

November 2003

Evaluation of Medicare's Competitive Bidding Demonstration for DMEPOS

Final Evaluation Report

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DMEPOS

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CMS Contract No. 500-95-0061

November 2003

This project was funded by the Centers for Medicare & Medicaid Services under contract no. 500-95-0061. The statements contained in this report are solely those of the authors and do not necessarily reflect the views or policies of the Centers for Medicare & Medicaid Services. RTI assumes responsibility for the accuracy and completeness of the information contained in this report.

*RTI International is a trade name of Research Triangle Institute.

ACKNOWLEDGMENTS

Without the assistance of many individuals, we could not have completed this report. Ann Meadow, our CMS project officer, provided insightful comments on each deliverable, arranged for access to numerous data sets, and kept us on course throughout the project. Mark Wynn, the CMS director of the demonstration, and Elaine Myers, the Palmetto GBA project director of the demonstration, patiently answered our questions about the implementation of the demonstration projects. Other individuals at Palmetto GBA, including Marlene Frierson and the demonstration Ombudsmen, Carmen Narganes and David Jernigan, provided valuable assistance.

At RTI, our research team included Claire Gibbons, Amy Wofford, Susan Hill, Suzanne Triplett, Kirtida Amin, and our survey research group. Eric Finkelstein, Maryam Arabshahi, Joe Burton, and Matthew Urato provided econometric and programming support. Susan Murchie edited all deliverables, with Judy Cannada and Andrew Jessup providing word processing and graphics support, respectively.

Finally, we thank the Medicare beneficiaries, providers, and referral agents who responded to our surveys and answered our questions during site visits.

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EXECUTIVE SUMMARY

ES.1 Background and Methods

ES.1.1 Background and Purpose

The Balanced Budget Act of 1997 (BBA 97) (U.S. Congress, 1997) authorized the Secretary of the Department of Health and Human Services to implement up to five demonstration projects of competitive bidding for Medicare Part B items and services, except physician services. At least one of these demonstration projects had to include oxygen and oxygen services. On the basis of this authority, the Centers for Medicare & Medicaid Services (CMS)¹ planned and implemented the DMEPOS Competitive Bidding Demonstration to test the use of competitive bidding to set prices for durable medical equipment (DME) and prosthetics, orthotics, and supplies (POS). Bidding in the first demonstration site, Polk County, Florida, was conducted in early 1999, and the resulting prices took effect on October 1, 1999. A second round of bidding was conducted in Polk County in 2001, with new prices taking effect on October 1, 2001. The second demonstration site included three counties in the San Antonio, Texas, metropolitan statistical area (MSA). Bidding in San Antonio occurred in 2000, and the resulting prices took effect on February 1, 2001.

BBA 97 required that the demonstrations be evaluated for their impact on Medicare program payments, access, diversity of product selection, and quality. The purpose of this report is to describe the results of the evaluation of the DMEPOS Competitive Bidding Demonstration. We evaluated the impact of the demonstration on

- Medicare expenditures,
- beneficiary access to care,
- quality of care (including diversity of product selection),
- competitiveness of the market, and
- the reimbursement system.

Our First-Year Annual Evaluation Report evaluated the effects of the demonstration on the first demonstration site, Polk County, during the period before and the 9-month period after the demonstration prices took effect on October 1, 1999. The Second-Year Annual Report evaluated the effects of the demonstration on the Polk County site during the period between July 1, 2000, and September 30, 2001. The Second-Year Annual Report also covered the effects of the demonstration on the San Antonio demonstration site during the period before and the 8-month period after the demonstration prices took effect in San Antonio on February 1, 2001. This Final Evaluation Report summarizes evaluation results for the entire demonstration, which continued until September 30, 2002, in Polk County and until December 31, 2002, in San Antonio.

¹Prior to July 2001, CMS was named the Health Care Financing Administration (HCFA). We use the new name throughout our report.

ES.1.2 Demonstration Overview

In Polk County, the DMEPOS Competitive Bidding Demonstration lasted for 3 years and included two rounds of bidding. Round 1 resulted in a fee schedule that was in effect for 2 years, and Round 2 resulted in a fee schedule that was in effect for 1 year. Round 1 included five product categories: oxygen equipment and supplies, hospital beds and accessories, enteral nutrition, urological supplies, and surgical dressings. Enteral nutrition was not included in Round 2, but the other four product categories were retained.

In San Antonio, the DMEPOS Competitive Bidding Demonstration lasted for 23 months and included one round of bidding. Five product categories were included in the San Antonio demonstration: oxygen equipment and supplies, hospital beds and accessories, wheelchairs and accessories, general orthotics, and nebulizer drugs.

Aside from the differences in dates, number of rounds, and product categories, the demonstration design was similar in Polk County and San Antonio. Each product category was considered a separate competition, so suppliers were required to submit separate bids for each product category in which they wished to compete. Demonstration suppliers were selected using a four-stage bid evaluation process. First, those bidders that met the demonstration's basic eligibility and quality standards were identified. Second, a composite bid for each bidder was calculated from the bid submission, and a cutoff composite price was chosen. Only those bids that were at or below this cutoff were considered for further evaluation. In setting the cutoff, the supply capacity and geographic coverage provided by the bidders were considered. Third, references from referral agents (hospital discharge planners, social workers, physician office staff, and home health workers who refer patients to DMEPOS suppliers) and financial institutions were collected. Fourth, the references were evaluated and on-site inspections were made to verify that the remaining bidders met general and product-specific quality and service requirements. Bidders were scored to identify those suppliers with the greatest potential to provide good quality and service.

At the end of the bid evaluation process, multiple demonstration suppliers were selected in each category. Demonstration suppliers were not guaranteed to receive a set number of Medicare patients. These provisions of the demonstration were designed to promote competition among demonstration suppliers for patients. This competition, it was hoped, would encourage suppliers to maintain quality and service levels during the demonstration.

The new fee schedule was determined from the bids that came in below the cutoff composite price. Demonstration suppliers were reimbursed according to this new fee schedule, minus the 20 percent beneficiary co-payment and any applicable deductibles.

Several transition policies governed beneficiary/supplier relationships that existed prior to the demonstration. Beneficiaries could continue to receive oxygen equipment and supplies or nebulizer inhalation drugs from their original supplier, regardless of whether the supplier was a demonstration supplier. However, payments were made according to the new demonstration fee schedule, and the supplier had to agree to accept assignment and demonstration prices. Those beneficiaries who had preexisting rental agreements or purchase contracts for enteral pumps, hospital beds and accessories, or manual wheelchairs and accessories could continue to use their

current supplier, and these suppliers would be paid under the normal Medicare fee schedule for the duration of the rental period. Repairs to purchased products, hospital beds and accessories, manual wheelchairs and accessories, and oxygen equipment were exempt from the demonstration and were reimbursed under the normal Medicare fee schedule. If beneficiaries used a nondemonstration supplier in error, then Medicare would cover the first 2 months of claims while the beneficiary located a new supplier.

Special policies covered reimbursement for demonstration products that were covered by Part B when Medicare beneficiaries resided in nursing facilities. Nursing facilities were allowed to continue existing relationships with nondemonstration suppliers, but payments were made on the basis of the demonstration fee schedule.

The demonstration included quality standards for demonstration suppliers, and these standards exceeded those set under the National Supplier Clearinghouse program. Also, CMS designated an Ombudsman in each site to receive, record, and respond to complaints from beneficiaries, physicians, suppliers, and other interested parties. Palmetto Government Benefits Administrators (Palmetto GBA) implemented the demonstration under contract and in collaboration with CMS.

ES.1.3 Evaluation Methods and Data

This evaluation required extensive descriptive and explanatory analyses to evaluate both the effectiveness of the implementation *process* and the *impact* of the demonstration on beneficiaries, providers, and the Medicare program. We addressed the five evaluation areas using several sources of qualitative and quantitative data. Data sources included site visits and telephone discussions with key demonstration participants, focus groups, a review of documentation, surveys of beneficiaries and providers, bid analysis, and claims analysis.

ES.2 Medicare Expenditures

Medicare allowed charges equal the product of price times the volume of utilization, summed across procedures. By comparing the demonstration prices with the Florida and Texas fee schedules that would have been in effect in the absence of the demonstration, we calculated the demonstration's effect on prices. Claims data allowed us to estimate whether the demonstration had an impact on utilization. We then estimated the demonstration's impact on allowed charges. Finally, we separated estimated allowed charges into Medicare expenditures (80 percent of allowed charges) and beneficiary co-payments (20 percent of allowed charges).

Key findings in this section are as follows:

- In Polk County, Round 1 demonstration prices were lower than the existing Florida fee schedule for most items in every product category except surgical dressings. Demonstration prices were lower for all 15 oxygen items, 28 of 31 hospital beds and accessories items, 37 of 40 urological supplies, and 22 of 24 enteral nutrition items. For surgical dressings, the demonstration price was higher for 46 of 52 items.
- In Polk County, Round 2 demonstration prices were lower than the Florida fee schedule for all items in the oxygen equipment and supplies and hospital beds and

accessories product categories, 18 of 24 urological supply items, and 21 of 28 surgical dressings items. Round 2 demonstration prices were lower than Round 1 demonstration prices for most of the items in the oxygen equipment and supplies and surgical dressings product categories. However, all of the Round 2 prices for urological supplies were higher than Round 1 prices. For hospital beds and accessories, most of the Round 2 prices were slightly higher than the Round 1 prices.

- In San Antonio, demonstration prices were lower than the existing Texas fee schedule for all items in the oxygen equipment and supplies, hospital beds and accessories, wheelchairs and accessories, and general orthotics product categories. For nebulizer drugs, the demonstration prices were lower than the Texas fee schedule prices for 16 of 27 items and higher for 11 of 27 items.
- For most demonstration items, the demonstration did not have a statistically significant effect on utilization. Although the general impact of the demonstration appears to be small or nonexistent for utilization for most items, there is mixed evidence on the impact on oxygen equipment and supplies and somewhat stronger evidence that the demonstration may have changed utilization patterns for wheelchairs and accessories in San Antonio.
- Assuming that the demonstration had no impact on utilization, we estimate that the demonstration reduced allowed charges in Polk County by \$4.7 million during its 3 years of operation. We estimate that the demonstration reduced allowed charges in San Antonio by \$4.6 million during its 23 months of operation.
- Combining savings from both sites, we estimate that the demonstration reduced allowed charges by nearly \$9.4 million (19.1 percent), again assuming that the demonstration did not affect utilization. Medicare expenditures (defined as allowed charges less co-payments and deductibles) fell by about \$7.5 million, and beneficiary payments fell by about \$1.9 million.

ES.3 Beneficiary Access

We define beneficiary access as the ability of Medicare beneficiaries to locate and use, without undue burden, the services and products that are covered by Medicare. Competitive bidding reduced the number of approved suppliers in a given area, and suppliers could have responded to the new environment in a number of ways. Responses could range from strategies to increase market share to business practices designed to reduce costs because of lower reimbursement. For example, suppliers could attempt to increase market share by extending service and advertising, thereby filling in geographic gaps left by ineligible suppliers. Conversely, suppliers could respond by delaying routine maintenance or employing fewer service technicians and customer service representatives in an effort to reduce costs. This could increase the need for service calls and extend waiting times, thereby decreasing access.

Because of the uncertainty of the outcomes, it was important to monitor the demonstration's impact on beneficiary access and evaluate whether competitive bidding affected beneficiaries' ability to obtain needed products and services. To evaluate beneficiary access, we

collected and analyzed data from beneficiaries, referral agents, suppliers, the Ombudsmen, demonstration directories, and Medicare claims.

Key findings in this section are as follows:

- Beneficiary survey data showed few statistically significant demonstration impacts on access-related survey measures in Polk County and San Antonio. This suggests that the demonstration had little overall impact on beneficiary access in these sites.
- In Polk County, most demonstration suppliers chose to serve every zip code in Polk County. Similarly, in San Antonio, most suppliers chose to serve all three counties in the demonstration area.
- The transition to demonstration prices and suppliers passed relatively smoothly in Polk County and San Antonio. The smooth transitions appeared to be related to the existence of transition policies and the willingness of nondemonstration oxygen suppliers to continue serving their patients. As a result, there was relatively little disruption of existing relationships between suppliers and beneficiaries during the transition period.
- Our Polk County beneficiary survey analysis detected a statistically significant decline in the provision of portable oxygen equipment and an increase in conserving device usage among new users under the demonstration. We also detected a decline in maintenance visits among new users of medical equipment in the demonstration area. Other statistically significant impacts in Polk County included changes in the ways beneficiaries order and receive their equipment, as well as declines in some types of training for urologicals and surgical dressings users.
- In contrast, beneficiary surveys in Texas indicate that the demonstration did not have a significant impact on portable oxygen and conserving device use in San Antonio, nor was there a decline in maintenance visits for new users of medical equipment.
- To further evaluate the impact of the demonstration on portable oxygen use in Polk County, we analyzed claims data. This analysis indicates that the demonstration had a negative and statistically significant impact on the percentage of new oxygen users who received portable oxygen, especially during Round 2 of the demonstration. However, the negative impact was smaller in magnitude than the impact suggested by the beneficiary survey.
- Referral agents who ordered equipment and supplies for their patients reported a few problems with access during the first months of the demonstration. Agents later became more familiar with demonstration rules and demonstration-eligible suppliers, and began using suppliers with whom they were comfortable. In general, referral agents did not think that the demonstration had a negative impact on beneficiaries' access to care, but the agents believed this was due to the additional responsibilities they assumed to ensure access and quality.

ES.4 Quality and Product Selection

One of the major concerns about competitive bidding is that it may encourage suppliers to provide lower quality products and services in an effort to cut costs and restore profit margins reduced by the bidding process. Lower quality may be manifested by suppliers offering lower quality products, postponing preventive maintenance, delaying service calls, limiting product selection, reducing the level of training or expertise of staff, and/or reducing inventory to the point that time needed to fill orders is increased. Consequently, our approach has been to evaluate the effect of the demonstration on the quality of products and services by obtaining information directly from Medicare beneficiaries, beneficiary organizations, referral agents, and suppliers. To do so, we relied on beneficiary surveys, supplier surveys, and site visits to each demonstration site.

Key findings in this section are as follows:

- Users of oxygen and other medical equipment in Polk County and San Antonio were highly satisfied with their experiences with their DMEPOS suppliers. Survey data show that overall satisfaction ratings were high before the demonstration and remained at that level 1 year after its implementation.
- Survey data indicate that quality of DMEPOS products and services was high before and after the demonstration in both Polk County and San Antonio. There were few statistically significant demonstration impacts on quality-related survey measures, suggesting that the demonstration had little overall impact on quality.
- During site visits to Polk County in Round 1, concerns were raised about the quality of urological supplies. Some suppliers believed that—partly through supplier inexperience—prices in Round 1 were set too low. Prices rose in Round 2, and a urological supplier with a strong reputation was added as a demonstration supplier.
- During site visits to San Antonio, referral agents reported a number of issues related to wheelchair service provided by some demonstration suppliers. Some suppliers did not provide the level of service expected by referral agents in terms of equipment setup and delivery, initial fitting and adjustments, and responsiveness to problems. Agents responded by cutting referrals to these suppliers and by taking increased responsibility for ensuring quality service to their patients.
- San Antonio suppliers reported on product selection in a supplier survey. Most suppliers reported little change in the products they supplied before and after the demonstration began.

ES.5 Competitiveness of the Market

The process of competitive bidding may reduce the number of suppliers that serve Medicare beneficiaries in these markets. For subsequent rounds of bidding to be successful, a sufficient number of bidders must be left in the market to induce competitive bids. Continued competition is also necessary to preserve beneficiary access and quality services. Therefore, we

analyzed whether the demonstration affected overall market competitiveness. We also examined a related issue: the effect of the demonstration on the aggregate market shares of demonstration and nondemonstration suppliers. Conceptually, competitive bidding requires that bidders have strong incentives to bid aggressively. There must be potential gains from submitting winning bids and potential losses from submitting losing bids. We analyzed whether the demonstration produced increases in aggregate market shares for demonstration suppliers and reductions in aggregate market shares for nondemonstration suppliers. In addition to looking at competitiveness issues at the aggregate level, we also examined the effects of the demonstration on DMEPOS suppliers. These effects are obviously of interest to the suppliers themselves.

Key findings in this section are as follows:

- Thirty suppliers submitted a total of 71 bids in Polk County in Round 1 of the demonstration. Sixteen suppliers, both large and small firms, were selected as demonstration suppliers.
- Twenty-six firms submitted a total of 52 bids for the four product categories in Round 2 bidding in Polk County, and 16 suppliers (62 percent) were awarded demonstration status.
- The number of firms submitting bids for urological supplies in Round 2 bidding in Polk County fell from 9 to 7, and the number of suppliers submitting bids for surgical dressings fell from 8 to 4. These reductions are noteworthy because these product categories had the fewest winners and demonstration suppliers in Round 1 of the demonstration.
- Entry into and exit from the market were still possible in the presence of competitive bidding. Half of the Round 2 demonstration suppliers in Polk County also had demonstration status in Round 1, but half did not.
- Seventy-nine firms submitted a total of 169 bids for the five product categories in San Antonio. Overall, 65 percent of the suppliers that submitted bids won demonstration status in at least one product category. Within product categories, the number of winning bids ranged from 8 for orthotics to 32 for oxygen equipment and supplies.
- In Round 1 bidding in Polk County, few winning bidders adopted a bidding strategy that lowered prices for all items by the same percentage, relative to the existing fee schedules. Instead, most bidders cut prices for individual items by varying percentages. Indirectly, this result suggests that relative prices for DMEPOS were not accurately reflected in the existing Florida fee schedule.
- As a group, demonstration suppliers gained market share during the demonstration, whereas nondemonstration suppliers lost market share. In product categories where there were transition policies that allowed nondemonstration suppliers to continue to serve existing customers, the increase in market share for demonstration suppliers occurred gradually over time.

- In both Polk County and San Antonio, the demonstration had relatively little effect on market concentration in every product category except one. For surgical dressings in Polk County, a relatively small and highly concentrated product category before the demonstration, concentration increased significantly in Round 1 and decreased significantly in Round 2.
- As expected, individual suppliers generally gained market share if they were demonstration suppliers and lost market share if they were nondemonstration suppliers. Some demonstration suppliers in Polk County, including some that had small market shares prior to the demonstration, gained substantial market share. However, being named as a demonstration supplier did not guarantee increased market share. In San Antonio, many demonstration oxygen suppliers had little or no increases in market share due to the fact that many of the largest suppliers in the predemonstration period were granted demonstration status.
- A supplier survey provides anecdotal evidence that San Antonio suppliers were more likely to receive reduced revenues and net income during the demonstration than suppliers in a comparison site, while the effects on costs were less clear. Within San Antonio, demonstration suppliers were more likely than nondemonstration suppliers to report that revenue, costs, and net income increased during the demonstration. These results must be interpreted cautiously because the survey had low response rates, particularly in the comparison site.
- In both sites, some suppliers felt that the demonstration made the DMEPOS market more competitive, whereas others felt the demonstration made the market less competitive. Suppliers frequently expressed opposition to the competitive bidding demonstration.

ES.6 Reimbursement System

In the course of the evaluation, we focused on understanding and documenting the process of implementing the competitive bidding demonstration. We examined the following questions: How were interested parties notified of the new system? What efforts were made to educate beneficiaries, referral agents, and suppliers on how to navigate the system? How was the bidding process managed? How were winners selected? What administrative changes were made to accommodate the new system, and how were system and supplier performance monitored? How much did it cost to administer the system?

Key findings in this section are as follows:

- From an operational standpoint, CMS and Palmetto GBA were able to successfully implement the demonstration project. The project team was able to effectively solicit, collect, and evaluate bids; educate suppliers, referral agents, and beneficiaries; monitor quality and behavior; and administer claims throughout the demonstration.
- Although the overall implementation was successful, not everything went perfectly. A flaw in the weighting system used to evaluate bids in Round 1 of the Polk County

demonstration led to higher prices in the surgical dressings category. In San Antonio, CMS delayed the start of the demonstration by 1 month, and delivery of the demonstration directories was delayed until very close to the actual starting date.

- Such problems were relatively minor and reflect one of the benefits of conducting demonstration projects: the ability to learn from the demonstration and apply the lessons if the demonstrated system is adopted on a wider scale. CMS modified the bid weights before Round 2 bidding in Polk County, and the Round 2 prices of surgical dressings declined. Similarly, the delays in San Antonio signaled the importance of including adequate time to evaluate bids and approve winners and the need to provide timely delivery of demonstration directories.
- There were three major differences in demonstration design between Round 1 bidding in Polk County and subsequent rounds of bidding in San Antonio and Polk County. As noted, the weighting mechanism was improved. The project design in San Antonio changed three of the product categories originally used in Polk County. Enteral nutrition was dropped as a product category in Round 2 bidding in Polk County.
- For the entire demonstration, CMS and Palmetto GBA costs of implementation totaled about \$4.8 million between 1995 and 2002. About \$1 million in costs were incurred in the development phase of the demonstration from September 1995 to June 1998 (15 months before the demonstration prices took effect in October 1999). About \$3.8 million, or \$845,000 per year, in costs were incurred during the operational phase of the demonstration from July 1998 until December 2002. The estimated incremental costs of operating a second demonstration site were relatively low, ranging from \$300,000 in a year when bidding occurs to \$110,000 per year in a nonbidding year.
- The costs of implementing the demonstration were nearly 50 percent lower than the projected \$9.4 million reduction in Medicare allowed charges associated with the demonstration.
- The estimated annual cost of operating a national competitive bidding program in 261 MSAs is about \$69 million. The program would require about 670 full-time equivalent employees, mostly at durable medical equipment regional carriers (DMERCs).

ES.7 Summary and Conclusions

BBA 97 authorized the Department of Health and Human Services to conduct the demonstration to test whether competitive bidding can be used to set prices for certain medical services covered by Medicare. Because the purpose of a demonstration project is to improve our understanding of the policy being tested, a demonstration project can be defined as a success if it actually becomes operational, so that we can learn what happens under the policy. Under this definition, the DMEPOS demonstration was successful, because it was the first time that competitive bidding has ever been implemented for Medicare services.

Another way of defining the success of a demonstration project is to evaluate the positive and negative impacts of the demonstration. Based on our evaluation, we believe that the overall impacts of the demonstration were largely positive. Competitive bidding produced lower prices, leading to lower allowed charges for the Medicare program and beneficiaries. We found that the demonstration had relatively little effect on beneficiary access, quality, and product selection. Beneficiaries remained as satisfied with their DMEPOS suppliers during the demonstration as they were before the demonstration. There is a cost to implementing the demonstration, but the estimated reductions in program expenditures exceeded the estimated costs of implementation. By definition, if the demonstration reduced allowed charges, supplier revenues had to fall, and that result will likely be viewed as a negative impact by suppliers in general. Still, the demonstration produced the expected results among suppliers; demonstration suppliers gained market share as a group, while nondemonstration suppliers lost market share.

Recommending whether competitive bidding should be adopted for DMEPOS on a broader basis is beyond the scope of our evaluation. However, the evaluation results have a number of implications for policy if a broader competitive bidding program is adopted. We believe that competitive bidding for DMEPOS can be successfully implemented in MSAs with moderate-sized populations and above. Larger product categories, such as oxygen equipment and supplies, hospital beds and accessories, wheelchairs and accessories, and nebulizer drugs, appear better suited for a competitive bidding program than smaller DMEPOS product categories. Most of the transition policies in the demonstration would also help promote access and prevent disruption of service to beneficiaries under a broader competitive bidding program. The selection of multiple winners in each product category in each acquisition area will also help maintain quality and access. Finally, educating beneficiaries, suppliers, and referral agents about competitive bidding will be an important component of any competitive bidding program.

SECTION 1 BACKGROUND AND METHODS

1.1 Purpose

The Balanced Budget Act of 1997 (BBA 97) (U.S. Congress, 1997) authorizes the Secretary of the Department of Health and Human Services to implement up to five demonstration projects of competitive bidding for Medicare Part B items and services, except physician services. At least one of these demonstration projects must include oxygen and oxygen services. On the basis of this authority, the Centers for Medicare & Medicaid Services (CMS)² planned and implemented the DMEPOS Competitive Bidding Demonstration to test the use of competitive bidding to set prices for durable medical equipment (DME) and prosthetics, orthotics, and supplies (POS). Bidding in the first demonstration site, Polk County, Florida, was conducted in early 1999, and the resulting prices took effect on October 1, 1999. A second round of bidding was conducted in Polk County in 2001, with new prices taking effect on October 1, 2001. The second demonstration site included three counties in the San Antonio, Texas, metropolitan statistical area (MSA). Bidding in San Antonio occurred in 2000, and the resulting prices took effect on February 1, 2001.

BBA 97 requires that the demonstrations be evaluated for their impact on Medicare program payments, access, diversity of product selection, and quality. The purpose of this report is to describe the results of the evaluation of the DMEPOS Competitive Bidding Demonstration. We evaluate the impact of the demonstration on

- Medicare expenditures,
- beneficiary access to care,
- quality of care (including diversity of product selection),
- competitiveness of the market, and
- the reimbursement system.

Our First-Year Annual Evaluation Report evaluated the effects of the demonstration on the first demonstration site, Polk County, during the period before and the 9-month period after the demonstration prices took effect on October 1, 1999. The Second-Year Annual Report evaluated the effects of the demonstration on the Polk County site during the period between July 1, 2000, and September 30, 2001. The Second-Year Annual Report also covered the effects of the demonstration on the San Antonio demonstration site during the period before and the 8-month period after the demonstration prices took effect in San Antonio on February 1, 2001. This Final Evaluation Report summarizes results for the evaluation for the entire demonstration, which continued until September 30, 2002, in Polk County and until December 31, 2002, in San Antonio.

²Prior to July 2001, CMS was named the Health Care Financing Administration (HCFA). We use the new name throughout our report.

In the remainder of this section, we present an overview of the key features of the demonstration design; provide a brief history of the demonstration; and discuss links among the major evaluation issues, our evaluation approach, and the methods and data we used to perform the evaluation. Sections 2 through 6 describe the evaluation results for Medicare expenditures, access, quality, competitiveness of the market, and the reimbursement system, respectively. In Section 7, we summarize the key conclusions across evaluation areas and make policy recommendations on the basis of these conclusions.

1.2 Demonstration Overview

In Polk County, the DMEPOS Competitive Bidding Demonstration lasted for 3 years and included two rounds of bidding (Table 1-1). The first round resulted in a fee schedule that was in effect for 2 years, while the fee schedule based on the second round of bidding was in effect for 1 year. In Round 1, five product categories were included: oxygen equipment and supplies, hospital beds and accessories, enteral nutrition, urological supplies, and surgical dressings. Enteral nutrition was dropped from Round 2 of the demonstration, while oxygen equipment and supplies, hospital beds and accessories, urological supplies, and surgical dressings were retained.

In San Antonio, the DMEPOS Competitive Bidding Demonstration lasted for 23 months and included one round of bidding (see Table 1-1). Originally, the new demonstration prices were scheduled to take effect on January 1, 2001, but the start of the demonstration was postponed 1 month until February 1, 2001. Five product categories were included in the San Antonio demonstration: oxygen equipment and supplies, hospital beds and accessories, wheelchairs and accessories, general orthotics, and nebulizer drugs.

Aside from the differences in dates, number of rounds, and product categories, the demonstration design was similar in Polk County and San Antonio. Each product category was considered a separate competition, so suppliers were required to submit separate bids for each product category in which they wished to compete. Demonstration suppliers were selected using a four-stage bid evaluation process. First, those bidders that met the demonstration's basic eligibility and quality standards were identified. Second, a composite bid for each bidder was calculated from the bid submission, and a cutoff composite price was chosen. Only those bids that were at or below this cutoff were considered for further evaluation. In setting the cutoff, the supply capacity and geographic coverage provided by the bidders were considered. Third, references from referral agents (hospital discharge planners, social workers, physician office staff, and home health workers who refer patients to DMEPOS suppliers) and financial institutions were collected. Fourth, the references were evaluated and on-site inspections were made to verify that the remaining bidders met general and product-specific quality and service requirements. Bidders were scored to identify those suppliers with the greatest potential to provide good quality and service.

At the end of the bid evaluation process, multiple demonstration suppliers were selected in each category. Demonstration suppliers were not guaranteed to receive a set number of Medicare patients. These provisions of the demonstration were designed to promote competition among demonstration suppliers for patients. This competition, it was hoped, would encourage suppliers to maintain quality and service levels during the demonstration.

Table 1-1
Demonstration timeline

Demonstration event	Date
BBA 97 passed	August 5, 1997
Polk County, Florida	
<i>Round 1</i>	
Site announcement	May 29, 1998
Request for bids	February 11, 1999
Bidders conference	February 23, 1999
Bid submission deadline	March 29, 1999
Bid evaluation	March 29 to July 1999
Winners announced	August 13, 1999
Supplier directory distributed	September 13, 1999
New prices take effect	October 1, 1999
End of first round	September 30, 2001
<i>Round 2</i>	
Request for bids	March 2, 2001
Bidders conference	March 27, 2001
Bid submission deadline	April 17, 2001
Bid evaluation	April 27 to August 2001
Winners announced	August 29, 2001
Supplier directory distributed	September 4, 2001
Second round prices take effect	October 1, 2001
Demonstration ends	September 30, 2002
San Antonio, Texas	
Site announcement	March 9, 2000
Request for bids	May 5, 2000
Bidders conference	May 16, 2000
Bid submission deadline	June 23, 2000
Bid evaluation	June 23 to November 2000
Winners announced	December 2000
Supplier directory distributed	January 24, 2001
New prices take effect	February 1, 2001
Demonstration ends	December 31, 2002

The new fee schedule was determined from the bids that came in below the cutoff composite price. Demonstration suppliers were reimbursed according to this new fee schedule, minus the 20 percent beneficiary co-payment and any applicable deductibles.

Several transition policies governed beneficiary/supplier relationships that existed prior to the demonstration. Beneficiaries could continue to receive oxygen equipment and supplies or nebulizer inhalation drugs from their original supplier, regardless of whether the supplier was a demonstration supplier. However, payments were made according to the new demonstration fee schedule, and the supplier had to agree to accept assignment and demonstration prices. Those beneficiaries who had preexisting rental agreements or purchase contracts for enteral pumps, hospital beds and accessories, or manual wheelchairs and accessories could continue to use their current supplier, and these suppliers would be paid under the normal Medicare fee schedule for the duration of the rental period. Repairs to purchased products, hospital beds and accessories, manual wheelchairs and accessories, and oxygen equipment were exempt from the demonstration and were reimbursed under the normal Medicare fee schedule. If beneficiaries used a nondemonstration supplier in error, then Medicare would cover the first 2 months of claims while the beneficiary located a new supplier.

Special policies covered reimbursement for demonstration products that were covered by Part B when Medicare beneficiaries resided in nursing facilities. Nursing facilities were allowed to continue existing relationships with nondemonstration suppliers, but payments were made on the basis of the demonstration fee schedule. In order to implement these policies, nursing facilities were asked to provide information about their DME suppliers.

The demonstration included quality standards for demonstration suppliers, and these standards exceeded those set under the National Supplier Clearinghouse program. Also, CMS designated an Ombudsman in each site to receive, record, and respond to complaints from beneficiaries, physicians, suppliers, and other interested parties. Palmetto Government Benefits Administrators (Palmetto GBA) implemented the demonstration under contract and in collaboration with CMS.

1.3 History of the Demonstration

1.3.1 Planning Stages

CMS has long been interested in using competitive bidding to set Medicare fee schedules. Developmental work on competitive bidding demonstrations for clinical laboratory services and DME began in the mid-1980s. However, because of a congressional funding moratorium, the projects were not implemented at that time. CMS resumed work on the clinical laboratory and DME competitive bidding demonstrations in 1995 (a competitive bidding demonstration for clinical laboratory services has not been implemented).

Interest in competitive bidding has intensified in recent years as continued growth in Medicare spending has forced CMS, the President, and Congress to seek additional innovative means to control program spending. This interest culminated in provisions addressing competitive bidding in the BBA 97. BBA 97 authorized the Secretary of Health and Human Services to conduct up to five demonstration projects of competitive bidding for Part B items and

services, except physician services. The key demonstration provisions, presented in Section 4319 of the BBA 97, were as follows:

- The Secretary will implement up to five demonstration projects under which competitive acquisition areas will be established for contract award purposes.
- Each demonstration shall be conducted in not more than three competitive acquisition areas.
- Competitive acquisition areas shall be all or part of an MSA. Criteria for selecting competitive acquisition areas include availability and accessibility of services and probability of savings from the demonstration.
- To receive a contract, providers must meet quality standards.
- The amount to be paid under a contract must be less than what would have been paid in the absence of a contract.
- The number of providers awarded contracts may be limited to the number needed to meet projected demand.
- The demonstrations shall be evaluated for their impact on Medicare program payments, access, diversity of product selection, and quality.
- A demonstration project may be expanded if the project reduces federal spending and does not reduce program access, diversity of product selection, or quality.
- The demonstration may include any Part B service except physician services. At least one demonstration project will include oxygen and oxygen equipment.
- The demonstrations—which will be operated over a 3-year period—must be completed by December 31, 2002.

1.3.2 Polk County—Round 1

On May 29, 1998, Polk County, Florida—an MSA that includes the cities of Lakeland and Winter Haven—was announced as the first site for the DMEPOS Competitive Bidding Demonstration. Polk County was selected because it has a relatively small population but a large proportion of Medicare beneficiaries, high expenditures for DMEPOS per beneficiary, and a large number of suppliers servicing the area. In 1997, 4,500 beneficiaries received about \$6.6 million in Medicare reimbursement for the products included in the demonstration. Nationally, Medicare paid about \$3 billion for the items included in the demonstration. The following DMEPOS product groups were included in the demonstration:

- oxygen equipment and supplies,
- hospital beds and accessories,

- enteral nutrition,
- urological supplies, and
- surgical dressings.

On February 11, 1999, CMS sent a Request for Bids (RFB) to every supplier that had submitted claims to Medicare during the previous year for items included in the demonstration and for beneficiaries residing in the demonstration area. CMS also published notices of the demonstration in national trade journals and in *Commerce Business Daily*, a publication that lists upcoming government procurements.

Medi-Health Care Inc., C&C Homecare, and Florida Association of Medical Equipment Dealers (collectively “FAMED”) filed a request for an injunction against the commissioner of the Social Security Administration, the administrator of CMS, and other codefendants on February 4, 1999. FAMED alleged that, in developing the competitive demonstration project, CMS had violated the Federal Advisory Committee Act (FACA), which ensures public access and participation in advisory committee meetings and makes available to the public any documentation from the meeting. CMS had convened a National Technical Expert Panel (NTEP) to gather feedback regarding the design of the competitive bidding project and to enhance communication with interested members of the public. The panel met three times and was not expected to, and did not, issue a report. FAMED claimed that they were unable to participate in the NTEP because they did not receive proper notice. Had they been able to participate, they would have hoped to influence the structure of the demonstration and afford themselves a better chance to bid successfully. FAMED asked that CMS be prevented from using any of the recommendations from the NTEP and that the demonstration project be delayed until the FACA requirements were met. However, the case was dismissed, and the United States Court of Appeals, Eleventh Circuit, denied FAMED’s appeal on November 9, 1999 (194 F.3d 1227), stating that FAMED was only able to allege speculative damages and a tenuous causal connection of damages to the alleged violations. The lawsuit may have caused uncertainty among suppliers about whether the demonstration would proceed as scheduled. Ultimately, however, the lawsuit did not delay the demonstration.

CMS held a Bidders Conference in Lakeland, Florida, on February 23, 1999, to describe the bidding process, explain the operational policies of the demonstration, share information on bidding strategies, and answer questions from prospective bidders. Prospective bidders were also given an opportunity to submit follow-up questions to CMS after the conference. About 100 people attended the Bidders Conference.

Bids were due on March 29, 1999. Thirty different suppliers submitted a total of 73 bids across five different product categories. The demonstration contractor, Palmetto GBA, and CMS reviewed these bids for both quality and value. They selected 16 suppliers, each to provide products in at least one product category, for participation in the demonstration. Results of the bidding, including the preliminary number of suppliers in each category and estimated savings, were announced in July 1999. CMS released a final list of demonstration suppliers in August 1999 (Table 1-2), after reviewing appeals and obtaining signed contracts from suppliers. The Demonstration Supplier Directory, which provides each demonstration supplier’s contact information and service area, was distributed in September 1999.

**Table 1-2
Demonstration suppliers by product category, Polk County—Round 1**

Supplier	Oxygen equipment and supplies	Hospital beds and accessories	Enteral nutrition	Urological supplies	Surgical dressings
American Home Patient	✓	✓	✓		
Comprehensive Health Care	✓	✓	✓	✓	✓
Encore Respiratory, Inc.	✓				
Global Medical, Inc.	✓	✓	✓		
Health Care Diagnostics	✓	✓	✓		
Home Care Medical Services	✓	✓	✓		
Home Care Supply	✓				
Housecall Medical Equipment	✓	✓			
Jernigan Healthcare				✓	✓
Med-Services Network	✓				
Medi-Healthcare	✓	✓	✓	✓	
Medical Technology Solutions					✓
Medline Healthcare			✓	✓	✓
Respitek Medical Services	✓	✓			
Sun Factors, Inc.	✓	✓		✓	
VNA Homecare, Inc.	✓	✓			
Total Number of Suppliers	13	10	7	5	4

Based on the demonstration suppliers' bids, new reimbursement rates were established for each product category included in the demonstration. The new rates went into effect on October 1, 1999.

1.3.3 Polk County—Round 2

The second round of bidding for Polk County, Florida, followed roughly the same format and schedule as the first round of bidding. However, enteral nutrition was not included in Round 2 of the demonstration (see Section 6). The following four product categories were included in the demonstration:

- oxygen equipment and supplies,
- hospital beds and accessories,
- urological supplies, and
- surgical dressings.

The RFB for Round 2 was released on March 2, 2001, and the Bidders Conference was held in Lakeland, Florida, later in the month. Bids were due on April 17, 2001, 45 days after the RFB was released. Twenty-six different suppliers submitted a total of 51 bids across the four different product categories. Palmetto GBA and CMS selected 16 suppliers, each to provide products in at least one product category, for participation in the demonstration. CMS released the final list of demonstration suppliers in August 2001 (Table 1-3), and the demonstration contractor distributed the Supplier Directory to beneficiaries and suppliers in September 2001. Round 2 demonstration prices went into effect on October 1, 2001. Round 2 prices remained in effect for 1 year, until September 30, 2002, when the Polk County demonstration ended.

1.3.4 San Antonio

In March 2000, CMS announced that San Antonio would be the second site for the DMEPOS Competitive Bidding Demonstration. Three (Bexar, Comal, and Guadalupe Counties) of the four counties in the San Antonio MSA were included in the demonstration. The San Antonio demonstration included the following product categories:

- oxygen equipment and supplies,
- hospital beds and accessories,
- wheelchairs and accessories,
- general orthotics, and
- nebulizer drugs.

According to a CMS news release, San Antonio was selected for the demonstration “because it has enough beneficiaries and suppliers to create the potential for significant savings” (<www.hcfa.gov/ord/dmepr300.htm>). San Antonio has approximately 112,000 Medicare beneficiaries in the three-county area included in the demonstration. Between 15 and 48 suppliers provided significant services to Medicare beneficiaries in each of the five product areas included in the demonstration.

The RFB for San Antonio was released on May 5, 2000, and the Bidders Conference was held in San Antonio later in the month. Bids were due on June 23, 2000. Seventy-nine different suppliers submitted a total of 179 bids across the five different product categories. Palmetto GBA and CMS selected 51 suppliers, each to provide products in at least one product category, for participation in the demonstration. CMS released the final list of demonstration suppliers in January 2001 (Table 1-4), and the demonstration contractor distributed the Supplier Directory to

Table 1-3
Demonstration suppliers by product category, Polk County—Round 2

Supplier	Oxygen equipment and supplies	Hospital beds and accessories	Urological supplies	Surgical dressings
American Home Patient		✓		
Atlantic Medical Supply		✓		
Desoto Home Health Care		✓		
DME Zone		✓		
Florida Medical Equipment Services				
Garrett’s Medical Supply, Inc.			✓	
Health Alliance, Inc.			✓	
Health Care Diagnostics		✓		
Jernigan Healthcare			✓	✓
Lincare				
Med-Services Network		✓		
Medi-Healthcare		✓	✓	✓
Medline Healthcare			✓	✓
QualiMed Respiratory and Mobility, Inc.				
RespiCare of Central Florida				
Sun Care		✓		
Total Number of Suppliers	10	8	5	3

beneficiaries and suppliers in January 2001. The demonstration prices went into effect on February 1, 2001, and remained in effect until December 31, 2002, when the San Antonio demonstration ended.

1.4 Evaluation Methods and Data

This section describes the methods and data we used to evaluate the five major evaluation areas (Medicare expenditures, access, quality, competitiveness of the market, and the reimbursement system). The evaluation required extensive descriptive and explanatory analyses to evaluate both the effectiveness of the implementation *process* and the *impact* of the demonstration on beneficiaries, providers, and the Medicare program. We addressed the five evaluation areas using several sources of qualitative and quantitative data. Data sources included site visits and telephone discussions with key demonstration participants, focus groups, a review of documentation, surveys of beneficiaries and providers, bid analysis, and claims analysis.

**Table 1-4
Demonstration suppliers by product category, San Antonio**

Supplier	Oxygen equipment and supplies	Hospital beds and accessories	Wheelchairs and accessories	General orthotics	Nebulizer drugs
AAA Medical & Oxygen Supply	✓	✓			
A.R.E. Pharmcare, Inc.	✓	✓	✓		
Alamo Sleep Center & Respiratory Equipment, Inc.	✓				
AMERICAIR of San Antonio & Austin-San Marcos	✓				
American Homepatient	✓	✓	✓		✓
Angel Care Medical Supply, Inc.	✓		✓		
Aspin Health Systems, Inc.		✓			
Bexar Care Home Medical Equipment & Supplies	✓	✓	✓		
Cedar View Medical Supply	✓		✓		✓
Champs Medical	✓	✓	✓		✓
Chartwell Care Givers, Inc.	✓				✓
Choice One Medical		✓	✓		
Christus Santa Rosa Homecare	✓				
Custom Care Pharmacy					✓
D&L Medical Products, Inc.	✓	✓	✓		
Davila Pharmacy, Inc.		✓	✓		
EBI, L.P.				✓	
G.G. Medical, Inc.	✓				
Healix Health Services, Inc.	✓				
Healthquest Pharmacy					✓
Homecare Dimensions	✓			✓	
Hope Medical Supply	✓	✓	✓		
Huntleigh Home Medical, LLC	✓	✓	✓		
Kirby Drugs of Texas, Inc.					✓
Longhorn Drug Co.					✓
LYNAY Healthcare, Inc.	✓	✓			
MG Pharmaceutical, Inc.	✓				
Med Link America, Inc.					✓

(continued)

**Table 1-4
(continued)**

Supplier	Oxygen equipment and supplies	Hospital beds and accessories	Wheelchairs and accessories	General orthotics	Nebulizer drugs
Ortho-Tex, Inc.				✓	
OxeNET	✓	✓	✓		
Oxy-Care, Inc.		✓			
P.F.T. Services, Inc.	✓		✓		
Patient Care Systems, Inc.	✓				
Praxair Healthcare	✓				
Prescott's Orthotics & Prosthetics				✓	
Professional Medical	✓	✓	✓		✓
Promise Medical, Inc.	✓		✓		
Rehab In Motion, Inc.		✓			
Respiratory Solutions, Inc.	✓	✓	✓		
Revcare Pharmacy		✓	✓		✓
San Antonio Extended Medical Care, Inc.	✓				
San Antonio Orthotics and Artificial Limbs				✓	
San Antonio Prosthetics Corp.				✓	
Simon & Simon Medical Equipment Co., Inc.	✓	✓	✓		
South Texas Medical Supply	✓	✓	✓	✓	
Southern Medical, Inc.	✓	✓	✓		
Summit D.M.E. of San Antonio	✓	✓	✓		
Texas Homecare Providers	✓				
The Orthopedic Store				✓	
Travis Medical		✓	✓		
Western Medical Supplies and Equipment, Inc.		✓	✓		
Total Number of Suppliers	32	24	23	8	11

For many analyses, we used an external comparison group composed of Medicare beneficiaries from areas that were similar to the Polk County and San Antonio demonstration sites. Brevard County, Florida, was chosen as the comparison county for Polk County because it closely resembles Polk County in several key characteristics:

- location in Florida,
- a single-county MSA,
- number of Medicare beneficiaries,
- number of DME suppliers, and
- managed care penetration.

Based on similar characteristics, the Austin-San Marcos, Texas, MSA was chosen as the comparison area for San Antonio.

Our primary focus in the evaluation was on Medicare, Medicare beneficiaries, and Medicare suppliers. It is possible that the demonstration affected non-Medicare beneficiaries or payers. When those effects were clearly evident, we report them, but such effects were not a major focus of our evaluation. Below, we discuss our approach for evaluating the five major evaluation areas.

1.4.1 Medicare Expenditures

Our evaluation of Medicare expenditures focused on price, utilization, and overall expenditures (the product of price and utilization). The evaluation addressed the following primary questions:

- Does competitive bidding reduce the price Medicare pays for DMEPOS?
- Does utilization of DMEPOS rise, fall, or remain the same?
- Do overall Medicare expenditures for DMEPOS fall?

The first question is critical to the overall evaluation of the demonstration project because proponents of competitive bidding expect that competitive bidding will reduce prices relative to the current Medicare fee schedule. If this expectation is proven incorrect, much of the motivation for using competitive bidding for DMEPOS will be lost. Conceptually, competitive bidding would have a good chance of reducing Medicare fees if current fees were higher than supplier costs. In the primary analysis of price, we compared the new price schedules generated by competitive bidding with the DMEPOS fee schedule that would have otherwise held in Florida and Texas.

For the second question, the probable effects of competitive bidding on utilization (the number of units used) are less clear, because utilization is determined by the interplay between the demand for and the supply of DMEPOS. To the extent that lower Medicare prices reduced

beneficiary out-of-pocket costs, beneficiaries would tend to increase the quantity demanded. Economic theories do not make a clear prediction about the impact of price reductions on supply. Standard supply theory implies that suppliers tend to reduce the quantity supplied when prices fall, at least according to standard economic theory. On the other hand, the theory of supplier-induced demand suggests that suppliers will try to exploit their informational advantages to induce demand if they suddenly face lower prices. Although many economists have criticized the theoretical underpinnings of supplier-induced demand, some economists and many other researchers find this theory intuitively appealing. It is not clear to what extent, if any, DMEPOS suppliers can induce demand. The demonstration was also designed to weed out fraudulent suppliers, which could by itself reduce utilization. Of course, all these conjectures about utilization could be rendered moot by the nature of DMEPOS: to the extent that the demand for DMEPOS was driven by medical necessity, rather than price, there may have been relatively little effect on utilization. In the analysis of utilization, we used Medicare National Claims History data to compare utilization in the Polk County and San Antonio demonstration sites to utilization in their respective comparison sites.

For the third question, the overall effect of competitive bidding for DMEPOS on total expenditures depends on competitive bidding's effect on both price and utilization. If price falls and utilization either falls or remains the same, Medicare expenditures will definitely fall. If price falls and utilization rises, the overall effect on expenditures will depend on the relative magnitudes of the two changes. If the percentage reduction in price is larger than the percentage increase in utilization, overall expenditures will fall. Proponents of competitive bidding expect that price reductions will dominate, but this expectation must be tested empirically. Data from the price and utilization analyses were combined to evaluate the overall effect of the demonstration on Medicare expenditures.

Table 1-5 summarizes the analyses that we performed. In the table, "pre-intervention" and "post-intervention" refer to data for the periods before and after the demonstration fee schedules took effect on October 1, 1999, in Polk County and on February 1, 2001, in San Antonio. Results of some of the analyses were presented in the First and Second Annual Evaluation Reports; the last column of the table indicates the report in which results were presented.

1.4.2 Beneficiary Access

Beneficiary access to and quality of DMEPOS services are interrelated, and both may change in response to competitive bidding. The impact of competitive bidding on access and quality is potentially very complex. The purpose of the evaluation was to determine which outcomes occurred and assess their implications for beneficiaries and suppliers.

From a conceptual standpoint, the demonstration's effects on access and quality are not clear. The competitive bidding rules reduced the number of approved suppliers providing DME to Medicare beneficiaries in Polk County and San Antonio. Further, if demand for services was constant (because, for example, there was no change in beneficiary health status and DME technology), competitive bidding would have almost certainly reduced the total revenue available to suppliers and shift the remaining revenue to fewer suppliers. Thus, we would expect

Table 1-5
Evaluation approach: Medicare expenditures

Issue	Method	Data Source	Pre-intervention	Post-intervention	Comparison site	Evaluation report ¹
Price	Comparative analysis	Bids; old and new fee schedules	✓	✓		1, 2, 3
Quantity	Claims analysis	National Claims History	✓	✓	✓	3
Total expenditures	Claims analysis	National Claims History	✓	✓	✓	3

¹Report 1: First Annual Evaluation Report. Report 2: Second Annual Evaluation Report.
Report 3: Final Evaluation Report.

some suppliers who did not bid or whose bids were not accepted to leave the local market. Approved suppliers might have experienced increased profits from increased volume and share of total revenue or decreased profits from smaller profit margins. Approved suppliers could have adapted to the potential for increased market share by advertising, opening new locations to fill in the geographic gaps left by suppliers who were not approved, and improving service, thereby increasing beneficiary access. Alternatively, they might have retained their initial configuration and marketing behavior and attempted to restore profit margins by offering lower-quality products, delaying routine maintenance, or employing fewer mechanics and customer service representatives, thereby increasing the need for service calls, extending the waiting time for service, and decreasing access and quality. At the same time, the demonstration also included measures to maintain access and quality.

The evaluation addressed the following principal access question:

- Did competitive bidding reduce beneficiaries' ability to receive the DMEPOS services they needed, when they needed them?

We performed several analyses to address this question. First, we examined whether the number of DME suppliers decreased in the demonstration sites. Second, we collected and analyzed data on perceived access from beneficiaries, suppliers, and referral agents. Third, using claims data, we examined realized access by testing whether utilization changed in the demonstration sites. Finally, we tested whether beneficiary out-of-pocket expenses were affected by the demonstration. Table 1-6 summarizes the analyses that were performed.

Table 1-6
Evaluation approach: beneficiary access

Issue	Method	Data source	Pre-intervention	Post-intervention	Comparison site	Evaluation report ¹
Number of suppliers	Claims analysis	National Claims History	✓	✓	✓	3
Beneficiary perceptions	Survey of users	Beneficiaries	✓	✓	✓	1, 2, 3
Referral agent perceptions	Focus groups	Physicians and referral agents		✓		1, 2, 3
Supplier perceptions	Focus groups	Suppliers		✓		1, 2, 3
	Survey	Suppliers		✓	✓	3
Realized access	Claims analysis	National Claims History, beneficiary surveys	✓	✓	✓	3
	Site visit	Ombudsman		✓		1, 2, 3
Out-of-pocket expenses	Claims analysis	National Claims History, Durable Medical Equipment Regional Carrier	✓	✓	✓	3

¹Report 1: First Annual Evaluation Report. Report 2: Second Annual Evaluation Report. Report 3: Final Evaluation Report.

1.4.3 Quality and Product Selection

If competitive bidding resulted in pressure on profit margins (an empirical question examined as part of the evaluation), then suppliers might have attempted to restore profits by lowering quality and therefore their cost of goods and services. Lower quality might be manifested in many ways: for example, by offering lower-quality products, postponing preventive maintenance, delaying service calls, or reducing inventory to the point that time needed to fill orders increases, or even, at the extreme, committing fraud and abuse. On the other hand, demonstration suppliers still had to compete among themselves to attract new patients, giving suppliers incentives to maintain quality and offer a wide product selection. In addition, quality was one of the criteria used to select demonstration suppliers, and an Ombudsman investigated all complaints to resolve quality issues.

Our analysis of demonstration effects on quality used both the beneficiary and the supplier as the unit of analysis. Beneficiary-level and supplier-level analyses were based on both qualitative and quantitative data.

The evaluation addressed the following principal quality questions:

- Did the demonstration reduce, maintain, or increase the quality of equipment provided to beneficiaries?
- Did the demonstration reduce, maintain, or increase the quality of service provided to beneficiaries?
- Did the demonstration reduce, maintain, or increase the product selection offered to beneficiaries?

To answer these questions, we analyzed

- beneficiary assessments of quality,
- supplier assessments of quality,
- referral agent assessments of quality, and
- product selection.

These analyses are summarized in Table 1-7.

Table 1-7
Evaluation approach: quality and product selection

Issue	Method	Data source	Pre-intervention	Post-intervention	Comparison site	Evaluation report ¹
Beneficiary perceptions	Survey of users	Beneficiaries	✓	✓	✓	1, 2, 3
Supplier perceptions	Survey	Suppliers		✓		3
	Focus groups	Suppliers		✓		1, 2, 3
Referral agent perceptions	Focus groups	Physicians and referral agents		✓		1, 2, 3
Complaints	Report of complaints	Ombudsman reports		✓		1, 2, 3
Product selection	Qualitative	Supplier product lists	✓	✓	✓	2, 3
	Focus groups	Suppliers		✓		1, 3
	Survey	Suppliers		✓	✓	3

¹Report 1: First Annual Evaluation Report. Report 2: Second Annual Evaluation Report.
Report 3: Final Evaluation Report.

1.4.4 Competitiveness of the Market

The process of selecting winners could substantially reduce the number of suppliers that serve the demonstration areas. This could have had important implications for the health of the DMEPOS market in these areas. A sufficient number of bidders needed to be left in the market for both quality and price competition benefits to be realized in the future. Obviously, reductions in the number of suppliers also have special relevance to suppliers. Thus, the analysis of industry competitiveness was an important component of the evaluation of the feasibility of competitive bidding. Our analysis addressed the following questions:

- Did competitive bidding significantly reduce the number of suppliers serving the market?
- Were small businesses differentially affected by the demonstration?
- Did winning bidders significantly increase market share?
- Did the demonstration adversely impact future competition in the market?

To address these issues, we used econometric analysis where appropriate; however, some questions related to competition could only be addressed in a case study approach. We conducted a comprehensive qualitative and quantitative evaluation using pre- and post-intervention claims data, data collected from a supplier survey, and data collected in focus groups of referral agents and suppliers conducted during site visits.

These data allowed us to characterize the supplier market in both the pre- and post-intervention periods and evaluate changes that occurred in the local market. Specifically, we made pre- and post-intervention comparisons of several measures of market competition, including

- the number of suppliers providing each product category;
- the number of suppliers who were local or from beyond the market area;
- the Herfindahl-Hirschman Index (HHI), a measure of market concentration, for each product category; and
- relative market shares of small, medium, and large suppliers by product category.

We also analyzed the reasons behind changes in these variables by evaluating the following in both the first and second round of bidding:

- entry and exit decisions for the demonstration sites;
- bid decisions;

- the effect of winning the contract; and
- financial status by product type and supplier size, origin, and breadth of products.

The key industry competitiveness analyses are summarized in Table 1-8.

Table 1-8
Evaluation approach: competitiveness of the market

Issue	Method	Data source	Pre-intervention	Post-intervention	Comparison site	Evaluation report ¹
Market concentration	HHI	Claims	✓	✓	✓	3
Number of bidders per round	Bid analysis	Bids		✓		1, 3
Supplier strategies	Site visits	Suppliers		✓		1, 3
Supplier perceptions	Survey, site visits	Suppliers		✓		1, 2, 3
Cost structure	Survey, bid analysis	Suppliers, bids		✓		1, 2, 3

¹Report 1: First Annual Evaluation Report. Report 2: Second Annual Evaluation Report.
Report 3: Final Evaluation Report.

1.4.5 Reimbursement System

Our evaluation of the reimbursement system focused on the process of the competitive bidding demonstration itself, rather than on the outcomes (i.e., cost savings, access, and quality) covered in other task areas. The process of the demonstration was a major focus of the evaluation because one of the objectives of the government’s policy was to achieve a fair and administratively feasible reimbursement system. Information was solicited from beneficiaries, suppliers, physicians, referral sources, and government officials to determine whether the demonstration did, in fact, meet this government objective.

Five areas (or phases) were covered under the evaluation of the reimbursement system: publicity and solicitation, management of the bidding process, selection of winners, administration and monitoring, and public education. Methods used to evaluate the reimbursement system included site visits, key informant interviews, focus groups, surveys, and review of documentation. The following general evaluation questions were addressed:

- What parts of the process worked? What did not work?
- What problems or barriers were encountered during implementation? How were they resolved?
- What were facilitating factors? Why?
- How could the competitive bidding system be improved in subsequent years?
- How much did it cost to implement the demonstration?

Table 1-9 summarizes the methods and data sources that we used.

Table 1-9
Evaluation approach: reimbursement system

Issue	Method	Data source	Pre-intervention	Post-intervention	Comparison site	Evaluation report ¹
Reimbursement system	Survey, site visits	Suppliers, beneficiaries		✓		1, 2, 3
	Focus groups	Suppliers and referral agents		✓		1, 3
	Site visit	Durable Medical Equipment Regional Carrier		✓		1, 2
	Site visit	Ombudsman		✓		1, 2, 3

¹Report 1: First Annual Evaluation Report. Report 2: Second Annual Evaluation Report.
Report 3: Final Evaluation Report.

1.4.6 Data Collection Methods

The major data collection and analysis methods we used in the evaluation were surveys, qualitative studies, and claims data and statistical analysis. Below, we discuss the major survey and qualitative data collection activities during the evaluation. The data analysis component of this project evaluated National Claims History and enrollment data.

1.4.7 Beneficiary Surveys

In each site, we fielded two beneficiary surveys: one for oxygen users and another very similar survey for other medical equipment and supply users (hospital beds, enteral nutrition, urological supplies, and surgical dressings in Polk County; hospital beds, wheelchairs, and orthotics in San Antonio; questions about nebulizer drugs were included in both surveys in San Antonio). Among the demonstration product categories, oxygen accounted for the majority of beneficiaries and Medicare expenditures. We used the same survey for all other equipment categories to provide enough observations for statistical analysis. Research questions that were addressed by the surveys focused on access, quality, and product selection.

In Polk County and its comparison site, Brevard County, the initial beneficiary surveys were conducted from March through June 1999. The surveys entered the field 6 months before the demonstration prices took effect on October 1, 2001; we treat the survey responses as baseline data for outcomes in the market before the demonstration began. We mailed surveys to 2,895 beneficiaries: 1,600 oxygen users and 1,295 medical equipment users. The overall response rate to the two surveys (excluding ineligible and deceased individuals) was 74 percent. Follow-up beneficiary surveys were conducted from December 2000 through March 2001, entering the field just over 1 year after the demonstration prices took effect. We mailed surveys to 2,960 beneficiaries: 1,600 oxygen users and 1,360 medical equipment users. The overall response rate to the two surveys (excluding ineligible and deceased individuals) was 75 percent.

In San Antonio and its comparison site, Austin-San Marcos, the baseline beneficiary surveys were conducted from November 2000 through February 2001. We mailed surveys to 3,200 beneficiaries: 1,600 oxygen users and 1,600 medical equipment users. The overall response rate to the two surveys (excluding ineligible and deceased individuals) was 70 percent. Follow-up beneficiary surveys were fielded during 2002, 1 year after the demonstration prices took effect. We mailed surveys to 3,200 beneficiaries: 1,600 oxygen users and 1,600 medical equipment users. The overall response rate to the two surveys (excluding ineligible and deceased individuals) was 72 percent.

In addition to the follow-up beneficiary survey in Texas, we also conducted a survey of DME suppliers in 2002. Suppliers in San Antonio and Austin-San Marcos were surveyed. We mailed surveys to 292 suppliers in San Antonio and 120 suppliers in Austin-San Marcos. The overall response rate was 52 percent.

1.4.8 Qualitative Studies

The qualitative studies for this project included site visits, focus groups, review of written materials, and telephone conversations with individuals involved in the demonstration, such as beneficiaries, physicians, suppliers, the demonstration contractor, and others. The main objectives of these qualitative studies were to gain an in-depth understanding of the demonstration's effect on beneficiaries, referral agents, and suppliers and to observe and monitor all aspects of the demonstration in a person-to-person environment.

Prior to the site visits, we contacted individuals to ask if they would be willing to participate in an interview. We briefly explained the purpose of the site visit and described the topics that we would discuss during the interview. We also explained that their participation was confidential and that we would not reveal their identity to CMS or to any other third party.

We conducted four site visits to Polk County in the first year of the evaluation. The first site visit took place after bidding had occurred but before winners were announced. During the first visit, we interviewed both suppliers that bid and suppliers that did not bid, focusing on the bidding process and reasons for bidding or not bidding. We spoke with seven suppliers and the Ombudsman during the visit; we interviewed an eighth supplier by telephone shortly thereafter.

The second visit took place 2 months after the demonstration prices took effect. We interviewed beneficiaries and representatives of beneficiary groups, suppliers, referral agents,

and the demonstration Ombudsman. The interviews with beneficiaries and referral agents focused on transition issues and the initial perceptions of the demonstration. The objective of the supplier interviews was to describe implementation of the demonstration from the supplier perspective, identify supplier planning and actions between the time winners were announced and new prices took effect, and evaluate the early effects of the demonstration on suppliers. We spoke with four suppliers, 13 referral agents and beneficiary groups, and the Ombudsman during this visit.

During the third site visit, which took place 6 months after the demonstration prices took effect, we conducted separate focus groups with demonstration suppliers and referral agents. The supplier focus group discussed implementation issues, product selection, service levels, beneficiary access, and business activity. The referral agent focus group discussed access and quality. Seven demonstration suppliers participated in the supplier focus group, and seven referral agents participated in the referral agent focus group. We also met separately with a nondemonstration supplier and the Ombudsman during this visit.

The fourth site visit took place 8 months after the demonstration prices took effect. During this visit, we met with demonstration suppliers in the urological supplies product category to discuss issues of access, quality, product selection, and pricing. We met with three of the demonstration urological suppliers and conducted telephone interviews with the remaining two demonstration suppliers in this product category.

We conducted a final site visit to Polk County in April 2002, about 7 months after the Round 2 demonstration prices took effect and 5 months before the demonstration ended. During this visit, we met with suppliers, referral agents, and a group of beneficiaries who used oxygen equipment. Some of the suppliers had gained demonstration status in Round 2 after not being demonstration suppliers in Round 1. Other suppliers had been demonstration suppliers in Round 1 but were not successful bidders in Round 2. We discussed bidding strategies, access, quality, product selection, transitions between Round 1 and Round 2, and post-demonstration planning.

During the second year of the evaluation, we conducted three site visits to San Antonio. The first visit took place 2 months before the new demonstration prices took effect on February 1, 2001. Bidding had already occurred, and most demonstration suppliers already knew they had been awarded contracts, but the complete list of demonstration suppliers had not been formally announced. We interviewed 10 suppliers and the San Antonio Ombudsman during the visit, focusing on the bidding process and expectations about implementation of the new fee schedule. The second site visit took place 3 months after the demonstration prices took effect. We interviewed referral agents, representatives of beneficiary groups, suppliers, and the demonstration Ombudsman. The interviews focused on transition issues and initial perceptions of the demonstration. The third site visit took place 7 months after the demonstration began. We met with referral agents, demonstration and nondemonstration suppliers, and the Ombudsman.

We conducted a fourth site visit to San Antonio in October 2002, 3 months before the demonstration ended. During this site visit, we conducted two focus groups with demonstration suppliers and one focus group with referral agents and representatives of home health agencies. Participants discussed their experience under the demonstration as well as their expectations about the market after the demonstration ended.

In addition to the site visits to the demonstration sites, we conducted two site visits to Palmetto GBA, the demonstration contractor, in Columbia, South Carolina. The site visits took place 2 months after the demonstration prices took effect in Polk County and 2 months after the demonstration prices took effect in San Antonio. During the visits, we discussed publicity and education efforts, bid evaluation, claims processing changes, demonstration costs, and other implementation issues. In addition to conducting the demonstration, Palmetto GBA is the Durable Medical Equipment Regional Carrier (DMERC) for Region C, which includes Florida and Texas. In this role, Palmetto GBA is one of the four DMERCs that process Medicare DMEPOS claims.

SECTION 2 MEDICARE EXPENDITURES

2.1 Introduction

One of the key aspects of competitive bidding is its potential ability to decrease the amount that Medicare and its beneficiaries pay for DMEPOS. In this section, we estimate the effects of the demonstration on Medicare allowed charges and expenditures.

Medicare allowed charges equal the product of price times the volume of utilization, summed across procedures. By comparing the demonstration prices with the Florida and Texas fee schedules that would have been in effect in the absence of the demonstration, we first calculate the demonstration's effect on prices. Claims data then allow us to estimate whether the demonstration had an impact on utilization. We can then estimate the demonstration's impact on allowed charges. Finally, we separate estimated allowed charges into Medicare expenditures (80 percent of allowed charges) and beneficiary co-payments (20 percent of allowed charges).

Key findings in this section are as follows:

- In Polk County, Round 1 demonstration prices were lower than the existing Florida fee schedule for most items in every product category except surgical dressings. Demonstration prices were lower for all 15 oxygen items, 28 of 31 hospital beds and accessories items, 37 of 40 urological supplies, and 22 of 24 enteral nutrition items. For surgical dressings, the demonstration price was higher for 46 of 52 items.
- In Polk County, Round 2 demonstration prices were lower than the Florida fee schedule for all items in the oxygen equipment and supplies and hospital beds and accessories product categories, 18 of 24 urological supply items, and 21 of 28 surgical dressings items. Round 2 demonstration prices were lower than Round 1 demonstration prices for most of the items in the oxygen equipment and supplies and surgical dressings product categories. However, all of the Round 2 prices for urological supplies were higher than Round 1 prices. For hospital beds and accessories, most of the Round 2 prices were slightly higher than the Round 1 prices.
- In San Antonio, demonstration prices were lower than the existing Texas fee schedule for all items in the oxygen equipment and supplies, hospital beds and accessories, wheelchairs and accessories, and general orthotics product categories. For nebulizer drugs, the demonstration prices were lower than the Texas fee schedule prices for 16 of 27 items and higher for 11 of 27 items.
- For most demonstration items, the demonstration did not have a statistically significant effect on utilization. Although the general impact of the demonstration appears to be small or nonexistent for utilization for most items, there is mixed evidence on the impact on oxygen equipment and supplies and somewhat stronger evidence that the demonstration may have changed utilization patterns for wheelchairs and accessories in San Antonio.

- Assuming that the demonstration had no impact on utilization, we estimate that the demonstration reduced allowed charges in Polk County by \$4.7 million during its 3 years of operation. We estimate that the demonstration reduced allowed charges in San Antonio by \$4.6 million during its 23 months of operation.
- Combining savings from both sites, we estimate that the demonstration reduced allowed charges by nearly \$9.4 million (19.1 percent), again assuming that the demonstration did not affect utilization. Medicare expenditures (defined as allowed charges less co-payments and deductibles) fell by about \$7.5 million, and beneficiary payments fell by about \$1.9 million.

2.2 Prices

2.2.1 Polk County—Round 1

Table 2-1 provides a brief overview of the product categories included in Round 1 of the demonstration in Polk County. Oxygen equipment and supplies accounted for the largest allowed charges in the area, with over \$7.6 million in allowed charges in 1997 (these figures were provided to suppliers in the Round 1 Request for Bid [RFB]). Medicare Part B covers oxygen equipment and supplies used in the home by beneficiaries with significant hypoxemia (oxygen deficiency in the blood). Virtually all home oxygen users rent stationary oxygen systems that are used exclusively in the home. The most common form of stationary equipment is an oxygen concentrator, an electronic machine that takes oxygen from the surrounding air and concentrates it; a few stationary users get their oxygen from large compressed oxygen tanks or liquid oxygen cylinders. From a supplier's perspective, oxygen concentrators are more efficient to provide than gas or liquid stationary systems because they do not require routine deliveries of tanks or cylinders. Most oxygen users also rent portable oxygen systems that allow them to move away from their stationary systems, both within and outside the home. To be covered by Medicare, a beneficiary's physician must prescribe oxygen, perform lab tests, and sign a certificate of medical necessity. Oxygen is most often prescribed for respiratory and cardiovascular problems. In Round 1, suppliers were required to bid on 15 HCPCS codes in the range from E0424 to E0433 and from E1400 to E1406. HCPCS codes for five types of oxygen concentrators (E1400 to E1404) were later consolidated into a single HCPCS code (E1390). Oxygen concentrators accounted for over 80 percent of Medicare allowed charges in the oxygen category in Polk County in 1997.

Beneficiaries also rent hospital beds for use in the home; occasionally, they purchase accessories. Rentals of semi-electric hospital beds with side rails and mattresses accounted for over 70 percent of the nearly \$0.6 million in allowed charges in the product category in Polk County in 1997.

Urological supplies and surgical dressings each accounted for less than \$220,000 in allowed charges in Polk County in 1997. In both product categories, items can be purchased for use in either the home or nursing home. Urological supplies such as catheters and urinary leg bags are used by patients with urinary problems, while gauze and hydrogel surgical dressings are used to cover wounds. Neither product category has a single dominant product code, with the

**Table 2-1
Overview of Polk County product categories for Round 1**

	Oxygen equipment and supplies	Hospital beds and accessories	Urological supplies	Surgical dressings	Enteral nutrition
Number of items bid	15	31	40	52	24
Rental or purchase	Rental, a few purchases	Rental, a few purchases	Purchase	Purchase	Equipment: Rental Nutrients: Purchase
1997 claims	39,895	6,369	5,565	3,794	6,045
1997 units	120,594	5,901	33,416	190,694	1,041,645
1997 allowed charges	\$7,615,506	\$587,680	\$116,157	\$212,245	\$1,268,816
Average allowed charges per unit	\$63.15	\$99.59	\$3.48	\$1.11	\$1.22
HCPCS range	E0424–E0443 (selected codes), E1400–E1406	E0250–E0310 (selected codes), E0910, E0940	A4310–A4364 (selected codes), A4402, A4455, A5102, A5112, A6265	A4460–A6406 (selected codes)	B4034–B4155 (selected codes), B9002, E0776
Most common codes (HCPCS code; percentage of allowed charges in category)	Oxygen concentrators (E1400–E1404; 81.4%)	Semi-electric hospital bed with side rails and mattress (E0260; 71.0%)	Male external catheter, adhesive coating (K0410; 16.8%)	Hydrocolloid dressing, wound filler, paste, per fluid ounce (A6240; 15.8%)	Enteral feeding supply kit, pump fed, per day (B4035; 30.7%)
Range in fees under 1999 Florida fee schedule	\$18.20 (portable oxygen contents, gaseous, 5 cu. ft)—\$245.31 (oxygen and water vapor enriching system with heated delivery, rental)	\$3.55 (bed cradle, innerspring, rental)—\$182.15 (mattress, full rubber, purchase)	\$0.12 (tape, per 18 sq. in.)—\$43.52 (external urethral clamp or compression device)	\$0.05 (nonsterile nonimpregnated gauze, without adhesive border, 16 sq. in. or less)—\$37.46 (hydrogel dressing, wound cover, without adhesive border, over 48 sq. in.)	\$0.51 (enteral formulae, category II, 100 calories = 1 unit)—\$1,121.97 (enteral nutrition pump, purchase)

SOURCE: Polk County Round 1 RFB.

items with the highest allowed charges accounting for only 17 percent of urological supplies allowed charges and only 16 percent of surgical dressings allowed charges.

Enteral nutrition accounted for over \$1.2 million in allowed charges in Polk County in 1997. Enteral nutrition encompasses liquid nutrition provided to patients who cannot eat solid food but can partially digest liquid food. Part B covers enteral nutrition in both the home and in nursing homes; unlike the other product categories, which are commonly provided in the home, the majority of Part B enteral nutrition services are provided in nursing homes. Beneficiaries typically rent enteral nutrition equipment, such as infusion pumps and IV poles, and purchase packages of enteral formula and enteral feeding supply kits. Nutrients and feeding supply kits account for the majority of volume and allowed charges.

Round 1 prices versus Florida fee schedule—The Round 1 demonstration and 1999 Florida fee schedule prices for individual items in each product category are detailed in Appendix Tables A-1 through A-5. Round 2 demonstration prices are also shown in these tables. Table 2-2 summarizes the differences between the demonstration and Florida fee schedules. The first three rows compare the composite price based on the demonstration prices with the composite price based on the Florida fee schedule that would have been in effect in the absence of the demonstration. The composite price is the weighted average of the individual product prices, where the weights are the product weights specified in the RFB. These product weights are based on the proportion of product category allowed charges in 1997 that is accounted for by the individual product. For each product category, the composite price for the demonstration is lower than the composite price based on the Florida fee schedule that would have been in effect in the absence of the demonstration. The demonstration composite price is 17.5 percent lower for oxygen equipment and supplies, 29.8 percent lower for hospital beds and accessories, 20.0 percent lower for urological supplies, 12.6 percent lower for surgical dressings, and 27.2 percent lower for enteral nutrition. Looking at individual procedures, Round 1 demonstration prices are lower than the 1999 Florida fee schedule for all 15 oxygen equipment and supply items, 28 of 31 hospital bed and accessory items, 37 of 40 urological supplies, and 22 of 24 enteral nutrition items. For surgical dressings, the demonstration price is higher than the 1999 Florida fee schedule for 46 of 52 items. Table 2-3 provides further detail on the magnitude of price reductions and increases under the demonstration.

The percentage change in the Round 1 demonstration prices versus the 1999 Florida fee schedule is displayed for individual items in Figures 2-1 through 2-5. Procedure codes come from the HCPCS. Changes in the demonstration price for each product in the oxygen equipment and supplies category are graphed in Figure 2-1. As noted above, the demonstration prices for all items in the oxygen category are lower than the 1999 fee schedule prices. The largest discount is greater than 30 percent for gaseous oxygen contents (HCPCS code E0441). Discounts on the remaining items varied from about 3 percent to 5 percent.

Changes in the price for each product in the hospital beds and accessories category are graphed in Figure 2-2. The demonstration prices for all but three items are lower than the Florida fee schedule. Discounts approached or exceeded 30 percent for several procedures, including semi-electric hospital beds (E0260), the largest spending item in the category.

Table 2-2
Difference in composite prices based on Round 1 Polk County demonstration prices and the 1999 Florida fee schedule

	Oxygen equipment and supplies	Hospital beds and accessories	Urological supplies	Surgical dressings	Enteral nutrition
Composite prices ¹					
Demonstration fee schedule	\$161.75	\$90.72	\$13.82	\$8.86	\$62.59
1999 Florida fee schedule	\$195.99	\$129.26	\$15.80	\$11.07	\$86.02
Percentage reduction: demonstration fees vs. 1999 Florida fee schedule	17.5%	29.8%	20.0%	12.6%	27.2%
Individual prices					
Demonstration prices lower than fee schedule	15	28	37	6	22
Demonstration prices higher than fee schedule	0	3	3	46	2
Total demonstration items	15	31	40	52	24

¹The composite price equals the demonstration (or fee schedule) price multiplied by the product weight for each item, summed across all items in the product category. See text for product weight definition.

SOURCE: Analysis of bids.

Changes in the price for each product in the urological supplies category are graphed in Figure 2-3. The demonstration prices are lower than the 1999 Florida fee schedule for all but two items that did not change in price and for therapeutic agent for urinary catheter irrigation (A4321), which rose over 450 percent, from \$1.00 to \$5.81. The latter code had an extremely small product weight, indicating it was seldom supplied in the demonstration area. The biggest discounts were 25 to 30 percent below the 1999 fee schedule rates.

Changes in the price for each product in the surgical dressings category are graphed in Figure 2-4. In contrast to the other product categories, most of these demonstration prices were higher than the Florida fee schedule. The demonstration price is discounted up to 20 percent for foam dressings (A6210 through A6212) and three out of six types of hydrogel dressings (A6243, A6244, and A6248). Prices for the remaining 46 products actually increased from 5 percent to 80 percent. However, because the weights for the discounted items were large, the composite bid price declined.

Changes in the demonstration price for each product in the enteral nutrition category are shown in Figure 2-5. The demonstration prices are lower than the 1999 fee schedule for all but two items: one type of used IV pole (E0776UEXA), which rose over 75 percent, and category VI enteral nutrition formulae (B4156), which rose less than 10 percent. Demonstration prices for the remaining 22 enteral nutrition items ranged from 5 to 40 percent lower than the corresponding fee schedule prices, except for one type of IV pole rental (E0776RRXA) that decreased by over 70 percent.

Table 2-3
Number of Round 1 Polk County demonstration prices lower and higher than the 1999 Florida fee schedule

	Oxygen equipment and supplies	Hospital beds and accessories	Urological supplies	Surgical dressings	Enteral nutrition
Number of lower prices					
0% to 4.9% lower	0	0	1	2	0
5% to 9.9% lower	4	0	0	3	5
10% to 14.9% lower	2	1	7	0	4
15% to 19.9% lower	6	3	15	0	2
20% to 24.9% lower	1	8	10	1	2
25% to 29.9% lower	1	9	4	0	5
30% to 35% lower	1	4	0	0	1
> 35% lower	0	3	0	0	3
All lower prices	15	28	37	6	22
Number of higher prices					
0% to 4.9% higher	0	0	2	3	1
5% to 9.9% higher	0	3	0	3	0
10% to 14.9% higher	0	0	0	3	0
15% to 19.9% higher	0	0	0	1	0
> 20% higher	0	0	1	36	1
All higher prices	0	3	3	46	2
Total demonstration items	15	31	40	52	24

SOURCE: Analysis of bids.

Figure 2-1
Oxygen equipment and supplies—Polk County Round 1 prices relative to 1999 Florida fee schedule

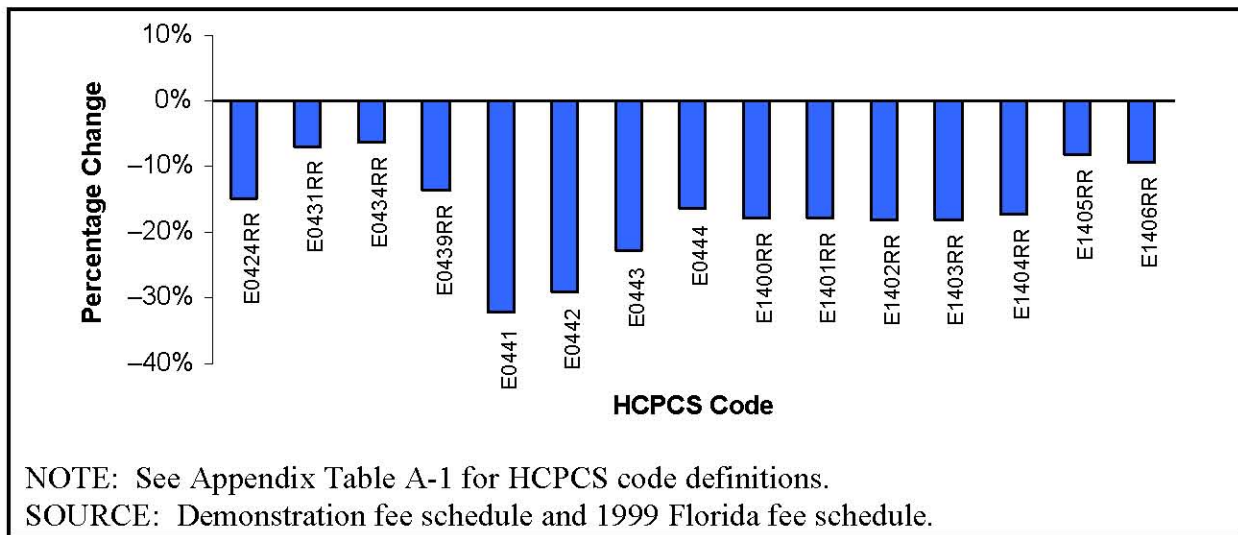


Figure 2-2
Hospital beds and accessories—Polk County Round 1 prices relative to 1999 Florida fee schedule

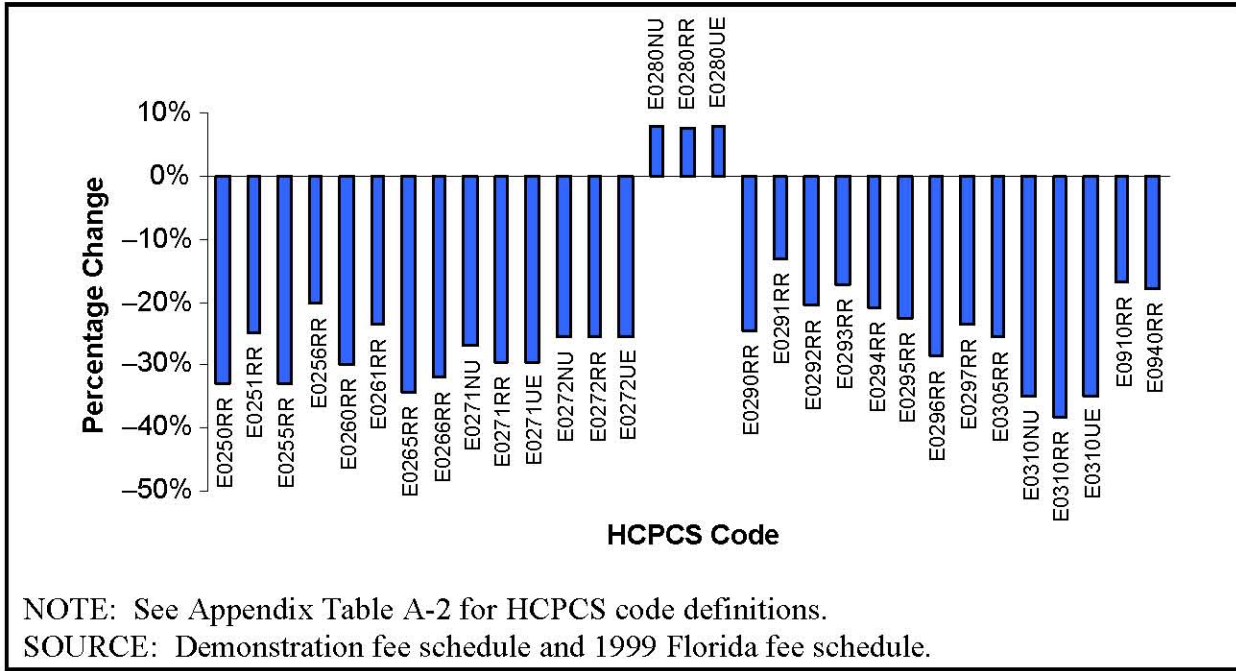


Figure 2-3
Urological supplies—Polk County Round 1 prices relative to 1999 Florida fee schedule

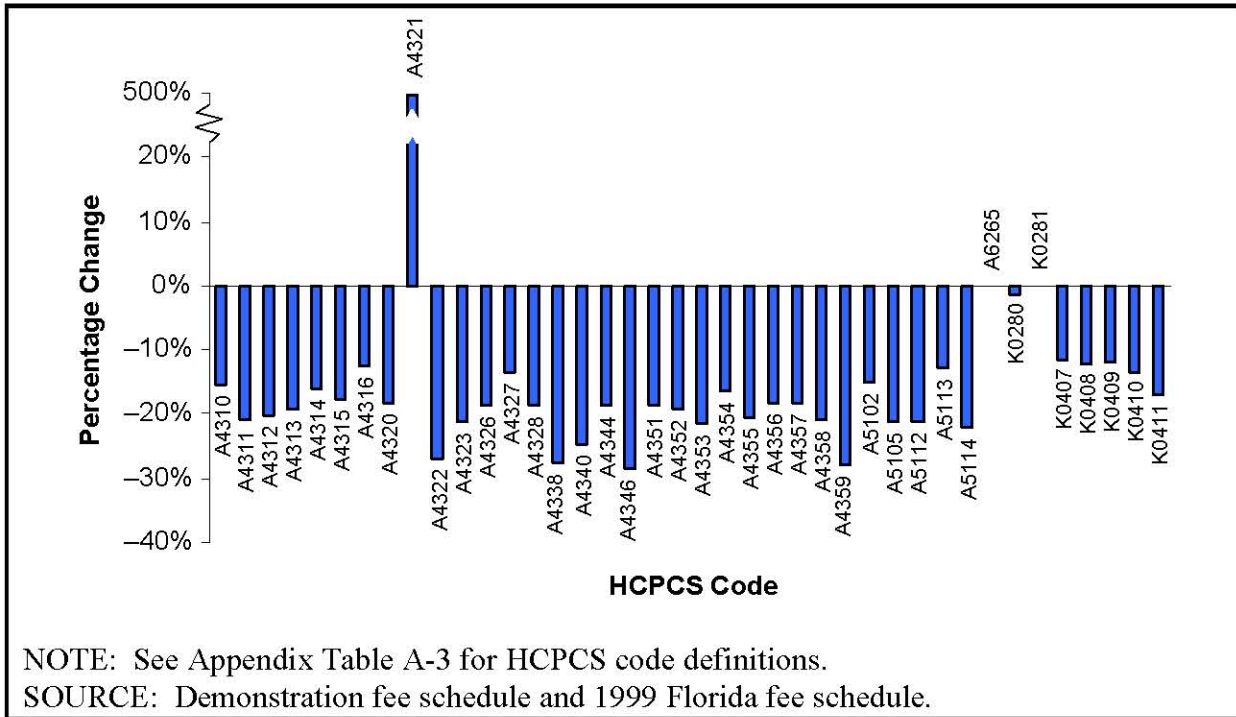


Figure 2-4
Surgical dressings—Polk County Round 1 prices relative to 1999 Florida fee schedule

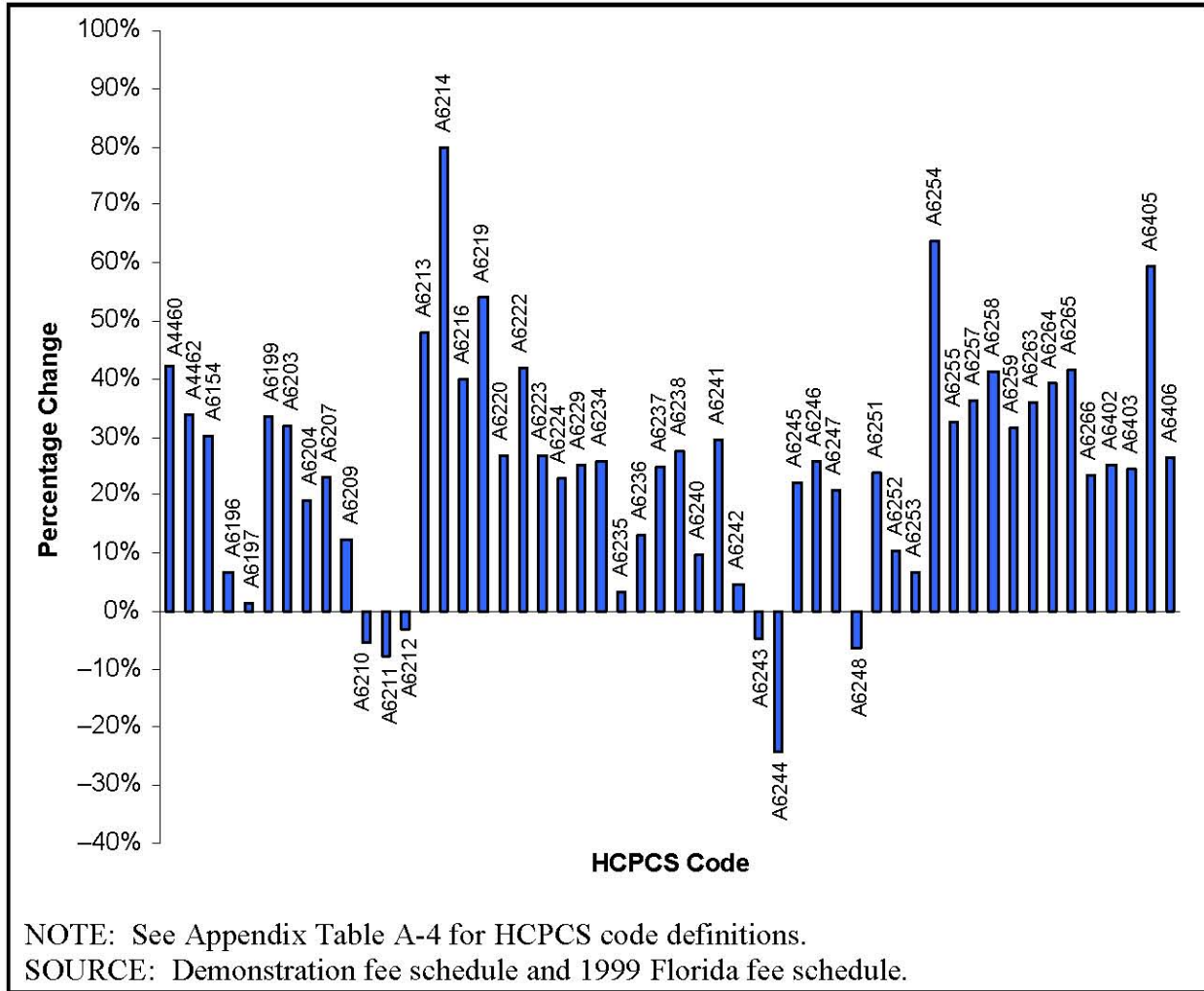
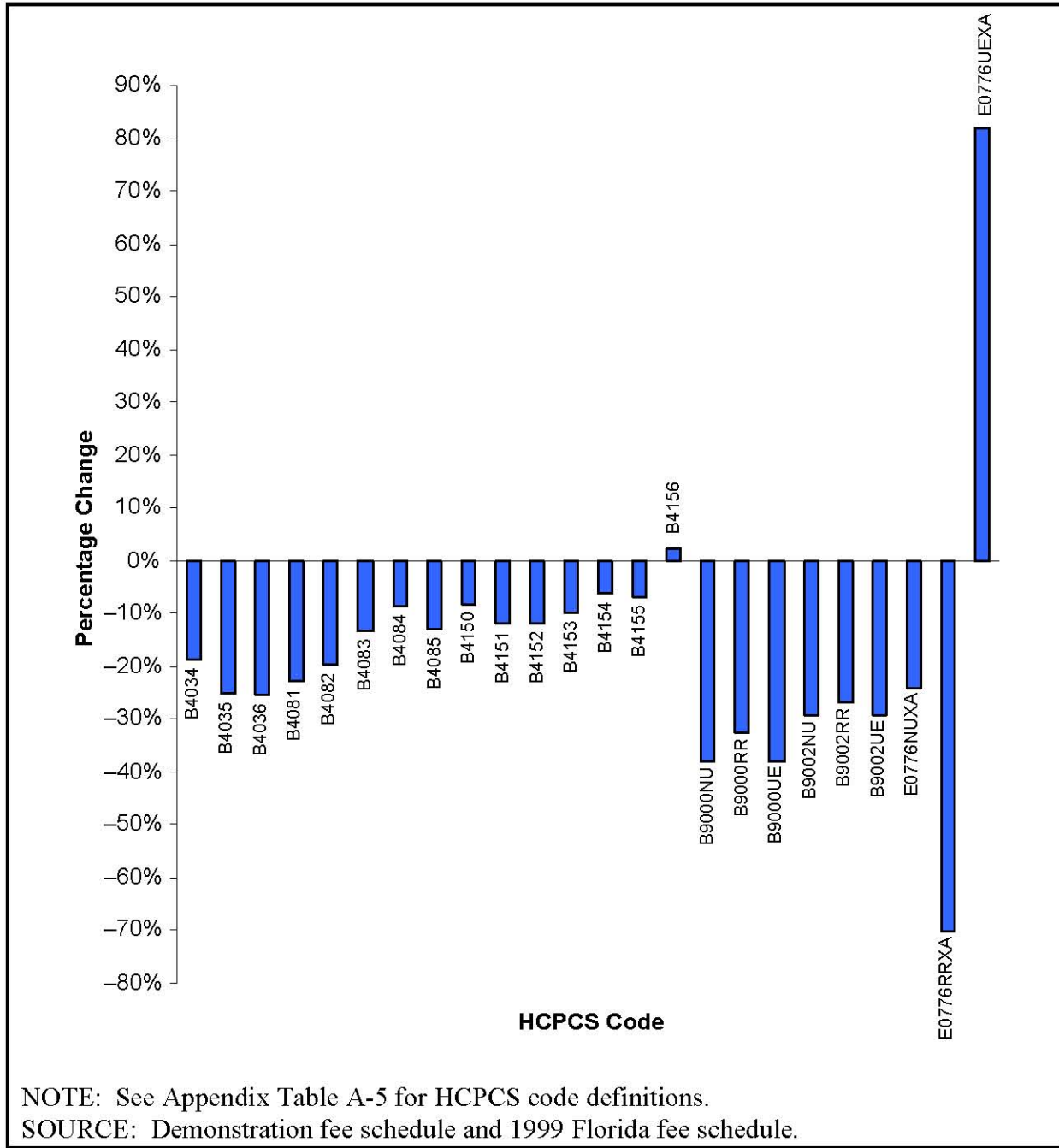


Figure 2-5
Enteral nutrition—Polk County Round 1 prices relative to 1999 Florida fee schedule



2.2.2 Polk County—Round 2

Table 2-4 provides a brief overview of the product categories included in Round 2 of the demonstration in Polk County. Round 2 included all of the Round 1 product categories except enteral nutrition. Generally, fewer items were included in the Round 2 bidding. This was due to the consolidation of some product codes (e.g., in Round 1, oxygen suppliers bid on 5 concentrator codes, E1400–E1404, that were consolidated into a single code, E1390, prior to Round 2) and the elimination of bidding for some codes that were rarely used. In Round 2, oxygen suppliers were required to bid on 7 items. Hospital bed suppliers bid on 17 items, urological suppliers bid on 24 items, and surgical dressing suppliers bid on 28 items.

**Table 2-4
Overview of Polk County product categories for Round 2**

	Oxygen equipment and supplies	Hospital beds and accessories	Urological supplies	Surgical dressings
Number of items bid	7	17	24	28
Rental or purchase	Rental, a few purchases	Rental, a few purchases	Purchase	Purchase
1999 claims	49,135	6,410	3,771	918
1999 units	98,500	6,411	52,992	60,592
1999 allowed charges	\$6,182,643	\$642,306	\$85,620	\$93,569
Average allowed charges per unit	\$62.77	\$100.19	\$1.62	\$1.54
HCPCS range	E0424–E0443 (selected codes), E1390	E0250–E0298 (selected codes), E0910, E0940	A4310–A4364 (selected codes), A4402, A4455, A5102, A5112, A6265	A6196–A6258 (selected codes), A6402, A6405, A6406
Most common codes (HCPCS code; percentage of allowed charges in category)	Oxygen concentrator (E1390; 84.4%)	Semi-electric hospital bed with side rails and mattress (E0260; 81.8%)	Intermittent urinary catheter, straight tip (A4351; 28.0%)	Hydrocolloid dressing, wound filler, paste, per fluid ounce (A6240; 21.2%)
Range in fees under 2001 Florida fee schedule	\$18.25 (portable oxygen contents, gaseous, 5 cu. ft)—\$213.75 (stationary liquid oxygen system, rental)	\$20.03 (mattress, innerspring, rental)—\$301.92 (hospital bed, heavy-duty, extra wide rental)	\$0.12 (tape, per 18 sq. in.)—\$46.61 (external urethral clamp or compression device)	\$0.05 (nonsterile nonimpregnated gauze, without adhesive border, 16 sq. in. or less)—\$40.12 (hydrogel dressing, wound cover, without adhesive border, over 48 sq. in.)

SOURCE: Polk County Round 2 RFB.

Round 2 prices versus Florida fee schedule—The Round 2 demonstration and 2001 Florida fee schedule prices for individual items in each product category are detailed in Appendix Tables A-1 through A-4. Round 1 demonstration prices are also shown in these tables. Table 2-5 summarizes the differences between the demonstration and Florida fee schedules. The first three rows compare the composite price based on the demonstration prices with the composite price based on the Florida fee schedule that would have been in effect in the absence of the demonstration. The composite price is the weighted average of the individual product prices, where the weights are the product weights specified in the RFB. These product weights are based on the proportion of total unit volume in 1999 that is accounted for by the individual product. For each product category, the composite price for the demonstration is lower than the composite price based on the Florida fee schedule that would have been in effect in the absence of the demonstration. The demonstration composite price is 19.4 percent lower for oxygen equipment and supplies, 34.1 percent lower for hospital beds and accessories, 7.4 percent lower for urological supplies, and 3.8 percent lower for surgical dressings. Looking at individual procedures, Round 2 demonstration prices are lower than the 2001 Florida fee schedule for all 7 oxygen equipment and supply items and all 17 hospital bed and accessory items. Round 2 demonstration prices are lower than the 2001 Florida fee schedule for 18 of 24 urological supply codes and 21 of 28 surgical dressing codes.

Table 2-5
Difference in composite prices based on Round 2 Polk County demonstration prices and the 2001 Florida fee schedule

	Oxygen equipment and supplies	Hospital beds and accessories	Urological supplies	Surgical dressings
Composite prices¹				
Demonstration fee schedule	\$105.55	\$85.04	\$1.89	\$1.77
2001 Florida fee schedule	\$131.01	\$128.95	\$2.04	\$1.84
Percentage reduction: demonstration fees vs. 2001 Florida fee schedule	19.4%	34.1%	7.4%	3.8%
Individual prices				
Demonstration prices lower than fee schedule	7	17	18	21
Demonstration prices higher than fee schedule	0	0	6	7
Total demonstration items	7	17	24	28

¹The composite price equals the demonstration (or fee schedule) price multiplied by the product weight for each item, summed across all items in the product category. See text for product weight definition.

SOURCE: Analysis of bids.

Table 2-6 provides further detail on the magnitude of price reductions and increases under the demonstration. Price reductions were concentrated in the range of 10 to 25 percent for oxygen equipment and supplies and 25 to 40 percent for hospital beds and accessories. Price reductions generally fell in a lower range of less than 5 to 15 percent for urological supplies and surgical dressings, the two categories where some prices (one in four) increased.

Table 2-6
Number of Round 2 Polk County demonstration prices lower and higher than 2001 Florida fee schedule

	Oxygen equipment and supplies	Hospital beds and accessories	Urological supplies	Surgical dressings
Number of lower prices				
0% to 4.9% lower	0	0	0	6
5% to 9.9% lower	0	0	7	7
10% to 14.9% lower	2	0	7	7
15% to 19.9% lower	3	0	3	1
20% to 24.9% lower	2	2	0	0
25% to 29.9% lower	0	6	0	0
30% to 34.9% lower	0	5	1	0
35% to 40% lower	0	4	0	0
All lower prices	7	17	18	21
Number of higher prices				
0% to 4.9% higher	0	0	1	4
5% to 9.9% higher	0	0	0	1
10% to 14.9% higher	0	0	1	1
15% to 19.9% higher	0	0	1	0
> 20% higher	0	0	3	1
All higher prices	0	0	6	7
Total demonstration items	7	17	24	28

SOURCE: Analysis of bids.

The percentage change in the Round 2 demonstration prices versus the 2001 Florida fee schedule is displayed for individual items in Figures 2-6 through 2-9. Procedure codes come from the HCPCS. Changes in the demonstration price for each product in the oxygen equipment and supplies category are graphed in Figure 2-6. As noted above, the demonstration prices for all items in the oxygen category are lower than the 2001 fee schedule prices. The largest discounts are approximately 23 percent for liquid oxygen contents (HCPCS code E0442) and 20 percent for the oxygen concentrator (E1390), which accounts for most of the allowed charges in the category. Discounts on the remaining items varied from about 12 percent to 19 percent.

Changes in the price for each product in the hospital beds and accessories category are graphed in Figure 2-7. The demonstration prices of all items are discounted from the Florida fee schedule, ranging from about 22 percent to 38 percent lower. The biggest discounts of 35 percent to 38 percent were obtained for total electric hospital beds (HCPCS codes E0265RR and E0266RR), fixed- and variable-height beds with mattresses (E0250RR and E0255RR), and used and rental innerspring mattresses (E0271UE and E0271RR). The discount for semi-electric hospital beds (E0260RR), the largest spending item in the category, is 34 percent.

Changes in the price for each product in the urological supplies category are graphed in Figure 2-8. The demonstration prices are discounted for all but six items, ranging from about 5 percent to 34 percent below the Florida fee schedule. The highest percentage discount for an individual urologicals code was approximately 34 percent for lubricant (HCPCS code A4402). Discounts of 17 to 19 percent were obtained for two Foley catheters and one type of intermittent urinary catheter (A4338, A4344, and A4353). The largest percentage price increases are about 162 percent for ostomy/catheter adhesive (A4364) and 67 percent for tape (A6265).

Changes in the price for each product in the surgical dressings category are graphed in Figure 2-9. The demonstration prices are discounted for all but seven items, ranging from approximately 2 to 18 percent below the Florida fee schedule. The biggest discounts of 14 to 18 percent were obtained for two types of hydrogel dressings and one specialty absorptive dressing (HCPCS codes A6244, A6248, and A6252). The largest percentage price increases are 80 percent for a type of gauze (A6216) (where the demonstration allowance is 4 cents higher than the fee schedule) and 12 percent for an alginate dressing (A6199).

Figure 2-6
Oxygen equipment and supplies—Polk County Round 2 prices relative to 2001 Florida fee schedule

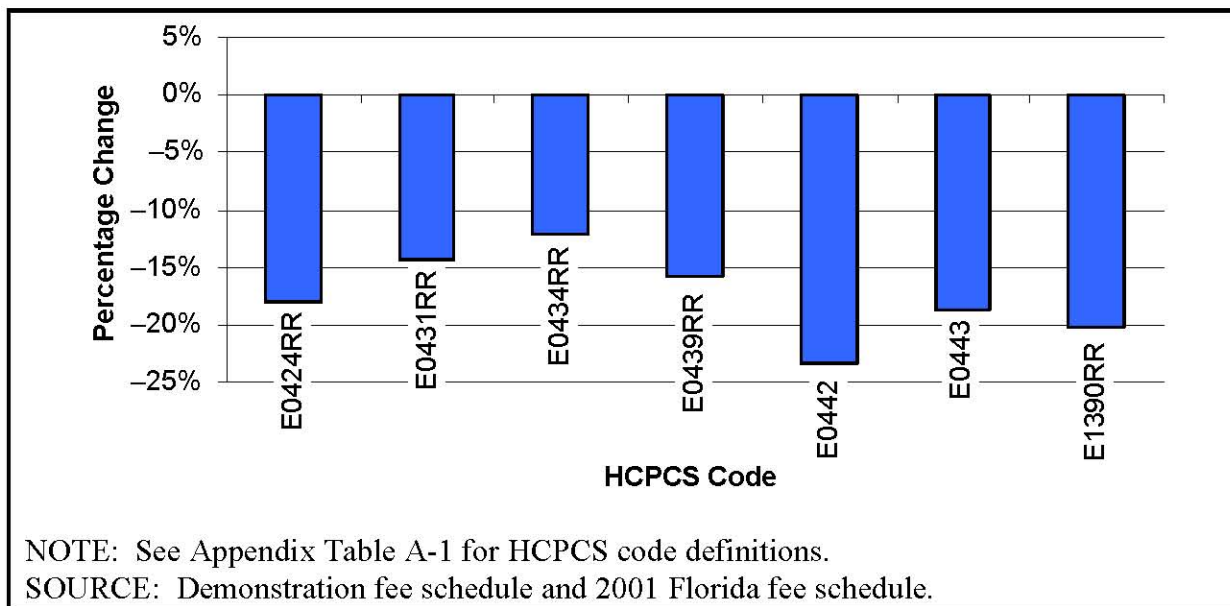


Figure 2-7
Hospital beds and accessories—Polk County Round 2 prices relative to 2001 Florida fee schedule

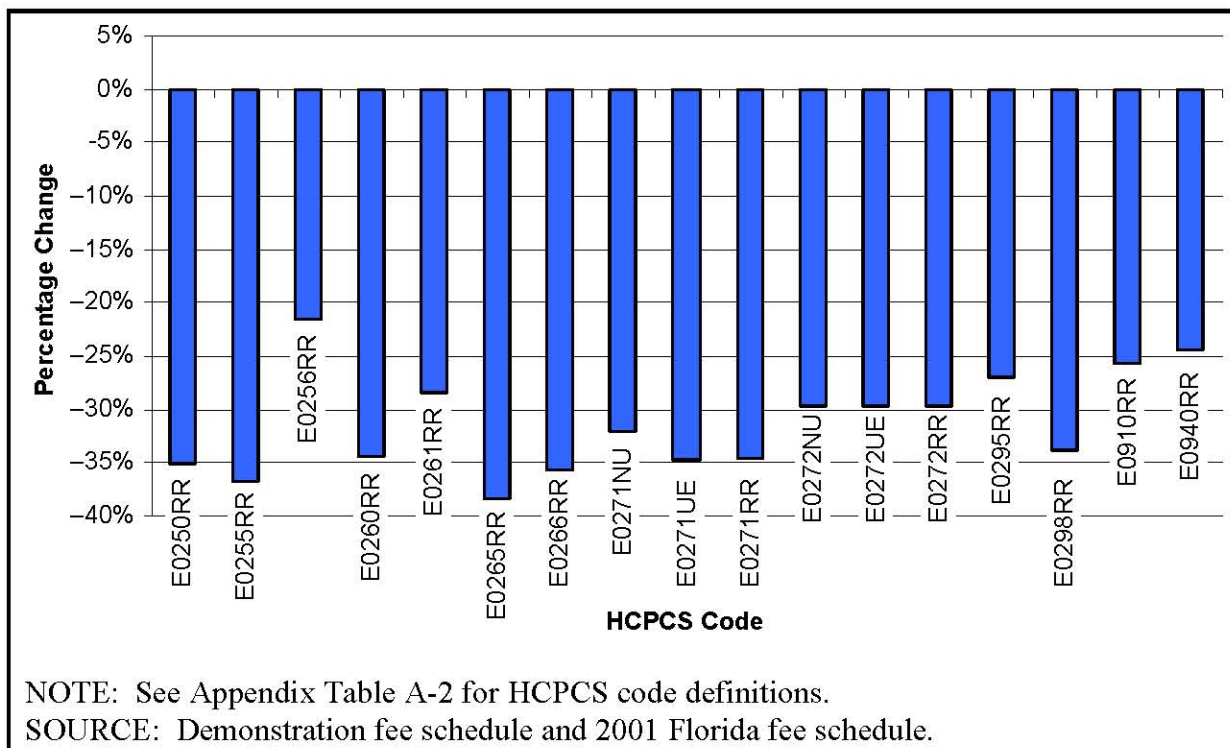


Figure 2-8
Urological supplies—Polk County Round 2 prices relative to 2001 Florida fee schedule

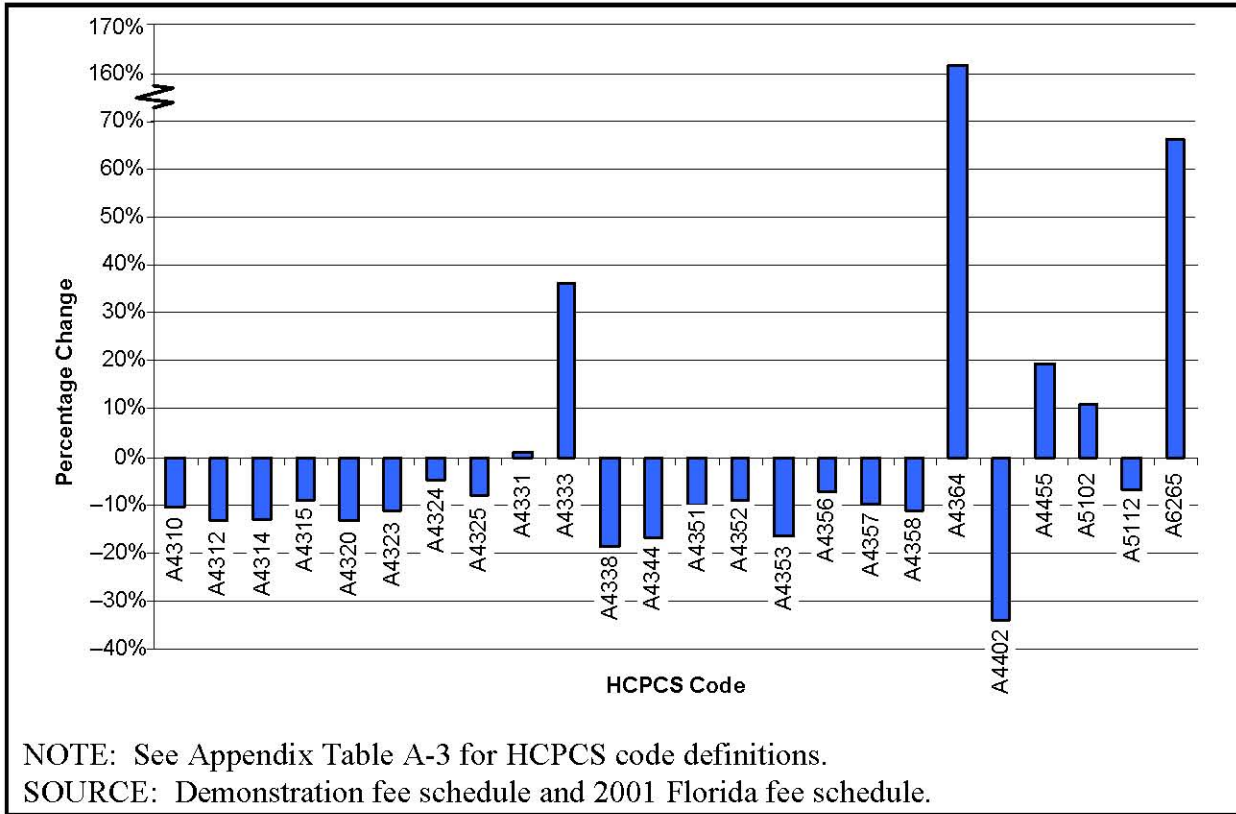
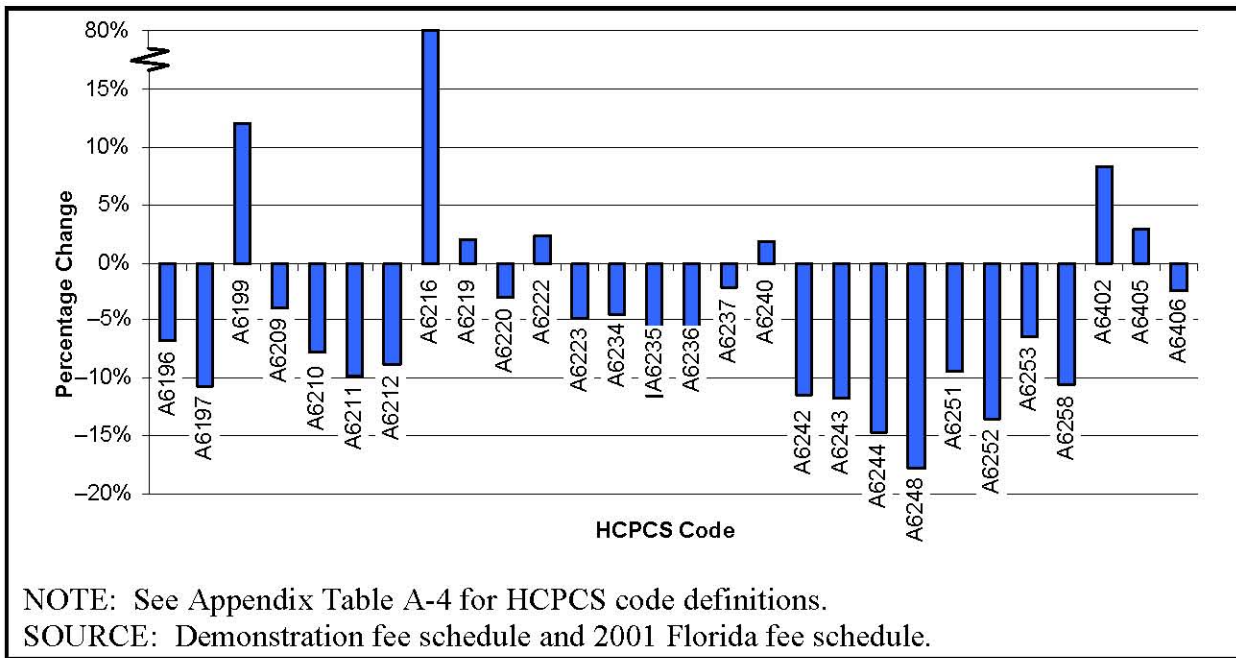


Figure 2-9
Surgical dressings—Polk County Round 2 prices relative to 2001 Florida fee schedule



Round 2 prices versus Round 1 prices—The percentage change in the Round 2 demonstration price versus the Round 1 demonstration allowance is displayed for individual procedures in Figures 2-10 through 2-13. Changes in the demonstration price for each product in the oxygen equipment and supplies category are graphed in Figure 2-10. Round 2 demonstration prices are lower than the Round 1 allowances for all but two items in the oxygen category. The largest decreases are approximately 6 and 8 percent for rentals of portable gaseous and liquid oxygen systems (HCPCS codes E0431RR and E0434RR), respectively. Prices increased by about 8 and 6 percent for liquid and gaseous oxygen contents (E0442 and E0443), respectively. For comparison, the 2001 Florida oxygen fee schedule prices were 0.30 percent higher than the 1999 Florida fee schedule prices.

Round 2 changes in the demonstration price for each product in the hospital beds and accessories category are graphed in Figure 2-11. Round 2 demonstration allowances are not dramatically changed from Round 1; all but three codes remained within 2 percent of their Round 1 levels. The largest percentage increases are about 4 and 5 percent for rentals of two types of nonelectric hospital beds (HCPCS codes E0250RR and E0256RR, respectively). The largest percentage decline is about 4 percent for E0910RR, a code covering the rental of trapeze bars attached to a bed. For comparison, the 2001 Florida fee schedule prices for hospital beds and accessories were about 7.1 percent higher than the 1999 Florida fee schedule prices.

Round 2 changes in the demonstration price for each product in the urological supplies category are graphed in Figure 2-12. All prices increased from Round 1 to Round 2, with most increases ranging from 10 to 20 percent. This result was somewhat expected, as some Round 1 demonstration suppliers had previously stated that the Round 1 demonstration prices were too low. The largest percentage price increases are about 67 percent for tape (HCPCS code A6265), 65 percent for a catheter anchoring device (A4333), and 40 percent for a bedside drainage bottle (A5102). For comparison, the 2001 Florida fee schedule prices for urological supplies were about 7 percent higher than the 1999 Florida fee schedule prices.

Round 2 changes in the demonstration price for each product in the surgical dressings category are graphed in Figure 2-13. Twenty-three of the 28 fees decreased between Round 1 and Round 2, with 16 of these decreasing by approximately 5 to 20 percent. The biggest discounts of 29 to 32 percent were obtained for transparent film (HCPCS code A6258) and two types of gauze (A6219 and A6405). The largest percentage price increases are 29 percent for a type of gauze (A6216) and 21 percent for a type of hydrogel dressing (A6244). For comparison, the 2001 Florida fee schedule prices for most surgical dressings were about 7.1 percent higher than the 1999 Florida fee schedule prices.

The large number of surgical dressings prices that fell between Round 1 and Round 2 is not unexpected. Because of a flaw in the weighting mechanism for the composite prices in Round 1 of the demonstration, most of the Round 1 surgical dressing demonstration prices were set higher than the Florida fee schedule. The weighting mechanism was corrected in Round 2, and this correction probably accounts for much of the reduction in prices relative to Round 1.

Figure 2-10
Oxygen equipment and supplies—Polk County Round 2 prices relative to Round 1

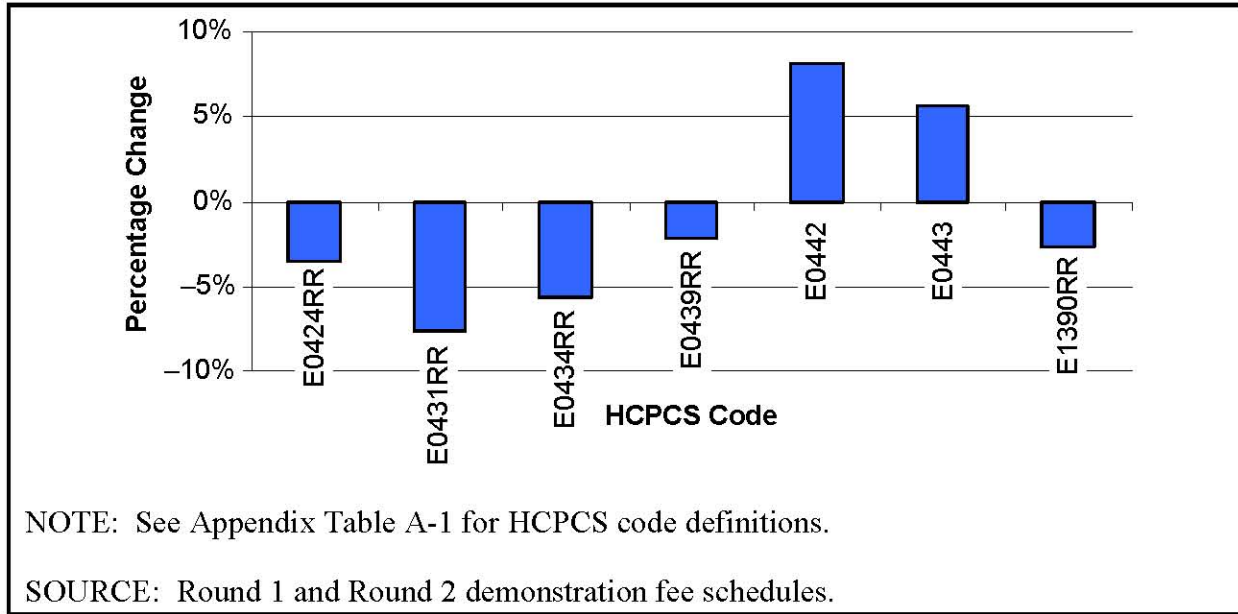


Figure 2-11
Hospital beds and accessories—Polk County Round 2 prices relative to Round 1

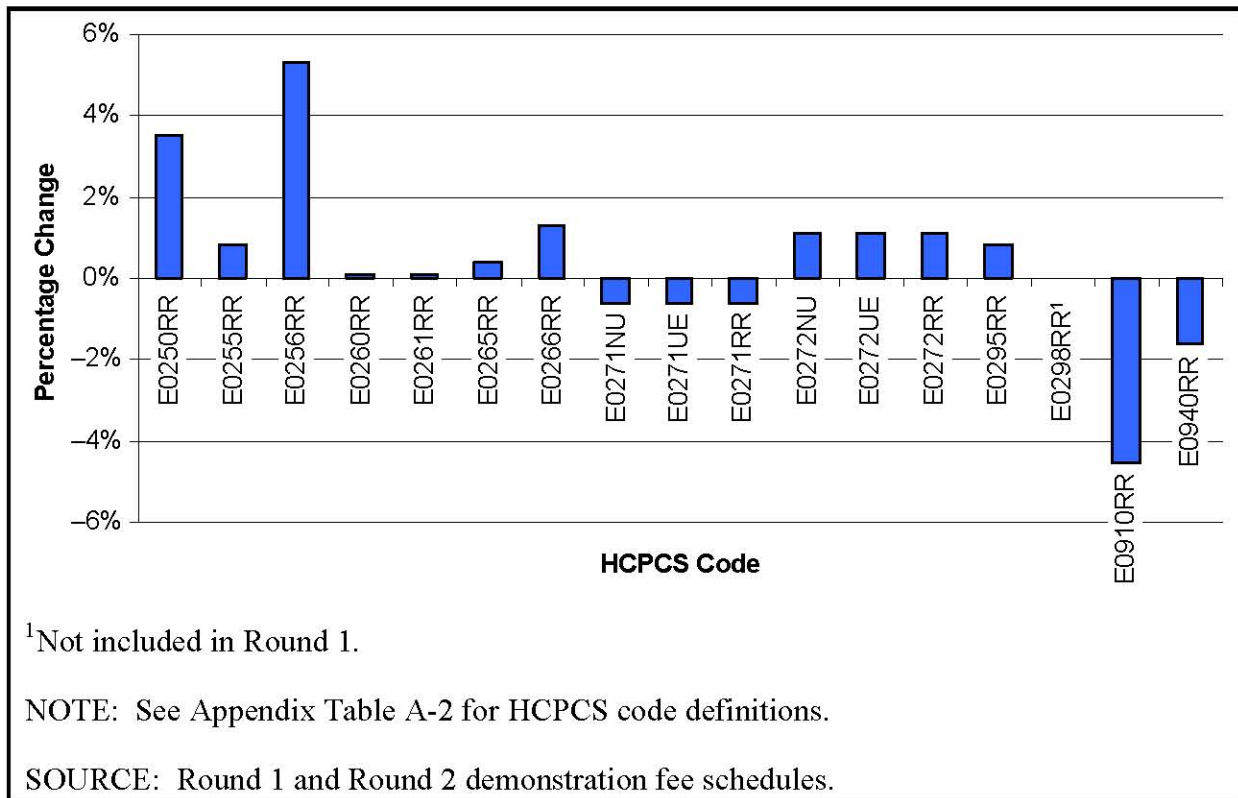


Figure 2-12
Urological supplies—Polk County Round 2 prices relative to Round 1

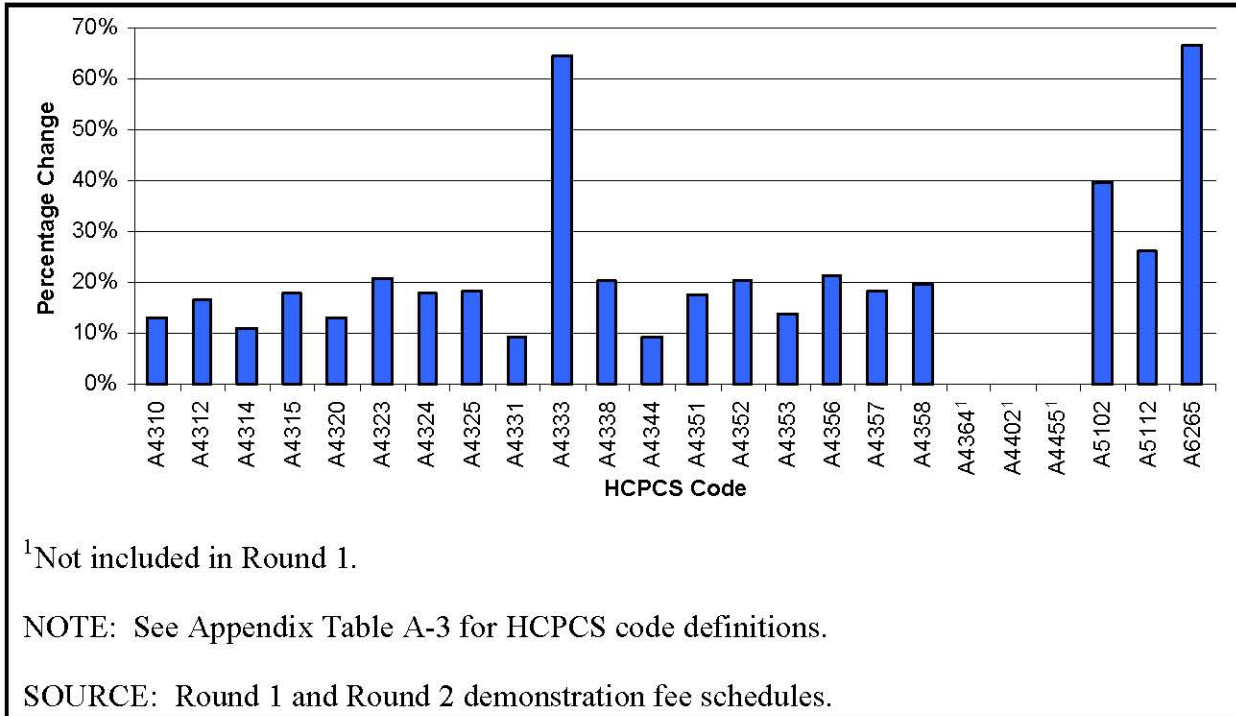
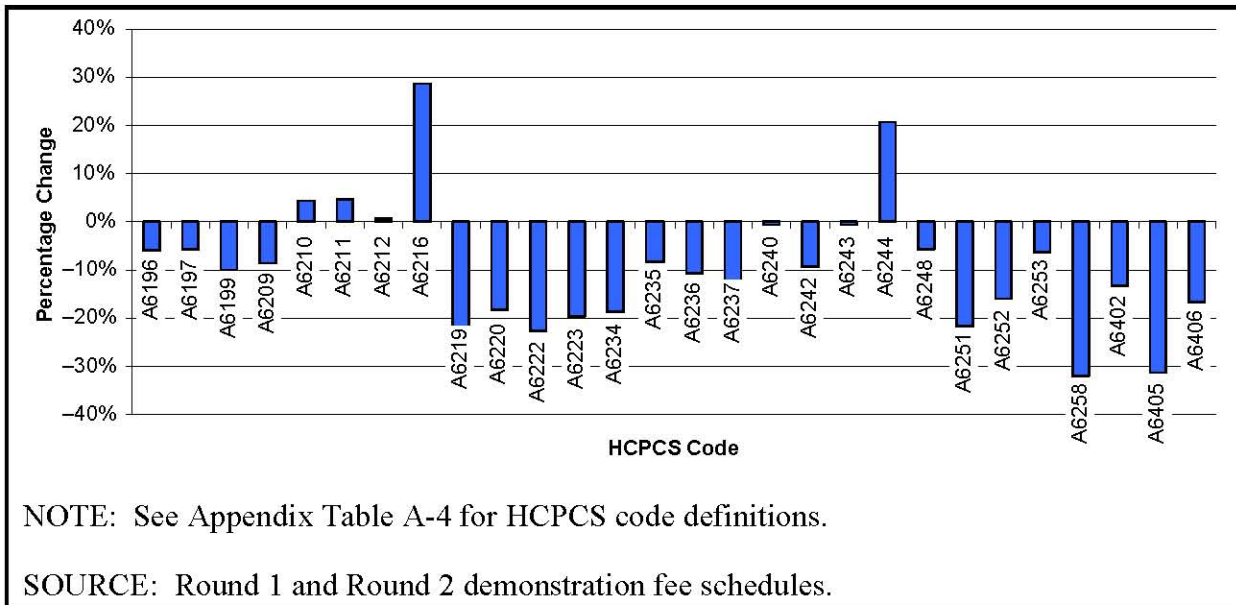


Figure 2-13
Surgical dressings—Polk County Round 2 prices relative to Round 1



2.2.3 San Antonio

Table 2-7 provides a brief overview of the product categories included in the San Antonio demonstration. As in Polk County, oxygen equipment and supplies account for the largest allowed charges in the area, with over \$5 million in allowed charges in 1998. In San Antonio, suppliers were required to bid on 10 HCPCS codes in the HCPCS range from E0424 to E0443 and from E1390 to E1406. Oxygen concentrators (E1390) accounted for over 80 percent of Medicare allowed charges in the oxygen category in San Antonio in 1998.

Rentals of semi-electric hospital beds with side rails and mattresses accounted for over 80 percent of the nearly \$2 million in allowed charges in San Antonio for hospital beds and accessories. As with hospital beds, beneficiaries rent wheelchairs for use in the home; occasionally, they purchase accessories. Rentals of three types of wheelchairs accounted for over 80 percent of the nearly \$2 million in allowed charges for wheelchairs and accessories.

General orthotics is the smallest of the five product categories in San Antonio, accounting for about \$0.45 million in allowed charges. Orthotics (also called orthoses) are braces that provide support for different parts of the body. Although many orthotics are custom-fit for individual patients, the HCPCS codes included in the demonstration were classified as noncustomized at the time the RFB was prepared.³ Medicare Part B covers orthotics purchased by beneficiaries living in the home or in nursing facilities. Unlike the other product categories in San Antonio, general orthotics allowed charges are widely distributed across HCPCS codes, with the largest code accounting for less than 25 percent of allowed charges.

Nebulizer drugs administered through nebulizers are one of the few types of outpatient prescription drugs covered by Medicare Part B. Nebulizers are a type of DME used to administer inhalation therapy, usually for asthma or emphysema. Two of the nebulizer drugs, albuterol and ipratropium bromide, accounted for nearly 97 percent of the allowed charges included in the demonstration. In contrast to the other products included in the demonstration, nebulizer drugs generally have unit prices less than \$1, and patients may consume hundreds of units per month. Most nebulizer drugs are administered by themselves, but in some cases two or more drugs are administered together in a multiple drug formulation. Medicare reimbursement for a drug depends on whether it is part of a single drug or multiple drug formulation. Nebulizer drugs accounted for over \$1.3 million in allowed charges in San Antonio in 1998.

The demonstration and Texas fee schedule prices for individual items in each product category are detailed in Appendix A. Table 2-8 summarizes the differences between the demonstration and Texas fee schedule values. The first three rows compare the composite price based on the demonstration prices with the composite price based on the Texas fee schedule that would have been in effect in the absence of the demonstration. The composite price is the weighted average of the individual product prices, where the weights are the product weights specified in the RFB. These product weights are based on the proportion of total unit volume in 1998 that is accounted for by the individual product.

³A few of these items were later reclassified as customized.

Table 2-7
Overview of San Antonio product categories

	Oxygen equipment and supplies	Hospital beds and accessories	Wheelchairs and accessories	General orthotics	Nebulizer drugs
Number of items bid	10	18	61	46	27
Rental or purchase	Rental, a few purchases	Rental, a few purchases	Rental, a few purchases	Purchase	Purchase
1998 claims	34,708	19,272	35,359	2,017	15,083
1998 units	61,673	17,507	34,103	2,575	2,026,052
1998 allowed charges	\$5,036,314	\$1,990,030	\$1,953,476	\$436,144	\$1,335,806
Average allowed charges per unit	\$81.66	\$113.67	\$57.28	\$169.38	\$0.66
HCPCS range	E0424–E0443 (selected codes), E1390, E1405–E1406	E0250–E0310 (selected codes), E0910, E0940	K0007–K0452 (selected codes)	L1800–L4398 (selected codes)	E0590, J2545, J7608–7684 (selected codes)
Most common items (HCPCS code; percentage of allowed charges in category)	Oxygen concentrator (E1390; 82%)	Semi-electric hospital bed with side rails and mattress (E0260; 88%)	Lightweight wheelchair (K0003; 29%); high strength, lightweight wheelchair (K0004; 23%); standard wheelchair (K0001; 23%)	Wrist-hand-finger orthosis, long opponens, no attachment (L3805; 24%), ankle-foot orthosis, plastic (L3730; 14%)	Albuterol, unit dose form (J7619; 61%); ipratropium bromide, unit dose form (J7644; 36%)
Range in fees under 2001 Texas fee schedule	\$18.25 (portable oxygen contents, gaseous, 5 cu. ft)—\$263.04 (oxygen and water vapor enriching system with heated delivery, rental)	\$17.60 (bed with side rails, half length, rental)—\$300.67 (hospital bed, heavy-duty, extra wide rental)	\$5.51 (wheelchair bearings)—\$458.75 (manual, fully reclining back, purchase)	\$18.66 (replacement soft interface material, static ankle-foot orthosis)—\$949.96 (knee-ankle-foot orthosis, femerol fracture case orthosis)	\$0.04 (triamcinolone, unit dose form)—\$110.45 (pentamidine isethionate, per 300 mg)

SOURCE: San Antonio RFB.

Table 2-8
Difference in composite prices based on demonstration prices and the 2001 Texas fee schedule

	Oxygen equipment and supplies	Hospital beds and accessories	Wheelchairs and accessories	General orthotics	Nebulizer drugs
Composite prices ¹					
Demonstration fee schedule	\$111.71	\$97.04	\$57.84	\$167.18	\$0.55
2001 Texas fee schedule	\$142.79	\$130.68	\$72.37	\$184.79	\$0.70
Percentage reduction: demonstration fees vs. 2001 Texas fee schedule	21.8%	25.7%	20.1%	9.5%	21.4%
Individual prices					
Demonstration prices lower than fee schedule	10	18	61	46	16
Demonstration prices higher than fee schedule	0	0	0	0	11
Total demonstration items	10	18	61	46	27

¹The composite price equals the demonstration (or fee schedule) price multiplied by the product weight for each item, summed across all items in the product category. See text for product weight definition.

SOURCE: Analysis of bids.

The composite price for the demonstration is lower in each product category. The demonstration composite price is 21.8 percent lower for oxygen equipment and supplies, 25.7 percent lower for hospital beds and accessories, 20.1 percent lower for wheelchairs and accessories, 9.5 percent lower for general orthotics, and 21.4 percent lower for nebulizer drugs. The remainder of the table shows the number of demonstration prices lower and higher than the corresponding prices in the Texas fee schedule.

Demonstration prices are lower than the Texas fee schedule for all 10 oxygen equipment and supply items (Appendix Table A-5), all 18 hospital bed and accessory items (Appendix Table A-6), all 61 wheelchair and accessory items (Appendix Table A-7), and all 46 general orthotics items (Appendix Table A-8). For nebulizer drugs, the demonstration price was lower than the Texas fee schedule for 16 of 27 items (Appendix Table A-9).

Table 2-9 provides further detail on the magnitude of price reductions and increases under the demonstration. The price reductions achieved under the San Antonio demonstration are rarely smaller than 10 percent, except for nebulizer drugs, the only category with price increases. For hospital beds and accessories, wheelchairs and accessories, and general orthotics, the price reductions are commonly between 15 percent and 25 percent.

Table 2-9
Number of demonstration prices lower and higher than the 2001 Texas fee schedule

	Oxygen equipment and supplies	Hospital beds and accessories	Wheelchairs and accessories	General orthotics	Nebulizer drugs
Number of lower prices					
0% to 4.9% lower	0	0	1	1	2
5% to 9.9% lower	1	0	0	0	5
10% to 14.9% lower	4	1	3	1	3
15% to 19.9% lower	2	5	22	13	2
20% to 24.9% lower	1	5	29	26	1
25% to 29.9% lower	2	7	6	5	2
30% to 35% lower	0	0	0	0	2
All lower prices	10	18	61	46	16
Number of higher prices					
0% to 4.9% higher	0	0	0	0	1
5% to 9.9% higher	0	0	0	0	1
10% to 14.9% higher	0	0	0	0	1
15% to 19.9% higher	0	0	0	0	0
> 20% higher	0	0	0	0	8
All higher prices	0	0	0	0	11
Total demonstration items	10	18	61	46	27

SOURCE: Analysis of bids.

The percentage change in the demonstration price versus the fee schedule price is displayed for individual items in Figures 2-14 through 2-18. Procedure codes come from the HCPCS. Changes in the price for each product in the oxygen equipment and supplies category are graphed in Figure 2-14. As noted above, the demonstration prices for all items in the oxygen equipment and supplies category are lower than the fee schedule prices. The largest discounts are for stationary and portable oxygen contents (HCPCS codes E0441 through E0443), which range from about 25 percent to 30 percent. Discounts on the remaining rental items varied from about 6 percent to 19 percent. The demonstration price for oxygen concentrators (E1390RR), which accounted for over 80 percent of oxygen allowed charges in 1998, is 19 percent lower than the Texas fee schedule price.

Figure 2-14
Oxygen equipment and supplies—San Antonio demonstration prices relative to 2001 Texas fee schedule

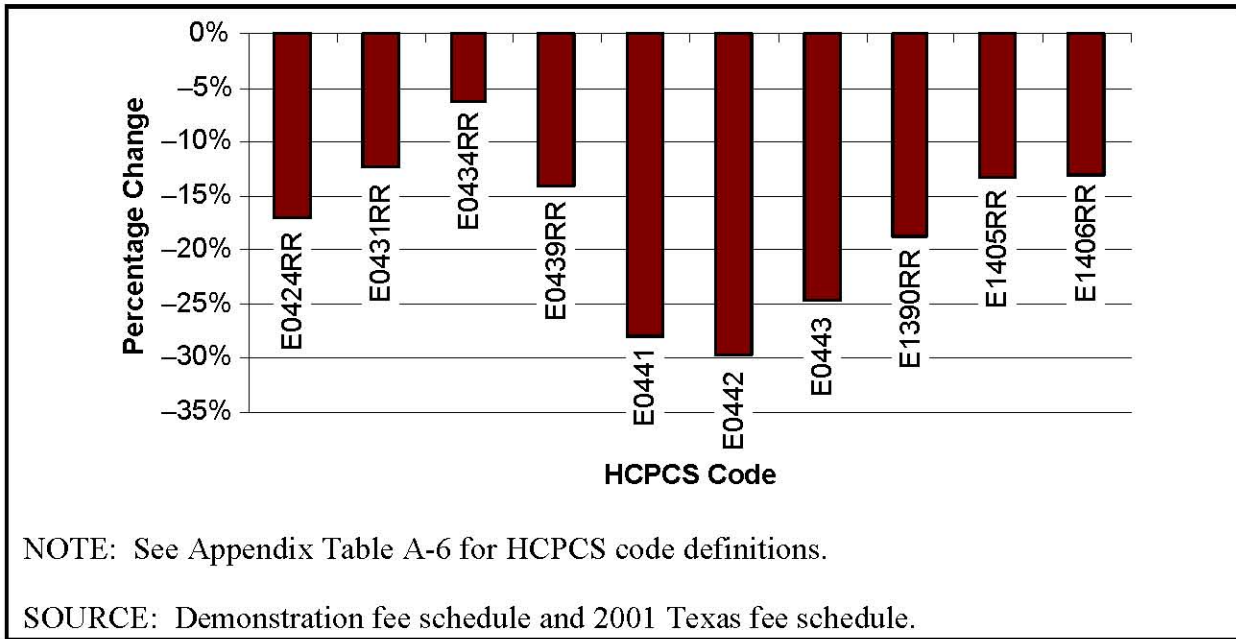


Figure 2-15
Hospital beds and accessories—San Antonio demonstration prices relative to 2001 Texas fee schedule

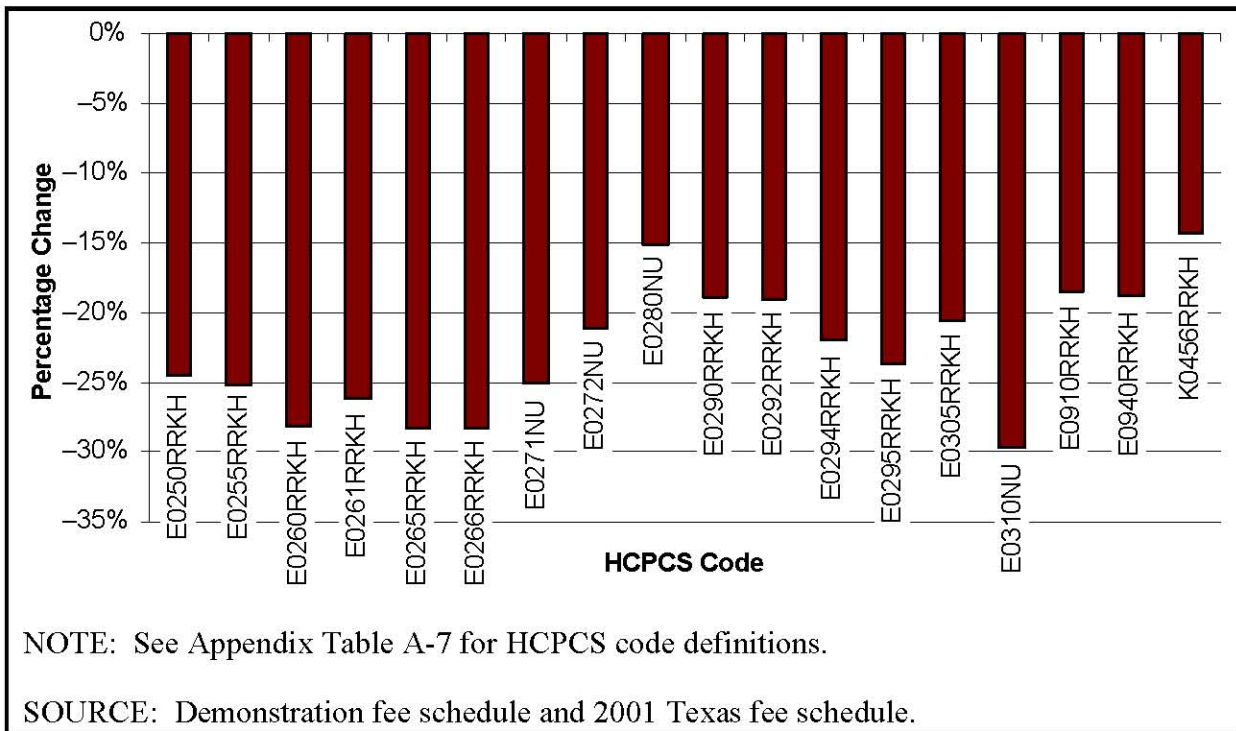
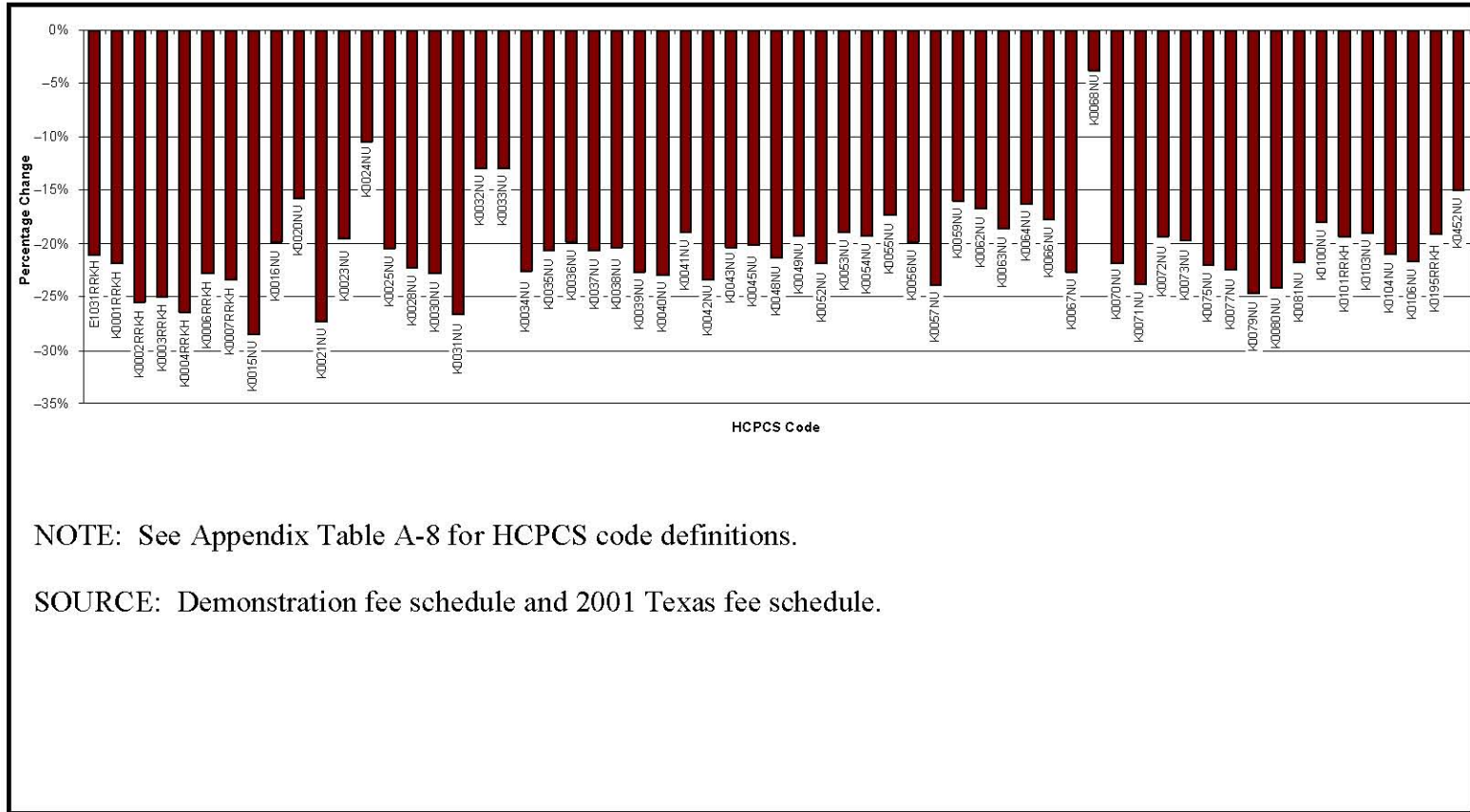


Figure 2-16
Wheelchairs and accessories—San Antonio demonstration prices relative to 2001 Texas fee schedule



NOTE: See Appendix Table A-8 for HCPCS code definitions.

SOURCE: Demonstration fee schedule and 2001 Texas fee schedule.

Figure 2-17
General orthotics—San Antonio demonstration prices relative to 2001 Texas fee schedule

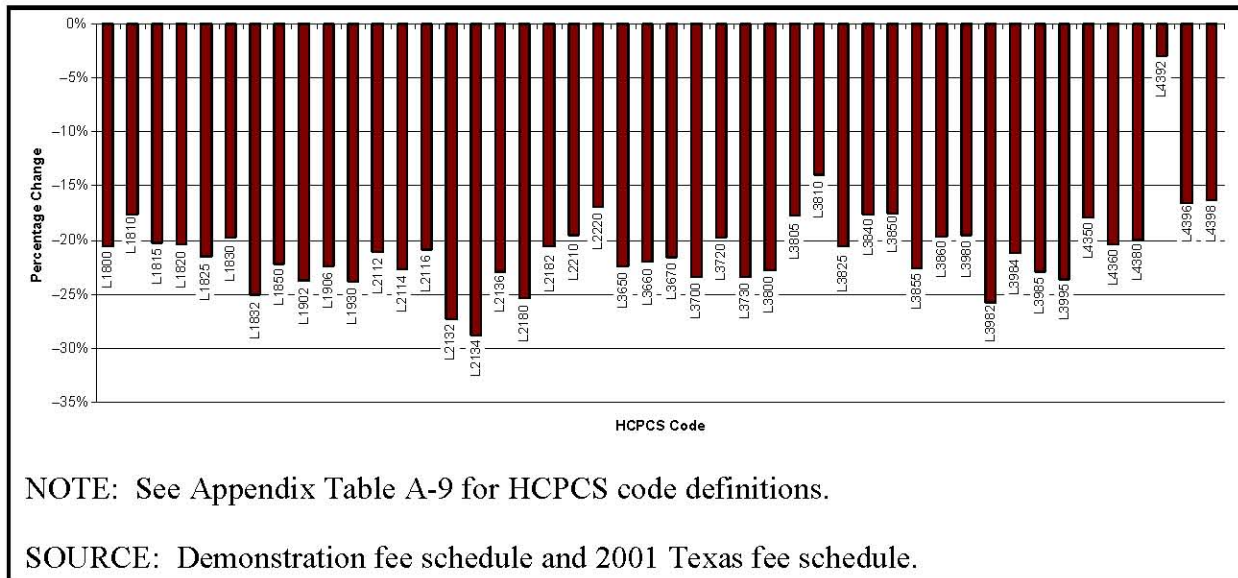
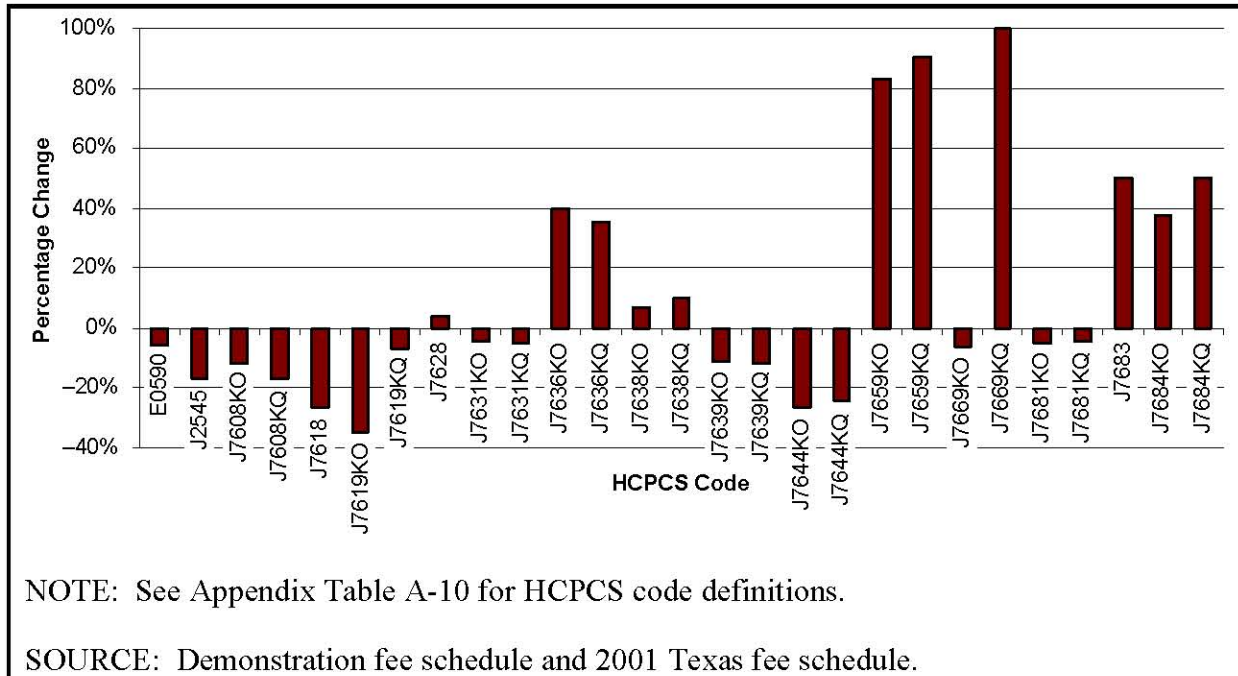


Figure 2-18
Nebulizer drugs—San Antonio demonstration prices relative to 2001 Texas fee schedule



Changes in the price for each product in the hospital beds and accessories category are graphed in Figure 2-15. The demonstration prices are discounted for all items, ranging from about 14 percent to 30 percent lower than the Texas fee schedule. The biggest discounts of 26 percent to 30 percent were obtained for full-length hospital bedside rails (HCPCS code E0310NU) and for semi- and total electric hospital beds (E0260RRKH, E0261RRKH, E0265RRKH, and E0266RRKH). Semi-electric hospital beds accounted for over 80 percent of allowed charges in the product category in 1998.

Changes in the price for each product in the wheelchairs and accessories category are graphed in Figure 2-16. The demonstration prices are discounted for all items, ranging from about 4 percent to 29 percent lower than the Texas fee schedule. The highest percentage discounts for individual wheelchair codes were approximately 29 percent for a nonadjustable arm rest (HCPCS code K0015) and about 27 percent each for an anti-tipping device (K0021) and a safety belt/pelvic strap (K0031). Demonstration fees for three wheelchair rental codes with relatively high volumes of utilization and allowed charges in past years (K0002, K0003, and K0004) achieved discounts of 25 to 26 percent.

Changes in the price for each product in the general orthotics category are graphed in Figure 2-17. The demonstration prices are discounted for all items, ranging from approximately 3 percent to 29 percent below the Texas fee schedule. The biggest discounts of 27 percent to 29 percent were obtained for two codes covering knee-ankle-foot orthoses, or KAFOs (HCPCS codes L2132 and L2134). Discounts of 25 percent and 24 percent were obtained for a type of knee orthosis (L1832) and a type of ankle-foot orthosis (L1930), respectively. These two codes were weighted relatively heavily in the computation of the composite bid, having received high utilization levels in past years.

Changes in the price for each product in the nebulizer drugs category are graphed in Figure 2-18. In contrast to the other product categories, demonstration prices are higher than the Texas fee schedule for a number of items in the nebulizer drug category. Increases range from 4 percent to 100 percent over fee schedule amounts, with most falling in the range of 35 to 50 percent increases. However, these increases are entirely within codes where fee schedule amounts are under 75 cents per billed unit and utilization has been relatively low in recent years. The majority of demonstration prices are lower than the fee schedule prices. The demonstration price is discounted by 35 percent for single drug unit dose albuterol (HCPCS code J7619KO), by 7 percent for multiple drug unit dose albuterol (J7619KQ), and by about 24 to 27 percent for concentrated albuterol and unit dose ipratropium bromide (J7618, J7644KO, and J7644KQ). These drugs have accounted for the majority of claims and allowed charges in the nebulizer drug category in recent years. Note that because the weight of the discounted products was large, the composite bid declined by 21.4 percent.

2.3 Polk County versus San Antonio Prices

Two product categories—oxygen equipment and supplies and hospital beds and accessories—are included in both the Polk County and San Antonio demonstration sites. However, the composite prices for these product categories are not directly comparable between Polk County and San Antonio because of differences in bidding items and product weights between the two sites and the different timing of the bidding competitions. Prices for individual

products are more comparable, although the different timing of the bidding competitions still affects comparability. Table 2-10 shows the demonstration and fee schedule prices for oxygen concentrators and semi-electric hospital beds with side rails and mattresses, the products that account for the highest allowed charges in the two product categories. Although the demonstration prices for San Antonio are from \$16 to \$24 higher than in Polk County, the dollar and percentage reductions relative to the fee schedule prices are similar between the two sites. Labor and other input costs may differ between Polk County and San Antonio, accounting for some of the differences in demonstration prices between the sites.

Table 2-10
Demonstration and fee schedule prices—Polk County versus San Antonio

	Demonstration price	Fee schedule price	Reduction (\$)	Reduction (%)
Oxygen concentrator (E1390)				
Polk County, Round 1	\$175.33	\$213.11	\$37.78	17.8%
Polk County, Round 2	\$170.36	\$213.75	\$43.65	20.4%
San Antonio	\$186.40	\$229.49	\$43.09	18.8%
Semi-electric hospital bed with side rails and mattress (E0260)				
Polk County, Round 1	\$95.66	\$136.14	\$40.48	29.7%
Polk County, Round 2	\$95.74	\$145.81	\$50.07	30.1%
San Antonio	\$119.26	\$166.10	\$46.84	28.2%

SOURCE: Demonstration and state fee schedules.

2.4 Utilization

Medicare expenditures depend on utilization, as well as price. As noted in Section 1, if the demonstration lowers Medicare fees, beneficiary out-of-pocket costs will also fall, causing beneficiaries to increase their quantity demanded. Lower fees may also affect the supplier side of the market, causing suppliers to either try to induce demand (if that is possible) or encourage beneficiaries to shift to products with higher profit margins. However, the nature of DMEPOS may render all of these possible factors moot: to the extent that the demand for DMEPOS is driven primarily by medical necessity, rather than price, the demonstration could have little effect on utilization.

Estimating the demonstration's impact on utilization is more difficult than estimating its impact on fees. We know which fees would have been in effect in the absence of the demonstration (the statewide fee schedule), but we do not observe what utilization would have been if the demonstration did not occur. We can compare utilization in a demonstration area across time to see whether utilization changes during the demonstration period. However, there may be other factors, such as changing medical practices, new Medicare regulations, growing population, random illness, and even natural phenomena (Florida experienced an outbreak of

wild fires from 1998 through 2001 that aggravated respiratory problems) that cause utilization within an area to change. We can also compare utilization in a demonstration area to utilization in similar comparison sites. But there may be unobserved differences between the demonstration and comparison sites that are unrelated to the demonstration, such as differences in illness and geographic variation in medical practice, that cause differences in utilization.

In this section, we use econometric analyses to attempt to identify the effect of the demonstration on utilization in Polk County and San Antonio. The analyses use data on utilization in the demonstration sites and comparison areas to test whether the demonstration is associated with statistically significant changes in utilization. We then discuss whether finding statistical significance establishes that the demonstration caused utilization to change.

2.4.1 Polk County

To examine whether the demonstration affected utilization, we analyzed DMEPOS claims from Polk County and five comparison counties in Florida. The comparison counties were Brevard County, which, like Polk County, is included in a single-county MSA (the Melbourne—Titusville—Palm Bay, MSA); and Clay, Duval, Nassau, and St. Johns Counties, which are included in the Jacksonville MSA. We estimated separate utilization equations for each of 24 high-volume or high-allowed charge items that were included in the demonstration. A number of items that were included in the demonstration have very low volume on an annual basis; consequently, their volume is very unstable between periods, even when aggregated to the quarterly level. Furthermore, changes in volume of these items have minimal effect on the overall demonstration. Therefore, we limited our analysis to items that met the following criteria:

- More than **\$10,000 in allowed charges** or more than **10,000 in allowed units** in the demonstration site in at least one year during the period 1997 through 2002, AND
- At least 120 allowed units (an average of 10 per month) in both the demonstration and the aggregated comparison sites in each year during the period 1997 through 2002.

Twenty-four items met these criteria. Table 2-11 displays the characteristics of these 24 most prevalent procedures. The difference in the Polk County fee schedule relative to the Florida fee schedule is in the second set of columns. In Round 1, there was a reduction in price for all items except surgical dressings and one product in the urological supplies category. In Round 2, only 5 items had higher prices in Polk County than in the rest of Florida; the rest of the items had lower prices in Polk County. The next set of columns displays the allowed charges for these items, 1 year prior to the demonstration and in each of 3 years during the demonstration. Combined, the 24 items accounted for more than 97 percent of allowed charges and quantities in each of the 4 years. Oxygen concentrators (E1390) accounted for more than half of the total allowed charges of all demonstration items. The next largest item in terms of allowed charges is portable gaseous oxygen (E0431).

Table 2-11
Characteristics of 24 most prevalent procedures: Polk County

Category Description of code	HCPCS code	Round 1 price relative to Polk County fee schedule ¹	Round 2 price relative to Polk County fee schedule ¹	Total allowed charges			
				Predemon- stration (Oct. '98 – Sept. '99)	Demo, Round 1, Year 1 (Oct. '99 – Sept. '00)	Demo, Round 1, Year 2 (Oct. '00 – Sept. '01)	Demo, Round 2 (Oct. '01 – Sept. '02)
Oxygen equipment and supplies							
Portable gaseous oxygen	E0431	-7.0%	-14.4%	\$778,405	\$789,223	\$765,605	\$699,018
Portable liquid oxygen	E0434	-6.5%	-12.1%	\$27,954	\$16,803	\$11,127	\$13,392
Stationary liquid oxygen	E0439	-13.7%	-15.8%	\$168,124	\$96,514	\$59,364	\$77,192
Oxygen concentrator	E1390	-17.7%	-20.3%	\$5,335,105	\$4,948,088	\$5,110,064	\$5,391,961
Hospital beds and accessories							
Hosp bed semi-electr w/ matt	E0260	-29.7%	-34.3%	\$583,726	\$493,982	\$420,083	\$413,730
Trapeze bar attached to bed	E0910	-16.7%	-25.7%	\$11,641	\$8,709	\$7,620	\$7,982
Urological supplies							
Male ext catheter w/adh coating	A4324	-13.5%	-5.0%	\$16,737	\$12,039	\$7,457	\$16,479
Straight tip urine catheter	A4351	-18.5%	-10.3%	\$24,434	\$28,801	\$28,411	\$57,817
Intermittent urinary catheter	A4353	-21.5%	-16.5%	\$7,539	\$18,757	\$7,216	\$11,349
Bedside drainage bag	A4357	-18.4%	-9.7%	\$11,259	\$9,800	\$6,460	\$7,896
Tape per 18 sq inches	A6265	41.7%	66.7%	\$1,831	\$5,251	\$3,493	\$1,731
Surgical dressings							
Alginate drsg wound filler	A6199	33.5%	12.0%	\$3,159	\$12,078	\$15,396	\$9,464
Nonsterile gauze ≤16 sq in	A6216	40.0%	80.0%	\$1,265	\$1,079	\$1,056	\$1,300
Hydrocolld drg ≤16 w/o bdr	A6234	25.6%	-4.5%	\$8,231	\$10,014	\$4,695	\$2,160
Sterile gauze ≤16 sq in	A6402	25.0%	8.3%	\$1,110	\$4,263	\$2,126	\$1,485
Sterile elastic gauze/yd	A6405	59.4%	2.9%	\$84	\$636	\$1,875	\$2,754
Sterile nonelastic gauze/yd	A6406	26.3%	-2.4%	\$3,337	\$29,079	\$24,246	\$8,889

(continued)

**Table 2-11
(continued)**

Category Description of code	HCPCS code	Round 1 price relative to Polk County fee schedule ¹	Round 2 price relative to Polk County fee schedule ¹	Total allowed charges			
				Predemon- stration (Oct. '98 – Sept. '99)	Demo, Round 1, Year 1 (Oct. '99 – Sept. '00)	Demo, Round 1, Year 2 (Oct. '00 – Sept. '01)	Demo, Round 2 (Oct. '01 – Sept. '02)
Enteral nutrition							
Enteral feeding supply kit, syringe	B4034	-18.8%	NA	\$45,298	\$69,901	\$43,244	\$25,378
Enteral feeding supply kit, pump fed	B4035	-25.2%	NA	\$270,048	\$228,407	\$217,394	\$205,619
Enteral feeding supply kit, gravity fed	B4036	-25.4%	NA	\$52,893	\$46,478	\$29,349	\$38,309
Enteral formulae category I	B4150	-8.2%	NA	\$280,623	\$277,211	\$244,116	\$221,171
Enteral formulae category II	B4152	-11.8%	NA	\$77,964	\$80,945	\$49,186	\$44,806
Enteral formulae category IV	B4154	-6.3%	NA	\$188,455	\$178,296	\$142,887	\$97,310
Enteral infusion pump with alarm	B9002	-27.0%	NA	\$47,797	\$44,933	\$44,863	\$38,236
Total charges (24 codes shown)				\$7,947,022	\$7,411,287	\$7,247,334	\$7,395,426
Total charges (all demonstration codes)				\$8,130,606	\$7,586,424	\$7,365,101	\$7,490,585
Selected codes share of total charges				97.7%	97.7%	98.4%	98.7%

¹Fee schedule referenced is the one in effect at the beginning of the demonstration round (Florida 1999 for Round 1, Florida 2001 July-December for Round 2).

SOURCE: Analysis of fee schedules and Medicare National Claims History data, 1997–2002; claims contained in data as of January 2003.

To account for differences in utilization levels across counties and to allow for underlying growth rates that affect all counties, we estimated the following equation using multivariate linear regression:

$$\ln(\text{Quantity}_{ijt}) = \alpha + \beta_1 * \text{County}_j + \beta_2 * \text{Year}_t + \beta_3 * \ln \text{FFS}_{jt} + \beta_4 * \text{Impact}_{ijt} + \varepsilon_{ijt}$$

The index *i* represents the item, the index *j* represents the county, and the index *t* represents time (in quarterly increments). Quantity_{ijt} represents the number of allowed units for a specific HCPCS code in county *j* in quarter *t*. We take the natural log (\ln) of quantity because we expect the effect of the demonstration to be proportional to quantity. The natural log specification allows the demonstration effect to enter proportionally. **County** is a set of dummy variables for 5 Florida counties, including Polk County; Brevard County is the omitted county. This set of variables controls for different levels of utilization across counties. **Year** is a set of indicator variables representing each year in the sample period (1997–2002); 1997 is the omitted year. The year variables are included to allow for growth rates that are common across counties; we do not constrain the growth rates to be the same in each year. FFS represents the fee-for-service enrollment in county *j* in quarter *t*. We expect that utilization will rise with fee-for-service enrollment; as with quantity, we take the natural log of the fee-for-service enrollment. **Impact** is a set of two index variables that are set equal to one in Polk County when the demonstration is in effect for a selected round of the demonstration. The variables equal zero for Polk County before the demonstration round begins and after the demonstration round ends; the variables equal zero for the comparison counties in all periods. The two Impact variables are

- Demo Round 1, which equals 1 in Polk County between October 1, 1999, and September 30, 2001; and
- Demo Round 2, which equals 1 in Polk County between October 1, 2001, and September 30, 2002.

To assess whether the demonstration affected utilization for an item, we tested whether the percentage changes in utilization associated with the impact variables were significantly different from zero (we describe how the percentage change was calculated later in this section). If the percentage changes were not significantly different from zero, we could not reject the hypothesis that the demonstration had no effect on utilization. If a percentage change was significantly different from zero and negative, we concluded that the demonstration was associated with a reduction in utilization. If a percentage change was significantly different from zero and positive, we concluded that the demonstration was associated with an increase in utilization. Utilization may differ between Rounds 1 and 2 of the demonstration because the demonstration prices may differ between rounds; thus, we included separate impact variables for each round.

Our estimation approach works well in identifying true demonstration effects if the demonstration is the only factor that affects one area and not the other. On the other hand, if there is another factor that differentially affects the two areas, and this factor coincides with the demonstration period, it will not be possible to identify the separate effects of the two factors. We tried to avoid this possibility by choosing similar comparison sites, but we cannot totally

eliminate the possibility. We will be more confident that there is a true demonstration effect if, when the demonstration prices are similar in Rounds 1 and 2, the estimated demonstration impacts are similar.

Data were taken from the DMEPOS Standard Analytic File for the period between 1997 and 2002, excluding the fourth quarter of 2002 due to incomplete data (when we received the data in early 2003, the claims for the last quarter of 2002 were not complete). Quantities were aggregated to the quarterly level, giving us 23 observations per county. For Polk County, the included data cover 11 quarters prior to the demonstration and 12 quarters during the demonstration.

We present the demonstration impacts on utilization for each of the 24 items in Table 2-12. The first column shows the allowed quantity for each procedure in the year preceding the demonstration; together, these procedures accounted for almost 98 percent of the total quantity of allowed demonstration items during that period. In the second set of columns, we report the estimates of the percentage change in quantity due to the demonstration and the significance level based on the results of the regression model.

To calculate the percentage change, we first calculated the predicted value for Polk County during the demonstration using the regression coefficients. Next, we recalculated the fitted value under the assumption that the demonstration never occurred. This is an estimate of what logged utilization would have been in the absence of the demonstration. However, changes in logged utilization are not of interest here; rather, we seek estimates of changes in utilization on the original unlogged scale. To calculate the changes on the original scale, we calculated the exponential value of both sets of predicted values. We then multiplied each observation by the appropriate smearing adjustment factor to account for the fact that the error terms in the linear log utilization regression do not drop out of the nonlinear exponential transformation.⁴ This calculation gave us our estimates of utilization with and without the demonstration for each period. We then calculated the percentage change. As suggested by Ai and Norton (2000), we calculated standard errors for the percentage change using a resampling process known as a bootstrap. In this application, the bootstrap is preferred over analytical standard errors because the bootstrap results hold in both small and large samples. In contrast, the analytical standard errors are not correct if assumptions regarding large sample properties are not true.

For the majority (15 of 24) of items, the demonstration was not associated with a statistically significant percentage change in quantity in either Round 1 or Round 2. These results are consistent with the notion that utilization of demonstration items was largely driven by medical need and the prescribing practices of physicians. Apparently, utilization for most items was not affected by lower (or higher) prices resulting from the demonstration or by any changes in quality or service that might have been caused by the demonstration.

⁴Following Manning (1998), we calculated heteroskedastic-corrected smearing adjustments for the demonstration and nondemonstration observations by calculating the exponent of the residual for each observation. The mean of the exponentiated residuals for demonstration observations served as the smearing adjustment factor for these observations, and the mean of the exponentiated nondemonstration residuals served as the smearing adjustment factor for those observations.

Table 2-12
Effect of demonstration on quantity of 24 most prevalent procedures: Polk County

Category Description of code	HCPC S code	Predemon- stration quantity (10/1/98- 9/30/99)	Percentage change in quantity	
			Round 1 (10/1/99-9/30/01)	Round 2 (10/1/01-9/30/02)
Home oxygen				
Portable gaseous O2	E0431	21,309	7.8%** (2.5%)	24.5%* (9.7%)
Portable liquid O2	E0434	762	-46.2%** (6.5%)	-36.7%* (15.3%)
Stationary liquid O2	E0439	773	-47.6%** (6.6%)	-34.2%* (15.9%)
Oxygen concentrator	E1390	24,645	5.3%* (2.1%)	27.1%** (9.7%)
Hospital beds and accessories				
Hosp bed semi-electr w/ matt	E0260	5,168	4.6% (4.4%)	30.9% (16.5%)
Trapeze bar attached to bed	E0910	728	0.7% (8.1%)	30.9% (19.0%)
Urological supplies				
Male ext cath w/adh coating	A4324	8,749	-43.0%** (11.4%)	-10.4% (25.5%)
Straight tip urine catheter	A4351	15,585	-2.1% (27.0%)	223.2% (221.0%)
Intermittent urinary cath	A4353	1,132	-45.8% (37.5%)	27.4% (292.4%)
Bedside drainage bag	A4357	1,223	-25.5%* (10.6%)	-20.4% (15.1%)
Tape per 18 sq inches	A6265	15,898	10.4% (26.9%)	351.2% (1490.1%)
Surgical dressings				
Alginate drsg wound filler	A6199	664	904.2% (985.1%)	1472.6% (1976.5%)
Nonsterile gauze ≤16 sq in	A6216	28,932	-40.7% (38.8%)	-60.5%* (29.1%)
Hydrocollid drg ≤16 w/o bdr	A6234	1,321	-18.1% (32.4%)	-46.2% (35.4%)
Sterile gauze ≤16 sq in	A6402	9,251	-49.3%* (22.8%)	-52.4% (41.3%)
Sterile elastic gauze/yd	A6405	263	9.0% (145.0%)	231.7% (420.6%)
Sterile nonelastic gauze/yd	A6406	4,391	24.9% (123.9%)	-42.2% (85.7%)
Enteral nutrition				
Enteral feeding supply kit, syringe	B4034	8,094	-10.1% (25.5%)	NA
Enteral feeding supply pump fed	B4035	25,357	7.1% (7.7%)	NA
Enteral feeding supply kit, gravity fed	B4036	7,242	66.8%* (31.6%)	NA
Enteral formulae category I	B4150	460,782	-7.7% (7.8%)	NA
Enteral formulae category II	B4152	153,093	-14.5% (13.6%)	NA
Enteral formulae category IV	B4154	169,076	-21.5% (15.9%)	NA
Enteral infusion pump with alarm	B9002	524	40.6% (23.1%)	NA
Total Quantity (24 codes shown)		964,962		
Total Quantity (all demonstration codes)		985,312		
Selected Codes Share of Total Quantity		97.9%		

NOTE: Standard errors are shown in parentheses. See text for procedure used to calculate standard errors.

* Significant at the 5 percent level.

** Significant at the 1 percent level.

SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Nine procedures had statistically significant percentage changes in quantity in at least one year. Of these, only portable liquid oxygen (E0434) and stationary liquid oxygen (E0439) were associated with a significant decline in both rounds of the demonstration. At the same time, portable gaseous oxygen (E0431) and oxygen concentrators (E1390) were associated with a significant increase in both rounds of the demonstration. In Round 1 only, the demonstration was associated with a statistically significant increase in utilization of enteral feeding supply kits for gravity systems (B4036), as well as statistically significant decreases in utilization of male external catheters with adhesive coating (A4324), bedside drainage bags (A4357), and sterile gauze of 16 square inches or less (A6402). In Round 2 only, the demonstration was associated with a statistically significant decrease in utilization of nonsterile gauze of 16 square inches or less (A6216).

Below, we provide additional detail on utilization across product categories. We provide graphs of utilization for the items with the highest allowed charges in each product category, as well as any items that had a significant demonstration effect on percentage change in quantity in at least one year. In each graph, we show the actual utilization by quarter, as well as the estimated utilization with and without the demonstration during the demonstration period based on the coefficient estimates. Actual utilization values are shown by triangles, predicted values in the absence of the demonstration are shown by squares, and predicted values with the demonstration are shown by diamonds. The difference between the diamonds and squares represents the estimated impact of the demonstration. In interpreting the graphs, two points are worth noting. First, the graph of the actual values will tend to fluctuate more dramatically than the two predicted values due to unobserved factors that affect utilization and cannot be captured in the predicted values. Second, for the items with significant demonstration effects, we would generally expect that the predicted demonstration value would be closer to the actual value than the predicted value in the absence of the demonstration.

Oxygen—The demonstration was associated with statistically significant increases in Round 1 and Round 2 utilization of oxygen concentrators (E1390) (Figure 2-19) and portable gaseous oxygen systems (E0431) (Figure 2-20). Together, these two codes accounted for over \$6 million in allowed charges in the year prior to the demonstration. Percentage increases in quantity due to the demonstration were estimated at 5 percent in Round 1 and 27 percent in Round 2 for oxygen concentrators, and 8 percent in Round 1 and 25 percent in Round 2 for portable gaseous oxygen. In looking at the actual utilization for each item in Polk County, there was little apparent evidence of an increase in utilization during Round 2. In fact, the statistical results appear to be driven primarily by reductions in utilization in the comparison counties during the period that coincided with Round 2 of the demonstration in Polk County. It is not clear what caused utilization in the other counties to fall, and it is also not clear that utilization would have fallen similarly in Polk County if the demonstration had not occurred (as the Round 2 demonstration coefficient implies).

The demonstration was associated with significant reductions in utilization of portable liquid oxygen (E0434) (Figure 2-21) and stationary liquid oxygen (E0439) (Figure 2-22) systems in each demonstration period. Percentage decreases in quantity due to the demonstration were estimated at 46 percent in Round 1 and 37 percent in Round 2 for portable liquid oxygen, and 48 percent in Round 1 and 34 percent in Round 2 for stationary liquid oxygen. Examination of the actual utilization patterns suggests that utilization of liquid oxygen systems was dropping rapidly

Figure 2-19
E1390—Oxygen concentrator: Polk County demonstration

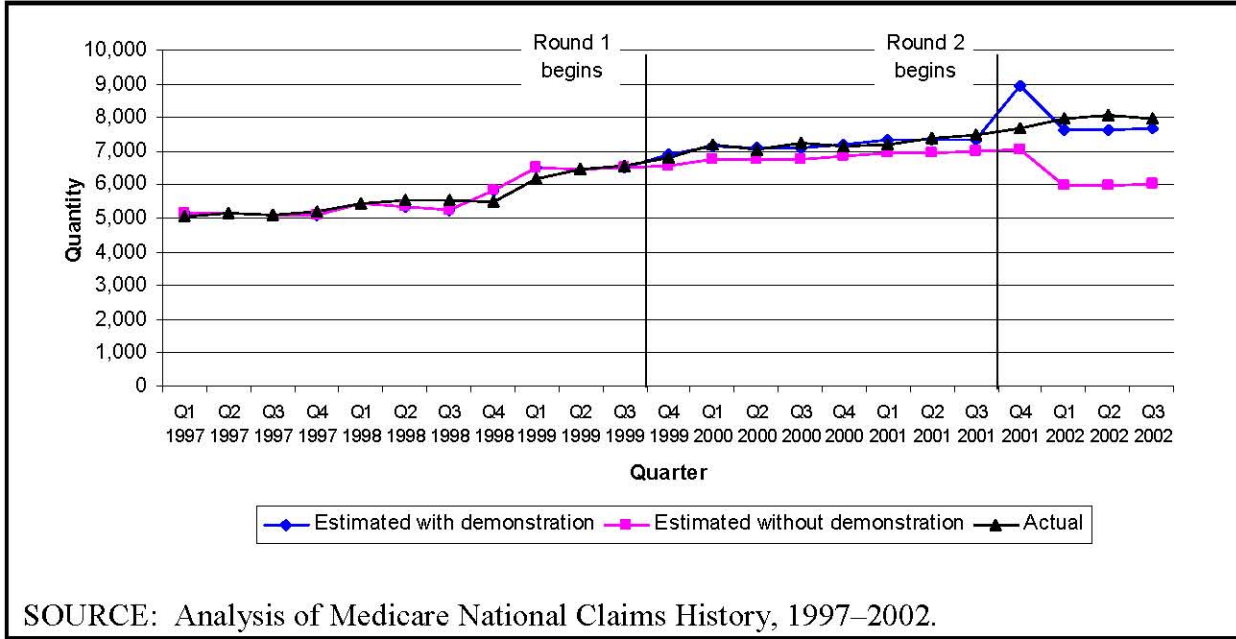


Figure 2-20
E0431—Portable gaseous oxygen system: Polk County demonstration

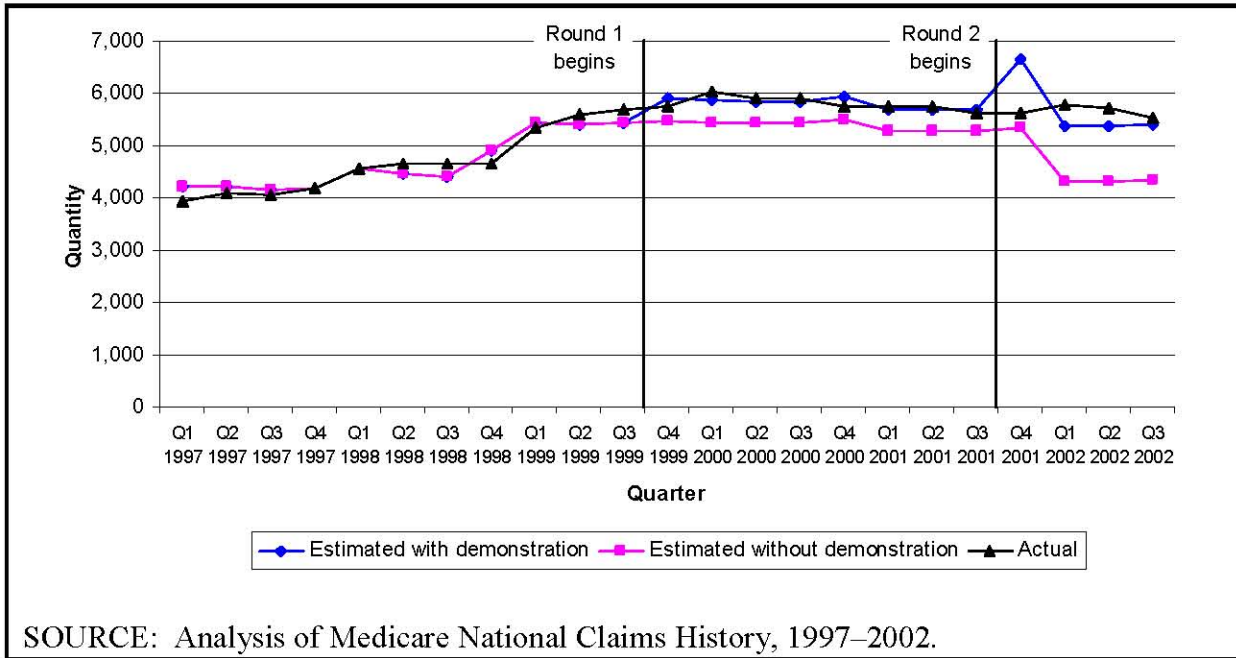
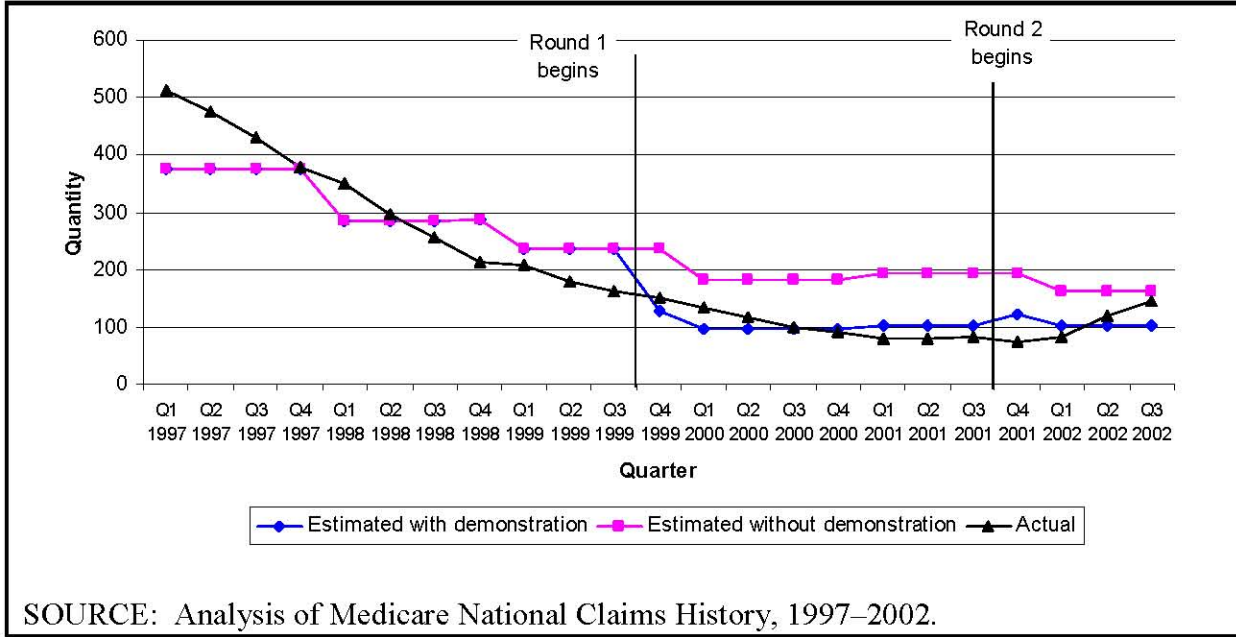
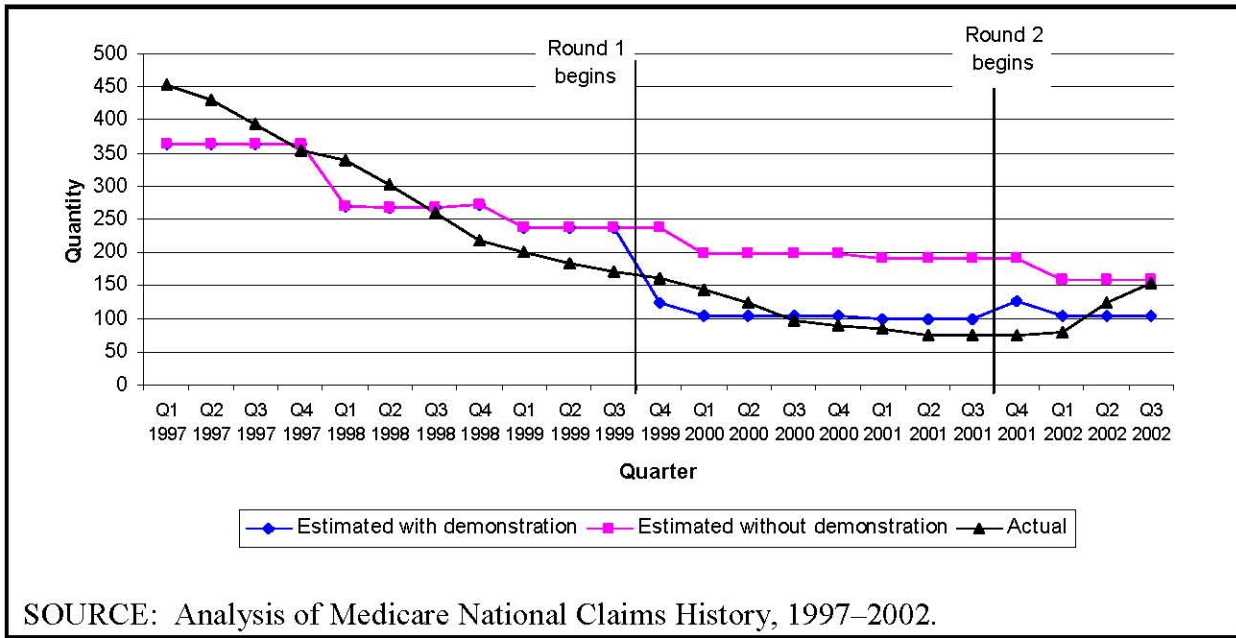


Figure 2-21
E0434—Portable liquid oxygen system: Polk County demonstration



SOURCE: Analysis of Medicare National Claims History, 1997–2002.

Figure 2-22
E0439—Stationary liquid oxygen system: Polk County demonstration

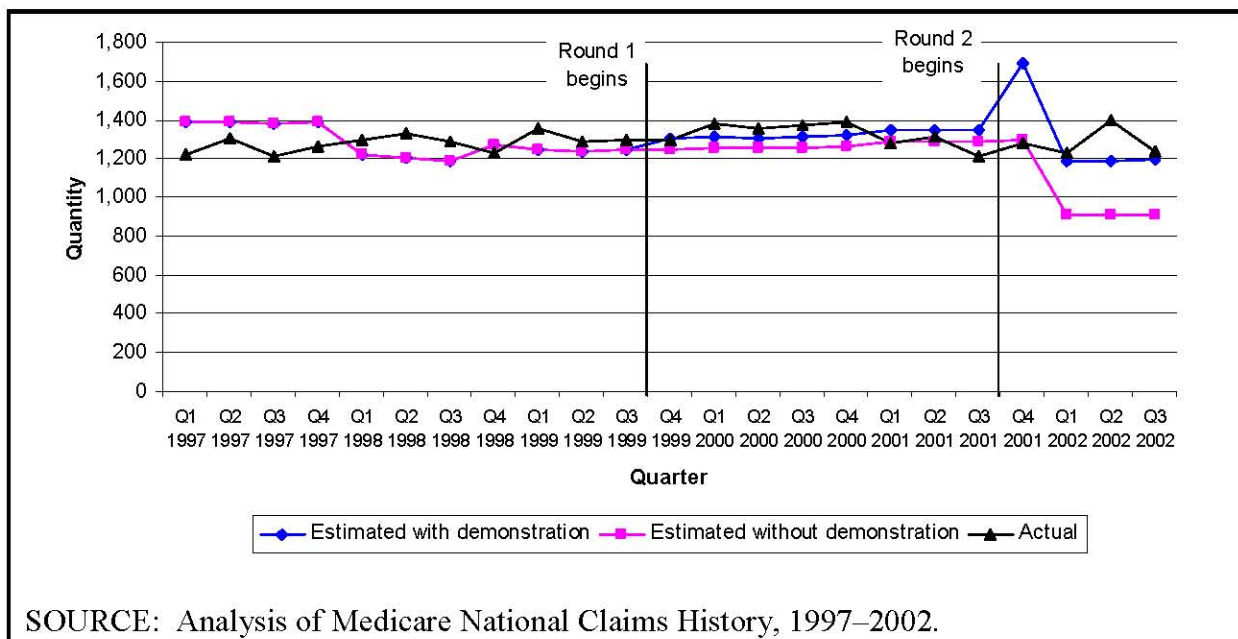


SOURCE: Analysis of Medicare National Claims History, 1997–2002.

prior to the demonstration; the demonstration may have simply accelerated the switch away from liquid systems. A 1999 GAO report indicated a general trend away from liquid oxygen systems that predated the demonstration. This trend was attributed to improving technology of oxygen concentrators and availability of cheaper, portable gas tanks. The report also cited anecdotal evidence that earlier price reductions caused suppliers to screen patients more carefully before providing liquid oxygen (DHHS, 1999).

Hospital beds—The demonstration did not have a significant effect on utilization of semi-electric hospital beds with mattresses (E0260) (Figure 2-23), which had by far the highest allowed charges in the category. Actual utilization of this item remained virtually flat before and after the demonstration began. The demonstration effect on the other analyzed item in the product category, trapeze bar attached to bed (E0910, graph not shown), was insignificant.

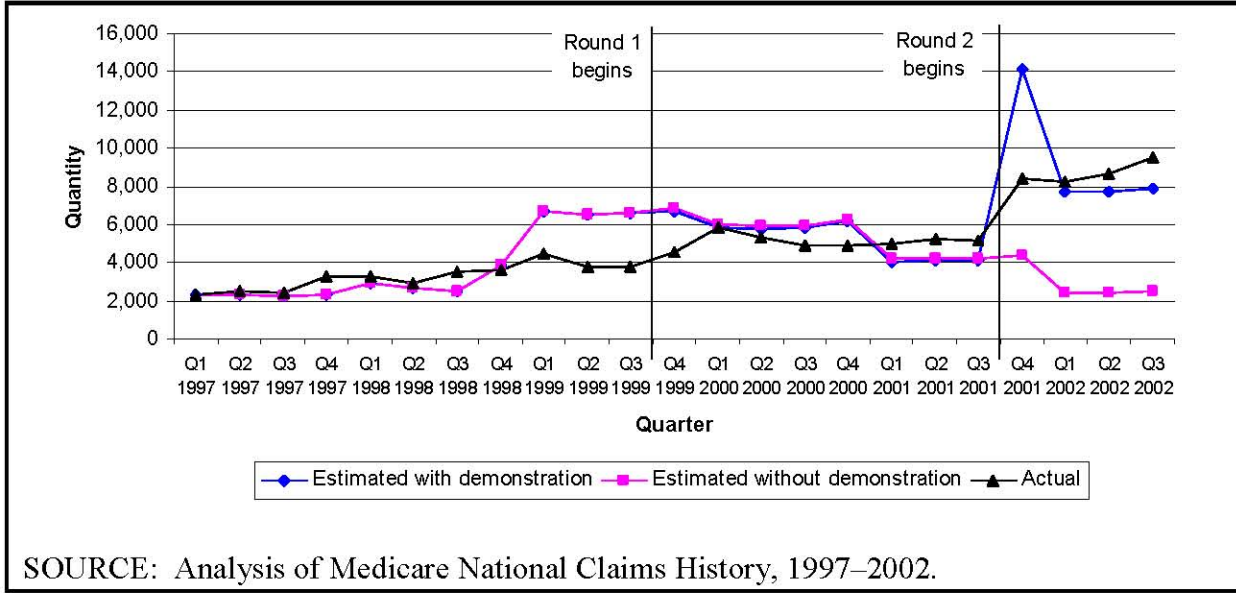
Figure 2-23
E0260—Semi-electric hospital bed: Polk County demonstration



SOURCE: Analysis of Medicare National Claims History, 1997–2002.

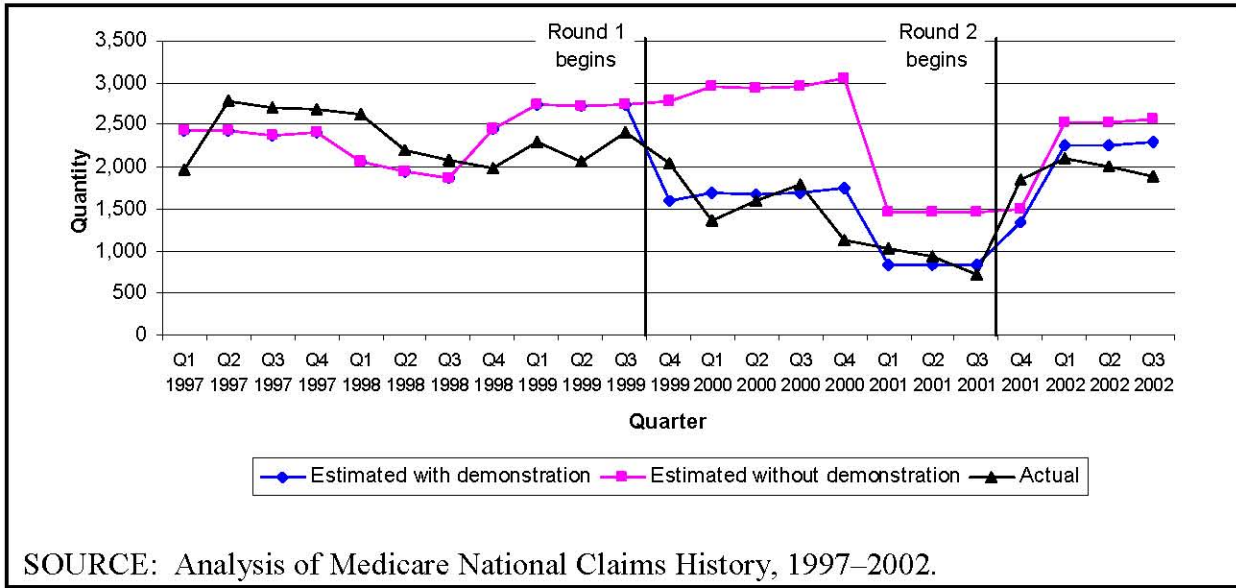
Urological supplies—The demonstration did not have a significant effect on utilization of straight tip urine catheters (A4351) (Figure 2-24), the item in urological supplies with the highest allowed charges prior to the demonstration. Utilization of this item rose during the demonstration, but the increase in Polk County was similar to the increase in other counties, leading to the insignificant demonstration coefficients. The demonstration was associated with a statistically significant decrease in utilization for two other urological supplies items in Round 1. Utilization for male external catheters with adhesive coating (A4324) (Figure 2-25) and bedside drainage bags (A4357) (Figure 2-26) were approximately 43 and 26 percent lower, respectively, during Round 1 of the demonstration. However, utilization of these items was fairly volatile and the demonstration effect on percentage change in quantity was not statistically significant in Round 2. The demonstration did not significantly affect utilization of the other items in the category.

Figure 2-24
A4351—Straight tip urine catheter: Polk County demonstration



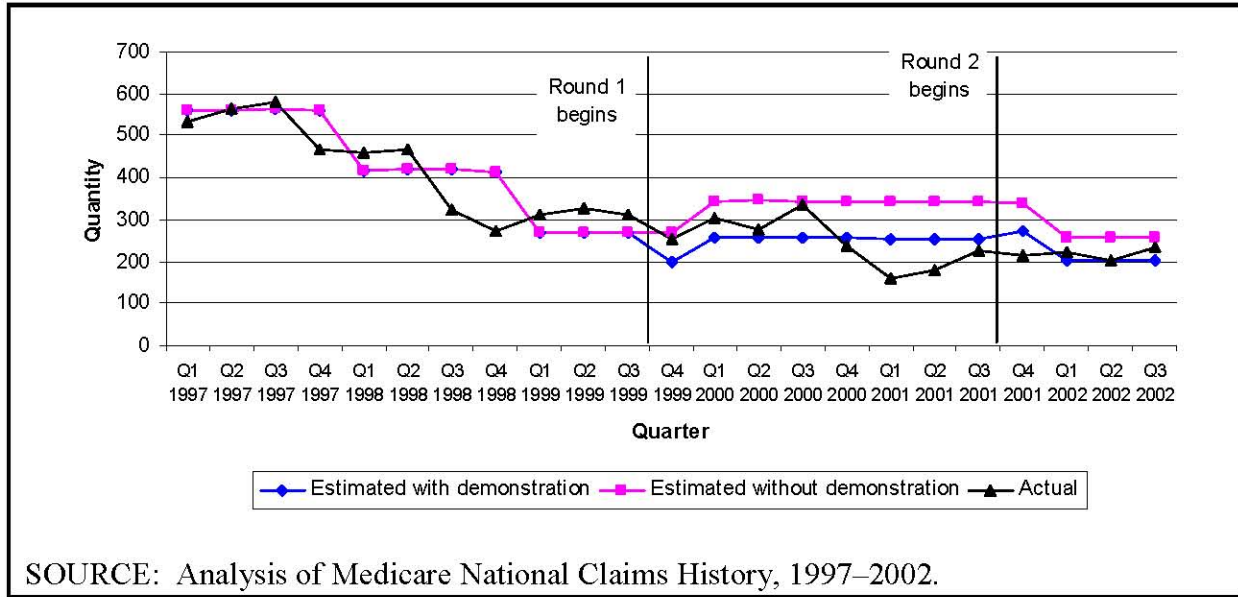
SOURCE: Analysis of Medicare National Claims History, 1997–2002.

Figure 2-25
A4324—Male external catheter with adhesive coating: Polk County demonstration



SOURCE: Analysis of Medicare National Claims History, 1997–2002.

Figure 2-26
A4357—Bedside drainage bag: Polk County demonstration



SOURCE: Analysis of Medicare National Claims History, 1997–2002.

Surgical dressings—The demonstration did not significantly affect utilization of hydrocolloid dressings, 16 square inches or less (A6234) (Figure 2-27), which had the highest allowed charges of the surgical dressings included in the analysis. In Round 1, the demonstration was associated with a 49 percent decline in quantity of sterile gauze of 16 square inches or less (A6402) (Figure 2-28). In Round 2, the demonstration was associated with a statistically significant decline in utilization of approximately 61 percent for nonsterile gauze of 16 square inches or less (A6216) (Figure 2-29). None of the other three surgical dressing items included in the analysis were significantly affected by the demonstration.

Enteral nutrition—Enteral nutrition was only included in the demonstration in Round 1. The demonstration did not have a significant impact on utilization of enteral formulae category I (B4150) (Figure 2-30), the item with the highest allowed charges in the category prior to the demonstration. However, the demonstration was associated with an increase of approximately 67 percent in utilization of enteral feed supply kits for gravity systems (B4036) (Figure 2-31).

Table 2-13 summarizes the demonstration effects by significance, direction, price change, and year. When the demonstration fee was higher than the fee schedule amount, there were only two significant effects on utilization. When the demonstration fee was lower than the fee schedule amount, the demonstration effect on utilization was generally insignificant; when the effect was significant, changes in utilization were mixed among increases and declines.

Figure 2-27

A6234—Hydrocolloid dressing, ≤16 sq. in., without border: Polk County demonstration

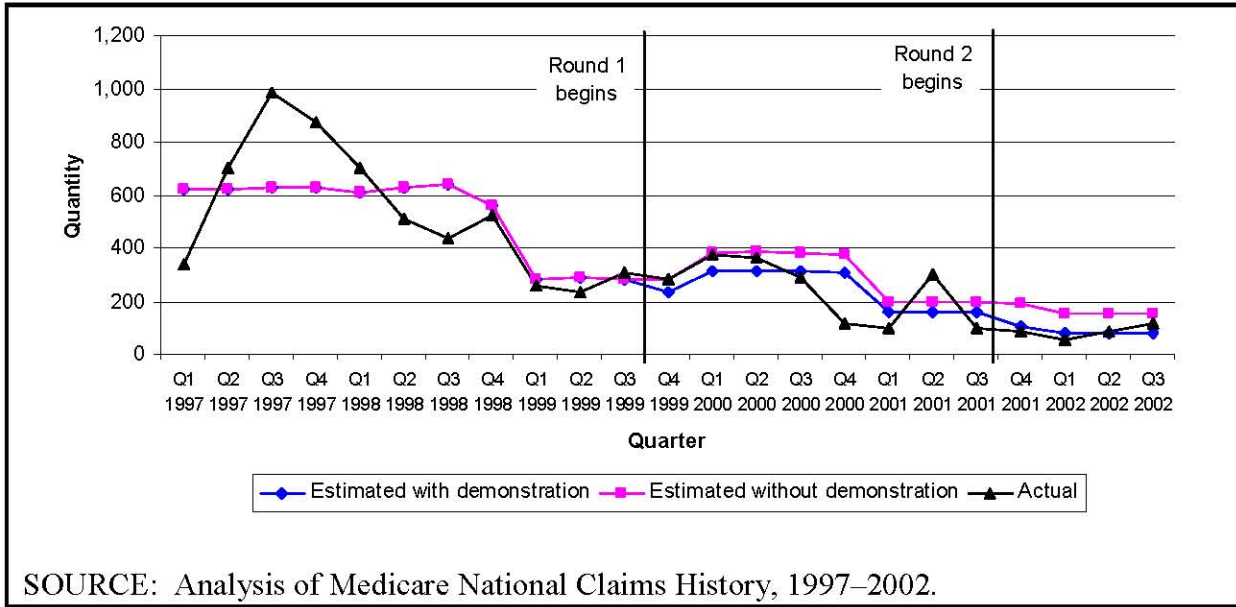


Figure 2-28

A6402—Sterile gauze, ≤16 square inch: Polk County demonstration

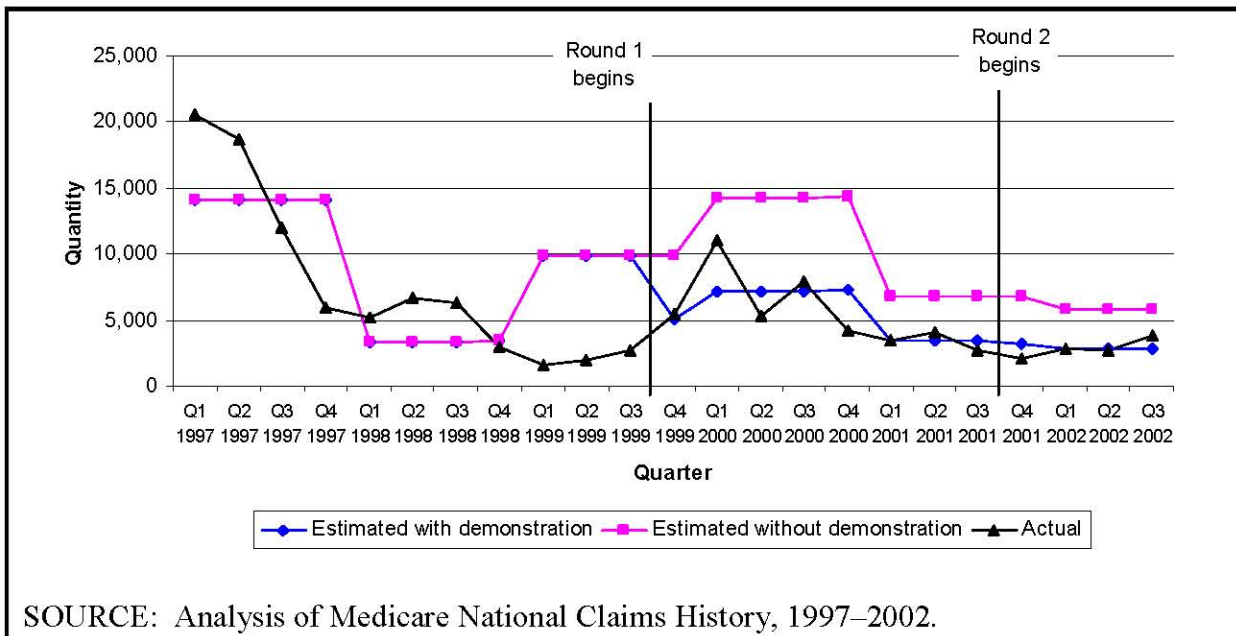
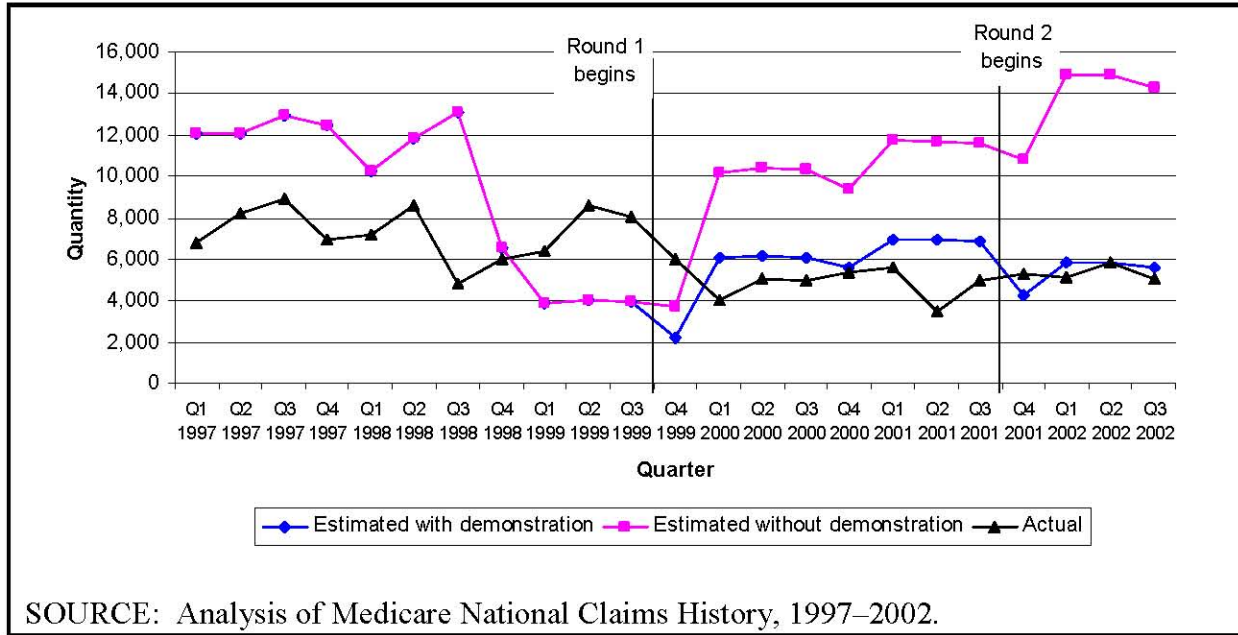
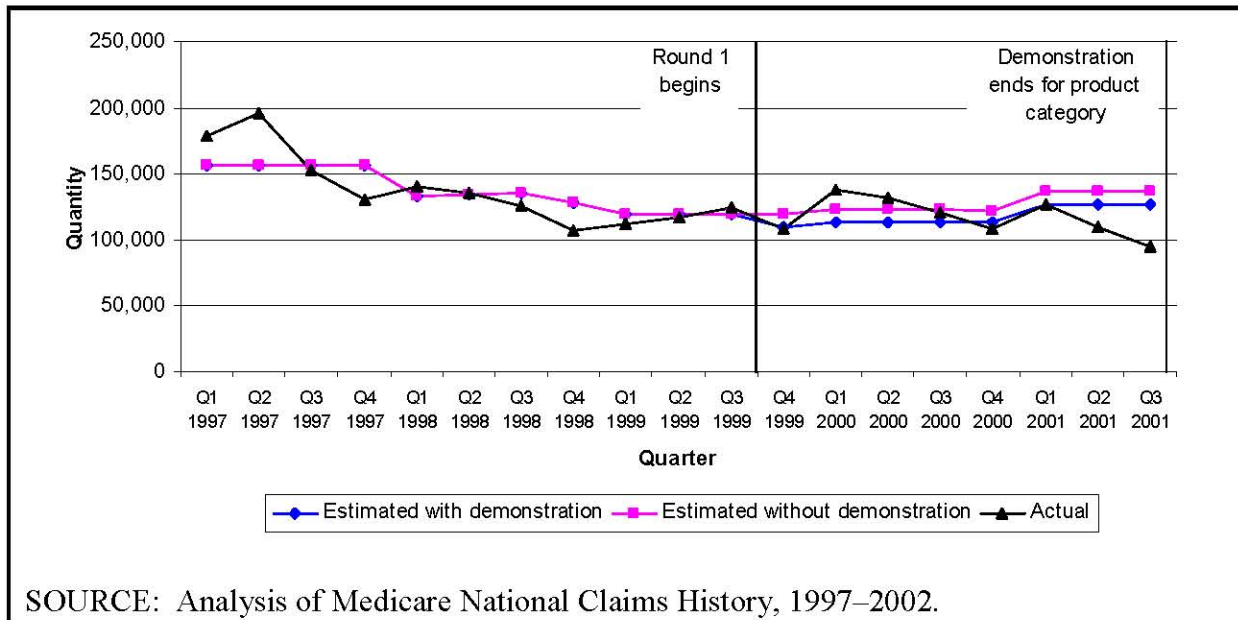


Figure 2-29
A6216—Nonsterile gauze, ≤16 square inch: Polk County demonstration



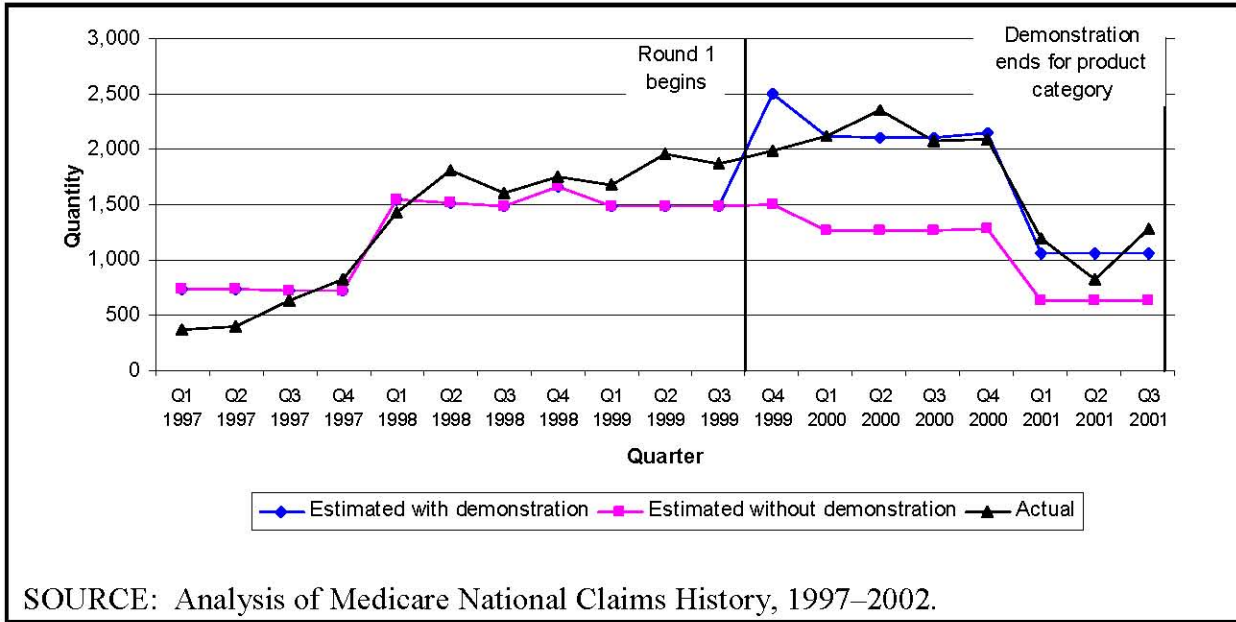
SOURCE: Analysis of Medicare National Claims History, 1997–2002.

Figure 2-30
B4150—Enteral formulae category i: Polk County demonstration



SOURCE: Analysis of Medicare National Claims History, 1997–2002.

Figure 2-31
B4036—Enteral feed supply kit, gravity, by day: Polk County demonstration



SOURCE: Analysis of Medicare National Claims History, 1997–2002.

Table 2-13
Summary of demonstration effects: Polk County

	Demonstration effects on quantity (selected HCPCS)	
	Round 1	Round 2
Price increased with demonstration		
Quantity increase	0	0
No significant effect	6	4
Quantity decrease	1	1
Price decreased with demonstration		
Quantity increase	3	2
No significant effect	10	8
Quantity decrease	4	2
Total	24	17

NOTE: Significance is defined as significant at the 5 percent level.

SOURCE: Analysis of Medicare National Claims History, 1997–2002.

2.4.2 San Antonio

We performed a similar utilization analysis for the San Antonio demonstration. There were a few minor changes in the analysis:

- A single comparison site was used, the Austin-San Marcos MSA.
- We performed the analysis on monthly data, rather than quarterly data, to accommodate the fact that the demonstration began in February and covered only 11 months in 2001.
- There was only one round of the demonstration in San Antonio; consequently, we included one demonstration impact variable in the regression.
- We limited the criteria for selecting items with high allowed charges or volume to the period 1999 through 2002. Several items that would have qualified based on 1997 or 1998 data had very low or zero allowed charges or volumes by the time the demonstration began in 2001. We also included in our analysis the utilization for L3805, the general orthotics code with the highest allowed charges in the product category in the predemonstration year, even though utilization in the comparison site did not meet the criteria of at least 120 units per year. This code was included as a representative of the general orthotics category since no codes meet the stated criteria. Characteristics of the 27 items included in the analysis are shown in Table 2-14.
- In analyzing the data, we saw evidence that changes in fee-for-service enrollment were accompanied by smaller changes in utilization in San Antonio than in Austin-San Marcos. Therefore, we included an interaction term in the regression equal to the San Antonio dummy variable times the log fee-for-service enrollment. This term captured the differential effect of fee-for-service enrollment in San Antonio.
- For products in the nebulizer drug category, we omitted data from 1997 and instead used 1998 as the base year for our regression analyses. Nebulizer drug codes were first introduced in the second quarter of 1997, and utilization patterns were not well established until these codes had been in operation for some time. 1998 is therefore more appropriate as a baseline year for utilization in this category. (The code for monthly dispensing fee, E0590, is an exception, since it was established prior to 1997.)
- We treated some HCPCS modifier combinations in the wheelchair and nebulizer drug categories as separate codes for analysis purposes. For nebulizer drugs, we treated single drug unit doses (-KO modifier) separately from multiple drug unit doses (-KQ). For wheelchair accessories, we treated purchases of equipment (-NU) separately from rentals (-RR). In these cases, separate analyses are justified due to relatively large differences in reimbursement amounts as well as different utilization patterns.

Table 2-14
Characteristics of 27 most prevalent procedures: San Antonio

Category Description of code	HCPCS code	Demonstration price relative to Texas fee schedule ¹	Total allowed charges ²		
			2000	2001	2002
Oxygen equipment and supplies					
Portable gaseous oxygen	E0431	-12.3%	\$568,998	\$527,393	\$569,587
Portable liquid oxygen	E0434	-6.3%	\$26,308	\$30,352	\$41,036
Stationary liquid oxygen	E0439	-14.1%	\$184,505	\$204,655	\$269,989
Oxygen concentrator	E1390	-18.8%	\$4,215,256	\$3,671,614	\$3,901,529
Hospital beds and accessories					
Hospital bed var ht w/ mattress	E0255	-22.7%	\$57,316	\$46,113	\$32,539
Hosp bed semi-electric w/ mattress	E0260	-25.8%	\$1,636,944	\$1,423,435	\$1,116,709
Trapeze bar attached to bed	E0910	-15.7%	\$49,203	\$43,377	\$36,778
Trapeze bar free standing	E0940	-16.0%	\$11,467	\$6,822	\$6,771
Wheelchairs and accessories					
Standard wheelchair	K0001	-19.2%	\$431,965	\$359,393	\$317,872
Standard hemi (low seat) wheelchair	K0002	-22.9%	\$122,292	\$91,164	\$67,711
Lightweight wheelchair	K0003	-22.4%	\$550,654	\$482,888	\$457,758
High strength lightweight wheelchair	K0004	-23.9%	\$418,034	\$422,125	\$327,962
Heavy duty wheelchair	K0006	-20.2%	\$50,051	\$58,624	\$44,736
Detach adjust armrest complete, purchase	K0016NU	-17.1%	\$33,285	\$52,412	\$36,878
Anti-tipping device each, purchase	K0021NU	-24.9%	\$57,355	\$87,504	\$81,014
Anti-tipping device each, rental	K0021RR	-24.9%	\$3,186	\$8,707	\$10,072
Safety belt/pelvic strap, purchase	K0031NU	-24.2%	\$26,710	\$38,981	\$36,955

(continued)

**Table 2-14
(continued)**

Category Description of code	HCPCS code	Demonstration price relative to Texas fee schedule ¹	Total allowed charges ²		
			2000	2001	2002
Wheelchairs and accessories (continued)					
Elevate legrest complete, purchase	K0048NU	-18.7%	\$48,363	\$60,985	\$66,703
Elevating wheelchair leg rests	K0195	-16.4%	\$114,360	\$112,512	\$106,236
Orthotics					
Wrist-hand-finger orthosis long opponens, no attachment	L3805	-15.5%	\$82,141	\$5,694	\$3,428
Nebulizer drugs					
Dispensing fee DME neb drug	E0590	-6.0%	\$45,007	\$51,062	\$56,617
Albuterol inh sol, single drug dose	J7619KO	-31.9%	\$842,323	\$656,193	\$613,558
Albuterol inh sol, multiple drug dose	J7619KQ	0.0%	\$23,885	\$37,955	\$63,404
Cromolyn sodium inh sol, single drug dose	J7631KO	-12.0%	\$5,630	\$4,285	\$2,381
Ipratropium brom inh sol, single drug dose	J7644KO	-23.7%	\$686,467	\$693,182	\$782,146
Ipratropium brom inh sol, multiple drug dose	J7644KQ	-14.3%	\$80,245	\$44,033	\$14,525
Metaproterenol inh sol, single drug dose	J7669KO	-21.9%	\$11,089	\$9,430	\$4,226
Total charges (27 codes shown)			\$10,383,039	\$9,230,891	\$9,069,122
Total charges (all demonstration codes)			\$10,886,917	\$9,598,652	\$9,418,131
Selected codes share of total charges			95.4%	96.2%	96.3%

¹Fee schedule referenced is the one in effect at the beginning of the demonstration (Texas 2001 first quarter).

²Demonstration fee schedule went into effect on February 1, 2001. Allowed charges for 2001 include the entire year.

SOURCE: Analysis of fee schedules and analysis of Medicare National Claims data, 1997–2002; claims contained in data as of January 2003.

We show the demonstration impact estimates for the San Antonio analysis in Table 2-15. Standard errors are in parentheses, and one and two asterisks denote statistical significance at the 5 percent and 1 percent levels, respectively. For 22 of the 27 items included in the analysis, the demonstration did not have a significant effect on utilization. The demonstration was associated with a statistically significant decrease in utilization for three items: variable height hospital bed with mattress (E0255), standard wheelchair (K0001), and standard hemi (low seat) wheelchair (K0002). The demonstration was associated with a statistically significant increase in utilization for two items: heavy duty wheelchair (K0006) and wheelchair anti-tipping device, rental (K0021RR).

We provide additional detail on utilization across product categories in San Antonio below. We graph the utilization for the item with the highest allowed charges in each category, as well as any items that have a significant percentage change in quantity due to the demonstration. In each graph, we show the actual utilization by month, as well as the estimated utilization with and without the demonstration during the demonstration period based on the coefficient estimates. In viewing the graphs, it should be noted that San Antonio experienced a large increase in fee-for-service enrollment in January 2002, when managed care enrollment dropped substantially. For some items, this increase produced a noticeable increase in utilization in 2002.

Oxygen equipment and supplies—The demonstration did not have a significant effect on utilization of oxygen concentrators (E1390) (Figure 2-32) and portable gaseous oxygen systems (E0431, graph not shown). Together, these two codes accounted for over \$4.8 million in allowed charges in the year prior to the demonstration. The demonstration also did not have an effect on the two liquid oxygen items (stationary and portable systems) included in the analysis. The demonstration in Polk County was associated with significant reductions in liquid oxygen, but that result was not evident in San Antonio.

Hospital beds and accessories—The demonstration did not have a significant effect on utilization of semi-electric hospital beds with mattresses (E0260) (Figure 2-33), which had by far the highest allowed charges in the category. Actual utilization of this item was fairly constant before and after the demonstration began. The demonstration's impact on utilization of variable height hospital beds (E0255) was statistically significant and negative and was associated with quantities approximately 20 percent lower than they would have been in the absence of the demonstration (Figure 2-34). Demonstration impacts on the two hospital bed accessories codes we analyzed were insignificant.

Table 2-15
Effect of demonstration on quantity of 27 most prevalent procedures: San Antonio

Category Description of code	HCPCS code	Predemonstration quantity (2/1/00-1/31/01)	Percentage change in quantity
Oxygen equipment and supplies			
Portable gaseous oxygen	E0431	15,810	7.1% (5.9%)
Portable liquid oxygen	E0434	741	-5.6% (6.6%)
Stationary liquid oxygen	E0439	825	-6.3% (7.1%)
Oxygen concentrator	E1390	18,482	5.9% (5.4%)
Hospital beds and accessories			
Hospital bed var height with mattress	E0255	626	-20.1%* (8.5%)
Hospital bed semi-electric with mattress	E0260	12,473	6.6% (4.3%)
Trapeze bar attached to bed	E0910	3,173	17.4% (20.8%)
Trapeze bar free standing	E0940	415	-13.0% (11.3%)
Wheelchairs and accessories			
Standard wheelchair	K0001	10,206	-11.9%** (4.2%)
Std hemi (low seat) wheelchair	K0002	1,917	-40.2%** (15.0%)
Lightweight wheelchair	K0003	7,922	12.9% (9.5%)
High strength lightweight wheelchair	K0004	4,099	12.4% (13.0%)
Heavy duty wheelchair	K0006	525	49.9%** (15.6%)
Detach adjust armrest complete, purchase	K0016NU	400	140.6% (440.6%)
Anti-tipping device each, purchase	K0021NU	1,155	198.7% (283.0%)
Anti-tipping device each, rental	K0021RR	541	235.3%* (96.6%)
Safety belt/pelvic strap, purchase	K0031NU	708	107.7% (129.4%)
Elevate legrest complete, purchase	K0048NU	464	107.4% (192.7%)
Elevating wheelchair leg rests	K0195	7,026	15.1% (12.4%)
Orthotics			
Who long opponens no attach	L3805	303	-53.3% (47.5%)
Nebulizer drugs			
Dispensing fee DME nebulizer drug	E0590	12,006	6.3% (36.4%)
Albuterol inh sol, single drug dose	J7619KO	1,850,675	20.8% (31.7%)
Albuterol inh sol, multiple drug dose	J7619KQ	181,268	-28.4% (21.3%)
Cromolyn sodium inh sol, single drug dose	J7631KO	25,695	-36.1% (19.8%)
Ipratropium brom inh sol, single drug dose	J7644KO	215,781	28.5% (22.8%)
Ipratropium brom inh sol, multiple drug dose	J7644KQ	27,417	-13.6% (181.2%)
Metaproterenol inh sol, single drug dose	J7669KO	11,655	-23.4% (517.1%)
Total Quantity (27 codes shown)		2,412,308	
Total Quantity (all demonstration codes)		2,464,963	
Selected Codes Share of Total Quantity		97.9%	

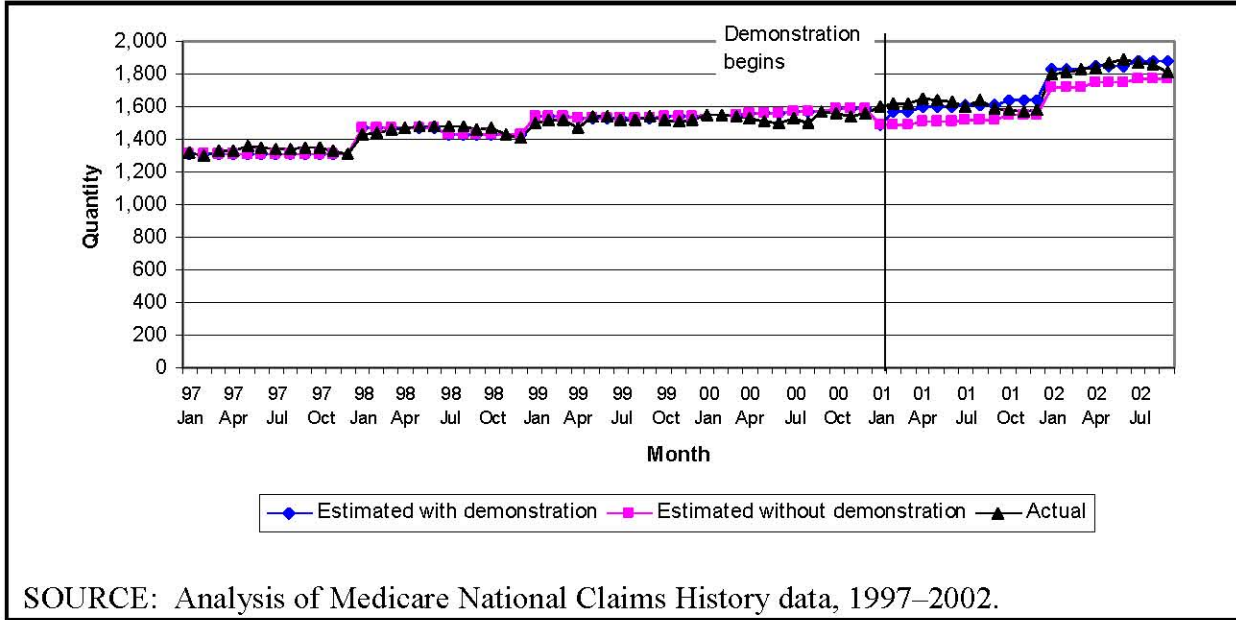
NOTE: Standard errors are shown in parentheses. See text in Section 2.4.1 for procedure used to calculate standard errors.

* Significant at the 5 percent level.

** Significant at the 1 percent level.

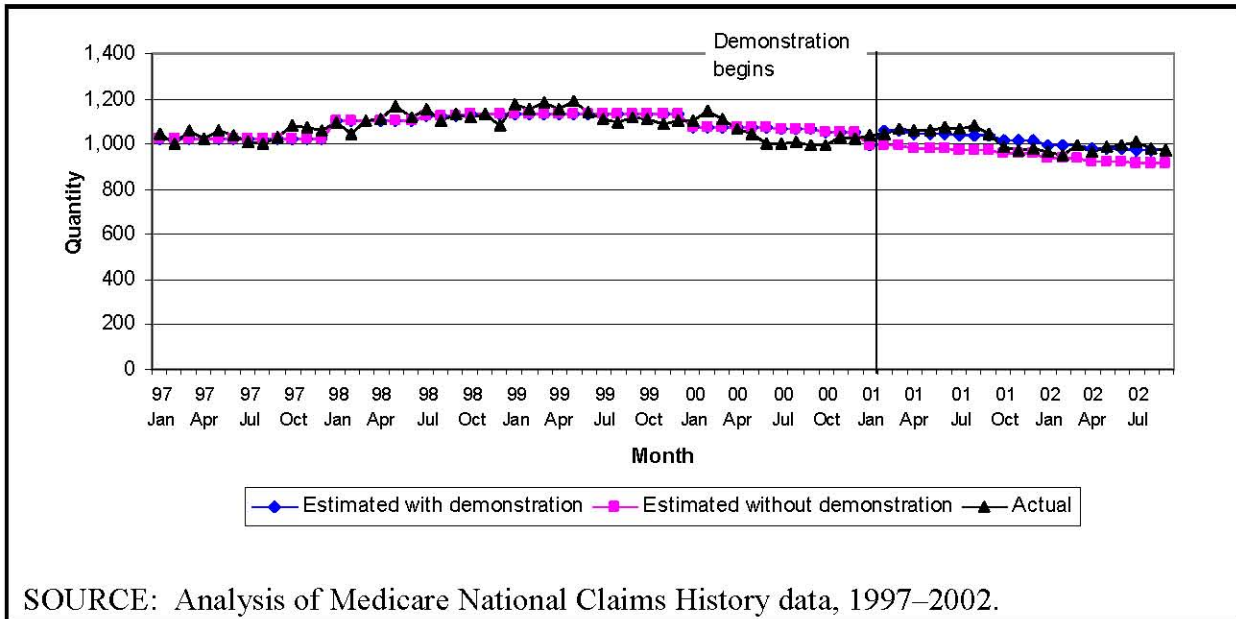
SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Figure 2-32
E1390—Oxygen concentrator: San Antonio demonstration



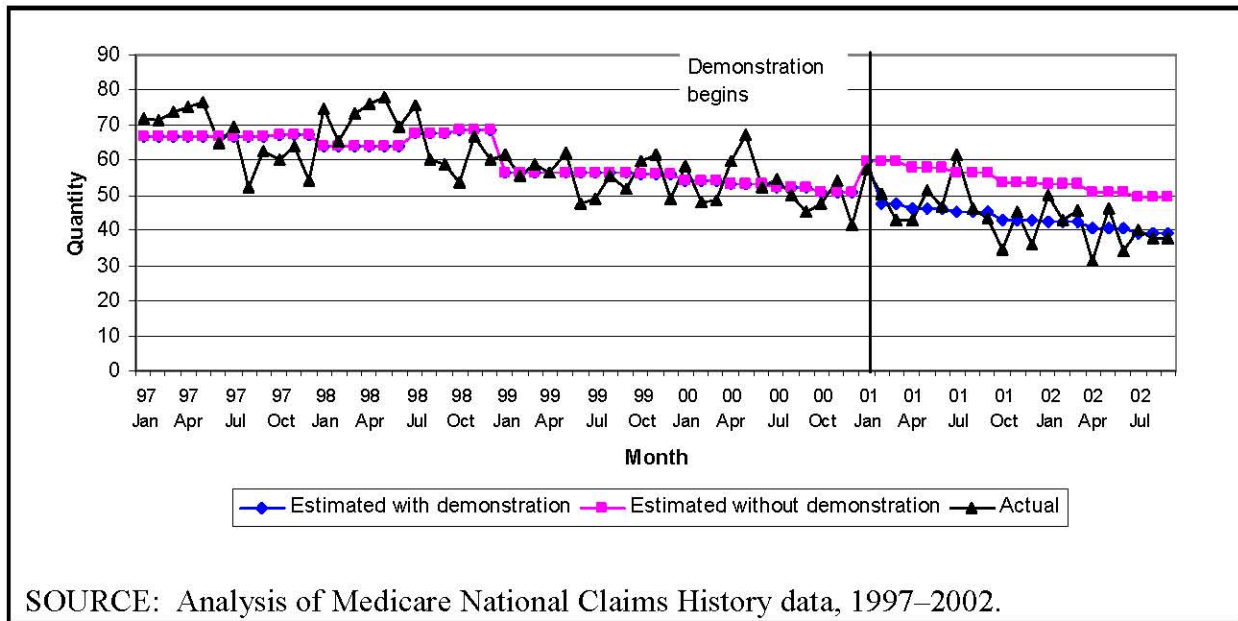
SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Figure 2-33
E0260—Semi-electric hospital bed: San Antonio demonstration



SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Figure 2-34
E0255—Variable height hospital bed: San Antonio demonstration

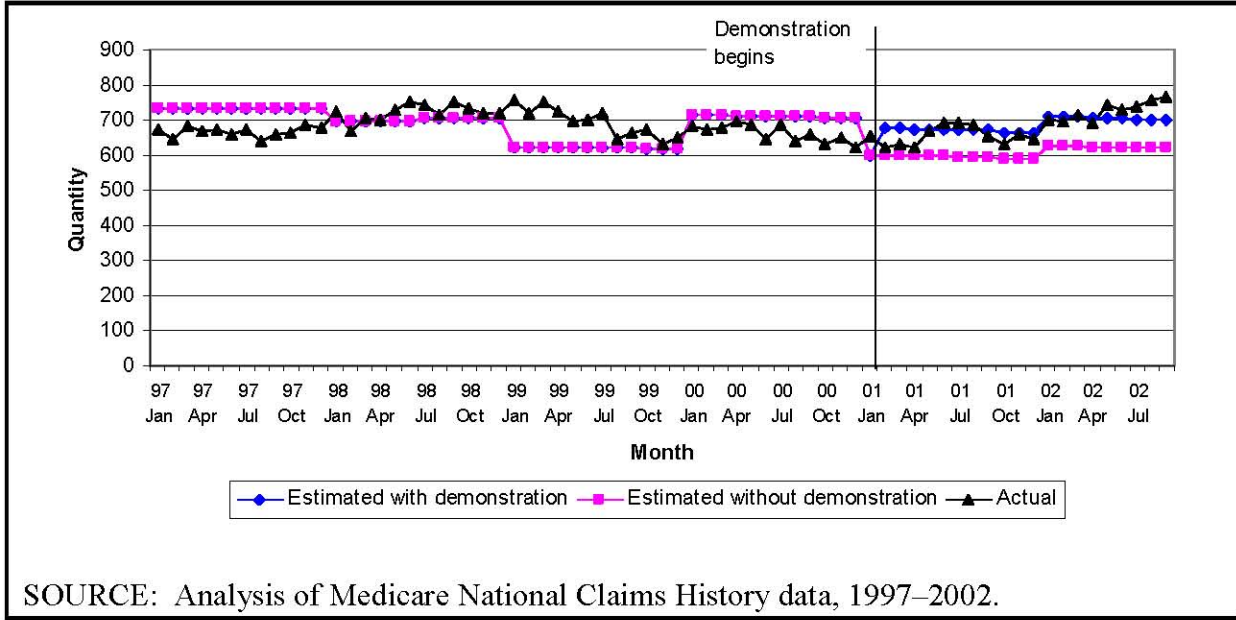


SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Wheelchairs and accessories—The demonstration did not have a significant impact on utilization of lightweight wheelchairs (K0003) (Figure 2-35). This item had the highest allowed charges in the wheelchair category in the year before the demonstration, although more standard wheelchairs were utilized during that year. However, the demonstration was associated with statistically significant changes in utilization for three other types of wheelchairs. First, the demonstration impact on standard wheelchairs (K0001) was significant; it was associated with quantities approximately 12 percent below what they would have been in the absence of the demonstration (Figure 2-36). Second, the demonstration was associated with a statistically significant reduction of approximately 40 percent of standard hemi (low seat) wheelchairs (K0002) (Figure 2-37), the fourth most common type of wheelchair. Third, the demonstration was associated with an increase of approximately 50 percent in utilization of heavy duty wheelchairs (K0006) (Figure 2-38). These results may indicate that some substitution from lower-priced standard wheelchairs toward higher-priced heavy duty wheelchairs occurred during the demonstration. However, because the demonstration fees for these codes experienced similar percentage reductions, it is unclear whether there was any incentive for such substitution. Furthermore, heavy duty wheelchairs remained the least common type of wheelchair included in the demonstration.

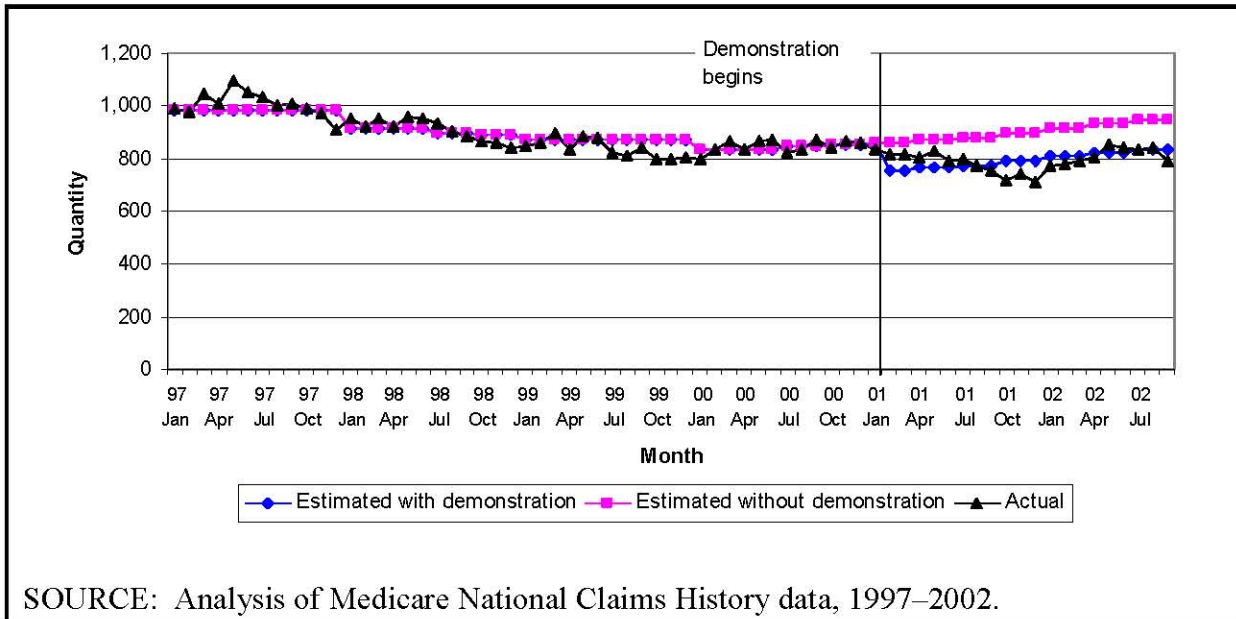
Among wheelchair accessories, the demonstration was associated with a large and significant increase in rentals of anti-tipping devices (K0021RR) (Figure 2-39). Quantities for this code were approximately 235 percent higher than they would have been in the absence of the demonstration. In this graph, the demonstration clearly seems to be associated with an increase in utilization.

Figure 2-35
K0003—Lightweight wheelchair: San Antonio demonstration



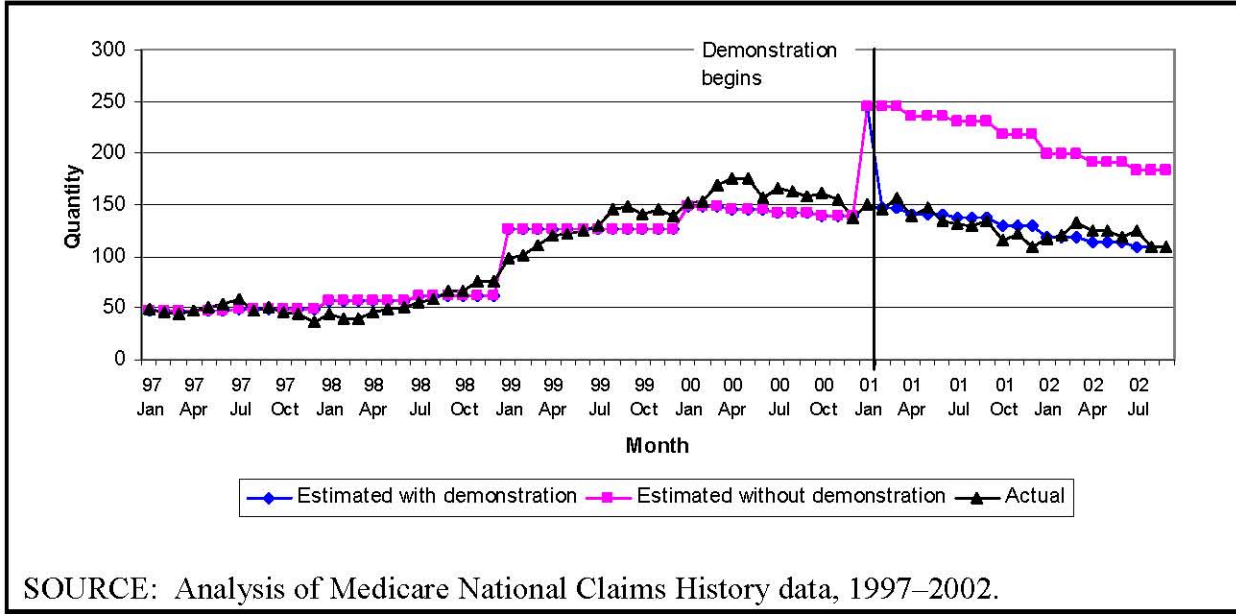
SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Figure 2-36
K0001—Standard wheelchair: San Antonio demonstration



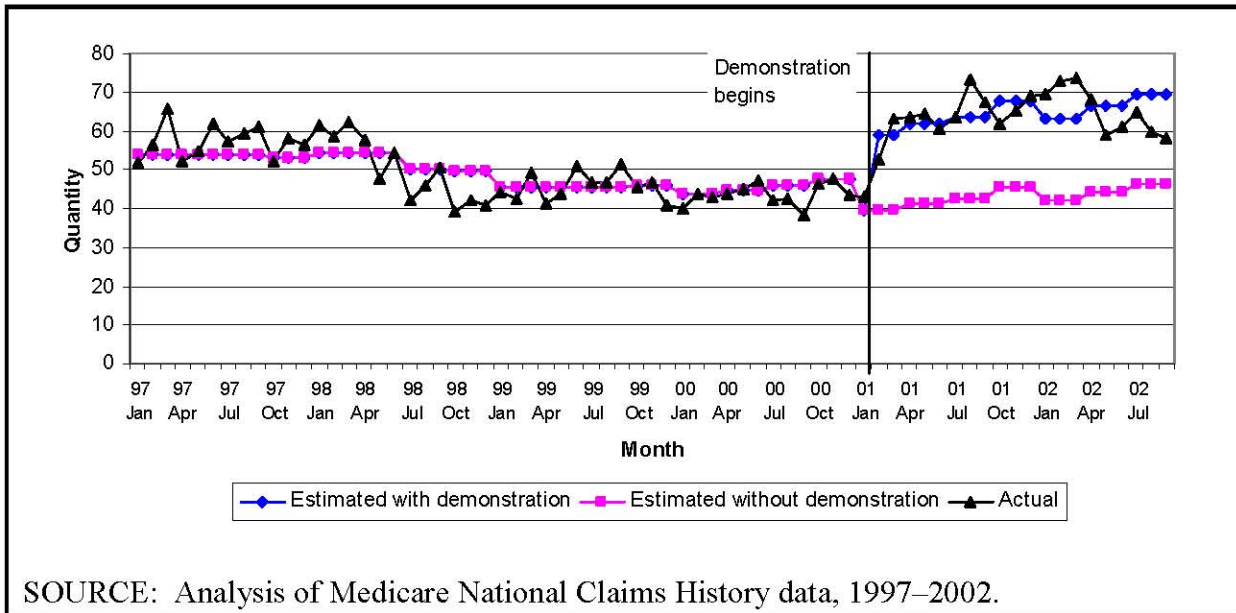
SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Figure 2-37
K0002—Standard hemi wheelchair: San Antonio demonstration



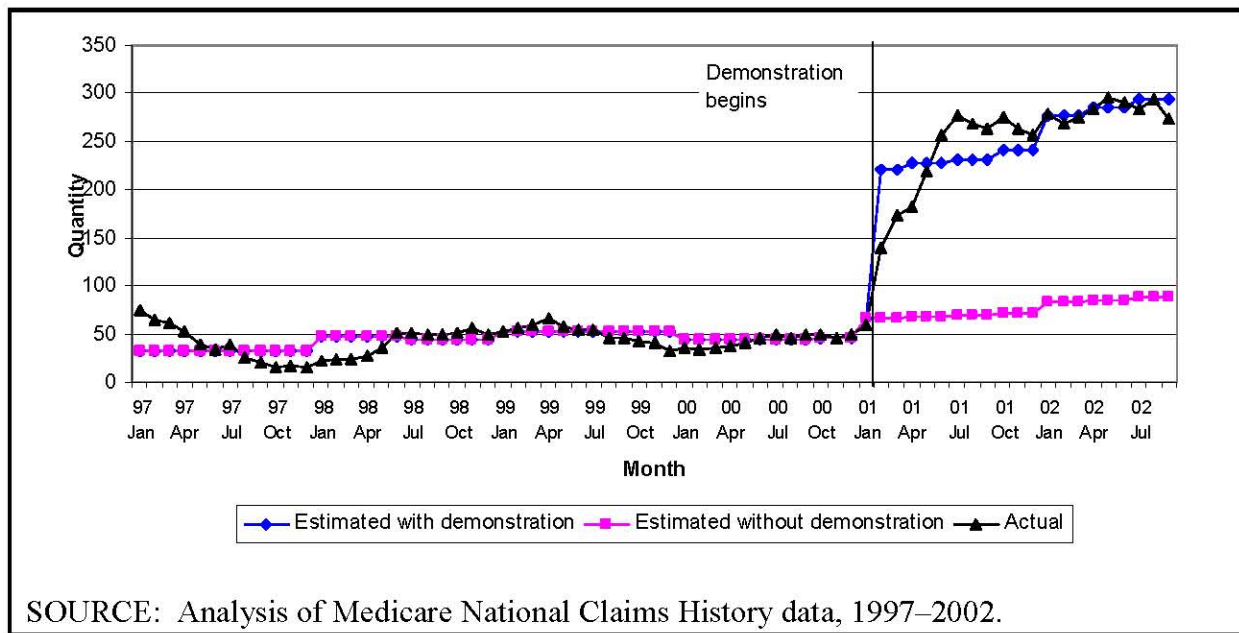
SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Figure 2-38
K0006—Heavy duty wheelchair: San Antonio demonstration



SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Figure 2-39
K0021RR—Anti-tipping device, rental: San Antonio demonstration



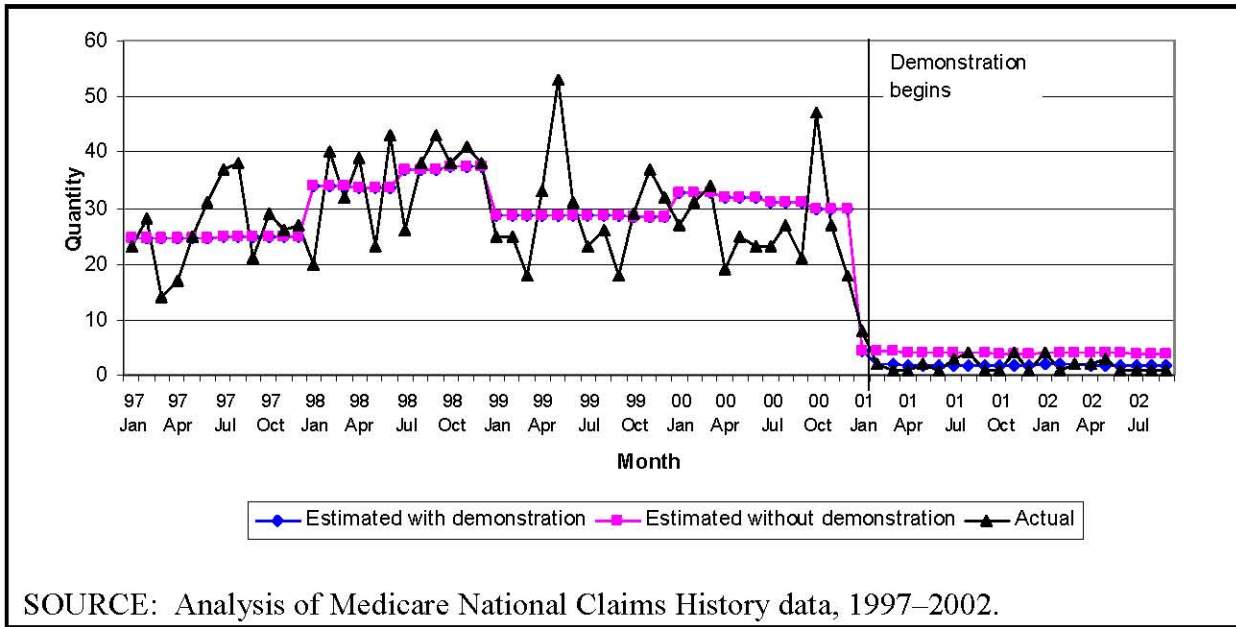
SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

General orthotics—In comparison to items in the other product categories, utilization of individual orthotic items was generally quite low. For example, L3805 (wrist-hand-finger orthosis, long opponens, no attachment, custom fabricated), the item with the highest allowed charges in the year before the demonstration, had only 303 units and \$76,596 in allowed charges that year. Although this item had less than 120 units of utilization per year in the comparison site, we included it in our analysis to provide representation for the product category. The demonstration was not associated with any statistically significant change in utilization. Although a reduction is clearly evident in the graph of actual utilization (Figure 2-40), there was a corresponding decline in the comparison site that made the demonstration impact insignificant.

CMS introduced a new HCPCS code for wrist-hand-finger orthosis (WHFO), L3807, in 2000 and modified the description for L3807 and another WHFO, L3805, in 2001. For 2001, the term “custom fabricated” was added to the description of L3805, and the term “prefabricated” was added to L3807. This change appeared to affect the way suppliers coded claims: in both the demonstration and comparison sites, claims for L3805 dropped and claims for L3807 increased in 2001.

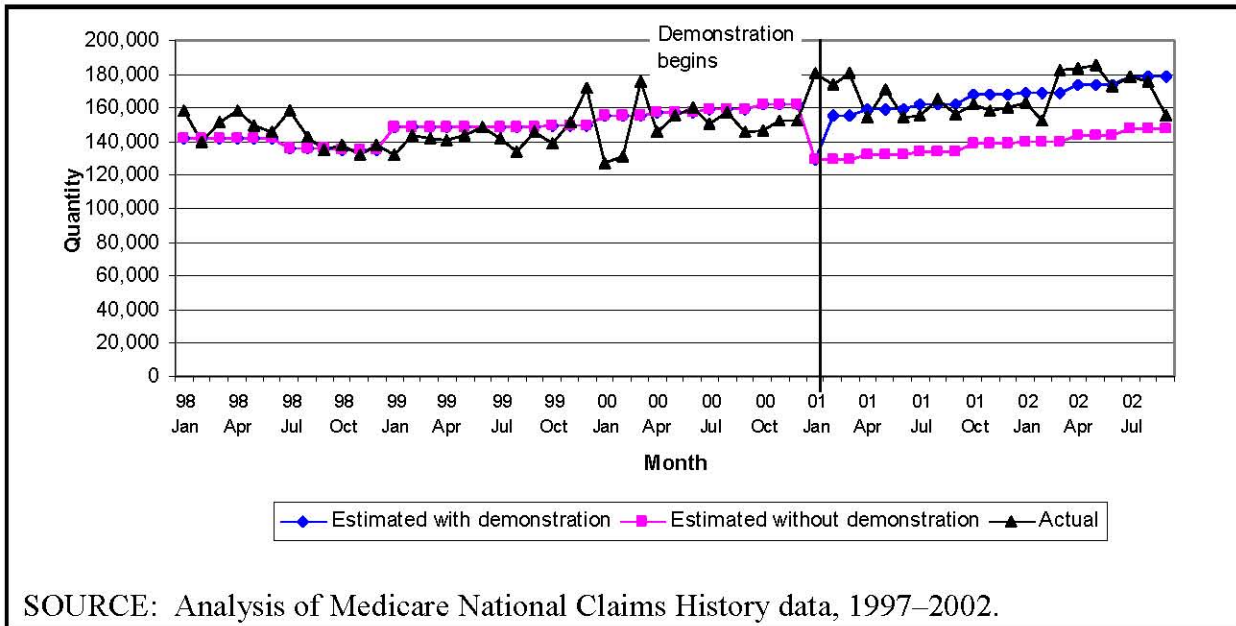
Nebulizer drugs—The demonstration did not have a significant effect on utilization of albuterol (J7619KO) (Figure 2-41), the nebulizer drug with the highest allowed charges in the year prior to the demonstration. The demonstration impacts on the remaining nebulizer drug items were insignificant.

Figure 2-40
L3805—Wrist-hand-finger orthosis, long opponens, no attachment: San Antonio demonstration



SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Figure 2-41
J7619KO—Albuterol inhalation solution: San Antonio demonstration



SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Table 2-16 summarizes the San Antonio demonstration effects by significance and direction. Of the 27 codes we analyzed, all except one had lower demonstration fees than the state fee schedule; the other code's reimbursement did not change. Therefore, we do not subdivide the data by change in price, as we did for the corresponding Polk County table. When significant, the demonstration impact was associated with increases in utilization for two items and decreases in utilization for three items.

Table 2-16
Summary of demonstration effects: San Antonio

Demonstration effects on quantity (selected HCPCS)	
	Effect
Quantity increase	2
No significant effect	22
Quantity decrease	3
Total	27

NOTE: Significance is defined as significant at the 5 percent level.

2.4.3 Discussion

Overall, the utilization analyses suggest that the demonstrations had little effect on utilization. In Polk County, the demonstration impact was not significant in any round of the demonstration for 15 of 24 items with high allowed charges. The demonstration did not have a significant impact on the items with the highest allowed charges in the hospital beds and accessories, enteral nutrition, surgical dressings, and urological supplies categories in either round of the demonstration. In San Antonio, the effect of the demonstration was not significant for 22 of 27 items, including the items with the highest allowed charges for each individual product category.

Although the general effect of the demonstration on utilization appears to be small or nonexistent, there is mixed evidence on the effect on oxygen equipment and services and somewhat stronger evidence that the demonstration may have changed utilization patterns for wheelchairs and accessories in San Antonio. We first discuss the mixed evidence on oxygen equipment and supplies, focusing on the use of liquid oxygen and the use of oxygen concentrators and portable gaseous oxygen systems.

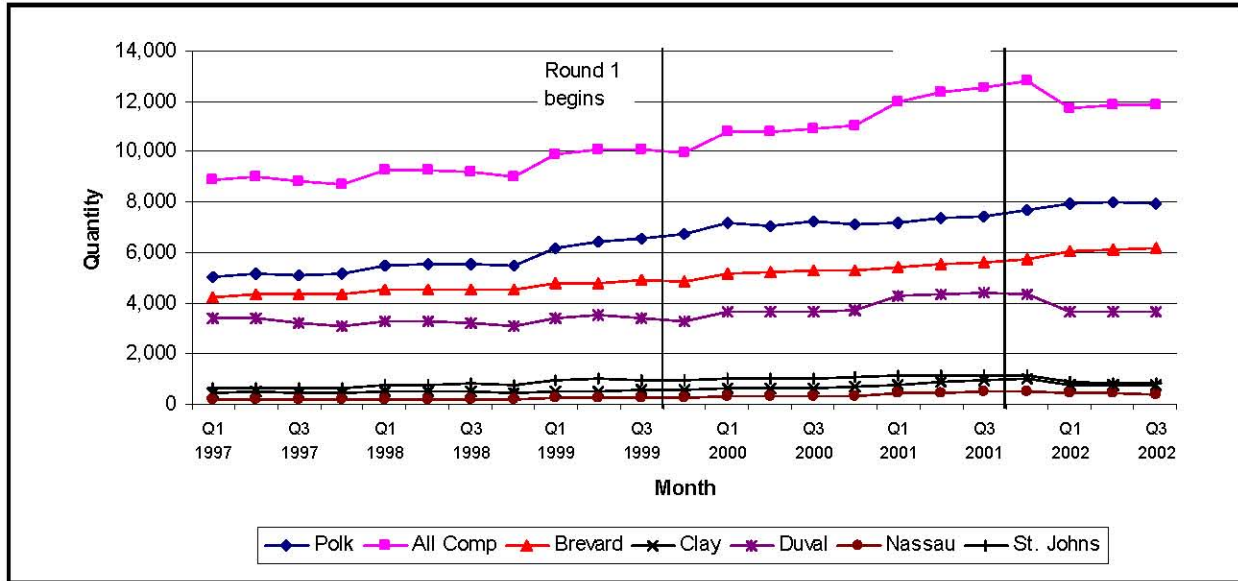
In Polk County, the demonstration was associated with a significant reduction in the use of portable liquid and stationary liquid oxygen systems in both rounds of the demonstration. Inspection of the utilization graphs shows that utilization of these items was falling even before the demonstration began. Moreover, utilization of the liquid oxygen items was higher in Polk County prior to the demonstration than it was in the comparison counties. Thus, the demonstration may have accelerated the reduction in liquid oxygen in Polk County. The demonstration did not have a significant effect on liquid oxygen use in San Antonio.

The demonstration's effect on the utilization of oxygen concentrators and portable gaseous oxygen systems is probably more important than the effect on liquid oxygen items, because the oxygen concentrators and portable gaseous oxygen systems account for most of the utilization and allowed charges in the product category. The demonstration was associated with a statistically significant increase in utilization of oxygen concentrators and portable gaseous oxygen systems in both rounds of the demonstration in Polk County, and the increases are especially large in Round 2. For several reasons, however, it is not clear that the demonstration actually caused utilization of these items to increase. First, the demonstration impact was not significant for these two items in San Antonio. Second, the estimated increases in Polk County utilization for Round 2 were much larger than the estimated increases for Round 1, even though the demonstration prices were similar in each round. Third, the graphs of actual utilization for Polk County show little evidence that utilization of the two items grew more rapidly during the demonstration than before the demonstration. Instead, the graphs appear to show continued growth at near predemonstration rates. The statistical result of significance appears to have been caused by a reduction in utilization in the comparison counties, especially in 2002. This pattern could have been caused by (1) a common factor that reduced utilization in both the comparison and the demonstration site and was offset by a true demonstration effect in the demonstration site or (2) a factor that affected only the comparison sites but happened to coincide with the demonstration. Our estimation approach cannot distinguish between these two causes. However, we believe the second cause is more likely, based on Figure 2-42, which shows the actual utilization of oxygen concentrators in Polk County and the comparison counties (graphs of portable gaseous oxygen utilization tell a similar story). Utilization fell in 2002 for four of the comparison counties, while utilization in Polk County and the comparison county with the highest utilization continued to rise at historic rates. It is not clear what caused utilization to fall in the four counties, which are all part of the Jacksonville MSA, but it appears entirely possible that this factor was not a general one that affected all counties. If our belief is correct, the Polk County Round 2 regression estimates for oxygen concentrators and portable gaseous oxygen overstate any actual utilization effects caused by the demonstration.

In San Antonio, we found that the demonstration was associated with significant declines in utilization for two types of standard wheelchairs and a significant increase in utilization of heavy duty wheelchairs. These results may suggest that a possible substitution from standard to heavy wheelchairs occurred during the demonstration. However, the demonstration price changes were similar for the two types of wheelchairs, and this would have limited the incentive for any substitution.

Utilization also significantly increased for the code covering rentals of anti-tipping devices (K0021RR), a wheelchair accessory. It is possible that wheelchair suppliers responded to the demonstration's lower wheelchair prices by increasing claims for this accessory. It was suggested by one referral agent during site visits that suppliers might begin billing separately for accessories that they would have included free of charge in the past. It is also possible that patients were more likely to demand the accessory, since the prices of the accessory and the wheelchairs themselves were lower during the demonstration. Such possible behavior should be kept in perspective: this accessory item accounted for about \$19,000 during the demonstration, while the five types of wheelchairs accounted for over \$2.6 million. Thus, increased utilization of accessories would be unlikely to fully offset the reduced revenue that resulted from reductions in wheelchair prices.

Figure 2-42
Utilization of oxygen concentrators, Polk County and comparison counties



2.5 Allowed Charges

Medicare allowed charges for most DMEPOS claims equal the product of the quantity times the fee for the item. In estimating the savings (or increases) in allowed charges associated with the demonstration, we faced the following challenge: we observed the allowed quantities and the corresponding fees under the demonstration, but we did not observe the quantities that would have occurred in the absence of the demonstration, nor did we observe the fee that would have been in effect in the absence of the demonstration, because we cannot assume that the state fee schedule amounts would be paid in all cases (in some cases, submitted fees may be lower than the fee schedule amount). Thus, to estimate what would have happened to allowed charges in the absence of the demonstration, we must make either implicit or explicit assumptions about the quantities and fees that would have occurred in the absence of the demonstration.

In the Second-Year Annual Evaluation Report, we presented estimates of the impact of the demonstration on allowed charges. Because utilization data were not yet available for the entire demonstration period, we estimated allowed charges under the assumption that utilization levels were constant at predemonstration levels. For each procedure, we multiplied quantity first by the demonstration fee and then by the fee schedule amount. We then took the difference between the two products to generate an estimate of the savings (or increase) in allowed charges associated with the demonstration.

This approach has one obvious and two more subtle shortcomings, which we can now address because we have actual claims data. Most obviously, utilization may have changed during the demonstration, either due to underlying factors such as growth that were unrelated to the demonstration or due to the demonstration itself. More subtly, this approach does not take

into account two reimbursement rules that were in effect during the demonstration. First, under the demonstration transition policies, beneficiaries with existing capped rental agreements with suppliers for hospital beds and enteral nutrition equipment were allowed to continue the relationships under the existing fee schedule. Ignoring this rule could overstate savings from the demonstration (assuming demonstration prices were below the fee schedule amount for capped rentals). Second, reimbursement under the demonstration rules equaled the lower of the submitted price and the demonstration fee, just as nondemonstration reimbursement equals the lower of the submitted price and the fee schedule amount. Such cases were likely to be uncommon because submitted charges usually are higher than the fee schedule that is in effect. Still, with actual data on submitted and allowed charges, we can identify cases where the submitted fee was less than the demonstration amount.

To address these shortcomings, for this report we estimated the demonstration's effects on allowed charges in the following way. We began with claims data showing utilization, submitted charges, and allowed charges for each claim in the demonstration site during the demonstration. From this information, we identified claims during the demonstration that were eligible for capped rental payments at predemonstration rates. If these claims had allowed charges higher than the demonstration fee, we assumed that they would have had the same allowed charges in the absence of the demonstration. We also identified claims with submitted charges that were lower than the demonstration fee schedule; we again assumed that these claims would have had the same allowed charges in the absence of the demonstration. For all other claims, we assumed that the payment in the absence of the demonstration would have equaled the fee schedule amount. We then summed allowed charges under the demonstration and estimated allowed charges in the absence of the demonstration, and calculated the difference.

This approach implicitly assumes that the demonstration had no impact on utilization; that is, any changes in utilization that occurred during the demonstration were caused by factors other than the demonstration itself. Given that the demonstration had no significant impact on utilization in any year for 15 of 24 high volume items in Polk County and 22 of 27 high volume items in San Antonio, and because we are skeptical that the demonstration caused the estimated percentage increases in oxygen equipment utilization in Polk County in Round 2, this appears to be a reasonable approach. In Appendix B, we provide an alternative estimate that assumes that the demonstration caused the estimated changes in utilization.

2.5.1 Polk County

Estimated reductions in allowed charges under the demonstration in Polk County are shown in Table 2-17. The estimated reductions in allowed charges across all 3 years of the demonstration are \$3,890,301 (17.8 percent) for oxygen equipment and supplies, \$485,855 (25.5 percent) for hospital beds and accessories, \$342,251 (16.6 percent) for enteral nutrition, and \$48,754 (14.4 percent) for urological supplies. However, for surgical dressings, allowed charges are estimated to increase by \$30,959 (10.3 percent). Overall, the demonstration is estimated to reduce allowed charges by \$4.7 million (17.9 percent).

Table 2-17
Demonstration savings: Polk County, based on actual utilization

	Allowed charges under demonstration	Allowed charges in absence of demonstration	Savings	Percentage savings
Oxygen equipment and supplies				
Round 1, Year 1	\$5,857,902	\$7,026,535	\$1,168,633	16.63%
Round 1, Year 2	\$5,950,618	\$7,146,796	\$1,196,178	16.74%
Round 2	\$6,183,704	\$7,709,194	\$1,525,490	19.79%
Total	\$17,992,224	\$21,882,525	\$3,890,301	17.78%
Hospital beds and accessories				
Round 1, Year 1	\$533,048	\$653,688	\$120,640	18.46%
Round 1, Year 2	\$448,046	\$618,121	\$170,075	27.51%
Round 2	\$441,504	\$636,645	\$195,140	30.65%
Total	\$1,422,598	\$1,908,453	\$485,855	25.46%
Urological supplies				
Round 1, Year 1	\$99,170	\$120,640	\$21,470	17.80%
Round 1, Year 2	\$70,644	\$85,343	\$14,699	17.22%
Round 2	\$120,802	\$133,388	\$12,585	9.44%
Total	\$290,616	\$339,370	\$48,754	14.37%
Surgical dressings				
Round 1, Year 1	\$161,142	\$143,871	-\$17,271	-12.00%
Round 1, Year 2	\$115,813	\$102,763	-\$13,050	-12.70%
Round 2	\$54,135	\$53,498	-\$637	-1.19%
Total	\$331,090	\$300,131	-\$30,959	-10.32%
Enteral nutrition				
Round 1, Year 1	\$935,163	\$1,117,611	\$182,448	16.32%
Round 1, Year 2	\$779,981	\$939,784	\$159,803	17.00%
Round 2 ¹	NA	NA	NA	NA
Total	\$1,715,143	\$2,057,394	\$342,251	16.64%
All product categories				
Round 1, Year 1	\$7,586,424	\$9,062,344	\$1,475,920	16.29%
Round 1, Year 2	\$7,365,101	\$8,892,806	\$1,527,705	17.18%
Round 2	\$6,800,146	\$8,532,724	\$1,732,578	20.31%
Total	\$21,751,671	\$26,487,874	\$4,736,203	17.88%

¹Enteral nutrition products were excluded from Round 2 of the demonstration.

SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Looking across years within product categories, percentage savings for oxygen equipment and supplies were about the same in Round 1, Year 1 and Round 1, Year 2. This result was expected because the same prices were in effect throughout Round 1. The percentage savings were larger in Round 2, when the demonstration prices were lower than in Round 1.

For hospital beds and accessories, the percentage savings were larger in Round 1, Year 2 than in Round 1, Year 1. This change was probably due to the grandfathering clause for capped rental payments; many beds may have been covered by preexisting capped rental agreements in Year 1 and therefore were not covered by the demonstration payment that was in effect for new rentals in both years of Round 1. Percentage savings were even higher in Round 2, due to lower demonstration prices.

For urological supplies, percentage savings were lower in Round 2 than in both years of Round 1. This is not surprising: Round 2 prices were generally higher than Round 1 prices in this product category.

Surgical dressings was the only product category with higher allowed charges under the demonstration. Allowed charges were 12 percent higher under the demonstration in Round 1, Year 1 and Round 1, Year 2, when most demonstration prices in this product category were higher than the fee schedule prices that would have been in effect in the absence of the demonstration. Most demonstration prices for surgical dressings fell in Round 2, so that allowed charges in the category were almost the same as they would have been in the absence of the demonstration.

For enteral nutrition, percentage savings were similar in Round 1, Year 1 and Round 1, Year 2; enteral nutrition was not included in the demonstration in Round 2.

2.5.2 San Antonio

Estimated reductions in allowed charges under the demonstration in San Antonio are shown in Table 2-18. The estimated reductions in allowed charges across the 23 months of the demonstration are \$2,096,707 (19.3 percent) for oxygen equipment and supplies, \$644,514 (19.1 percent) for hospital beds and accessories, \$796,617 (19.1 percent) for wheelchairs and accessories, \$89,462 (23.2 percent) for general orthotics, and \$1,020,072 (26.2 percent) for nebulizer drugs. Overall, the demonstration is estimated to reduce allowed charges by \$4.6 million (20.5 percent).

Looking across years within product categories, percentage savings for oxygen equipment and supplies, general orthotics, and nebulizer drugs were about the same in the 2 years of the demonstration. This result was expected because the same prices were in effect throughout the demonstration period. For hospital beds and accessories and wheelchairs and accessories, the percentage savings were larger in the second year of the demonstration than in the first year. This pattern was probably due to the grandfathering clause for capped rental payments; many beds and wheelchairs may have been covered by preexisting capped rental agreements in Year 1 and therefore were not covered by the demonstration payment that was in effect for new rentals.

Table 2-18
Demonstration savings: San Antonio demonstration, based on actual utilization

	Allowed charges under demonstration	Allowed charges in absence of demonstration	Savings	Percentage savings
Oxygen equipment and supplies				
Year 1 ¹	\$3,998,460	\$5,043,108	\$1,044,648	20.71%
Year 2	\$4,784,522	\$5,836,580	\$1,052,059	18.03%
Total	\$8,782,982	\$10,879,689	\$2,096,707	19.27%
Hospital beds and accessories				
Year 1 ¹	\$1,465,060	\$1,700,164	\$235,104	13.83%
Year 2	\$1,262,973	\$1,672,384	\$409,410	24.48%
Total	\$2,728,033	\$3,372,548	\$644,514	19.11%
Wheelchairs and accessories				
Year 1 ¹	\$1,708,257	\$2,006,698	\$298,441	14.87%
Year 2	\$1,662,992	\$2,161,169	\$498,176	23.05%
Total	\$3,371,249	\$4,167,866	\$796,617	19.11%
General orthotics				
Year 1 ¹	\$131,322	\$175,910	\$44,589	25.35%
Year 2	\$164,029	\$208,903	\$44,874	21.48%
Total	\$295,351	\$384,813	\$89,462	23.25%
Nebulizer drugs				
Year 1 ¹	\$1,332,030	\$1,810,416	\$478,386	26.42%
Year 2	\$1,543,614	\$2,085,300	\$541,686	25.98%
Total	\$2,875,645	\$3,895,716	\$1,020,072	26.18%
All product categories				
Year 1 ¹	\$8,635,128	\$10,736,296	\$2,101,168	19.57%
Year 2	\$9,418,131	\$11,964,336	\$2,546,205	21.28%
Total	\$18,053,259	\$22,700,632	\$4,647,373	20.47%

¹Year 1 covers the first 11 months of the demonstration.

SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

2.5.3 Overall Demonstration Savings

Table 2-19 summarizes savings from each site and year of the demonstration. We estimate that total savings from the demonstration were nearly \$9.4 million, under the assumption that the demonstration did not affect utilization. This represents a 19.1 percent savings.

Table 2-19
Overall demonstration savings, based on actual utilization

	Annual allowed charges under the demonstration	Estimated annual allowed charges in the absence of the demonstration	Estimated annual savings under the demonstration	Percentage savings
Polk County				
Round 1, year 1	\$7,586,424	\$9,062,344	\$1,475,920	16.29%
Round 1, year 2	\$7,365,101	\$8,892,806	\$1,527,705	17.18%
Round 2, year 1	\$6,800,146	\$8,532,724	\$1,732,578	20.31%
Polk County totals	\$21,751,671	\$26,487,874	\$4,736,203	17.88%
San Antonio				
Year 1	\$8,635,128	\$10,736,296	\$2,101,168	19.57%
Year 2	\$9,418,131	\$11,964,336	\$2,546,205	21.28%
San Antonio totals	\$18,053,259	\$22,700,632	\$4,647,373	20.47%
Demonstration totals	\$39,804,930	\$49,188,506	\$9,383,576	19.08%

SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

2.6 Medicare Expenditures

The cost of DMEPOS is shared by Medicare and beneficiaries. The beneficiaries' co-payment rate is 20 percent, and the remaining 80 percent of allowed charges is covered by Medicare. Thus, we estimate that the demonstration will reduce Medicare payments by \$7.5 million and beneficiary payments by \$1.9 million.

2.7 Summary

Competitive bidding led to lower prices for almost every item in every product category, with the exception of surgical dressings in Round 1 of the demonstration in Polk County (many of these prices rose due to a flaw in the demonstration product weights that was subsequently corrected). Price decreases were typically in the range of 10 to 30 percent. For items included in both Polk County and San Antonio, price reductions were similar across sites. In Polk County, where two rounds of bidding occurred, Round 2 prices were lower or about the same as Round 1

prices for oxygen equipment and supplies, hospital beds and accessories, and surgical dressings; Round 2 prices were higher than Round 1 prices for urological supplies.

For most demonstration items, the demonstration was not associated with statistically significant changes in utilization. Where the difference was statistically significant, it was associated with both increases and decreases in utilization. In Polk County, the demonstration was associated with a statistically significant increase in utilization for oxygen concentrators—the single largest demonstration item in terms of allowed charges—and the estimated increase was quite large. However, there was evidence that the large estimated effect was not caused by the demonstration, but rather by an unobserved factor that reduced Round 2 utilization in some of the comparison sites.

We estimated the effect of the demonstration on Medicare allowed charges under the assumption that the demonstration did not affect utilization. Under this assumption, the demonstration reduced allowed charges by \$4.7 million in Polk County and by \$4.6 million in San Antonio. The estimated \$9.2 million savings for both sites represented a 19.1 percent reduction in allowed charges. Medicare expenditures (defined as allowed charges minus 20 percent beneficiary co-payments) fell by about \$7.5 million, and beneficiary payments fell by about \$1.9 million.

SECTION 3 BENEFICIARY ACCESS

3.1 Introduction

We define beneficiary access as the ability of Medicare beneficiaries to locate and use, without undue burden, the services and products that are covered by Medicare. Competitive bidding reduced the number of approved suppliers in a given area, and suppliers could have responded to the new environment in a number of ways. Responses could range from strategies to increase market share to business practices designed to reduce costs because of lower reimbursement. For example, suppliers could attempt to increase market share by extending service and advertising, thereby filling in geographic gaps left by ineligible suppliers. Conversely, suppliers could respond by delaying routine maintenance or employing fewer service technicians and customer service representatives in an effort to reduce costs. This could increase the need for service calls and extend waiting times, thereby decreasing access. Because of the uncertainty of the outcomes, it was important to monitor the demonstration's impact on beneficiary access and evaluate whether competitive bidding affected beneficiaries' ability to obtain needed products and services.

Because competitive bidding inherently reduces the number of suppliers serving a given area, the demonstration design included a number of features intended to promote and maintain beneficiary access. First, multiple winners were selected in each product category to encourage competition among winning bidders. Second, supplier capacity was taken into account in the bid evaluation process in an effort to ensure that selected suppliers have enough capacity to serve the entire area. The Bid Evaluation Panel also examined the financial viability of firms in the competitive range to reduce the risk of bankruptcies that could cause access problems. Finally, transition policies allowed some nondemonstration suppliers to continue serving their existing patients during the demonstration under specific circumstances.

To evaluate beneficiary access, we collected data from beneficiaries, referral agents, suppliers, the on-site Ombudsmen, demonstration directories, and Medicare claims. In Section 3.2, we discuss the findings from the baseline and follow-up beneficiary surveys conducted in Polk and Brevard Counties in Florida and the San Antonio and Austin-San Marcos metropolitan areas in Texas. Brevard County serves as the comparison site to the Polk County demonstration, and Austin-San Marcos serves as the comparison site to the San Antonio demonstration. In Section 3.3, we discuss the service areas offered by demonstration suppliers in their bids. In Section 3.4, we detail our findings related to beneficiary access from site visits in Polk County and San Antonio, and in Section 3.5 we present findings from a survey of demonstration suppliers in San Antonio and its comparison site. In Section 3.6, we discuss the impact of the demonstration on portable oxygen use by analyzing data from the beneficiary surveys, Medicare claims analysis, and site visits. Section 3.7 concludes by summarizing results and discussing implications.

Key findings in this section are as follows:

- Beneficiary survey data showed few statistically significant demonstration impacts on access-related survey measures in Polk County and San Antonio. This suggests that the demonstration had little overall impact on beneficiary access in these sites.
- In Polk County, most demonstration suppliers chose to serve every zip code in Polk County. Similarly, in San Antonio, most suppliers chose to serve all three counties in the demonstration area.
- The transition to demonstration prices and suppliers passed relatively smoothly in Polk County and San Antonio. The smooth transitions appeared to be related to the existence of transition policies and the willingness of nondemonstration oxygen suppliers to continue serving their patients. As a result, there was relatively little disruption of existing relationships between suppliers and beneficiaries during the transition period.
- Our Polk County beneficiary survey analysis detected a statistically significant decline in the provision of portable oxygen equipment and an increase in conserving device usage among new users under the demonstration. We also detected a decline in maintenance visits among new users of medical equipment in the demonstration area. Other statistically significant impacts in Polk County included changes in the ways beneficiaries order and receive their equipment, as well as declines in some types of training for urologicals and surgical dressings users.
- In contrast, beneficiary surveys in Texas indicate that the demonstration did not have a significant impact on portable oxygen and conserving device use in San Antonio, nor was there a decline in maintenance visits for new users of medical equipment.
- To further evaluate the impact of the demonstration on portable oxygen use in Polk County, we analyzed claims data. This analysis indicates that the demonstration had a negative and statistically significant impact on the percentage of new oxygen users who received portable oxygen, especially during Round 2 of the demonstration. However, the negative impact was smaller in magnitude than the impact suggested by the beneficiary survey.
- Referral agents who ordered equipment and supplies for their patients reported a few problems with access during the first months of the demonstration. Agents later became more familiar with demonstration rules and demonstration-eligible suppliers and began using suppliers with whom they were comfortable. In general, referral agents did not think that the demonstration had a negative impact on beneficiaries' access to care, but the agents believed this was due to the additional responsibilities they assumed to ensure access and quality.

3.2 Beneficiary Survey Results

In this section, we discuss the access-related findings from the baseline and follow-up beneficiary surveys in Polk and Brevard Counties, Florida, and the baseline and follow-up beneficiary surveys in the San Antonio and Austin-San Marcos, Texas, MSAs. We use these beneficiary surveys as our primary tool for collecting quantitative data on beneficiaries' experiences regarding access to and quality of their DMEPOS service and suppliers. In the following sections, we briefly describe the survey and analysis methodology before detailing our findings on access (quality findings are presented in Section 4).

3.2.1 Survey Methodology

We fielded two surveys, the Oxygen Consumer Survey and the Medical Equipment Consumer Survey, before and after the demonstration's implementation in each demonstration site. These surveys were developed by project staff along with several consultants with experience and expertise in DMEPOS. Some of the measures of access in the surveys include the distance from beneficiaries' homes to their suppliers, whether a supplier delivers equipment directly to a beneficiary's home, how long it takes to receive equipment after ordering, and whether beneficiaries have been able to get the equipment and oxygen they need without spending significant amounts of time and energy. The surveys also collected information on issues related to quality and product selection, which we discuss in Section 4.

In Florida, we conducted surveys in the demonstration site (Polk County) and a comparison site (Brevard County). Baseline surveys were fielded from March to June 1999, 3 months before demonstration policies took effect. Follow-up surveys were fielded from January to April 2001, allowing for more than a year of beneficiary experience under the demonstration. In Texas, we also conducted surveys in the demonstration site (San Antonio) and a comparison site (Austin-San Marcos). Baseline surveys were fielded from November 2000 to February 2001 (the last 3 months before the demonstration and overlapping the first month under the demonstration), and follow-up surveys were fielded from March to July 2002. In San Antonio, this allowed for more than a year of beneficiary experience under the demonstration.

The nature of this survey design allows us to compare the demonstration site to the comparison site and baseline responses to follow-up responses for both demonstrations. We also conduct multivariate regression analyses, comparing the incremental change in outcomes from baseline to follow-up in the demonstration site with the change in outcomes in the comparison site.

Survey samples were identified using data from the demonstration contractor (Palmetto GBA) and the Medicare Enrollment Database (EDB). Palmetto GBA provided claims data used to identify beneficiaries in the demonstration and comparison sites with at least \$20 in allowed charges in the demonstration project categories in the 6 months prior to each sampling period. This list was merged with demographic and contact information from the Medicare EDB, and individuals known to be deceased were eliminated from the sampling frame before sample selection. Initial plans called for random samples of 800 oxygen users (for the Oxygen Consumer Survey) and 800 other equipment users (for the Medical Equipment Consumer Survey) in each demonstration and comparison sites. However, there were fewer than 800 other

equipment users in Polk and Brevard Counties, so all other equipment users were included in the samples for these sites. For oxygen users, a random sample of 800 beneficiaries from each site was drawn for the baseline surveys. In the follow-up surveys, we attempted to resample respondents to the baseline survey who were still receiving oxygen. New oxygen users were sampled at random.

Sample sizes and response rates for each survey are presented in Tables 3-1a and 3-1b. As shown, response rates were higher for the Oxygen Consumer Survey than for the Medical Equipment Consumer Survey. The higher response rates for oxygen may be because beneficiaries spend more money and receive more service for oxygen equipment than for other product categories; thus, they were more interested in the Oxygen Survey. As described in the next section, proxy respondents were common on the Medical Equipment Consumer Survey, possibly suggesting that medical equipment users are more disabled than oxygen users. Our analysis of respondents and nonrespondents indicated that beneficiaries older than 85 were less likely to respond to the surveys than younger beneficiaries in both Florida and Texas. In addition, in Florida only, males were more likely to respond to the surveys than females and beneficiaries with high allowed charges for covered items (based on claims) were less likely to respond to the Medical Equipment Consumer Survey.

3.2.2 Analysis Methodology

We first examine the survey data graphically, plotting the mean value for selected access variables for the demonstration site at baseline, the demonstration site at follow-up, the comparison site at baseline, and the comparison site at follow-up. By visually comparing these data, we can qualitatively evaluate a number of questions:

- Does the variable change between baseline and follow-up in the demonstration site? How large, relative to the baseline value, is this change?
- Does the variable change between baseline and follow-up in the comparison site? How large, relative to the baseline value, is this change?
- Are there differences between the baseline value for the demonstration site and the baseline value for the comparison site?
- Do these differences persist during the follow-up period?
- Is the change between baseline and follow-up in the demonstration site larger than the change between baseline and follow-up in the comparison site?

To answer the last question, we examine a variable, *Impact*, that equals the difference between follow-up and baseline in the demonstration site minus the difference between follow-up and baseline in the comparison site. This variable can be interpreted as the impact of the demonstration on the access variable. If the variable changes more between baseline and follow-up in the demonstration site than it changes in the comparison site, *Impact* will take a positive or negative value. On the other hand, if the variable changes by the same amount in both the demonstration and the comparison site, the measured *Impact* will be zero; we interpret this result as indicating that the demonstration did not affect the variable.

Table 3-1a
Selected characteristics of beneficiary survey samples, Polk and Brevard Counties

	Oxygen consumer survey				Medical equipment consumer survey			
	Polk County		Brevard County		Polk County		Brevard County	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Sample size	800	800	800	800	723	759	572	601
Completed survey	599	604	611	615	365	413	378	367
Deceased/ineligible	59	70	63	72	76	81	45	63
Response rate ¹	80.8%	82.7%	82.9%	84.5%	56.4%	60.9%	71.7%	68.2%
Recontacts ²	—	40.7%	—	40.5%	—	16.5%	—	23.4%

¹Response rate excludes deceased and ineligible individuals from denominator.

²Percentage of follow-up respondents (those who completed a survey) who were also respondents at baseline.

SOURCE: Oxygen Consumer Survey and Medical Equipment Consumer Survey.

Table 3-1b
Selected characteristics of beneficiary survey samples, San Antonio and Austin-San Marcos

	Oxygen consumer survey				Medical equipment consumer survey			
	San Antonio		Austin-San Marcos		San Antonio		Austin-San Marcos	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Sample size	800	800	800	800	800	800	800	800
Completed survey	491	571	521	543	395	437	394	464
Deceased/ineligible	61	42	50	38	33	30	45	23
Response rate ¹	66.4%	75.3%	69.5%	71.3%	51.5%	56.8%	52.2%	59.7%
Recontacts ²	—	64.3%	—	66.9%	—	47.4%	—	49.1%

¹Response rate excludes deceased and ineligible individuals from denominator.

²Percentage of follow-up respondents (those who completed a survey) who were also respondents at baseline.

SOURCE: Oxygen Consumer Survey and Medical Equipment Consumer Survey.

The formula for the *Impact* calculation highlights the advantage of collecting comparison site data for the evaluation. If we only had baseline and follow-up data from the demonstration site, we would not be able to distinguish between changes caused by the demonstration and changes caused by other factors that affect both the demonstration and other similar but nondemonstration sites. For example, if we observe that use of oxygen concentrators increases by 10 percent between the baseline and follow-up surveys in Polk County, we would not be able to tell whether this increase is due to the demonstration or due to another factor that would have caused concentrator use to rise even in the absence of the demonstration. By including the data from the comparison site, we can interpret the change observed at the comparison site as the change that would have occurred at the demonstration site in the absence of the demonstration. After subtracting this change from the actual change in the demonstration site, we can interpret the remaining change as the demonstration’s impact.

Although the graphical analysis provides an intuitive way to evaluate the survey data, it cannot tell us whether the demonstration’s impact is—from a statistical standpoint—significantly different than zero. To address this issue, we perform a series of multivariate regressions to detect whether the demonstration has a statistically significant impact on the access measures included in the two surveys.

For Polk County, we use the following regression model (a similar analysis is performed separately for San Antonio):

$$(\text{Access Variable})_{ijt} = \alpha + \beta_1 * \text{Polk}_j + \beta_2 * \text{Follow-Up}_t + \beta_3 * \text{Impact}_{ijt} + \beta_4 * \text{Patient}_{it} + \epsilon_{ijt}$$

The dependent, or left-hand-side, variables in our regression model are responses to the surveys’ access-related questions. The independent, or right-hand-side, variables are the explanatory variables that determine the access variable. The index i represents the patient, the index j represents the location (Polk County vs. Brevard County), and the index t represents time (baseline vs. follow-up). *Polk* is a dichotomous variable set equal to one for Polk County beneficiaries and zero for Brevard County beneficiaries to represent time-invariant differences between Polk and Brevard Counties. *Follow-Up* is a dichotomous variable set equal to one in the follow-up period and zero at baseline. The variable controls for overall time trends that affect both the demonstration and comparison site in the follow-up survey. *Impact* equals one if the observation is from the demonstration site (Polk County) during the demonstration (i.e., during the follow-up survey) and zero otherwise (*Impact* equals *Polk* multiplied by *Follow-Up*). *Patient* represents a vector of patient characteristics, including health status, level of education, whether patient is a new user, proxy respondent, and other variables concerning living situation. Inclusion of these variables allows us to better control for personal characteristics that affect the access measures. *Patient* also includes variables representing the DMEPOS product categories used by the patient to allow for additional service-specific effects.

The interpretation of the coefficients in the regression model is as follows. β_1 captures systematic differences between the demonstration and comparison sites that affect access in both the baseline and follow-up periods. β_2 captures the effects of factors that generate changes in responses from baseline to follow-up in both the demonstration and comparison sites. β_3 then isolates the change in outcomes over time in the demonstration site (Polk County) minus the

change in outcomes over time in the comparison site (Brevard County). This is the regression equivalent of the graphical impact variable. Finally, β_4 captures the effect of personal characteristics.

We used three regression techniques with the above model, depending on the nature of the access variable. For variables that are continuous (such as equipment delivery times and distance from the beneficiary's home to their supplier), we used ordinary least squares (OLS) regression. For dependent variables defined as a binomial choice (such as whether a maintenance visit occurred in the last 30 days or whether a beneficiary uses portable oxygen), we used a logit regression technique. For variables that are ordinal in nature, we used an ordered logit regression technique. These ordinal variables are generated by survey questions such as "How would you rate the reliability of the equipment you use?" where response choices are "Very reliable," "Somewhat reliable," "Somewhat unreliable," and "Very unreliable." We used a t-test to determine if the coefficient of the *Impact* variable on each access-related outcome was statistically significant at the 5 percent level. Where the *Impact* variable is statistically significant, we say that the presence of the demonstration had an observable effect on the measure of beneficiary access.

In these cases, we report the marginal effect of the demonstration on the dependent variable (the marginal effect means the change in the dependent variable caused by the demonstration). When the dependent variable is continuous, β_3 in the OLS regression can be directly interpreted as the demonstration's marginal effect. Logit and ordered logit regressions are not linear functions of the explanatory variables, so β_3 cannot be directly interpreted as a marginal effect in these regressions. We calculated the marginal effects using Stata software, with the demonstration site (*Polk* or *San Antonio*) equal to one, *Follow-up* equal to one, and the mean values of the other independent variables. See Appendix C for a detailed description of the marginal effects calculation.

For dependent variables estimated using logit regressions, Stata calculates the marginal effect of the demonstration as the discrete change in the dependent variable as the *Impact* variable moves from 0 to 1. Since the dependent variables in our logit regressions are all 0/1 variables, the marginal effect can be interpreted straightforwardly as a change in the proportion of respondents with a positive (1) response for the dependent variable.

For ordered logit regressions, Stata requires a specification of the outcome for which a marginal effect is to be calculated. For each dependent variable, we specified the most positive response outcome (e.g., "very reliable," "always") because the majority of responses on each of these variables fall in these categories. With this specification, Stata calculates the marginal effect of the demonstration as the increase in the probability of this most positive response outcome. Interpretation of these effects is therefore similar to that used with logit regressions.

Means of the patient characteristics used in our regression model are presented in Tables 3-2a and 3-2b. Patient characteristics are fairly similar between each demonstration site and its comparison site, and there are relatively few differences between the baseline and follow-up surveys in each site. Moreover, use of the regression model allows us to control for any differences in patient characteristics between the demonstration and comparison sites as well as any differences in patient characteristics between the baseline and follow-up surveys. We

Table 3-2a
Means of patient characteristics used in regression model, Polk County demonstration

	Ordinal range	Oxygen consumer survey				Medical equipment consumer survey			
		Demonstration site		Comparison site		Demonstration site		Comparison site	
		Baseline N=599	Follow-up N=604	Baseline N=611	Follow-up N=615	Baseline N=365	Follow-up N=413	Baseline N=378	Follow-up N=367
White, Non-Hispanic	0,1	0.91	0.91	0.94	0.93	0.86	0.83	0.86	0.88
Income ¹	1-5	2.80	2.80	3.23	3.19	2.94	2.91	2.89	3.07
Education ²	0-2	0.64	0.56	0.92	0.95	0.80	0.75	0.82	0.84
Good health status ³	0,1	0.18	0.22	0.20	0.26	0.34	0.37	0.20	0.31
Lives alone	0,1	0.28	0.29	0.29	0.28	0.14	0.17	0.15	0.18
New user	0,1	0.18	0.11	0.24	0.15	0.24	0.17	0.18	0.15
Moved in past year	0,1	0.07	0.06	0.05	0.09	0.03	0.11	0.08	0.05
Medicaid recipient	0,1	0.26	0.27	0.18	0.18	0.30	0.28	0.23	0.23
Proxy respondent	0,1	0.23	0.24	0.24	0.25	0.51	0.45	0.52	0.57

¹Values for the Income variable: 1 = less than \$5,000/year, 2 = \$5,001 to \$10,000/year, 3 = \$10,001 to \$20,000/year, 4 = \$20,001 to \$30,000/year, 5 = over \$30,000/year.

²Values for the Education variable: 0 = did not graduate high school, 1 = high school graduate but no college degree, 2 = college graduate or beyond.

³Respondent's health status was classified as "good" if respondent indicated that their health status was "good," "very good," or "excellent." Other options for response were "fair" and "poor."

SOURCE: Oxygen Consumer Survey and Medical Equipment Consumer Survey.

Table 3-2b
Means of patient characteristics used in regression model, San Antonio demonstration

	Ordinal range	Oxygen consumer survey				Medical equipment consumer survey			
		Demonstration site		Comparison site		Demonstration site		Comparison site	
		Baseline N=491	Follow-up N=571	Baseline N=521	Follow-up N=543	Baseline N=395	Follow-up N=437	Baseline N=394	Follow-up N=464
White, Non-Hispanic	0,1	0.73	0.74	0.83	0.81	0.60	0.59	0.70	0.70
Income ¹		717.09	855.61	856.15	942.70	676.18	634.55	707.51	792.50
Education ²	0,1	0.62	0.65	0.70	0.76	0.49	0.48	0.58	0.64
Good health status ³	0,1	0.29	0.33	0.26	0.30	0.29	0.31	0.32	0.36
Lives alone	0,1	0.29	0.35	0.28	0.32	0.26	0.31	0.26	0.29
New user	0,1	0.17	0.14	0.18	0.18	0.28	0.35	0.28	0.41
Moved in past year	0,1	0.07	0.06	0.08	0.08	0.11	0.12	0.09	0.15
Medicaid recipient	0,1	0.17	0.22	0.13	0.16	0.44	0.43	0.35	0.32
Proxy respondent	0,1	0.38	0.33	0.33	0.27	0.52	0.56	0.48	0.49

¹Values for Income are determined by respondents' indications of a range in which their annual earnings fall. We use the midpoints of 5 ranges, translated into monthly earnings.

²Education is equal to one for high school graduates and zero otherwise.

³Respondent's health status was classified as "good" if respondent indicated that their health status was "good," "very good," or "excellent." Other options for response were "fair" and "poor."

SOURCE: Oxygen Consumer Survey and Medical Equipment Consumer Survey.

derived our race variable from joint use of survey responses and the Medicare EDB. We used the survey response in most cases to identify race and ethnicity. However, in cases where respondents were inconsistent in their response between baseline and follow-up rounds of the survey, we used the EDB race indicator for that sample member. We also used the EDB if the respondent did not answer the survey questions on race and ethnicity. Table 3-2a shows that only about 25 percent of oxygen users in Polk County required a proxy respondent to the survey, whereas about half of the other medical equipment users had a proxy fill out the survey. Including a variable for proxy respondent in the regression analysis allowed us to control for the possibility that proxy respondents provide different answers than users.

We performed separate analyses for oxygen users and for users of other medical equipment and supplies. We also performed separate regression analyses on the subset of survey responses provided by new users. We defined new users as those who reported having used their DMEPOS for less than a year at the time they complete the survey. Under this definition, a respondent cannot be a new user in both the baseline and follow-up rounds of the survey.

The new user analysis is important because new beneficiaries in the demonstration sites at follow-up are required to use demonstration suppliers. In Polk County, beneficiaries who used home oxygen, hospital beds, and enteral nutrition equipment before the demonstration took effect could maintain supply arrangements with their previous suppliers under specific circumstances through the demonstration's transition policies. These policies did not apply to beneficiaries who began using DMEPOS during the demonstration or to previous users of urological supplies, surgical dressings, and enteral nutrition food items. Because of these policies, the subset of new users is more likely to show the effects of any changes in service that may be caused by the demonstration than the entire set of DMEPOS users. This is particularly true for the oxygen, hospital bed, and enteral nutrition equipment categories, and less true of surgical dressings and urological supplies. In San Antonio, beneficiaries who used home oxygen, hospital beds, wheelchairs, and nebulizer drugs before the demonstration took effect could maintain supply arrangements in specific circumstances under the demonstration transition policies. These policies did not apply to beneficiaries who began using DMEPOS during the demonstration or to previous users of noncustomized orthotic devices.

3.2.3 Findings

Many of the generalized access measures have means that indicate high levels of access to care both before and after implementation of the demonstration. In addition, beneficiaries report high levels of satisfaction with DMEPOS services in the demonstration sites both before and during the demonstration. The satisfaction variable provides a summary measure of perceived access and quality (satisfaction is discussed in detail in Section 4). In the sections below, we describe the differences in baseline and follow-up outcomes for the access measures. When interpreting these often small movements, it is important to recognize the high degree of satisfaction among DMEPOS users.

Below, we describe the variables that had the greatest amount of proportional change from baseline to follow-up and consider the corresponding changes in the comparison site. Graphical figures throughout this section present unadjusted results at baseline and follow-up for Polk and Brevard Counties and for San Antonio and Austin-San Marcos. The figures also

present the unadjusted *Impact* variable. We display unadjusted results here because there is little difference between the regression-adjusted and unadjusted results. We also identify the measures where the demonstration's impact was statistically significant when adjusting for the patient characteristics described above, either among all survey respondents or among only the subset of new users.

To compare and contrast findings between the two demonstration sites for each access variable, we present first the results for Polk County demonstration and then the results for the San Antonio demonstration. To highlight which site is being discussed, the site names are marked in bold font.

Oxygen consumer survey—Most of our analyses showed no statistically significant demonstration impacts on the survey's access measures. In Table 3-3, we present the access variables by category, noting those for which the demonstration's impact was statistically significant. In **Polk County**, the demonstration impact variable was significant for only 4 of the 43 measures for all oxygen users and for only 3 of the 43 measures for new users. In **San Antonio**, the demonstration impact variable was significant for none of the 43 measures for all oxygen users and for only 1 of the 43 measures for new users. Below, we describe the major findings for individual access measures in the Oxygen Consumer Survey.

Access to equipment and supplies. *Stationary oxygen.* Among those who use stationary oxygen in **Polk County**, the unadjusted percentage of respondents using oxygen concentrators increased slightly from 90.7 to 93.8 percent, with a similar change in the comparison site. Compressed oxygen gas tanks became more prevalent at follow-up as the percentage of oxygen users who reported using such systems increased from 6.3 percent to 10.1 percent. The demonstration had a statistically significant impact on the number of beneficiaries using compressed oxygen gas tanks. The marginal impact of the demonstration is a 4.4 percentage point increase in the percentage of stationary system users who use a compressed oxygen gas tank. Stationary compressed oxygen tank gas systems are commonly provided to oxygen users as backup systems to oxygen concentrators, but they are seldom used as the primary stationary system. Our results do not show that compressed oxygen gas systems are replacing oxygen concentrators. On the surveys, beneficiaries could indicate that they use more than one type of stationary system. The percentage indicating that they use only a compressed oxygen gas tank system remained at about 1 percent from baseline to follow-up, whereas the percentage who reported using both an oxygen concentrator and a compressed oxygen gas tank rose from 5.6 percent to 9.6 percent in Polk County. There were no statistically significant changes in the prevalence of oxygen concentrators or liquid stationary systems.

In **San Antonio**, the percentage of respondents who reported using compressed oxygen tanks decreased slightly from 11.9 to 10.9 percent. The percentage using oxygen concentrators also declined slightly from 92.4 to 91.3 percent, with a similar change in the comparison site. The demonstration had no statistically significant impact on the prevalence of any type of stationary oxygen system.

**Table 3-3
Demonstration impact on access variables—oxygen users**

Category	Variable	Significant impact in Polk County?		Significant impact in San Antonio?	
		All users	New users	All users	New users
Access to equipment and supplies	Stationary system use	No	No	No	No
	Type of stationary system				
	Oxygen concentrator	No	No	No	No
	Liquid oxygen cylinder	No	No	No	No
	Compressed oxygen tank	Increase	No	No	No
	Portable system use	No	Decrease	No	No
	Type of portable system				
	Oxygen tank	No	No	No	No
	Liquid cylinder	No	No	No	No
	Oxygen conserving device use	No	Increase	No	No
Delivery	Initial equipment delivery time	No	No	No	No
	Orderer of equipment				
	Beneficiary	No	No	No	No
	Caregiver	No	No	No	No
	Home health agency (HHA)	Increase	No	No	No
	Doctor	No	No	No	No
	Method of equipment receipt				
	Delivered to home by supplier	No	No	No	No
	Mailed to home by supplier	No	No	No	No
	Pick up from supplier	No	No	No	No
	Delivered by home health (HHA)	Increase	No	No	No
	Distance to supplier	No	No	No	No
	Time and energy used obtaining DMEPOS	No	No	No	No
	Frequency of receiving portable refills	No	No	No	Increase
	Number of portable refills ordered each time	No	No	No	No
	Ran out of stationary oxygen supplies, last 6 months	No	No	No	No
Ran out of portable oxygen supplies, last 6 months	No	No	No	No	
Use of multiple suppliers	No	No	No	No	

(continued)

**Table 3-3
(continued)**

Category	Variable	Significant impact in Polk County?		Significant impact in San Antonio?	
		All users	New users	All users	New users
Access to training	Types of training given by supplier				
	Written instructions	No	No	No	No
	Show how to use	No	No	No	No
	Choose a good place	No	No	No	No
	Show how to put together	No	No	No	No
	Show how to take care of	No	No	No	No
	Show how to use safely	No	No	No	No
	Show how to replace parts	No	No	No	No
	Tell how to get service	No	No	No	No
Tell how to get service after-hours	No	Increase	No	No	
	Did not receive any training	No	No	No	No
Access to maintenance and service	Major change in therapy requiring new equipment, last 6 months	Increase	No	No	No
	Frequency of maintenance visits	No	No	No	No
	Maintenance visit in last 30 days	No	No	No	No
	Time since last respiratory checkup	No	No	No	No
	Frequency of visits from supplier's respiratory therapist	No	No	No	No
Access to customer service	Receipt of supplier assistance with insurance	No	No	No	No
	Number of face-to-face contacts with supplier, last 6 months	No	No	No	No
	Ability to contact supplier by telephone	No	No	No	N.A.
	Supplier service call response time	No	No	No	No

N.A.: Not analyzable due to lack of variation in dependent variable.

SOURCE: Oxygen Consumer Survey.

Portable oxygen. In **Polk County**, the percentage of beneficiaries using portable oxygen systems declined from baseline to follow-up, dropping from 79.7 percent use to 73.8 percent (Figure 3-1a). The comparison county (Brevard) experienced a small gain in the percentage using portable systems, which may indicate a slight upward or stable trend in the absence of the demonstration. The demonstration effect was not significant among all users. Among new oxygen users, the demonstration's negative impact was statistically significant. Based on the regression results, the presence of the demonstration decreased the proportion of new Polk County users that used portable oxygen by 23.5 percentage points. The unadjusted data for new oxygen users indicate that the prevalence of portable systems fell from 75.9 percent to 54.1 percent in Polk County, while rising from 57.5 percent to 62.3 percent in the comparison site.

In **San Antonio**, the percentage of beneficiaries using portable oxygen increased from 76.2 percent at baseline to 78.3 percent at follow-up. This measure dropped from 74.2 to 71.0 percent in the comparison site (Figure 3-1b). Among new oxygen users, the percentage using portable systems increased from 63.2 to 72.6 percent in San Antonio and from 63.2 to 65.5 percent in Austin. The demonstration shows no statistically significant effect on portable oxygen usage in San Antonio, either among all users or among the subset of new users.

We discuss portable oxygen use in greater detail in Section 3.6, where we synthesize the information from the beneficiary surveys with evidence from other sources.

Oxygen conserving devices. Figure 3-2a shows utilization of oxygen conserving devices among all users in **Polk County** and its comparison site. Each site experienced an increase in the percentage of users with an oxygen conserving device, with the total percentage approaching 60 percent. Although not significant among all users, the demonstration had a statistically significant impact on new oxygen users' utilization of oxygen conserving systems. Our analysis indicates that the presence of the demonstration increased the percentage of new oxygen users with conserving devices by 44.2 percentage points. Unadjusted data show that this percentage rose from 45.5 percent to 73.7 percent in Polk County from baseline to follow-up, while falling from 62.7 to 55.9 percent in Brevard County.

Both **San Antonio** and its comparison site experienced an increase in the percentage of beneficiaries using oxygen conserving devices with their portable oxygen systems. Unadjusted data show that this percentage rose from 48.2 to 50.9 percent in San Antonio from baseline to follow-up, and it increased from 46.2 to 53.4 percent in Austin-San Marcos (Figure 3-2b). However, our analysis indicates that the demonstration impact was not statistically significant.

Oxygen conserving systems allow oxygen to flow only when the beneficiary is breathing in, thus conserving the oxygen normally lost when the oxygen flows continuously, whether the beneficiary is breathing in or exhaling. These devices extend the amount of time that a tank of oxygen can be used, thereby decreasing the number of refill tanks required and/or increasing the amount of time between deliveries. This decreases costs for suppliers without affecting the beneficiary's access to oxygen therapy.

Figure 3-1a
Portable oxygen system use, all oxygen users, Polk County demonstration

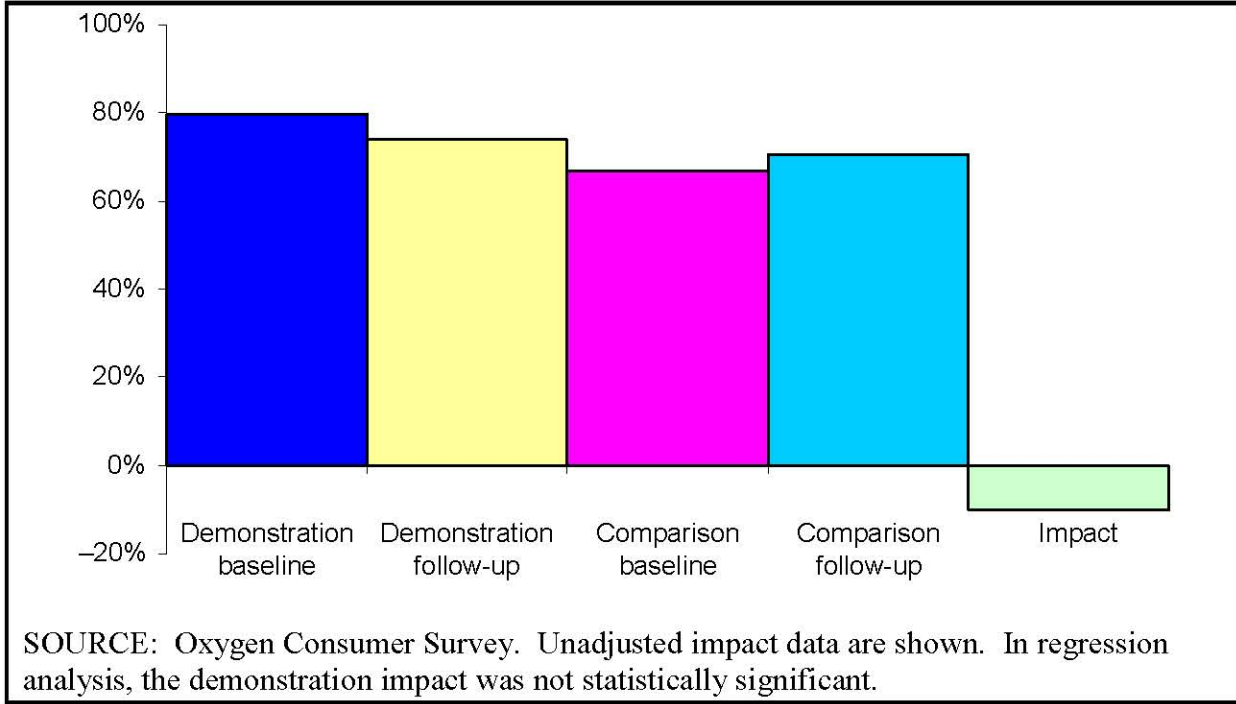


Figure 3-1b
Portable oxygen system use, all oxygen users, San Antonio demonstration

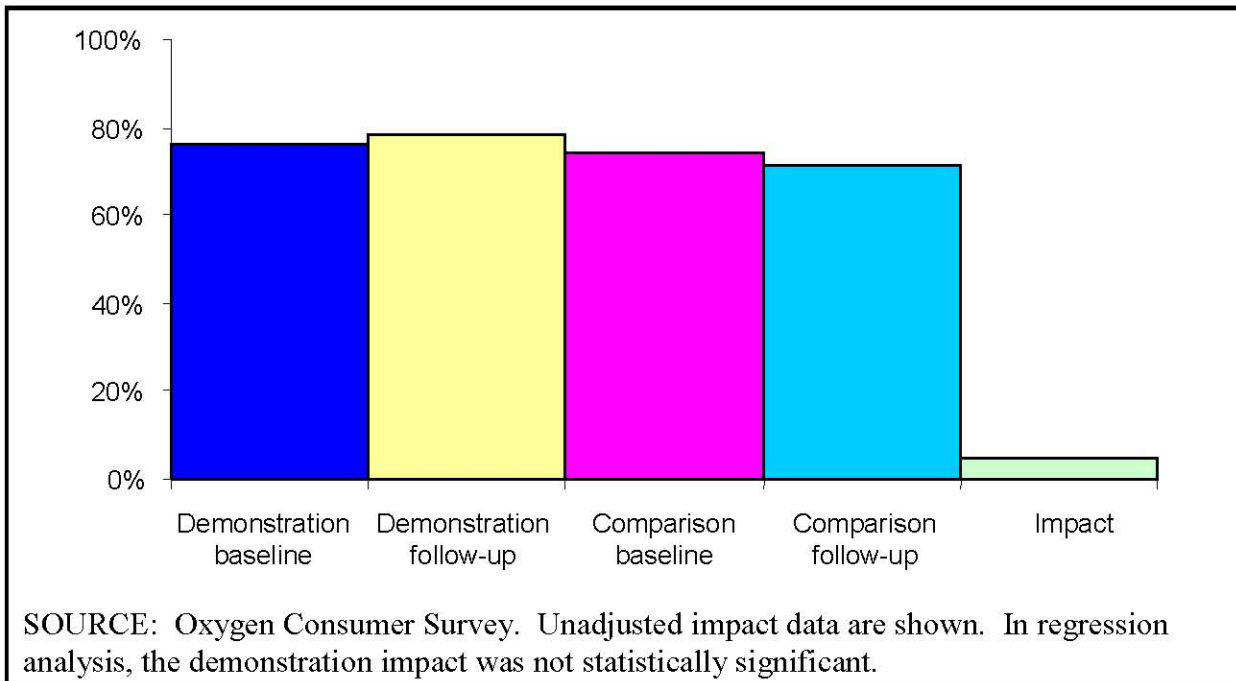


Figure 3-2a
Oxygen conserving system use, all oxygen users, Polk County demonstration

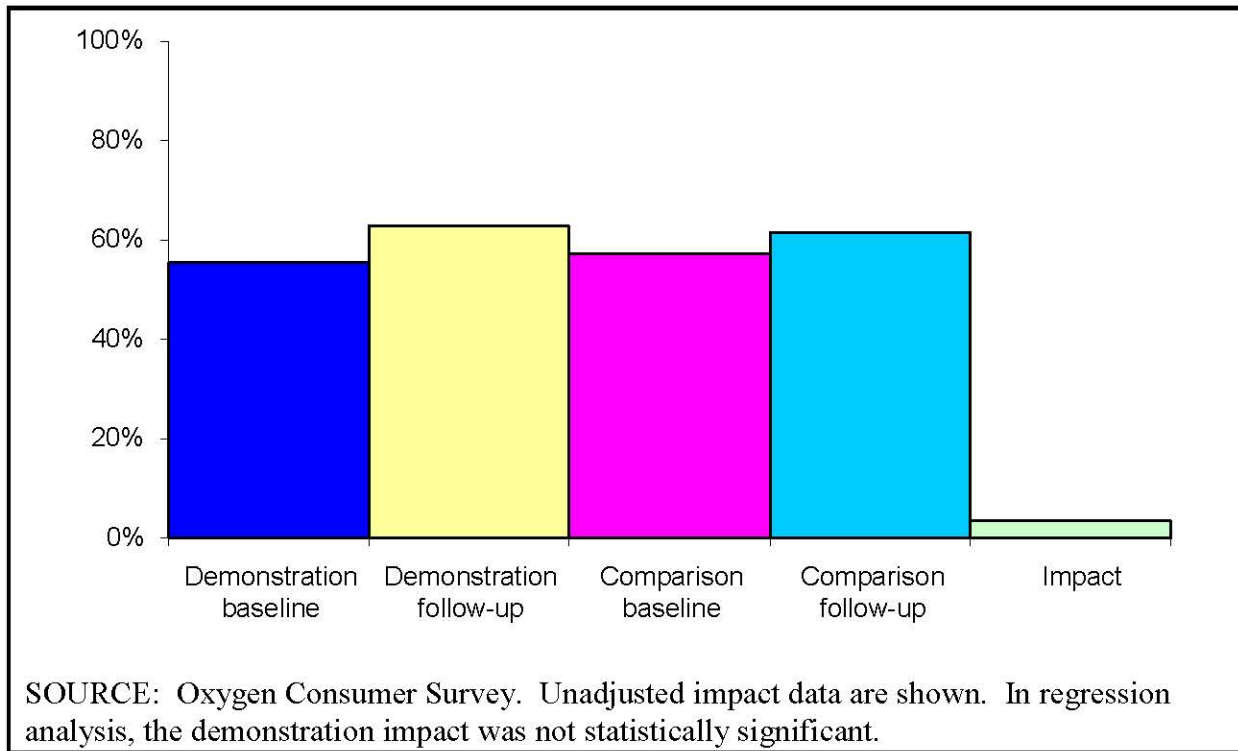
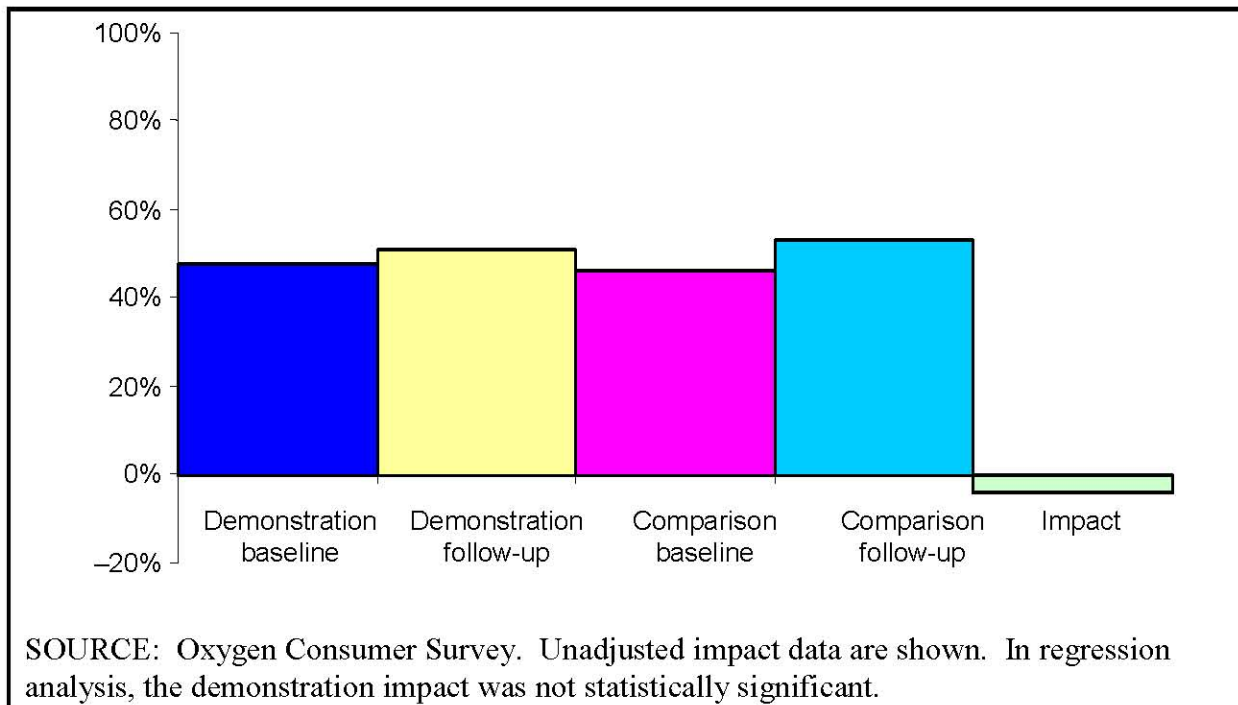


Figure 3-2b
Oxygen conserving system use, all oxygen users, San Antonio demonstration



Delivery. Method. Beneficiaries are most likely to receive their equipment via home delivery by their oxygen supplier. Approximately 95 percent of **Polk County** beneficiaries received their equipment in this manner at both baseline and follow-up; Brevard County was closer to 91 percent. A relatively small number received their equipment via delivery from a home health agency or via direct mail from a supplier or they picked up their equipment themselves from the supplier. However, two statistically significant demonstration impacts were detected indicating that a larger number of beneficiaries were using home health agencies to order and deliver their oxygen equipment. The marginal effects of the demonstration were an increase of 2.2 points in the percentage of Polk County oxygen users ordering their equipment via home health, and an increase of 4.5 points in the percentage receiving their equipment via home health delivery. These increases in home health ordering and delivery may be attributable to paid caregivers (such as home health agencies) ensuring demonstration compliance by taking responsibility for ordering and delivering their patients' equipment. The shift toward home health appears to be accompanied by declines in doctors' ordering equipment for beneficiaries and in suppliers' mailing supplies to beneficiaries' homes, although these declines were not statistically significant.

In **San Antonio**, there was no statistically significant demonstration impact either on ordering oxygen equipment via home health or on delivery via home health agencies. As in Polk County, more than 90 percent of beneficiaries in San Antonio and its comparison county had their equipment delivered directly to their homes.

Delivery time. A high percentage of beneficiaries (close to 75 percent in each site and period) reported receiving their oxygen equipment and supplies on the same day they initially ordered them (Figure 3-3a). Most other deliveries occur within 1 to 2 days. In **Polk County**, the percentage receiving their oxygen equipment on the same day as their initial order increased from 75.0 percent to 79.3 percent over the course of the demonstration, while the comparison site experienced little change. The demonstration's impact was not statistically significant.

Results for **San Antonio** were similar. Most oxygen users (over 70 percent in San Antonio in each period) received their equipment on the same day they placed their order (Figure 3-3b). The demonstration's impact was not statistically significant.

Portable oxygen refills. In **Polk County**, survey responses show wide variation in the frequency with which beneficiaries receive refills for their portable oxygen systems; most seem to get refills once every 1 to 3 months (Figure 3-4a). Respondents from the demonstration and comparison sites generally responded similarly from baseline to follow-up on this measure. The number of refills beneficiaries receive at a time also remained stable from baseline to follow-up in Polk County. Statistically, the demonstration had no significant impact on supplier deliveries with respect to timing or quantity of refills.

As in Polk County, there was wide variation in the frequency with which **San Antonio** beneficiaries got refills from their oxygen supplier for their portable oxygen system (Figure 3-4b). For all users, the demonstration did not have a statistically significant impact on the frequency of refills. For new users, the regression analysis shows that the demonstration had a statistically significant and positive impact on the frequency of refills (Table 3-3). The positive impact means that new users received portable oxygen refills more frequently under the demonstration, with the average frequency increasing from about once a month to about once every 2 weeks.

Figure 3-3a
Length of time to get supplies at initial order, all oxygen users, Polk County demonstration

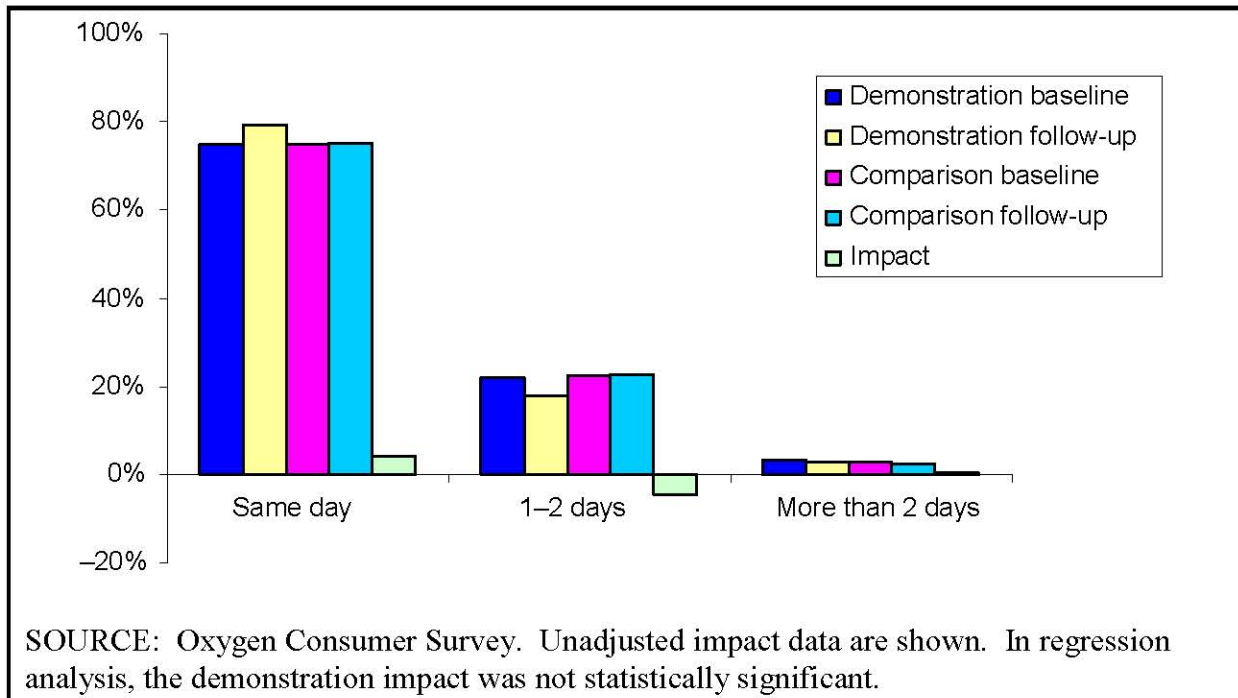


Figure 3-3b
Length of time to get supplies at initial order, all oxygen users, San Antonio demonstration

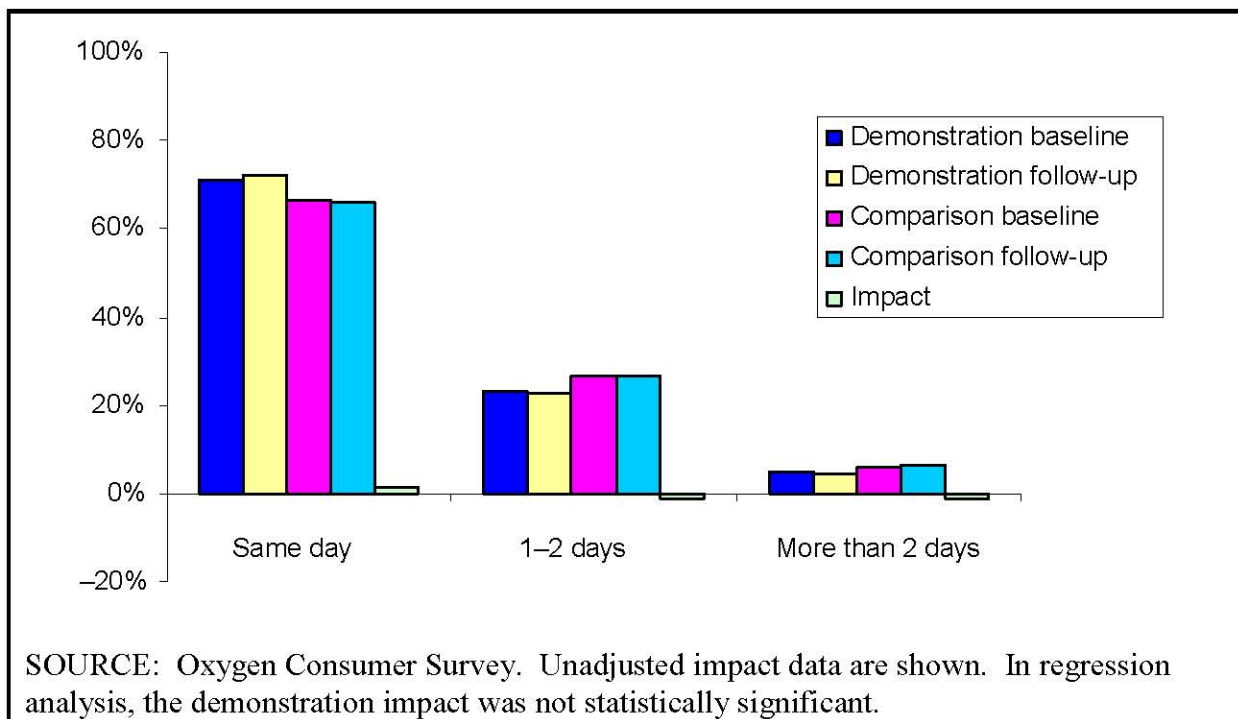


Figure 3-4a
Frequency of getting refills for portable oxygen system, all oxygen users, Polk County demonstration

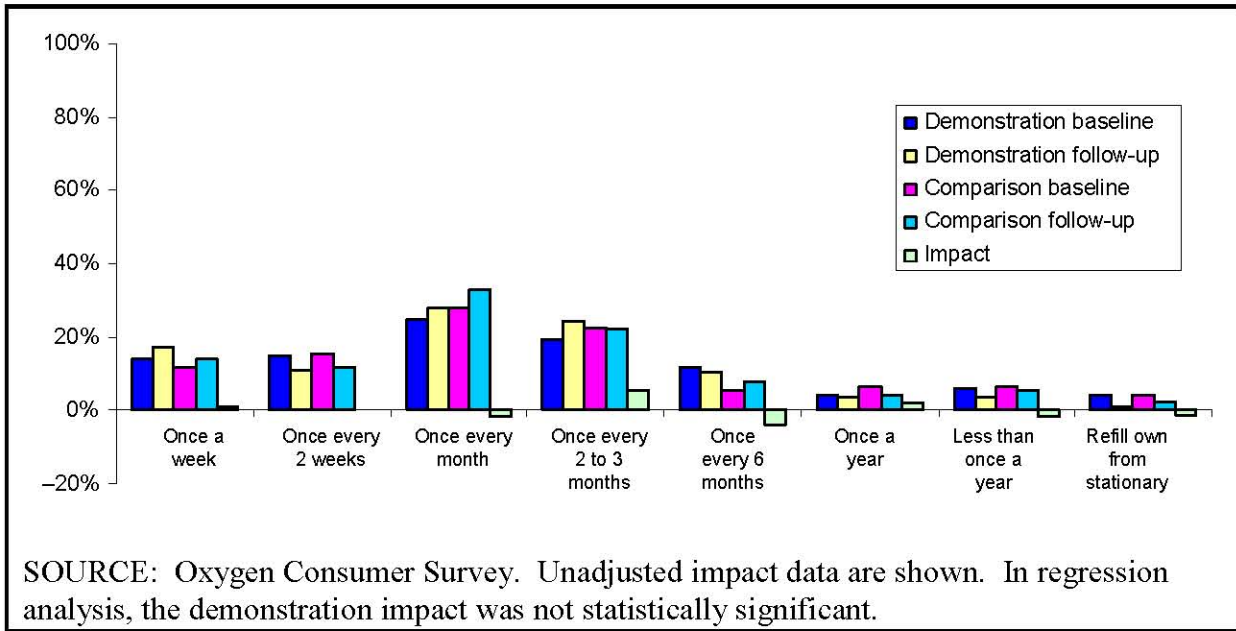
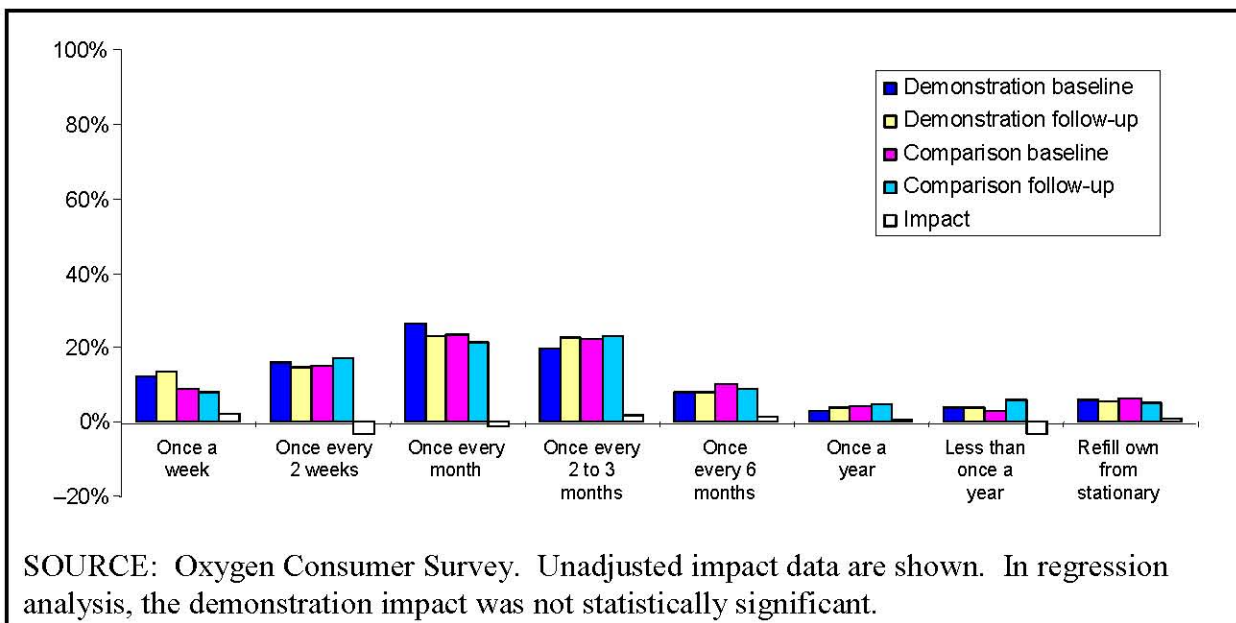


Figure 3-4b
Frequency of getting refills for portable oxygen system, all oxygen users, San Antonio demonstration



Access to training. In **Polk County**, the types of training received by beneficiaries upon initial receipt of their equipment did not change substantially during the demonstration (Figure 3-5a). At least 55 percent of respondents reported receiving each type of training listed on the questionnaire. The highest percentages were for training in how to use the equipment, how to replace parts of the equipment, and how to get service for the equipment. Proportions were lowest for beneficiaries reporting that the supplier provided written instructions and chose a good place for the equipment. Polk County proportions decreased for seven types of training from baseline to follow-up. The demonstration's impact on training was statistically significant only among new users for one type of training. The percentage of new users in Polk County at follow-up who reported receiving training on how to get after-hours service was 22.9 points higher than it would have been in the absence of the demonstration. It should be noted, though, that the statistical significance of this impact is due in part to the large decrease in provision of training on after-hours service in Brevard County. Figure 3-5a shows this decrease in Brevard County among all users. Unadjusted data indicate that the percentage of new oxygen users receiving this instruction increased from 74.7 to 84.6 percent in Polk County but decreased from 81.0 to 73.1 percent in Brevard County.

In **San Antonio**, the demonstration did not have a significant effect on any type of training. The unadjusted data (Figure 3-5b) show small negative impacts on most types of training in San Antonio, but none of these changes were significant.

Access to maintenance and service. *Maintenance visits.* In **Polk County**, most beneficiaries reported that their suppliers performed regular maintenance visits every 1 to 3 months to check their oxygen equipment (Figure 3-6a). The proportions associated with some intervals did shift moderately, but no consistent pattern of changes in the interval between maintenance visits is apparent. For example, the percentage reporting that their supplier performed a maintenance visit every month fell from 44.4 percent to 39.3 percent from baseline to follow-up in Polk County. However, Brevard County experienced an even larger decline of 7 percentage points in this interval. The demonstration had no statistically significant impact on the frequency of maintenance visits.

In **San Antonio**, close to 60 percent of beneficiaries reported that their suppliers performed regular maintenance visits every 1 to 3 months (Figure 3-6b). Minor changes between the baseline and follow-up values can be observed but these changes appear to be similar in both the demonstration and comparison counties. For example, the percentage reporting that their suppliers performed maintenance visits every month fell from 30.3 percent to 28.3 from baseline to follow-up in San Antonio, while this portion fell from 29.2 to 27.1 percent in the comparison site. The demonstration did not have a significant effect on this variable.

Figure 3-5a
Type of training received from supplier initially, all oxygen users, Polk County demonstration

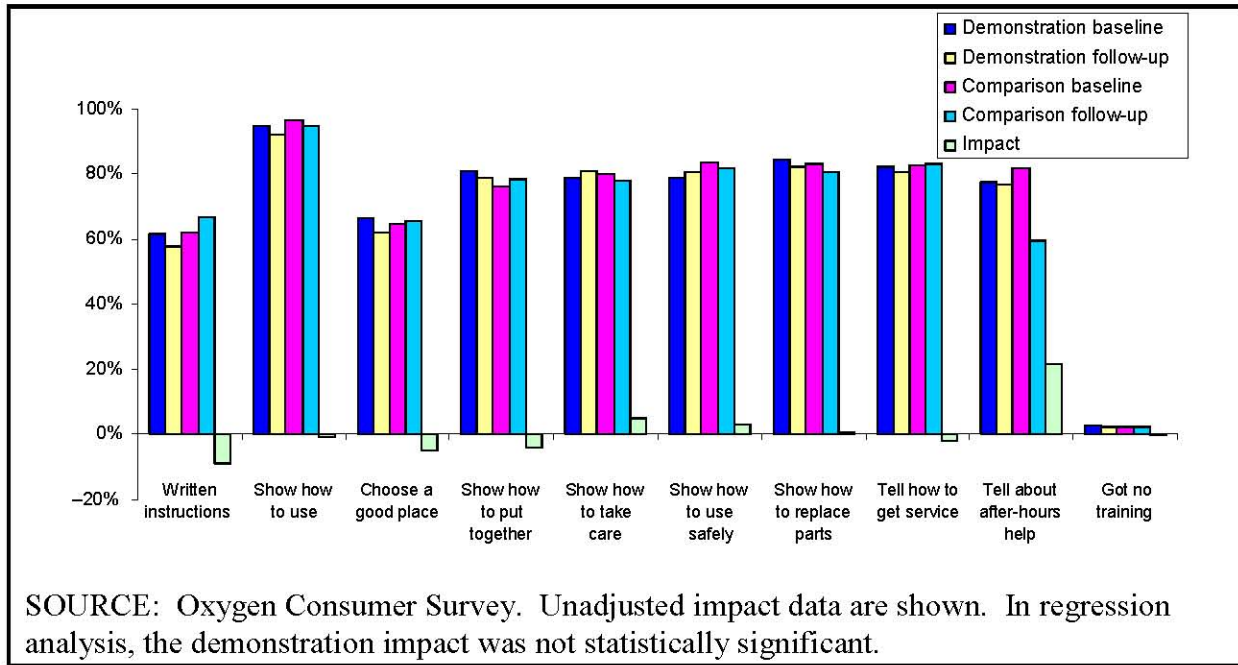


Figure 3-5b
Type of training received from supplier initially, all oxygen users, San Antonio demonstration

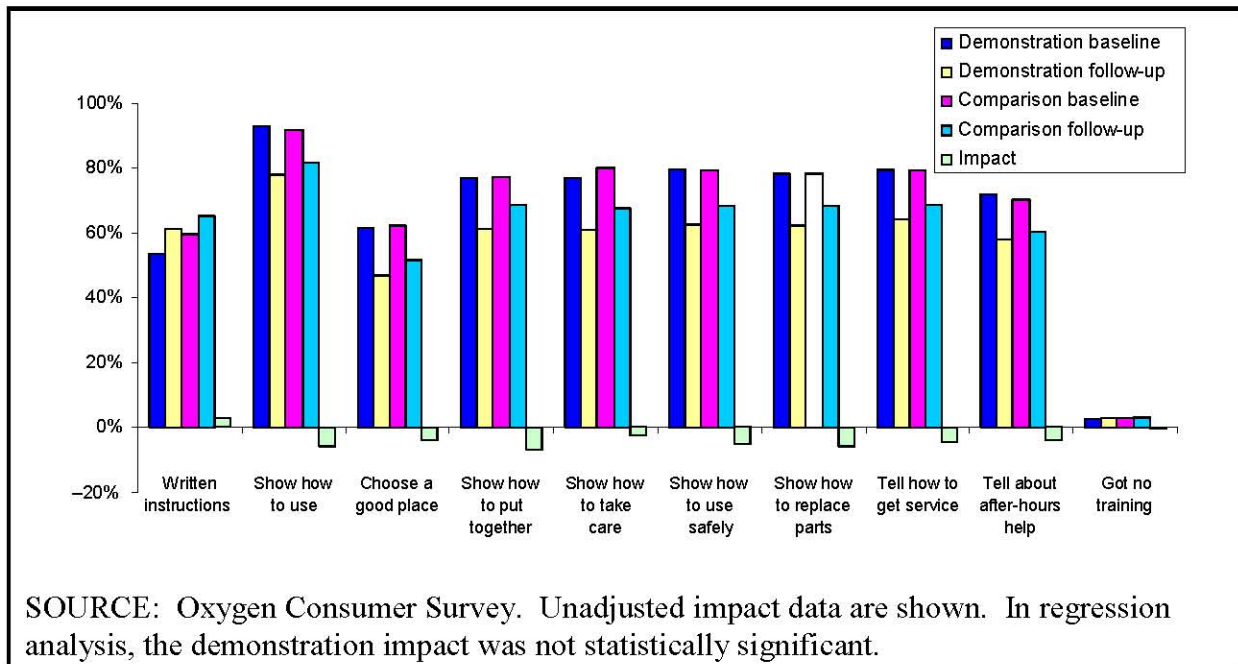


Figure 3-6a
Frequency of maintenance visits by supplier, last 6 months, all oxygen users, Polk County demonstration

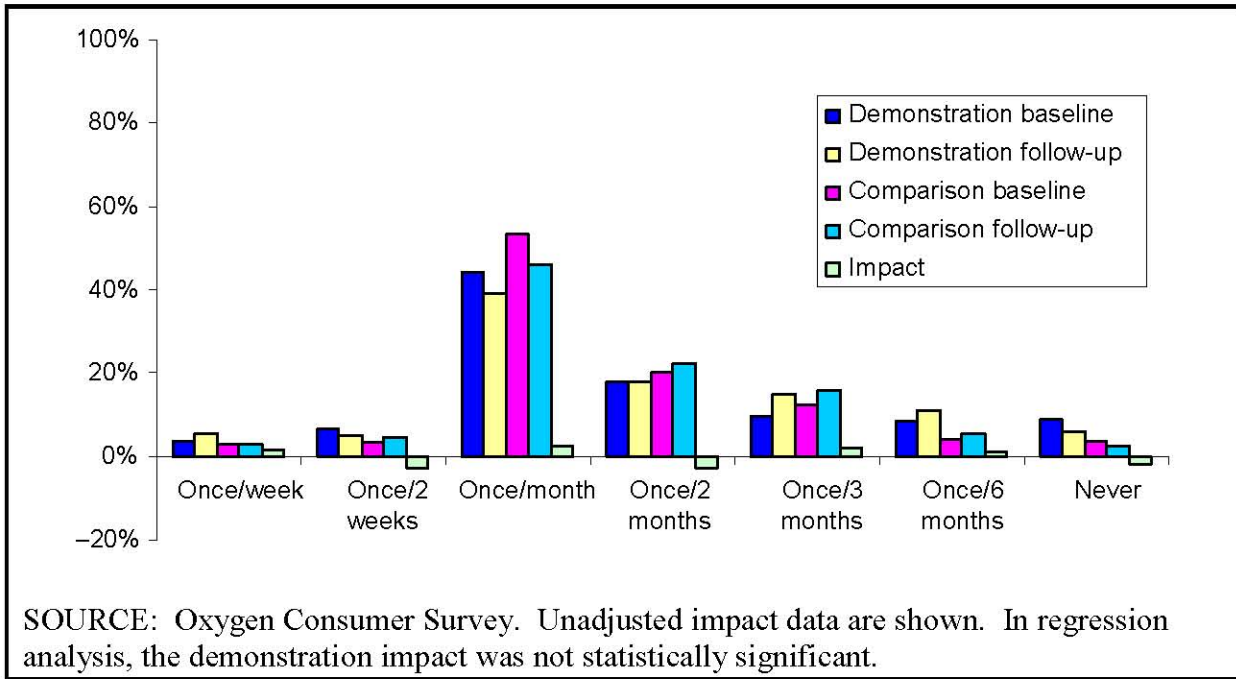
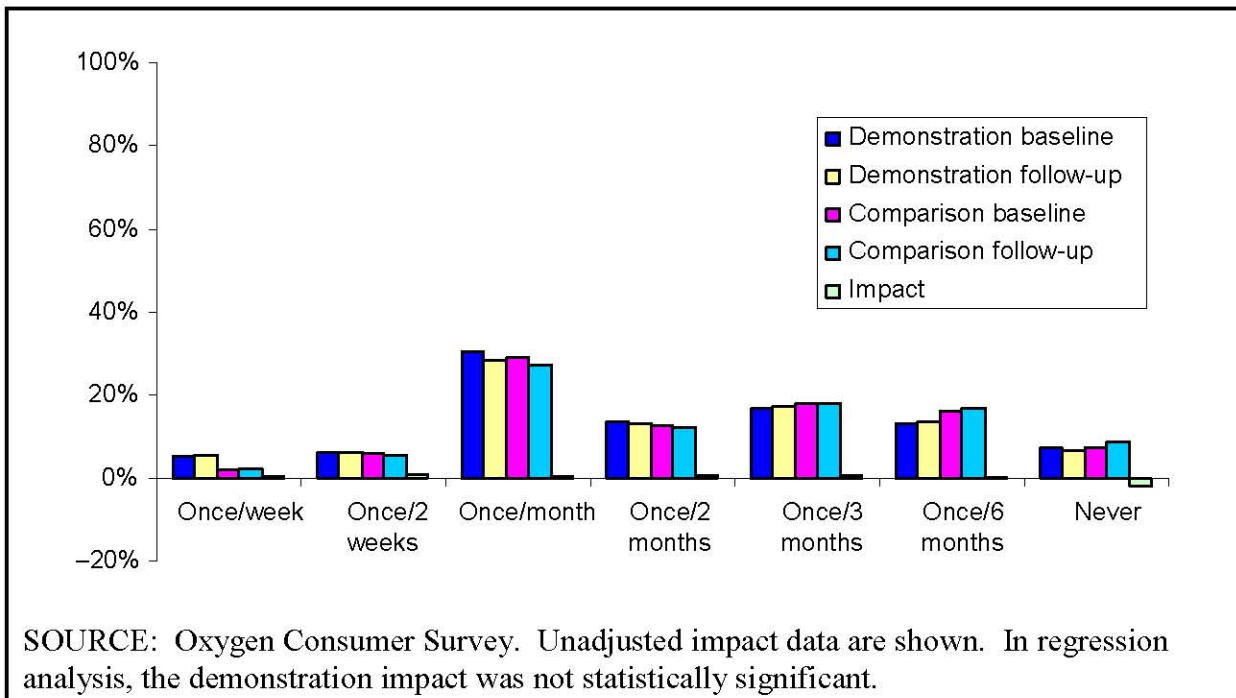


Figure 3-6b
Frequency of maintenance visits by supplier, last 6 months, all oxygen users, San Antonio demonstration



Changes in therapy requiring new equipment. In **Polk County**, the demonstration had a statistically significant effect on the percentage of oxygen users reporting that they had a major change in therapy requiring new equipment in the past 6 months. Marginal effect analysis indicates that the percentage reporting such a change in Polk County at follow-up is 3.6 percentage points higher than it would have been in the absence of the demonstration. This measure was originally included in the survey for possible use as an explanatory variable. We found that the variable had little explanatory power in this role. The observed demonstration impact on the variable is somewhat surprising and therefore worth reporting. This effect is relatively small and it is not clear how the demonstration could affect therapy.

In **San Antonio**, the demonstration did not have a significant effect on the percentage of oxygen users who reported that they had a major change in therapy requiring new equipment.

Respiratory check-ups. The beneficiary's last respiratory checkup (physician office visit) is included as an access-related analysis variable because of the relationship between supplier visits to the beneficiary and the frequency of physician office visits (Figures 3-7a and 3-7b). Because staff of oxygen suppliers are often in the home more frequently than beneficiaries routinely go to the physician, supplier staff potentially play an important role in early identification of changes in condition. Therefore, they often urge earlier contact with the physician than the beneficiary would otherwise make. If the demonstration results in a decreased frequency of visits by delivery staff and/or a decrease in clinical evaluations by clinical staff, there may be a delay in beneficiaries' seeking medical attention for clinical changes. This could result in an increase in physician visits and possibly hospitalizations. In **Polk County**, 64.7 percent of respondents at baseline reported that their last visit to a doctor for a breathing check was between 1 week ago and 3 months ago. At follow-up, beneficiaries were slightly less likely to report a doctor visit in the last week and more likely to have their last visit more than 6 months ago (Figure 3-7a). These changes were approximately 4 to 5 percent, as compared to little change in the comparison site. However, none of these differences were statistically significant.

The demonstration also appeared to have little effect on doctor visits for respiratory checkups in **San Antonio** (Figure 3-7b). The demonstration impact was not statistically significant.

Figure 3-7a
Most recent doctor visit (respiratory checkup), all oxygen users, Polk County demonstration

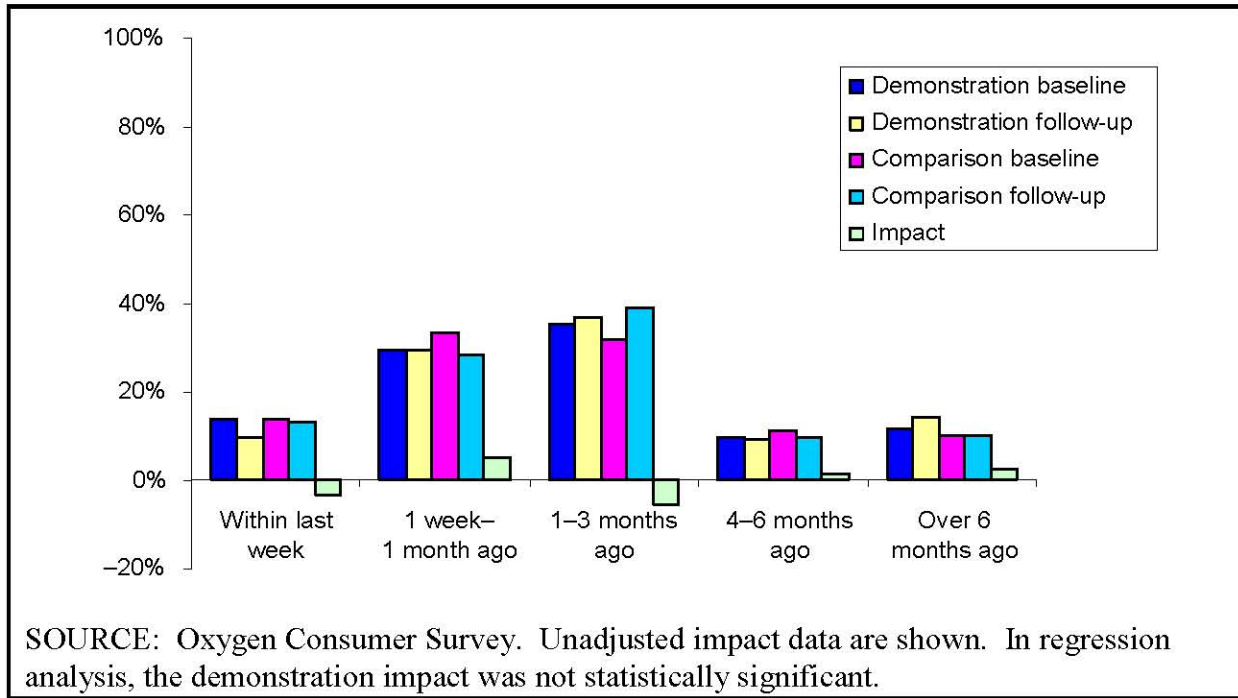
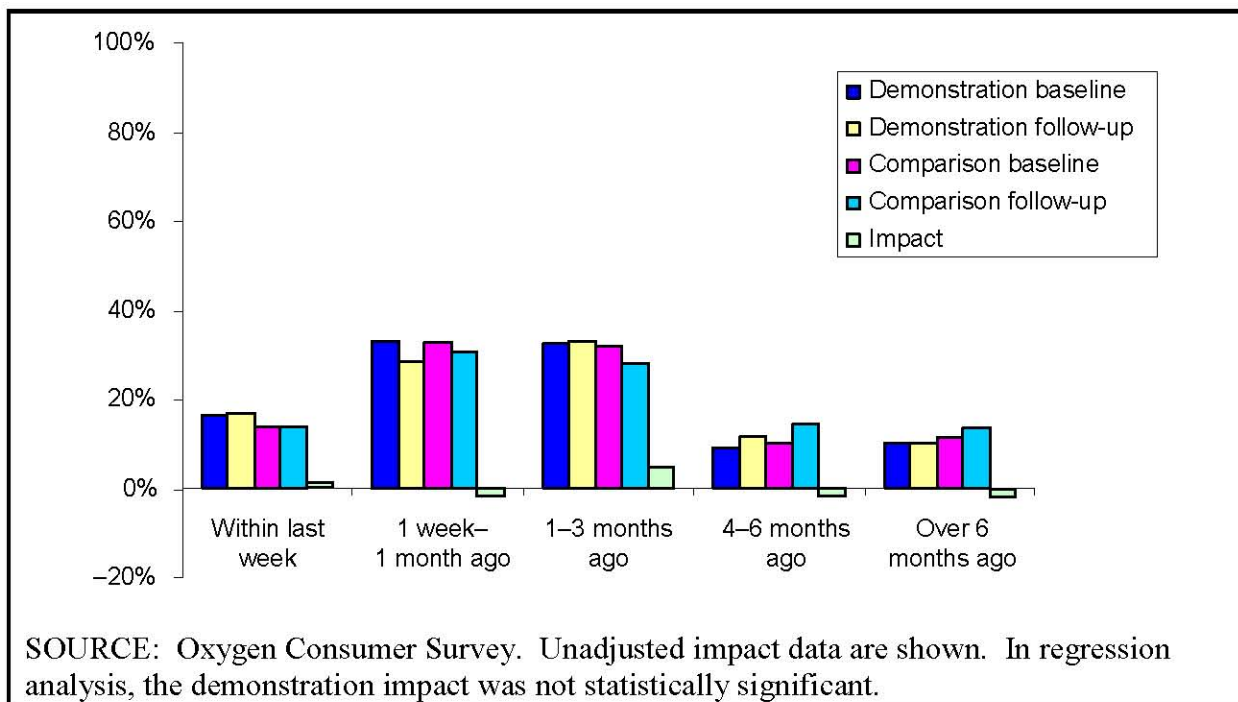


Figure 3-7b
Most recent doctor visit (respiratory checkup), all oxygen users, San Antonio demonstration



Visits from a supplier's breathing specialist. At baseline and follow-up in both **Polk County** and its comparison site, over 55 percent of respondents said that they did not have a visit from a supplier's breathing specialist (or respiratory therapist) in the past 6 months (Figure 3-8a). The demonstration's impact on this measure was not statistically significant. The frequency of breathing specialist visits is an important evaluation issue, as several suppliers we interviewed on Polk County site visits claimed that they generally make such visits every 3 to 6 months. Furthermore, some suppliers worried that the frequency of specialist visits could fall under the demonstration. Our survey data indicate that breathing specialist visits were fairly infrequent before the demonstration began and have not become more or less frequent since then. However, our results may underreport the true frequency of these visits if beneficiaries do not recognize visiting supplier personnel as breathing specialists (i.e., the beneficiary thinks the staff member is making a routine maintenance visit).

We found similar results in **San Antonio** (Figure 3-8b). Visits by suppliers' breathing specialists were relatively infrequent both before and after the demonstration began, and many users reported that they had never received such a visit. The demonstration's impact on visits by breathing specialists was not statistically significant.

Access to customer service. A set of survey questions probed beneficiaries regarding the services they receive from their oxygen suppliers. Respondents were queried on issues such as how quickly their supplier responds to service requests and whether they are able to get in touch with their supplier both during the workday and after hours. Proportions remained similar from baseline to follow-up for questions measuring service response times and suppliers' availability for assistance. In both **Polk County** and **San Antonio**, the demonstration's impact was not statistically significant for any of these measures.

Medical Equipment Consumer Survey—The Medical Equipment Consumer Survey revealed few changes concerning access-related issues. In Table 3-4, we present the access variables by category, noting those for which the demonstration's impact is statistically significant. In **Polk County**, we detected only one significant demonstration impact when analyzing all users together; we detected five statistically significant demonstration impacts when subsetting responses into individual product categories. There were two significant demonstration impacts on access variables when analyzing responses from all product categories together among new users only. In **San Antonio**, there were two significant demonstration impacts when analyzing all users together; we detected six statistically significant demonstration impacts when subsetting responses into individual product categories. There were six significant demonstration impacts on access variables when analyzing responses from all product categories together among new users only and one significant demonstration impact when subsetting responses into individual product categories. Below, we present the major variables of interest.

Figure 3-8a
Frequency of home checkups by supplier's breathing specialist, last 6 months, all oxygen users, Polk County demonstration

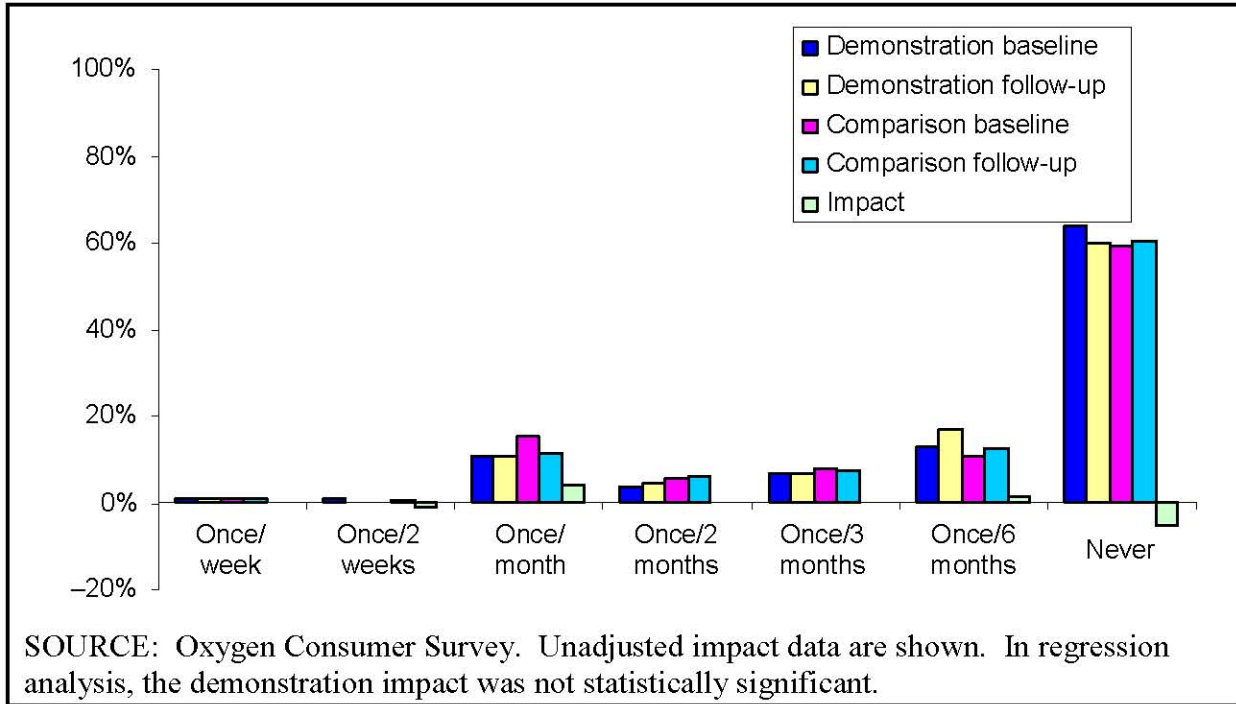
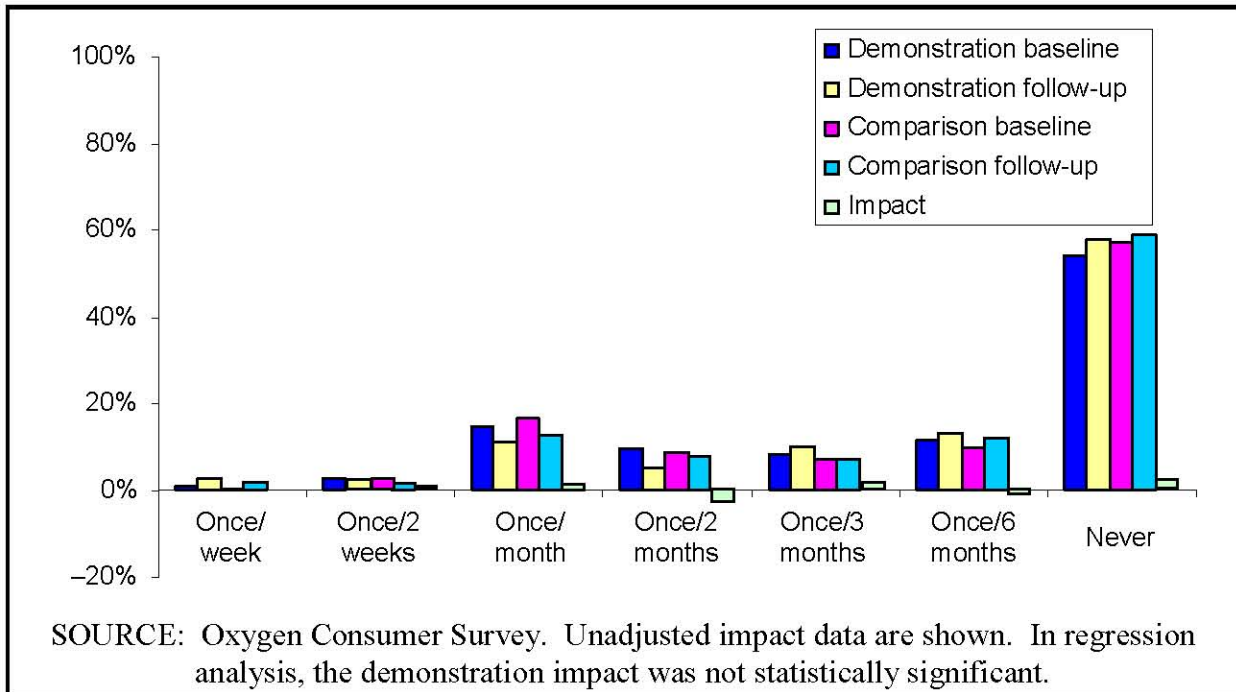


Figure 3-8b
Frequency of home checkups by supplier's breathing specialist, last 6 months, all oxygen users, San Antonio demonstration



**Table 3-4
Demonstration impact on access variables—other medical equipment users**

Category	Variable	Significant impact in Polk County?		Significant impact in San Antonio?	
		All users	New users	All users	New users
Delivery	Initial equipment delivery time	No	No	Increase ¹	No
	Orderer of equipment				
	Beneficiary	Decrease ²	No	Decrease ³	No
	Caregiver	No	No	Increase ⁴	Increase
	Home health agency	No	No	No	Decrease ⁵
	Doctor	No	No	No	No
	Method of equipment receipt				
	Delivered to home by supplier	No	Decrease	Increase ⁴	Increase
	Mailed to home by supplier	No	No	No	No
	Pick up from supplier	No	No	No	No
	Delivered by home health agency	No	No	No	No
	Distance to supplier	No	No	No	No
	Time and energy used obtaining DMEPOS	No	No	No	No
Receipt of excess supplies, last 6 months	No	No	No	Decrease	
Receipt of too few supplies, last 6 months	No	No	No	No	
Use of multiple suppliers	No	No	No	No	
Access to training	Types of training given by supplier				
	Written instructions	No	No	No	No
	Show how to use	No	No	No	No
	Choose a good place	No	No	No	No
	Show how to put together	No	No	No	No
	Show how to take care of	Decrease ⁶	No	No	Increase
	Show how to use safely	No	No	No	No
	Show how to replace parts	No	No	No	No
	Tell how to get service	No	No	No	No
	Tell how to get service after-hours	No	No	No	No
Did not receive any training	Increase ⁷	No	No	No	

(continued)

**Table 3-4
(continued)**

Category	Variable	Significant impact in Polk County?		Significant impact in San Antonio?	
		All users	New users	All users	New users
Access to Maintenance and Service	Major change in therapy requiring new equipment, last 6 months	No	No	No	No
	Frequency of maintenance visits	No	No	No	No
	Maintenance visit in last 30 days	No	Decrease	No	No
Access to Customer Service	Receipt of supplier assistance with insurance	No	No	No	No
	Number of face-to-face contacts with supplier, last 6 months	Decrease ⁶	No	Increase ⁸	No
	Ability to contact supplier by telephone	No	No	Increase	Increase
	Supplier service call response time	Decrease ⁶	No	No	No

¹Statistically significant only among the subset of hospital bed users.

²Statistically significant among all users and among the subset of hospital bed equipment users.

³Statistically significant among all users, the subset of wheelchair users, and the subset of nebulizer drug users.

⁴Statistically significant only among the subset of nebulizer drug users.

⁵Statistically significant among all new users and among the subset of new hospital bed users.

⁶Statistically significant only among the subset of surgical dressings users.

⁷Statistically significant only among the subset of urological supplies users.

⁸Statistically significant only among the subset of wheelchair users.

SOURCE: Medical Equipment Consumer Survey.

Delivery. Delivery times. Delivery times (the time from initial order to delivery) in **Polk County** increased slightly over the course of the demonstration, but the demonstration's impact was not statistically significant (Figure 3-9a). Most deliveries occurred within 2 days after the order in both sites. Polk County and its comparison site also showed declines of similar magnitude from baseline to follow-up in the proportion of deliveries that occurred on the same day as the order.

In **San Antonio**, close to 70 percent of baseline respondents reported that they received their equipment on the same day they ordered it or between 1 and 2 days after ordering (Figure 3-9b). The unadjusted data show that those who received their equipment on the same day or between 1 and 2 days later fell from 68.4 percent to 60.6 percent between baseline and follow-up. In the comparison site, the percentage of beneficiaries who received their equipment

Figure 3-9a
Length of time to get supplies at initial order, other medical equipment users (all), Polk County demonstration

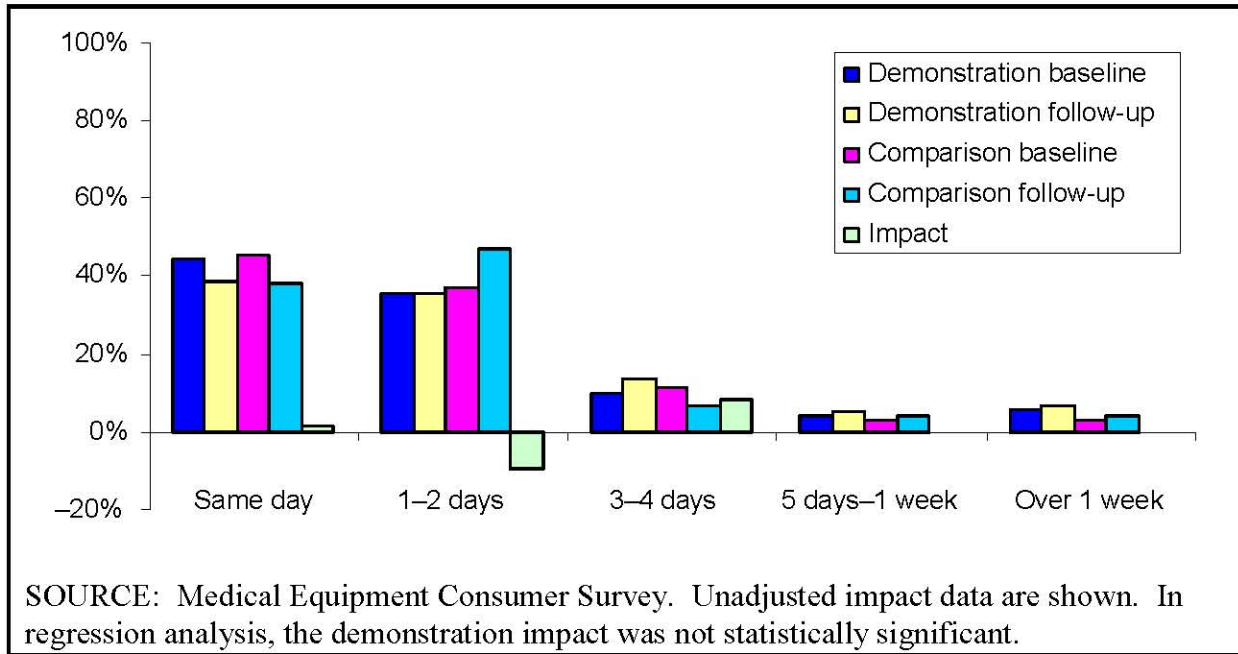
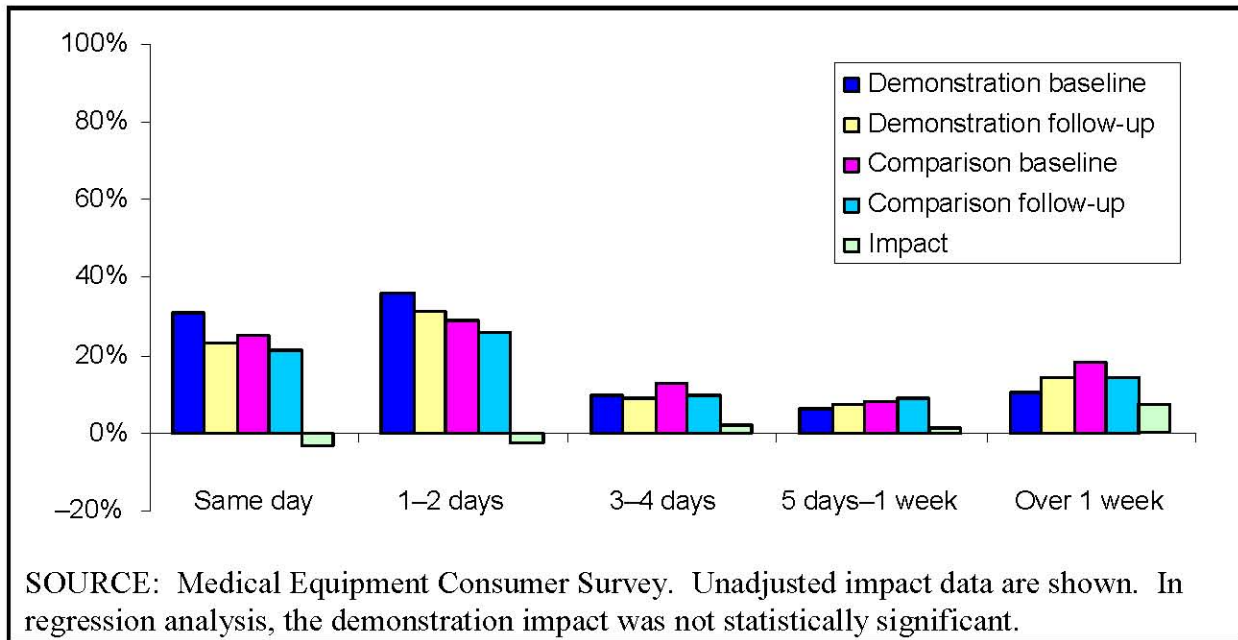


Figure 3-9b
Length of time to get supplies at initial order, other medical equipment users (all), San Antonio demonstration



less than 2 days after ordering also fell, from 55.6 percent at baseline to 53.6 percent at follow-up. Our multivariate analysis shows that the demonstration's impact on this measure was not significant among all users ($p = 0.080$), but it was significant among hospital bed users ($p = 0.042$). The marginal effect of the demonstration on this variable was an increase in delivery time of 1.056 days, relative to a nondemonstration delivery time of about 2 days.⁵

Distance from supplier. The percentage of **Polk County** respondents whose supplier is less than 5 miles from their home dropped from 28.8 percent at baseline to 22.7 percent at follow-up, while the percentage whose supplier is over 20 miles away rose from 16.7 percent to 23.9 percent (Figure 3-10a). This increase in distance is an expected result because of the smaller number of Medicare-approved suppliers under the demonstration. The demonstration's impact on this measure was not statistically significant.

Data for **San Antonio** show similar trends. The percentage of suppliers whose supplier was less than 5 miles from their home fell from 32.3 percent at baseline to 25.9 percent at follow-up, while the percentage increased from 21.0 to 22.0 percent in the comparison site (Figure 3-10b). However, the demonstration's impact was not statistically significant.

Equipment ordering. Equipment ordering processes potentially affect how easily and how quickly beneficiaries receive the equipment and supplies they need. In **Polk County**, the demonstration had a statistically significant impact, both among all users and among the subset of hospital bed users, that indicates a decline in the percentage of beneficiaries ordering their equipment for themselves. Our analysis indicates that the percentage of all equipment users self-ordering their equipment was 14.2 points lower than it would have been in the absence of the demonstration. Among hospital bed users only, the marginal effect was a 26.3 percentage point decline. Unadjusted data indicate that more medical equipment users had their equipment ordered for them by caregivers or their doctors, though these effects were not statistically significant.

In **San Antonio**, the unadjusted data for all users indicate that the demonstration may have reduced the percentage of patients who ordered their own equipment or had a home health agency (HHA) order their equipment, while there may be a slight increase in the percentage who have the equipment ordered by a caregiver. In our multivariate analysis, the demonstration had a statistically significant impact on beneficiaries who ordered their medical equipment themselves or asked a caregiver or HHA to do so for them. Among all users, the subsample of wheelchair users, and the subset of nebulizer drug users, the demonstration significantly lowered the percentage of beneficiaries who ordered their equipment themselves by 13.0, 11.6, and 31.1 percentage points, respectively. For new users, the demonstration increased the percentage of patients who had a caregiver order their equipment by 21.3 percentage points and decreased ordering by HHAs by 15.1 percentage points. The demonstration also significantly increased the percentage of all nebulizer drug users who had a caregiver order their drugs by 10.1 percentage points.

⁵For regression purposes, we set delivery time equal to the mean of the interval survey response.

Figure 3-10a
Distance to supplier from home, other medical equipment users (all), Polk County demonstration

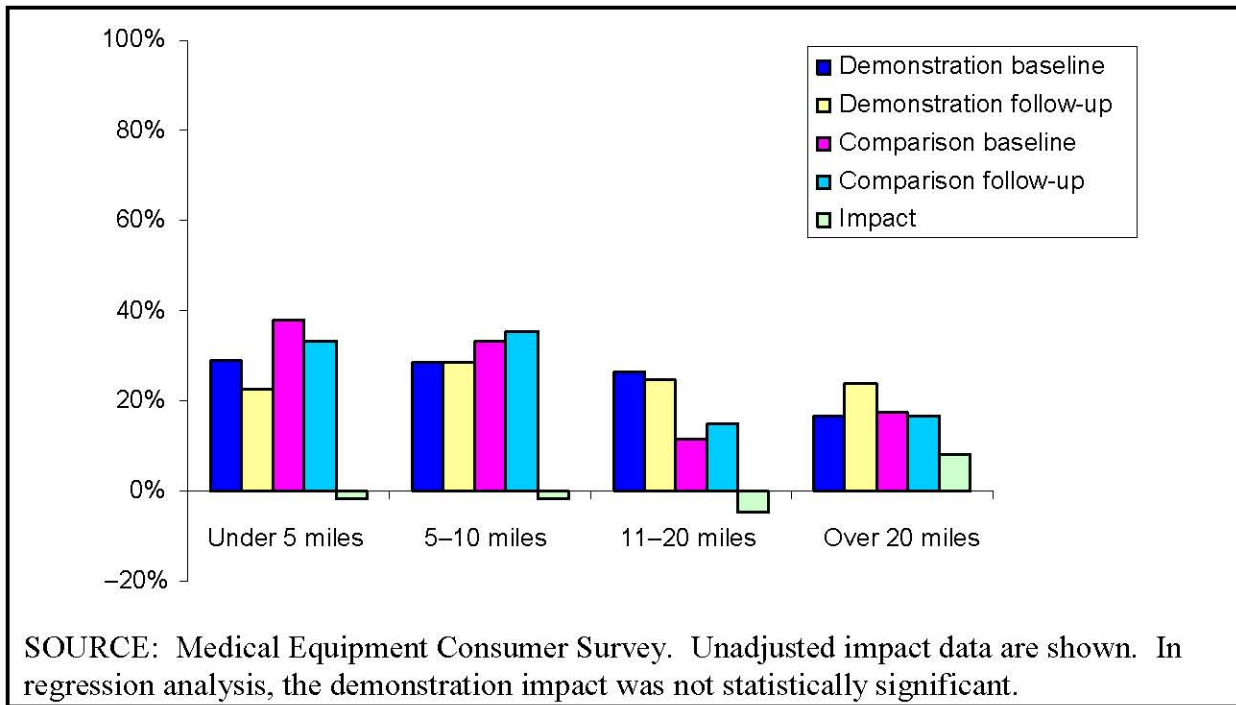
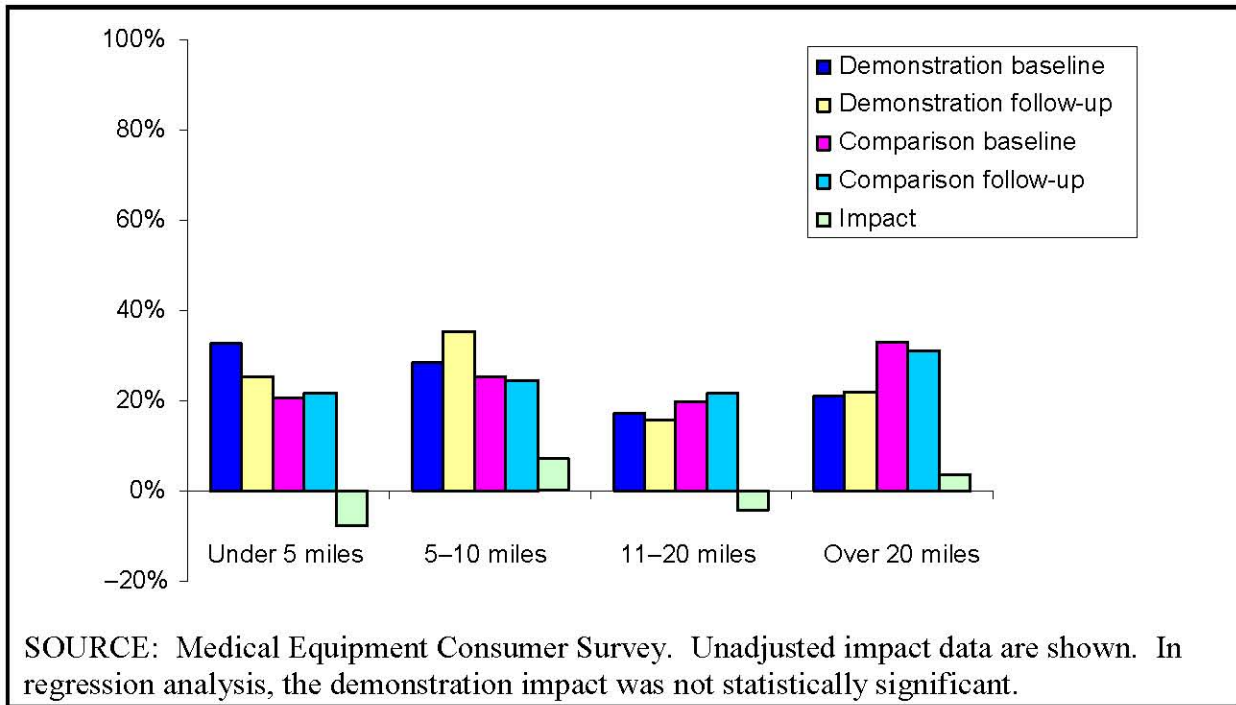


Figure 3-10b
Distance to supplier from home, other medical equipment users (all), San Antonio demonstration



The demonstration's impact on ordering may be generated by referral agents, caregivers, and/or doctors taking more responsibility for ordering beneficiaries' equipment to ensure compliance with demonstration rules. We heard reports of such adaptation by referral agents during site visit interviews in San Antonio (which we describe later in this section), and it is possible that agents in Polk County behaved similarly.

Method of delivery. The proportion of **Polk County** beneficiaries who received their supplies by delivery from their supplier dropped by about 5 percentage points, and the proportion who received their supplies by mail increased by about 5 percentage points (Figure 3-11a). However, the demonstration's impact was not statistically significant for this measure among all equipment users. Among new users, the demonstration had a statistically significant impact on lowering the percentage of beneficiaries who receive their equipment via home delivery by their supplier. The marginal effect of the demonstration was a decrease of 24.2 points in the percentage of new medical equipment users receiving their equipment via home delivery by their supplier. Unadjusted data show that home delivery by supplier fell from 75.7 to 65.9 percent among new users in Polk County and rose from 71.4 to 88.9 percent in Brevard County. Our analysis did not detect a statistically significant substitution toward other methods of receiving equipment; however, unadjusted data for individual product categories provide possible—albeit not statistically significant—insight into the decline in home delivery to new equipment users. Generally, users of urological supplies and surgical dressings shifted from supplier delivery to receiving their supplies by mail. The increase in mail receipt was 6 percentage points among urological supplies users and 12 percentage points among users of surgical dressings. Some of the demonstration suppliers for urological supplies and surgical dressings were located outside of the demonstration area, providing a possible explanation for the increase in patients receiving these supplies by mail. It is less clear why hospital bed users became more likely to pick up their equipment and supplies.

We did not find a similar effect in **San Antonio**. Unadjusted data for all users (Figure 3-11b) indicate that the percentage of patients who received their equipment via home delivery increased from 73.2 to 77.2 percent in the demonstration site while it decreased from 65.6 to 60.3 percent in the comparison site from baseline to follow-up. Our analysis did not detect a statistically significant demonstration impact on home delivery among all users in the total sample of beneficiaries. However, when we looked at user subsamples, we found that the impact of the demonstration on home delivery was statistically significant for new users and for all nebulizer drug users. The marginal effect was a 18.7 percentage point increase in home delivery for new users and a 21.0 percentage point increase for all nebulizer drug users.

Other delivery issues. In **Polk County**, the demonstration did not have a statistically significant impact on the proportions of respondents who reported that they received too many or too few supplies. The demonstration also did not have a statistically significant effect on the use of multiple suppliers.

In **San Antonio**, the demonstration had a negative and statistically significant impact on the proportion of new users who reported that they received excess supplies. This may be viewed as an increase in efficiency. As in Polk County, the demonstration did not have a significant effect on the use of multiple suppliers.

Figure 3-11a
Method of delivery, other medical equipment users (all), Polk County demonstration

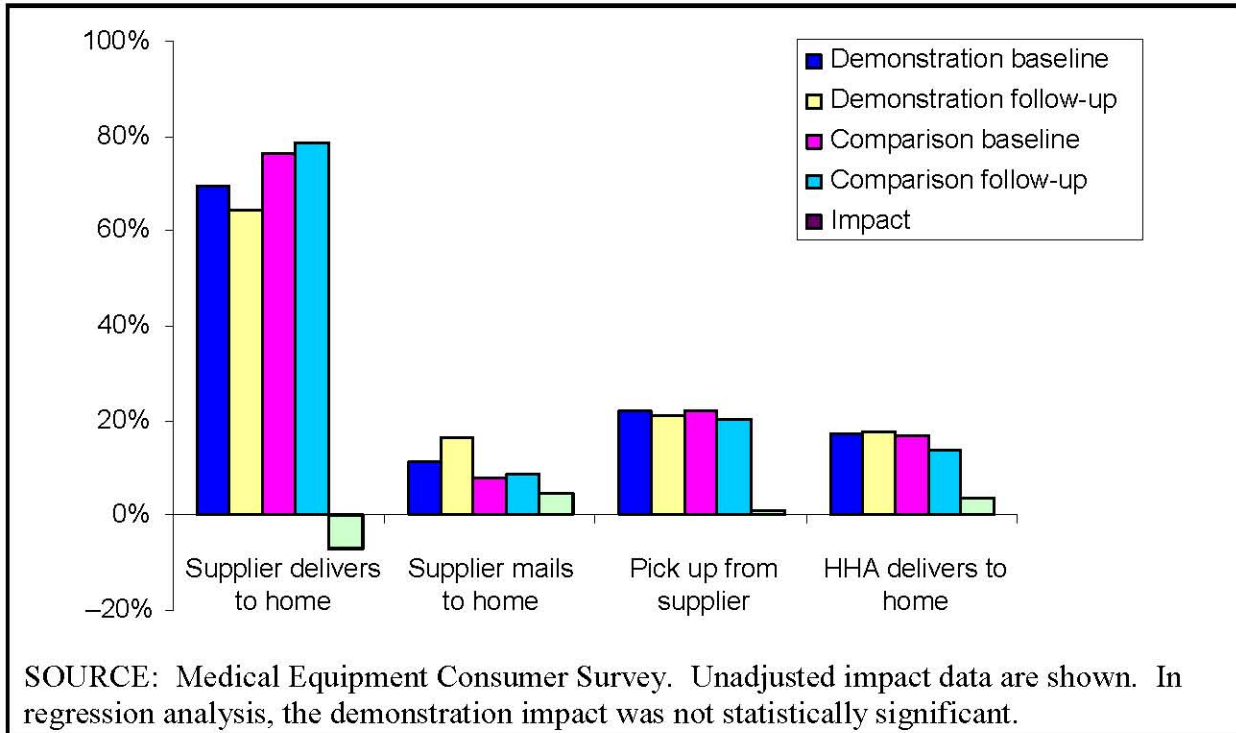
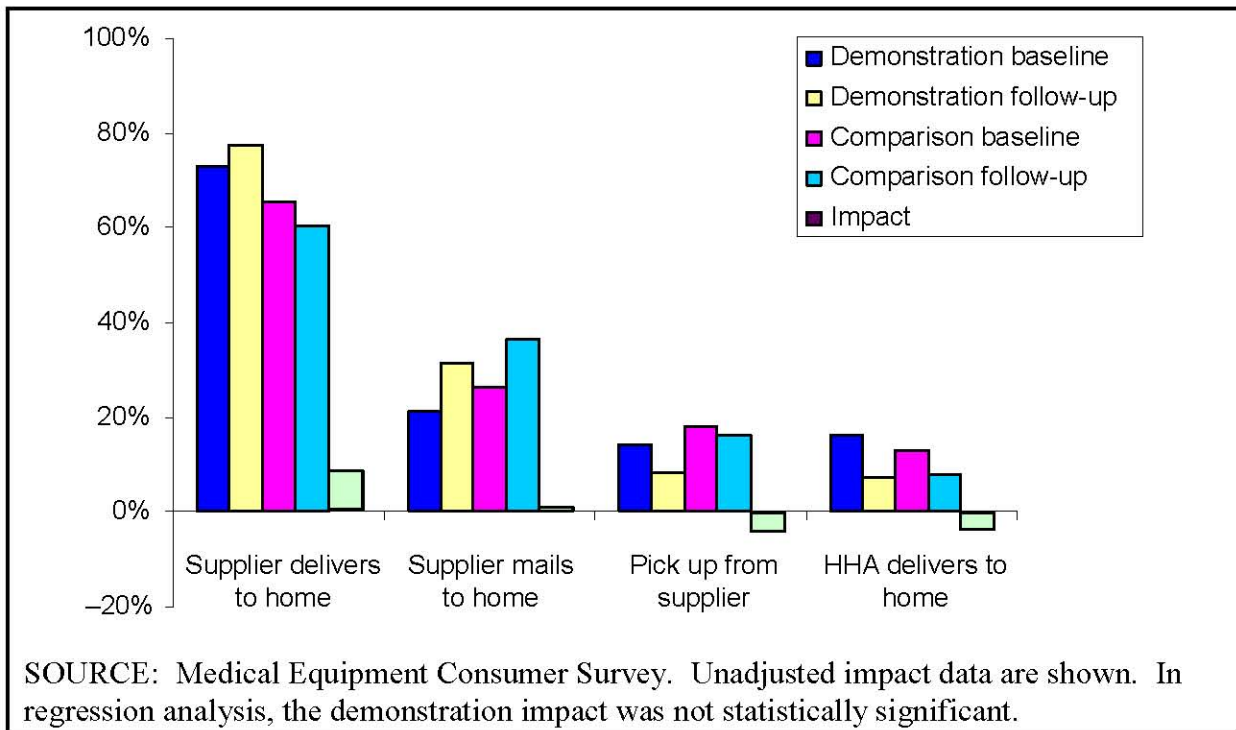


Figure 3-11b
Method of delivery, other medical equipment users (all), San Antonio demonstration



Access to training. The proportion of **Polk County** respondents who reported receiving training on how to use their medical equipment and supplies increased from baseline to follow-up. Brevard County had higher levels of training than Polk County in both the pre- and post-demonstration periods. The increases in Polk County did not bring proportions up to the levels seen in the comparison site. The proportion of respondents who received no training on using their equipment decreased slightly in each site, but the percentage of Polk County respondents at follow-up who received no training (25.9 percent) was still higher than that in Brevard County (18.8 percent).

The only statistically significant demonstration impacts on training were detected among product-specific subsets of equipment users. Among surgical dressings users, the demonstration had a significant impact, lowering the percentage of users receiving training on how to take care of their supplies. The marginal effect of the demonstration was a 40.1 percentage point decline in the percentage of surgical dressings users receiving such training. Unadjusted data show that the percentage of surgical dressings users receiving this training fell from about 30 to 17 percent in Polk County from baseline to follow-up, while rising from about 26 to 36 percent in Brevard County.

Among users of urological supplies, the demonstration increased the percentage receiving no training on their supplies. The marginal effect of the demonstration was an increase of 22.2 points in the percentage of urologicals users receiving no training. Here, unadjusted data show that the percentage of urologicals users receiving no training rose from about 42 to 52 percent in Polk County while falling from approximately 52 to 39 percent in Brevard County.

This decline in the provision of training to users of urological supplies may result from the reported inexperience of some demonstration suppliers in this product category. As described in the First-Year Evaluation Report, some demonstration suppliers were relatively new to the urological supplies category. Several reported that they bid lower than cost in the urological supplies category because of this inexperience. The cost pressures generated by this underbidding, combined with inexperience, may have contributed to a decline in training for urological supplies users. Another explanation is a possible shift toward mail delivery for users of urological supplies. Although the demonstration's impact in this area was not statistically significant, unadjusted data indicate that the number of urologicals users who received their supplies by mail rose by 6.4 percentage points in Polk; all other listed methods of equipment receipt declined. Because three of the five providers of urological supplies in Round 1 were located outside of Polk County, a shift to mailing (rather than delivering) supplies might entail that supplier staff were not available in person to give training to beneficiaries when they first received their urological supplies.

The surgical dressing and urological supplies product categories were not included in the San Antonio demonstration. In **San Antonio**, the demonstration impact on training generally appeared to be positive in the unadjusted data, but the impact was seldom statistically significant. The only statistically demonstration impact on training was detected among new users. Among new users, the demonstration significantly increased the percentage of patients who received training on how to take care of their equipment. The marginal effect of the demonstration was 17.1 percentage points.

Access to maintenance and service. Two survey questions investigate changes in the frequency of routine maintenance visits during the demonstration. The first asks beneficiaries to indicate the frequency of the visits they receive. Figure 3-12a displays unadjusted responses to this question for all medical equipment users in **Polk County** and its comparison site. Our analysis detected no statistically significant demonstration impacts on this variable, either among all equipment users, new users, or product-specific subsets of users.

In **San Antonio**, the demonstration also did not have a significant impact on the frequency of maintenance visits. A high percentage of beneficiaries received no maintenance visits, but this result did not vary between baseline and follow-up or between San Antonio or its comparison site (Figure 3-12b). With the exception of hospital beds, the demonstration product categories in San Antonio were different from the product categories in Polk County, and this could explain why maintenance visits were less common in San Antonio.

The second question asks beneficiaries to indicate if their supplier made a routine maintenance visit to their home in the last 30 days. In **Polk County**, no statistically significant demonstration impact was detected among all medical equipment users. Among new users only, the demonstration had a statistically significant impact, and the marginal effect of the demonstration was a decline of 33.8 points in the percentage with such a visit. Declines appear most common for new hospital bed users and new surgical dressings users, although the changes were not statistically significant for either of these product categories alone.

In **San Antonio**, the demonstration did not significantly affect the probability of a maintenance visit in the last 30 days. In fact, most beneficiaries did not receive a maintenance visit, either at baseline or at follow-up. The demonstration also did not significantly change the probability that a supplier would send an employee to a beneficiary's home for a routine maintenance visit.

Access to customer service. As with the Oxygen Consumer Survey, the set of survey questions probing access to customer service for medical equipment users showed little change from baseline to follow-up. **Polk County** showed some improvements in suppliers' provision of after-hours assistance and help with insurance claims. Supplier response times to service calls remained stable, as did beneficiaries' ability to contact suppliers by phone. The demonstration's impact on these measures among all users was not statistically significant. However, the demonstration's impact was statistically significant among surgical dressings users for two of these measures. The demonstration decreased the number of contacts that surgical dressings users had with their suppliers and improved suppliers' response times to their service calls. The marginal effect of the demonstration was a decline of 1.9 in the mean number of contacts with suppliers over the last 6 months. While this decrease may be either a beneficial or a detrimental outcome depending on the nature of these contacts, the improvement in response times is certainly beneficial. Marginal effect analysis indicates that the demonstration improved average response times (as reported by beneficiaries) by approximately 2 days in Polk County at follow-up.

Figure 3-12a
Frequency of maintenance visits by supplier, last 6 months, other medical equipment users (all), Polk County demonstration

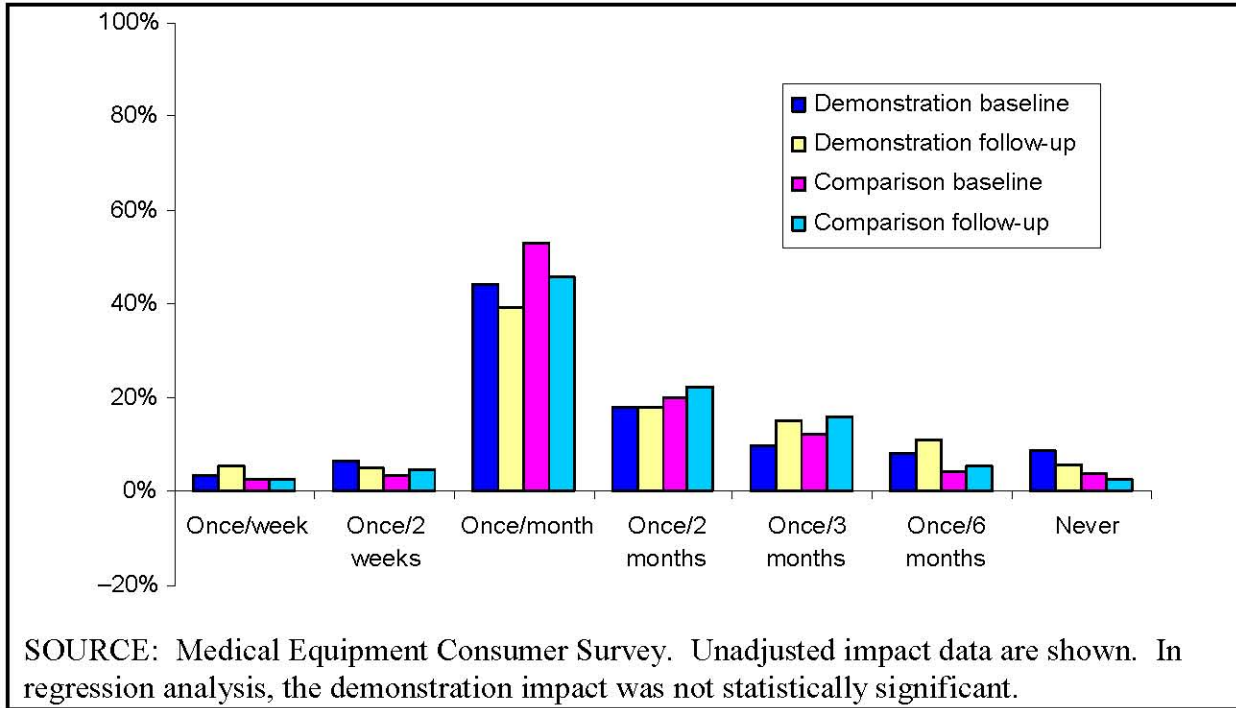
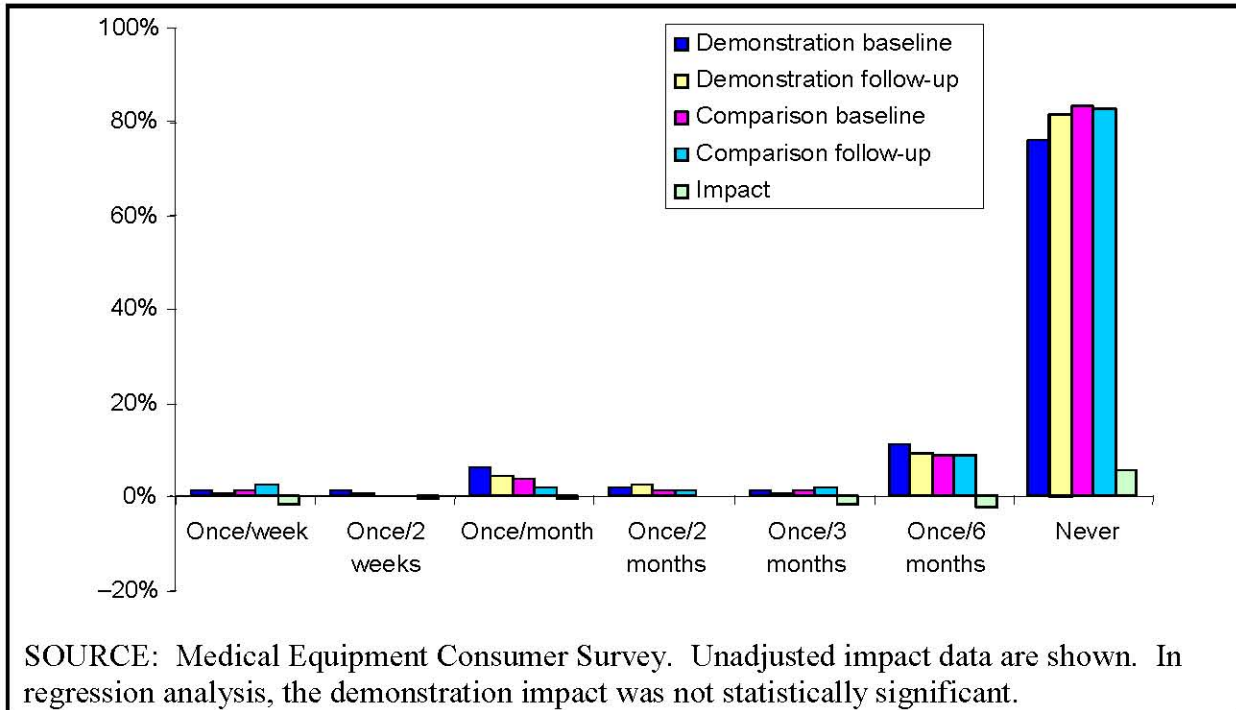


Figure 3-12b
Frequency of maintenance visits by supplier, last 6 months, other medical equipment users (all), San Antonio demonstration



Surgical dressings were not included in the San Antonio demonstration. Across all users, for the product categories included in **San Antonio**, the demonstration did not have much effect on the contact and call response time measures. The demonstration's impact on these measures was not statistically significant among all users. However, for the subset of wheelchair users, the demonstration significantly increased the number of face-to-face contacts. The marginal effect of the demonstration was to increase the number of visits by 0.5 visits. The demonstration did not significantly affect the supplier call response time, but it did significantly increase the probability that a beneficiary knew how to get in touch with their supplier, both for all users and for the subset of new users. The marginal effect was a 10 percentage point increase for all patients and a 20 percentage point increase for new patients.

3.3 Results of the Bidding: Service Areas

3.3.1 Polk County—Round 1

As part of their bids, 12 of the 16 demonstration suppliers agreed to provide service to every zip code in Polk County. All of the demonstration suppliers who provided surgical dressings and urological supplies—the two product categories with the fewest suppliers in total—served the entire county, as did 9 of the 13 oxygen suppliers. The large number of suppliers supplying each zip code helped to maintain beneficiary access.

3.3.2 Polk County—Round 2

During Round 2 bidding in Polk County, CMS stipulated that all winning suppliers would be required to serve all of Polk County during the demonstration. Therefore, all 16 winning suppliers provided service to the entirety of Polk County. This should have maintained access to DMEPOS services for Polk County beneficiaries.

3.3.3 San Antonio

Forty-one out of 51 demonstration suppliers (80 percent) agreed to provide service to all three counties in the San Antonio demonstration area. All 8 of the demonstration orthotics providers supplied the entire demonstration area. Twenty-five of 32 oxygen equipment suppliers, 20 of 24 hospital bed and accessory suppliers, 19 of 23 wheelchair and accessory suppliers, and 7 of 11 nebulizer drug suppliers agreed to provide to the entire demonstration area. Again, the large number of suppliers that provided service to all areas of the demonstration suggests that beneficiary access was maintained during the demonstration.

3.4 Site Visit Results

In this section, we describe findings from site visits related to access changes under the demonstration. We begin by discussing our methodology for conducting site visits.

3.4.1 Site Visit Methodology

Our planning for each site visit began by contacting a set of key informants, such as DMEPOS suppliers, referral agents who work with Medicare beneficiaries using DMEPOS, and beneficiary groups. Our contacts were compiled from directories of local DMEPOS suppliers

and civic groups, as well as from lists provided by the Demonstration Ombudsman for each site. We spoke briefly with each contact to explain the purpose of our interviews and review confidentiality. For those who agreed to an interview, we set a time and place for them to meet with (usually) two members of the evaluation team.

Our interviews were structured around a set of protocols containing open-ended questions that covered topic areas central to this evaluation but also enabled key informants to introduce topics they considered relevant to the demonstration. We developed separate protocols for beneficiary groups, referral agents, and suppliers, and revised them before each visit to tailor our questions for relevant and emerging issues. Interviews usually lasted approximately 1 hour.

We interviewed both demonstration and nondemonstration suppliers. In selecting contacts, we attempted to draw a diverse group of interviewees located throughout each demonstration area. Some suppliers we interviewed provided all the demonstration categories of products, while others provided only one type of DMEPOS. Some were branch outlets of national DMEPOS chains with over \$2 million in annual revenue; others were locally owned and operated with relatively small amounts of business.

During one visit each in Polk County and San Antonio, we conducted separate focus groups of suppliers and referral agents. The focus groups were guided by a set of interview protocols. While generally following these protocols, we encouraged interviewees to speak openly and to bring up any issues they thought relevant to the demonstration. The focus groups lasted from 90 minutes to 2 hours.

3.4.2 Polk County Findings

In Polk County, the first site visit took place after bidding had occurred but before winners were announced. The visit focused on the bidding process and reasons for bidding or not bidding. The second visit took place 2 months after the demonstration prices took effect and focused on transition issues. The third visit occurred 6 months after the demonstration prices took effect and included separate focus groups with demonstration suppliers and referral agents. The fourth site visit took place 8 months after the demonstration took effect. We met with urological suppliers to discuss issues of access, quality, product selection, and pricing. The final site visit occurred 7 months after the Round 2 prices took effect and 5 months before the demonstration ended.

The transition to demonstration prices in October 1999 passed relatively smoothly. There were no reports of substantial or widespread barriers to access. This smooth transition seemed to be related to the existence of the transition policies and the nondemonstration oxygen suppliers' willingness to continue serving their patients. The transition policies applied to capped-rental equipment, which includes enteral nutrition infusion pumps and hospital beds, and to home oxygen therapy. Preexisting rental or purchase contracts for infusion pumps and hospital beds were eligible for Medicare reimbursement according to regular fee schedule levels throughout the demonstration. Beneficiaries beginning use of these items after the start of the demonstration were required to obtain the equipment from a demonstration supplier. Beneficiaries who had preexisting relationships with nondemonstration oxygen suppliers were not required to switch to

a demonstration oxygen supplier, provided the oxygen supplier accepted the demonstration price schedule.

As it turned out, all nondemonstration suppliers of oxygen equipment in Polk County opted to continue to serve their patients and accept the demonstration prices. In turn, most oxygen users elected to remain with their original supplier. The willingness of nondemonstration suppliers to accept the demonstration prices and continue their services was very important to oxygen users who were concerned about any potential disruption to their services.

The Ombudsman reported only a handful of specific complaints related to the beneficiaries' ability to access suppliers or products. A representative of a beneficiary group that provided a health insurance hotline reported that he received no calls regarding the demonstration during the first 2 months after the demonstration prices went into effect. This was in sharp contrast to the representative's experience when Medicare HMOs withdrew from the county, and the representative's office was flooded by calls. The hospital discharge planners also did not report access-related concerns occurring during the transition. They even reported that some demonstration suppliers from the Orlando and Tampa areas opened offices in Polk County to be more accessible and to reduce response time. Beneficiaries who began using oxygen prior to the demonstration reported no change in quality or access during the transition (they tended to remain with the supplier they used prior to the demonstration). However, there was a report of a new oxygen user needing to switch suppliers because of poor service and difficulty accessing a portable oxygen tank. Once the beneficiary was made aware that it was possible to change suppliers, a new supplier was contacted and the beneficiary was pleased with oxygen service and supplies.

The demonstration enabled some suppliers outside of Polk County to bid and thereby enter the market. Such was the case with two of the five urological suppliers who were not providing services to Polk County residents prior to the start of the demonstration. However, contrary to their expectations, they received few referrals in Polk County. Referral agents and beneficiaries appeared to be reluctant to use providers located outside of the county. This reluctance was not related to concerns about quality but rather issues of access. Apparently, beneficiaries often wanted to come to a storefront to obtain their urological supplies and preferred doing business with a company that had a storefront nearby. One supplier based outside of Polk County, who was not providing services in Polk County prior to the demonstration, reported receiving only three new urological patients from Polk County in the first year after the demonstration began. The other supplier new to Polk County reported having 11 new urological patients during the period.

Although we found no systematic negative effects on access to services resulting from the demonstration, beneficiaries, nondemonstration suppliers, and referral agents expressed concerns regarding potential disruptions to demonstration supplies for beneficiaries. For example, one concern that we heard from referral agents, beneficiaries, and beneficiary group representatives was that demonstration suppliers located outside of Polk County might not be able to provide services as quickly as those located within the county. The referral agents stated that some of the demonstration suppliers who did not deliver quickly enough were located outside of Polk County but that being outside of Polk County did not necessarily predict poor service. The oxygen users and beneficiary group representatives who mentioned this concern did

not actually encounter any problems but, nevertheless, were concerned that the distance could have an effect on access to service. Two representatives from the beneficiary groups mentioned that they were concerned about access: one was worried about beneficiaries on the edge of the county and the other was concerned about loss of choice among suppliers. In general, if referral agents encountered any difficulties with a demonstration supplier, they responded by switching to a different, more responsive demonstration supplier. Thus, any initial difficulties that may have occurred were not lingering problems.

A couple of referral agents expressed concern that after the demonstration began some suppliers became less willing to provide non-Medicare-covered equipment to indigent patients without charge. This may be a result of suppliers' need to cut costs due to the lower markup under the demonstration prices, or the supplier not being selected as a demonstration supplier. One referral agent had been relying on a particular supplier to provide products for indigent patients; however, because this supplier was not chosen to be a demonstration supplier and could no longer accept Medicare patients, the referral agent no longer felt comfortable asking this supplier to provide free equipment for indigent patients. This referral agent has since asked other participating suppliers to provide services for indigent patients and has, on occasion, been turned down. Referral agents emphasized that the lack of willingness to assist with indigent patients was not the case for all suppliers; however, it was a trend that concerned this referral agent.

During our last visit to Polk County, after the second round of bidding and near the end of the demonstration, most referral agents we interviewed did not believe there had been widespread problems with access to or quality of products and services associated with the demonstration. One discharge planner reported some delays in discharge at their facility during the period when they were becoming familiar with the new Round 2 demonstration suppliers. This problem had since been resolved as agents identified more responsive suppliers. Another discharge planner reported that arranging service on weekends had become more difficult because one particularly responsive supplier was not approved for the second round.

3.4.3 San Antonio Findings

In San Antonio, the first site visit occurred after demonstration suppliers were selected and before demonstration prices took effect. The visit focused on education efforts, bidding strategies, and preparations for implementation. The second site visit occurred 2½ months after the demonstration prices took effect and focused on transitional issues. The third visit took place 7 months after the demonstration prices took effect, when stakeholders had more experience with the demonstration. The final site visit took place 2 months before the demonstration ended and included one focus group with referral agents and two focus groups with demonstration suppliers.

In general, referral agents and beneficiary groups reported few cases of systematic problems with access to DMEPOS products or care affecting beneficiaries. Interviewees reported receiving few calls or questions from beneficiaries about the demonstration, and the complaints or problems they experienced were generally transitional in nature.

To a great degree, the demonstration's impact on beneficiaries was mitigated by the presence of referral agents who are responsible for coordinating the acquisition of new DMEPOS

equipment and supplies for beneficiaries. Case managers and hospital discharge planners adjusted their procedures to assure that the beneficiaries they served would comply with demonstration policies while receiving needed services. This allowed the beneficiaries to be served without needing to know a lot about the demonstration. Several referral agents and suppliers we interviewed believed that most beneficiaries had only marginal knowledge of the demonstration, if any.

Case managers and discharge planners generally used familiar suppliers when coordinating beneficiaries' DMEPOS suppliers. Most referral agents reported that before the demonstration they commonly referred beneficiaries to a set of suppliers with whom they had experience and knew to supply good quality products and services. Some of these suppliers were not included in the demonstration, resulting in the need to become familiar with several new companies.

Both before and after the demonstration began, referral agents' two major concerns regarding any supplier were the quality of services and the ability to do "one-stop shopping." They generally associated quality of services with such factors as timeliness of product delivery, minimal or coordinated paperwork, knowledge about the product, and quality of the product provided. "One-stop shopping" refers to the fact that since many patients use several types of DMEPOS, agents were particularly interested in finding companies that provided as many of the demonstration products as possible and offered a wide variety of other DMEPOS. When one supplier could provide products for all of a patient's needs, the beneficiary did not incur extra time and expense associated with using multiple suppliers. Although referral agents had similar concerns about suppliers before and after the demonstration, they thought that the demonstration required them to expend more effort in selecting suppliers. First, the demonstration forced some referral agents to end existing relationships with nondemonstration suppliers, to become familiar with new suppliers, and to pick one or more demonstration suppliers to make referrals to. These requirements would not have been necessary in the absence of the demonstration. Second, some of the demonstration suppliers were not selected as demonstration suppliers for all of the product categories that were commonly needed by individual patients. Consequently, referral agents sometimes had to make referrals to two demonstration suppliers or remember which demonstration suppliers provided both or all of the needed product categories.

When a referral agent found a demonstration supplier who met their standards, then the agent began referring patients to that supplier. In this way, referral agents screened suppliers and possibly prevented beneficiaries from using suppliers who provided lower quality service or products.

Still, beneficiaries may have experienced indirect effects from the demonstration if referral agents found it more difficult to coordinate their DMEPOS care under the new set of rules. Most case managers interviewed said that the few problems they experienced were transitional in nature, associated with the period of adjustment to the demonstration when they were learning about new suppliers. Several referral agents referred to their early demonstration experience as part of a learning curve that would allow their difficulties to diminish as they became more familiar with new suppliers' product lines and standard procedures.

The most urgent problems occurring early in the demonstration were in acute care settings where discharge had to be coordinated quickly. Case managers in these settings were not completely familiar with some of the new demonstration suppliers, especially with regard to how quickly they could deliver necessary equipment. One incident required a beneficiary to wait in a hospital's holding area until the oxygen equipment they needed arrived. In acute care settings such as this, delays in discharge can result when products are not provided on time. This may cause patients to spend extra days in the hospital, possibly backing up admissions and increasing costs to both the hospital and the beneficiary. Hospital case managers expressed some frustration, stating that they previously had arrangements with suppliers who provided timely and high quality service and now needed to find others who were in the demonstration. However, referral agents generally believed that this type of incident would be rare once they became familiar with all the demonstration suppliers.

Little evidence was seen that would indicate systematic and persistent access problems associated with the demonstration. However, some referral agents were concerned that beneficiaries might react negatively to their inability to use familiar suppliers or ones located close to their home under the demonstration. One supplier, located outside San Antonio in a city with a smaller number of DMEPOS providers, reported that some beneficiaries expressed such disappointment.

Referral agents also expressed concerns about an increase in the cost of items not covered by Medicare, which they said began before the demonstration. Because of the appeal of one-stop shopping described above, referral agents preferred to use one demonstration supplier for both covered and noncovered products. However, referral agents reported that the price of items not covered by Medicare, such as shower chairs and transfer devices, was higher from demonstration suppliers than from nondemonstration suppliers. Referral agents believed that using the demonstration supplier for all of a patient's needs might increase the overall out-of-pocket expenses for the beneficiary. A beneficiary might choose to use more than one supplier if they felt that their cost savings on noncovered items would be greater than the increased costs (of time and inconvenience) of using multiple suppliers. In some cases, referral agents began calling multiple suppliers to obtain the best prices for beneficiaries.

In our final site visit to San Antonio, we conducted one focus group with referral agents and two focus groups with suppliers. In general, referral agents did not think that the demonstration had a negative impact on beneficiaries' access to care and equipment, but they believed this was due to the additional responsibilities they assumed to ensure access and quality for the beneficiaries they served. The referral agents also thought that the demonstration limited their ability to shop among suppliers for the best price on noncovered items. Demonstration suppliers generally believed that the demonstration did not greatly affect beneficiaries' access to care.

3.5 Supplier Survey Results

In a 2002 survey of DMEPOS suppliers in San Antonio and in a comparison site, Austin-San Marcos, we asked suppliers if they thought that beneficiaries were receiving the DMEPOS that they needed on time. The suppliers were asked the same question about access before February 2001, when the demonstration began in San Antonio. Demonstration and

nondemonstration suppliers in San Antonio and suppliers in Austin-San Marcos had fairly similar thoughts about access in February 2001, with most reporting that beneficiaries received the DMEPOS they needed on time (Table 3-5). Most demonstration suppliers in San Antonio and suppliers in Austin-San Marcos reported that beneficiaries received the DMEPOS that they needed on time in 2002, while nondemonstration suppliers in San Antonio were more likely to report that they thought that beneficiaries were not receiving the DMEPOS that they needed on time in 2002. This divergence in opinion between demonstration and nondemonstration suppliers was common in the supplier survey (see Section 5).

Table 3-5
Supplier survey results: do you think that beneficiaries receive the DMEPOS they need on time?

	San Antonio			Austin-San Marcos
	Demonstration	Nondemonstration	Total	
Before demonstration				
Yes	86.4%	65.8%	73.3%	67.0%
No	4.5%	2.6%	3.3%	0.0%
Don't know	9.1%	31.6%	23.3%	33.0%
During demonstration				
Yes	81.8%	26.3%	46.7%	71.0%
No	9.1%	28.9%	21.7%	0.0%
Don't know	9.1%	44.7%	31.7%	29.0%
Total number of responses	22	38	60	15

SOURCE: Durable Medical Equipment and Prosthetics, Orthotics, and Supplies (DMEPOS) Supplier Survey, 2002.

3.6 Portable Oxygen

In our Second-Year Annual Evaluation Report, we reported that the demonstration in Polk County had few statistically significant effects on access measures included in the oxygen consumer survey. However, our finding that the demonstration had a significant negative effect on portable oxygen use by new oxygen users concerned some observers, who worried that this result could represent an important reduction in access caused by competitive bidding. In response to this concern, we placed special attention on portable oxygen use as we continued to evaluate the demonstration. In this section, we present our evidence on portable oxygen use. We first discuss the role of portable oxygen use as a component of oxygen therapy. We briefly review the portable oxygen results from the beneficiary surveys in Polk County and San Antonio, which are described in detail earlier in this section. We then analyze claims data on portable oxygen utilization in the two demonstration sites. We present findings from site visits and consider potential nondemonstration causes of changes in portable oxygen use. Finally, we synthesize the findings and discuss the overall effect of competitive bidding on access to portable oxygen use.

3.6.1 The Role of Portable Oxygen

Use of portable oxygen is considered a quality of life issue for beneficiaries who require oxygen therapy. For those with severe conditions, portable oxygen may be necessary for the beneficiary to move about their home, away from the location of their stationary system. Portable oxygen systems also make trips outside the home possible, including visits to the doctor, and therefore may help increase compliance with the beneficiary's oxygen treatment regimen. Access to portable oxygen is influenced by both the level of need (based on a beneficiary's treatment regimen) and the supplier's offering it at the time the oxygen order is placed.

For suppliers, there are significant costs of equipment and staff for delivery of supplies in the provision of portable oxygen to the beneficiary. Newer, lighter tanks are easier for the beneficiary to use but represent a higher cost to suppliers when compared to larger, heavier portable tanks. Suppliers deliver full tanks to the beneficiary and take back the empties; thus, for each tank left at the beneficiary's home, the supplier must have one in the shop to fill and deliver. Suppliers receive a fixed monthly fee for supplying portable oxygen to a beneficiary, regardless of the number of units or amount of deliveries necessary for the beneficiary. Therefore, limiting access to portable oxygen—including equipment, numbers of tanks delivered, and the frequency of delivery—are viable means for suppliers to influence their costs for providing portable oxygen. Even in the absence of competitive bidding, suppliers have an incentive to limit the number of tanks delivered and the frequency of portable oxygen delivery because these activities increase costs without affecting the fixed monthly fee for portable oxygen. However, the incentive to reduce these activities could be exacerbated if competitive bidding reduces the monthly fee for providing portable oxygen. At the extreme, if competitive bidding reduced the monthly fee to the point where providing portable oxygen became unprofitable, suppliers might try to discourage beneficiaries from seeking portable oxygen use.

Coverage of portable oxygen requires that a beneficiary meet a set of specific Medicare criteria. Generally, these are similar to the criteria for the use of stationary oxygen systems:

- The beneficiary must have a chronic lung condition or disease.
- A blood gas study was performed under the appropriate conditions.
- Alternative treatment measures were tried or considered and were deemed clinically ineffective.
- The prescribing physician must fill out a Certificate of Medical Necessity (CMN).

However, there are two additional criteria for portable oxygen coverage: (1) the patient must be mobile within the house, and (2) the qualifying blood gas study must be performed while the patient is at rest (and awake) or during exercise (patients can qualify for nocturnal oxygen therapy with stationary equipment if the blood gas study is performed while the patient is asleep). The second criterion took effect for beneficiaries with initial dates of service on or after October 1, 1999. This date is potentially significant because it coincides with implementation of the demonstration in Polk County. It is plausible that the requirement could have reduced the

share of oxygen users who received portable oxygen, independently of the competitive bidding demonstration.

It is also possible that suppliers under the demonstration increased their attention to the Medicare criteria that qualify beneficiaries for portable system use, requiring physicians to provide more specific orders and documentation of the beneficiary's need for portable oxygen. Another possibility is that several suppliers selected for the demonstration did not routinely provide portable oxygen to their Medicare patients. A study by the General Accounting Office (U.S. GAO, 1997) found that almost 25 percent of Medicare home oxygen suppliers provided portable oxygen to no more than 10 percent of Medicare beneficiaries they serve.

3.6.2 Results from the Beneficiary Surveys

As described in detail earlier in this section, the beneficiary survey analysis found that demonstrations in Polk County and San Antonio did not have a statistically significant effect on reported portable oxygen use in the sample of all oxygen users. However, when the analyses were limited to new oxygen users, the demonstration impact was significant and negative in Polk County and insignificant in San Antonio. In Polk County, the estimated marginal effect of the demonstration was quite large (23.5 percentage points). Unadjusted data indicate that the prevalence of portable systems among new users fell from 76 percent to 54 percent in Polk County, while rising from 58 percent to 62 percent in the comparison site. As noted, the demonstration effect in San Antonio was insignificant for new users; in the unadjusted data, the percentage using portable systems increased from 63 to 73 percent in San Antonio and from 63 to 66 percent in the comparison site.

3.6.3 Results from Claims Analysis

Polk County—Using Medicare claims data, we identified all patients who used oxygen equipment in Polk County and 5 comparison counties in Florida during the period 1997–2002.⁶ We then determined whether these patients also used portable oxygen during that month. The variable Portable Oxygen use was set equal to 1 if the patient used portable oxygen and 0 if the patient did not use portable oxygen. In addition, we defined patients as new patients if they were in their first 3 months of oxygen use.

To examine whether the demonstration affected portable oxygen use, we estimated a logit regression with Portable Oxygen Use as the dependent variable. Explanatory variables were county and year indicator variables and indicator variables for Demonstration Round 1 and Demonstration Round 2. The logit regression accounts for the fact that the dependent variable only takes on two values (zero and 1) and is thus associated with heterogeneous errors in ordinary

⁶We included claims data from Q4 2002. As noted in Section 2, the data from this quarter were not complete when we obtained the data set. This was an important omission for the analysis of utilization, so we excluded the quarter from the analysis in Section 2. The present analysis only required us to know whether a person with Q4 2002 oxygen claims received portable oxygen. As long as portable oxygen claims for a person were as likely to be in the data set as other oxygen claims, including the Q4 2002 data will not bias our estimates. As a sensitivity analysis, we also estimated portable oxygen use while excluding Q4 2002. The results were similar to the estimates that included Q4 2002.

least squares regression. The coefficients in logit regressions cannot be directly interpreted as marginal effects; we report marginal effects that were calculated by Stata 7.0 software.⁷

Among all oxygen users in Polk County, we estimate that 79.7 percent and 73.8 percent would have received portable oxygen in the absence of the demonstration during the Round 1 and Round 2 time periods, respectively (Table 3-6). Beginning in 2000, there was a general and statistically significant decline in portable oxygen use in all counties; by 2002, portable oxygen use was 9.8 percentage points lower than in 1997. The demonstration was associated with a statistically significant 2.4 percentage point increase in utilization in Round 1. The demonstration impact in Round 2 was not statistically significant.

Table 3-6
Demonstration impact on the percentage of oxygen users who receive portable oxygen, Polk County

	Estimated percentage receiving portable oxygen in absence of demonstration, Round 1	Marginal effect of demonstration, Round 1	Estimated percentage receiving portable oxygen in absence of demonstration, Round 2	Marginal effect of demonstration, Round 2
All oxygen users	79.7%	2.4%**	73.8%	-1.7%
New oxygen users	81.4%	-3.3%**	74.7%	-12.4%**

**Significant at the 1 percent level.

SOURCE: Analysis of Medicare National Claims History, 1997–2002.

Among new users, there was also a general decline in portable oxygen use that affected all counties; by 2002, portable oxygen use was about 14.7 percentage points lower than in 1997. The demonstration was associated with statistically significant reductions in portable oxygen use of 3.3 percentage points in Round 1 and 12.4 percentage points in Round 2.

Figures 3-13 and 3-14 plot quarterly portable oxygen use in Polk County and the five comparison counties over the period 1997 to 2002 among all users and new users, respectively. These data are unadjusted for the results of the regression. The figures are consistent with the regression results, showing a general reduction in portable oxygen use in 2000, 2001, and 2002 that affects both Polk County and the comparison counties and a Round 2 demonstration reduction for Polk County.

⁷The marginal effects were calculated with the Polk County variable set equal to one and the year values set to coincide with the demonstration period.

Figure 3-13
Portable use among all oxygen users, Polk County demonstration

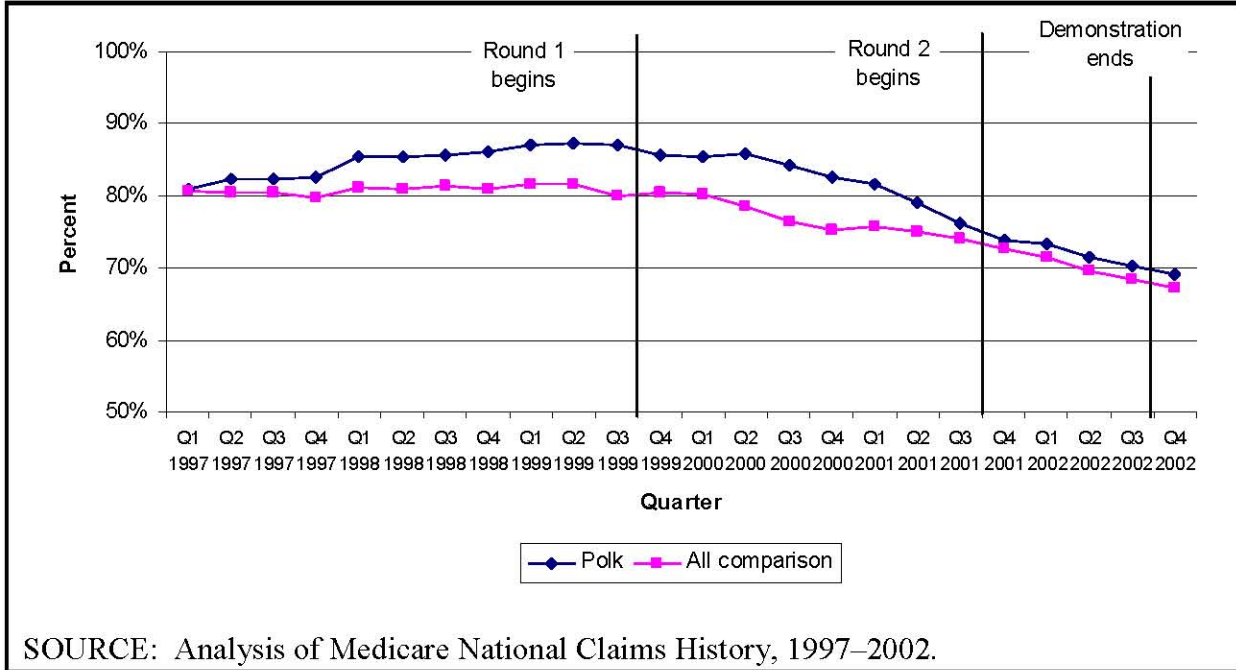
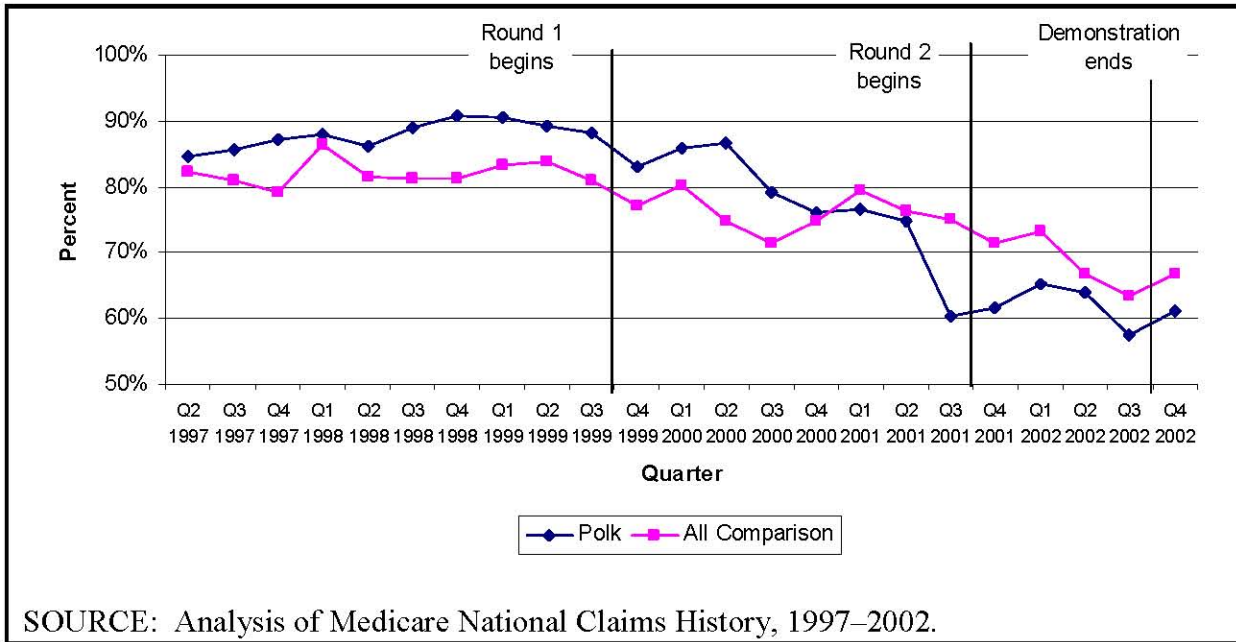


Figure 3-14
Portable use among new oxygen users, Polk County demonstration



San Antonio—We performed a similar analysis for San Antonio and its comparison area, the Austin-San Marcos MSA (Table 3-7). Among all oxygen users in San Antonio, we estimated that 87.6 percent would have used portable oxygen in the absence of the demonstration. The demonstration was associated with a statistically insignificant change in portable oxygen use in San Antonio. Unlike the Florida counties, where portable oxygen use fell over time in both the demonstration and comparison counties, the common time effects in San Antonio and Austin-San Marcos were small and positive (portable oxygen use was 4.6 percentage points higher in 2002 than in 1997).

Table 3-7
Demonstration impact on the percentage of oxygen users who receive portable oxygen, San Antonio

	Estimated percentage receiving portable oxygen in absence of demonstration	Marginal effect of demonstration
All oxygen users	87.6%	-1.7%
New oxygen users	88.6%	-1.2%

SOURCE: Analysis of Medicare National Claims History, 1997–2002.

Among new oxygen users in San Antonio, we estimated that 88.6 percent would have used portable oxygen in the absence of the demonstration. The demonstration was associated with a statistically insignificant change in portable oxygen use. Similar to the case for all users, portable oxygen use among new users was about 2.6 percentage points higher in 2002 than in 1997 in both San Antonio and Austin-San Marcos.

Figures 3-15 and 3-16 plot actual monthly portable oxygen use in San Antonio and Austin-San Marcos over the period 1997–2002 among all users and new users, respectively. Among all users (Figure 3-15), the percentage in San Antonio receiving portable oxygen varies from about 82 to 88 percent. There is a noticeable increase in portable oxygen use in Austin-San Marcos between 1997 and 1999, and use remains relatively constant thereafter. Consistent with the logit regression results, there is not a clear-cut change in portable oxygen use in San Antonio, relative to Austin-San Marcos, after the demonstration begins.

For new users (Figure 3-16), portable oxygen use varies from about 80 to 95 percent in San Antonio and Austin-San Marcos. Again, there is not a clear-cut demonstration effect visible in the raw numbers.

Figure 3-15
Portable use among all oxygen users, San Antonio demonstration

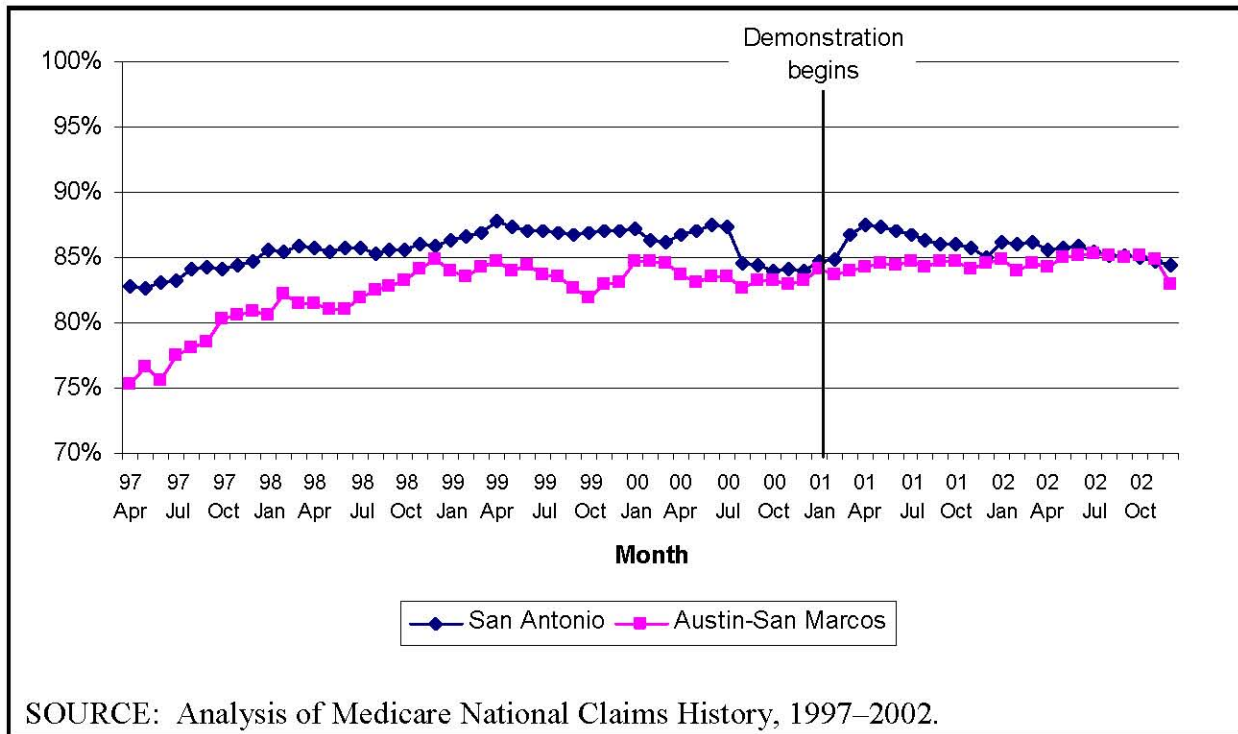
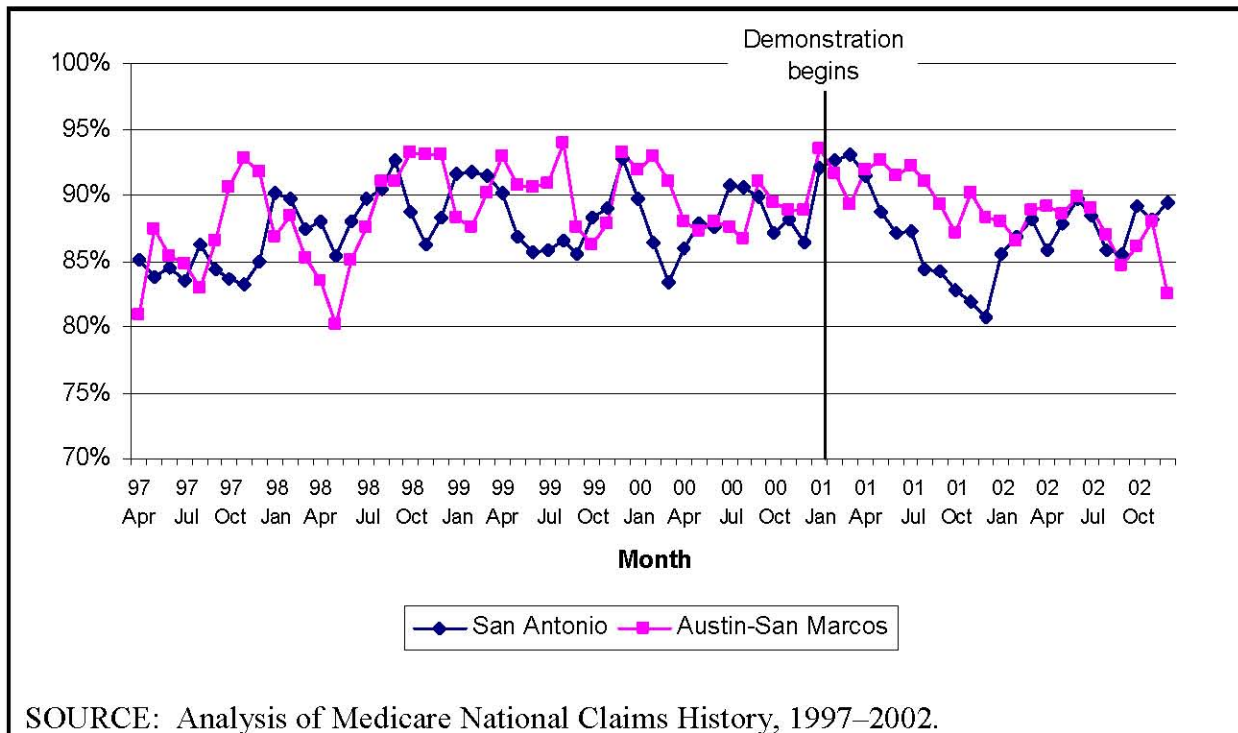


Figure 3-16
Portable use among new oxygen users, San Antonio demonstration



Discussion. Both the beneficiary survey results and the claims data results indicate that the demonstration was associated with a reduction in portable oxygen use by new users in Polk County. However, the two sets of results are not entirely consistent. First, the baseline beneficiary surveys were primarily conducted in the second quarter of 1999 and the follow-up surveys were conducted in the first quarter of 2001, during Round 1 of the demonstration. The claims analysis finds only a small (3.3 percentage point) reduction in portable oxygen use for new oxygen users in Round 1 of the demonstration. Although this reduction is statistically significant, it is much smaller than the 23.5 percentage point reduction estimated from the beneficiary survey. Moreover, if we match the claims data to the period covered by the beneficiary surveys and limit our analysis to the two counties in the beneficiary surveys, we see similar differences in portable oxygen use by new users; the claims data (unadjusted for the regression) show portable oxygen use dropping from 89.3 percent in Polk County in the second quarter of 1999 to 76.6 percent in the first quarter of 2001, while use dropped from 77.4 percent to 67.4 percent in the corresponding quarters in Brevard County. Second, if we ignore the timing difference and compare the larger negative Round 2 effect in the claims data analysis to the marginal effect computed from the beneficiary survey, we see that the marginal effect in the claims analysis (-12.4 percent) is smaller in magnitude than the marginal effect from the beneficiary survey (-23.5 percent). It is possible that the claims data provide a better measure of access to portable oxygen, because the claims data measure how many oxygen users *received* portable oxygen equipment and supplies, while the surveys asked whether beneficiaries currently *used* a portable oxygen system. If this is the case, the smaller marginal effect in the claims analysis may provide a better measure of the demonstration's impact.

3.6.4 Site Visits

During site visits, neither demonstration suppliers nor referral agents mentioned reductions or changes in access for portable oxygen resulting from the demonstration. Several suppliers mentioned that it was expensive to serve beneficiaries who used large amounts of portable oxygen, but this appears to be related more to current reimbursement policy than to the competitive bidding demonstration. Under current reimbursement policy, a single monthly portable oxygen payment covers rental of a portable oxygen system; delivery of all necessary portable oxygen tanks and cylinders is covered under the monthly payment for a stationary oxygen system. Providing more portable tanks or cylinders increases costs but does not result in higher reimbursement.

3.6.5 Conclusions about Portable Oxygen

Careful analysis of the use of portable oxygen among beneficiaries residing in demonstration versus nondemonstration sites results in the following conclusions:

- In Polk County, there was a secular trend in decreased use of portable oxygen among Medicare beneficiaries that was unrelated to the demonstration. This is supported by the observation of decreasing portable oxygen use for the years 2000, 2001, and 2002, among new and ongoing oxygen users and in both demonstration and nondemonstration counties in Florida. This finding may be the result of the added criteria for eligibility that took effect on October 1, 1999. However, in San Antonio

and its comparison site there was no secular downward trend in the portable oxygen utilization.

- The dramatic decrease in use of portable oxygen that was self-reported by new users in Polk County in the beneficiary survey was not fully substantiated by claims data analysis. Claims data analysis for the survey reference period demonstrated a smaller change in oxygen use among new users (89.9 to 76.6 percent in Polk County) and portable oxygen use dropped nearly as much in the comparison (77.4 to 67.4 percent) site.
- The claims analysis revealed that the demonstration was associated with a small, but statistically significant reduction in portable oxygen use by new oxygen users in Round 1 of the Polk County demonstration. Round 2 of the demonstration in Polk County was associated with a larger (–12.4 percentage points) statistically significant reduction in the use of portable oxygen by new users. In San Antonio, the demonstration was not associated with a change in portable oxygen use by new oxygen users.
- Claims data seem to provide a better and more complete assessment of the proportion of beneficiaries who were provided with portable oxygen. This means of tracking utilization was relatively inexpensive and provided meaningful information about this important aspect of oxygen therapy.

3.7 Summary

Overall, our findings indicate that beneficiary access to DMEPOS products and services was high prior to the demonstration and remained at high levels during the demonstration. Beneficiary survey data from the Polk County and San Antonio demonstrations did not indicate widespread, persistent problems with access, and these results were largely backed by site visit interviews with referral agents and suppliers.

For the evaluation, an area of special concern was access during the transition period when the new demonstration rules and prices were just taking effect. We found that the transition to demonstration prices and suppliers passed relatively smoothly in Polk County and San Antonio. The smooth transitions appeared to be related to the existence of transition policies and the willingness of nondemonstration oxygen suppliers to continue serving their patients. As a result, there was relatively little disruption of existing relationships between suppliers and beneficiaries during the transition period. This finding suggests that CMS should anticipate the need for a transition period and special transition policies if competitive bidding is adopted on a wider scale.

The selection of multiple winners in each product category and the role of referral agents also helped maintain access during the demonstration. Referral agents who ordered equipment and supplies for their patients reported a few problems with access during the first months of the demonstration. Agents later became more familiar with demonstration rules and demonstration-eligible suppliers and began using suppliers with whom they were comfortable. Because a number of demonstration suppliers were selected in each product category, demonstration

suppliers still had to attract new patients by promptly delivering equipment and supplies. This competition appeared to promote access. In general, referral agents did not think that the demonstration had a negative impact on beneficiaries' access to care. The agents believed this was due to the additional responsibilities they assumed to ensure access and quality.

The beneficiary survey data showed few statistically significant demonstration impacts on access measures. However, the Polk County beneficiary survey analysis detected a statistically significant decline in the provision of portable oxygen and an increase in conserving device usage among new oxygen users under the demonstration. In contrast, beneficiary surveys in Texas indicated that the demonstration did not have a significant impact on portable oxygen and conserving device use in San Antonio.

To further evaluate the impact of the demonstration on portable oxygen use in Polk County and San Antonio, we analyzed claims data. This analysis indicated that the demonstration had a negative and statistically significant impact on the percentage of new oxygen users who received portable oxygen in Polk County; the demonstration impact was insignificant in San Antonio. In Polk County, the reduction in portable oxygen use for new oxygen users was as large as 12.4 percentage points in Round 2. However, the negative impacts were smaller in magnitude than the impact suggested by the beneficiary survey, and most new oxygen users still received portable oxygen during the demonstration. Although the reductions in portable oxygen use by new patients did not appear to affect beneficiary satisfaction (see Section 4), monitoring of portable oxygen use in any future competitive bidding program would help ensure that access to portable oxygen remains satisfactory.

SECTION 4 QUALITY AND PRODUCT SELECTION

4.1 Introduction

One of the major concerns about competitive bidding is that it may encourage suppliers to provide lower quality products and services in an effort to cut costs and restore profit margins reduced by the bidding process. The DMEPOS Competitive Bidding Demonstration design included a number of features intended to maintain and promote quality. First, CMS ensured that all bidders underwent an initial quality evaluation, with more strenuous evaluation for potential winners. Second, multiple winners were selected in each product category to maintain competition. Third, CMS designated quality and service standards that were monitored throughout the demonstration. Finally, a Demonstration Ombudsman was appointed in each site to respond to complaints and concerns related to quality.

Lower quality may be manifested by suppliers offering lower quality products, postponing preventive maintenance, delaying service calls, limiting product selection, reducing the level of training or expertise of staff, and/or reducing inventory to the point that time needed to fill orders is increased. Consequently, our approach was to evaluate the effect of the demonstration on the quality of products and services by obtaining information directly from Medicare beneficiaries, beneficiary organizations, referral agents, and suppliers. To do so, we relied on beneficiary surveys, supplier surveys, and site visits to each demonstration site.

Section 4.2 presents findings from beneficiary surveys in the Polk County and San Antonio demonstrations. Section 4.3 details findings from site visits in Polk County and San Antonio. Section 4.4 discusses quality issues related specifically to urological supplies in the Polk County demonstration. Section 4.5 discusses quality issues related to wheelchairs in San Antonio. Section 4.6 describes the effects of selecting multiple winners for the demonstrations. Section 4.7 evaluates product selection under the demonstration. Section 4.8 concludes with a summary of results.

Key findings in this section are as follows:

- Users of oxygen and other medical equipment in Polk County and San Antonio were highly satisfied with their experiences with their DMEPOS suppliers. Survey data show that overall satisfaction ratings were high before the demonstration and remained at that level 1 year after its implementation.
- Survey data indicate that quality of DMEPOS products and services was high before and after the demonstration in both Polk County and San Antonio. There were few statistically significant demonstration impacts on quality-related survey measures, suggesting that the demonstration had little overall impact on quality.
- During site visits to Polk County in Round 1, concerns were raised about the quality of urological supplies. Some suppliers believed that—partly through supplier inexperience—prices in Round 1 were set too low. Prices rose in Round 2, and a urological supplier with a strong reputation was added as a demonstration supplier.

- During site visits to San Antonio, referral agents reported a number of issues related to wheelchair service provided by some demonstration suppliers. Some suppliers did not provide the level of service expected by referral agents in terms of equipment setup and delivery, initial fitting and adjustments, and responsiveness to problems. Agents responded by cutting referrals to these suppliers and by taking increased responsibility for ensuring quality service to their patients.
- San Antonio suppliers reported on product selection in a supplier survey. Most suppliers reported little change in the products they supplied before and after the demonstration began.

4.2 Beneficiary Survey Results

In this section, we discuss the quality-related findings from the baseline and follow-up beneficiary surveys in Polk and Brevard Counties, Florida, and San Antonio and Austin-San Marcos, Texas. Refer to Section 3.2.1 for our survey methodology. Our analysis methodology is identical to that described in Section 3.2.2; however, the dependent variables are responses to the surveys' quality-related questions. We again conducted separate analyses for oxygen users and for users of other medical equipment and supplies. We also performed separate analyses on the subset of survey responses provided by new users (see Section 3.2.2 for a definition of new users). In addition, we included an ordered logit regression analysis on overall satisfaction ratings. This specification takes into account the ordinal nature of the satisfaction variable. To compare and contrast findings between the two demonstration sites for each quality variable, we present first the results for the Polk County demonstration and then the results for the San Antonio demonstration. To highlight which site is being discussed, the site names are marked in bold type.

4.2.1 Oxygen Consumer Survey Findings

Our data indicate high levels of satisfaction with DMEPOS services in the two demonstration sites and their comparison sites both before and after the demonstration. Many of the generalized quality measures have means that indicate that beneficiaries were satisfied with the quality of products and services they were receiving from their DMEPOS suppliers. In this section, we present the variables that had the greatest amount of proportional change from baseline to follow-up. When interpreting the results, it is important to recognize that both pre- and post-demonstration measures of quality indicated very high levels of service and satisfaction.

As in Section 3, figures in this section present unadjusted results (the regression results that are adjusted for other characteristics are quite similar). In the text, we identify the measures where the demonstration's impact was statistically significant when adjusting for patient characteristics, either among all survey respondents or among only the subset of new users. In Table 4-1, we present the quality variables by category, noting those for which the demonstration's impact was statistically significant. In **Polk County**, the demonstration's impact was significant for none of the 23 measures for all oxygen users and for only 2 of the 23 measures for new users. In **San**

**Table 4-1
Demonstration impact on quality variables, oxygen users**

Category	Variable	Significant impact in Polk County?		Significant impact in San Antonio?	
		All users	New users	All users	New users
Overall satisfaction	Overall satisfaction with supplier	No	No	No	No
	Willingness to recommend supplier	No	No	No	No
Quality of equipment and supplies	Equipment reliability rating	No	No	No	No
	Number of major equipment problems, last 6 months	No	Decrease	No	No
	Equipment replaced due to malfunction, last 6 months	No	No	No	No
Quality of training	Rating of training given by supplier	No	No	No	No
	Comfort level with oxygen conserving device	No	No	No	No
	Comfort level, controlling oxygen flow	No	No	No	No
	Comfort level with oxygen system humidifier	No	No	No	No
	Comfort level, attaching regulators	No	No	No	No
	Comfort level, cleaning oxygen system filter	No	No	No	No
Quality of customer service	Frequency of customer service courtesy	No	No	No	No
	Frequency of customer service good explanation	No	Increase	No	No
	Frequency of customer service thoroughness	No	No	No	No
	Contacted supplier with problem, last 6 months	No	No	No	No
	Problem resolved satisfactorily	No	No	No	No
	After-hours call to supplier, last 6 months	No	No	No	No
	Frequency of after-hours customer service thoroughness	No	No	No	No
	Type of assistance with insurance				
	Explain what insurance will pay for	No	No	No	No
	Offer to bill Medicare/other insurance	No	No	No	No
	Tell how to get information on insurance	No	No	Decreased	No
Got documentation from physician for you	No	No	No	No	
Did not receive any assistance	No	No	Increased	No	
Nebulizer drugs	Delay in receiving drugs because out of stock	N/A	N/A	No	No
	Received wrong drug from supplier	N/A	N/A	No	No

SOURCE: Oxygen Consumer Survey.

Antonio, the demonstration's impact was significant for only 2 of the 25 measures for all oxygen users and for none of the 25 measures for new users. Below, we describe our major findings for individual quality measures in the Oxygen Consumer Survey.

Overall satisfaction—The satisfaction variable provides a summary measure of beneficiaries' perceptions about access to and quality of service provided by their DMEPOS supplier. Satisfaction ratings for all oxygen survey respondents in **Polk County** and its comparison site are shown in Figure 4-1a. We analyzed satisfaction ratings based on a survey question that asked respondents to rate their overall experience with their primary supplier on a scale of 1 to 10, with 10 being the best possible rating. In presenting the data graphically, we show the proportion of survey responses falling in each of four ranges of satisfaction ratings: 0 to 5, 6 to 7, 8 to 9, and 10.

Unadjusted data suggest slight increases in the highest rating, and a slightly larger increase in Polk County, suggesting a small positive impact of the demonstration. Among Polk County oxygen users, the mean of the overall satisfaction variable remained almost constant from baseline to follow-up, moving from 9.26 to 9.29. The corresponding change in Brevard County is from 9.27 to 9.28. The demonstration's impact on satisfaction ratings of all oxygen users was not statistically significant.

In **San Antonio** and its comparison site, satisfaction ratings were somewhat lower than in Polk County and its comparison site (Figure 4-1b). In San Antonio, there was a small decrease in the highest ratings between baseline and follow-up and little change in the comparison site. The mean rating decreased from 8.36 to 8.09 in San Antonio and from 8.10 to 7.95 in the comparison site. The demonstration impact was not statistically significant, for all users or for the subset of new users.

Oxygen supplier satisfaction ratings for new oxygen users only are shown in Figure 4-2a for **Polk County**. Because beneficiaries who were using oxygen prior to the start of the demonstration were allowed to continue with their existing supplier even if the supplier was not part of the demonstration, new users may be most affected by the demonstration (see Section 3.2.2 for a detailed discussion of this issue). Satisfaction levels were stable from baseline to follow-up in both Polk and Brevard Counties. We again find no significant demonstration impacts on overall satisfaction among new users. In **San Antonio**, the demonstration also did not have a significant impact on satisfaction among new oxygen users (Figure 4-2b).

As another measure of satisfaction, beneficiaries were asked if they would be willing to recommend their supplier to a friend who needed oxygen service. In **Polk County** and its comparison county at baseline and follow-up, over 95 percent of respondents indicated that they would be willing to recommend their supplier to a friend. Each site experienced an increase of approximately 1 percentage point in this measure from baseline to follow-up among all users. At follow-up in Polk County, all new users reported that they would recommend their supplier to a friend (up from about 98 percent at baseline). The demonstration's impact on this measure was not statistically significant.

Figure 4-1a
Overall satisfaction ratings, all oxygen users, Polk County demonstration

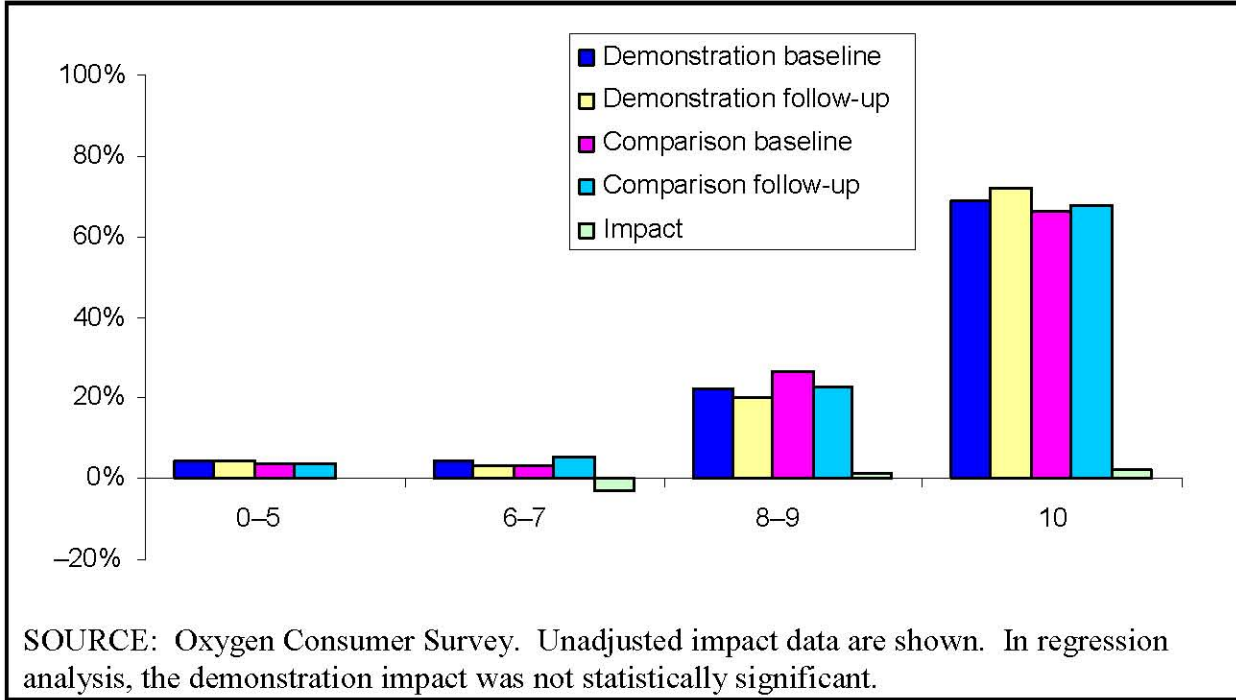


Figure 4-1b
Overall satisfaction ratings, all oxygen users, San Antonio demonstration

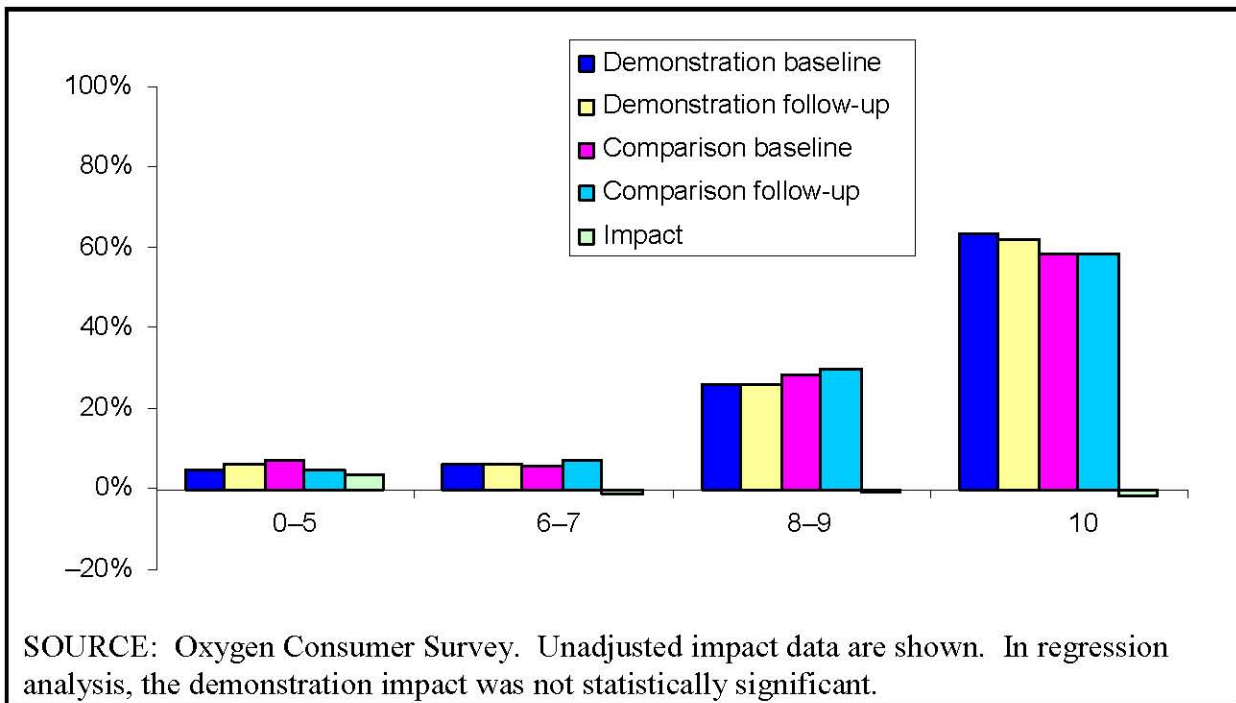


Figure 4-2a
Satisfaction ratings, new oxygen users only, Polk County demonstration

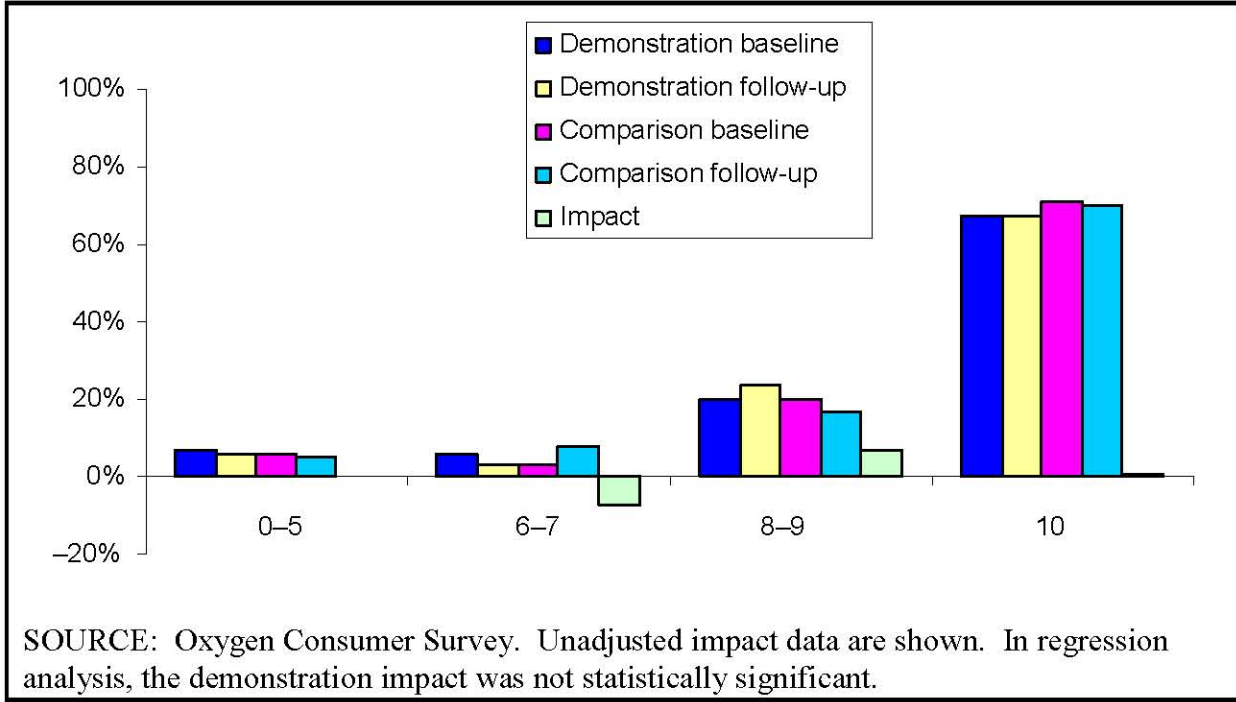
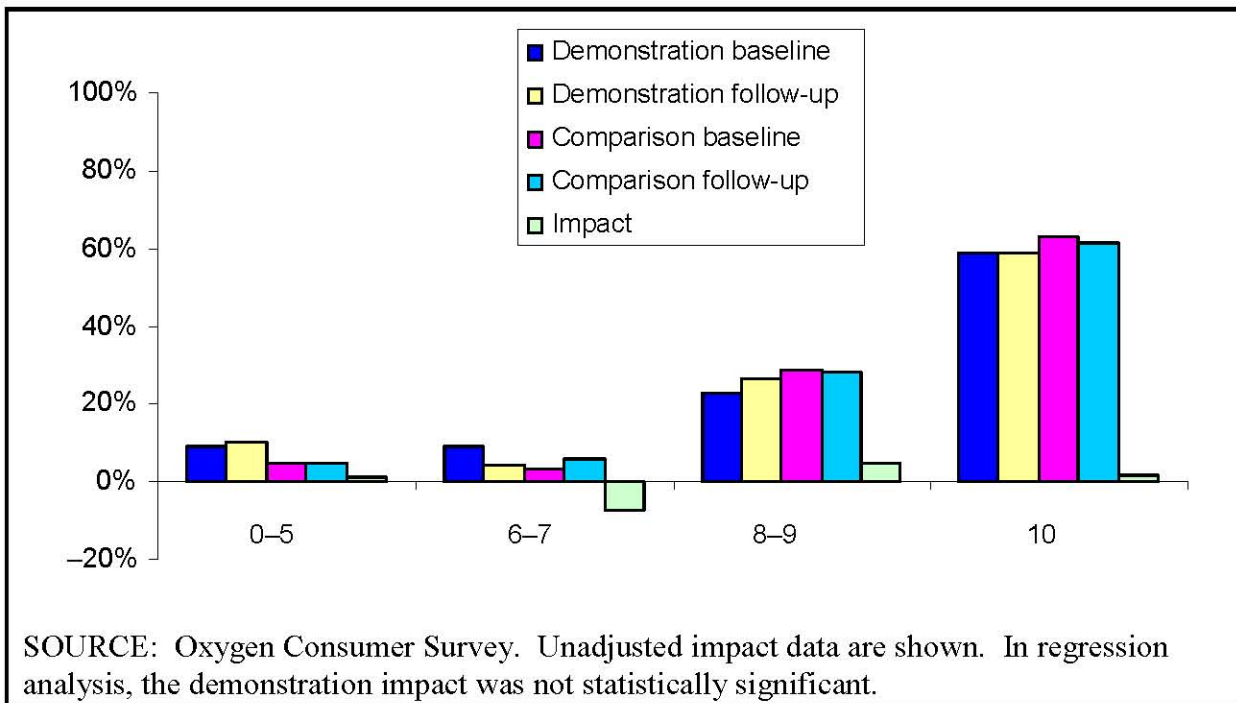


Figure 4-2b
Satisfaction ratings, new oxygen users only, San Antonio demonstration



The demonstration also did not significantly affect this measure in **San Antonio**. At baseline and follow-up, approximately 96 percent of San Antonio beneficiaries would recommend their supplier to a friend; the corresponding numbers for the comparison site were 94.7 percent at baseline and 96.2 percent at follow-up.

Quality of equipment and supplies—In **Polk County**, respondents' ratings of the reliability of their oxygen equipment over the last 6 months showed little change from baseline to follow-up (Figure 4-3a). The vast majority (90 to 95 percent) of respondents rated their equipment as “very reliable,” with a slight (statistically insignificant) increase in this percentage from baseline to follow-up in the demonstration site.

Similarly, in **San Antonio**, the demonstration did not have a significant impact on reliability ratings by oxygen users. Most users thought that the equipment was very reliable (Figure 4-3b).

A related measure, the number of major equipment problems reported by all oxygen users in the last 6 months, also changed little from baseline to follow-up in Polk County (Figure 4-4a) or San Antonio (Figure 4-4b). In **Polk County**, the percentage reporting no major problems remained high throughout, ranging between 80 and 85 percent. Again, the demonstration's impact on all users was statistically insignificant.

However, the demonstration's impact was statistically significant among the subset of new users, indicating that the demonstration was associated with a decline in the number of major problems new beneficiaries had with their oxygen equipment. Our marginal effect analysis indicated that the presence of the demonstration decreased the average number of major equipment problems reported by new users in Polk County by 0.31. Hypothetically, this effect could result from suppliers offering higher quality products, more frequent equipment maintenance, or better training to beneficiaries under the demonstration. However, our analysis did not detect statistically significant demonstration impacts on beneficiaries' ratings of equipment reliability or the reported frequency of maintenance visits. Only one statistically significant impact on training was detected among oxygen users (an increase in training on how to get after-hours service among new users), and it seems unlikely that this alone could have generated a decline in major equipment problems.

In **San Antonio**, most oxygen users had no major equipment problems (see Figure 4-4b). The impact of the demonstration on all users was not significant. For new users, the demonstration did not have a statistically significant impact on the number of major problems among new users; however, the coefficient was negative, and its p-value (0.0596) approached the 5 percent cutoff. The marginal effect here was about -0.25 , similar to the -0.31 marginal effect in Polk County.

Quality of training—Beneficiaries' level of comfort when using their oxygen equipment may be largely dependent on the training they receive from their suppliers and the quality and reliability of their equipment. Four survey questions probed respondents' level of comfort performing various tasks associated with their oxygen equipment (i.e., regulating the flow of oxygen, cleaning the filter, attaching regulators, and operating a humidifier). Each of these variables behaved similarly from baseline to follow-up; Figures 4-5a and 4-5b present one of

Figure 4-3a
Ratings of reliability of oxygen equipment, all oxygen users, Polk County demonstration

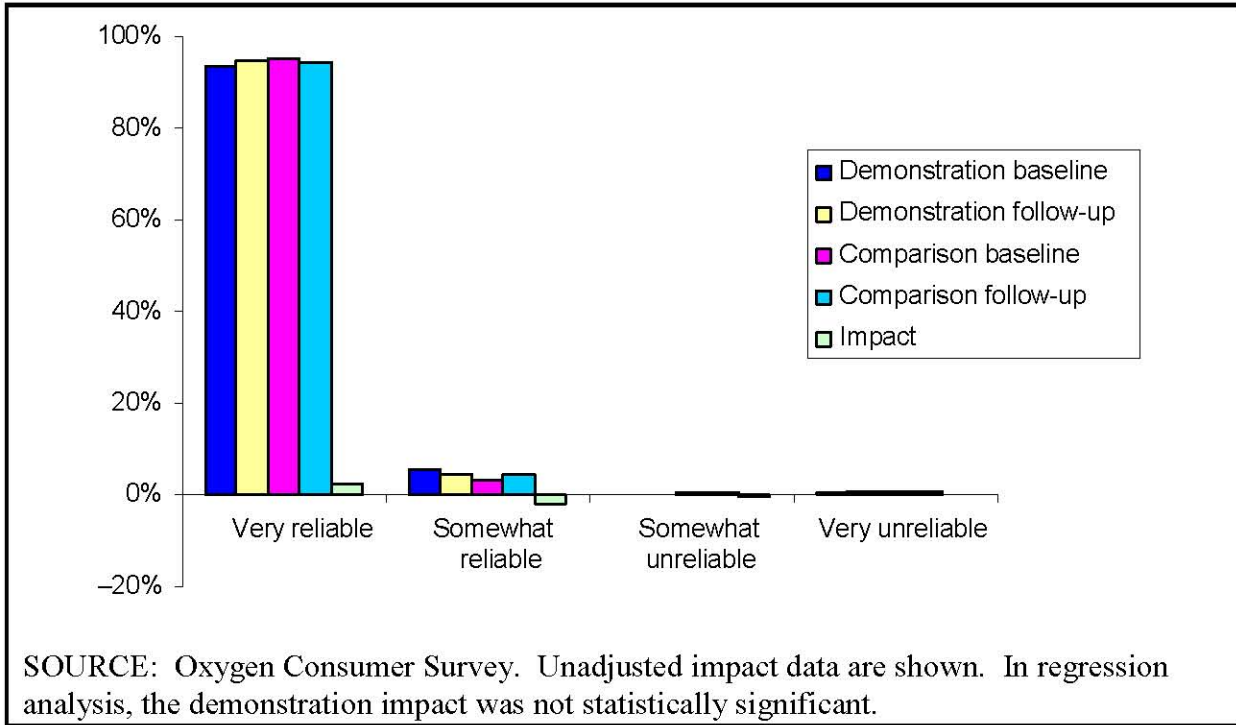


Figure 4-3b
Ratings of reliability of oxygen equipment, all oxygen users, San Antonio demonstration

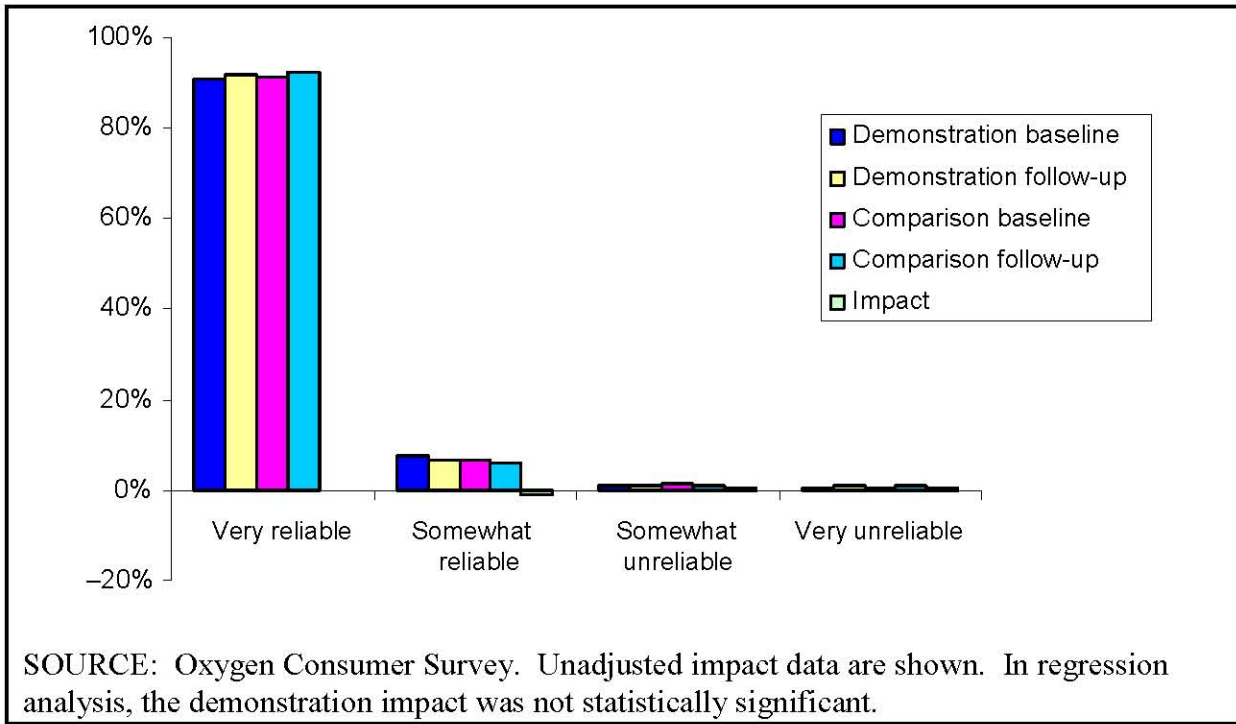


Figure 4-4a
Number of major problems with equipment in last 6 months, all oxygen users, Polk County demonstration

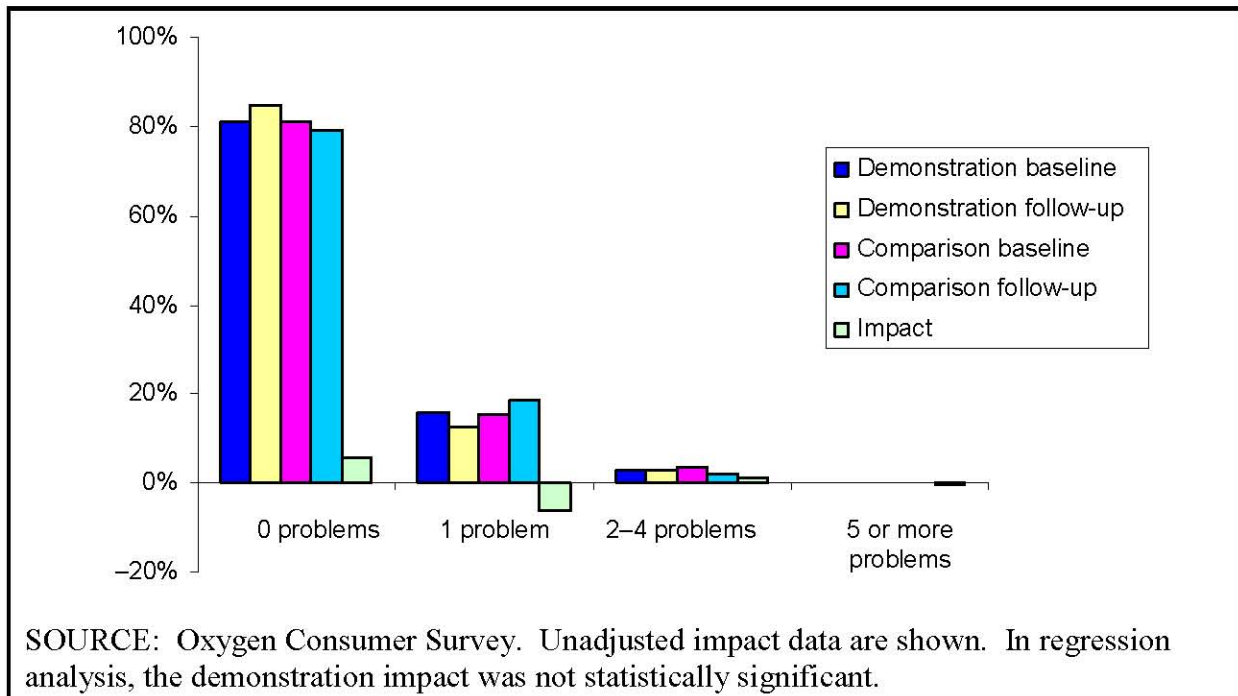


Figure 4-4b
Number of major problems with equipment in last 6 months, all oxygen users, San Antonio demonstration

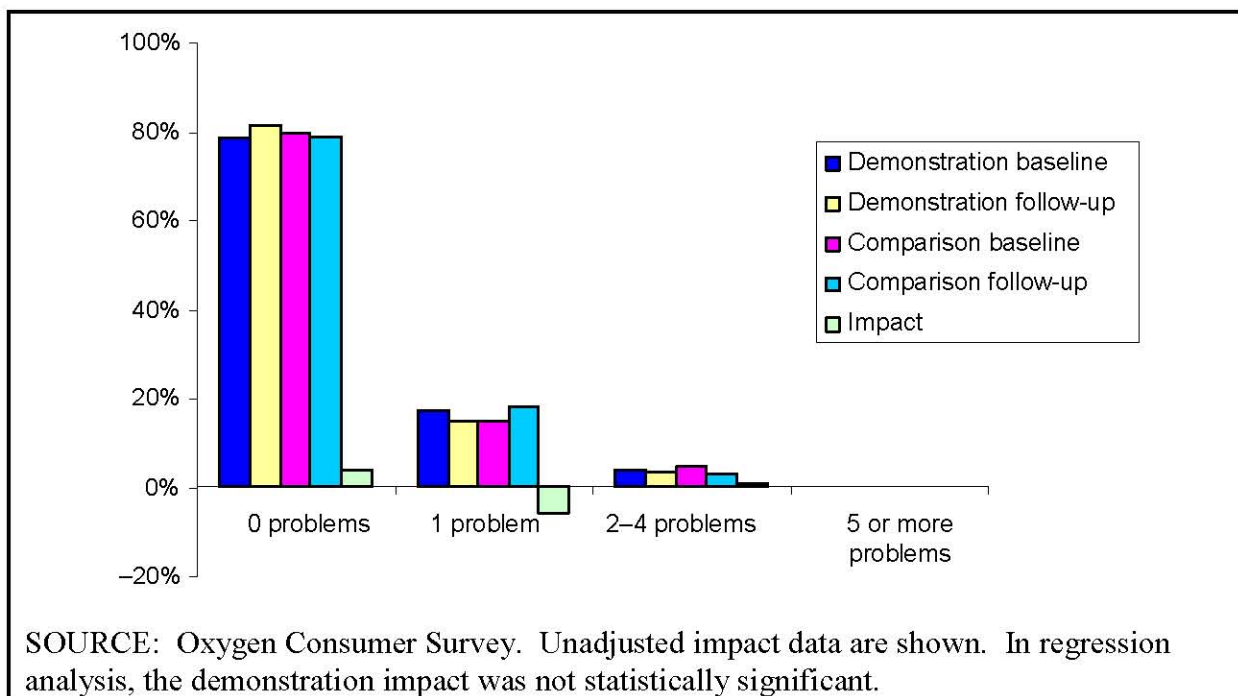


Figure 4-5a
Level of comfort controlling rate of oxygen flow, all oxygen users, Polk County demonstration

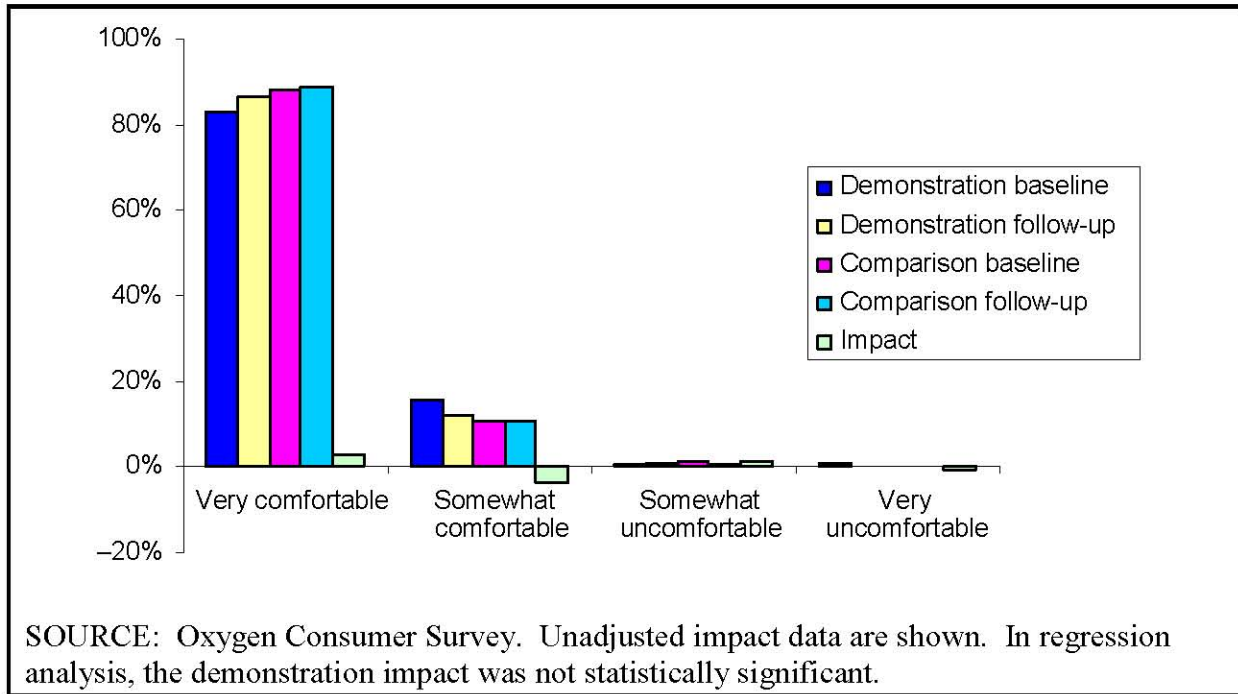
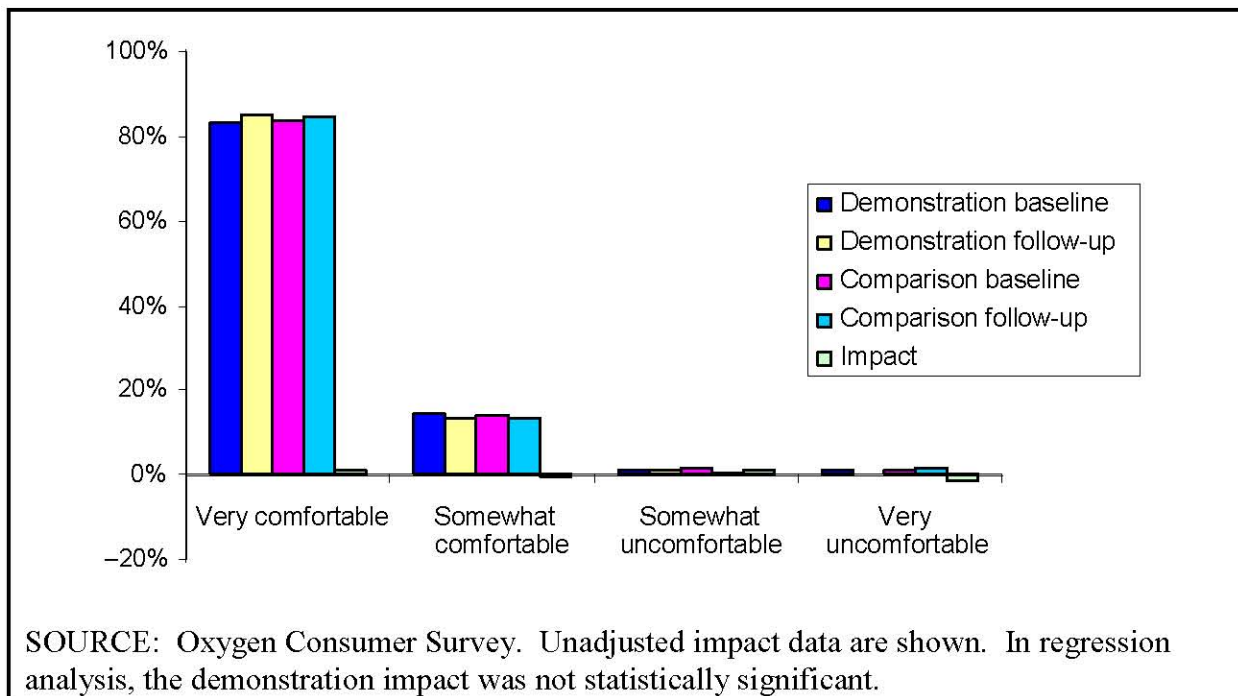


Figure 4-5b
Level of comfort controlling rate of oxygen flow, all oxygen users, San Antonio demonstration



these variables in each demonstration site as an example. For all four questions, the majority of responses (70 to 87 percent) fell in the “very comfortable” category. The demonstration had no significant impact on these four variables in either **Polk County** or **San Antonio**.

Respondents were also asked to rate the training they received from their supplier when first obtaining their oxygen equipment (Figures 4-6a and 4-6b). Of those who received training in **Polk County**, over 82 percent rated their training as either “excellent” or “very good” (see Figure 4-6a). The proportion rating their training “excellent” increased from baseline to follow-up in both the demonstration and comparison sites. There was no statistically significant demonstration impact on this variable.

In **San Antonio** and its comparison site, the ratings for training were slightly less consistent across sites and between baseline and follow-up (see Figure 4-6b) than in the Florida sites. However, the demonstration impact was not statistically significant.

Quality of customer service—Courtesy and assistance. Respondents were asked whether their supplier provides courteous service and whether their supplier provides all the assistance or information the beneficiary needs. In both **Polk County** and its comparison site and in both periods, most beneficiaries reported that they were “always” treated with courtesy (about 90 percent), supplier staff “always” explained things well to them (about 75 percent in Polk County), and they “always” got all the information they needed from their supplier (about 80 percent). No statistically significant demonstration effects were detected on these measures among all users. Among only new users, however, the demonstration had a statistically significant impact on the frequency with which suppliers explained issues clearly to beneficiaries. The marginal effect of the demonstration was a 43.9 percentage point increase in the percentage of new users reporting that their suppliers “always” explained things in a way that they can understand. Unadjusted data show that the percentage of new oxygen users with this response increased from approximately 73 to 80 percent in Polk County while falling from about 89 to 67 percent in Brevard County.

In **San Antonio**, most beneficiaries also reported that their supplier always treated them with courtesy, always or usually explained things well to them, and always or usually provided all of the information they needed. The demonstration did not have a statistically significant impact on any of these variables. Unlike in Polk County, the demonstration did not have a significant impact on the percentage of new users reporting that their suppliers “always” explained things in a way that they can understand.

Problem resolution. The percentage of **Polk County** beneficiaries who contacted their supplier with a problem in the last 6 months fell from approximately 26 percent at baseline to 22 percent at follow-up. Brevard County responses were stable at approximately 26 percent. In both sites and periods, approximately 92 percent of those who had a problem reported that their supplier resolved the situation satisfactorily. The demonstration’s impact on these measures was not statistically significant.

In **San Antonio**, the demonstration did not have a statistically significant impact on the percentage of patients who contacted their supplier with a problem. The demonstration also did not have a significant impact on whether suppliers resolved these problems satisfactorily.

Figure 4-6a
Ratings of training given initially by oxygen supplier, all oxygen users, Polk County demonstration

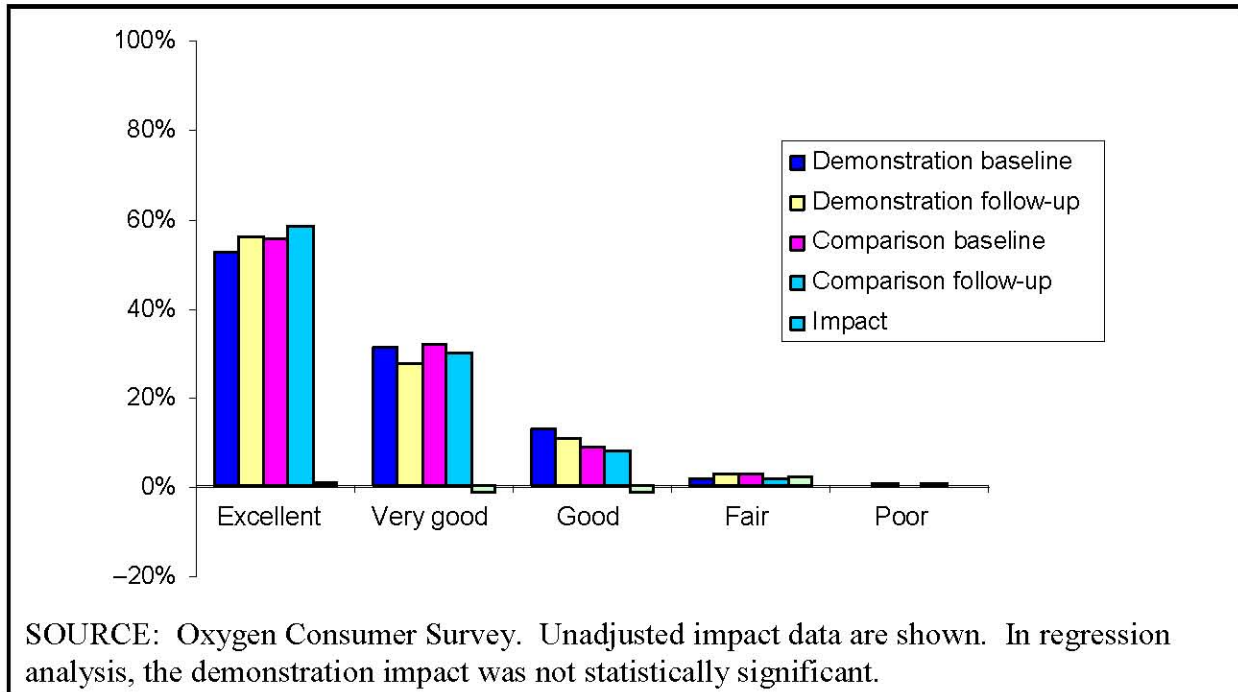
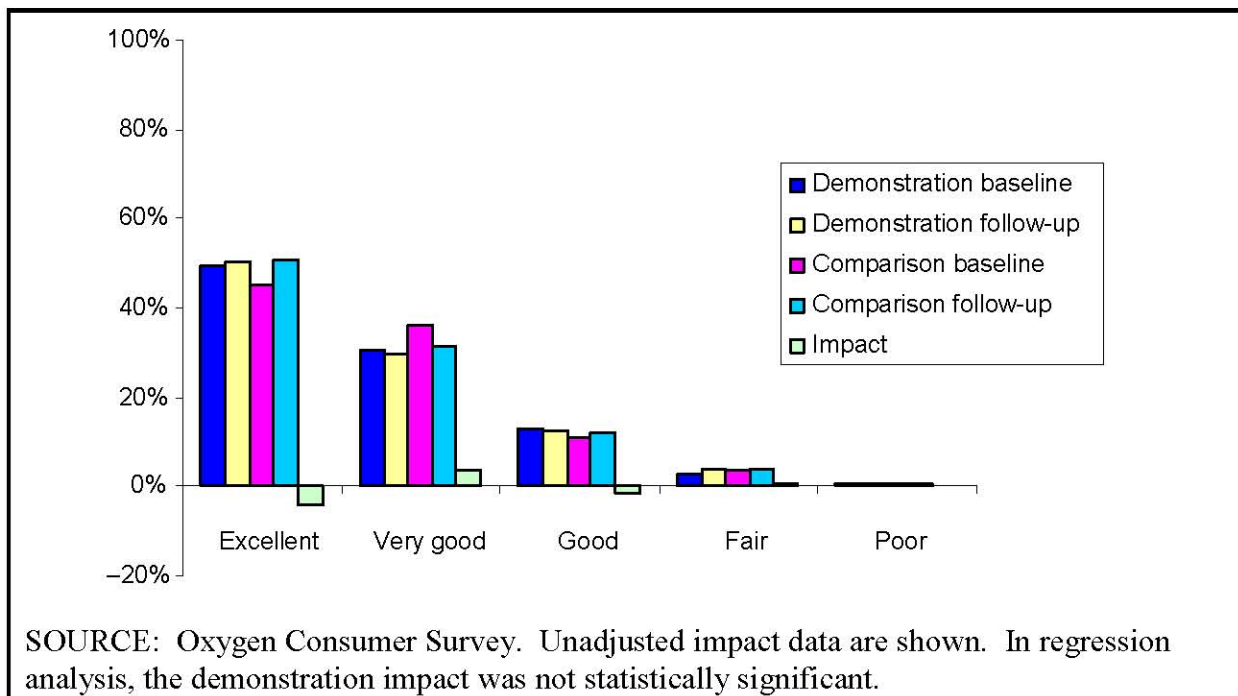


Figure 4-6b
Ratings of training given initially by oxygen supplier, all oxygen users, San Antonio demonstration



Assistance with insurance. In **Polk County**, the demonstration did not have a statistically significant impact on the type of assistance with insurance that was provided by suppliers.

In **San Antonio**, the demonstration was associated with a statistically significant reduction in suppliers telling all users how to get information about insurance. The marginal effect of the demonstration was –8.0 percentage points. The demonstration impact on the proportion of all users who received no assistance with insurance was positive and statistically significant. The marginal effect was 6.0 percentage points.

Nebulizer drugs—Nebulizer drugs were included in the demonstration in San Antonio but not in Polk County. We asked oxygen users who received nebulizer drugs whether they experienced delays in receiving drugs because the supplier was out of stock and whether they ever received the wrong drug. The demonstration did not have a statistically significant effect on these variables.

Changing suppliers—In **Polk County** and its comparison site, the number of respondents who reported changing their oxygen supplier in the last year was very low, representing only 25 to 50 beneficiaries (5.2 percent to 8.9 percent) in each site and period (Figure 4-7a). In both sites, the number changing suppliers dropped from baseline to follow-up, although there was no statistically significant demonstration impact. Table 4-2a presents the three most common reasons given by beneficiaries for changing their oxygen supplier in Polk and Brevard Counties, along with the percentage of such respondents who chose each reason.

Changing oxygen suppliers was also unusual in **San Antonio** and its comparison site (Figure 4-7b). In San Antonio, the percentage changing suppliers increased from 7.5 percent at baseline to 10.3 percent at follow-up, while the corresponding percentages in the comparison site increased from 9.2 percent at baseline to 11.5 percent at follow-up. The demonstration impact was not statistically significant. Table 4-2b presents the three most common reasons for changing suppliers in San Antonio.

Overall, these results suggest that Polk County and San Antonio beneficiaries did not “vote with their feet” by switching providers during the demonstration. This lack of response is consistent with the survey findings that the demonstration had little effect on patient satisfaction.

4.2.2 Medical Equipment Consumer Survey Findings

The Medical Equipment Consumer Survey revealed that the demonstration had few significant impacts on quality-related variables. In Table 4-3, we present the quality variables by category, noting those for which the demonstration’s impact is statistically significant. In **Polk County**, there were no significant demonstration impacts when analyzing all users together and only two significant impacts when subsetting responses into individual product categories. Among new users only, there were no significant demonstration impacts. In **San Antonio**, there was one significant demonstration impact when analyzing all users together and two statistically significant impacts when subsetting responses into individual product categories. There was one significant demonstration impact on quality variables when analyzing responses from all product

Figure 4-7a
Respondents who changed supplier in last 12 months, all oxygen users, Polk County demonstration

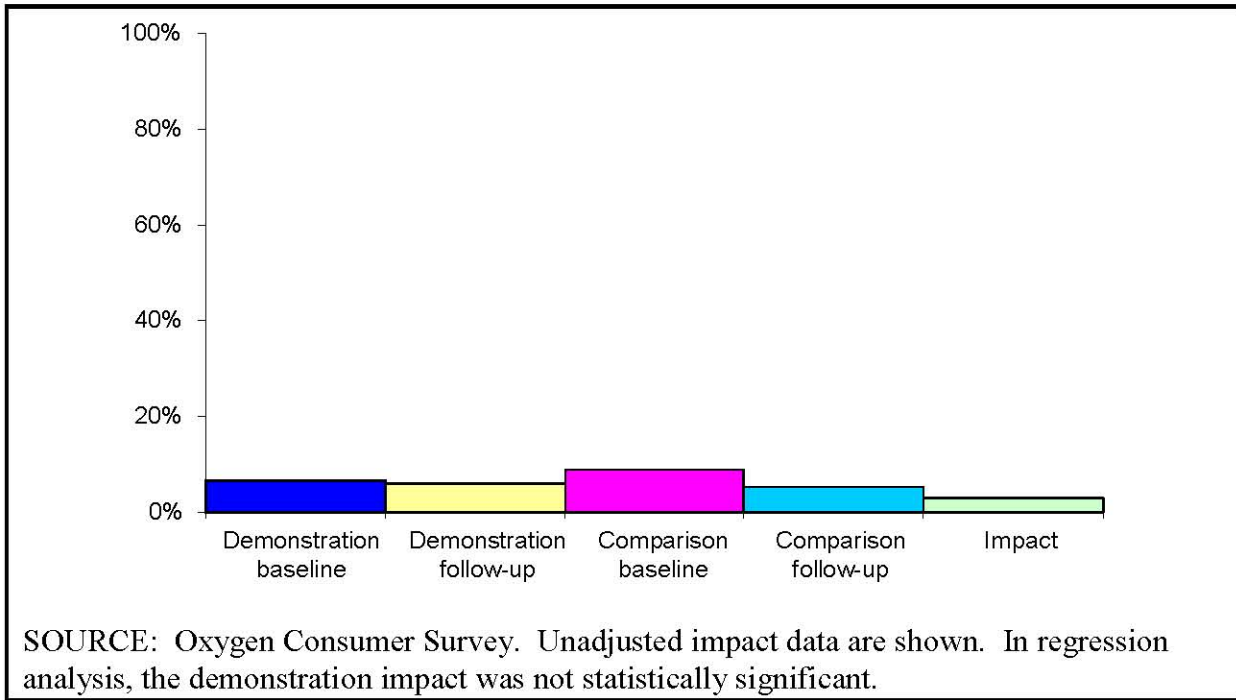


Figure 4-7b
Respondents who changed supplier in last 12 months, all oxygen users, San Antonio demonstration

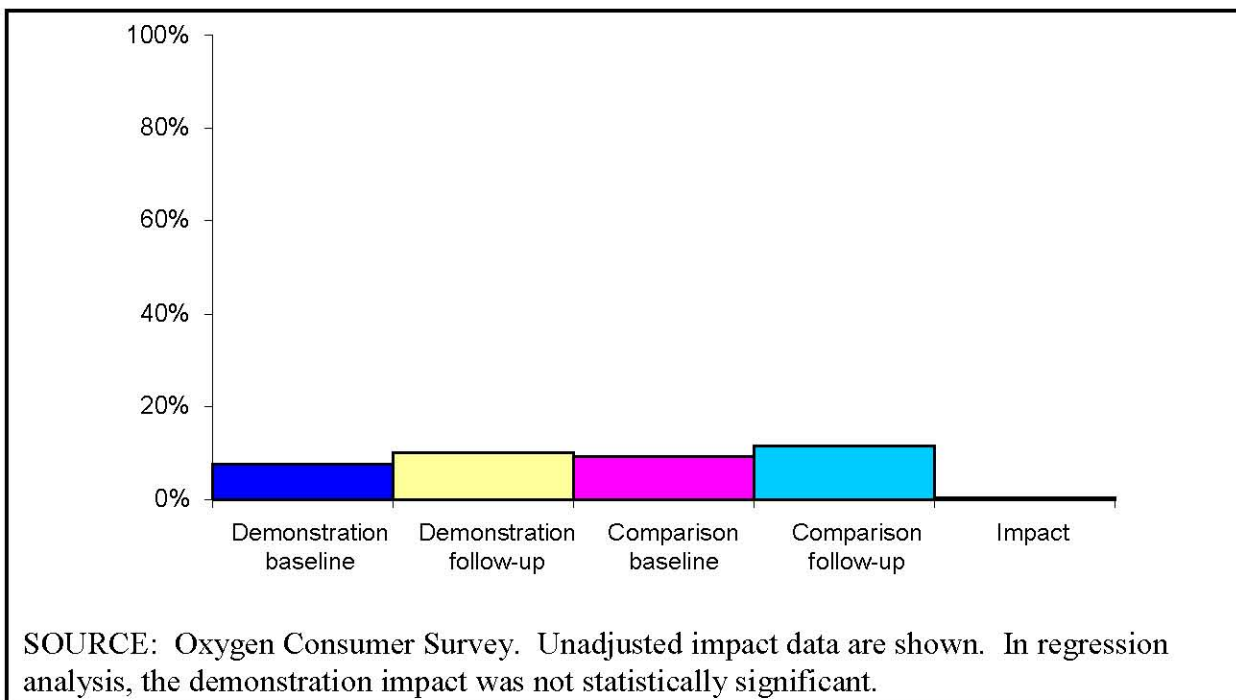


Table 4-2a
Most common reasons for changing oxygen supplier, all oxygen users who changed supplier, Polk County demonstration

Rank	Polk County		Brevard County	
	Baseline (n = 35)	Follow-up (n = 29)	Baseline (n = 50)	Follow-up (n = 27)
1.	Moved residence (17.6%)	Moved residence (19.4%)	Unhappy with service quality (20.9%)	Moved residence (23.1%)
2.	Unhappy with service quality (17.6%)	Unhappy with service quality (16.1%)	New HMO uses a different supplier (14.0%)	New HMO uses a different supplier (11.5%)
3.	Supplier went out of business (11.8%)	Tie: Supplier went out of business; and Changed to supplier listed in the Medicare Demonstration Directory (12.9% each)	Moved residence (11.6%)	Unhappy with service quality (11.5%)

SOURCE: Oxygen Consumer Survey.

Table 4-2b
Most common reasons for changing oxygen supplier, all oxygen users who changed supplier, San Antonio demonstration

Rank	San Antonio		Austin-San Marcos	
	Baseline (n = 36)	Follow-up (n = 57)	Baseline (n = 47)	Follow-up (n = 61)
1.	Supplier went out of business (21.2%)	Supplier went out of business (33%)	Unhappy with service quality (27.9%)	Supplier went out of business (41.8%)
2.	Unhappy with service quality (15.2%)	Changed to supplier listed in the Medicare Demonstration Directory (21%)	Supplier went out of business (14%)	Moved residence (12.7%)
3.	Tie: Unhappy with amount of service; and Joined HMO that uses different supplier (13.0% each)	Unhappy with service quality (19%)	Tie: Unhappy with service amount; and Moved residence (11.6%)	Unhappy with service quality (10.9%)

SOURCE: Oxygen Consumer Survey.

**Table 4-3
Demonstration impact on quality variables, other medical equipment users**

Category	Variable	Significant impact in Polk County?		Significant impact in San Antonio?	
		All users	New users	All users	New users
Overall satisfaction	Overall satisfaction with supplier	No	No	No	No
	Willingness to recommend supplier	No	No	Decrease ¹	No
Quality of equipment and supplies	Equipment reliability rating	Increase ²	No	No	No
	Number of major equipment problems, last 6 months	No	No	No	No
	Equipment replaced due to malfunction, last 6 months	No	No	No	No
Quality of training	Rating of training given by supplier	No	No	No	No
	Comfort level with equipment use	No	No	No	No
	Comfort level with equipment maintenance	No	No	No	No
Quality of customer service	Frequency of customer service courtesy	No	No	No	Increase ¹
	Frequency of customer service good explanation	No	No	No	No
	Frequency of customer service thoroughness	No	No	No	No
	Contacted supplier with a problem, last 6 months	No	No	Increase ³	No
	Problem resolved satisfactorily	No	No	No	No
	After-hours call to supplier, last 6 months	No	No	No	No
	Frequency of after-hours customer service thoroughness	No	No	No	Increase
	Type of assistance with insurance				
	Explain what insurance will pay for	No	No	No	No
	Offer to bill Medicare/other insurance	No	No	No	Increase ⁴
	Tell how to get information on insurance	Increase ⁴	No	No	No
Got documentation from physician for you	No	No	No	No	
Did not receive any assistance	No	No	No	No	
Nebulizer drugs	Delayed in receiving drugs because out of stock	N/A	N/A	No	No
	Received wrong drug from supplier	N/A	N/A	No	No

¹Statistically significant only among the subset of nebulizer drug users.

²Statistically significant only among the subset of surgical dressings users.

³Statistically significant among all users and the subset of hospital bed users.

⁴Statistically significant only among the subset of hospital bed users.

SOURCE: Medical Equipment Consumer Survey.

categories together among new users only and two significant demonstration impacts when subsetting responses into individual product categories. Below, we present the major variables of interest.

Overall satisfaction—Figures 4-8a and 4-8b present satisfaction ratings for all medical equipment survey respondents in Polk County and San Antonio, respectively. The figures present the proportion of survey responses falling in each of four ranges of satisfaction ratings: 0 to 5, 6 to 7, 8 to 9, and 10.

In **Polk County**, mean satisfaction ratings for medical equipment suppliers increased from 8.13 at baseline to 8.32 at follow-up. As with the Polk County oxygen users, there was a slightly more pronounced increase for the demonstration area in the unadjusted proportion of respondents giving the highest rating. However, the demonstration effect was not statistically significant.

As shown in Figure 4-8b, in each **San Antonio** site and period, more beneficiaries gave their supplier the highest possible rating than gave any other rating. However, the proportion of beneficiaries giving the highest rating fell from approximately 50 percent at baseline to 48 percent at follow-up in San Antonio, while in the comparison site the percentage increased from about 44 percent to 46 percent. The mean satisfaction rating for medical equipment decreased from 8.59 at baseline to 8.37 at follow-up in San Antonio, while the mean rating in the comparison site decreased from 8.37 to 8.35. However, in the multivariate analysis, the demonstration effect was not statistically significant.

Figure 4-9a shows satisfaction ratings for new DMEPOS users in **Polk County**. The percentage of responses indicating the highest possible satisfaction rating fell by 5.1 percentage points among Polk County respondents. Brevard County responses, in comparison, increased by 4.3 percentage points. Although we place more emphasis on results for new users because new users may be more sensitive to demonstration effects, the demonstration impact was not statistically significant in the regression analysis. Thus, this result does not provide reliable evidence of an adverse impact of the demonstration.

Figure 4-9b shows satisfaction ratings for new DMEPOS users in **San Antonio**. The percentage of responses indicating the highest possible satisfaction rating increased by 12 percentage points among San Antonio respondents. Austin-San Marcos responses, in comparison, fell by 3 percentage points. However, the demonstration impact was not statistically significant in the regression analysis.

Figure 4-8a
Overall satisfaction ratings, other medical equipment users (all), Polk County demonstration

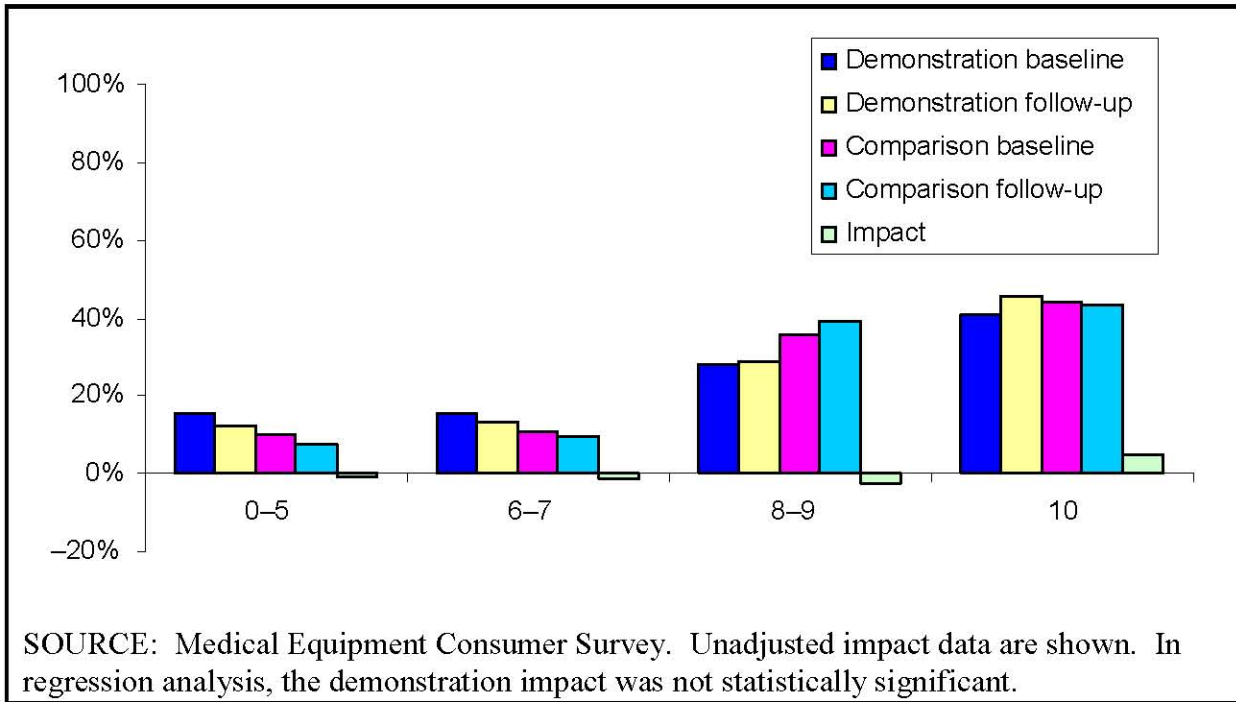


Figure 4-8b
Overall satisfaction ratings, other medical equipment users (all), San Antonio demonstration

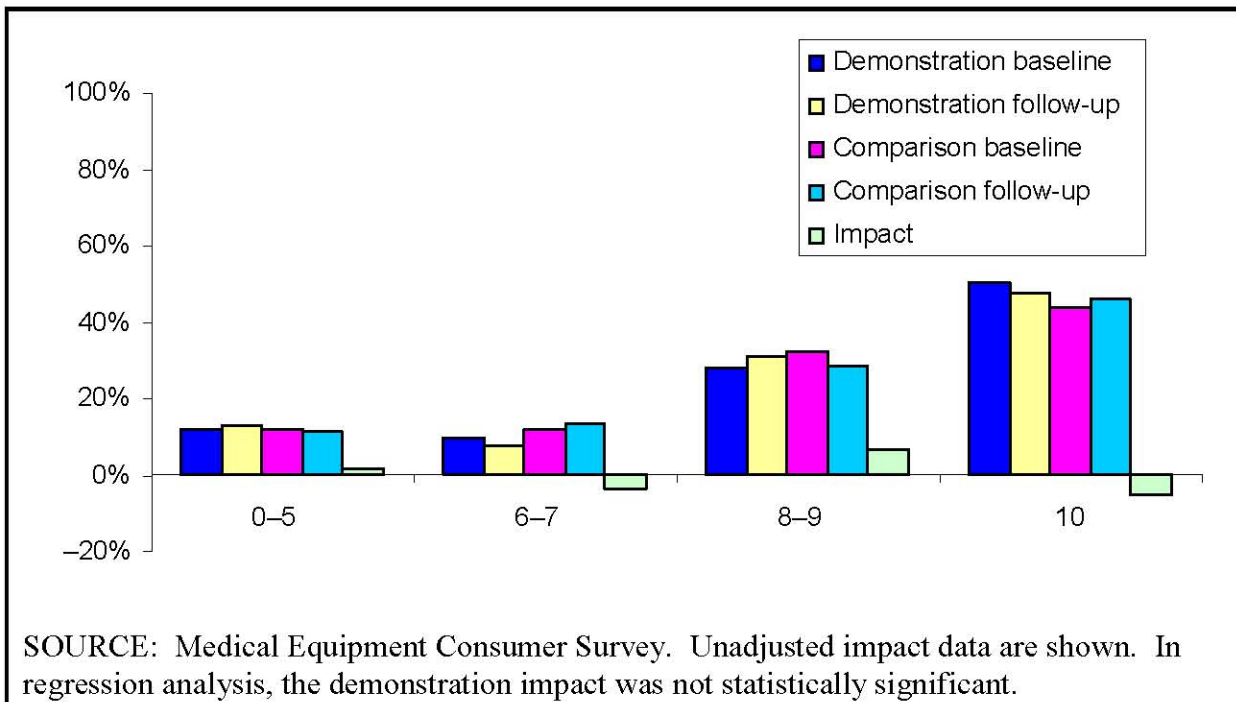


Figure 4-9a
Satisfaction ratings, new medical equipment users only, Polk County demonstration

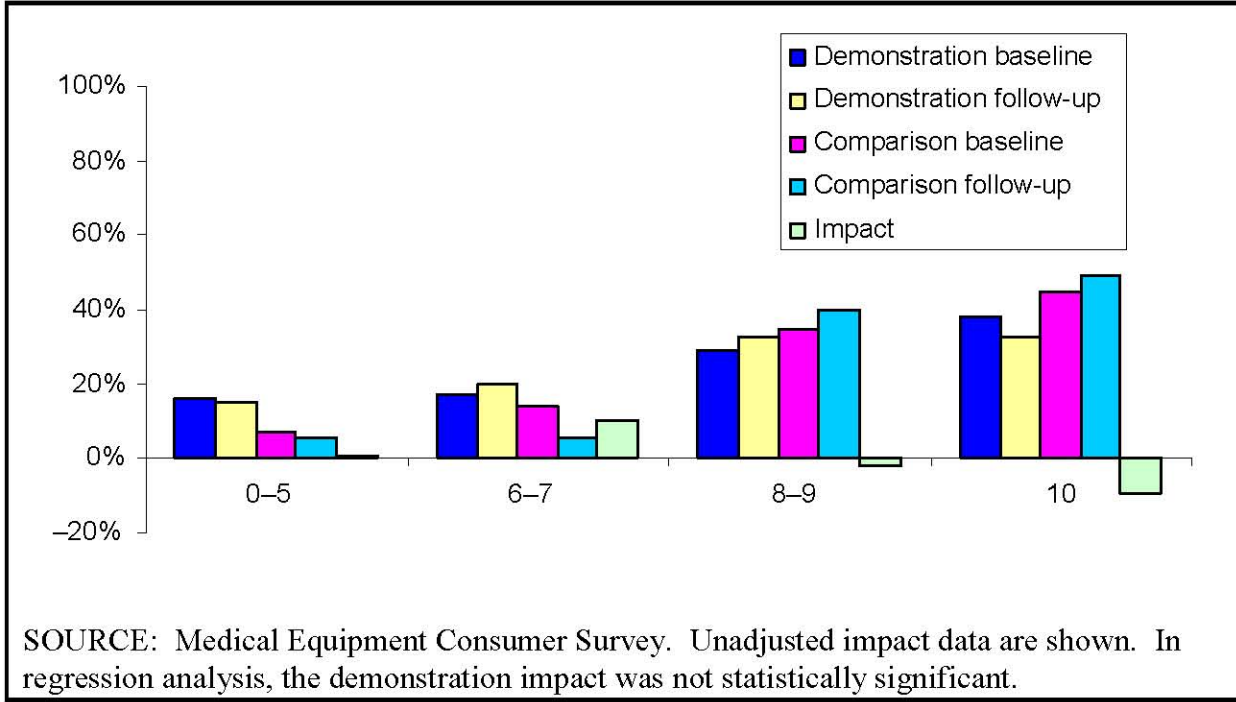
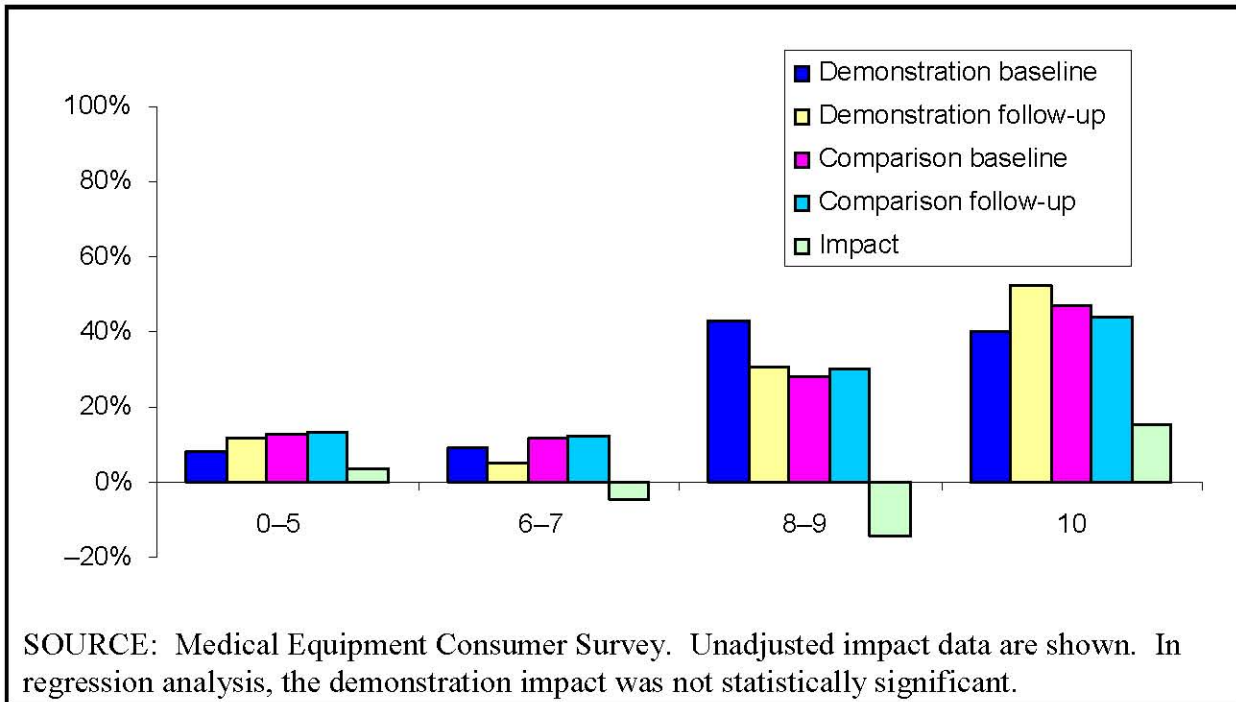


Figure 4-9b
Satisfaction ratings, new medical equipment users only, San Antonio demonstration



Changes in mean satisfaction ratings for each product category in **Polk County** are detailed in Table 4-4a. Mean satisfaction ratings in Polk County for suppliers of surgical dressings and enteral nutrition decreased the most in relation to those in the comparison site, and the unadjusted demonstration impacts are fairly large and negative for these product categories. However, these results come from small samples, and the demonstration's impact on these ratings was not statistically significant.

Changes in mean satisfaction ratings for each product category in the **San Antonio** demonstration are detailed in Table 4-4b. The unadjusted demonstration impacts are fairly large and negative for orthotics and nebulizer drugs. However, these results are based on small sample sizes, and the demonstration impact on satisfaction ratings for individual product categories was not significant.

Recommendations to friends. In **Polk County** and its comparison county, in both the baseline and follow-up surveys, the percentage of respondents indicating that they would recommend their supplier to a friend remained stable. Approximately 91 percent of Polk County respondents would recommend their suppliers, compared with about 94 percent in Brevard County. The demonstration's impact on this measure was not statistically significant.

At baseline, about 93 percent of respondents in **San Antonio** indicated that they would recommend their supplier to a friend, compared with 90 percent in the comparison site. At follow-up, about 90 percent of San Antonio and 92 percent of comparison site respondents would recommend their supplier. The demonstration impact was not statistically significant in the regression for all users. However, the demonstration impact was significant and negative in an analysis of all nebulizer drug users. Marginal effect analysis indicates that the demonstration decreased the percentage of nebulizer drug users who would recommend their supplier to their friends by 6.3 points. At baseline in San Antonio, approximately 98 percent of nebulizer drug users would recommend their supplier to their friends; at follow-up, about 93 percent would make this recommendation. The corresponding figures in the comparison site were 92 percent at baseline and 99 percent at follow-up.

Quality of equipment and supplies—Major problems. The percentage of **Polk County** beneficiaries experiencing no major problems with their medical equipment increased from 76.4 percent to 83.0 percent between the baseline and follow-up surveys (Figure 4-10a). Although the comparison site showed little change in this measure, there was no statistically significant demonstration impact.

In **San Antonio** at baseline, most (over 80 percent) beneficiaries in the demonstration and comparison sites reported having no major problems with their equipment (Figure 4-10b). In the follow-up survey, there was a 7 percent decrease in the percentage of beneficiaries with no problems in San Antonio and no change in the comparison site. The demonstration impact was not statistically significant.

Table 4-4a
Satisfaction ratings: other medical equipment users (all), Polk County demonstration

Medical equipment consumer survey	Demonstration site			Comparison site			Impact
	Baseline	Follow-up	Change: follow-up – baseline	Baseline	Follow-up	Change: follow-up – baseline	
All medical equipment types	8.13 n = 273	8.32 n = 296	0.19	8.55 n = 312	8.69 n = 286	0.14	0.05
Surgical dressings	8.47 n = 34	8.00 n = 31	-0.47	8.24 n = 38	9.21 n = 29	0.97	-1.44
Enteral nutrition	8.74 n = 31	8.70 n = 20	-0.04	8.60 n = 40	9.44 n = 36	0.84	-0.88
Hospital beds	7.98 n = 161	8.27 n = 177	0.29	8.52 n = 206	8.63 n = 187	0.11	0.18
Urological supplies	8.47 n = 93	8.43 n = 99	-0.04	8.52 n = 84	8.73 n = 80	0.21	-0.25

SOURCE: Medical Equipment Consumer Survey. Unadjusted impact data are shown. In regression analysis, the demonstration impact was not statistically significant.

Table 4-4b
Satisfaction ratings: other medical equipment users (all), San Antonio demonstration

Medical equipment consumer survey	Demonstration site			Comparison site			Impact
	Baseline	Follow-up	Change: follow-up – baseline	Baseline	Follow-up	Change: follow-up – baseline	
All medical equipment types	8.59 n = 356	8.37 n = 357	-0.22	8.37 n = 350	8.35 n = 365	-0.02	-0.20
Wheelchairs	8.35 n = 237	8.33 n = 270	-0.02	8.08 n = 224	8.11 n = 240	0.03	-0.05
Hospital beds	8.27 n = 161	8.29 n = 147	0.02	7.94 n = 118	8.24 n = 129	0.3	-0.28
Orthotics	8.19 n = 27	7.75 n = 28	-0.44	7.50 n = 46	7.80 n = 44	0.3	-0.74
Nebulizer drugs	9.07 n = 137	8.69 n = 65	-0.38	8.84 n = 135	9.01 n = 77	0.17	-0.55

SOURCE: Medical Equipment Consumer Survey. Unadjusted impact data are shown. In regression analysis, the demonstration impact was not statistically significant.

Figure 4-10a
Number of major equipment problems in last 6 months, other medical equipment users (all), Polk County demonstration

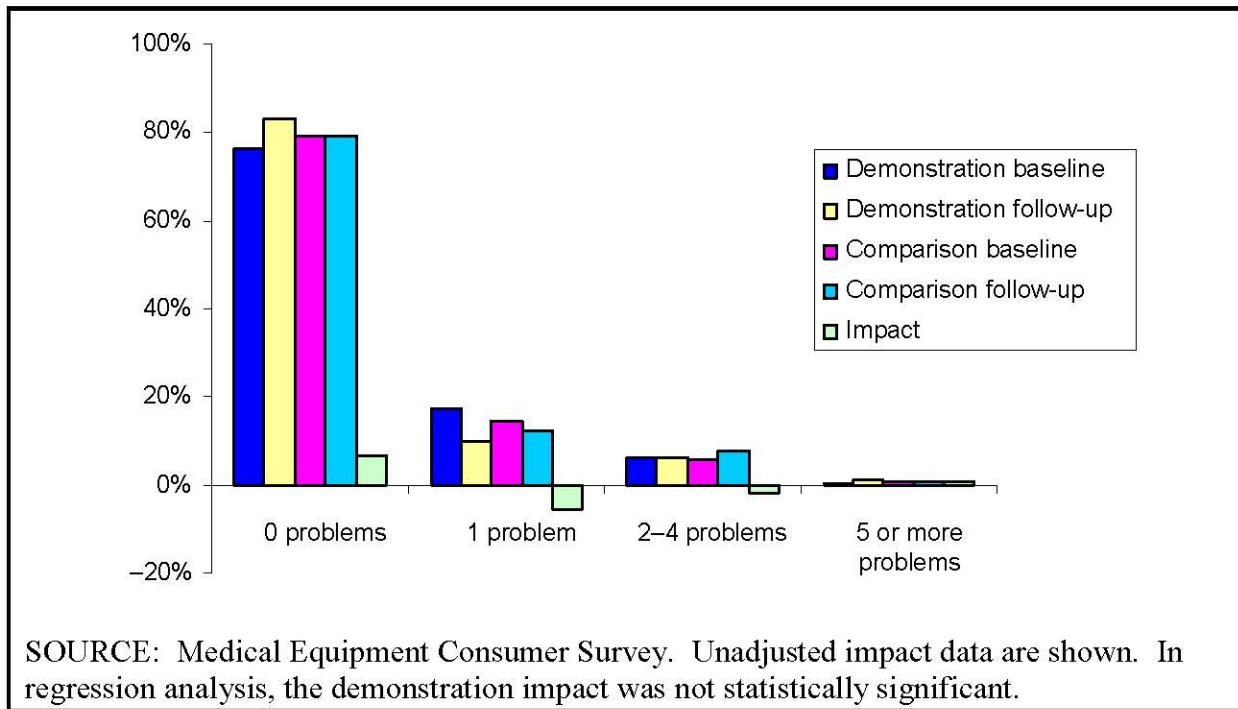
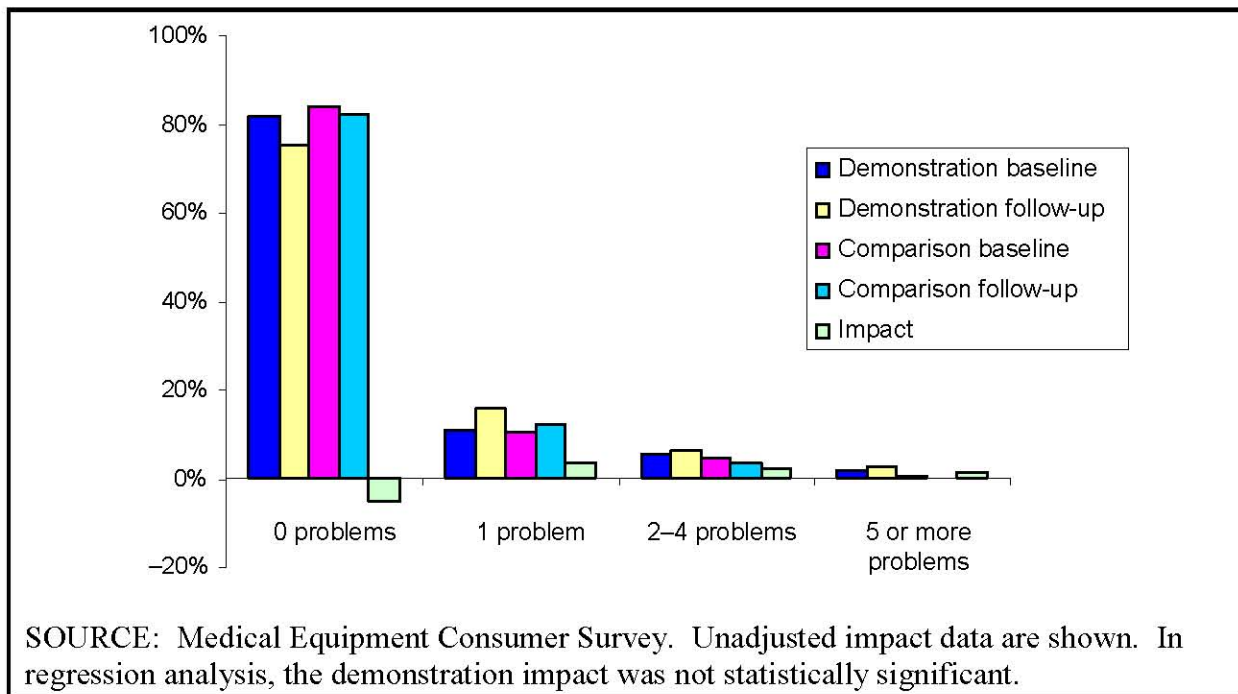


Figure 4-10b
Number of major equipment problems in last 6 months, other medical equipment users (all), San Antonio demonstration



Reliability. Figures 4-11a and 4-11b show beneficiaries' ratings of equipment reliability for Polk County and San Antonio, respectively. **Polk County** beneficiaries' ratings of the reliability of their equipment showed improvement (see Figure 4-11a). The percentage of beneficiaries rating their equipment as "very reliable" rose from 73.3 percent at baseline to 81.6 percent at follow-up. The demonstration's impact was significant only among the subset of surgical dressings users, indicating that equipment reliability improved (as rated by beneficiaries) as a result of the demonstration. Marginal effect analysis indicates that the demonstration increased the percentage of surgical dressings users rating their equipment as "very reliable" by 41.4 points. Unadjusted data show that the percentage of surgical dressings users with the "very reliable" response rose from about 61 to 83 percent in Polk County while falling from 83 to 74 percent in Brevard County. Interestingly, the reliability rating for surgical dressings improved, despite statistically significant declines associated with the demonstration's impact on one component of training and the probability of face-to-face contacts with the supplier among surgical dressings users (these access variables are described in Section 3). It is somewhat surprising that reliability increased, while a couple of access measures declined during the demonstration.

In **San Antonio**, the demonstration impact was insignificant, both for all users and for subsets of beneficiaries using each product category. Overall, the percentage of beneficiaries rating their equipment "very reliable" increased from about 72 to 74 percent in San Antonio, while the percentage decreased from approximately 74 percent to 71 percent in the comparison site (see Figure 4-11b).

Quality of training—Three-fourths (75.3 percent) of **Polk County** respondents at follow-up indicated that they were "very comfortable" taking care of their medical equipment, up from 65.3 percent at baseline (Figure 4-12a). Results concerning how comfortable respondents were using their equipment were similar, but with a greater increase from baseline to follow-up in the "very comfortable" category. The demonstration's impact was not statistically significant on either of these measures.

Beneficiaries in **San Antonio** and its comparison site were also very comfortable taking care of their equipment (Figure 4-12b) and using their equipment. Again, the demonstration's impact was not statistically significant.

Beneficiaries' high levels of comfort using their DMEPOS may be partly attributable to high quality training provided by suppliers when beneficiaries first receive their equipment and/or supplies. In **Polk County**, most beneficiaries rated the training they received on their medical equipment as "excellent" or "very good" (Figure 4-13a). The percentage of Polk County beneficiaries responding in these two categories rose from 49.2 percent at baseline to 52.5 percent at follow-up, although there was no statistically significant demonstration impact.

In **San Antonio**, about 60 percent of beneficiaries rated their training as "excellent" or "very good" at baseline, while in the comparison site the corresponding percentage was close to 56 percent (Figure 4-13b). At follow-up, the percentage of beneficiaries rating training as "excellent" or "very good" was approximately 61 percent in San Antonio and 55 percent in the comparison site. The demonstration impact was not statistically significant.

Figure 4-11a
Ratings of reliability of medical equipment, other medical equipment users (all), Polk County demonstration

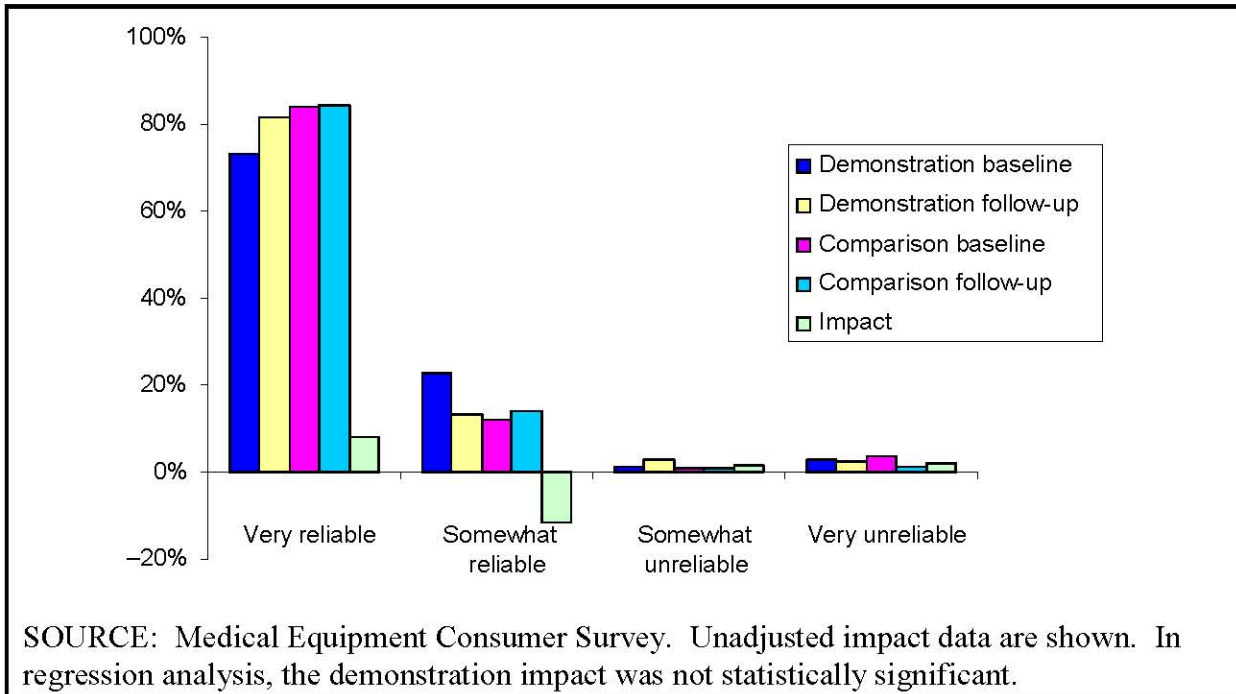


Figure 4-11b
Ratings of reliability of medical equipment, other medical equipment users (all), San Antonio demonstration

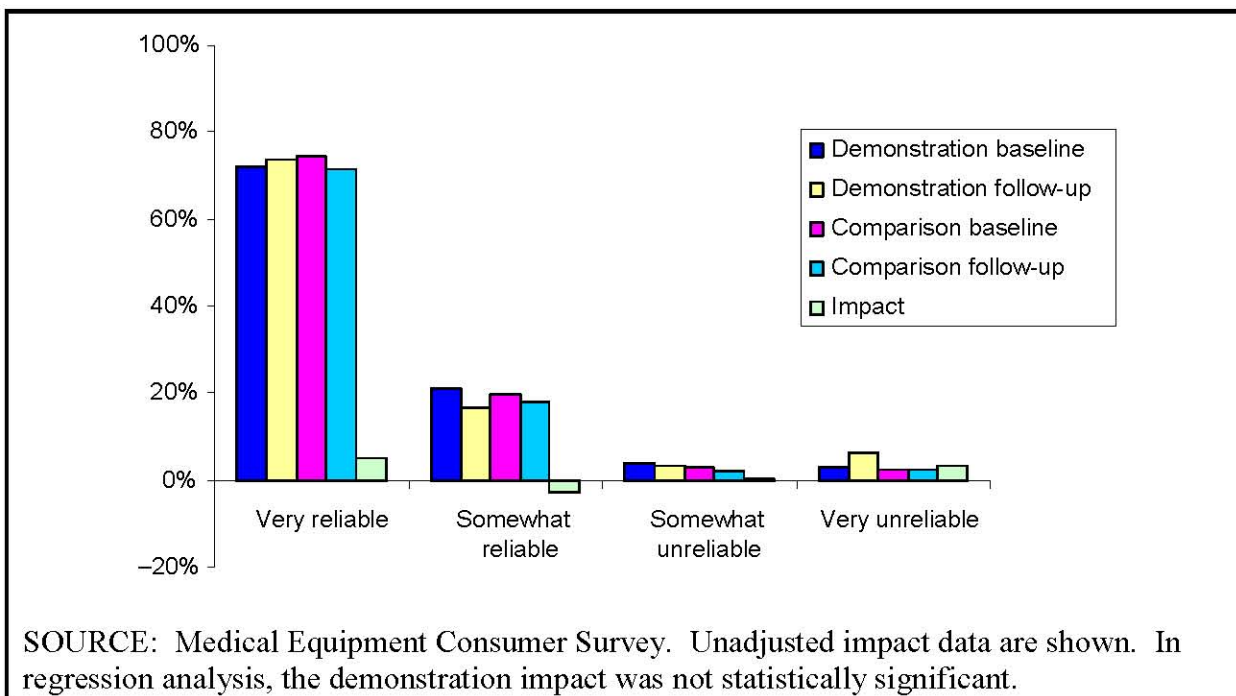


Figure 4-12a
Level of comfort taking care of equipment, other medical equipment users (all), Polk County demonstration

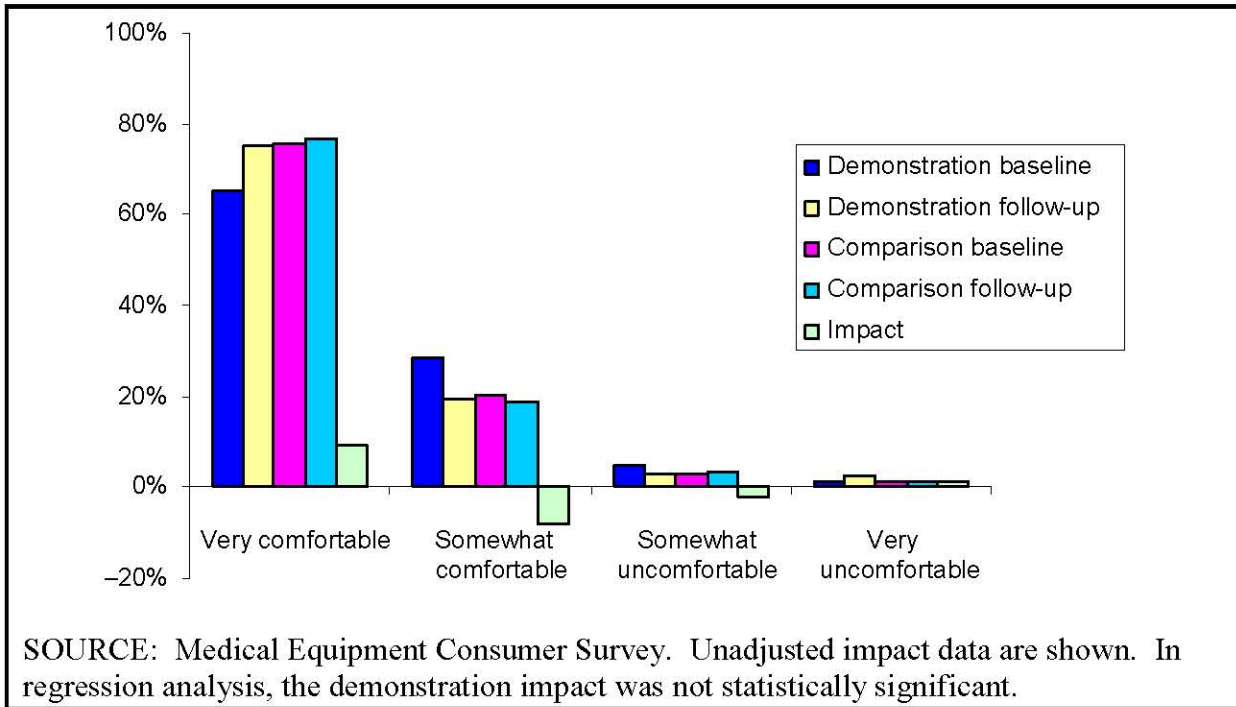


Figure 4-12b
Level of comfort taking care of equipment, other medical equipment users (all), San Antonio demonstration

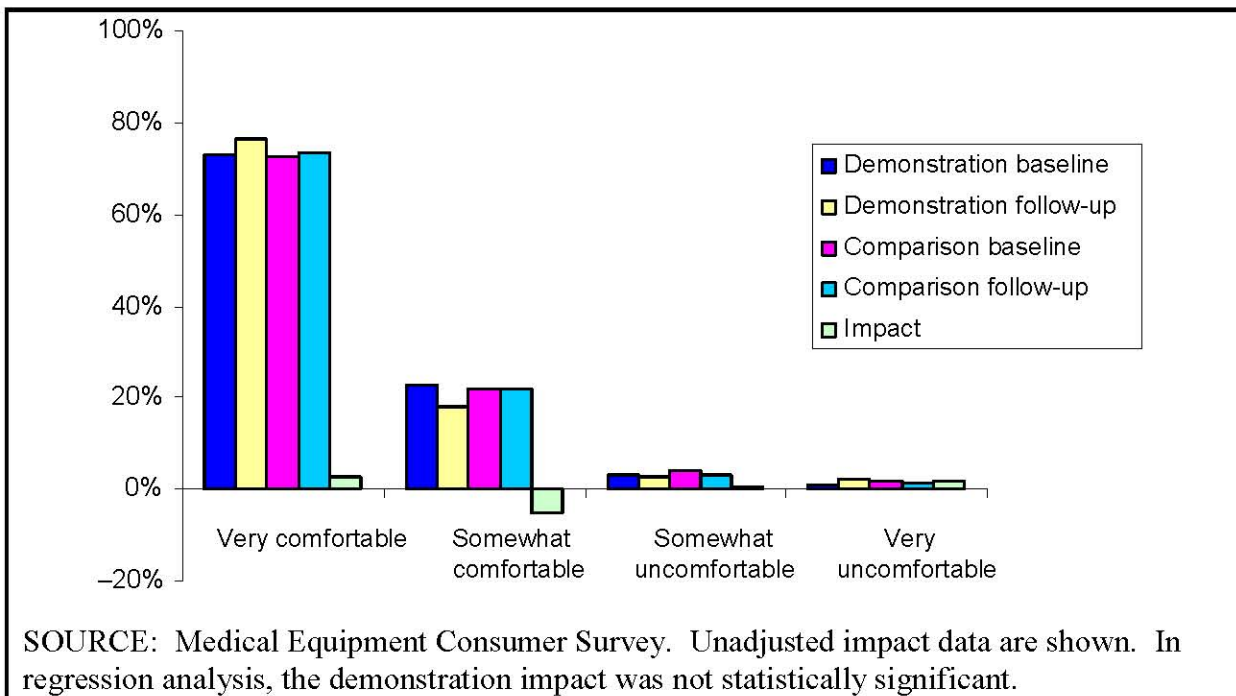


Figure 4-13a
Ratings of training given initially by medical equipment supplier, other medical equipment users (all), Polk County demonstration

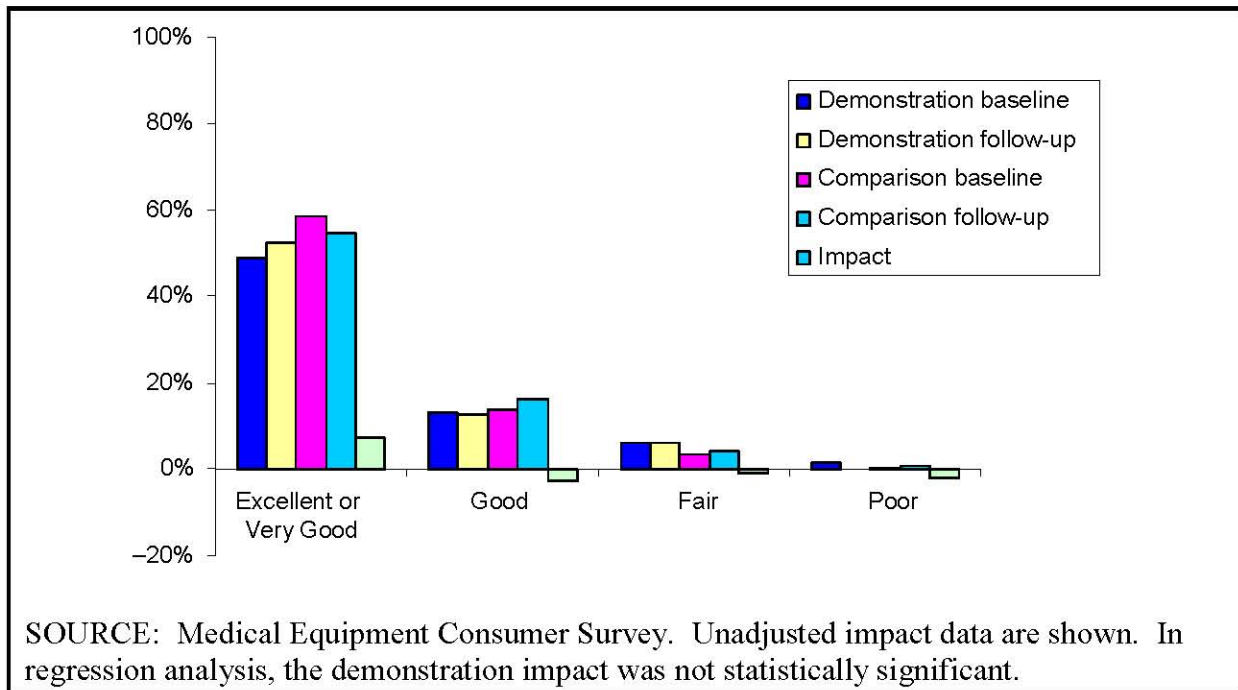
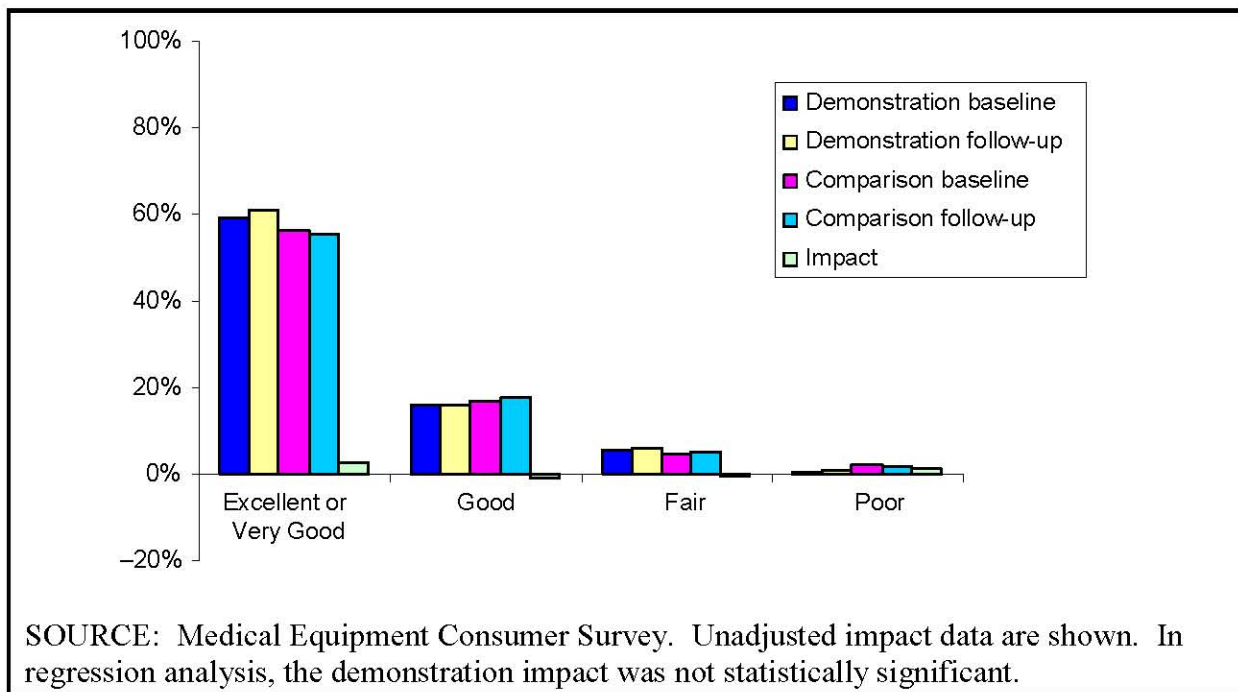


Figure 4-13b
Ratings of training given initially by medical equipment supplier, other medical equipment users (all), San Antonio demonstration



Quality of customer service—General service. The majority of **Polk County** respondents at follow-up reported that they were “always” treated with courtesy (76.3 percent) (Figure 4-14a), had things explained well to them (55.4 percent), and got all the help they needed from their supplier (59.5 percent). Each of these percentages represents an increase from baseline levels; however, there was no statistically significant demonstration impact.

The demonstration impact also was not statistically significant in **San Antonio**, with one exception. As in Polk County, the majority of respondents who asked their supplier to explain things to them reported that they were always treated with courtesy (Figure 4-14b), got all the help they needed, and had things explained well to them. However, there was a significant positive demonstration impact on the frequency with which new nebulizer drug users were treated with courtesy. The marginal effect was 56 percentage points.

Contacts about problems and help with insurance. In **Polk County**, proportions of medical equipment users who contacted their suppliers with problems remained stable over the course of the demonstration, while the proportion who reported that these problems were satisfactorily resolved rose by 5.4 percentage points. Suppliers’ service call response times remained stable, both relative to baseline and relative to the comparison site. Polk County showed some improvements in suppliers’ provision of after-hours assistance and help with insurance claims. Among all medical equipment users, the demonstration had no statistically significant impact on any of these measures. However, among hospital bed users, the demonstration had a statistically significant impact on the percentage receiving instructions on how to get information on their insurance. The marginal effect of the demonstration was an increase of 10.4 percentage points in the percentage of hospital bed users receiving such instruction.

In **San Antonio**, the percentage of people who contacted their suppliers with problems increased from about 18 to 24 percent over the course of the demonstration while it decreased from 20 to 17 percent in the comparison site. The demonstration impact was statistically significant for all users and for all hospital bed users. The estimated marginal effect of the demonstration was an 8.5 percentage point increase for all users and a 14.2 percentage point increase for all hospital bed users. The demonstration did not significantly affect the percentage of people with problems whose problems were resolved satisfactorily. The majority of baseline San Antonio respondents, about 60 percent, reported that their supplier would inform them that they would bill Medicare or other insurance for them. At follow-up, the percentage decreased slightly to 59 percent, while it decreased from about 65 to 57 percent in the comparison site from baseline to follow-up. The demonstration effect was only significant among new hospital bed users; the effect of the demonstration was to increase the likelihood that suppliers would provide this type of help. Demonstration suppliers were required to accept Medicare patients on assignment and this may explain the positive demonstration impact.

After-hours help. At baseline, close to 62 percent of **Polk County** beneficiaries and 56 percent of comparison site beneficiaries who needed after-hours customer service help reported that they always received all the help they needed from after-hours customer service. These percentages changed to 58 percent and 60 percent in the demonstration and comparison sites, respectively, at follow-up. The demonstration impact was not statistically significant.

Figure 4-14a
Frequency with which beneficiary was treated with courtesy by supplier staff, last 6 months, other medical equipment users (all), Polk County demonstration

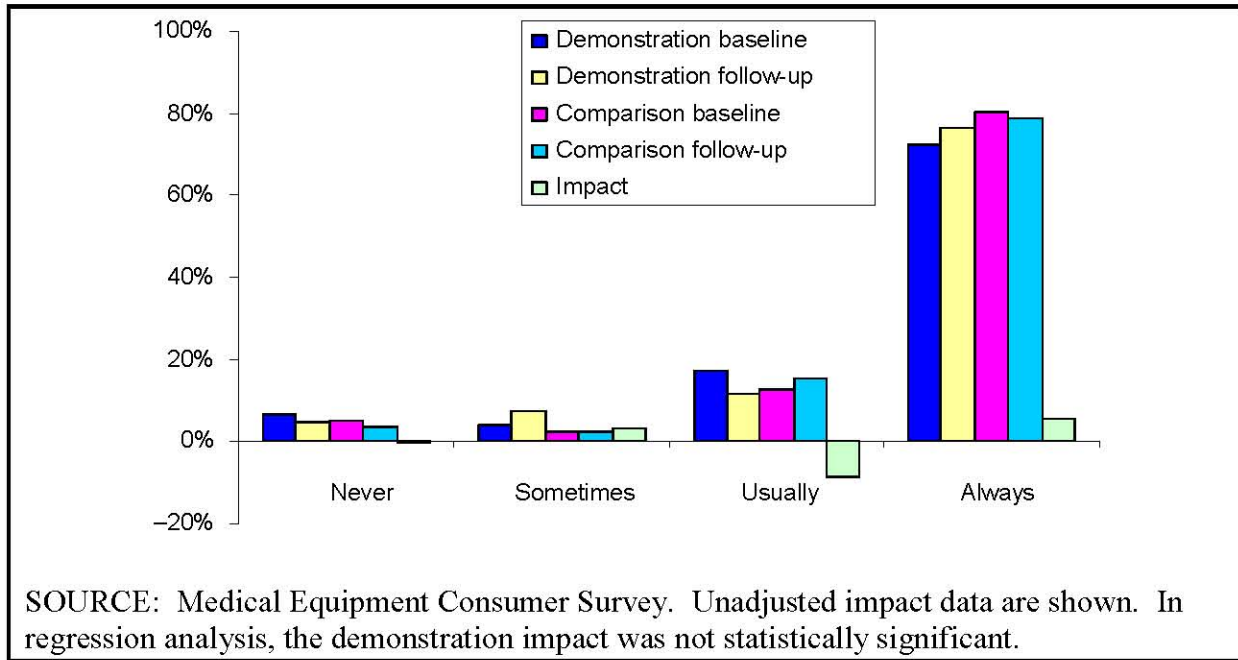
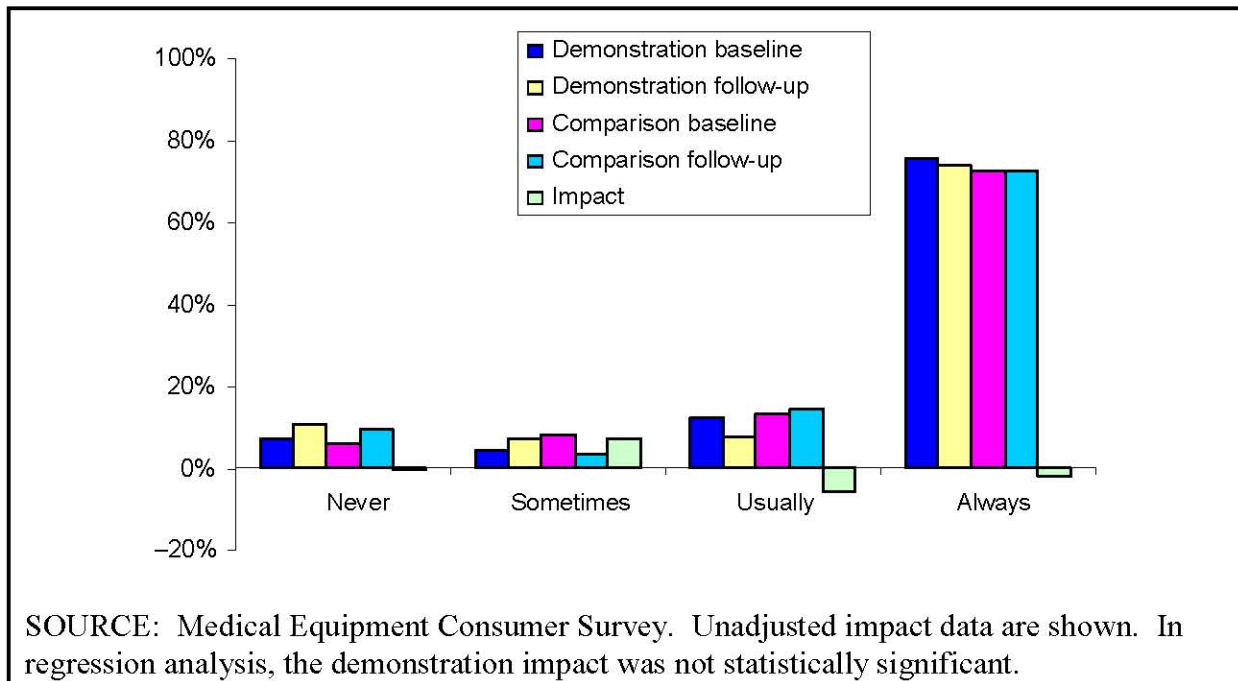


Figure 4-14b
Frequency with which beneficiary was treated with courtesy by supplier staff, last 6 months, other medical equipment users (all), San Antonio demonstration



In **San Antonio**, the demonstration’s impact on thoroughness of after-hours help was positive and statistically significant among new users of medical equipment who needed after-hours help, indicating an increase in after-hours service quality. However, relatively few new users required after-hours help.

Changing suppliers—Survey data indicate that the demonstration had no statistically significant impact on the proportion of beneficiaries who changed their medical equipment suppliers (Figure 4-15a) in **Polk County** and its comparison site. The number of users changing suppliers was low (between 15 and 28 users or from 5.5 to 10.1 percent) in each site during the baseline and follow-up periods. The percentage of Polk County respondents who reported changing their supplier in the past year increased modestly from 7.3 percent at baseline to 10.1 percent at follow-up.

The demonstration also did not have a significant impact on the proportion of beneficiaries who changed suppliers in **San Antonio** (Figure 4-15b). Again, relatively few beneficiaries changed suppliers (between 15 and 31 users, or from 5.4 to 8.2 percent) in each site during the baseline and follow-up periods.

Table 4-5a presents the three most common reasons given by beneficiaries for changing their medical equipment supplier in **Polk** and Brevard Counties, along with the percentage of such respondents who chose each reason. The percentages are based only on the relatively small number of individuals who changed suppliers, or 5.5 to 10.1 percent. Table 4-5b presents the three most common reasons for switching in **San Antonio** and its comparison site.

4.3 Site Visit Results

We discussed our methodology for conducting site visits in Section 3.4.1. Below, we describe our quality-related findings from interviews conducted during site visits in Polk County and San Antonio.

4.3.1 Polk County

Once the demonstration was implemented, there were few initial reports of substantial changes in the quality of services or equipment. Two months after demonstration prices went into effect, the Ombudsman did not receive any complaints from beneficiaries regarding the quality of the equipment. However, after 2 months, referral agents were not as consistent with their reports. Some referral agents thought that the highest quality suppliers were included in the demonstration, while others did not. Some received complaints from beneficiaries regarding new suppliers, while others did not. There was a period of adjustment where some referral agents had to work with new suppliers until they found one(s) with whom they were pleased. One home health agency voiced complaints about poor quality urological supplies. This home health agency had always provided patients with urological supplies from its own inventory and was used to dealing with a few, very reliable manufacturers. They reported catheters that had “disintegrated” and turned patients’ urine blue. However, the issue with urological supplies is complex and is confounded by issues unrelated to the demonstration, such as referral agents’ frustration regarding the number of items allowable per month by Medicare. Because of issues unique to this product, we explored issues of price, access, and quality regarding urological supplies in greater detail (see Section 4.4).

Figure 4-15a
Respondents who changed supplier in last 12 months, other medical equipment users (all),
Polk County demonstration

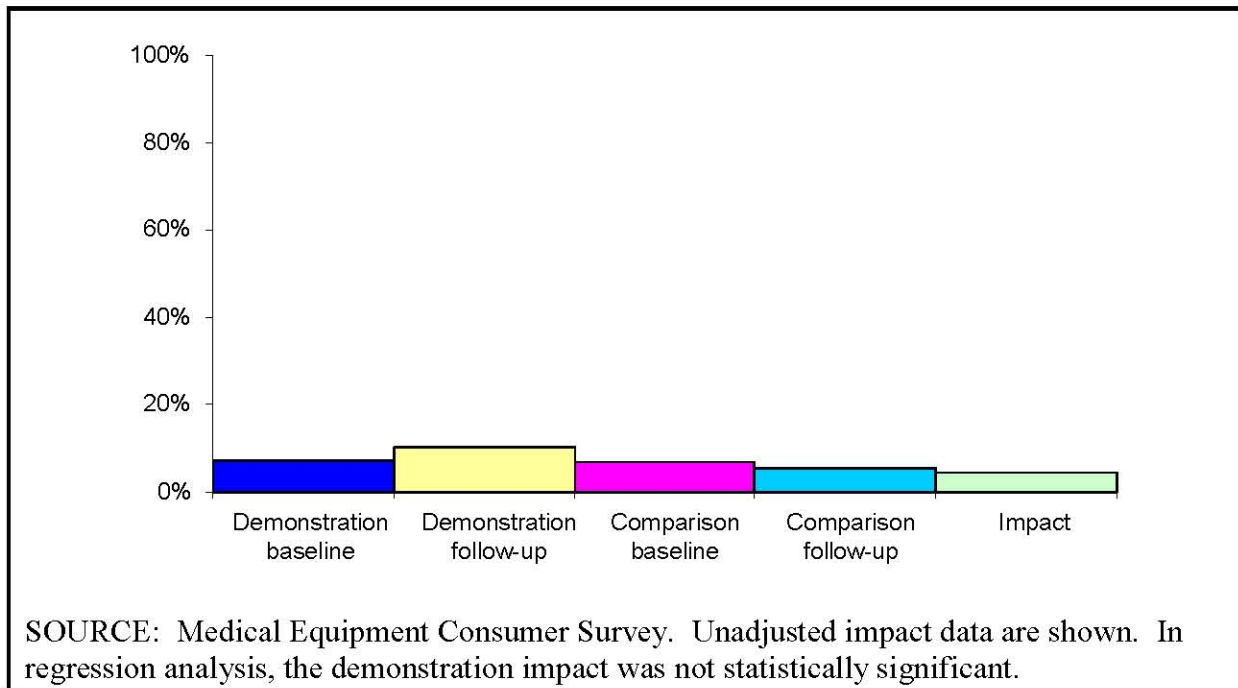


Figure 4-15b
Respondents who changed supplier in last 12 months, other medical equipment users (all),
San Antonio demonstration

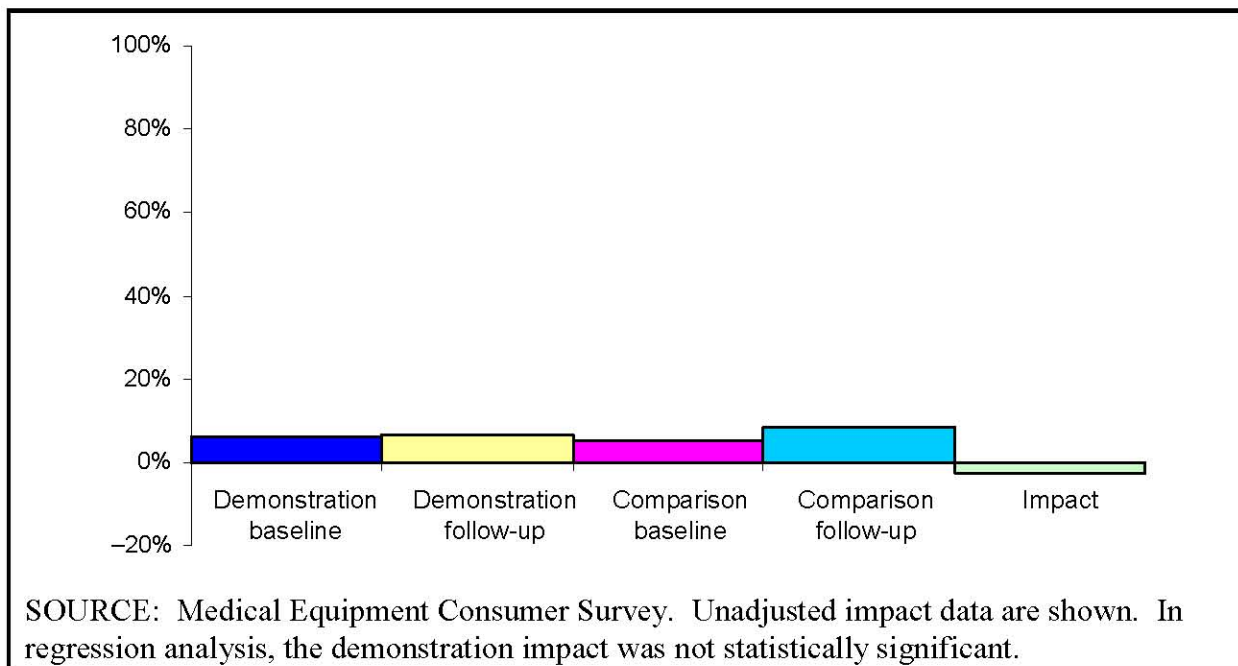


Table 4-5a
Most common reasons for changing medical equipment supplier, other medical equipment users (all) who changed supplier, Polk County demonstration

Rank	Polk County		Brevard County	
	Baseline (n = 19)	Follow-up (n = 28)	Baseline (n = 21)	Follow-up (n = 15)
1.	Unhappy with service quality (29.4%)	Unhappy with service quality (24.1%)	Moved residence (20.0%)	Moved residence (21.4%)
2.	Unhappy with service amount (17.6%)	Changed to supplier listed in the Medicare Demonstration Directory (20.7%)	Supplier went out of business (15.0%)	Unhappy with service quality (14.3%)
3.	New HMO uses a different supplier (17.6%)	Moved residence (17.2%)	New supplier costs less (10.0%)	New HMO uses different supplier (14.3%)

SOURCE: Medical Equipment Consumer Survey.

Table 4-5b
Most common reasons for changing medical equipment supplier, other medical equipment users (all) who changed supplier, San Antonio demonstration

Rank	San Antonio		Austin-San Marcos	
	Baseline (n = 23)	Follow-up (n = 24)	Baseline (n = 20)	Follow-up (n = 31)
1.	Moved residence (26.0%)	Tie: Unhappy with service quality; and Supplier went out of business (24%)	Unhappy with service quality (26.7%)	Supplier went out of business (41.9%)
2.	Supplier went out of business (17.4%)	Moved residence (20%)	Tie: Unhappy with service amount; and New supplier costs less (13.3%)	Tie: Moved residence; and Unhappy with service quality (16.1%)
3.	Tie: Unhappy with service quality; and joined HMO that uses different supplier (13.0%)	Unhappy with service amount (12%)	Tie: Supplier went out of business; and Joined HMO that uses different supplier (6.7%)	Joined HMO that uses different supplier (9.7%)

SOURCE: Medical Equipment Consumer Survey.

In a focus group 6 months after the demonstration prices took effect, referral agents reported that, in general, quality had not been reduced as a result of the demonstration. All those with whom we spoke were able to locate demonstration suppliers that provided good quality services and products. These agents reported no problems related to urological supplies.

Suppliers varied in their assessment of the demonstration's impact on the quality of products and services. Demonstration suppliers generally believed that quality was good, whereas nondemonstration suppliers expressed concerns that lower reimbursement would reduce quality. However, only one nondemonstration supplier (a urological supplier) was able to provide specific examples of beneficiaries who had sought this supplier's services after being dissatisfied with a demonstration supplier.

During our final site visit to Polk County, 7 months after Round 2 prices took effect and 5 months before the end of the demonstration, most referral agents we interviewed did not believe there had been widespread problems with quality of products and services associated with the demonstration. One discharge planner reported some delays in discharge at their facility during the period when they were becoming familiar with the new Round 2 demonstration suppliers. This problem was resolved as agents identified more responsive suppliers. Another discharge planner reported that arranging service on weekends had become more difficult because one particularly responsive supplier was not approved for the second round.

Although most suppliers did not make significant changes in their business operations to prepare for the demonstration, some reported making changes that may impact the quality of services they provide. One supplier with a large Medicare patient base reported dropping respiratory therapists from the staff. These therapists had formerly been responsible for the clinical component of patient education. Now, with service technicians solely responsible for setup, the clinical component could not be offered. We note, however, that beneficiaries reported in our surveys that visits by respiratory therapists were relatively rare, both before and after the demonstration began. Another supplier reported consolidating product lines for urological supplies to a single brand. This could diminish product choice for the beneficiary and possibly have implications for quality of care (urological supplies are discussed in greater detail below).

The oxygen users we interviewed during this visit were generally very satisfied with their DMEPOS service and felt that they had been largely unaffected by the demonstration. Many in the group we interviewed had changed suppliers during the first round of the demonstration. Some stated that they changed to a new supplier because their former company had become less responsive in delivering supplies when needed. Others switched suppliers due to word-of-mouth, initiated when a few individuals switched to a new demonstration supplier and told others of their high level of service. Most of those who changed suppliers transferred their business to a company that was particularly visible because the owner/manager was involved with the respiratory clinic they visit. Although this new supplier did not obtain demonstration status for Round 2, the beneficiaries were still receiving service from the supplier in accordance with demonstration transition policies. It should be noted that these observations were from a small group of oxygen users and therefore were not generalizable to the entire set of beneficiaries involved in the demonstration.

4.3.2 San Antonio

Referral agent experience—Overall, referral agents believed that some of the demonstration suppliers had less well-trained staff and less experience with DMEPOS than those with whom they worked in the past. In general, however, they did not notice changes in amount of paperwork, timeliness of delivery, services, or quality of products being provided.

Case managers reported some problems with new suppliers they used under the demonstration. The majority of these problems were related to wheelchairs and their accessories. One agent reported that a supplier inappropriately delivered items that were not ordered and billed the products incorrectly. Referral agents also said that some suppliers were unwilling to make chair adjustments after delivery or to reclaim poor quality products after delivery. Another agent reported that a beneficiary was given an improperly adjusted wheelchair because the supplier's staff did not know how to make the required adjustment. However, agents were usually successful in obtaining the products that a beneficiary needed by providing specific details to the supplier when ordering the product. Wheelchair issues are discussed in greater detail in Section 4.5.

Case managers help ensure that the beneficiary is provided with quality equipment by monitoring the products that are delivered and intervening with the supplier when items do not meet specifications. As noted previously, referral agents also bolster the quality of products and services provided to beneficiaries by referring patients only to suppliers whose service they trust based on previous experience. If suppliers provide inaccurate orders or do not provide information about the beneficiary back to referral agents, referral agents avoid these suppliers in the future. Several of the wheelchair-related problems described above led agents to avoid the suppliers who were involved.

Supplier perspectives—All suppliers reported that they did not receive many questions from beneficiaries about the demonstration. Some reported having difficulties with patient transfers resulting from the demonstration when beneficiaries either could not remember or did not know if they had capped-rental equipment (such as a wheelchair or hospital bed) previously. In such cases, the suppliers usually provided the equipment and might not recoup their cost if the beneficiary reached the limit of the capped-rental reimbursement before the supplier expected.⁸

Suppliers generally had two perspectives concerning the demonstration's potential effect on quality. One group was concerned that other companies would provide lower cost, low-quality equipment to beneficiaries to maintain their profit margins. This group did not think that they would be able to compete with such companies because their clients would not accept lower quality products. This perspective often coincided with the belief that CMS' motivation for

⁸Such occurrences are more related to existing capped rental rules than to the demonstration itself. Under these rules, reimbursement for capped rental equipment is limited to a fixed number of months. If the patient switches providers, the fixed number of months still holds. For suppliers, this can pose a problem: the supplier must incur the fixed costs of delivering the equipment to the home and has fewer months to recoup these costs before the capped payments end. The rule would only have a greater effect during the demonstration if transfers between suppliers were more common during the demonstration.

implementing this demonstration was less about improving quality than about lowering reimbursement levels.

On the other hand, some suppliers believed that the bidding process had improved quality in the market. They believed that before the demonstration, some DME suppliers in the area were operating at very low levels of quality. Since some of these suppliers lost the ability to provide DMEPOS to Medicare beneficiaries, they believed the overall level of service quality in the market was likely to improve during the demonstration.

4.4 Urological Supplies

In the First-Year Annual Evaluation Report, we discussed suppliers' concerns that the reimbursements for certain HCPCS codes in the urological supplies category under the Polk County demonstration did not adequately cover the cost of some products within those codes. The incentive for the supplier to provide the least expensive item that qualified under a specific HCPCS code had existed since before the demonstration. However, lower reimbursement levels under the demonstration may have strengthened this incentive so that suppliers were willing to provide products of lower quality than they did in the past.

Fortunately, two factors work to diminish the incentive to provide lower-quality products as a way of maintaining profit levels. During Polk County site visits, suppliers indicated that they would be reluctant to make lower-quality substitutions because they feared their customers might not accept such products and therefore would go to a different supplier for their DMEPOS. Furthermore, beneficiaries could circumvent suppliers' desire to provide a lower-cost, lower-quality product by asking their physician to prescribe a specific brand or type of equipment.

Our findings from beneficiary surveys in Polk County do not indicate that beneficiaries using urological supplies experienced any negative impact on the quality of their equipment. However, the low number of responses that were directly related to urological supplies (only 99 in Polk County at follow-up) made it difficult to identify any statistically significant demonstration impacts. As seen in Table 4-4, the overall satisfaction ratings of urological supplies users in Polk County were stable from baseline to follow-up, and the demonstration's impact (-0.25 on a scale of 1 to 10) was insignificant in the regression.

The only statistically significant impact of the demonstration detected among the subset of respondents who use urological supplies was an increase in the percentage who reported receiving no training when receiving their equipment and supplies. As discussed in Section 3.2.3, this effect may be due to the relative inexperience of some demonstration suppliers with urologicals, cost pressures related to underbidding, or an increase in mail delivery of urological supplies.

It appears that some of the problems surrounding urological supplies that existed in Round 1 of the demonstration were addressed in Round 2. The Demonstration Ombudsman attributed this improvement to the inclusion of an exceptionally good local supplier in the second round. This supplier, who had been in business for over 20 years, was reputed to have extensive knowledge of products and to provide excellent education to beneficiaries on how to use their supplies. This supplier's business increased under Round 2 of the demonstration.

This local supplier and one out-of-area urologicals supplier offered several brands of supplies, allowing them to satisfy individual preferences and/or offer alternate products if one brand was not working properly. The local, experienced supplier emphasized that it was often necessary for a patient to try several brands before finding one that works well. This was particularly an issue for male urological supplies. However, one local supplier reported that they consolidated their product lines in urologicals in order to obtain a better price from the wholesaler and remain competitive under the demonstration. This supplier offered only one brand of urological supplies, and beneficiaries had to use this brand or go to another supplier if they preferred a different brand. This is a potential concern. In Polk County, as long as the experienced supplier was in business, beneficiaries could get access to specific brands (provided that physicians were aware of a supplier who offered multiple brands and referred the patient to that company). However, should the experienced supplier leave the market or if the demonstration were extended to an area without such an experienced supplier, the practice of using only one brand to obtain a more competitive price for the supplier could have a deleterious effect on product selection. We believe that any deleterious effects would be more likely in product categories with low allowed charges and relatively few suppliers, such as urologicals, than in product categories with higher allowed charges and more suppliers.

Demonstration-approved providers of urological supplies that were located outside of Polk County did not receive a large share of new business. The Demonstration Ombudsman reported that two of the three out-of-area demonstration suppliers of urologicals did not submit any claims in the first 6 months of Round 2 (although a statement by one of these suppliers seems to contradict this). One out-of-area supplier stated that their company had not made extensive efforts to market themselves in the area because their primary reason for entering the demonstration was to see how the program would work and how closely participating businesses would be scrutinized by Medicare. This supplier reported receiving 35 new urologicals patients during Round 2 of the demonstration.

We attempted to evaluate whether these out-of-area suppliers could provide sufficient access to and quality of services for urological supplies. The out-of-area supplier we spoke with reported that most of their orders were shipped within 24 hours. For patient education, they provided written materials with their products and had a toll-free number available for customers to receive assistance regarding their supplies. They also had educational technicians in the field who were available to make house calls when necessary.

One local urologicals demonstration supplier reported that he received a few inquiries from beneficiaries about obtaining some supplies in the short-term from his business until those from their out-of-area provider could be delivered. This supplier was reluctant to serve these beneficiaries because he did not receive all of their business. He stated that he considered it unfair that he paid the cost of maintaining a storefront that provided immediate access for beneficiaries while the majority of a beneficiary's business went to a mail-order supplier that avoided this cost by taking orders by phone and shipping supplies.

4.5 Wheelchairs and Accessories

During interviews and a focus group in San Antonio, referral agents raised a number of issues about wheelchairs. Referral agents reported that after the demonstration began suppliers

became stricter about having the signed prescription when the order was placed. Referral agents also found that the prescriptions needed to be very detailed to ensure that beneficiaries got the required product. Agents noted an increase in demand for paperwork to be completed in detail and presented on paper to suppliers, sometimes delaying availability of the equipment.

Prior to the demonstration, referral agents used suppliers who would provide wheelchairs with removable arms and adjustable leg rests as standard equipment. After the demonstration, they found that some suppliers stopped providing this equipment in every case, opting to do so only if these features were specifically ordered. One agent noted that in the past, when a supplier did not have the chair needed by the beneficiary, a substitute was provided until the appropriate one was delivered. Since the demonstration, staff noted the need to monitor whether a replacement chair was delivered, based on experience with patients returning to their clinic without the appropriate chair weeks later.

Wheelchairs are ordered initially by patient height and weight. Prior to the demonstration, some referral agents noted that suppliers usually either had a physical therapist on staff or the wheelchair would be delivered by someone who was familiar with the product and how to measure its fit. When the wheelchair was delivered, the supplier delivering the chair would have the beneficiary sit in the chair and check the fit. Adjustments were made to the chair to accommodate the patient or a new chair ordered if the fit was not appropriate.

Under the demonstration, however, some referral agents voiced concern that wheelchairs were typically delivered by a driver only and that drivers were not familiar with the products. Patients reported instances of chairs being delivered and left folded, with no attempt to check fit. One agent mentioned an incident wherein the delivery person was asked to make an adjustment to a beneficiary's chair. The deliverer told the beneficiary that he did not know how to make the adjustment and then left without offering any other assistance. There were other examples of wheelchairs being delivered that did not fit and no action being taken by the supplier unless the agents followed up with numerous phone calls. One supplier refused to take back a chair that did not fit as requested by the beneficiary and the agent. Another agent dealt with a beneficiary who received a wheelchair that "buckled in" in the back when the beneficiary sat in the chair. The supplier refused to replace it initially but finally did so after the referral agent intervened. Another agent mentioned a supplier that billed for items as purchased when the chair itself was a rental; this supplier also provided seating items that were not ordered.

Referral agents responded to these problems by taking extra measures to be sure that suppliers checked the fit and made any necessary adjustments to the wheelchairs. Agents also stopped making referrals to suppliers with whom they experienced problems in previous cases. Once agents became familiar with the demonstration suppliers, they felt that they were able to refer beneficiaries to suppliers that would provide acceptable service. On average, referral agents estimated that beneficiaries received the appropriate chair approximately 80 percent of the time under the demonstration. When the wheelchair was reported to be unacceptable, the suppliers they used would provide another chair.

Wheelchair suppliers had differing opinions about the standard service required to properly serve beneficiaries. One supplier indicated that his or her company, which provided wheelchairs before the demonstration, was unable to bid low enough to gain demonstration

status. This supplier felt that the company's bids may have been higher than other suppliers because of the individualized fittings that the company provided to each customer. Two demonstration wheelchair suppliers, however, felt that it was not necessary to individually fit each patient. One supplier's policy was to use a standard sizing profile based on the patient's height and weight; they then delivered two chairs (of different sizes) and left the one that best fit the patient. Another supplier generally provided a standard 18 inch wheelchair for all needs and then replaced it with a different size if necessary.

4.5.1 Discussion

Findings from the site visit interviews with referral agents suggest that some wheelchair suppliers in the demonstration attempted to cut service quality by providing fewer wheelchair accessories and/or charging for accessories that were previously provided without charge. Some suppliers may have also attempted to use less qualified staff to fit wheelchairs. These attempts were at least partly offset by increased efforts by referral agents to monitor quality. In addition, the existence of multiple winners in the demonstration allowed referral agents to switch suppliers if they perceived that a given supplier was not providing appropriate levels of service.

It is not clear whether the problems noted by referral agents had an appreciable impact on the quality and service that beneficiaries received. As noted earlier in this section, the demonstration did not have a significant impact on satisfaction among wheelchair users, nor did the demonstration have a significant effect on any other quality variable among wheelchair users. It is possible that the efforts of referral agents to monitor and ensure quality were sufficient to insulate wheelchair users from any adverse effects of the demonstration. We also had little information about the extent to which these problems occur in the absence of the demonstration. It is possible that the problems are as common outside the demonstration.

Nonetheless, if competitive bidding were to be adopted on a wider basis, it would be prudent to carefully monitor service in the wheelchairs and accessories product category. In addition, CMS could consider writing stronger service requirements for wheelchair fitting and delivery. The demonstration rules stated that "suppliers must have qualified staff who ensure that the wheelchair and accessories are fitted to the patient." Our interviews suggest that different suppliers have different standards for fitting wheelchairs. More explicit standards for fitting might lead to less variation and fewer problems in fitting. Finally, maintaining multiple winners appears to provide an important safeguard, ensuring that quality and service levels do not deteriorate.

4.6 Multiple Winners

The Polk County and San Antonio site visits support the conclusion that selecting multiple winners encouraged demonstration suppliers to continue competing based on service and quality in order to attract and retain patients. As described above, referral agents went through a process early in the demonstration of familiarizing themselves with new suppliers, their service, and their product lines. When the agents were not satisfied with aspects of a supplier's products or services, they stopped referring beneficiaries to that supplier. This illustrates that suppliers must be responsive to the referral agents and patients or they will lose

their referral sources. By the time of our interviews, all of the participating referral agents had found a demonstration supplier with whom they were satisfied.

4.7 Product Selection

In BBA 97, Congress mandated that the evaluation examine the impact of the demonstration on product selection. Congress was apparently concerned that the demonstration could lead to a reduction in product selection. The demonstration could cause reductions in product selection in at least two different ways, with potentially different impacts on beneficiaries. First, if the demonstration led to lower prices and resulting pressure on supplier profit margins, suppliers might switch to lower cost and lower quality products. Second, even if general quality levels were maintained, selection of a limited number of demonstration suppliers could lead to a narrower set of products being offered to beneficiaries. If beneficiaries value product choice, this reduction in product selection could have negative implications.

To evaluate the impact of the demonstration on product selection, the supplier survey requested information on product offerings, changes in product offerings, and product age from suppliers in San Antonio (the demonstration site) and Austin-San Marcos (the comparison site). Seventy-six suppliers in the demonstration site and 16 suppliers in the comparison site returned the supplier surveys. However, the number of responses for product selection data elements from the demonstration site numbered fewer than 20 for every question, and responses from the comparison site were too few for analysis. We therefore concentrate on analyzing responses to detect any large-scale, systematic change in product offerings or large increase in average product age. Although our sample sizes are too small to provide statistical confirmation of any demonstration impact, they may provide useful descriptive information on the demonstration's effect.

The supplier survey queried respondents for common durable medical equipment and orthotics supplies. Suppliers were asked about the most typical brand offered in January 2001 (the month before the demonstration began) and in January 2002 (11 months after the demonstration began). They were also asked about reasons for changes in the product selection. This approach allowed a supplier in some cases to provide an answer indicating no change in brand, simply because of random changes in sales between the two months, while providing a seemingly contradictory answer by providing reasons for making brand changes. In addition, a few suppliers, usually nondemonstration suppliers, responded that they left the market between January 2001 and January 2002.

We found that suppliers offered a fairly wide selection of products both before and after the demonstration began. Moreover, most suppliers did not change the products they supplied. In only one instance did more than a quarter of respondents indicate change in a product selection; 5 of 18 respondents switched from offering new mattresses to offering used mattresses to all new Medicare hospital bed patients.

4.7.1 Home Oxygen Therapy

Oxygen concentrators—Nineteen suppliers reported brand information for oxygen concentrators (HCPCS E1390). Of these, 15 offered the same concentrator in January 2002 as

they had offered in January 2001, just before the demonstration began. Four respondents indicated that they switched their most common oxygen concentrator brands; one respondent indicated that they had equal numbers of two brands in 2001, and in 2002 one of these brands had become more numerous. Each of these suppliers provided the reasons that motivated the change. One respondent indicated that the reason for the change was lower cost and less maintenance. The respondent that switched from an evenly split inventory indicated the same reason and also cited higher quality and additional features as the motivating factor. Of the remaining two changes, one respondent indicated that their previous model was no longer available and the other stated that they purchased oxygen concentrators after previously renting.

Eleven suppliers carried Invacare products, including one that switched to Invacare from Puritan Bennett after this brand became unavailable. Three suppliers carried Devilbiss products in 2002, including one that switched to Devilbiss from Puritan Bennett. Two suppliers used Puritan Bennett in 2002. Five suppliers had used Puritan Bennett in 2001, including one that switched to Invacare, one that switched to Devilbiss, and one that was renting and then purchased products by Respironics Millennium. Three suppliers carried Respironics Millennium in 2002 and one carried Airsep New Life. In 2001, the only other brands that were offered were Healthdyne and Total O2 by Chad, with one supplier offering each brand.

Fourteen suppliers reported the average age of their oxygen concentrators. The average age of oxygen concentrators decreased slightly over the course of the year from 2.6 to 2.4 years. This reduction was largely attributable to the suppliers that changed brands.

Portable oxygen systems—No supplier reported any changes in the most common type of portable oxygen system (HCPCS E0431RR) they offered to Medicare beneficiaries. Thirteen and 11 suppliers reported their most common brand of small and large portable oxygen system, respectively. Although none of the suppliers indicated a change in their most commonly offered system, three respondents volunteered explanations for apparent product selection changes. One cited lower cost, one cited both lower cost and lower maintenance, and the third stated that the older model was no longer available.

Liquid oxygen system—Seven suppliers reported brand information, of which only one indicated a change in the most commonly used type of liquid oxygen system (HCPCS E0439RR) supplied to beneficiaries. However, when asked for the rationale for the change this supplier later indicated that they did not change liquid oxygen brands, so this change may reflect inventory changes due to product life-cycle.

Portable oxygen tanks—Suppliers were asked to report the presence and direction of any changes in portable oxygen tank size or the number provided per month. Of 24 respondents, 21 indicated no change in the size of oxygen tanks, and 14 reported no change in the number supplied per month. Of those that did indicate a change in size, one increased tank size while two decreased tank size. Seven respondents stated they increased the number of tanks supplied per month, while three reported a decrease.

4.7.2 Hospital Beds and Accessories

Semi-electric hospital beds—Of 14 suppliers that reported their most commonly provided brand of semi-electric hospital bed (HCPC E0260), only two reported a change in product selection. All suppliers reported using either Invacare or Medline brand beds, with the exception of one supplier that switched from Sunrise to Invacare, the most common brand among all suppliers. This supplier cited higher quality, additional features, and less maintenance as the reasons for the change. This supplier was the only one to indicate a change in trapeze bars (HCPCS E0910), as they issued bars of the same make as their beds. The other supplier that changed brands switched from the most common to the second most common brand, citing lower costs. The average age of the beds was 1.6 years.

Mattresses—Fourteen suppliers provided the percentage of their mattress inventory that consisted of foam, coil, or other materials in 2001 and 2002. Overall, respondents reported that approximately two-thirds of their inventory consisted of coil spring mattresses, about 24 percent foam, and 10 percent other. Only two suppliers changed their inventory breakdown during 2001, resulting in a nominal increase in coil springs and slight decreases in foam and other mattresses. One supplier with primarily coil spring mattresses reduced their stock of foam mattresses from 10 percent to 5 percent. The other supplier switched from 50 percent foam/50 percent other to 75 percent foam/25 percent other. Thus, across suppliers, beneficiaries continued to have some choice between coil spring and foam mattresses, but most continued to receive coil spring mattresses.

Eighteen suppliers reported whether they issued new mattresses to every new Medicare hospital bed patient, and if not, whether the mattresses are sterilized between uses. In January 2001, half of the suppliers issued new mattresses to each new patient. Over the course of the year, four of these suppliers began issuing some used mattresses to patients. All suppliers that provided any used mattresses indicated that they sterilize or decontaminate used mattresses between uses.

4.7.3 Wheelchairs and Accessories

Wheelchairs and elevating leg rests—Suppliers were asked to name the most common brand of wheelchair supplied to beneficiaries in January 2001 and January 2002. Excluding suppliers that left the market, 14 suppliers provided wheelchair product selection information. Three of these respondents reported they changed the product of standard wheelchair (HCPCS K0001) they typically provided over the course of the year, two switched brands, and one switched models within the same brand. These three suppliers also made corresponding changes to elevating leg rest (HCPCS K0195) product selection, maintaining brand and model uniformity with their standard wheelchair. Two of the same suppliers that had changed their standard wheelchair also changed lightweight wheelchair (HCPCS K0003) and high strength, lightweight wheelchair (HCPCS K0004) brands. One of these suppliers also changed high strength, lightweight wheelchair (HCPCS K0004) brands. Most suppliers used the different models of the same brand for each type of wheelchair and maintained some brand uniformity when changing.

The most common brand supplied was Invacare, which was carried by nine suppliers. Medline was carried by three, while six other brands were each offered by one supplier. Of the

suppliers that changed products, one switched from Invacare to Medline, one switched between Invacare product models, and one changed from E & J to Summit.

Suppliers that changed wheelchair products were asked to provide the reasons they did so. Nine respondents provided reasons for change, although only three of these respondents had provided brand information for both periods. Seven suppliers cited lower cost, while “patient asked for different brand or model,” “physician/HMO/referral requested different brand,” “different brand has higher quality,” “different brand has additional features,” and “different brand requires less maintenance” were each cited once. Of the suppliers that provided product information, all three cited only “lower cost.”

Wheelchair accessories—Suppliers were also asked to supply the number of various types of accessories supplied to Medicare beneficiaries during January 2001 and 2002. Sixteen suppliers supplied data for at least one type of accessory, including adjustable height arm rests (HCPCS K0016), anti-tipping device (HCPCS K0021), safety belt (HCPCS K0031), wheel lock assembly (HCPCS K0081), and elevating leg rests (HCPCS K0195). The provision of arm rests and safety belts decreased by 3 and 11 percent, respectively, but increased for all other accessories. The supply of anti-tipping devices and wheel locks increased 79 and 129 percent, respectively, while the supply of elevating leg rests increased 9 percent.

4.7.4 General Orthotics

Suppliers were asked which brands and models of certain types of orthotics were most commonly supplied to beneficiaries, and if there were any changes, why. However, only one supplier provided product selection data for any product over both periods. This supplier switched models of the same brand for 9 of the 10 included orthotic supplies and cited patient request and lower cost as the motivating factors. Two other respondents provided reasons for product selection changes, although they did not list products for both periods. One supplier cited lower cost and “Medicare approval” as the reasons for the change, while the other listed “patient requested different brand,” “physician/HMO/referral requested different brand,” “different brand has higher quality,” and that the old brand was no longer available.

4.7.5 Nebulizer Inhalation Drugs

Twenty suppliers indicated they supplied nebulizer drugs, including albuterol and ipratropium bromide, to 608 Medicare beneficiaries in January 2001. Three of these respondents did not supply nebulizer drugs to beneficiaries in January 2002. One of these three suppliers stated that they lost a competitive bid contract. Despite the reduction in suppliers, the number of beneficiaries supplied with nebulizer drugs increased 61 percent to 981, due primarily to an increase by one supplier from 25 to 500 beneficiaries supplied.

Suppliers were asked to describe which brands of nebulizer drugs they typically supplied to Medicare beneficiaries. Other than the three suppliers that discontinued supply of nebulizer drugs, 0 of 16 respondents changed albuterol products, and only 2 of 15 respondents changed their most commonly supplied type of ipratropium bromide. Four suppliers provided reasons for changing nebulizer drug products, with three citing lower cost and one citing patient request and physician/HMO/referral request. Although most of the nebulizer drugs are offered on a generic

basis with multiple drug producers, some of the nebulizer drug suppliers we interviewed stated preferences for certain brands over others based on packaging and other attributes. The survey responses suggest that few suppliers changed the brands that they offered.

4.8 Summary

We evaluated the impact of the competitive bidding demonstration on the quality of products and services provided to Medicare beneficiaries, as well as product selection, using a multipronged approach. We gathered information directly from beneficiaries residing in the demonstration counties and control counties by fielding surveys before and during the demonstration; we gathered data directly from suppliers through a supplier survey and through focus groups and individual interviews with suppliers during multiple site visits conducted during various phases of the demonstration; and we gathered information directly from referral agents, including physical therapists, social workers, and home health staff, by conducting focus groups and individual interviews during site visits to demonstration counties.

The beneficiary survey focused on a number of key areas that convey the quality of products and services from the perspective of the beneficiary, including

- beneficiary overall satisfaction with the DMEPOS supplier,
- perceived quality of equipment and supplies,
- perceived quality of training by the supplier,
- perceived quality of customer services, and
- questions specific to the delivery and receipt of nebulizer drugs.

The analysis of beneficiary surveys suggests that beneficiaries receiving DMEPOS products and services were quite satisfied with the products and services provided by suppliers. Overall, satisfaction was not affected by the demonstration so that from the beneficiary perspective, the demonstration did not have either a negative or positive impact on the quality of products and services provided to beneficiaries. This was the case for both the oxygen users and the medical equipment users from both demonstration sites. The exception to this was nebulizer drug users in San Antonio. Although the impact of the demonstration was not statistically significant for all users, among nebulizer drug users the proportion who would recommend the demonstration supplier dropped slightly but remained above 90 percent at follow-up.

The supplier survey provided important information on product selection. We found that, as a group, suppliers continued to offer a wide selection of products during the demonstration and that, among the demonstration suppliers, the products they were providing did not change much. The only area that did show a change in product selection was hospital beds where nearly 25 percent of bed suppliers began offering used mattresses rather than new mattresses to Medicare hospital bed patients.

The analysis of focus group and interview data from referral agents suggests that after an initial period of trying new suppliers, most referral agents were able to find suppliers that

provided the product and service quality that they were seeking. However, this often required additional attention and oversight by the referral agent. There were two areas that were potential exceptions that warranted additional exploration: urological supplies and wheelchairs. For urological supplies, it became apparent that suppliers need to be knowledgeable about this product and that beneficiaries would benefit from a wide selection of products to accommodate different needs. From the perspective of the referral agent, wheelchairs need to be delivered by someone who can adjust the chair to fit the patient and assess if the fit is not appropriate.

Although the overall quality and services of DMEPOS products were not negatively affected by the demonstration, if competitive bidding were to be adopted on a wider basis, it would be prudent to maintain multiple winners to provide the competition needed to safeguard quality and selection of products and services. With multiple winners, demonstration suppliers had strong incentives to maintain quality, and referral agents were able to select suppliers that met their patients' needs.

SECTION 5 COMPETITIVENESS OF THE MARKET

5.1 Introduction

In this section, we discuss the effects of the demonstration on the competitiveness of the DMEPOS markets in Polk County and San Antonio. The process of competitive bidding may reduce the number of suppliers that serve Medicare beneficiaries in these markets. For subsequent rounds of bidding to be successful, a sufficient number of bidders must be left in the market to induce competitive bids. Continued competition is also necessary to preserve beneficiary access and quality services.

In this section, we analyze whether the demonstration affects overall market competitiveness. We also examine a related issue: the effect of the demonstration on the aggregate market shares of demonstration and nondemonstration suppliers. Conceptually, competitive bidding requires that bidders have strong incentives to bid aggressively. There must be potential gains from submitting winning bids and potential losses from submitting losing bids. We analyzed whether the demonstration produced increases in aggregate market shares for demonstration suppliers and reductions in aggregate market shares for nondemonstration suppliers.

In addition to looking at competitiveness issues at the aggregate level, we also examined the effects of the demonstration on individual DMEPOS suppliers. These effects are obviously of interest to the suppliers themselves. DMEPOS suppliers generally opposed competitive bidding prior to the demonstration project. The demonstration's impact on suppliers and suppliers' feelings about competitive bidding will likely shape suppliers' attitudes for future policy discussions about competitive bidding. Examining the effects of the demonstration on individual suppliers also addressed several other policy questions, including the following:

- Will demonstration suppliers gain enough market share to offset lower demonstration prices, allowing revenue to increase?
- Can small suppliers prosper during competitive bidding?
- If a supplier is not selected as a demonstration supplier during the first round of competitive bidding, will the supplier be able to gain demonstration status in subsequent rounds?

We begin in Section 5.2 by discussing the results of the bidding in each site and round of the demonstration, with a focus on the number of winners in each product category. In Section 5.3, we discuss bidding strategies employed by Polk County suppliers in Round 1 of the demonstration. In Sections 5.4 and 5.5, we examine effects of the demonstration on the aggregate market share of demonstration suppliers and overall market concentration, respectively. We focus on the effect of the demonstration on individual suppliers in Section 5.6, examining market shares, revenues, costs, and net income. In Section 5.7, we discuss supplier perceptions about the competitiveness of the market. Section 5.8 summarizes our conclusions.

Key findings in this section are as follows:

- Thirty suppliers submitted a total of 71 bids in Polk County in Round 1 of the demonstration. Sixteen suppliers, both large and small firms, were selected as demonstration suppliers.
- Twenty-six firms submitted a total of 52 bids for the four product categories in Round 2 bidding in Polk County, and 16 suppliers (62 percent) were awarded demonstration status.
- The number of firms submitting bids for urological supplies in Round 2 bidding in Polk County fell from 9 to 7, and the number of suppliers submitting bids for surgical dressings fell from 8 to 4. These reductions are noteworthy because these product categories had the fewest winners and demonstration suppliers in Round 1 of the demonstration.
- Entry into and exit from the market are still possible in the presence of competitive bidding. Half of the Round 2 demonstration suppliers in Polk County also had demonstration status in Round 1, but half did not.
- Seventy-nine firms submitted a total of 169 bids for the five product categories in San Antonio. Overall, 65 percent of the suppliers that submitted bids won demonstration status in at least one product category. Within product categories, the number of winning bids ranged from 8 for orthotics to 32 for oxygen equipment and supplies.
- In Round 1 bidding in Polk County, few winning bidders adopted a bidding strategy that lowered prices for all items by the same percentage, relative to the existing fee schedules. Instead, most bidders cut prices for individual items by varying percentages. Indirectly, this result suggests that relative prices for DMEPOS were not accurately reflected in the existing Florida fee schedule.
- As a group, demonstration suppliers gained market share during the demonstration, whereas nondemonstration suppliers lost market share. In product categories where there were transition policies that allowed nondemonstration suppliers to continue to serve existing customers, the increase in market share for demonstration suppliers occurred gradually over time.
- In both Polk County and San Antonio, the demonstration had relatively little effect on market concentration in every product category except one. For surgical dressings in Polk County, a relatively small and highly concentrated product category before the demonstration, concentration increased significantly in Round 1 and decreased significantly in Round 2.
- As expected, individual suppliers generally gained market share if they were demonstration suppliers and lost market share if they were nondemonstration suppliers. Some demonstration suppliers in Polk County, including some that had small market shares prior to the demonstration, gained substantial market share.

However, being named as a demonstration supplier did not guarantee increased market share. In San Antonio, many demonstration suppliers had little or no increases in market share due to the fact that many of the largest suppliers in the predemonstration period were granted demonstration status.

- A supplier survey provides anecdotal evidence that San Antonio suppliers were more likely to receive reduced revenues and net income during the demonstration than suppliers in a comparison site, while the effects on costs were less clear. Within San Antonio, demonstration suppliers were more likely than nondemonstration suppliers to report that revenue, costs, and net income increased during the demonstration. These results must be interpreted cautiously because the survey had low response rates, particularly in the comparison site.
- In both sites, some suppliers felt that the demonstration made the DMEPOS market more competitive, whereas others felt the demonstration made the market less competitive. Suppliers frequently expressed opposition to the competitive bidding demonstration.

5.2 Results of Bidding

5.2.1 Polk County Round 1

In 1997, 321 DMEPOS suppliers served Polk County in at least one of the five demonstration product categories (Table 5-1). The number of suppliers serving individual product categories ranged from 61 for enteral nutrition to about 120 for both hospital beds and oxygen supplies. However, the majority of these suppliers had less than \$10,000 a year in Medicare allowed charges in Polk County. Only 42 suppliers had over \$10,000 in total combined allowed charges in Polk County for the five demonstration product categories.

A total of 30 suppliers submitted bids in one or more product categories (Table 5-2). There were a total of 73 bids across the five product categories. Three suppliers bid on all five product categories, while seven suppliers bid on only one product category; the remaining 20 suppliers bid on two, three, or four product categories. More suppliers (23) bid on oxygen than any other product category; surgical dressings (8) and urological supplies (9) received the fewest bids. Probably not coincidentally, oxygen accounted for the most allowed charges and surgical dressings and urological supplies accounted for the least allowed charges among the five product categories.

Overall, just over half of the bidders in each product category won a contract (see Section 6 for information on how CMS determined the winning bidders). Specifically, 13 of 23 bidders for oxygen supplies, 10 of 19 bidders for hospital beds and accessories, 5 of 9 bidders for urological supplies, 4 of 8 bidders for surgical dressings, and 7 of 14 bidders for enteral nutrition won a contract (Table 5-2).

Table 5-1
Number and size of suppliers in Polk County in 1997

Product category	\$1M or more	\$500K to \$1M	\$250K to \$500K	\$100K to \$250K	\$50K to \$100K	\$10K to \$50K	\$1K to \$10K	\$0 to \$1K	Total suppliers	Allowed charges
Oxygen equipment and supplies	2	1	3	5	1	6	62	43	123	\$7,615,505
Hospital beds and accessories	0	0	0	2	2	10	19	89	122	\$587,679
Urological supplies	0	0	0	0	0	3	15	52	70	\$116,156
Surgical dressings	0	0	0	1	0	2	14	49	66	\$212,245
Enteral nutrition	0	0	1	0	7	12	28	13	61	\$1,268,458
Total charges for all five categories	2	1	5	5	10	19	106	173	321	\$9,800,043

NOTE: Column entries do not add to the figures in the last row, which include total allowed charges in all five categories.

SOURCE: Analysis of National Claims History data, 1997.

Table 5-2
Bids, by number of firms and product categories

	Polk County—Round 1			Polk County—Round 2			San Antonio		
	Bids	Winners	Winning percentage	Bids	Winners	Winning percentage	Bids	Winners	Winning percentage
Number of firms	30	16	53%	26	16	62%	79	51	65%
By product category									
Oxygen equipment and supplies	23	13	57%	22	10	45%	42	32	76%
Hospital beds and accessories	19	10	53%	19	8	42%	44	24	55%
Urological supplies	9	5	56%	7	5	71%	—	—	—
Surgical dressings	8	4	50%	4	3	75%	—	—	—
Enteral nutrition	14	7	50%	—	—	—	—	—	—
Wheelchairs and accessories	—	—	—	—	—	—	46	23	50%
Orthotics	—	—	—	—	—	—	14	8	57%
Nebulizer drugs	—	—	—	—	—	—	33	11	33%
Total bids	73	39	53%	52	26	50%	179	98	55%

SOURCE: Bid data, DMEPOS Competitive Bidding Demonstration.

Suppliers with both large and small market shares in Polk County submitted bids. Of the 42 suppliers with over \$10,000 in allowed charges in the county in 1997, 14 submitted bids (by 1999, a few of the top 42 suppliers had merged or gone out of business). The remaining 16 of 30 bidders had less than \$10,000 in allowed charges in 1997. Suppliers with large and small market shares that submitted bids were about equally likely to be selected as demonstration suppliers. Seven of the 14 bidders with over \$10,000 in Polk County allowed charges were selected as demonstration suppliers, while 9 of the 16 bidders with less than \$10,000 in allowed charges were selected. Three of the four national DMEPOS companies either did not bid or were not selected as demonstration suppliers; two of these companies had large Polk County market shares before the demonstration.

5.2.2 Polk County Round 2

Results of Round 2 bidding in Polk County provide important insights into the dynamic nature of competition in the DMEPOS market under Medicare competitive bidding. Round 2 bidding allowed suppliers to adapt their behavior based on their experience and lessons learned during Round 1 of the demonstration. Round 2 also provided an opportunity to evaluate whether suppliers entered or exited the demonstration.

Number of bidders—Overall, Polk County attracted nearly as many bidders in Round 2 as in Round 1, and the same number of suppliers was awarded demonstration status (see Table 5-2). Twenty-six suppliers submitted bids in at least one of the four product categories in Round 2, compared with 30 suppliers in Round 1, when there were five product categories. In both rounds, 16 suppliers achieved demonstration status in at least one product category. The number of firms submitting bids for oxygen equipment and supplies and hospital beds and accessories remained virtually the same, while the number of suppliers submitting bids for urological supplies fell from 9 to 7 and the number of suppliers submitting bids for surgical dressings was cut in half, falling from 8 to 4.

The reduction in bidders for urological supplies and surgical dressings is noteworthy because these product categories had the fewest bidders and the fewest suppliers in Round 1 of the demonstration. The relatively low level of allowed charges for these product categories (\$94,000 for urological supplies and \$85,000 for surgical dressings in 1999 versus \$6.1 million for oxygen equipment and supplies and \$575,000 for hospital beds and accessories) may explain why urological supplies and surgical dressings attracted fewer bids than oxygen equipment and hospital beds. Suppliers may have thought that the time it took to prepare a bid outweighed any potential gain from winning the bid. Nevertheless, the reduction in bids for these product categories during Round 2 raises the question of whether sufficient competition—both at the bidding stage and among the suppliers subsequently awarded demonstration status—can be maintained under competitive bidding for product categories with relatively low allowed charges. Future competitions may need to consider design changes to avoid having small numbers of competitors.

Low profit margins in Round 1 of the demonstration may also partly explain why fewer suppliers submitted bids for urological supplies. It is difficult to fully evaluate the role of profit margins because we lack accurate information on supplier costs. Available evidence suggests that profit margins may have been quite narrow for urological supplies during Round 1 of the

demonstration. In site visits during the first year, some of the demonstration suppliers of urological supplies stated that they had bid too low because of their inexperience in the product category. Consequently, in our First-Year Annual Evaluation Report, we identified urological supplies as a category to watch for possible quality reductions and changes in bidding behavior.

Low profit margins are less plausible as an explanation for the reduction in the number of bids for surgical dressings. Because of a flaw in the design of the pricing mechanism used to set prices in Round 1 of the demonstration, most of the demonstration prices for surgical dressings were higher than the Florida fee schedule that would have been in effect in the absence of the demonstration. If a corrected pricing mechanism had been used (as it was in Round 2), the demonstration prices would have been lower than the Florida fee schedule. This suggests that the demonstration suppliers may have enjoyed relatively high profit margins in Round 1 of the demonstration. If so, high profit margins did not attract additional bidders in Round 2 of the demonstration.

Entry and exit—The list of Round 2 demonstration suppliers suggests that entry into and exit from the market are still possible in the presence of competitive bidding. Half of the demonstration suppliers selected in Round 2 were also demonstration suppliers in Round 1; the remaining half won demonstration status in Round 2 after not having demonstration status in Round 1. Two of the new demonstration suppliers had bid unsuccessfully in Round 1 of the demonstration, while the others had not bid. Among the demonstration suppliers in both rounds, there were relatively few changes in the product categories served. One supplier lost demonstration status for oxygen equipment and supplies, while a second supplier gained demonstration status for hospital beds and accessories and a third supplier added demonstration status for surgical dressings.

The changes in demonstration status appeared to have relatively little effect on the number of local suppliers serving Polk County. This result may be important because Polk County beneficiaries and referral agents told us during site visits that they preferred to use local suppliers. Among the 8 new demonstration suppliers in Round 2, 3 were located in Polk County, 2 were located in predominantly rural bordering counties, 2 were located elsewhere in Florida, and 1 was located out of state. Of the 9 Round 1 demonstration suppliers that were not demonstration suppliers in Round 2, 2 had been acquired during the first round of the demonstration by a large national DME supplier that also had a large local presence in Polk County before the demonstration began, 3 were located in Polk County, and 4 were located in the neighboring metropolitan areas of Tampa or Orlando.

Effects of changes since the demonstration began—In our First-Year Evaluation Report, we identified several changes that occurred in the competitive environment in Polk County after the Round 1 demonstration prices took effect on October 1, 1999. A nondemonstration supplier acquired two demonstration suppliers, and one nondemonstration and two demonstration suppliers filed for bankruptcy protection. We concluded that the relationship between the acquisitions and the demonstration was not clear and that the bankruptcies were unrelated to the demonstration. Below, we discuss the effects of these changes on Round 2 bidding.

Lincare Holdings, Inc., was not initially selected as a demonstration supplier in Round 1 in Polk County, but it gained demonstration status after acquiring two demonstration suppliers. In Round 2, Lincare bid successfully. Lincare is one of the nation's largest DME suppliers and was a large supplier within Polk County before Round 1 of the demonstration began.

The two demonstration suppliers that filed for bankruptcy during Round 1 both successfully attained demonstration status in Round 2. Sun Healthcare Group, parent company of Round 1 demonstration supplier Sun Factors, had filed for bankruptcy in 1999, citing reductions in payments for its long-term care facilities. As part of its reorganization, Sun Healthcare changed the name of its DME subsidiary to Sun Care and began actively seeking buyers for the subsidiary. Sun Care bid successfully in Round 2 of the demonstration. Round 1 demonstration supplier Medi-Health Care filed for bankruptcy in 2000 for reasons unrelated to the demonstration. It also won demonstration status in Round 2.

In 2000, Integrated Health Services, the parent company of National Medical Equipment Suppliers, a nondemonstration supplier in Polk County, filed for bankruptcy. The company blamed reductions in reimbursement rates for nursing facilities. National Medical Equipment continued to provide DME services in Polk County but did not become a demonstration supplier in Round 2.

5.2.3 San Antonio

A total of 79 suppliers submitted bids in one or more product categories (see Table 5-2), making a total of 179 bids across all five categories. Oxygen equipment and supplies, hospital beds and accessories, and wheelchairs and accessories each attracted more than 40 bids, and nebulizer drugs attracted 33 bids. In contrast, there were only 14 bids for orthotics, the product category with the lowest total allowed charges. Overall, 65 percent of suppliers that submitted bids won demonstration status in at least one product category. Within product categories, the number of winning bids ranged from 8 for orthotics to 32 for oxygen equipment and supplies; winning percentages ranged from 33 percent for nebulizer drugs to 76 percent for oxygen equipment and supplies.

5.3 Bidding Strategies

We performed a detailed analysis of bidding strategies in Round 1 of the demonstration in Polk County. During site visits, suppliers reported that they determined their bids by examining their costs of providing services, the prices they had bid on other contracts, and how long their equipment would be used. They also compared the reimbursement from different payers, including Medicare, Medicaid, and the VA. Our analysis of individual suppliers' bids suggests that bidding strategies varied among suppliers. The strategies can be categorized as follows:

- bid the existing fee schedule for all procedures,
- bid a uniform percentage discount of the fee schedule on all procedures (e.g., bid 20 percent less than the existing fee schedule for all procedures),

- bid a uniform (usually discounted) percentage of the existing fee schedule on more than 70 percent of (but not all) procedures, and
- vary the percentage reduction on more than 30 percent of the procedures.

The number of suppliers who used each of these strategies is listed in Table 5-3. One supplier bid the existing fee schedule for oxygen equipment and supplies, hospital beds and accessories, and enteral nutrition. This supplier also bid the existing fee schedule except for two items in surgical dressings and one item in urological supplies. Overall, the existing fee schedule was bid by one other supplier of oxygen equipment and supplies and another supplier of hospital beds and accessories. Two oxygen suppliers and three hospital bed suppliers bid uniform discounts on the existing fee schedules. Several suppliers bid a uniform reduction on more than 70 percent of the items but varied bids on some of the remaining 30 percent of the items. However, the most frequently used strategy was to vary the discount for most procedures. The majority of bidders in each product category used this strategy.

Table 5-3
Bidding strategy by product category

	Oxygen equipment and supplies	Hospital beds and accessories	Urological supplies	Surgical dressings	Enteral nutrition
Bid fee schedule	2	2	0	0	1
Bid uniform percentage of fee schedule on all products	2	3	0	0	0
Bid uniform percentage of fee schedule on at least 70 percent but not all products	3	4	3	2	3
Varied bids on more than 30 percent of products	16	12	6	6	10
Total number of bids	23	19	9	8	14

SOURCE: Analysis of bids, Polk County Round 1.

It is not clear why a few bidders bid the existing fee schedule. It is possible that these suppliers felt the existing fee schedule provided an accurate measure of the underlying costs of providing the products in each product category. Alternatively, these bidders may have hoped that only a few competitors would bid, allowing them to gain demonstration status without having to lower their prices.

Bidding a uniform percentage discount for all procedures is a relatively simple strategy for bidders to apply. If the existing fee schedule provides an accurate measure of the relative costs of each procedure (e.g., if procedure A costs twice as much as procedure B, then the existing fee for procedure A is twice the fee for procedure B), bidding a uniform percentage

discount is also an optimal strategy because relative cost differences are already built into the existing fee schedule. Indeed, if the existing fee schedule provides an accurate measure of relative costs, then competitive bidding could be simplified by requiring bidders to submit a single discount bid or conversion factor to be applied to the existing fee schedule, rather than submitting individual bids for each procedure in the product category. The fact that most bidders did not adopt the uniform percentage discount strategy provides indirect evidence that the existing fee schedule did not accurately reflect the relative costs of procedures.

5.4 Market Shares of Demonstration Suppliers

From a competitive standpoint, one of the key issues is the demonstration's effect on the market shares of demonstration and nondemonstration suppliers. Market share provides an important incentive for suppliers to bid aggressively in competitive bidding. Suppliers who bid aggressively in the competitive bidding are more likely to win the competition and have a chance to gain market share and increase profitability. At the same time, they are less likely to lose the competition and therefore less likely to face the prospect of losing market share and profitability.

The demonstration's effect on market shares for demonstration suppliers in aggregate will depend on the market share of nondemonstration suppliers before the demonstration began (i.e., the potential gains for the winning bidders) and demonstration transition policies, which determine whether nondemonstration suppliers can continue to serve existing customers. For an individual demonstration supplier, market share also depends on the suppliers' ability to compete with other demonstration suppliers for customers on the basis of quality and service.

The effect of demonstration transition policies on market shares for demonstration and nondemonstration suppliers is worth mentioning in greater detail. At first glance, one might expect that the market share of nondemonstration suppliers would fall to zero during the demonstration because beneficiaries were generally required to use demonstration suppliers. However, several demonstration transition policies allowed nondemonstration suppliers to continue to serve beneficiaries under certain circumstances.

First, for purchased enteral supplies, urological supplies, surgical dressings, general orthotics, and nebulizer drugs during a 2-month grace period, CMS paid claims for beneficiaries who mistakenly used nondemonstration suppliers. Second, oxygen equipment and nebulizer drug users were permitted to continue existing relationships with nondemonstration suppliers during the demonstration, as long as the nondemonstration suppliers agreed to accept the demonstration fee schedule as payment in full. Third, beneficiaries with existing capped rental equipment agreements for hospital beds, enteral nutrition equipment, and wheelchairs with nondemonstration suppliers were allowed to continue these relationships for the remaining duration of the contract. Fourth, Medicare Part B covers urological supplies, surgical dressings, and enteral nutrition for beneficiaries living in nursing homes, as well as for beneficiaries living at home. Beneficiaries living in nursing homes were allowed to receive these products from nondemonstration suppliers, as long as the nondemonstration suppliers accepted the demonstration fee schedule. Below, as we describe the market share effects for each product category in each site, we briefly discuss the effects of transition policies.

5.4.1 Polk County

In a series of figures for Polk County, we show the effects of the demonstration on aggregate market shares (based on allowed charges for demonstration items) for four types of suppliers:

- Suppliers who were not selected as demonstration suppliers in either Round 1 or Round 2 (diamonds) (i.e., they either did not bid or they bid and lost)
- Suppliers who were demonstration suppliers in both Round 1 and Round 2 (asterisks)⁹
- Suppliers who were demonstration suppliers in Round 1 but not in Round 2 (squares)
- Suppliers who were demonstration suppliers in Round 2 but not in Round 1 (triangles)

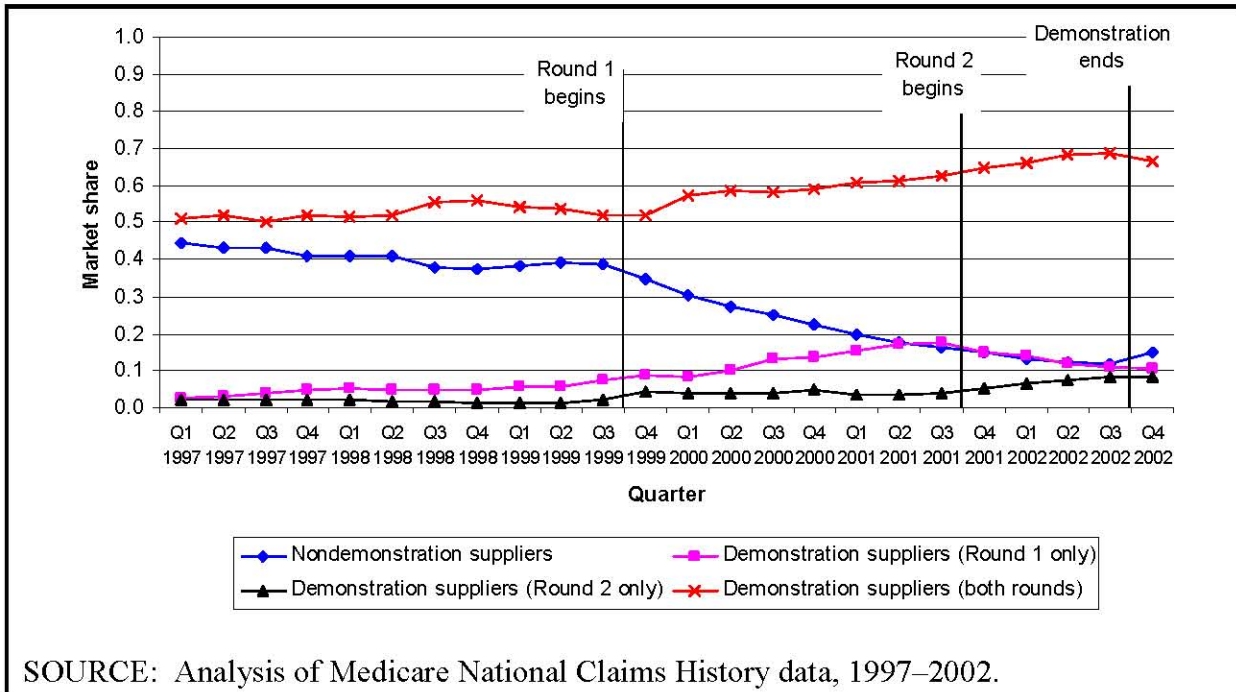
We expect that the demonstration will have different effects on each group of suppliers. We expect that market share will decrease during the demonstration for nondemonstration suppliers and increase during the demonstration for demonstration suppliers. For suppliers that are demonstration suppliers in one round but not the other round, we expect that market share will rise when the supplier is a demonstration supplier and fall when it is not a demonstration supplier.

Oxygen equipment and supplies—Figure 5-1 shows aggregate market shares for the four types of oxygen suppliers. The demonstration produced the expected changes in market shares. Just prior to the demonstration (Q3 1999), the group of suppliers that were not selected as demonstration suppliers in either Round 1 or Round 2 had 39 percent of the market share. By the end of Round 2 of the demonstration (Q3 2002), the group's market share had fallen to 12 percent. For suppliers that were demonstration suppliers in both Round 1 and Round 2, market share increased from 52 percent prior to the demonstration to 69 percent at the end of the demonstration. Suppliers who were demonstration suppliers in Round 1 but not Round 2 had a market share of 7 percent prior to Round 1, 17 percent at the end of Round 1, and 11 percent at the end of Round 2. Suppliers who were demonstration suppliers only in Round 2 saw their market share rise from 4 percent just prior to Round 2 to 8 percent at the end of Round 2.

Because of the demonstration transition policy that allowed beneficiaries to continue existing relationships with nondemonstration suppliers, the market share of nondemonstration suppliers did not immediately fall to zero when the demonstration began. However, their market share fell over time as new oxygen users entered the market and received oxygen from demonstration suppliers.

⁹For oxygen equipment and supplies, this category includes one supplier that did not initially gain demonstration status but acquired a demonstration supplier just over 2 months into the demonstration.

Figure 5-1
Market shares of demonstration suppliers: oxygen equipment and supplies, Polk County demonstration

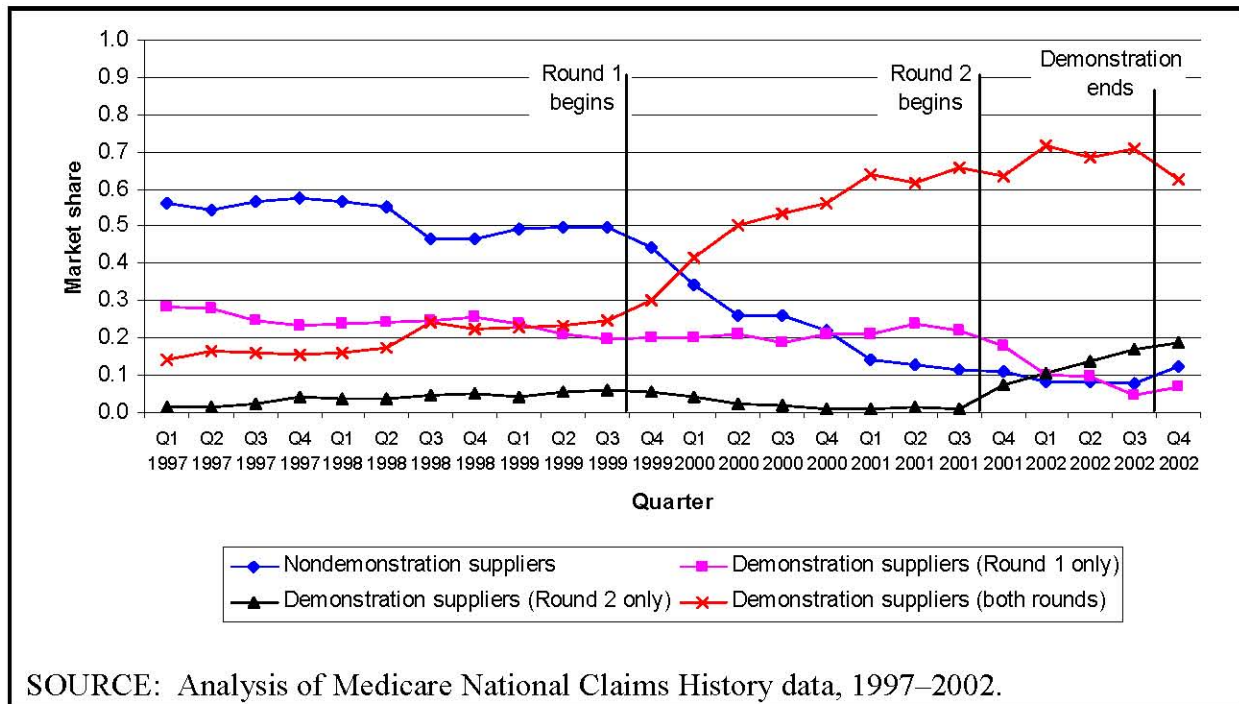


SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Hospital beds and accessories—For hospital beds and accessories, the demonstration produced the expected changes in market shares (Figure 5-2). The group of suppliers that were not selected as demonstration suppliers in either Round 1 or Round 2 had 50 percent of the market share just prior to the demonstration. By the end of the demonstration, their market share had fallen to 8 percent. For suppliers that were demonstration suppliers in both Round 1 and Round 2, market share increased from 25 percent prior to the demonstration to 71 percent at its close. Suppliers that were demonstration suppliers in Round 1 but not Round 2 had a market share of 19 percent prior to Round 1, 22 percent at the end of Round 1, and 5 percent at the end of Round 2. Suppliers that were demonstration suppliers only in Round 2 saw their market share fall from 6 percent prior to Round 1 to 1 percent at the end of Round 1 and then rise to 17 percent at the end of Round 2.

Because of the demonstration transition policy that permitted beneficiaries to continue existing capped rental contracts with nondemonstration suppliers, the market share of nondemonstration suppliers did not immediately fall to zero when the demonstration began. However, their market share fell over time as the capped rental agreements expired and new hospital bed users entered the market and received their beds from demonstration suppliers.

Figure 5-2
Market shares of demonstration suppliers: hospital beds and accessories, Polk County demonstration

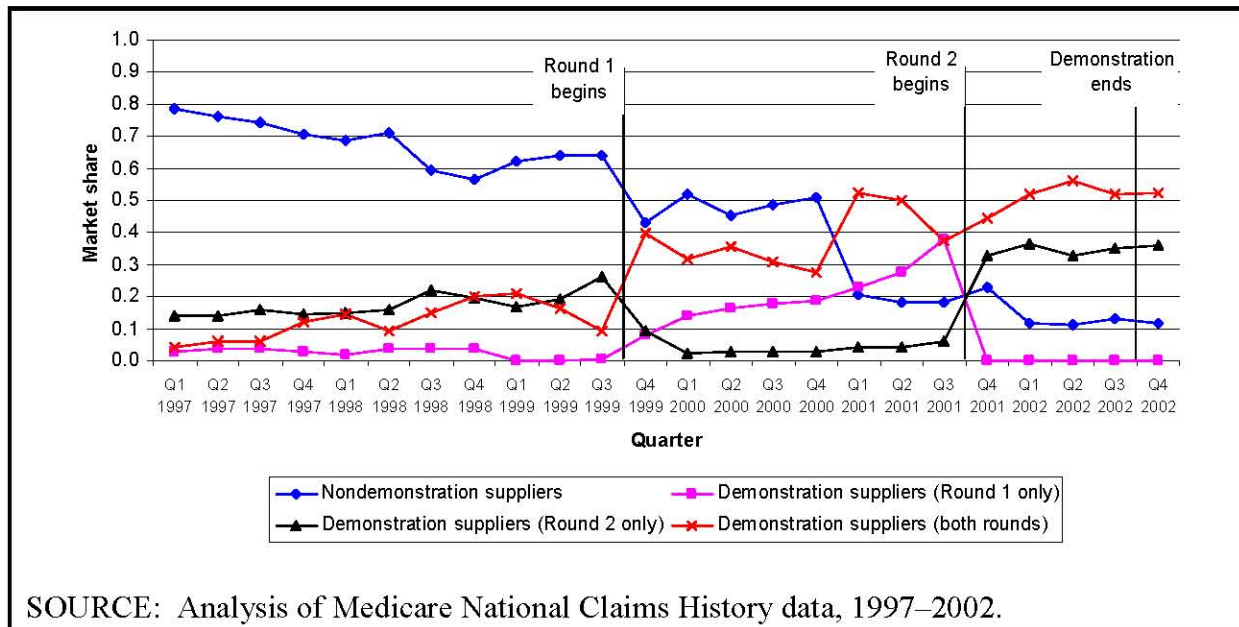


SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Urological supplies—Figure 5-3 shows aggregate market shares for the four types of suppliers that provided urological supplies. Just prior to the demonstration, the group of suppliers that were not selected as demonstration suppliers in either Round 1 or Round 2 had 64 percent of the market share. By the end of Round 2, the group’s market share had fallen to 13 percent. For suppliers that were demonstration suppliers in both Round 1 and Round 2, market share increased from 9 percent prior to the demonstration to 52 percent at the end of the demonstration; however, there were both increases and decreases in the group’s market share during the demonstration. Suppliers that were demonstration suppliers in Round 1 but not Round 2 had a market share of 1 percent prior to Round 1 of the demonstration and 38 percent at the end of Round 1; this group did not provide urological supplies in Round 2. Suppliers that were demonstration suppliers only in Round 2 saw their market share fall from 26 percent prior to Round 1 to 6 percent at the end of Round 1 and then rise to 35 percent at the end of Round 2.

Nondemonstration suppliers continued to receive some market share during the demonstration from beneficiaries in nursing homes and as a result of the 2-month grace period for beneficiaries who mistakenly used nondemonstration suppliers.

Figure 5-3
Market shares of demonstration suppliers: urological supplies, Polk County demonstration

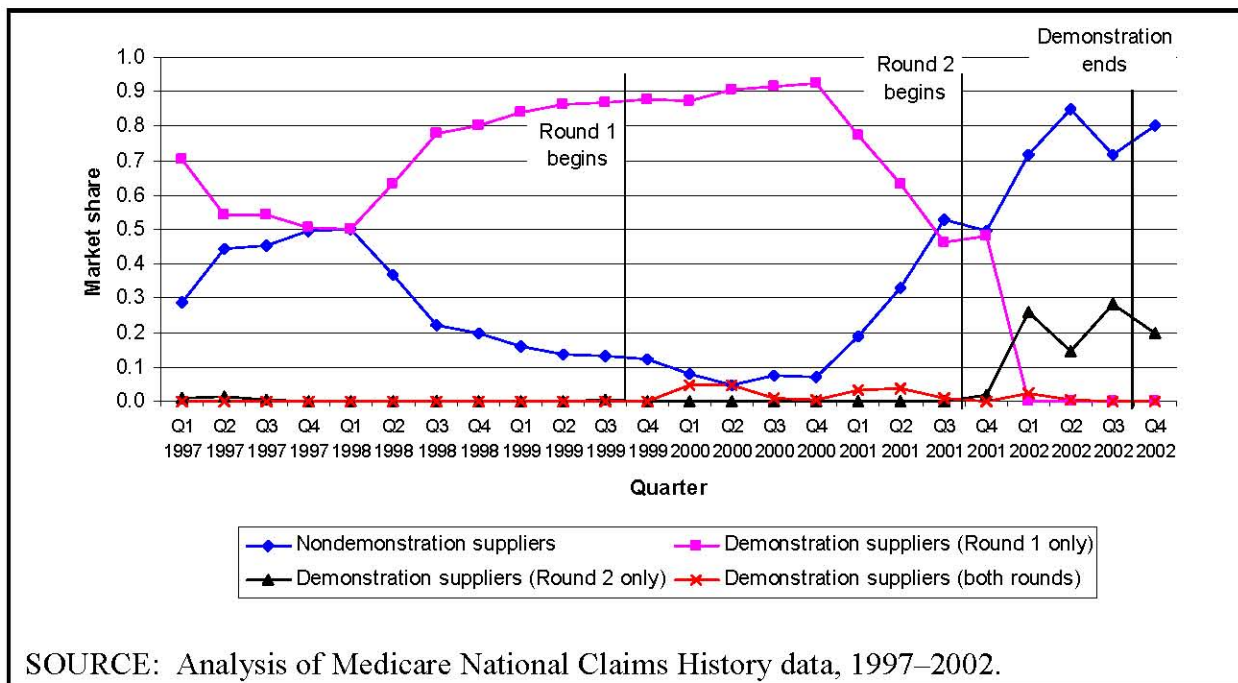


SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Surgical dressings—Figure 5-4 shows market shares for the four types of surgical dressings suppliers. Before the demonstration, and during most of Round 1, the group of suppliers that were demonstration suppliers in Round 1 but not Round 2 had by far the largest market share. This group, whose market share was entirely attributable to a single supplier, had a market share of 87 percent prior to the demonstration. In the fourth quarter of 2000, this supplier’s market share rose to 92 percent, at which point it appears that the supplier began a process of exiting the market. Because of this, the group’s market share declined steadily to 46 percent at the end of Round 1. After achieving a market share of 48 percent in the first quarter of Round 2, this large supplier effectively left the market. The group of suppliers that were not selected as demonstration suppliers in either Round 1 or Round 2 had 13 percent of the market share just prior to the demonstration, and the group’s market share had fallen to 7 percent by Q4 2000. The group’s market share began to rise thereafter, as the market share of Round 1 only demonstration suppliers fell. The suppliers that were demonstration suppliers in both Round 1 and Round 2 did not serve the market prior to the demonstration. Their market share increased only as high as 5 percent during the demonstration. Suppliers that were demonstration suppliers only in Round 2 saw their market share rise from 0 percent at the end of Round 1 to 28 percent at the end of Round 2.

Two factors may partly explain the unexpected increase in market share for nondemonstration suppliers during the second half of Round 2. First, surgical dressings were included in the home health agency prospective payment system, which went into effect in the fourth quarter of 2000. When surgical dressings were provided by home health agencies, payments for these dressings were bundled into the home health prospective payment; overall, fee-for-service payments for surgical dressings dropped. Second, a large proportion of surgical

Figure 5-4
Market shares of demonstration suppliers: surgical dressings suppliers, Polk County demonstration

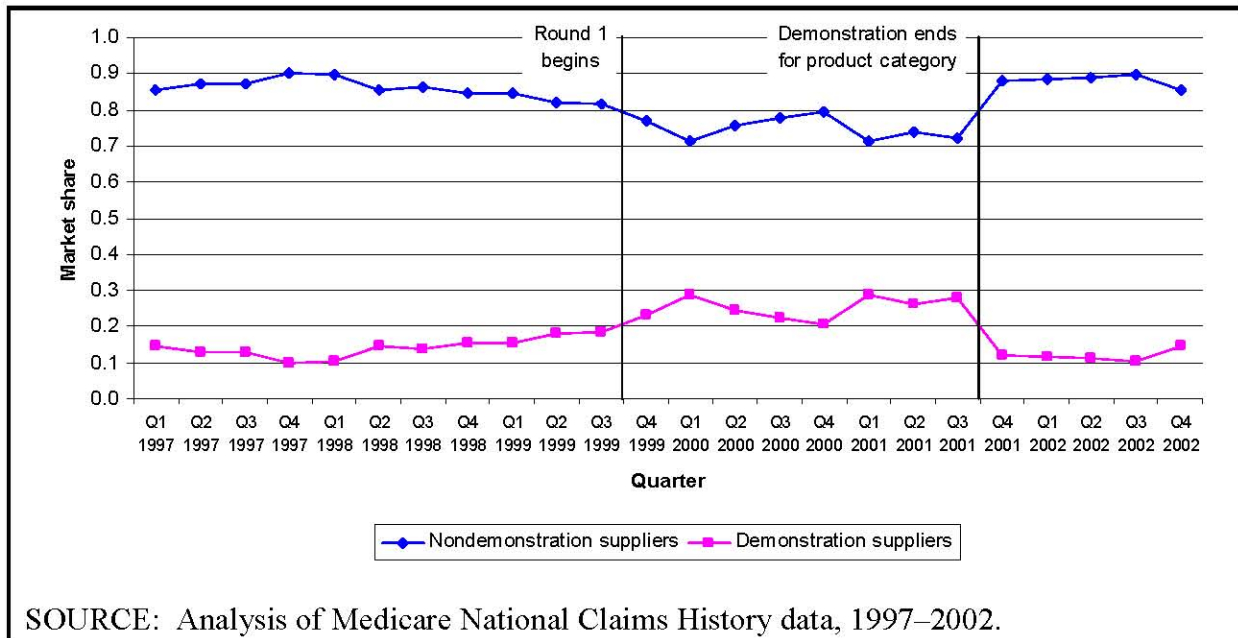


SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

dressings utilization occurred in nursing homes. The transition policy for nursing homes allowed nondemonstration suppliers to provide surgical dressings as long as they accepted demonstration fees. Together, these two factors may have led to a reduction in payments to demonstration suppliers for beneficiaries in the home and little change in payments to nondemonstration suppliers for nursing home residents. This combination could lead to an increase in market share for nondemonstration suppliers.

Enteral nutrition—Enteral nutrition was only included in the demonstration in Round 1, so we only show market shares for nondemonstration and Round 1 demonstration suppliers in Figure 5-5. The market shares of the two groups were affected by the demonstration’s transition policy that allowed nursing homes to honor contracts with nondemonstration suppliers. Because most enteral nutrition users were nursing home residents, the group of nondemonstration suppliers was able to maintain a fairly high market share throughout the demonstration. Nevertheless, the group’s market share did fall, from 82 percent prior to the demonstration to 72 percent at the end of Round 1. The group’s market share increased to 88 percent in the first quarter after the demonstration ended for the product category. The market share for demonstration suppliers increased from 18 percent prior to the demonstration to 28 percent at the end of the demonstration.

Figure 5-5
Market shares of demonstration suppliers: enteral nutrition, Polk County demonstration



SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Discussion—Looking across product categories, the market shares for the various types of oxygen and hospital bed suppliers provided the closest match with expectations. Demonstration suppliers gained market share throughout the demonstration, at the expense of nondemonstration suppliers. Because of the transition policies that allowed nondemonstration suppliers to continue to serve existing customers, nondemonstration suppliers lost patients gradually over time.

Market shares for the four types of urological suppliers also provided a fairly close match with expectations. With only the nursing home transition policy allowing nondemonstration suppliers to continue to serve existing customers, demonstration suppliers achieved large increases in market share, while nondemonstration suppliers had corresponding losses in market share.

For enteral nutrition, the market share of demonstration suppliers increased during the demonstration, while the market share of nondemonstration suppliers fell, as expected. However, because of the transition policy that allowed nursing homes to honor contracts with nondemonstration suppliers, demonstration suppliers never gained a majority market share in this market.

Finally, the market shares for surgical dressings showed the most unusual pattern, with nondemonstration suppliers actually gaining substantial market share during the last half of the demonstration. Reasons for this pattern are not entirely clear. However, surgical dressings differed from the other product categories in several ways:

- Demonstration prices for surgical dressings rose above the Florida fee schedule in Round 1 and dropped below the fee schedule in Round 2.
- A supplier with the dominant market share prior to the demonstration and during Round 1 did not obtain demonstration status in Round 2. The supplier effectively left the market thereafter.
- Surgical dressings had much lower allowed charges than all of the other product categories except urological supplies. This could lead to more variation in market shares, because a relatively small absolute change in allowed charges could lead to a relatively large change in market share.
- Surgical dressings were included in the home health prospective payment system, which went into effect in the fourth quarter of 2000. When surgical dressings were provided by home health agencies, payments for these dressings were bundled into the prospective payment and no longer included in the demonstration.
- A fairly large proportion of surgical dressings users resided in nursing homes. Nondemonstration suppliers were allowed to continue providing surgical dressings to nursing home residents.

These factors could explain why the market share patterns for surgical dressings differed from the patterns for other product categories.

Putting aside the unexpected results for surgical dressings, the results for the other product categories have the following implications for suppliers facing competitive bidding. Suppliers that are selected as demonstration suppliers can expect, as a group, to gain market share. Correspondingly, nondemonstration suppliers can expect to lose market share. If there are transition policies that allow nondemonstration suppliers to continue to serve existing customers, the increase in market share for demonstration suppliers will occur gradually over time.

5.4.2 San Antonio

Figures 5-6 through 5-10 show the effects of the San Antonio demonstration on aggregate market shares of demonstration and nondemonstration suppliers. The total market is defined as the total Medicare allowed-charges for demonstration items in the specified product category. As in Polk County, we expect that market share for demonstration suppliers will increase when the demonstration is in effect. Likewise, we expect that market share for nondemonstration suppliers will decline.

Figure 5-6 shows aggregate market shares for demonstration and nondemonstration suppliers in the oxygen equipment category. The demonstration produced the expected changes in market shares. Immediately prior to the demonstration (January 2001), nondemonstration suppliers had 17 percent of the market share. By the end of the San Antonio demonstration (December 2002), this group's market share had fallen to 5 percent. Demonstration suppliers' market share increased from 83 percent prior to the demonstration to 95 percent near the

Figure 5-6
Market share by supplier type: oxygen equipment and supplies, San Antonio demonstration

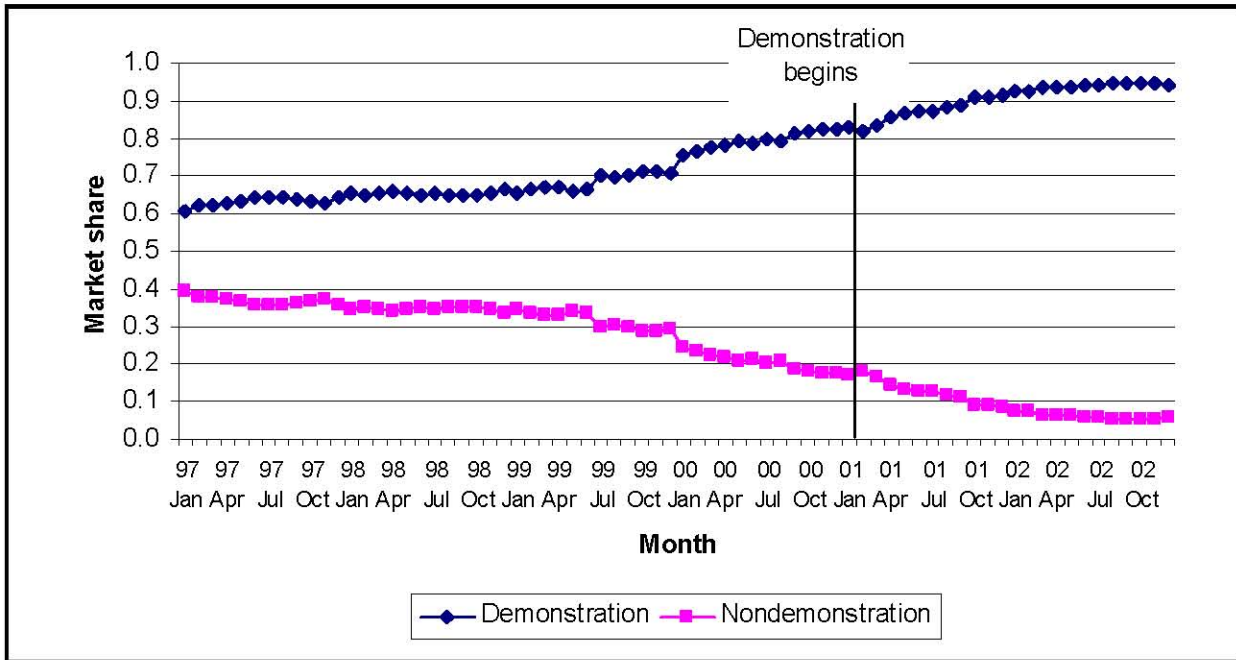


Figure 5-7
Market share by supplier type: hospital beds and accessories, San Antonio demonstration

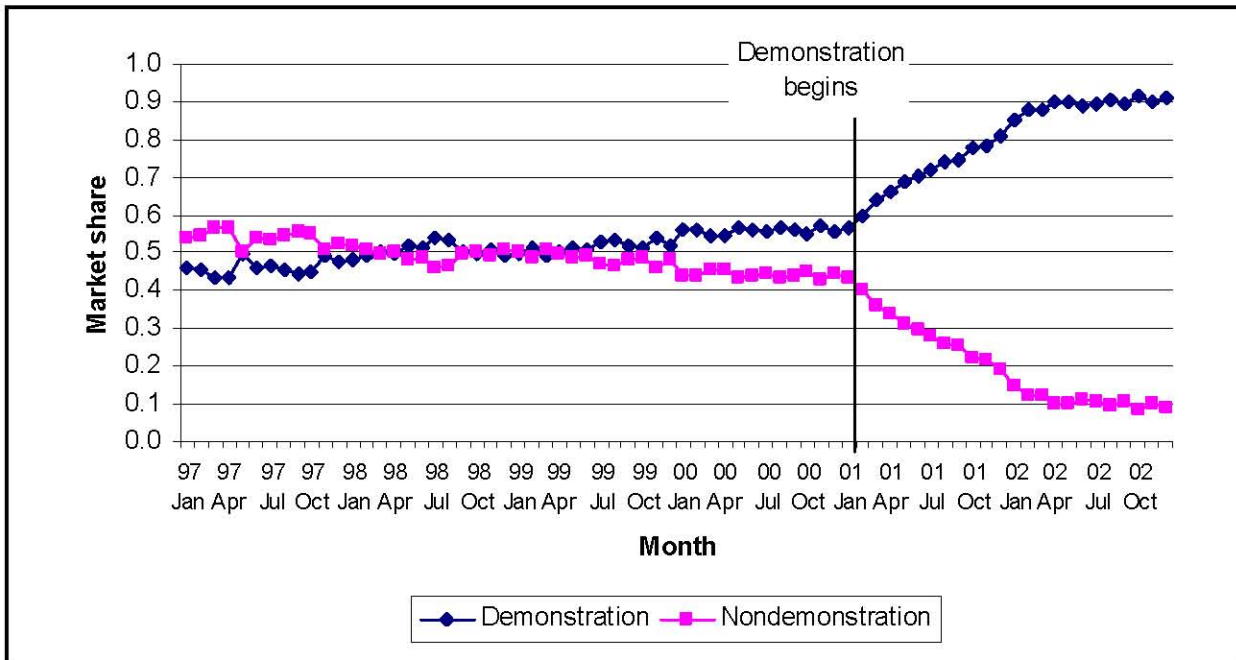


Figure 5-8
Market share by supplier type: wheelchairs and accessories, San Antonio demonstration

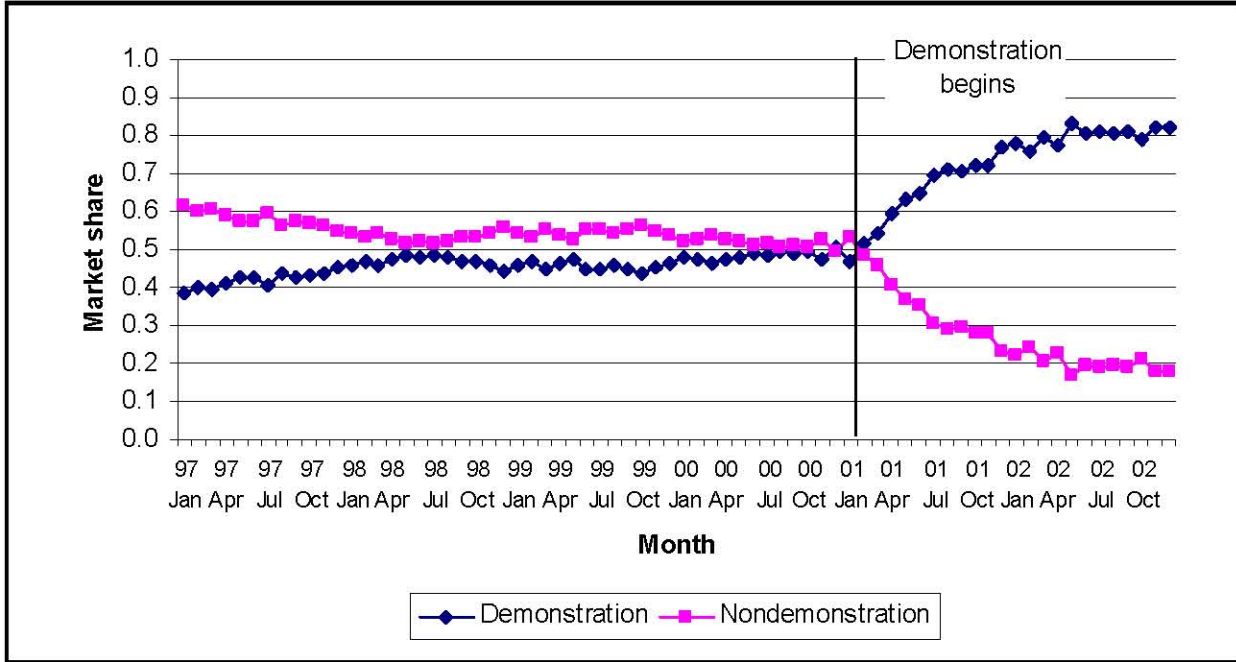


Figure 5-9
Market share by supplier type: general orthotics, San Antonio demonstration

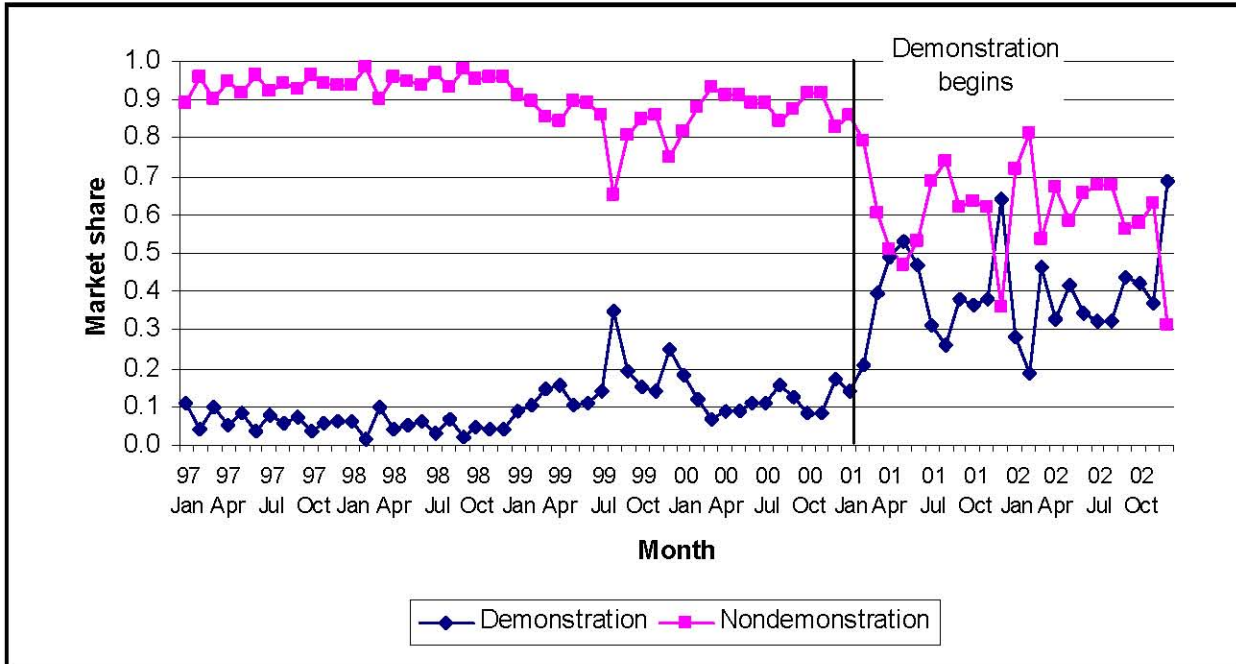
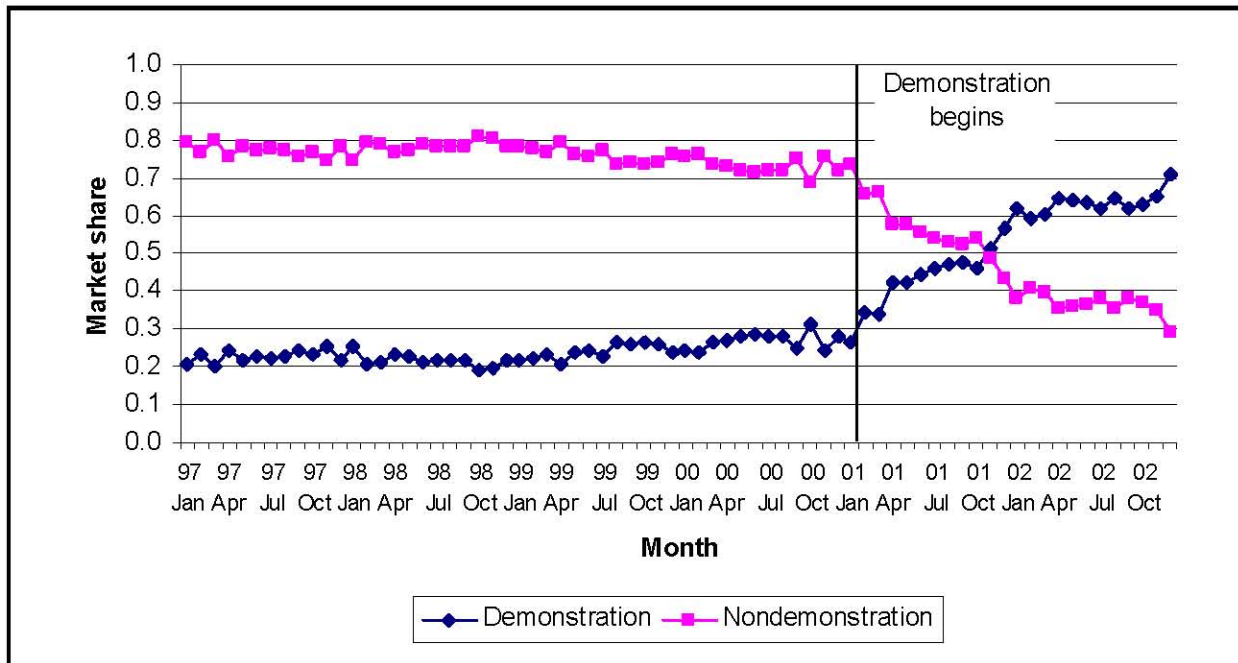


Figure 5-10
Market share by supplier type: nebulizer drugs, San Antonio demonstration



demonstration’s close. It is notable that the group of suppliers chosen for the demonstration enjoyed a relatively large market share even before the demonstration began. As a result, the group’s potential gain in market share was relatively small.

For hospital beds and accessories, the demonstration again produced the expected changes in aggregate market shares for each supplier type. Nondemonstration suppliers’ market share decreased from 43 percent in January 2001 to 10 percent in December 2002, whereas demonstration suppliers’ market share increased from 57 to 90 percent.

The demonstration also produced the expected changes in aggregate market shares for suppliers of wheelchairs and accessories. Demonstration suppliers’ market share increased from 47 percent in January 2001 to 82 percent in December 2002. Nondemonstration suppliers’ market share decreased from 53 to 18 percent.

Aggregate market shares for each supplier type in the orthotics category are relatively volatile compared with other product groups. This is largely due to smaller allowed charge amounts in this category that engender greater percentage swings from month to month. Nevertheless, the demonstration’s effects on market shares in this category seem to follow expectations. For orthotics, demonstration suppliers’ market share increased from 14 percent just prior to the demonstration to 37 percent in December 2002.

For nebulizer drugs, the demonstration again produced the expected changes in aggregate market shares for each supplier type. Nondemonstration suppliers’ market share decreased from

74 percent in January 2001 to 35 percent in December 2002, whereas demonstration suppliers' market share increased from 26 to 65 percent.

The San Antonio demonstration produced the expected market shares in each product category. Demonstration suppliers gained market share as the demonstration progressed at the expense of nondemonstration suppliers. Transition policies (in place for the oxygen, hospital bed, wheelchair, and nebulizer drug categories) allowed nondemonstration suppliers to continue to serve existing customers or those with preexisting rental arrangements. Therefore, changes in market share took place gradually in these product categories. Demonstration suppliers in the oxygen equipment and supplies category already had a large market share before the demonstration began. Therefore, their potential increase in market share was limited.

5.5 Effects on Market Concentration

Economists generally agree that, other things being equal, competitive markets produce lower prices, higher output, and higher efficiency than markets that are monopolistic or highly concentrated. Although competitive bidding is expected to enhance competition in the short-run, there is also the possibility that it will reduce competition in the long-run if, through the bidding outcomes, one or a few firms come to dominate the market. Conceptually, the expected outcome of the competitive bidding demonstration on market concentration is not clear. On the one hand, by selecting a subset of suppliers as demonstration suppliers, the demonstration is likely to increase the market share of this group in aggregate. On the other hand, there is no guarantee that the largest suppliers in the market will be selected as demonstration suppliers. Indeed, even though fewer suppliers may be selected, each could have roughly the same market share, leading to a relatively unconcentrated market.

We use the HHI, a common measure of market concentration, to evaluate the effect of the demonstration on market concentration in each product category. The HHI equals the sum of the squared market shares of the suppliers serving a market. The market shares can be measured in terms of fractions, with a range from 0 to 1, or, equivalently, in terms of percentages, with a range from 0 to 10,000. In our analysis, we treat market shares as fractions. In either case, a higher value means more concentration. At the monopoly extreme, with a single firm controlling the market, the HHI is 1 (or 10,000). At the other extreme, with an infinite number of firms each having tiny market shares, the HHI approaches 0.

The precise HHI value where the market becomes too concentrated for effective competition is not clear. For purposes of analyzing horizontal mergers, the U.S. Department of Justice (DOJ) characterizes markets as unconcentrated, moderately concentrated, or highly concentrated depending on whether the HHI is below 0.1, between 0.1 and 0.18, or above 0.18, respectively. However, the DOJ characterization requires a detailed definition of the market being analyzed that considers substitution between products and the potential for entry by new firms. Such a definition is beyond the scope of our analysis; instead, we narrowly limit the "market" to individual product categories and convenient geographic jurisdictions (i.e., Polk County and San Antonio) and focus on whether there are any trends in concentration associated with the demonstration.

We first plot the HHI in the demonstration sites for the period 1997–2002¹⁰ for Polk County (Figure 5-11) and for San Antonio (Figure 5-12). We then estimate regressions with the HHI as the dependent variable and site, year, and demonstration indicator variables as explanatory variables. As in our previous regression analyses, we test whether the demonstration indicator variable(s) has a significant effect on the dependent variable. We use five Florida counties as comparison groups for Polk County; the Austin-San Marcos MSA is the comparison group for San Antonio. We limit the analysis to DME codes that are included in the demonstration.

5.5.1 Polk County

Oxygen equipment and supplies—Figure 5-11 shows that the HHI for the oxygen equipment market remained relatively flat during the demonstration. Regression results indicate that the demonstration was associated with a statistically significant reduction in market concentration, with the estimated impact on HHI equal to -0.045 in Round 1 and -0.021 in Round 2 (Table 5-4). In the absence of the demonstration, the HHI would have been about 0.25 in Round 1 and 0.26 in Round 2.

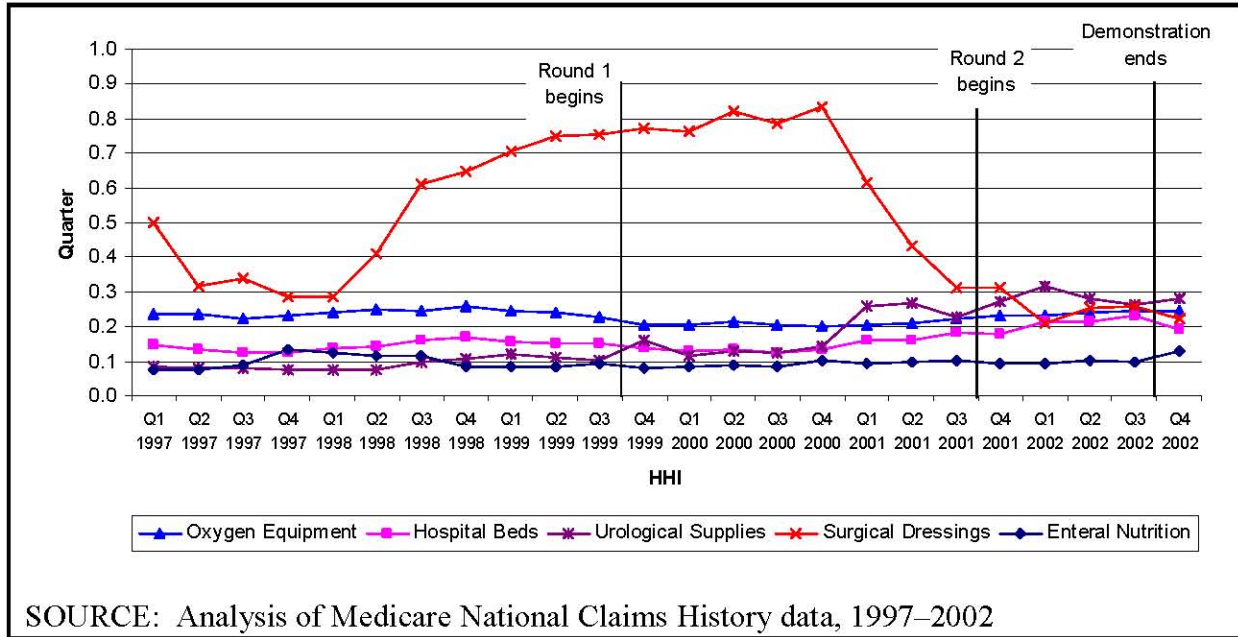
Hospital beds and accessories—The market for hospital beds was less concentrated than the market for oxygen products prior to the demonstration. The HHI was 0.15 in the third quarter of 1999 and rose to 0.18 by the end of Round 1 and 0.23 at the end of Round 2. The demonstration effect on HHI during Round 1 was not statistically significant, but there was a statistically significant ($p < 0.05$) increase of 0.044 associated with the demonstration during Round 2. The HHI would have been 0.17 in each round in the absence of the demonstration.

Urological supplies—The market for urological supplies was relatively unconcentrated in Polk County compared to the comparison counties. For example, the HHI in Nassau County was on average 0.37 higher than the HHI in Polk County, and the HHI in Clay County was 0.15 higher than in Polk County. Furthermore, the markets in both Polk and the comparison counties were becoming increasingly concentrated between 1998 and 2002. The effect of the demonstration on market concentration was not significant in either round.

Surgical dressings—Prior to the demonstration, the market for surgical dressings was highly concentrated, with the HHI in Polk County approximately 0.75 in the third quarter of 1999. In Round 1, the demonstration significantly increased concentration with an estimated impact of 0.206. However, the Round 2 demonstration impact was significant and negative, with an estimated impact of -0.265 . These inconsistent estimates are a result of the relatively small number of suppliers that were included in the demonstration and the fact that the dominant

¹⁰We include claims data from Q4 2002. As noted in Section 2, the data from this quarter were not complete when we obtained the data set. Completeness was an important requirement for the analysis of utilization, so we excluded the quarter from the analysis in Section 2. The present analysis only requires us to know the relative market shares of suppliers in Q4 2002. As long as suppliers' claims are equally likely to be missing in Q4 2002, the incomplete data will not affect the market shares or HHI. Thus, including the Q4 2002 data should not bias our estimates. We also estimated the regressions excluding the Q4 2002 data; the parameter estimates were similar to the estimates that included Q4 2002.

Figure 5-11
Market concentration by product category, Polk County demonstration



SOURCE: Analysis of Medicare National Claims History data, 1997–2002

Figure 5-12
Market concentration by product category, San Antonio demonstration

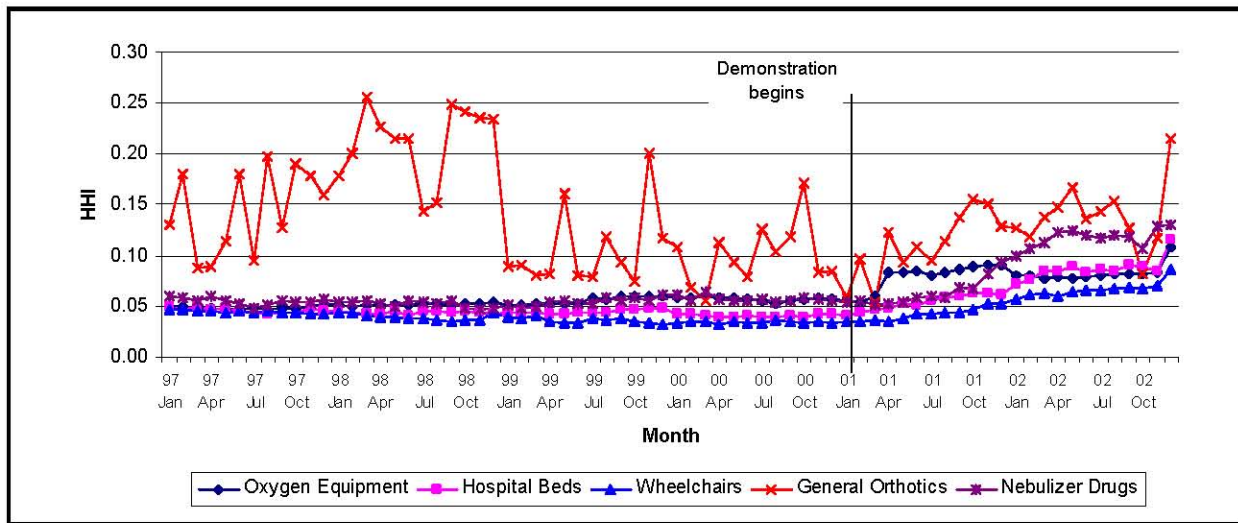


Table 5-4
Demonstration effects on market concentration, Polk County demonstration

Product category	Mean predicted value of HHI in absence of demonstration, Round 1	Demonstration change in HHI, Round 1 (10/1/99–9/30/01)	Mean predicted value of HHI in absence of demonstration, Round 2	Demonstration change in HHI, Round 2 (10/1/01–9/30/02)
Oxygen equipment	0.2540	–0.04509 (<.0001)**	0.2576	–0.02092 (0.0131)*
Hospital beds	0.1656	–0.01952 (0.1173)	0.1654	0.04445 (0.0046)**
Urological supplies	0.1733	0.00593 (0.8719)	0.2153	0.06851 (0.1364)
Surgical dressings	0.4617	0.20560 (0.0184)*	0.5235	–0.26477 (0.0149)*
Enteral nutrition	0.1100	–0.01885 (0.2412)	NA	NA

NOTE: p-values are shown in parentheses.

* Significant at the 5 percent level.

** Significant at the 1 percent level.

SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

supplier prior to and during Round 1 was not a demonstration supplier in Round 2. Because this market was relatively concentrated prior to the demonstration, the demonstration could have a significant effect on the HHI through the inclusion and exclusion of suppliers.

Enteral nutrition—The market for enteral nutrition was relatively unconcentrated in Polk County and most of the comparison counties. The demonstration had a small insignificant effect on concentration in this category.

Discussion—The demonstration had its largest effect on market concentration for surgical dressings, a relatively small product category that was already concentrated before the demonstration. The effect was positive and significant in Round 1 of the demonstration and negative and significant in Round 2, suggesting that the demonstration effect can go either way in a concentrated market. Subtracting (or adding) a firm from (or to) a four firm market will have a dramatic effect on concentration. In larger product categories that were less concentrated before the demonstration, such as oxygen equipment and supplies, hospital beds and accessories, and enteral nutrition, we did not observe large changes in the HHI. For these products, we find little evidence that concentration was increased by the demonstration. The demonstration did not have a significant effect on concentration for urological supplies, a relatively small product category that was relatively unconcentrated prior to the demonstration.

The design of the demonstration project called for the selection of multiple demonstration suppliers in each product category; and this requirement was probably responsible for the demonstration’s generally small effects on market concentration. If a single demonstration

supplier had been selected, market concentration almost certainly would have increased substantially.

5.5.2 San Antonio

Oxygen equipment and supplies—Results for the oxygen product category reveal that the HHI in San Antonio was significantly affected by the presence of the demonstration at the 1 percent level, with an estimated impact of -0.016 (Table 5-5). This indicates that the market for oxygen equipment was slightly less concentrated as a result of the demonstration. In absolute terms, however, the HHI for oxygen equipment in San Antonio increased (Figure 5-12). The negative demonstration effect was a result of strong positive yearly effects on HHI, indicating that there was a significant upward trend in HHI over time that extends beyond the San Antonio area. In the absence of the demonstration, the HHI in San Antonio would have been 0.098 over the given period.

Table 5-5
Demonstration effects on market concentration, San Antonio demonstration

Product category	Mean predicted value of HHI in absence of demonstration	Demonstration change in HHI, (2/1/01–12/31/02)
Oxygen equipment and supplies	0.0979	-0.01625 (<0.0001)**
Hospital beds and accessories	0.1154	-0.04400 (<0.0001)**
Wheelchairs and accessories	0.0579	-0.00283 (0.3466)
General orthotics	0.0979	0.02948 (0.0606)
Nebulizer drugs	0.0952	-0.00349 (0.4823)

NOTE: p-values are shown in parentheses.

* Significant at the 5 percent level.

** Significant at the 1 percent level.

SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

Hospital beds and accessories—Changes in the concentration of the market for hospital beds and accessories in San Antonio were similar to those shown for oxygen equipment. Regression results indicate that the demonstration had a significant negative effect on HHI, with an estimated impact of -0.044 (see Table 5-5). However, strong positive yearly effects on HHI dictate that in absolute terms the HHI for the hospital bed market actually increased (see Figure 5-12). In the absence of the demonstration, the HHI in San Antonio would have been 0.115.

Wheelchairs and accessories—The market for wheelchairs and accessories was the least concentrated of the demonstration product categories, both before the demonstration and during its operation (see Figure 5-12). The demonstration had no statistically significant impact on market concentration (see Table 5-5), although in absolute terms the HHI increased due to

significant yearly effects. In the absence of the demonstration, the HHI for wheelchairs and accessories would have been 0.058.

General orthotics—Market concentration for general orthotics in San Antonio was much more volatile than that seen in the other demonstration product categories (see Figure 5-12). Although regression results indicate that the demonstration had no statistically significant effect on HHI, orthotics was the only category in San Antonio for which the demonstration coefficient was positive (see Table 5-5). The HHI for the orthotics market during the demonstration would have been approximately 0.098 in the absence of the program.

Nebulizer drugs—Results for the nebulizer drug product category mirror those shown for the oxygen and hospital beds categories. In absolute terms, the HHI for the nebulizer drugs market increased from 0.054 in January 2001 to 0.128 by November 2002 (see Figure 5-12). However, the market concentration for this category was not significantly affected by the presence of the demonstration (see Table 5-5). The increase in HHI was attributed to strong positive yearly effects indicating that there was a significant upward trend over time that extended beyond the San Antonio area. In the absence of the demonstration, the HHI in San Antonio would have been 0.095 over the given period.

Discussion—In general, product markets in San Antonio were less concentrated than those seen in the Polk County demonstration. Each product category had a mean HHI less than 0.1 in the year prior to the demonstration. We did not observe large changes in HHI due to the demonstration in San Antonio; these changes were statistically significant for only two product categories. Changes in the HHI that did occur were largely attributable to significant upward yearly trends in market concentration that were observed in both the demonstration and comparison sites. As in Polk County, the demonstration's requirement for selection of multiple suppliers was probably responsible for producing only small changes in market concentration during the demonstration.

5.6 Effects on Individual Firms

5.6.1 Market Shares

DMEPOS suppliers are likely to be very interested in how individual suppliers fared during the demonstration. To provide data on this experience, in Appendix D, we provide detailed analysis on the performance of individual suppliers' market shares, emphasizing the different experiences of demonstration and nondemonstration suppliers. Overall, the individual market share analysis supports the following conclusions:

- As expected, suppliers generally gained market share if they were demonstration suppliers and lost market share if they were nondemonstration suppliers.
- Some demonstration suppliers gained substantial market share.
- Some suppliers that had small market shares before the demonstration began were able to substantially increase their market share as demonstration suppliers.

- Being named as a demonstration supplier was no guarantee of increased market share; some demonstration suppliers that had small or zero market shares before the demonstration still had small or zero market shares at the end of the demonstration. The demonstration may have induced some of these suppliers to enter the demonstration area, but it did not ensure that entry would be successful.
- In San Antonio, many of the suppliers selected in the oxygen category already had substantial market share prior to the demonstration. Because of this, large increases in market share for demonstration suppliers were uncommon.

5.6.2 Revenues, Costs, and Net Income

Polk County—To obtain information about competition in the market from Polk County suppliers during Round 1 of the demonstration, we mailed separate questionnaires to 9 DME suppliers who provided oxygen equipment and supplies, hospital beds and accessories, or enteral nutrition and 9 suppliers who provided urological supplies or surgical dressings. We received responses from 3 of the 9 DME suppliers and 6 of the 9 urological/surgical dressings suppliers. Because of the small sample size and low response rate, the following results should be interpreted cautiously.

Medicare patient volume increased substantially for 5 of the 6 respondents who were demonstration suppliers. One demonstration supplier reported little change in volume. Two nondemonstration suppliers of urological supplies or surgical dressings reported that they stopped serving Polk County before the demonstration prices went into effect on October 1, 1999. They attributed this decision to the demonstration. A nondemonstration oxygen supplier continued to serve its previous Medicare customers in Polk County but reported declines in volume. These results are consistent with the demonstration design, which required Medicare beneficiaries who started using demonstration products during the demonstration to select demonstration suppliers.

A different but related issue is the effect of the demonstration on suppliers' Medicare revenue. Revenue is the product of the Medicare price times Medicare volume. Even if Medicare volume went up, Medicare revenues could fall if the demonstration prices were sufficiently lower than the Medicare fees in effect prior to the demonstration. Three of the 6 respondents who were demonstration suppliers reported increases in revenues of over 20 percent in Polk County, a fourth reported an increase in revenue between 0 and 20 percent, and a fifth reported no change. One demonstration supplier of urologicals reported a reduction in revenue because its prices were below costs. This supplier may have answered the question from the perspective of profits; its reported increases in volume should have brought higher revenues. Overall, these results suggest that some of the demonstration suppliers were able to increase their Medicare revenues despite the demonstration's price reductions.

San Antonio—Based on our experience with the supplier questionnaire in Polk County, we developed a supplier survey that we administered to DMEPOS suppliers in San Antonio and in a comparison site, the Austin-San Marcos MSA. Originally, we planned to perform econometric analyses to test whether changes in revenues, costs, and net income were significantly different in San Antonio than in the comparison site. However, the response rate

from Austin-San Marcos suppliers was too low to support the econometric analyses. Instead, we simply present tabulations showing the suppliers' responses. We believe these data provide anecdotal evidence of trends in San Antonio and Austin, but the results must be interpreted cautiously. Without sufficient sample size, it is not possible to tell whether differences between the sites are statistically significant. In addition, the results may be biased if respondents experienced different trends in revenues, costs, and net income than nonrespondents.

Suppliers were asked to compare their revenue during a month in the first year after the demonstration began to the corresponding revenue in the same month in the prior year, before the demonstration began. The question asked whether revenues increased by more than 20 percent, increased by 0 to 20 percent, stayed the same, decreased by 0 to 20 percent, or decreased by more than 20 percent. Suppliers were then asked what caused their revenue to change. Similar questions were asked about costs and net income.

Table 5-6 shows the change in monthly Medicare revenue reported by suppliers. In San Antonio, 30 percent of suppliers said that their revenue increased, 21 percent said it remained the same, and 49 percent said it decreased. In Austin-San Marcos, the corresponding percentages were 38, 31, and 31 percent, respectively. Among San Antonio suppliers, demonstration suppliers were more likely than nondemonstration suppliers to report that their revenue increased (53 percent vs. 18 percent). Overall, 41 percent of San Antonio suppliers attributed their change in Medicare revenues to the competitive bidding demonstration. Again, there was a marked difference between demonstration and nondemonstration suppliers. Only 2 of 15 responding demonstration suppliers attributed their change in revenues to competitive bidding, while 10 of 14 responding nondemonstration suppliers made that attribution.

Table 5-6
Change in supplier total monthly revenue for DME and POS from Medicare, San Antonio demonstration

	San Antonio			Austin
	Demonstration	Nondemonstration	Total	
Increased by more than 20%	21.1%	2.9%	9.4%	7.7%
Increased between 0 and 20%	31.6%	14.7%	20.8%	30.8%
Stayed the same	21.1%	20.6%	20.8%	30.8%
Decreased between 0 and 20%	10.5%	17.6%	15.1%	23.0%
Decreased by more than 20%	15.8%	44.1%	34.0%	7.7%
Total number of responses	19	34	53	13

SOURCE: Durable Medical Equipment and Prosthetics, Orthotics, and Supplies (DMEPOS) Supplier Survey, 2002.

Table 5-7 shows the change in monthly costs reported by suppliers. In San Antonio, over half of the suppliers reported an increase in costs, and 21 percent reported a reduction in costs. In comparison, suppliers in Austin-San Marcos were more likely to report that costs remained the same. Over 80 percent of demonstration suppliers in San Antonio reported that their costs increased, compared with about 40 percent of nondemonstration suppliers. The higher increase

Table 5-7
Change in supplier monthly cost for DME and POS, San Antonio demonstration

	San Antonio			Austin
	Demonstration	Nondemonstration	Total	
Increased by more than 20%	33.3%	14.3%	20.8%	7.7%
Increased between 0 and 20%	50.0%	25.7%	34.0%	38.5%
Stayed the same	16.7%	28.6%	24.5%	46.1%
Decreased between 0 and 20%	0.0%	14.3%	9.4%	7.7%
Decreased by more than 20%	0.0%	17.1%	11.3%	0.0%
Total number of responses	18	35	53	13

SOURCE: Durable Medical Equipment and Prosthetics, Orthotics, and Supplies (DMEPOS) Supplier Survey, 2002.

in costs for demonstration suppliers may have been associated with increased volume resulting from the demonstration. However, unlike the case of revenue, only 5 suppliers attributed their change in costs to competitive bidding.

Table 5-8 shows the change in net income reported by suppliers. In San Antonio, 25 percent of suppliers said that their net income increased, 21 percent said it remained the same, and 54 percent said it decreased. In Austin-San Marcos, the corresponding percentages were 46, 31, and 23 percent, respectively. As with revenues and costs, demonstration suppliers in San Antonio experienced different changes in net income than nondemonstration suppliers. Forty-seven percent of demonstration suppliers reported an increase in net income and 29 percent reported a reduction, while only 14 percent of nondemonstration suppliers reported an increase in net income and 66 percent reported a reduction. Nearly half of the demonstration suppliers attributed their change in net income to the competitive bidding demonstration, while only a third of the nondemonstration suppliers attributed their changes to the competitive bidding demonstration.

As described earlier in the section, the supplier survey data must be considered anecdotal, due to the low response rates, particularly in the comparison site. Still, these results are broadly consistent with expectations and the results of the claims analysis in Section 2. Overall, San Antonio suppliers were less likely to report increases and more likely to report decreases in Medicare revenues than suppliers in the comparison site. This is consistent with Section 2's analysis of allowed charges, which estimated that allowed charges fell substantially in San Antonio during the demonstration. As expected, demonstration suppliers in San Antonio were more likely to report increases in Medicare revenues than nondemonstration suppliers. For costs, suppliers in San Antonio were likely to report either increases or decreases in costs, while nearly half of the suppliers in the comparison site reported no change in costs. This pattern is consistent with demonstration suppliers in San Antonio increasing their volume and therefore their costs, and nondemonstration suppliers decreasing their volume and therefore their costs. Indeed, over

Table 5-8
Change in supplier net income for DME and POS, San Antonio demonstration

	San Antonio			Austin
	Demonstration	Nondemonstration	Total	
Increased by more than 20%	29.4%	2.9%	11.5%	15.4%
Increased between 0 and 20%	17.6%	11.4%	13.5%	30.8%
Stayed the same	23.5%	20.0%	21.2%	30.8%
Decreased between 0 and 20%	17.6%	25.7%	23.1%	15.3%
Decreased by more than 20%	11.8%	40.0%	30.8%	7.7%
Total number of responses	17	35	52	13

SOURCE: Durable Medical Equipment and Prosthetics, Orthotics, and Supplies (DMEPOS) Supplier Survey, 2002.

80 percent of demonstration suppliers in San Antonio reported increased costs, while nearly a third of nondemonstration suppliers reported reduced costs. Finally, suppliers in San Antonio were less likely to report increases and more likely to report decreases in net income than suppliers in the comparison site, but within San Antonio demonstration suppliers had more favorable net income results than nondemonstration suppliers. These results are consistent with (a) overall allowed charges and revenues declining in San Antonio during the demonstration, causing overall net income for suppliers there to fall; and (b) demonstration suppliers being more likely to benefit and less likely to lose from the demonstration than nondemonstration suppliers.

5.7 Supplier Perceptions about Competition

5.7.1 Polk County

In response to the questionnaire that we sent to a small number of suppliers in Polk County during Round 1, several demonstration suppliers perceived the market as being more competitive after the demonstration began. In contrast, one demonstration and one nondemonstration supplier thought the market was less competitive.

5.7.2 San Antonio

During four site visits to San Antonio, we interviewed over 20 demonstration and nondemonstration suppliers. We also conducted two focus groups with suppliers, with a total of 14 suppliers participating. Many of our questions focused on the demonstration's effects on competition among suppliers at the bidding stage, competition among demonstration suppliers after the demonstration prices take effect, and the long-term competitiveness of the DME market.

With regard to competition at the bidding stage, a number of suppliers expressed concern about how the number of demonstration suppliers was determined. A serious concern for some suppliers was that they missed the composite bid cutoff by \$1 or less yet were not selected as demonstration suppliers. Several of the nondemonstration suppliers we spoke with indicated that

while they understood the need for winners and losers, they would have been willing to provide equipment at the demonstration prices. Others said that they saw no need for CMS to eliminate suppliers from the market; they felt that CMS should have determined a new fee schedule and then let suppliers decide whether they would provide to beneficiaries at the new levels. In contrast, some demonstration suppliers expressed disappointment that so many demonstration suppliers were selected; they thought that it would be hard to substantially increase their Medicare volume with so many demonstration suppliers selected. These concerns are almost unavoidable with competitive bidding: once the bidding is over, nondemonstration suppliers will wish that the competitive cutoff was a little less stringent, while demonstration suppliers will wish to face fewer competitors.

A few suppliers made plans to change the way they marketed themselves after they were named demonstration suppliers. Some suppliers headquartered in San Antonio in Bexar County began marketing themselves to Comal and Guadalupe Counties in the surrounding demonstration area after they won demonstration status. One supplier added a staff member to assist with marketing. Three suppliers reported increasing their efforts with referral agents to educate them on the demonstration and inform them of their demonstration status.

Opinions were generally mixed among suppliers as to how the demonstration might affect the competitiveness of the DMEPOS market in the longer term. Medicare comprised varying percentages of our interviewees' revenues, ranging from approximately 5 percent to 90 percent. Most suppliers we interviewed did not feel that they were dependent on revenue generated from Medicare for survival. However, at least one of the losing bidders expected that his company would have to go out of the DMEPOS business because of the demonstration. Other losing bidders reported that they would focus on generating revenues from nondemonstration products or non-Medicare patients. Some suppliers believed that since competitive bidding inherently eliminates a number of suppliers from the Medicare market, competition among the remaining suppliers must be less than before the demonstration.

In the supplier survey, we asked suppliers whether the competitiveness of the DMEPOS market had changed since February 1, 2001 (the day the demonstration started). In San Antonio, suppliers had mixed perceptions about competitiveness: about a third of respondents said that competitiveness had increased and a third said that competitiveness had decreased (Table 5-9) during the previous year. In contrast, in the comparison site, suppliers overwhelmingly said that competitiveness had increased. Within San Antonio, demonstration suppliers were more likely to say that competitiveness in the market increased or stayed the same, while nondemonstration suppliers were more likely to say that competitiveness decreased.

5.7.3 Overall Attitudes about the Demonstration

In our site visits, focus groups, and supplier survey, suppliers generally expressed opposition to the demonstration. Attitudes ranged from strong philosophical objections against competitive bidding to grudging acknowledgment that CMS needed to control DMEPOS costs combined with the belief that competitive bidding was not the best approach for achieving this objective. Opposition to the demonstration tended to be stronger among nondemonstration suppliers than among demonstration suppliers. A few of the demonstration suppliers thought that they had managed to gain market share and become more efficient because of the

Table 5-9
Change in competitiveness in the last year, San Antonio demonstration

	San Antonio			Austin
	Demonstration	Nondemonstration	Total	
Much more competitive	22.7%	13.2%	16.7%	28.6%
More competitive	9.1%	15.8%	13.3%	42.9%
Equally competitive	36.4%	10.5%	20.0%	14.3%
Less competitive	13.6%	7.9%	10.0%	0.0%
Much less competitive	9.1%	28.9%	21.7%	0.0%
Don't know	9.1%	23.7%	18.3%	14.3%
Total number of responses	22	38	60	14

SOURCE: Durable Medical Equipment and Prosthetics, Orthotics, and Supplies (DMEPOS) Supplier Survey, 2002.

demonstration. By the time of our last site visits, even most of the demonstration suppliers were looking forward to the end of the demonstration (and the return of the higher state fee schedules).

The depth of suppliers' feelings about the demonstration was clear in their responses to an open-ended question on the supplier survey. At the end of the survey, we left a page for "Comments" and instructed respondents to "Please use this page to clarify any answers to questions or provide further information of interest." About 20 suppliers took the time to write out comments on various aspects of competitive bidding. Nineteen suppliers commented negatively on competitive bidding, while one supplier offered positive comments. The negative comments included anecdotal stories of quality reductions by other suppliers ("we hear that other suppliers limit the number of portable oxygen cylinders..."), concerns about the way the demonstration was implemented ("the 'weighting' of the bid categories was never clearly explained..."), complaints that too many suppliers were selected or some bids just missed, and overall opinions about competitive bidding.

Representative comments of the last type included the following: "I believe competitive bidding takes away from the quality of care a patient receives. I am 100 percent opposed..."; "Competitive bidding is a farce..."; "I do not believe competitive bidding is the answer. It limits a beneficiary's ability to choose the supplier of their choice. I believe CMS should set a fair price for the products and services they pay for, and then let all providers compete for a beneficiary's business...." The one positive comment was "We have been very successful in the competitive bidding project. Though some of our success is attributable to diversification, much has been gained by the bidding demonstration.... We are somewhat disappointed that the bid is drawing to a close."

5.8 Summary

In order for competitive bidding to effectively and efficiently set prices, the market must have a number of suppliers willing to submit bids. In most product categories in the demonstration, at least 10 suppliers submitted bids. Not surprisingly, the number of bidders was highest in the product categories with the highest allowed charges, and there were more bidders in heavily populated San Antonio than in the less-populated Polk County. There were only two product categories where the number of bidders raised concerns: in Polk County in Round 2, only 7 suppliers submitted bids for urological supplies and only 4 suppliers submitted bids for surgical dressings. Each of these product categories accounted for less than \$200,000 in annual allowed charges in Polk County and had relatively few suppliers serving patients before the demonstration. It is possible that competitive bidding may not be appropriate for product categories that are so small and have so few suppliers serving the market.

The demonstration included two rounds of bidding in Polk County. This experience provides information about the dynamic effects of competitive bidding. In the two largest product categories, oxygen equipment and supplies and hospital beds and accessories, there was about the same number of bidders in Round 2 as in Round 1. Nondemonstration suppliers in Round 1 were able to compete and win demonstration status in Round 2. These results suggest that competitive bidding will not necessarily lead to a narrow and declining set of bidders as additional rounds of bidding occur.

A potential concern about competitive bidding is that the process of selecting winning suppliers may lead to increasing market concentration. This process did not occur in the demonstration sites, with one exception. In most of the product categories, the demonstration did not have a large effect on the HHI, a common measure of market concentration. Although competitive bidding led to a smaller set of demonstration suppliers than would have been in the market in the absence of the demonstration, the demonstration suppliers were not necessarily the largest predemonstration suppliers. Some of the smaller demonstration suppliers gained market share, causing the HHI to fall slightly, indicating less concentration. Surgical dressings was the one product category where the demonstration appeared to have a substantial effect on market concentration, with concentration rising in Round 1 and falling in Round 2. The demonstration's effect on surgical dressings appeared to be tied to the relatively small size of the product category, the fact that the largest supplier in the market gained demonstration status in Round 1 but did not gain demonstration status in Round 2, and the demonstration transition policy that allowed nondemonstration suppliers to provide surgical dressings to nursing home patients.

Conceptually, competitive bidding is designed to give a supplier strong incentives to submit a bid that is close to the supplier's costs. The two main incentives, which are closely interrelated, are the promise of increased market share and revenue if the supplier submits a winning bid and the fear of reduced market share and revenue if the supplier submits a losing bid. We examined the aggregate market shares of demonstration and nondemonstration suppliers to see if they changed as expected. As expected, demonstration suppliers gained market share in aggregate, while nondemonstration suppliers lost market share in aggregate. Demonstration suppliers did not immediately gain 100 percent market share because of the demonstration transition policies that in some cases allow nondemonstration suppliers to

continue to serve existing patients. As noted in Section 3, such policies help ensure beneficiary access.

The amount of market share gained by demonstration suppliers as a group also depended on the market share they held prior to the demonstration. For example, as a group, demonstration suppliers for oxygen in San Antonio already held a market share of 83 percent before the demonstration began. Thus, the most market share the demonstration suppliers could gain during the demonstration was 17 percentage points; they actually gained 12 percentage points. In other product categories, where the group of demonstration suppliers had lower market shares prior to the demonstration, demonstration suppliers gained as much as 40 to 50 percentage points in market share. In San Antonio, some demonstration suppliers complained that too many firms had been selected as demonstration suppliers for oxygen. On the other hand, we also heard from suppliers that were not selected who lamented that they had missed selection by a dollar or so. These responses show the inherent tradeoff in selecting winners: by lowering the cutoff bid for demonstration suppliers, the smaller group of demonstration suppliers will have larger potential gains in market share. However, fewer winners will be selected, and those suppliers that would have been selected with a higher cutoff will be disappointed.

DMEPOS suppliers will obviously be interested in how individual suppliers fared during the demonstration. To examine this issue, we analyzed Medicare National Claims History data and collected information from suppliers through a survey and during site visits. Consistent with the aggregate findings, individual demonstration suppliers tended to gain market share and individual nondemonstration suppliers tended to lose market share during the demonstration. Some demonstration suppliers, including some with relatively low allowed charges before the demonstration, posted large increases in market share. But being named as a demonstration supplier was no guarantee of increased market share.

Although low response rates to the supplier survey precluded statistical comparisons between San Antonio and its comparison site, the survey did provide plausible anecdotal information about the effects of the demonstration on individual suppliers. These results suggested that demonstration suppliers were more likely to have increased revenue, increased costs, and increased net income than nondemonstration suppliers in San Antonio. Generally, the demonstration suppliers in San Antonio appeared more similar to suppliers in the comparison site than to nondemonstration suppliers in San Antonio. However, these impressions should be interpreted cautiously due to the low response rates that precluded statistical testing.

In site visits, focus groups, and a supplier survey, suppliers generally expressed opposition to competitive bidding. Opposition tended to be stronger among nondemonstration suppliers than among demonstration suppliers. The opposition is perhaps natural for a new reimbursement system with new rules that produced lower prices. Nevertheless, our findings suggest that suppliers are unlikely to be enthusiastic about any proposal to adopt competitive bidding on a wider basis.

One final aspect of competitiveness has been discussed in detail in Section 3 on Beneficiary Access and Section 4 on Quality and Product Selection. In those sections, we noted that after the demonstration began, referral agents selected among demonstration suppliers on the basis of service and quality. Because the design of the demonstration allowed for multiple

winning suppliers in each product category, demonstration suppliers still needed to compete on quality and services attributes in order to attract new patients. We believe that the requirement for multiple winners played an important role in maintaining access and quality during the demonstration.

SECTION 6 REIMBURSEMENT SYSTEM

6.1 Introduction

In the course of the evaluation, we focused on understanding and documenting the process of implementing the competitive bidding demonstration. We examined the following questions:

- How were interested parties notified of the new system?
- What efforts were made to educate beneficiaries, referral agents, and suppliers on how to navigate the system?
- How was the bidding process managed?
- How were winners selected?
- What administrative changes were made to accommodate the new system, and how were system and supplier performance monitored?
- How much did it cost to administer the system?

The remainder of this section is organized in the following way. Section 6.2 describes implementation of the demonstration, including publicity, solicitation, and education; management of the bidding process; selection of winners; and administration and monitoring. Changes in the demonstration between sites and rounds of bidding are discussed in Section 6.3. Section 6.4 estimates the costs to CMS and its contractor, Palmetto Government Benefits Administrators (Palmetto GBA),¹¹ of administering the demonstration. We include an estimate of the cost of a national competitive bidding program, under the assumption that the design of the program is similar to the demonstration project. Section 6.5 concludes by summarizing the main findings.

Key findings are as follows:

- From an operational standpoint, CMS and Palmetto GBA were able to successfully implement the demonstration project. The project team was able to effectively solicit, collect, and evaluate bids; educate suppliers, referral agents, and beneficiaries; monitor quality and behavior; and administer claims throughout the demonstration.
- Although the overall implementation was successful, not everything went perfectly. A flaw in the weighting system used to evaluate bids in Round 1 of the Polk County demonstration led to higher prices in the surgical dressings category. In San Antonio,

¹¹Palmetto GBA was selected to administer the demonstration because it was one of the four existing Durable Medical Equipment Regional Carriers (DMERCs) that specializes in processing DMEPOS claims.

CMS delayed the start of the demonstration by 1 month, and delivery of the demonstration directories was delayed until very close to the actual starting date.

- Such problems were relatively minor and reflect one of the benefits of conducting demonstration projects: the ability to learn from the demonstration and apply the lessons if the demonstrated system is adopted on a wider scale. CMS modified the bid weights before Round 2 bidding in Polk County, and the Round 2 prices of surgical dressings declined. Similarly, the delays in San Antonio signaled the importance of including adequate time to evaluate bids and approve winners and the need to provide timely delivery of demonstration directories.
- There were three major differences in demonstration design between Round 1 bidding in Polk County and subsequent rounds of bidding in San Antonio and Polk County. As noted, the weighting mechanism was improved. The project design in San Antonio changed three of the product categories originally used in Polk County. Enteral nutrition was dropped as a product category in Round 2 bidding in Polk County.
- For the entire demonstration, CMS and Palmetto GBA costs of implementation totaled about \$4.8 million between 1995 and 2002. About \$1 million in costs were incurred in the development phase of the demonstration from September 1995 to June 1998 (15 months before the demonstration prices took effect in October 1999). About \$3.8 million, or \$845,000 per year, in costs were incurred during the operational phase of the demonstration from July 1998 until December 2002. The estimated incremental costs of operating a second demonstration site were relatively low, ranging from \$300,000 in a year when bidding occurs to \$110,000 per year in a nonbidding year.
- The costs of implementing the demonstration were nearly 50 percent lower than the projected \$9.4 million reduction in Medicare allowed charges associated with the demonstration.
- The estimated annual cost of operating a national competitive bidding program in 261 MSAs is about \$69 million. The program would require about 670 full-time equivalent employees, mostly at durable medical equipment regional carriers (DMERCs).

6.2 Implementation of the Demonstration

The demonstration was implemented in similar ways in Polk County and in San Antonio. Below, we describe the major steps in implementation.

6.2.1 Publicity, Solicitation, and Education

In both sites, CMS and Palmetto GBA undertook a series of efforts to publicize the demonstration and educate stakeholders about its rules and implications. Separate publicity and

education efforts were aimed at beneficiaries and beneficiary advocacy groups, suppliers, and referral agents. Below, we describe the efforts aimed at each group.

- **Beneficiaries and Beneficiary Advocacy Groups**—CMS held a public meeting to describe the demonstration in each site prior to bidding. Representatives of beneficiary groups were invited to the meeting. A letter explaining the demonstration was sent to beneficiaries. This letter outlined why CMS was undertaking the demonstration, what the changes would mean for beneficiaries, how competitive bidding would work, and how Medicare would protect beneficiaries. A follow-up letter and a copy of the demonstration directory of providers were sent immediately prior to the date when the demonstration prices took effect. In San Antonio, the letters and directory were available in both English and Spanish. The on-site Ombudsmen made presentations at local gatherings (e.g., AARP groups, senior nutrition centers, health fairs) to provide opportunities for open questions and answers. A hotline was set up to allow the local Ombudsman to answer beneficiary questions. Numerous beneficiaries used this hotline to discuss the implications of the demonstration for their health care needs. New Medicare beneficiaries were identified quarterly and sent materials on the demonstration.
- **Suppliers**—Prior to the start of bidding, CMS sent a letter to all suppliers submitting DMEPOS claims for beneficiaries in the demonstration site during the previous 18 months, informing them of the demonstration and inviting them to attend a local meeting to discuss the demonstration. The upcoming demonstration was also announced in the *Commerce Business Daily*. This announcement explained the purpose of the competitive bidding demonstration and provided information on the upcoming bidding process, including contact information for obtaining an RFB package. The RFB, detailed instructions, and information regarding the Bidders Conference were sent out to all persons requesting these documents. CMS and Palmetto GBA conducted a Bidders Conference 1 month before the bids were due to review bid procedures and answer technical questions. After bid evaluation was complete, CMS staff held a general debriefing with suppliers to discuss the results of the bid evaluation process. The on-site presence of the Ombudsman allowed the Ombudsman to personally visit suppliers to discuss the demonstration and answer technical questions both before and after the demonstration prices took effect.
- **Referral Agents**—CMS sent letters to referral sources describing the demonstration, announcing that demonstration winners had been selected, and indicating that a directory would soon follow. In-service meetings were scheduled with hospital discharge planners, and one-on-one meetings were also scheduled with administrators of home health agencies and large physician groups to provide referral agents with detailed information concerning the demonstration, including a draft list of demonstration winners. Directories listing demonstration providers, their services, and service areas were sent to these agents late in the month prior to the beginning of the demonstration. The on-site Ombudsmen continued to meet with referral agents after the demonstrations began.

During site visits, we found that most Polk County and San Antonio stakeholders were generally satisfied with the publicity, solicitation, and education efforts of CMS and Palmetto GBA. However, some suppliers in San Antonio complained that the list of demonstration suppliers was not available at the general debriefing (at that time, some suppliers were still appealing their rejections). At least one supplier in San Antonio felt that the on-site Ombudsman should have spent more time with suppliers prior to implementation of the new prices. Finally, in both Polk County and San Antonio, a number of stakeholders believed that it would have been helpful to receive the demonstration directory more in advance of the date when the new prices took effect.

Overall, the education efforts appeared to be nearly as effective in San Antonio as they were in Polk County. However, delays in delivery of the demonstration directory are a potential problem. Delivery delays complicate supplier planning and may hinder referral agents' ability to properly refer beneficiaries to demonstration suppliers in the early days of the demonstration. It seems reasonable to expect that beneficiaries and referral agents should have demonstration directories in hand at least 2 weeks before the demonstration prices take effect.

6.2.2 Management of the Bidding Process

In both sites, a detailed RFB package was distributed to all suppliers that requested the materials. The package was slightly different in San Antonio than it was in Polk County, Round 1, reflecting lessons learned in the earlier competition. The San Antonio RFB contained the following information:

- Background information on why the competitive bidding demonstration was being conducted and how competitive bidding works to lower prices.
- Specific discussion of the DMEPOS Competitive Bidding Demonstration process, including how to formulate bids, how bids are evaluated, how demonstration prices are determined from bid prices, and post-award options.
- An outline of operational policies that would be in effect during the demonstration.
- Forms to be submitted to the DMERC for bid evaluation:
 - Form A: Application for Suppliers—contained general information about the supplier and its employees, including identifying information, categories of goods/services for which the supplier was submitting a bid, accreditation and licensure, number of employees, their training and certifications, methods for handling customer complaints and assessing customer satisfaction, presence of disaster and infection control plans, declarations regarding investigations or claims against the supplier, a list of references, and a list of financial institutions with which the supplier does business.
 - Form B: Bidding Sheets—Suppliers were asked to complete separate bid sheets for each category of goods/services on which they would be submitting a bid. Each bid sheet requested additional details on the processes of care for the

particular good/service, counties that they would service during the demonstration, and bid prices for procedures included in the demonstration.

- Form F: Financial Data—Suppliers who qualified within the competitive range were asked to provide detailed information from income statements and tax returns for the previous 2 years and accounts receivable summaries for the past 3 months.
- Forms to be used by bid evaluators and references:
 - Form C: On-site Inspection Checklist—covered examination of physical property, licenses and certifications, staffing, inventory, patient files, and procedures.
 - Form D: Bank References—covered loan payments, returned checks, and credit-worthiness of supplier. The supplier completed the top half of the form and then forwarded it to the bank reference. The bank reference then completed the reference section and submitted the form to Palmetto GBA.
 - Form E: Referral Source References—requested information from references regarding customer service, deliveries, patient satisfaction, quality of products, and patient training. The supplier completed the top half of the form and then forwarded it to the referral source. The referral source then completed the reference section and submitted the form to Palmetto GBA.
- Appended materials:
 - Requirements and standards for demonstration suppliers
 - 1998 Medicare utilization data for DMEPOS for Part B beneficiaries permanently residing in the San Antonio demonstration area (to assist suppliers in estimating demand)
 - Financial ratios—explained the financial ratios to be used to evaluate bidders
 - Glossary of terms
 - Evaluation tables—explained how bids would be evaluated and demonstration prices would be calculated
 - HCPCS codes and product weights used in determining the composite price

Bidders Conferences were held on February 23, 1999 (Round 1) and March 27, 2001 (Round 2) in Polk County and on May 16, 2000, in San Antonio. Representatives from CMS and Palmetto GBA outlined the rationale for the demonstration, described demonstration rules and operating procedures, and reviewed the bidding process and RFB materials. A consultant from the DME industry made a short presentation on developing effective bidding strategies for the demonstration. During a question-and-answer period that lasted over an hour, CMS and

Palmetto GBA representatives responded to questions from the audience about the demonstration. Written responses to the questions were sent to attendees and made available on CMS' Internet site for the demonstration.

In general, the presentations in the Bidders Conference were clear and informative. During our site visits, suppliers reported that the conference was useful, although a few suppliers felt that most of the material was already contained in the RFB and therefore questioned the value-added of the conference. The question-and-answer session gave suppliers a useful opportunity to raise questions about the bidding process and demonstration rules. In San Antonio, CMS staff provided evidence from the Polk County Round 1 demonstration that demonstration suppliers did not experience a large immediate increase in Medicare volume. This information was useful to bidders; some Round 1 bidders in Polk County had expected a huge immediate increase in volume that did not quickly materialize.

In Polk County and San Antonio, suppliers felt that the RFB and Bidders Conference provided them with sufficient information for bid preparation. None of the suppliers indicated that there was additional information that CMS could have supplied that would have been helpful in bid formulation, although some San Antonio suppliers noted that it would be interesting to have examples of bids submitted by Polk County suppliers. Some suppliers eventually pursued this idea by contacting companies in Polk County. Some suppliers in San Antonio commented that the product weights were confusing, especially for wheelchairs and accessories where there were more items than in other product categories.

During site visits, Polk County suppliers reported spending 40 to 100 hours in preparing their bids, and San Antonio suppliers reported spending 20 to 300 hours in preparing their bids, with a median time of 45 to 60 hours. One supplier reported problems in filling out the financial forms, but suppliers had few problems filling out the other forms.

Overall, management of the bidding process in San Antonio was very similar to management of the bidding process in Round 1 in Polk County. If anything, bidding may have proceeded more smoothly in San Antonio.

6.2.3 Selection of Winners

Minor modifications were made in the bid evaluation process between Polk County Round 1 and the San Antonio competition. In this section, we focus primarily on the bid evaluation process used in San Antonio; the same process was used in Polk County Round 2.

Bids were initially reviewed by Palmetto GBA staff for completeness and eligibility of bidders. To be eligible for participation in the demonstration, suppliers had to meet four minimum requirements. Suppliers had to be

- enrolled in the Medicare program with an active National Supplier Clearinghouse (NSC) identification number,
- in compliance with all state and federal licensure and regulatory requirements,

- in compliance with all Medicare and Medicaid statutes and regulations, suppliers sanctioned for violations of the statutes were ineligible to bid, and
- in compliance with all Medicare billing guidelines.

Suppliers located outside the demonstration areas were allowed to bid if they could provide the demonstration items in the demonstration area.

After determined eligibility, a bid evaluation panel of reimbursement and DMEPOS experts established a financially competitive range that included more than enough suppliers to serve the entire demonstration site. This was accomplished by arraying suppliers in each product category according to their composite bid price, comparing cumulative supplier volume (current volume in and outside the demonstration area and estimated capacity as calculated by the panel) with current utilization levels, and selecting a minimum number of suppliers. The possibility that some suppliers might drop out of the demonstration was considered, and the minimum number of suppliers was adjusted to account for this possibility.

The panel considered the capacity of these bidders and looked for natural breaks (if they existed) in the bid prices to select a cutoff price that determined the financially competitive range. The panel recommended cutoff points to CMS for approval, and CMS approved the cutoffs.

After the financially competitive range was established, only bidders at or below the cutoff price received further consideration for selection. Suppliers who made the cutoff completed Form F on Financial Data and received site visits by inspectors who completed Form C's on-site Inspection Checklist. Palmetto GBA staff evaluated information on Forms D and E from bank and referral source references, respectively. Palmetto GBA obtained at least five references on each supplier. The panel used the information obtained from Forms C, D, E, and F to score the quality of each bidder in each of four areas: customer service and satisfaction, ethics, data collection and retention, and financial stability/creditworthiness. Based on experience from the first round of the Polk County bidding, where all members of the Bid Evaluation Panel examined the financial data, Palmetto GBA established a special panel of accounting and financial experts to evaluate the issues of financial stability/creditworthiness. Overall, the assessments resulted in a relatively wide distribution of scores ranging from poor (score of less than 70 total points out of 100) and average (70 to 79 points) to good (80 to 89 points) and excellent (> 90 points).

After quality scores were evaluated, the Bid Evaluation Panel recommended a preliminary list of demonstration suppliers. Suppliers in the financially competitive range with quality ratings of good to excellent were selected with no conditions. Several other suppliers in the financially competitive range with average quality ratings were selected conditionally; these suppliers were required to meet specific conditions to become demonstration suppliers. In San Antonio, seven suppliers in the financially competitive range were not initially selected as demonstration suppliers. Under demonstration rules, these suppliers were allowed to file for reconsideration. Six of the suppliers filed for reconsideration. Ultimately, five of the six achieved demonstration status after providing supplemental information and/or correcting

deficiencies. During the evaluation process, CMS had final responsibility for reviewing and approving the Bid Evaluation Panel's recommendations.

To set the new fee schedule, Palmetto GBA returned to the bid prices from all the suppliers who initially bid at or below the CMS-approved cutoff price. Their individual bids were combined to find a single price for each demonstration item.

Palmetto appeared to have benefited from its experience in evaluating bids during Round 1 bidding in Polk County. Use of a special financial panel streamlined the financial assessment. Nevertheless, with more than twice as many bidders in San Antonio as in the first round in Polk County, it took longer to evaluate the San Antonio bids. In part due to delays in the evaluation process and in part due to other factors, the implementation date for the San Antonio demonstration was delayed from January 1, 2001, to February 1, 2001.

6.2.4 Administration and Monitoring

Processing system changes—DMEPOS claims from Polk County and San Antonio were already being processed by Palmetto GBA. Thus, there was no confusion as to where to send claims as a result of the new reimbursement system for the two sites. However, significant computer system changes were necessary to accommodate the alternative reimbursement structure associated with the demonstration. Palmetto GBA worked directly with their programming contractor (VIPS) to create additional computer program modules to handle the new claims. All claims submitted to the DMERC had to be screened to determine whether they were demonstration claims.

The modified programs were developed prior to the beginning of the demonstration, and extensive system testing with mock claims was conducted to work out any program bugs. A procedure manual was developed specifically for the demonstration, and staff who would be dealing with Polk County and San Antonio suppliers and beneficiaries received intensive training. In addition, internal education seminars were held for all Palmetto GBA staff to educate them about the demonstration, in case their department came into contact with some aspect of the demonstration or they received any "stray" calls. During the demonstration, there was one unanticipated problem with the new claims processing modules. The program used to identify which DME claims were associated with beneficiaries eligible for the demonstration (i.e., those beneficiaries living in Bexar, Comal, and Guadalupe Counties of the San Antonio MSA) was based on the beneficiaries' zip codes. However, a few zip codes crossed demonstration borders to include areas in nondemonstration counties. As a result, some nondemonstration beneficiaries were incorrectly identified as living within the demonstration area. To overcome this problem, Palmetto GBA identified the problem zip codes. Claims for these zip codes were then processed manually so that their residents could be correctly sorted as demonstration and nondemonstration beneficiaries. Relatively few claims were involved.

Use of an on-site Ombudsman—A Medicare Competitive Bidding Ombudsman took up residence in Polk County in March 1999 and a second Ombudsman took up residence in San Antonio in summer 2000. The Ombudsmen were responsible for answering beneficiary, supplier, and provider inquiries on the hotline and providing education and outreach (town meetings, in-service meetings, and one-on-one visits) in the months prior to the implementation dates for the

demonstration. They were also responsible for coordinating and participating in bid evaluation site visits. After implementation of the demonstration, the Ombudsmen continued to answer telephone inquiries and monitor demonstration suppliers through investigation of complaints and routine inspections.

Having on-site Ombudsmen dedicated to the demonstration proved popular among beneficiaries, referral agents, and suppliers in both Polk County and San Antonio. Stakeholders in Polk County believed that the Ombudsman understood and was responsive to their concerns. Opinions on the effectiveness of Ombudsman operations in San Antonio were mixed.

For the last year of the Polk County demonstration, the Ombudsman worked off-site, making periodic on-site visits. This off-site arrangement did not appear to have an adverse effect on her ability to monitor the demonstration.

Site monitoring—Each Ombudsman was responsible for monitoring the quality of products and services offered by the suppliers in their demonstration area. A telephone hotline was used by many suppliers and beneficiaries to request information and to notify the Ombudsmen of potential problems. The Ombudsmen maintained complaint logs to document complaints and follow-up and track resolutions. In addition to the complaint-driven methods for assuring quality and service, the Ombudsmen conducted site visits to demonstration suppliers who received conditional approval to see that the conditions were being met. The Ombudsmen also conducted annual site visits to demonstration suppliers to review procedures, assure appropriate inventories, and check transactions records.

Relationship between Palmetto GBA and CMS—Palmetto GBA was responsible for implementing and administering the demonstration on a day-to-day basis. In this role, Palmetto was responsible for designing the demonstration; educating beneficiaries, suppliers, and other stakeholders about the demonstration; soliciting and evaluating bids; processing claims; and responding to inquiries and complaints about the demonstration. Most demonstration staff worked in Palmetto's Columbia, South Carolina, headquarters; an on-site Ombudsman resided and worked in San Antonio. The Polk County Ombudsman resided in Polk County during Round 1 bidding and the first 12 months after the demonstration fees took effect. She then worked out of Palmetto's Columbia office but traveled to Polk County frequently.

CMS staff maintained oversight responsibility for the demonstration, reviewed all documents and Palmetto decisions, and made final decisions about demonstration design and policy. In each bidding round, CMS staff participated prominently in the announcement of competitive bidding, the Bidders Conference, and a general debriefing for bidders. CMS and Palmetto staff collaborated closely, with weekly teleconferences and occasional on-site meetings.

In both Polk County and San Antonio, the division of labor between Palmetto and CMS appeared to work well. Palmetto has strong expertise in the areas of DMEPOS, claims processing and administration, beneficiary and supplier communication, and customer service. It made sense to merge operations of the demonstration with Palmetto's existing DMERC operations to the fullest extent possible. CMS provided appropriate oversight and retained ultimate responsibility for policy decisions. Communication and coordination between Palmetto and CMS was generally effective. After completion of a longer than expected developmental

period, the bidding process and implementation of the demonstration prices proceeded on schedule in Polk County.

In San Antonio, the division of labor between Palmetto and CMS may have contributed to the 1-month delay in implementation from January 1, 2001, to February 1, 2001. The CMS review of Palmetto selection recommendations necessarily—and properly—lengthened the period before demonstration suppliers could be announced, but in this case the final selection took longer than expected. If competitive bidding occurs in the future, it may be helpful to consider steps to streamline CMS review and/or lengthen the period allocated in the schedule for bid evaluation.

6.3 Changes in Demonstration Design

There were three major differences in design between Round 1 bidding in Polk County, Florida, and subsequent rounds of bidding in San Antonio and Polk County. First, the weighting mechanism used to calculate the composite price was modified before bidding began in San Antonio. Second, bidding in San Antonio covered two of the product categories in the first round of Polk County bidding but also included three new product categories. Third, enteral nutrition was dropped as a product category during Round 2 bidding in Polk County. Below, we describe each of these changes in greater detail.

6.3.1 Weighting

In our First-Year Evaluation Report, we identified several problems related to the product weights used in Round 1 bidding in Polk County. Product weights were used to calculate the composite bid for each demonstration product category. The composite bid was a way to aggregate a supplier's bids for each individual product into a single bid for the whole category that is comparable across bidders. A supplier's composite bid for the product category was calculated by multiplying the supplier's bid for each product by the product's weight and then summing the weighted bids across all products in the category. Each product's weight represented the share of that product relative to all of the products in the category; the weights sum to one for each category.

In Round 1 bidding in Polk County, the weight for each product was set equal to the product's share of allowed charges in the product category. We found that this weighting approach put too much weight on high-priced products so that bids for these products had an inordinate effect on the composite bid. This could cause three related problems to occur:

- The Round 1 weighting mechanism, combined with the formula to set prices for individual products, could cause prices to be set too high. This problem actually occurred for surgical dressings. For many products in this category, demonstration prices were set higher than the Florida fee schedule that would have been in effect in Florida. We found evidence to suggest that the demonstration prices would have been lower than the Florida fee schedule if an alternative weighting mechanism (see below) had been used.

- Under the Round 1 weighting mechanism, it was possible that a supplier offering lower allowed charges to CMS could have had a higher composite bid than a supplier offering higher allowed charges to CMS.
- The Round 1 weighting process did not adequately distinguish among HCPCS modifiers that are associated with new purchases, used purchases, and rental payments. In the case of enteral nutrition, the use of new purchase prices in the calculation of the composite bid had a significant effect.

Because of these problems, we recommended that the demonstration use an alternative weighting mechanism based on product volume. CMS adopted volume weighting for the San Antonio demonstration and Round 2 bidding in Polk County. In addition, for HCPCS codes with modifiers associated with new purchases, used purchases, and rental payments, the product weight was associated with the most commonly applied modifier. These changes appeared to resolve the problems associated with the Round 1 weights.

For a detailed technical description of the weighting issues, see Appendix A of the First-Year Annual Evaluation Report.

6.3.2 San Antonio Product Categories

Product categories in San Antonio, the second demonstration site, included oxygen equipment and supplies and hospital beds and accessories, which were both included in Round 1 of the Polk County demonstration. Three new product categories—wheelchairs and accessories, orthotics, and nebulizer drugs—were also included in San Antonio. Wheelchairs and accessories were included because this product category accounts for a relatively high share of DME expenditures. Orthotics were included to test competitive bidding for at least one type of prosthetics and orthotics. Ultimately, only orthotic products that required relatively little customization were included in the demonstration.¹² Nebulizer drugs were included because of evidence that Medicare pays too much for these specific drugs and to test whether competitive bidding is an effective way to set Medicare payments in general.

6.3.3 Enteral Nutrition

Enteral nutrition was included in Round 1 bidding in Polk County but dropped from Round 2 bidding. CMS dropped enteral nutrition from Round 2 to focus on medical equipment and supplies used in a noninstitutional setting; most Medicare Part B enteral nutrition equipment and supplies are used by residents of nursing facilities in stays that are not covered by Part A. During Round 1 of the demonstration, nursing facilities were allowed to purchase enteral nutrition services (as well as urological supplies and surgical dressings) from nondemonstration suppliers that agreed to accept the demonstration fees and quality and service standards. Most nursing facilities continued to use their existing suppliers for enteral nutrition. During Round 1 site visits, we encountered no access or quality concerns related to enteral nutrition.

¹²A few orthotics products that were classified as noncustomized when the RFB was issued were subsequently reclassified as customized.

6.4 Costs of the Demonstration

As part of the overall evaluation of the competitive bidding demonstration, we collected data on the costs of administering the system, including both initial implementation costs and ongoing operation costs. This section summarizes the information and highlights a number of cost issues that need to be considered in implementing competitive bidding on a wide-scale basis.

6.4.1 Overall Costs of the Demonstration

We estimate that the overall costs of the demonstration over the life of the project (1995 to 2002) were approximately \$4.8 million (in Year 2000 dollars). Major cost categories included personnel (\$2.3 million), computer software and upgrades necessary to accommodate the revised claims processing (\$0.9 million), overhead costs (\$0.8 million), and publishing/ mailing of materials to beneficiaries and suppliers (\$0.3 million) (Table 6-1).

Table 6-1
Estimated overall costs of the demonstration

Estimated DMERC costs (in millions)		Estimated CMS costs (in millions)	
Personnel	\$1.8	Personnel and travel ¹	\$0.5
Publishing/ mailing	\$0.3	Overhead	\$0.1
Office/ telephone	\$0.3		
Equipment	\$0.1		
Computer software	\$0.9		
Travel	\$0.1		
Overhead	\$0.7		
Total costs	\$4.2	Total costs	\$0.6

¹CMS travel costs too small to report separately.

6.4.2 Development Costs

Of the estimated \$4.8 million in demonstration administration costs, about \$1 million was spent in the development phase of the project (costs incurred between September 1, 1995, and July 1, 1998). These costs included computer software upgrades (\$0.5 million), personnel (\$0.4 million), and office/ telephone expenses (\$0.1 million). The development phase took longer than anticipated due, in part, to introduction of BBA provisions in 1997.

6.4.3 Scaling the Learning Curve

Implementing a new reimbursement system required a substantial amount of learning on the part of the fiscal intermediary. As individuals and the organization gained experience with the demonstration and as policies and procedures were established, evidence suggests that they were able to process materials and conduct tasks more efficiently.

One example of this learning curve effect is provided by the costs associated with the first two Bid Evaluation Panels. The first Bid Evaluation Panel, convened to review the initial bids from the Polk County site, met for at least 3 weeks. Every evaluator read every bid. The process was slow and arduous to assure completeness, accuracy, and fairness. While these efforts were admirable, replication allowed the staff to recognize time-saving steps and simplify procedures. Additional preparatory work by DMERC staff also streamlined the process and reduced average Bid Evaluation Panel member time per application. During the first review cycle, we estimate that an average of 16.4 Bid Evaluation Panel hours were spent reviewing each bid. During the second review cycle (for San Antonio), we estimate that time was reduced to 9.4 hours per bid. In addition, auditors, accountants, and supervisors were substituted for many of the (more expensive) high-level administrators on the panel, further reducing costs.

6.4.4 Spreading the Fixed Costs

It is also clear from our examination of the costs associated with the demonstration that there may be considerable economies of scale associated with conducting competitive bidding. One example of the economies of scale achieved over the course of the demonstration is evident in the extremely small increase in overall costs of the DMERC with the addition of the second (San Antonio) site. Addition of this site resulted in an overall increase in costs of approximately \$310,000 in the first full year. This includes the costs of hiring one additional full-time employee (the San Antonio Ombudsman), mailings to beneficiaries and suppliers, additional computer software upgrades, travel, telephone, equipment, and compensating the Bid Evaluation Panel for reviewing bids.

6.4.5 Cost Implications of a National Program

We believe that the cost data provide some important information from which to make cost projections. First, there are sizable fixed or semi-fixed costs associated with implementing a competitive bidding program. These costs can be spread over multiple markets and lower the average and incremental costs associated with additional markets. Examples of these fixed costs include the fiscal intermediary's knowledge of and ability to oversee the competitive bidding program. Modifying reimbursement software to accommodate competitive bidding and training personnel to handle modified claims also requires a significant fixed investment. Efforts to implement competitive bidding on a nationwide basis should limit the number of fiscal intermediaries to economize on these fixed costs. This is unlikely to be a large problem for DMEPOS, where there are only four DMERCs nationwide.

Second, the cost of establishing competitive bidding in additional markets is far lower than the fiscal intermediary's fixed costs. These costs were in the range of \$100,000 to \$310,000 per year for San Antonio, depending on whether the year in question was a "bidding year" (requiring the costs of the Bid Evaluation Panel and extensive mailings to beneficiaries and suppliers). Approximately \$75,000 to \$85,000 of these costs are semi-fixed, no matter what the size of the market (e.g., the salary of the Ombudsman, office/equipment, telephone). It is conceivable that markets located in reasonable proximity to each other could share an Ombudsman, further reducing the costs. Ombudsmen seem to be especially important just before and after the new bids and new suppliers take effect, but after that period their most important functions include annual on-site inspections of participating suppliers and

troubleshooting. For the last year of the Florida demonstration, the Ombudsman worked off-site, making periodic on-site visits. This scaled-back arrangement did not appear to have an adverse effect on her ability to monitor the demonstration. Currently, Palmetto DMERC (the DMERC in charge of the demonstration) assigns territory to its general DMERC program Ombudsmen based on population. Large states have two Ombudsmen, while some Ombudsmen serve two states. This staffing pattern suggests that some MSAs could be jointly served by a single Ombudsman.

The balance of site-specific costs (variable costs, including bid evaluation and mailings) will vary based on market parameters (e.g., number of beneficiaries, number of suppliers, number of bids received, and number of products/product categories). Based on the size of the San Antonio market, these variable administrative costs appear to average about \$1.88 per beneficiary. However, these costs would likely be higher for smaller markets and, perhaps, somewhat smaller for larger markets.

Finally, we note that it is also possible that a national program would require some costs that were not evident in the demonstration. For example, although individuals might be willing to serve a few weeks every other year on a Bid Evaluation Panel, they might not be willing to undertake such a task on a full-time basis (as would be required with a national program). Thus, the resources available to the demonstration might not be available to a national program. Alternative models for bid evaluation that may be more or less costly might need to be considered. For example, under a national competitive bidding program, it might make sense to establish a full-time panel (or multiple panels) to evaluate bids. Individuals on these panels would need to be trained in the various aspects of bid evaluation. An administrative structure could coordinate the various competitive bidding processes across the country so that bid evaluations could be scheduled with the standing panel. Conceivably, such a dedicated structure could conduct the bid evaluations in a more cost-effective manner than an ad hoc committee that only meets every other year.

6.4.6 Estimated Costs of a National Competitive Bidding Program

Although it is difficult to accurately estimate the costs of a national competitive bidding program based on cost data from a two-site demonstration, we have constructed some estimates to provide policy makers and planners with an idea of the magnitude of costs that might be expected in a national program. We emphasize that our cost estimates should be interpreted with caution, given the limited information on which they are based. We also try to note for the reader when our cost estimates are particularly speculative.

A summary of our cost estimates is provided in Table 6-2. We divide costs into three areas: CMS costs, DMERC costs (for the four DMERCs), and site-level costs (assuming site offices in each of the 261 MSAs). Our baseline cost estimates are relatively conservative and reflect the level of costs that we might expect for initial years of a national competitive program. Over time, however, it is possible that the program would be able to economize on resources by (a) assigning more MSAs to a single Ombudsman, and (b) by moving to a 3-year bid cycle (as opposed to a 2-year cycle).

Table 6-2
Estimated annual costs of a national competitive bidding program

Cost category	Estimated cost ¹	Estimated FTE
Baseline estimate		
CMS costs	\$1.8	10
DMERC costs (2-year bid cycle)	21.2	395
Site offices (1 office per Ombudsman)	<u>45.9</u>	<u>264</u>
TOTAL COST	\$68.9	669
Sensitivity Analysis		
Move to 3-year bid cycle		
CMS costs	\$1.8	10
DMERC costs	19.0	359
Site offices	<u>40.0</u>	<u>264</u>
TOTAL COST	\$60.9	633
<i>Savings relative to baseline estimate</i>	<i>\$8.0</i>	<i>36</i>
Move to 2 sites per Ombudsman		
CMS costs	\$1.8	10
DMERC costs	21.2	395
Site offices	<u>37.5</u>	<u>132</u>
TOTAL COST	\$60.5	537
<i>Savings relative to baseline estimate</i>	<i>\$8.4</i>	<i>132</i>
Move to 3-year bid cycle AND 2 sites per Ombudsman		
CMS costs	\$1.8	10
DMERC costs	19.0	359
Site offices	<u>31.6</u>	<u>132</u>
TOTAL COST	\$52.5	501
<i>Savings relative to baseline estimate</i>	<i>\$16.4</i>	<i>168</i>

¹In millions.

CMS costs—CMS travel costs associated with the demonstration were approximately \$12,000 for 4.5 years, or \$1,333 per site per year. Assuming that these costs continue, CMS travel costs for 261 MSA sites would be approximately \$348,000 per year. The other major cost category for CMS during the demonstration was personnel time. CMS incurred approximately \$314,000 in personnel costs for the 4.5 years of the demonstration, averaging 0.6 FTE devoted to the project. Our qualitative interviews with CMS indicated that much of their time was devoted to interactions with the DMERC. Based on this information, we estimate that CMS would require 10 FTEs to oversee a national competitive bidding demonstration: 1 director, 1 associate director, and 2 FTEs for each of the 4 DMERC regions. These individuals would have similar

skills sets as the original CMS staff assigned to the demonstration (and would, therefore, have similar hourly rates). Thus, we project annual CMS personnel costs to be approximately \$1.16 million. We also assume that indirect costs (office space, supplies, and support) would be 20 percent of direct costs (travel + personnel).

DMERC costs—DMERC costs associated with the demonstration can be divided into two major categories: standard operating costs and bid evaluation panel costs. We estimated the DMERC’s standard operating costs associated with the demonstration to be \$2.94 million for 4.5 years, or approximately \$653,000 per year per DMERC. This included the cost of 8 FTEs (7 prior to the addition of the San Antonio site). Since adding an additional site only increased staffing at the DMERC by one individual, we assume that assigning 64 additional sites to a DMERC would increase staffing by 64 FTEs at a cost of approximately \$3.04 million per year per DMERC. We estimated the DMERC’s bid evaluation panel costs to be approximately \$269 per bid (9.4 hours per bid X \$28.69/hour). In San Antonio, the bid evaluation panel reviewed 179 bids. Using this as an expected number of bids for each market and assuming a 2-year bid cycle (each DMERC reviews bids in 33 MSAs per year), we estimate that bid evaluation panel costs would be \$1.59 million per year per DMERC. In sensitivity analyses, we consider the possibility that bid cycles are stretched to 3 years, rather than 2. This reduces bid evaluation panel costs to \$1.06 million per year per DMERC.

Site office costs—Based on demonstration data, we estimated the cost of maintaining a site office (space, equipment, utilities) to be approximately \$40,000 per year. In years when bidding is being conducted, sites also incurred between \$100,000 and \$136,000 in printing, duplicating, and mailing costs. For this analysis, we took the higher number of \$136,000. Personnel costs associated with an on-site Ombudsman were approximately \$68,000 per year. Assuming that one Ombudsman can serve one MSA, we estimated site-specific costs to be \$176,000 per site per year. In sensitivity analyses, we examined the impact on costs of increasing the responsibilities of Ombudsmen to include two MSAs approximately 100 miles apart. This reduced site-specific costs to \$143,820 per year. If bid cycles are also increased from 2 to 3 years, this further reduces site-specific costs to \$121,153 per year.

Comparison with alternative estimates of resource requirements—In the Multinational Business Services document “The New Bureaucratic Order: Resource Requirements Needed to Carry Out the Mandates in Section 511 of the Proposed Medicare Modernization and Prescription Drug Act of 2002,” the authors suggest that CMS would have additional staffing requirements of approximately 1,570 FTEs (for 261 sites) if competitive bidding were adopted on a national basis. This total staffing level works out to approximately 6.015 FTEs per MSA bidding site.

We have two sets of estimates of the number of personnel required to staff a national competitive bidding program, and both of these estimates are far lower than 6.015 FTEs per site per year. Our original cost estimates from the demonstration indicated that approximately 4.088 FTEs were required per site per year (36.789 FTEs for two sites for 4.5 years). Our national estimates in Section 6.4.6 indicate that staffing estimates are more likely to be 1.92 to 2.56 FTEs per site per year. In addition, in our estimates, most staffing is provided by DMERCs, not by CMS.

6.4.7 Demonstration Costs versus Demonstration Savings

Based on operating (nonstartup) costs of approximately \$3.8 million over 4.5 years, we estimate that the competitive bidding program, as currently formulated, cost approximately \$845,000 per year to run. Our estimates (see Section 2) suggest that the demonstration reduced Medicare allowed charges by approximately \$9.4 million over that same period.

Given the sizeable fixed costs associated with conducting the competitive bidding demonstration, it is likely that addition of further sites could enhance the cost savings associated with competitive bidding. We can base this statement on the costs and cost savings associated with the addition of the San Antonio site. The cost of adding San Antonio was approximately \$510,000 over 3 years (2000 to 2002). Estimated reductions in allowed charges in San Antonio were approximately \$4.6 million.

6.5 Discussion

Our process evaluation of the reimbursement system indicates that, from an operational standpoint, competitive bidding can be successfully implemented for the DMEPOS items included in the demonstration. CMS and Palmetto GBA were able to successfully implement a competitive bidding system for DMEPOS in two MSAs. Although several implementation issues arose, these types of problems are to be expected during a demonstration. The purpose of the demonstration is to experiment with a new method for delivering health services: to examine the impact of the new design, to gain experience, and to make mid-course corrections as necessary. Demonstrations are intended to be learning experiences.

The success of the demonstration implementation is important because it represents the first time Medicare has implemented competitive bidding to set prices for goods or services covered by the program. The results of this evaluation suggest that competitive bidding has the potential to reduce Medicare costs in the area of DMEPOS. In addition, while the set of items covered under this demonstration was limited, this success suggests that CMS may want to consider additional demonstrations with other products and services.

Our evaluation provides evidence that there are economies of scale associated with conducting competitive bidding. Large up-front fixed costs make initial start-up relatively expensive, but the addition of sites (MSAs) is relatively inexpensive. As we noted in this section, this lesson would imply that a national roll-out of competitive bidding for DMEPOS should use a limited number of regional carriers. Since there are currently only four DMERCs nationwide, this centralization could be easily accomplished for DMEPOS. Economies of scale, however, are likely to exist no matter what types of goods and services are covered by competitive bidding, and the existing claims processing structure may not always be so conducive to regionalization. Expanding competitive bidding beyond DMEPOS may require rethinking the way that CMS processes claims using state- and sub-state-level carriers.

Our preliminary cost estimates for a national roll-out of competitive bidding for DMEPOS suggest that implementation nationwide would require a significant up-front investment in personnel. We estimate that approximately 670 FTEs would be required to maintain a DMEPOS competitive bidding system for 261 MSAs across the United States.

Although the associated cost of this program is large (\$69 million in our baseline estimate), it is likely that the program would more than pay for itself. For example, if competitive bidding were only applied to oxygen equipment and supplies, which accounted for \$1.77 billion in allowed charges in 2000, and competitive bidding only reduced expenditures by 10 percent, Medicare program expenditures would be reduced by \$141.6 million (80 percent of the \$177 million reduction in allowed charges). This is twice the estimated cost of a national program.

SECTION 7 SUMMARY AND IMPLICATIONS

7.1 Introduction

In this section, we summarize the major evaluation findings on the impact of the demonstration on Medicare expenditures, beneficiary access to care, quality of care, competitiveness, and the reimbursement system (Section 7.2). Evaluations of demonstration projects have inherent limitations, and our study is no exception. We discuss limitations in Section 7.3. Several Congressional bills have proposed implementation of competitive bidding for DMEPOS on a wider basis. In Section 7.4, we discuss the implications of our evaluation findings for a potential nationwide competitive bidding program. Section 7.5 concludes.

7.2 Summary of Major Findings

In this evaluation, we analyzed data from beneficiary and supplier surveys, site visits, supplier bids, and Medicare claims to evaluate the impact of the demonstration on Medicare expenditures, beneficiary access to care, quality of care, competitiveness, and the reimbursement system. We reached the following conclusions.

Medicare expenditures are determined by Medicare fees, levels of utilization, and co-payment rates. Competitive bidding definitely lowered Medicare fees. The demonstration led to lower fees for almost every item in almost every product category in each round of bidding.¹³ Fee reductions varied by product category and item, with most reductions ranging from 10 to 30 percent. We believe that the demonstration generally did not have large effects on utilization. For a few items covered by the demonstration, the demonstration was associated with statistically significant increases in utilization. However, it was not clear if these effects were caused by the demonstration or by other factors that happened to coincide with the demonstration. If utilization was unaffected by the demonstration, and fees declined, Medicare allowed charges must also have declined. We estimate that Medicare allowed charges in Polk County and San Antonio were about \$9.4 million (19.1 percent) lower than they would have been in the absence of the demonstration. Medicare expenditures (defined as allowed charges less co-payments and deductibles) fell by about \$7.5 million, and beneficiary payments fell by about \$1.9 million.

Overall, we saw little systematic evidence that the demonstration affected beneficiary access to DMEPOS. In both Polk County and San Antonio, the demonstration had no effect on virtually all of the access questions on beneficiary surveys. Transition policies that allowed patients to continue existing relationships with suppliers helped ensure that there was little disruption in access when each round of the demonstration was implemented. Some referral agents reported that they had to choose new demonstration suppliers when the demonstration began, and some of these agents were not satisfied with the first demonstration supplier they used. However, all of the referral agents said they eventually found a satisfactory supplier. In

¹³The only exception was surgical dressings in Round 1 of the bidding in Polk County. A flaw in the weighting factor used to determine winners and set prices led to higher fees for most items in the category. However, the flaw was corrected in Round 2, and prices fell.

the beneficiary survey in Polk County (but not in San Antonio), data indicated that new oxygen users were less likely to receive portable oxygen under the demonstration. Analysis of Medicare claims indicated that the demonstration was associated with a statistically significant reduction in portable oxygen use by new oxygen users in Polk County but not in San Antonio. It is unclear that this reduction represents an important adverse effect on access; most new oxygen users still received portable oxygen during the demonstration, and neither referral agents nor suppliers noted changes in portable oxygen use. Nonetheless, if competitive bidding were to be adopted on a wider scale, it would be prudent to monitor portable oxygen use to ensure that access is maintained.

With two exceptions, we found little evidence that the demonstration adversely affected quality of care or product selection. As with access, the demonstration did not have a statistically significant impact on virtually all of the quality variables included in the beneficiary surveys. Of particular note, the demonstration did not affect beneficiary ratings of satisfaction with their supplier, a summary measure of quality and access. Beneficiary satisfaction was high before the demonstration began and continued to be high during the demonstration. Site visits and a supplier survey in San Antonio suggest that suppliers made relatively few changes in the products they offered to patients.

The two instances where we found anecdotal evidence of quality changes during the demonstration were urological supplies in Round 1 in Polk County and wheelchairs and accessories in San Antonio. During site visits to Polk County in Round 1, concerns were raised about the quality of urological suppliers. Some suppliers believed that—partly through supplier inexperience—prices had been set too low, and quality had suffered. Prices rose in Round 2, and a more experienced supplier was selected as a demonstration supplier. In site visits in San Antonio, referral agents reported problems with the service provided by some demonstration wheelchair suppliers in the areas of equipment delivery and setup, fitting and adjustment, and responsiveness. Referral agents responded to these problems by stopping referrals to unsatisfactory suppliers and taking increased responsibility for ensuring quality service for their beneficiaries. As noted in Section 7.3, quality problems in urological supplies and wheelchairs and accessories may have different implications if competitive bidding is adopted on a wider basis in the future.

We examined the impact of the demonstration on competitiveness in the DMEPOS markets in the demonstration sites. At least in the largest product categories, the demonstration did not appear to have an adverse impact on market competitiveness. In most product categories, at least 10 suppliers submitted bids; this level of competition was strong enough to lead to lower prices for most demonstration items. In Polk County, where two rounds of bidding occurred, Round 2 continued to attract more than 10 bidders in the larger product categories of oxygen equipment and supplies and hospital beds and accessories, suggesting that competition can remain strong during repeated bidding for product categories with high allowed charges. The number of bids declined in Round 2 in the smaller product categories of surgical dressings and urological supplies, raising the issue of whether competitive bidding is sustainable in product categories or areas with low allowed charges. In both sites, the demonstration had relatively little effect on market concentration for most of the product categories. Collectively, demonstration suppliers gained market share at the expense of nondemonstration suppliers; in general, most, but not all, demonstration suppliers gained market share, and some demonstration

suppliers enjoyed large increases in market share. Among demonstration suppliers, competition on the basis of service and quality continued to be an important factor in determining market share; with multiple winners in each product category, suppliers had to satisfy referral agents and beneficiaries to attract business.

From an operational standpoint, it appears that competitive bidding can be successfully implemented for the DMEPOS items included in the demonstration. CMS and Palmetto GBA were able to design a competitive bidding demonstration, collect bids, select demonstration suppliers, educate stakeholders, administer demonstration claims, and monitor performance during the demonstration. Achieving these outcomes is notable, because this is the first time that CMS has implemented competitive bidding for Medicare services. As is the nature of a demonstration project, unexpected issues arose; CMS and Palmetto GBA were generally able to devise workable solutions. The demonstration cost about \$4.8 million, including \$3.8 million during a 4.5 year operational period. The cost of adding a second demonstration site was substantially lower than the cost of the first demonstration site. Based on this finding, we estimate that it would cost about \$70 million annually to implement competitive bidding in 261 MSAs across the United States.

7.3 Limitations of the Evaluation

Evaluations of demonstration projects have inherent limitations, and our study is no exception. Below, we discuss some of the limitations and our attempts to mitigate them.

First, our evaluation attempts to compare what happened with the demonstration to what would have happened in the demonstration area in the absence of the demonstration. However, what would have happened in the absence of the demonstration is a “counterfactual” for many of our analyses, since we do not actually observe what would have happened if the demonstration had not occurred. For example, we cannot directly observe what utilization of DMEPOS would have been in a demonstration area if the demonstration had not occurred. To mitigate this problem, we used standard evaluation techniques to create the counterfactual for comparison. We collected data from demonstration and comparison sites before and during the demonstration and used regression analysis to test for demonstration effects. This approach has its own limitations, because there may be unobserved variables unrelated to the demonstration that affect the comparison site during the period that coincides with the demonstration.

Second, most of our quality analyses were based on perceptions of beneficiaries, referral agents, and suppliers. We believe these analyses covered many of the important dimensions of quality but not necessarily all relevant dimensions. For example, the analyses did not include direct measures of clinical outcomes that might be affected by DMEPOS services. To address this limitation, we are currently analyzing claims data to determine whether the demonstration had any effect on hospitalization or emergency room visits for patients using oxygen equipment. As part of our evaluation of quality, we also analyzed supplier survey data on product selection. The analysis suggested that the demonstration did not affect product selection. However, relatively few suppliers provided information on product selection, so the results of this analysis must be interpreted cautiously.

Third, it is possible that behavior during a competitive bidding demonstration project may be different than would occur if competitive bidding were adopted on a wider and more permanent basis. This is an inherent limitation of demonstration projects. Through inexperience, participants might make mistakes during a demonstration that they would not repeat if they had more experience. Alternatively, because a demonstration project is not permanent, participants might be either more willing or less willing to change their behavior during a demonstration. For example, during a competitive bidding demonstration, some suppliers might be willing to submit especially low bids so that they can maintain their market share in anticipation of the demonstration ending, whereas other suppliers might be willing to sit out the demonstration and return when competitive bidding is no longer required. It is difficult to completely rule out the possibility that demonstration behavior is different from behavior under a permanent program, short of implementing a permanent program. However, the fact that bidding was repeated in two rounds in Polk County with generally similar outcomes may partially allay these concerns.

Fourth, it is possible that results from the demonstration in one or two sites may not generalize to other localities. Again, this is an inherent limitation of demonstration projects which, because of their costs, must usually be implemented in one or a few sites. The fact that the demonstration produced similar results in two very different MSAs provides more evidence for generalization than if the demonstration had only been implemented in a single site.

7.4 Implications for a Possible Nationwide Competitive Bidding Program for DMEPOS

Several Congressional bills have proposed implementation of competitive bidding for DMEPOS on a wider basis (e.g., H.R. 2473, Section 302). Based on our evaluation findings, the results of the demonstration have a number of implications for a potential nationwide competitive bidding program.

7.4.1 Geographic Areas

If competitive bidding for DMEPOS were to be considered for adoption on a national scale, an important question would be how to set the geographic areas covered by each separate bidding competition. The BBA 97 mandated that the demonstrations be conducted in MSAs, either in whole or in part. However, other areas, such as states or contiguous counties outside of MSAs, could be included in bidding conducted outside the BBA 97 mandate.

Our evaluation provides some evidence on implementing competitive bidding in MSAs, and this evidence can be extrapolated—albeit cautiously—to other possible bidding areas. We believe that the demonstration was, from an operational standpoint, successfully implemented in Polk County, a one-county MSA with a population of 483,924, and in San Antonio, a multicounty MSA (3 of the 4 counties in the MSA were included in the demonstration) with a population of 1,592,383. To us, this suggests that the demonstration could be implemented in population counties ranging in population from Polk County (84th of 260 MSAs in population in

the United States)¹⁴ to San Antonio (30th in population). Moving beyond the demonstration sites in population requires extrapolation. We believe that competitive bidding could be implemented in larger MSAs than San Antonio, possibly with different bidding requirements to ensure that the entire MSA is served. We also believe that competitive bidding could be implemented in MSAs that are smaller than Polk County but have reasonably close populations (144 MSAs have population that is at least 50 percent of Polk County).

Could competitive bidding for DMEPOS be implemented at the state level, as opposed to the MSA level? The Polk County demonstration provides some evidence that statewide bidding could be difficult to implement. On the one hand, several out-of-town suppliers were willing and able to successfully bid for demonstration status. On the other hand, most of these suppliers did not gain appreciable market share. Referral agents were reluctant to use the out-of-town suppliers because they were skeptical that the suppliers could deliver equipment and supplies in a timely fashion. Many DME users need to receive oxygen equipment, hospital beds, or wheelchairs as soon as they are discharged from the hospital, so having local suppliers is an important access concern for referral agents. Ensuring adequate local supply sources within a statewide bidding framework could be difficult. The bid evaluation panel would have to spend greater effort to determine whether there are adequate suppliers in each area. In addition, the bid evaluation panel might have to increase the cutoff price statewide to ensure that all local areas have adequate supply.

We believe that the demonstration projects do not provide sufficient evidence to determine whether competitive bidding could be implemented in rural areas outside of MSAs or in very small MSAs. Both the Polk County and San Antonio demonstrations contained rural areas within their respective MSAs, and we found little evidence to suggest that access and quality in these rural areas were adversely affected by the demonstration. However, these results cannot easily be extended to rural areas that are not in MSAs. These rural areas are likely to be served by fewer DMEPOS suppliers so bidding may not be as aggressive in these areas. And if some suppliers are not selected as demonstration suppliers, there may not be enough remaining suppliers to support continued service and quality competition.

7.4.2 Product Categories

If competitive bidding were adopted on a larger scale, CMS would have to decide which product categories to include in the program. A total of 8 different product categories were included in the two demonstration sites, and the demonstration experience offers some guidance on which product categories might be included in a broader program. Below, we discuss each of the demonstration product categories and discuss whether it should be subject to competitive bidding if a broader competitive bidding program is adopted. We consider several criteria: allowed charges and potential savings, number of suppliers, problems reported during the demonstration, and possible exclusions from competitive bidding (e.g., nondemonstration

¹⁴These ratings come from Census 2000 PHC-T-3, Ranking Tables for Metropolitan Areas: 1999 and 2000, Table 3: Metropolitan Areas Ranked by Population: 2000 (<http://www.census.gov/population/cen2000/phc-t3/tab03.pdf>). The MSAs are based on the 1993 definition of MSAs; a new definition of MSAs was released by the Office of Management and Budget on July 6, 2003.

suppliers were allowed to provide enteral nutrition to nursing home residents during the demonstration).

Oxygen equipment and supplies—We believe that the product category of oxygen equipment and supplies is well-suited for a competitive bidding program, if such a program is to be adopted. Oxygen equipment and supplies was by far the largest product category in allowed charges in both the Polk County and San Antonio demonstrations. With high baseline allowed charges, the product category also has the potential for large savings under competitive bidding; indeed, oxygen equipment and supplies accounted for over 80 percent of estimated demonstration savings in Polk County and about 45 percent of estimated savings in San Antonio.

Probably because of the product category's high allowed charges, a large number of oxygen suppliers serve metropolitan markets. In Polk County, 23 oxygen suppliers submitted bids, more than in any other product category. In San Antonio, 42 oxygen suppliers submitted bids, nearly equal to the 44 hospital bed suppliers and 46 wheelchair suppliers who submitted bids. With so many suppliers in the product category, competition is likely to be strong both in the bidding stage and amongst the multiple demonstration suppliers that are selected. There were nearly as many bidders in Round 2 as in Round 1 in Polk County, and the demonstration was not associated with changes in concentration, suggesting that the product category may continue to support competition under a competitive bidding program.

We found little evidence to suggest that the demonstration affected quality or product selection for oxygen. The demonstration did not affect beneficiaries' satisfaction with their oxygen suppliers, and we also found little change in the brands offered by suppliers. We also heard relatively few complaints about quality in the product category from referral agents.

We did find that the demonstration had a negative and statistically significant effect on the percentage of new oxygen users who received portable oxygen. Although access to portable oxygen is an important issue, we do not believe that this finding is serious enough to offset the positive factors for including oxygen in a competitive bidding program. Most new patients received portable oxygen during the demonstration, and the relatively small reduction in portable oxygen use did not affect beneficiary satisfaction. Still, portable oxygen use should probably be monitored closely if competitive bidding is adopted for oxygen equipment and supplies.

Hospital beds and accessories—We believe that the product category of hospital beds and accessories is also well-suited for a competitive bidding program, if such a program is to be adopted. The product category has fairly high annual allowed charges (over \$500,000 in Polk County and over \$1.7 million in San Antonio), so there is a fairly high potential for savings from competitive bidding. As with oxygen, relatively many suppliers provide hospital beds; in the demonstration sites, hospital beds and accessories attracted the second highest number of bidders in each round of bidding. In Polk County, as many hospital bed suppliers bid in Round 2 as bid in Round 1. We also found little evidence to suggest that the demonstration affected access, quality, or product selection for hospital equipment and supplies.

Wheelchairs and accessories—We believe that the product category of wheelchairs and accessories could be included in a potential competitive bidding program, but we also recommend that the quality standards be revised to provide clearer standards on wheelchair

fitting and adjustment. The product category has fairly high annual allowed charges (over \$1.8 million in San Antonio) and a large number of suppliers. More wheelchair suppliers submitted bids in San Antonio than in any other product category, and the demonstration did not have a statistically significant effect on market concentration.

Still, we heard more complaints about wheelchair suppliers from referral agents than we heard about other products included in the San Antonio demonstration. Some referral agents who previously used nondemonstration suppliers reported that the first demonstration suppliers they used did not provide proper wheelchair fitting and adjustment for their patients. Ultimately, the referral agents were able to find demonstration suppliers that provided satisfactory services. This suggests that competition amongst multiple winning bidders will help preserve service and quality under competitive bidding. However, clearer and stronger standards on wheelchair fitting and adjustment will enhance service and quality, especially when competitive bidding is first implemented, and help create a level playing field for suppliers who wish to bid on wheelchairs and accessories.

Nebulizer drugs—We believe that the product category of nebulizer drugs is well-suited for a competitive bidding program, if such a program is adopted. However, nebulizer drugs could be included in alternative pricing reforms for Medicare Part B drugs.

Nebulizer drugs account for a fairly high level of annual allowed charges (over \$1.3 million in San Antonio) and are provided by many suppliers. Thirty-three suppliers submitted bids in San Antonio, suggesting that there is likely to be fairly strong competition between suppliers at the bidding stage. We also found little evidence to suggest that the demonstration affected access, quality, or product selection for nebulizer drugs. Thus, it appears that nebulizer drugs could be included in a competitive bidding program for DMEPOS, if such a program is adopted.

However, we also recognize that there is widespread concern that Medicare pays too much for all of the drugs currently covered by Part B (GAO, 2001). Potential reforms in Medicare Part B drug pricing have been proposed, including collection of better information on the “net” prices paid to drug manufacturers and retailers, a drug rebate system similar to that used by Medicaid, and competitive bidding for prices by drug manufacturers or wholesalers (instead of by local suppliers and pharmacies, as occurred during the San Antonio demonstration). These methods could be applied to nebulizer drugs as part of an overall Medicare Part B drug pricing reform. Deciding whether this approach is more appropriate than including nebulizer drugs under a possible DMEPOS competitive bidding program is beyond the scope of this study.

Surgical dressings—We believe that the product category of surgical dressings is not as well-suited for competitive bidding as the previous product categories that we have discussed. Surgical dressings has relatively low allowed charges compared to the product categories previously discussed. As a result, the potential savings that might be derived from competitive bidding are relatively low. There are also relatively few surgical dressings suppliers, probably due to the low allowed charges, raising questions about whether there will be enough suppliers to maintain competition under competitive bidding. We found that market concentration was more variable in the surgical dressings market during the Polk County demonstration than in the other

product categories, with concentration rising significantly in Round 1 and falling significantly in Round 2. This occurred because one large supplier was a demonstration supplier in Round 1 but not in Round 2. Only 8 firms submitted bids for surgical dressings in Round 1, and the number of bidders dropped to 4 in Round 2, raising further concerns about whether the product category can support enough competition under competitive bidding.

We note that we heard almost no complaints about quality of or access to surgical dressings during our evaluation. Our conclusion about the suitability of competitive bidding for surgical dressings is also not affected by the finding that surgical dressings prices increased during the demonstration; that result was an anomaly caused by the weighting formula used to set prices during Round 1.

Urological supplies—We believe that the product category of urological supplies is not as well-suited for competitive bidding as oxygen equipment and supplies, hospital beds and accessories, wheelchairs and accessories, and nebulizer drugs. Urological supplies has much lower allowed charges than those product categories, so it offers relatively little potential for program savings. Probably because of the low allowed charges, relatively few urological suppliers serve each market. Only 9 suppliers submitted bids for urological supplies in Round 1 of the Polk County demonstration; the number of bidders fell to 7 in Round 2. With these numbers, it may be difficult to maintain enough competition to support competitive bidding.

We also heard more concerns about the quality of urological supplies than we heard about the other product categories included in the Polk County demonstration. Some of the demonstration suppliers selected in Round 1 of the demonstration appeared to be relatively inexperienced or new to supplying the area, and one supplier reported consolidating his product line to one brand in order to obtain lower prices. These factors might not be grounds for major concern in a market with many bidders and many suppliers selected as winning suppliers, because the suppliers will still have to compete to attract new patients. However, in a market with relatively few suppliers, quality may suffer if several of the winning suppliers are inexperienced, perceived access may fall if patients prefer local suppliers and several of the winning suppliers are located outside the area, and product selection could be reduced if several winning suppliers adopt more limited product lines.

Enteral nutrition—We believe that the product category of enteral nutrition is not as well-suited for competitive bidding as oxygen equipment and supplies, hospital beds and accessories, wheelchairs and accessories, and nebulizer drugs, at least under the demonstration project's provision that allowed nursing homes to continue to use nondemonstration enteral nutrition suppliers. Enteral nutrition has fairly high allowed charges. However, a large share of covered enteral nutrition is provided to nursing home patients. When enteral nutrition was included in Round 1 of the Polk County demonstration, nondemonstration suppliers were allowed to continue supplying enteral nutrition in nursing homes, as long as the suppliers agreed to accept the demonstration prices. As a consequence, demonstration suppliers gained relatively little market share during the demonstration (their market share increased from 18 percent prior to the demonstration to 28 percent at the end of the demonstration for this product category). Based on this experience, we believe that enteral nutrition suppliers would learn that they had little incentive to bid aggressively under competitive bidding. They would have little to gain, except lower prices, if they bid aggressively and were selected as a winning supplier and little to

lose—if they already served nursing home patients—if they were not selected as a winning supplier. Thus, we believe that competitive bidding would have little potential to reduce allowed charges for enteral nutrition in the long run, if nursing home patients are not required to use winning suppliers.

General orthotics—We believe that the product category of general orthotics is not as well-suited for competitive bidding as oxygen equipment and supplies, hospital beds and accessories, wheelchairs and accessories, and nebulizer drugs. We reach this conclusion primarily on the basis of the relatively low potential for savings in the product category. We estimated that allowed charges on the demonstration items would have totaled only about \$200,000 per year in San Antonio in the absence of the demonstration.¹⁵ At this level, even if competitive bidding reduced prices by 20 percent, the change in allowed charges would be relatively small. General orthotics had the fewest bidders of the product categories included in the demonstration in San Antonio, with only 14 suppliers submitting bids; 8 suppliers were selected as demonstration suppliers. We did not hear complaints about access or quality of general orthotics from beneficiaries or referral agents.

7.4.3 Transition Policies

If competitive bidding were to be adopted on a wider basis, an important policy issue is whether to adopt transition policies that allow nonwinning suppliers to continue serving existing patients under specified conditions. In our evaluation, we found that the transition policies that were in effect during the demonstration promoted smooth transitions and limited disruption of service to beneficiaries. Most nondemonstration suppliers who had the option elected to continue serving their existing patients; in some cases, the transition policies allowed nondemonstration suppliers to remain in business so that they could participate in subsequent rounds of bidding. With the transition policies, demonstration suppliers did not experience a sharp, immediate increase in market share, but, with the exception of enteral nutrition, they still gained market share over time, a necessary requirement to promote aggressive bidding. Most importantly, beneficiaries who had strong relationships with their suppliers and who had equipment already in their homes were not required to disrupt their relationships or wait for a new supplier to bring in new equipment.

Based on our findings, we recommend that the following demonstration transition policies be included in any subsequent competitive bidding program:

¹⁵However, this number is somewhat obscured by changes in orthotics HCPCS codes that occurred during the demonstration. General orthotics had the lowest allowed charges of the five product categories included in the demonstration in San Antonio. According to the RFB, allowed charges for the demonstration codes totaled about \$450,000 in 1998. Before the demonstration, several new HCPCS codes were approved for orthotics, including some that were very similar to codes that were included in the demonstration. In 2001, some HCPCS codes that were included in the demonstration were designated as “customized” orthotics, while some of the codes that were new in 2000 were designated as “prefabricated.” This led to a reduction in volume for the old orthotics codes, which were now designated as customized and were included in the demonstration, and an increase in volume for the new codes, which were now designated as prefabricated and were not included in the demonstration. Even if the items for competitive bidding had totaled \$450,000 in allowed charges, the potential gains from competitive bidding would be substantially less than the potential savings from the other product categories in San Antonio.

- Beneficiaries who have an existing relationship with a supplier prior to a bidding round may continue to receive oxygen equipment and supplies and nebulizer drugs from that supplier, even if the supplier is a losing bidder, as long as the supplier agrees to accept the new fees.
- Beneficiaries who have preexisting capped rental agreements for enteral pumps, hospital beds and accessories, or manual wheelchairs and accessories may continue to use their current supplier under the rental provisions.

As implied in the section on the suitability of enteral nutrition for a possible national competitive bidding demonstration, the demonstration transition policy that allowed nondemonstration suppliers to continue to serve nursing home patients poses certain complications for a broader competitive bidding program. For product categories where a large share of services are delivered in nursing homes, such as enteral nutrition and surgical dressings, the transition policy is likely to erode much of the incentive for aggressive bidding.

7.4.4 Multiple Suppliers

In the evaluation, we found that selecting multiple winners played an important role in maintaining patient access and quality. Referral agents looked for demonstration suppliers who could offer timely delivery, satisfactory service, and quality equipment. If a supplier did not provide these attributes, referral agents looked for another supplier. All of the referral agents we talked to eventually found a demonstration supplier with whom they were satisfied. We did find that referral agents and beneficiaries appeared to have differing tastes, with some referral agents liking one supplier but not another, while other referral agents liked the second supplier but not the first. Having multiple suppliers allowed for choice between suppliers.

Based on our findings, we recommend that any future competitive bidding program also include multiple winners in each product category in each acquisition area.

7.4.5 Education Efforts

Educating beneficiaries, suppliers, and other stakeholders about Medicare program changes is always a challenge, and a national competitive bidding program for DMEPOS would likely be no exception. During the demonstration, CMS made a number of efforts to provide information to beneficiaries, suppliers, and referral agents, and these efforts would probably have to continue if competitive bidding were adopted on a nationwide basis. During our site visits, we found that referral agents played a large role in selecting suppliers for beneficiaries; therefore, providing referral agents with effective information about competitive bidding rules as well as promptly providing them with the list of winning suppliers would be an important component of a national program.

7.5 Conclusion

BBA 97 authorized the Department of Health and Human Services to conduct the demonstration to test whether competitive bidding can be used to set prices for certain medical services covered by Medicare. Because the purpose of a demonstration project is to improve our understanding of the policy being tested, a demonstration project can be defined as a success if it

actually becomes operational, so that we can learn what happens under the policy. Under this definition, the DMEPOS demonstration was successful, because it was the first time that competitive bidding has ever been implemented for Medicare services.

Another way of defining the success of a demonstration project is to evaluate the positive and negative impacts of the demonstration. Based on our evaluation, we believe that the overall impacts of the demonstration were largely positive. Competitive bidding produced lower prices, leading to lower allowed charges for the Medicare program and beneficiaries. We found that the demonstration had relatively little effect on beneficiary access, quality, and product selection. Beneficiaries remained as satisfied with their DMEPOS suppliers during the demonstration as they were before the demonstration. There is a cost to implementing the demonstration, but the estimated reductions in program expenditures exceeded the estimated costs of implementation. By definition, if the demonstration reduced allowed charges, supplier revenues had to fall, and that result will likely be viewed as a negative impact by suppliers in general. Still, the demonstration produced the expected results among suppliers; demonstration suppliers gained market share as a group, while nondemonstration suppliers lost market share.

Recommending whether competitive bidding should be adopted for DMEPOS on a broader basis is beyond the scope of our evaluation. However, the evaluation results have a number of implications for policy if a broader competitive bidding program is adopted. We believe that competitive bidding for DMEPOS can be successfully implemented in MSAs with moderate-sized populations and above. Larger product categories, such as oxygen equipment and supplies, hospital beds and accessories, wheelchairs and accessories, and nebulizer drugs, appear better suited for a competitive bidding program than smaller DMEPOS product categories. Most of the transition policies in the demonstration would also help promote access and prevent disruption of service to beneficiaries under a broader competitive bidding program. The selection of multiple winners in each product category in each acquisition area will also help maintain quality and access. Finally, educating beneficiaries, suppliers, and referral agents about competitive bidding will be an important component of any competitive bidding program.

SECTION 8 REFERENCES

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GLOSSARY

Adjusted Bid Price:	The supplier's bid price for a demonstration product multiplied by the supplier's ratio.
Adjustment Factor:	The ratio of the supplier's composite bid price to the cutoff composite bid price chosen by CMS for the product category. Used to calculate the demonstration fee schedule from each winning supplier's bids.
Allowed Charges:	The Medicare approved charge for a procedure. Medicare typically pays 80 percent of the allowed charge. The beneficiary is responsible for the remaining 20 percent.
Austin-San Marcos Metropolitan Statistical Area (MSA):	The external comparison group to San Antonio. It was chosen because it matches San Antonio on several key characteristics including location in Texas, a multiple-county MSA, Medicare population, number of DME suppliers, and managed care penetration. It is used to identify what changes are due to the demonstration project and what changes may be general trends. (Since Wilson County [the least-populated county in the San Antonio MSA] is not included in the demonstration site, we do not include Caldwell County [the least-populated county in Austin-San Marcos] in the comparison site.)
Beneficiary:	Person receiving Medicare benefits.
Beneficiary Co-payment:	The percentage of covered medical expenses for which the beneficiary is responsible. For Medicare Part B, the co-payment equals 20 percent of the maximum Medicare allowance.
Bid Evaluation Panel (BEP):	Group of individuals selected by CMS to evaluate and score, by assigning points, bidders' proposals. The panel is made up of experienced Palmetto Government Benefits Administrator DMEPOS staff and subcontractors. The panel recommends a preliminary list of demonstration suppliers; these recommendations are approved and/or amended by CMS staff.
Bid Price:	The amount for which a supplier offers to provide a demonstration item to Medicare and designated beneficiaries during the demonstration cycle.

Bidders Conference:	A meeting sponsored by CMS and designed to provide potential bidders technical details of the demonstration and the bidding forms. CMS will respond to questions about the procurement.
Bidding Round:	The period of time ranging from the release of the Request for Bids through selection of the Demonstration Suppliers.
Brevard County:	The external comparison group to Polk County. It was chosen because it matches Polk County on several key characteristics including location in Florida, a single-county Metropolitan Statistical Area, Medicare population, number of DME suppliers, and managed care penetration. It is used to identify what changes are due to the demonstration project and what changes may be general trends.
Brokering Arrangement:	The practice by nondemonstration suppliers of referring requests for demonstration products to a demonstration supplier of their choice.
CMS:	Centers for Medicare & Medicaid Services. Formerly the Health Care Financing Administration.
Commerce Business Daily:	A daily list of U.S. government procurement invitations, contract awards, subcontracting leads, sales of surplus property, and foreign business opportunities.
Comparison Site:	An area without the demonstration that is used to identify which changes in the demonstration site are due to the demonstration project and which changes may be general trends. Brevard County was chosen as the comparison site for the Polk County demonstration. Austin-San Marcos, including Bastrop, Hays, Travis, and Williamson Counties, was chosen as the comparison site for the San Antonio demonstration. These sites were chosen because of their similarities to the demonstration site on several key characteristics including location, Medicare population, number of DME suppliers, and managed care penetration.
Competitive Bidding:	A process by which individuals or organizations contend against each other to win a contract by offering the best value to the customer. The prices and terms offered are compared and a subset of bidders selected to supply items and services. It allows the customer to take advantage of marketplace dynamics that are likely to lower prices.
Competitive Environment:	Factors affecting competition between suppliers.

Competitive Range:	Phrase used to describe the subset of suppliers whose composite bid prices equal or are less than the cutoff composite bid price for the product category.
Composite Bid Price:	The sum of the supplier's weighted bid prices for each demonstration product in the product category.
Consolidated Billing:	A comprehensive billing requirement, similar to the one that has been in effect for inpatient hospital services for more than a decade, under which a skilled nursing facility is responsible for billing Medicare for virtually all of the services that its residents receive.
Cutoff Composite Bid Price:	The dollar amount that suppliers' composite bid prices must be equal to or less than for their bids to be in the competitive range.
Cutoff Supplier:	The bidder whose composite bid price equals the cutoff composite bid price for the product category.
Debriefing:	A meeting sponsored by CMS and designed to notify bidders of the bid evaluation results.
Demonstration Cycle:	Preceded by a bidding round, a demonstration cycle is the period of time ranging from the establishment of demonstration prices until the next demonstration cycle begins or the current demonstration cycle ends.
Demonstration Procedure:	A specific DMEPOS item selected for the demonstration. Each demonstration procedure is identified by its HCFA Common Procedure Coding System code.
Demonstration Site:	The geographic region selected in which to conduct the demonstration. It may consist of all or part of a Metropolitan Statistical Area.
Demonstration Supplier:	A bidding supplier chosen by CMS to provide one or more product categories to designated beneficiaries.
Designated Beneficiaries:	Specific Medicare Part B beneficiaries who are included in the demonstration because they permanently reside in the demonstration site.
DMEPOS:	Durable Medical Equipment, Prosthetics, Orthotics, and Supplies.
DMERC:	Durable Medical Equipment Regional Carrier.

Estimated Volume:	The quantity of a demonstration product that Medicare paid for on behalf of beneficiaries during a given year or quarter.
Exempt Status:	Suppliers of DMEPOS who are exempt from the demonstration, such as physicians.
FAMED:	Florida Association of Medical Equipment Dealers.
FDA:	Food and Drug Administration.
Federal Acquisition Regulation System:	Created to establish uniform policies and procedures for certain government acquisition contracts and developed in accordance with the requirements of the Office of Federal Procurement Policy Act of 1974, as amended in 1985.
Fee Schedule:	A list of maximum payments for specified Medicare services based on the relative value of the procedure.
Financial Ratios:	Financial variables for suppliers that are used to determine the financial viability of bidding suppliers.
GAO:	General Accounting Office.
HCFA:	Health Care Financing Administration. Now the Centers for Medicare & Medicaid Services (CMS).
HCPCS:	HCFA Common Procedure Coding System.
Herfindahl-Hirschman Index (HHI):	A measure of industry concentration. It equals the sum of the squared market shares for each firm in the market.
HMO:	Health Maintenance Organization.
Medicare Reimbursement:	Eighty percent of the maximum Medicare allowance.
Medicare+Choice:	A broader array of health plans in addition to original Medicare and health maintenance organizations that includes preferred provider organizations, provider sponsored organizations, private fee-for-service plans, and a medical savings account.
Metropolitan Statistical Area:	A statistical standard developed by the U.S. Census Bureau for use by federal agencies in the production, analysis, and publication of data on geographic areas dominated by a city.
National Claims History (NCH):	Medicare claims.

Nondemonstration Supplier:	A supplier that is not eligible for Medicare reimbursement when providing demonstration products to designated beneficiaries. Nondemonstration suppliers may provide certain demonstration products for designated-beneficiary residents in skilled nursing facilities but will only be reimbursed according to demonstration prices.
NSC:	National Supplier Clearinghouse. National entity that issues Medicare DMEPOS supplier authorization numbers.
Ombudsman:	A person in the demonstration site designated to coordinate educational and outreach efforts, answer questions, and receive and investigate complaints from beneficiaries, suppliers, and providers.
Palmetto GBA:	Palmetto Government Benefits Administrators, the demonstration contractor and Durable Medical Equipment Regional Carrier for Florida and Texas.
Pivotal Bid:	The dollar amount, chosen by CMS, that suppliers' composite bid prices must be equal to or less than for their bids to be in the competitive range.
Polk County, Florida:	The geographic region selected in which to conduct the first DMEPOS demonstration. Polk County is a single county Metropolitan Statistical Area.
PPS:	Prospective Payment System.
Product Category:	A bidding unit for the demonstration. Each product category is a group of demonstration products.
Product Code:	A unique number, part of the HCFA Common Procedure Coding System, that identifies the products and procedures to be reimbursed by Medicare.
Product Weight:	A demonstration product's estimated volume during the prior year or quarter divided by the product category's estimated volume during the same year or quarter.
Projected Allowed Charges:	The allowed charges expected under a certain set of circumstances.

Prospective Payment System:	Federal prospective payment rates applicable to Medicare Part A skilled nursing facility services. Payment rates will encompass all costs of furnishing covered skilled nursing services (i.e., routine, ancillary and capital-related costs) not associated with operation-approved educational activities.
Referral:	When a Medicare beneficiary is referred to a DMEPOS supplier for medically necessary services.
Referral Agent:	Someone responsible for referring beneficiaries to DMEPOS suppliers. Referral agents may be hospital discharge planners, home health agency nurses, social workers, or physician office staff.
Rental Episode:	The continuous period of time during which a beneficiary rents an item from a supplier.
Request For Bids:	A formal procurement process by which CMS is requesting eligible Medicare DMEPOS suppliers to propose their most favorable prices for items and services included in the demonstration.
RFB:	Request for Bids.
San Antonio, Texas:	The geographic region selected in which to conduct the second DMEPOS demonstration. The demonstration site covers three counties within the San Antonio Metropolitan Statistical Area: Bexar, Comal, and Guadalupe.
Sanction:	An official action by the Office of the Inspector General that bars a supplier from participating in the Medicare program during a specific time period or indefinitely.
Service Area:	A subset of the demonstration site that suppliers may bid to serve.
SNF:	Skilled Nursing Facility.
Subcontracting:	An agreement where a demonstration supplier allows a nondemonstration supplier to provide demonstration products. The demonstration supplier is responsible for the quality of the products provided by the nondemonstration supplier.
Supplier Agreement:	Document a potential demonstration supplier signs to agree formally to the obligations of its participation in the demonstration.

Supplier Ratio:	The ratio of the supplier's composite bid price to the cutoff composite bid price chosen by CMS for the product category.
Transition Policies:	Provisions of the demonstration project that allow beneficiaries to continue receiving oxygen equipment and supplies and nebulizer drugs from their original supplier regardless of the supplier's demonstration status. These provisions also allow beneficiaries to maintain preexisting rental agreements for enteral nutrition equipment, hospital beds and accessories, and wheelchairs and accessories.
Volume Weight:	A demonstration product's estimated allowed charges during the prior year or quarter divided by the product category's estimated allowed charges during the same year or quarter.
Weighted Bid Price:	The supplier's bid price for a demonstration product multiplied by the product's weight.

APPENDIXES

**APPENDIX A:
DEMONSTRATION FEE SCHEDULE FOR POLK COUNTY AND SAN ANTONIO**

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**Table A.1
Oxygen equipment and supplies—Polk County**

HCPCS code	Modifier ¹	Description	Round 1		Round 2	
			Demonstration allowance	1999 Medicare statewide fee schedule	Demonstration allowance	2001 Medicare statewide fee schedule
E0424	RR	Stationary compressed gaseous oxygen system; includes contents (per unit), regulator, flowmeter, humidifier, nebulizer, cannula or mask, and tubing; 1 unit = 50 cubic ft. (Rental)	\$181.59	\$213.11	\$175.25	\$213.75
E0431	RR	Portable gaseous oxygen system; includes regulator, flowmeter, humidifier, cannula or mask, and tubing (Rental)	\$33.44	\$35.97	\$30.88	\$36.08
E0434	RR	Portable liquid oxygen system; includes portable container, supply reservoir, humidifier, flowmeter, refill adapter, contents gauge, cannula or mask, and tubing (Rental)	\$33.63	\$35.97	\$31.71	\$36.08
E0439	RR	Stationary liquid oxygen system; includes use of reservoir, contents (per unit), regulator, flowmeter, humidifier, nebulizer, cannula or mask, and tubing; 1 unit = 10 lbs. (Rental)	\$184.01	\$213.11	\$179.97	\$213.75
E0441		Oxygen contents, gaseous, per unit (for use with owned gaseous stationary systems or when both a stationary and portable gaseous system are owned; 1 unit = 50 cubic ft.)	\$93.95	\$138.53	Not included	Not included
E0442		Oxygen contents, liquid, per unit (for use with owned liquid stationary systems or when both a stationary and portable liquid system are owned; 1 unit = 10 lbs.)	\$98.37	\$138.53	\$106.39	\$138.95
E0443		Portable oxygen contents, gaseous, per unit (for use only with portable gaseous systems when no stationary gas or liquid system is used; 1 unit = 5 cubic ft.)	\$14.05	\$18.20	\$14.84	\$18.25
E0444		Portable oxygen contents, liquid, per unit (for use only with portable liquid systems when no stationary gas or liquid system is used; 1 unit = 1 lb.)	\$15.20	\$18.20	Not included	Not included

(continued)

**Table A.1
(continued)**

HCPCS code	Modifier ¹	Description	Round 1		Round 2	
			Demonstration allowance	1999 Medicare statewide fee schedule	Demonstration allowance	2001 Medicare statewide fee schedule
E1390 ²	RR	Oxygen concentrator, capable of delivering 85 percent or greater oxygen concentration at the prescribed flow rate (Rental)	\$175.10 (0.81)	\$213.11	\$170.36	\$213.75
E1405	RR	Oxygen and water vapor enriching system with heated delivery	\$225.40	\$245.39	Not included	Not included
E1406	RR	Oxygen and water vapor enriching system with heated delivery	\$210.23	\$231.93	Not included	Not included

¹Modifier code definitions: RR = rental, UE = used equipment, and NU = new equipment.

²E1390 replaces HCPCS codes E1400, E1401, E1402, E1403, and E1404. The Round 1 demonstration allowance shown is the arithmetic mean of these five Round 1 allowances, followed by the standard deviation. The 1999 Medicare statewide fee schedule was identical for each of these component codes.

**Table A.2
Hospital beds and accessories—Polk County**

HCPCS code	Modifier ¹	Description	Round 1		Round 2	
			Demonstration allowance	1999 Medicare statewide fee schedule	Demonstration allowance	2001 Medicare statewide fee schedule
E0250	RR	Hospital bed, fixed height, with any type side rails, with mattress	\$62.58	\$93.25	\$64.78	\$99.87
E0251	RR	Hospital bed, fixed height, with any type side rails, without mattress	\$53.13	\$70.66	Not included	Not included
E0255	RR	Hospital bed, variable height (hi-lo), with any type side rails, with mattress	\$72.01	\$107.10	\$72.60	\$114.70
E0256	RR	Hospital bed, variable height (hi-lo), with any type side rails, without mattress	\$59.94	\$75.24	\$63.13	\$80.58
E0260	RR	Hospital bed, semi-electric (head and foot adjustment), with any type side rails, with mattress	\$95.66	\$136.14	\$95.74	\$145.81
E0261	RR	Hospital bed, semi-electric (head and foot adjustment), with any type side rails, without mattress	\$85.07	\$111.03	\$85.16	\$118.92
E0265	RR	Hospital bed, total electric (head, foot, and height adjustment), with any type side rails, with mattress	\$106.44	\$162.06	\$106.84	\$173.57
E0266	RR	Hospital bed, total electric (head, foot, and height adjustment), with any type side rails, without mattress	\$97.89	\$143.98	\$99.16	\$154.21
E0271	NU	Mattress, innerspring (new)	\$131.80	\$180.01	\$130.95	\$192.79
E0271	UE	Mattress, innerspring (used)	\$98.85	\$140.63	\$98.21	\$150.61
E0271	RR	Mattress, innerspring (rental)	\$13.18	\$18.70	\$13.10	\$20.03
E0272	NU	Mattress, foam rubber (new)	\$135.66	\$182.15	\$137.20	\$195.09
E0272	UE	Mattress, foam rubber (used)	\$101.75	\$136.61	\$102.90	\$146.31
E0272	RR	Mattress, foam rubber (rental)	\$13.57	\$18.22	\$13.72	\$19.51
E0280	NU	Bed cradle, any type	\$38.16	\$35.29	Not included	Not included
E0280	RR	Bed cradle, any type	\$3.82	\$3.55	Not included	Not included
E0280	UE	Bed cradle, any type	\$28.62	\$26.47	Not included	Not included

(continued)

**Table A.2
(continued)**

HCPCS code	Modifier ¹	Description	Round 1		Round 2	
			Demonstration allowance	1999 Medicare statewide fee schedule	Demonstration allowance	2001 Medicare statewide fee schedule
E0290	RR	Hospital bed, fixed height, without side rails, with mattress	\$53.85	\$71.29	Not included	Not included
E0291	RR	Hospital bed, fixed height, without side rails, without mattress	\$45.03	\$51.79	Not included	Not included
E0292	RR	Hospital bed, variable height (hi-lo), without side rails, with mattress	\$59.88	\$75.40	Not included	Not included
E0293	RR	Hospital bed, variable height (hi-lo), without side rails, without mattress	\$53.18	\$64.20	Not included	Not included
E0294	RR	Hospital bed, semi-electric (head and foot adjustment), without side rails, with mattress	\$83.74	\$105.93	Not included	Not included
E0295	RR	Hospital bed, semi-electric (head and foot adjustment), without side rails, without mattress	\$80.04	\$103.25	\$80.69	\$110.58
E0296	RR	Hospital bed, total electric (head, foot, and height adjustment) without side rails, with mattress	\$95.04	\$133.13	Not included	Not included
E0297	RR	Hospital bed, total electric (head, foot, and height adjustment), without side rails, without mattress	\$87.30	\$114.05	Not included	Not included
E0298 ²	RR	Hospital bed, heavy-duty, extra wide, with any type side rails	Not bid	Not bid	\$199.65	\$301.92
E0305	RR	Bed side rails, half length	\$10.74	\$14.42	Not included	Not included
E0310	NU	Bed side rails, full length	\$114.08	\$175.41	Not included	Not included
E0310	RR	Bed side rails, full length	\$11.41	\$18.45	Not included	Not included
E0310	UE	Bed side rails, full length	\$85.56	\$131.55	Not included	Not included
E0910	RR	Trapeze bars, A/K/A patient helper, attached to bed, with grab bar	\$15.89	\$19.07	\$15.17	\$20.43
E0940	RR	Trapeze bar, freestanding, complete with grab bar	\$24.17	\$29.39	\$23.78	\$31.48

¹Modifier code definitions: RR = rental, UE = used equipment, and NU = new equipment.

²E0298 replaces HCPCS code K0456.

Table A.3
Urological supplies—Polk County

HCPCS code	Description	Round 1		Round 2	
		Demonstration allowance	1999 Medicare statewide fee schedule	Demonstration allowance	2001 Medicare statewide fee schedule
A4310	Insertion tray without drainage bag and without catheter (accessories only)	\$5.30	\$6.26	\$5.99	\$6.70
A4311	Insertion tray without drainage bag with indwelling catheter, Foley type, two-way latex with coating (Teflon, silicone, silicone elastomer, or hydrophilic, etc.)	\$9.52	\$12.04	Not included	Not included
A4312	Insertion tray without drainage bag with indwelling catheter, Foley type, two-way, all silicone	\$13.71	\$17.20	\$15.96	\$18.43
A4313	Insertion tray without drainage bag with indwelling catheter, Foley type, three-way, for continuous irrigation	\$12.14	\$15.02	Not included	Not included
A4314	Insertion tray with drainage bag with indwelling catheter, Foley type, two-way latex with coating (Teflon, silicone, silicone elastomer, or hydrophilic, etc.)	\$17.20	\$20.50	\$19.12	\$21.96
A4315	Insertion tray with drainage bag with indwelling catheter, Foley type, two-way, all silicone	\$17.62	\$21.39	\$20.80	\$22.91
A4316	Insertion tray with drainage bag with indwelling catheter, Foley type, three-way, for continuous irrigation	\$20.15	\$23.03	Not included	Not included
A4320	Irrigation tray with bulb or piston syringe, any purpose	\$4.16	\$5.08	\$4.71	\$5.44
A4321	Therapeutic agent for urinary catheter irrigation	\$5.81	\$1.00	Not included	Not included
A4322	Irrigation syringe, bulb, or piston, each	\$1.97	\$2.69	Not included	Not included
A4323	Sterile saline irrigation solution, 1,000 ml.	\$6.05	\$7.68	\$7.31	\$8.22
A4324 ¹	Male external catheter, with adhesive coating, each	\$1.79	\$2.07	\$2.11	\$2.22
A4325 ¹	Male external catheter, with adhesive strip, each	\$1.43	\$1.72	\$1.69	\$1.84
A4326	Male external catheter specialty type (e.g., inflatable, faceplate) each	\$8.38	\$10.29	Not included	Not included

(continued)

**Table A.3
(continued)**

HCPCS code	Description	Round 1		Round 2	
		Demonstration allowance	1999 Medicare statewide fee schedule	Demonstration allowance	2001 Medicare statewide fee schedule
A4327	Female external urinary collection device: metal cup, each	\$34.91	\$40.32	Not included	Not included
A4328	Female external urinary collection device: pouch, each	\$7.64	\$9.40	Not included	Not included
A4331 ¹	Extension drainage tubing, any type, any length, with connector/adapter; for use with urinary leg bag or urostomy pouch, each	\$3.00	\$3.04	\$3.28	\$3.25
A4333 ¹	Urinary catheter anchoring device, adhesive skin attachment	\$1.86	\$2.10	\$3.06	\$2.25
A4338	Indwelling catheter; Foley type; two-way latex with coating (Teflon, silicone, silicone elastomer, or hydrophilic, etc.), each	\$8.49	\$11.70	\$10.21	\$12.53
A4340	Indwelling catheter; specialty type (coude, mushroom, wing, etc.), each	\$22.78	\$30.28	Not included	Not included
A4344	Indwelling catheter; Foley type; two-way all silicone, each	\$12.44	\$15.28	\$13.58	\$16.37
A4346	Indwelling catheter; Foley type, three-way for continuous irrigation, each	\$13.37	\$18.69	Not included	Not included
A4351	Intermittent urinary catheter; straight tip, each	\$1.41	\$1.73	\$1.66	\$1.85
A4352	Intermittent urinary catheter; Coude (curved) tip, each	\$4.20	\$5.20	\$5.06	\$5.57
A4353	Intermittent urinary catheter; with insertion supplies	\$5.23	\$6.66	\$5.96	\$7.14
A4354	Insertion tray with drainage bag but without catheter	\$7.99	\$9.56	Not included	Not included
A4355	Irrigation tubing set for continuous bladder irrigation through a three-way indwelling Foley catheter, each	\$5.75	\$7.23	Not included	Not included
A4356	External urethral clamp or compression device (not to be used for catheter clamp), each	\$35.54	\$43.52	\$43.16	\$46.61
A4357	Bedside drainage bag, day or night, with or without anti-reflux device, with or without tube, each	\$7.55	\$9.25	\$8.94	\$9.90
A4358	Urinary leg bag; vinyl, with or without tube, each	\$5.02	\$6.33	\$6.01	\$6.78

(continued)

**Table A.3
(continued)**

HCPCS code	Description	Round 1		Round 2	
		Demonstration allowance	1999 Medicare statewide fee schedule	Demonstration allowance	2001 Medicare statewide fee schedule
A4359	Urinary suspensory without leg bag, each	\$19.92	\$27.67	Not included	Not included
A4364	Adhesive for ostomy or catheter: liquid (spray, brush, etc.), cement, powder or paste: any composition (e.g., silicone, latex), per oz.	Not bid	Not bid	\$7.00	\$2.67
A4402	Lubricant, per ounce	Not bid	Not bid	\$0.96	\$1.45
A4455	Adhesive remover or solvent (for tape, cement, or other adhesive), per ounce	Not bid	Not bid	\$1.48	\$1.24
A5102	Bedside drainage bottle with or without tubing, rigid or expandable, each	\$18.28	\$21.53	\$25.53	\$23.06
A5105	Urinary suspensory; with leg bag, with or without tube	\$26.07	\$33.05	Not included	Not included
A5112	Urinary leg bag; latex	\$26.04	\$33.02	\$32.90	\$35.36
A5113	Leg strap; latex, replacement only, per set	\$3.91	\$4.48	Not included	Not included
A5114	Leg strap; foam or fabric, replacement only, per set	\$5.98	\$7.69	Not included	Not included
A6265	Tape, all types, per 18 sq. in.	\$0.12	\$0.12	\$0.20	\$0.12
K0281	Lubricant, individual sterile packet, for insertion of urinary catheter, each	\$0.12	\$0.12	Not included	Not included
K0408	Urinary catheter anchoring device, leg strap	\$4.14	\$4.71	Not included	Not included
K0409	Sterile water irrigation solution, 1,000 ml.	\$5.32	\$6.04	Not included	Not included

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¹A4324 and A4325 replace HCPCS codes K0410 and K0411; A4331 and A4333 replace HCPCS codes K0280 and K0407.

Table A.4
Surgical dressings—Polk County

HCPCS code	Description	Round 1		Round 2	
		Demonstration allowance	1999 Medicare statewide fee schedule	Demonstration allowance	2001 Medicare statewide fee schedule
A4460	Elastic bandage, per roll (e.g., compression bandage)	\$1.38	\$0.97	Not included	Not included
A4462	Abdominal dressing holder/binder, each	\$4.19	\$3.13	Not included	Not included
A6154	Wound pouch, each	\$17.31	\$13.29	Not included	Not included
A6196	Alginate dressing, wound cover, pad size 16 sq. in. or less each dressing	\$7.47	\$7.01	\$7.01	\$7.51
A6197	Alginate dressing, wound cover, pad size more than 16 sq. in. but less than or equal to 48 sq. in., each dressing	\$15.88	\$15.68	\$14.99	\$16.79
A6199	Alginate dressing, wound filler, per 6 inches	\$6.73	\$5.04	\$6.05	\$5.40
A6203	Composite dressing, pad size 16 sq. in. or less, with any size adhesive border, each dressing	\$4.21	\$3.19	Not included	Not included
A6204	Composite dressing, pad size more than 16 sq. in. but less than or equal to 48 sq. in., with any size adhesive border, each dressing	\$7.07	\$5.94	Not included	Not included
A6207	Contact layer, more than 16 sq. in. but less than or equal to 48 sq. in., each dressing	\$8.62	\$7.00	Not included	Not included
A6209	Foam dressing, wound cover, pad size 16 sq. in. or less, without adhesive border, each dressing	\$8.03	\$7.14	\$7.34	\$7.64
A6210	Foam dressing, wound cover, pad size more than 16 sq. in. but less than or equal to 48 sq. in., without adhesive border, each dressing	\$17.97	\$19.00	\$18.77	\$20.35
A6211	Foam dressing, wound cover, pad size more than 48 sq. in., without adhesive border, each dressing	\$25.87	\$28.01	\$27.04	\$30.00
A6212	Foam dressing, wound cover, pad size 16 sq. in. or less, with any size adhesive border, each dressing	\$8.96	\$9.25	\$9.03	\$9.90
A6213	Foam dressing, wound cover, pad size more than 16 sq. in. but less than or equal to 48 sq. in., with any size adhesive border, each dressing	\$14.53	\$9.82	Not included	Not included

(continued)

**Table A.4
(continued)**

HCPCS code	Description	Round 1		Round 2	
		Demonstration allowance	1999 Medicare statewide fee schedule	Demonstration allowance	2001 Medicare statewide fee schedule
A6214	Foam dressing, wound cover, pad size more than 48 sq. in., with any size adhesive border, each dressing	\$17.65	\$9.82	Not included	Not included
A6216	Gauze, nonimpregnated, nonsterile, pad size 16 sq. in. or less, without adhesive border, each dressing	\$0.07	\$0.05	\$0.09	\$0.05
A6219	Gauze, nonimpregnated, pad size 16 sq. in. or less, with any size adhesive border, each dressing	\$1.40	\$0.91	\$0.99	\$0.97
A6220	Gauze, nonimpregnated, pad size more than 16 sq. in. but less than or equal to 48 sq. in., with any size adhesive border, each dressing	\$3.12	\$2.46	\$2.55	\$2.63
A6222	Gauze, impregnated, other than water or normal saline, pad size 16 sq. in. or less, without adhesive border, each dressing	\$2.88	\$2.03	\$2.23	\$2.18
A6223	Gauze, impregnated, other than water or normal saline, pad size more than 16 sq. in. but less than or equal to 48 sq. in., without adhesive border, each dressing	\$2.92	\$2.30	\$2.35	\$2.47
A6224	Gauze, impregnated, other than water or normal saline, pad size more than 48 sq. in., without adhesive border, each dressing	\$4.22	\$3.44	Not included	Not included
A6229	Gauze, impregnated, water or normal saline, pad size more than 16 sq. in. but less than or equal to 48 sq. in., without adhesive border, each dressing	\$4.30	\$3.44	Not included	Not included
A6234	Hydrocolloid dressing, wound cover, pad size 16 sq. in. or less, without adhesive border, each dressing	\$7.84	\$6.24	\$6.38	\$6.68
A6235	Hydrocolloid dressing, wound cover, pad size more than 16 sq. in. but less than or equal to 48 sq. in., without adhesive border, each dressing	\$16.58	\$16.05	\$15.20	\$17.19
A6236	Hydrocolloid dressing, wound cover, pad size more than 48 sq. in., without adhesive border, each dressing	\$29.34	\$25.99	\$26.19	\$27.83
A6237	Hydrocolloid dressing, wound cover, pad size 16 sq. in. or less, with any size adhesive border, each dressing	\$9.41	\$7.54	\$7.91	\$8.08

(continued)

**Table A.4
(continued)**

HCPCS code	Description	Round 1		Round 2	
		Demonstration allowance	1999 Medicare statewide fee schedule	Demonstration allowance	2001 Medicare statewide fee schedule
A6238	Hydrocolloid dressing, wound cover, pad size more than 16 sq. in. but less than or equal to 48 sq. in., with any size adhesive dressing, each dressing	\$27.71	\$21.74	Not included	Not included
A6240	Hydrocolloid dressing, wound filler, paste, per fluid ounce	\$12.83	\$11.68	\$12.74	\$12.51
A6241	Hydrocolloid dressing, wound filler, dry form, per gram	\$3.17	\$2.45	Not included	Not included
A6242	Hydrogel dressing, wound cover, pad size 16 sq. in. or less, without adhesive border, each dressing	\$6.06	\$5.79	\$5.49	\$6.20
A6243	Hydrogel dressing, wound cover, pad size more than 16 sq. in. but less than or equal to 48 sq. in., without adhesive border, each dressing	\$11.18	\$11.75	\$11.11	\$12.58
A6244	Hydrogel dressing, wound cover, pad size more than 48 sq. in., without adhesive border, each dressing	\$28.36	\$37.46	\$34.25	\$40.12
A6245	Hydrogel dressing, wound cover, pad size 16 sq. in. or less, with any size adhesive border, each dressing	\$8.46	\$6.93	Not included	Not included
A6246	Hydrogel dressing, wound cover, pad size more than 16 sq. in. but less than or equal to 48 sq. in., with any size adhesive border, each dressing	\$11.89	\$9.46	Not included	Not included
A6247	Hydrogel dressing, wound cover, pad size more than 48 sq. in., with any size adhesive border, each dressing	\$27.38	\$22.68	Not included	Not included
A6248	Hydrogel dressing, wound filler, gel, per fluid ounce	\$14.47	\$15.49	\$13.63	\$16.59
A6251	Specialty absorptive dressing, wound cover, pad size 16 sq. in. or less, without adhesive border, each dressing	\$2.35	\$1.90	\$1.84	\$2.03
A6252	Specialty absorptive dressing, wound cover, pad size more than 16 sq. in. but less than or equal to 48 sq. in., without adhesive border, each dressing	\$3.42	\$3.10	\$2.87	\$3.32
A6253	Specialty absorptive dressing, wound cover, pad size more than 48 sq. in., without adhesive border, each dressing	\$6.46	\$6.05	\$6.06	\$6.48
A6254	Specialty absorptive dressing, wound cover, pad size 16 sq. in. or less, with any size adhesive border, each dressing	\$1.90	\$1.16	Not included	Not included

(continued)

**Table A.4
(continued)**

HCPCS code	Description	Round 1		Round 2	
		Demonstration allowance	1999 Medicare statewide fee schedule	Demonstration allowance	2001 Medicare statewide fee schedule
A6255	Specialty absorptive dressing, wound cover, pad size more than 16 sq. in. but less than or equal to 48 sq. in., with any size adhesive border, each dressing	\$3.83	\$2.89	Not included	Not included
A6257	Transparent film, 16 sq. in. or less, each dressing	\$1.99	\$1.46	Not included	Not included
A6258	Transparent film, more than 16 sq. in. but less than or equal to 48 sq. in., each dressing	\$5.79	\$4.10	\$3.93	\$4.39
A6259	Transparent film, more than 48 sq. in., each dressing	\$13.71	\$10.43	Not included	Not included
A6263	Gauze, elastic, nonsterile, all types, per linear yard	\$0.38	\$0.28	Not included	Not included
A6264	Gauze, nonelastic, nonsterile, per linear yard	\$0.64	\$0.46	Not included	Not included
A6265	Tape, all types, per 18 sq. in.	\$0.17	\$0.12	Not included	Not included
A6266	Gauze, impregnated, other than water or normal saline, any width, per linear yard	\$2.26	\$1.83	Not included	Not included
A6402	Gauze, nonimpregnated, sterile, pad size 16 sq. in. or less, without adhesive border, each dressing	\$0.15	\$0.12	\$0.13	\$0.12
A6403	Gauze, nonimpregnated, sterile, pad size more than 16 sq. in. but less than or equal to 48 sq. in., without adhesive border, each dressing	\$0.51	\$0.41	Not included	Not included
A6405	Gauze, elastic, sterile, all types, per linear yard	\$0.51	\$0.32	\$0.35	\$0.34
A6406	Gauze, nonelastic, sterile, per linear yard	\$0.96	\$0.76	\$0.80	\$0.82

Table A.5
Enteral nutrition—Polk County

HCPCS code	Modifier ¹	Description	Round 1	
			Demonstration allowance	1999 Medicare statewide fee schedule
B4034		Enteral feeding supply kit; syringe, per day	\$4.55	\$5.60
B4035		Enteral feeding supply kit; pump fed, per day	\$7.98	\$10.67
B4036		Enteral feeding supply kit; gravity fed, per day	\$5.45	\$7.31
B4081		Nasogastric tubing with stylet	\$15.27	\$19.78
B4082		Nasogastric tubing without stylet	\$11.81	\$14.73
B4083		Stomach tube-levine type	\$1.95	\$2.25
B4084		Gastrostomy/jejunostomy tubing	\$15.12	\$16.52
B4085		Gastrostomy tube, silicone with sliding ring, each	\$32.64	\$37.48
B4150		Enteral formulae; category I: semi-synthetic intact protein/protein isolates, 100 calories = 1 unit	\$0.56	\$0.61
B4151		Enteral formulae; category I: natural intact protein/protein isolates, 100 calories = 1 unit	\$1.26	\$1.43
B4152		Enteral formulae; category II: intact protein/protein isolates (calorically dense), 100 calories = 1 unit	\$0.45	\$0.51
B4153		Enteral formulae; category III: hydrolized protein/amino acids; 100 calories = 1 unit	\$1.57	\$1.74
B4154		Enteral formulae; category IV: defined formula for special metabolic need, 100 calories = 1 unit	\$1.05	\$1.12
B4155		Enteral formulae; category V: modular components (protein, carbohydrates, fat), 100 calories = 1 unit	\$0.81	\$0.87
B4156		Enteral formulae; category VI: standardized nutrients, 100 calories = 1 unit	\$1.27	\$1.24
B9000	NU	Enteral nutrition infusion pump; without alarm	\$695.62	\$1,121.97
B9000	RR	Enteral nutrition infusion pump; without alarm	\$69.56	\$103.10
B9000	UE	Enteral nutrition infusion pump; without alarm	\$521.72	\$841.47
B9002	NU	Enteral nutrition infusion pump; with alarm	\$793.65	\$1,121.97
B9002	RR	Enteral nutrition infusion pump; with alarm	\$79.36	\$108.66
B9002	UE	Enteral nutrition infusion pump; with alarm	\$595.24	\$841.47
E0776	NUXA	IV pole	\$70.73	\$93.30
E0776	RRXA	IV pole	\$7.07	\$23.62
E0776	UEXA	IV pole	\$53.05	\$29.15

¹Modifier code definitions: RR = rental, UE = used equipment, and NU = new equipment.

Table A.6
Oxygen equipment and supplies—San Antonio

HCPCS code	Modifier ¹	Description	Demonstration allowance	2001 Medicare statewide fee schedule
E0424	RR	Stationary compressed gaseous oxygen system; includes contents (per unit), regulator, flowmeter, humidifier, nebulizer, cannula or mask, and tubing; 1 unit = 50 cubic ft. (Rental)	\$190.47	\$229.49
E0431	RR	Portable gaseous oxygen system; includes regulator, flowmeter, humidifier, cannula or mask, and tubing (Rental)	\$31.64	\$36.08
E0434	RR	Portable liquid oxygen system; includes portable container, supply reservoir, humidifier, flowmeter, refill adapter, contents gauge, cannula or mask, and tubing (Rental)	\$33.81	\$36.08
E0439	RR	Stationary liquid oxygen system; includes use of reservoir, contents (per unit), regulator, flowmeter, humidifier, nebulizer, cannula or mask, and tubing; 1 unit = 10 lbs. (Rental)	\$197.18	\$229.49
E0441		Oxygen contents, gaseous (for use with owned gaseous stationary systems or when both a stationary and portable gaseous system are owned)	\$114.95	\$159.75
E0442		Oxygen contents, liquid, per unit (for use with owned liquid stationary systems or when both a stationary and portable liquid system are owned; 1 unit = 10 lbs.)	\$112.23	\$159.75
E0443		Portable oxygen contents, gaseous, per unit (for use only with portable gaseous systems when no stationary gas or liquid system is used; 1 unit = 5 cubic ft.)	\$13.77	\$18.25
E1390	RR	Oxygen concentrator, capable of delivering 85 percent or greater oxygen concentration at the prescribed flow rate (Rental)	\$186.40	\$229.49
E1405	RR	Oxygen and water vapor enriching system with heated delivery	\$227.81	\$263.04
E1406	RR	Oxygen and water vapor enriching system without heated delivery	\$215.96	\$248.36

¹Modifier code definitions: RR = rental, UE = used equipment, and NU = new equipment.

Table A.7
Hospital beds and accessories—San Antonio

HCPCS code	Modifier ¹	Description	Demonstration allowance	2001 Medicare statewide fee schedule
E0250	RR	Hospital bed, fixed height, with any type side rails, with mattress	\$73.06	\$96.70
E0255	RR	Hospital bed, variable height (hi-lo), with any type side rails, with mattress	\$86.89	\$116.20
E0260	RR	Hospital bed, semi-electric (head and foot adjustment), with any type side rails, with mattress	\$119.26	\$166.10
E0261	RR	Hospital bed, semi-electric (head and foot adjustment), with any type side rails, without mattress	\$100.06	\$135.45
E0265	RR	Hospital bed, total electric (head, foot, and height adjustment), with any type side rails, with mattress	\$141.71	\$197.71
E0266	RR	Hospital bed, total electric (head, foot, and height adjustment), with any type side rails, without mattress	\$126.08	\$175.66
E0271	NU	Mattress, innerspring (new)	\$152.74	\$203.63
E0272	NU	Mattress, foam rubber (new)	\$144.30	\$183.01
E0280	NU	Bed cradle, any type	\$32.08	\$37.78
E0290	RR	Hospital bed, fixed height, without side rails, with mattress	\$59.95	\$73.93
E0292	RR	Hospital bed, variable height, hi-lo, without side rails, with mattress	\$67.26	\$83.13
E0294	RR	Hospital bed, semi-electric (head and foot adjustment), without side rails, with mattress	\$100.74	\$129.23
E0295	RR	Hospital bed, semi-electric (head and foot adjustment), without side rails, without mattress	\$96.10	\$125.96
E0298 ²	RR	Hospital bed, heavy-duty, extra wide, with any type side rails	\$257.90	\$300.67
E0305	RR	Bed side rails, half length	\$13.98	\$17.60
E0310	NU	Bed side rails, full length	\$127.01	\$180.44
E0910	RR	Trapeze bars, A/K/A patient helper, attached to bed, with grab bar	\$16.12	\$19.78
E0940	RR	Trapeze bar, freestanding, complete with grab bar	\$27.93	\$34.39

¹Modifier code definitions: RR = rental, UE = used equipment, and NU = new equipment.

²E0298 replaces HCPCS code K0456.

Table A.8
Wheelchairs and accessories—San Antonio

HCPCS code	Modifier ¹	Description	Demonstration allowance	2001 Medicare statewide fee schedule
E1031	RR	Rollabout chair, any and all types with castors 5" or greater	\$39.44	\$49.96
K0001	RR	Standard wheelchair	\$42.25	\$54.03
K0002	RR	Standard hemi (low seat) wheelchair	\$60.33	\$80.94
K0003	RR	Lightweight wheelchair	\$66.52	\$88.62
K0004	RR	High strength, lightweight wheelchair	\$97.26	\$132.19
K0006	RR	Heavy-duty wheelchair	\$95.77	\$124.05
K0007	RR	Extra heavy-duty wheelchair	\$135.29	\$176.56
K0015	NU	Detachable, nonadjustable height armrest, each	\$128.37	\$179.72
K0016	NU	Detachable, adjustable height armrest, complete assembly, each	\$77.54	\$96.66
K0020	NU	Fixed, adjustable height armrest, pair	\$38.69	\$45.95
K0021	NU	Anti-tipping device, each	\$40.17	\$55.27
K0023	NU	Solid back insert, planar back, single density foam, attached with straps	\$71.37	\$88.64
K0024	NU	Solid back insert, planar back, single density foam, with adjustable hook-on hardware	\$94.04	\$104.93
K0025	NU	Hook-on headrest extension	\$56.15	\$70.59
K0028	NU	Manual, fully reclining back	\$356.88	\$458.75
K0030	NU	Solid seat insert, planar seat, single density foam	\$61.82	\$79.99
K0031	NU	Safety belt/pelvic strap, each	\$30.07	\$40.99
K0032	NU	Seat upholstery for ultralightweight or high strength lightweight wheelchair	\$33.59	\$38.58
K0033	NU	Seat upholstery for wheelchair type other than ultralightweight or high strength lightweight wheelchair	\$33.59	\$38.58
K0034	NU	Heel loop, each	\$12.26	\$15.83

¹Modifier code definitions: RR = rental, UE = used equipment, and NU = new equipment.

(continued)

**Table A.8
(continued)**

HCPCS code	Modifier ¹	Description	Demonstration allowance	2001 Medicare statewide fee schedule
K0035	NU	Heel loop with ankle strap, each	\$19.56	\$24.66
K0036	NU	Toe loop, each	\$13.37	\$16.67
K0037	NU	High mount flip-up footrest, each	\$37.80	\$47.64
K0038	NU	Leg strap, each	\$19.13	\$24.00
K0039	NU	Leg strap, H style, each	\$41.20	\$53.29
K0040	NU	Adjustable angle footplate, each	\$56.87	\$73.86
K0041	NU	Large size footplate, each	\$42.45	\$52.34
K0042	NU	Standard size footplate, each	\$27.61	\$36.03
K0043	NU	Footrest, lower extension tube, each	\$15.39	\$19.32
K0045	NU	Footrest, complete assembly	\$44.74	\$56.00
K0048	NU	Elevating legrest, complete assembly	\$87.28	\$111.03
K0049	NU	Calf pad, each	\$20.66	\$25.56
K0052	NU	Swingaway, detachable footrests, each	\$71.49	\$91.43
K0053	NU	Elevating footrests, articulating (telescoping), each	\$81.82	\$100.90
K0054	NU	Seat width of 10", 11", 12", 15", 17", or 20" for a high strength, lightweight, or ultralightweight wheelchair	\$83.60	\$103.50
K0055	NU	Seat depth of 15", 17", or 18" for a high strength, lightweight, or ultralightweight wheelchair	\$77.80	\$94.07
K0056	NU	Seat height less than 17" or equal to or greater than 21" for a high strength, lightweight, or ultralightweight wheelchair	\$75.45	\$94.07
K0057	NU	Seat width 19" or 20" for heavy-duty or extra heavy-duty wheelchair	\$93.56	\$122.85
K0059	NU	Plastic coated handrim, each	\$26.35	\$31.37

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¹Modifier code definitions: RR = rental, UE = used equipment, and NU = new equipment.

(continued)

**Table A.8
(continued)**

HCPCS code	Modifier ¹	Description	Demonstration allowance	2001 Medicare statewide fee schedule
K0062	NU	Handrim with 8 to 10 vertical or oblique projections, each	\$50.23	\$60.32
K0063	NU	Handrim with 12 to 16 vertical or oblique projections, each	\$65.61	\$80.57
K0064	NU	Zero pressure tube (flat free inserts), any size, each	\$25.16	\$30.07
K0066	NU	Solid tire, any size, each	\$19.74	\$23.98
K0067	NU	Pneumatic tire, any size, each	\$26.61	\$34.40
K0068	NU	Pneumatic tire tube, each	\$5.60	\$5.82
K0070	NU	Rear wheel assembly, complete, with pneumatic tire, spokes or molded, each	\$141.64	\$181.17
K0071	NU	Front caster assembly, complete, with pneumatic tire, each	\$82.33	\$108.06
K0072	NU	Front caster assembly, complete, with semi-pneumatic tire, each	\$52.48	\$65.04
K0073	NU	Caster pin lock, each	\$26.58	\$33.11
K0075	NU	Semi-pneumatic caster tire, any size, each	\$27.46	\$35.18
K0077	NU	Front caster assembly, complete, with solid tire, each	\$45.14	\$58.21
K0079	NU	Wheel lock extension, pair	\$42.06	\$55.81
K0080	NU	Anti-rollback device, pair	\$117.65	\$155.10
K0081	NU	Wheel lock assembly, complete, each	\$31.50	\$40.24
K0100	NU	Wheelchair adapter for amputee, pair (device used to compensate for transfer of weight due to lost limbs to maintain proper balance)	\$70.10	\$85.54
K0101	RR	One-arm drive attachment, each	\$31.84	\$39.47
K0103	NU	Transfer board, <25"	\$37.50	\$46.33
K0104	NU	Cylinder tank carrier, each	\$92.94	\$117.49
K0106	NU	Arm trough, each	\$83.01	\$105.99
K0195	RR	Elevating legrests, pair (for use with capped rental wheelchair base)	\$16.86	\$20.84
K0452	NU	Wheelchair bearings, any type	\$5.51	\$6.48

¹Modifier code definitions: RR = rental, UE = used equipment, and NU = new equipment.

Table A.9
General orthotics—San Antonio

HCPCS code	Description	Demonstration allowance	2001 Medicare statewide fee schedule
L1800	Knee orthosis, elastic with stays, prefabricated, includes fitting and adjustment	\$51.92	\$65.38
L1810	Knee orthosis, elastic with joints, prefabricated, includes fitting and adjustment	\$64.99	\$78.85
L1815	Knee orthosis, elastic or other elastic type material with condylar pad(s), prefabricated, includes fitting and adjustment	\$59.03	\$73.98
L1820	Knee orthosis, elastic with condylar pads and joints, prefabricated, includes fitting and adjustment	\$84.49	\$106.06
L1825	Knee orthosis, elastic knee cap, prefabricated, includes fitting and adjustment	\$42.45	\$54.05
L1830	Knee orthosis, immobilizer, canvas longitudinal, prefabricated, includes fitting and adjustment	\$51.76	\$64.49
L1832	Knee orthosis, adjustable knee joints, positional orthosis, rigid support, prefabricated, includes fitting and adjustment	\$336.12	\$448.19
L1850	Knee orthosis, Swedish type, prefabricated, includes fitting and adjustment	\$191.06	\$245.37
L1902	Ankle-foot orthosis, ankle gauntlet, prefabricated, includes fitting and adjustment	\$59.84	\$78.46
L1906	Ankle-foot orthosis, multiligamentous ankle support, prefabricated, includes fitting and adjustment	\$68.83	\$88.65
L1930	Ankle-foot orthosis, plastic, prefabricated, includes fitting and adjustment	\$177.27	\$232.53
L2112	Ankle-foot orthosis, fracture orthosis, tibial fracture orthosis, soft, prefabricated, includes fitting and adjustment	\$329.74	\$417.56
L2114	Ankle-foot orthosis, fracture orthosis, tibial fracture orthosis, semi-rigid, prefabricated, includes fitting and adjustment	\$373.66	\$483.39
L2116	Ankle-foot orthosis, fracture orthosis, tibial fracture orthosis, rigid, prefabricated, includes fitting and adjustment	\$458.17	\$579.11
L2132	Knee-ankle-foot orthosis (KAFO), fracture orthosis, femoral fracture cast orthosis, soft, prefabricated, includes fitting and adjustment	\$488.25	\$670.87

(continued)

**Table A.9
(continued)**

HCPCS code	Description	Demonstration allowance	2001 Medicare statewide fee schedule
L2134	KAFO, fracture orthosis, femoral fracture cast orthosis, semi-rigid, prefabricated, includes fitting and adjustment	\$597.77	\$839.07
L2136	KAFO, fracture orthosis, femoral fracture cast orthosis, rigid, prefabricated, includes fitting and adjustment	\$732.31	\$949.96
L2180	Addition to lower extremity fracture orthosis, plastic shoe insert with ankle joints	\$85.96	\$115.11
L2182	Addition to lower extremity fracture orthosis, drop lock knee joint	\$67.23	\$84.57
L2210	Addition to lower extremity, dorsiflexion assist (planar flexion resist), each joint	\$39.89	\$49.55
L2220	Addition to lower extremity, dorsiflexion and planar flexion assist/resist, each joint	\$53.53	\$64.40
L3650	Shoulder orthosis, figure of eight design abduction restrainer, prefabricated, includes fitting and adjustment	\$36.37	\$46.88
L3660	Shoulder orthosis, figure of eight design abduction restrainer, canvas and webbing, prefabricated, includes fitting and adjustment	\$57.86	\$74.15
L3670	Shoulder orthosis, acromio/clavicular (canvas and webbing type), prefabricated, includes fitting and adjustment	\$66.43	\$84.69
L3700	Elbow orthosis, elastic with stays, prefabricated, includes fitting and adjustment	\$51.40	\$67.14
L3720	Elbow orthosis, double upright with forearm/arm cuffs, free motion, custom-fabricated	\$439.18	\$547.34
L3730	Elbow orthosis, double upright with forearm/arm cuffs, extension/flexion assist, custom-fabricated	\$613.20	\$800.57
L3800	Wrist hand finger orthosis, short opponens, no attachments, custom-fabricated	\$111.37	\$114.25
L3805	Wrist hand finger orthosis, long opponens, no attachment, custom-fabricated	\$219.61	\$266.74
L3810	WHFO, addition to short and long opponens, thumb abduction ("C") bar	\$40.22	\$46.75
L3825	WHFO, addition to short and long opponens, M.P. extension stop	\$46.83	\$58.95
L3840	WHFO, addition to short and long opponens, spring swivel thumb	\$49.84	\$60.46
L3850	WHFO, addition to short and long opponens, action wrist, with dorsiflexion assist	\$74.12	\$89.81

(continued)

**Table A.9
(continued)**

HCPCS code	Description	Demonstration allowance	2001 Medicare statewide fee schedule
L3855	WHFO, addition to short and long opponens, adjustable M.P. flexion control	\$78.44	\$101.38
L3860	WHFO, addition to short and long opponens, adjustable M.P. flexion control and I.P.	\$123.66	\$153.89
L3980	Upper extremity fracture orthosis, humeral, prefabricated, includes fitting and adjustment	\$213.62	\$265.55
L3982	Upper extremity fracture orthosis, radius/ulnar, prefabricated, includes fitting and adjustment	\$222.63	\$299.66
L3984	Upper extremity fracture orthosis, wrist, prefabricated, includes fitting and adjustment	\$205.42	\$260.70
L3985	Upper extremity fracture orthosis, forearm, hand with wrist hinge, custom-fabricated	\$325.24	\$421.63
L3995	Addition to upper extremity orthosis, sock, fracture or equal, each	\$23.51	\$30.77
L4350	Pneumatic ankle control splint (e.g., aircast), prefabricated, includes fitting and adjustment	\$55.66	\$67.76
L4360	Pneumatic walking splint (e.g., aircast), prefabricated, includes fitting and adjustment	\$162.54	\$204.12
L4380	Pneumatic knee splint (e.g., aircast), prefabricated, includes fitting and adjustment	\$63.41	\$79.19
L4392	Replacement, soft interface material, static ankle-foot orthosis (AFO)	\$18.10	\$18.66
L4396	Static AFO, including soft interface material, for positioning, pressure reduction, may be used for minimal ambulation, prefabricated, includes fitting and adjustment	\$110.96	\$133.03
L4398	Foot drop splint, recumbent positioning device, prefabricated, includes fitting and adjustment	\$51.24	\$61.22

Table A.10
Nebulizer drugs—San Antonio

HCPCS code	Modifier ¹	Description	Demonstration allowance	2001 Medicare statewide fee schedule
E0590		Dispensing fee covered drug administered through DME nebulizer	\$4.88	\$5.19
J2545		Pentamidine isethionate, inhalation solution, per 300mg, administered through DME	\$91.53	\$110.45
J7608	KO	Acetylcysteine, inhalation solution administered through DME, unit dose form, per gram (single drug unit dose formulation)	\$4.61	\$5.24
J7608	KQ	Acetylcysteine, inhalation solution administered through DME, unit dose form, per gram (second or subsequent drug of a multiple drug unit dose formulation)	\$4.19	\$5.05
J7618		Albuterol, all formulations including separated isomers, inhalation solution administered through DME, concentrated form, per 1 mg	\$0.11	\$0.15
J7619	KO	Albuterol, all formulations including separated isomers, inhalation solution administered through DME, unit dose form, per 1 mg (single drug unit dose formulation)	\$0.32	\$0.49
J7619	KQ	Albuterol, all formulations including separated isomers, inhalation solution administered through DME, unit dose form, per 1 mg (second or subsequent drug of a multiple drug unit dose formulation)	\$0.14	\$0.15
J7628		Bitolterol mesylate, inhalation solution administered through DME, concentrated form, per milligram	\$0.27	\$0.26
J7631	KO	Cromolyn sodium, inhalation solution administered through DME, unit dose form, per 10 mg (single drug unit dose formulation)	\$0.22	\$0.23
J7631	KQ	Cromolyn sodium, inhalation solution administered through DME, unit dose form, per 10 mg (second or subsequent drug of a multiple drug unit dose formulation)	\$0.18	\$0.19
J7636	KO	Atropine, inhalation solution administered through DME, unit dose form, per milligram (single drug unit dose formulation)	\$0.35	\$0.25
J7636	KQ	Atropine, inhalation solution administered through DME, unit dose form, per milligram (second or subsequent drug of a multiple drug unit dose formulation)	\$0.23	\$0.17
J7638	KO	Dexamethasone, inhalation solution administered through DME, unit dose form, per milligram (single drug unit dose formulation)	\$0.16	\$0.15
J7638	KQ	Dexamethasone, inhalation solution administered through DME, unit dose form, per mg (second or subsequent drug of a multiple drug unit dose formulation)	\$0.11	\$0.10

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¹Modifier code definitions: KO = single drug unit dose formulation, KQ = second or subsequent drug of a multiple drug unit dose formulation. (continued)

**Table A.10
(continued)**

HCPCS code	Modifier ¹	Description	Demonstration allowance	2001 Medicare statewide fee schedule
J7639	KO	Dornase alpha, inhalation solution administered through DME, unit dose form, per mg (single drug unit dose formulation)	\$13.91	\$15.68
J7639	KQ	Dornase alpha, inhalation solution administered through DME, unit dose form, per mg (second or subsequent drug of a multiple drug unit dose formulation)	\$13.84	\$15.66
J7644	KO	Ipratropium bromide, inhalation solution administered through DME, unit dose form, per mg (single drug unit dose formulation)	\$2.55	\$3.46
J7644	KQ	Ipratropium bromide, inhalation solution administered through DME, unit dose form, per mg (second or subsequent drug of a multiple drug unit dose formulation)	\$2.51	\$3.31
J7659	KO	Isoproterenol HCl, inhalation solution administered through DME, unit dose form, per mg (single drug unit dose formulation)	\$0.64	\$0.35
J7659	KQ	Isoproterenol HCl, inhalation solution administered through DME, unit dose form, per mg (second or subsequent drug of a multiple drug unit dose formulation)	\$0.61	\$0.32
J7669	KO	Metaproterenol sulfate, inhalation solution administered through DME, unit dose form, per 10 mg (single drug unit dose formulation)	\$1.07	\$1.14
J7669	KQ	Metaproterenol sulfate, inhalation solution administered through DME, unit dose form, per 10 mg (second or subsequent drug of a multiple drug unit dose formulation)	\$0.52	\$0.26
J7681	KO	Terbutaline sulfate, inhalation solution administered through DME, unit dose form, per mg (single drug unit dose formulation)	\$1.91	\$2.01
J7681	KQ	Terbutaline sulfate, inhalation solution administered through DME, unit dose form, per mg (second or subsequent drug of a multiple drug unit dose formulation)	\$1.84	\$1.93
J7683		Triamcinolone, inhalation solution administered through DME, concentrated form, per mg	\$0.06	\$0.04
J7684	KO	Triamcinolone, inhalation solution administered through DME, unit dose form, per mg (single drug unit dose formulation)	\$0.11	\$0.08
J7684	KQ	Triamcinolone, inhalation solution administered through DME, unit dose form, per mg (second or subsequent drug of a multiple drug unit dose formulation)	\$0.06	\$0.04

¹Modifier code definitions: KO = single drug unit dose formulation, KQ = second or subsequent drug of a multiple drug unit dose formulation.

**APPENDIX B:
ALTERNATIVE DEMONSTRATION SAVINGS ESTIMATES UNDER THE
ASSUMPTION THAT THE DEMONSTRATION CAUSED ESTIMATED CHANGES IN
UTILIZATION**

LIST OF TABLES IN APPENDIX B

Table B.1	Demonstration savings: Polk County demonstration, based on utilization impact estimates	296
Table B.2	Demonstration savings: San Antonio demonstration, based on utilization impact estimates	298

In Section 2.5, we estimated savings from the demonstration under the implicit assumption that the demonstration did not cause utilization to change. That is, the estimates assumed that utilization in the absence of the demonstration would have been the same as utilization with the demonstration. We chose this approach because, in our Section 2.4 analysis of utilization, the demonstration was not associated with statistically significant changes in utilization for most of the high volume items included in the demonstration. In addition, for some of the items where there was a statistically significant coefficient, it was not clear whether the result was actually caused by the demonstration or by an unrelated factor that coincided with the demonstration.

In this appendix, we show an alternative estimate of demonstration savings under the assumption that the demonstration caused the statistically significant changes in utilization that were associated with the demonstration. To estimate savings with the demonstration utilization effects, we first calculated allowed charges under the demonstration and subtracted estimated charges in the absence of the demonstration, as in Section 2.5. Then, for each item and year that had a statistically significant change in utilization, we added the product of the fee schedule amount times the change in utilization associated with the demonstration. For example, if actual utilization of an item in Round 1, Year 1 is 1,000 units, the demonstration price is \$10 and the fee schedule price is \$12, our Section 2.5 estimate of savings is \$2,000 ($1,000 \times \$10 - 1,000 \times \$12 = -\$2,000$). If the demonstration was associated with a statistically significant increase in utilization of 50 units in Round 1, Year 1, our alternative estimate of savings would be \$1,400 ($-\$2,000 + 50 \times \$12 = -\$1,400$). The alternative estimates of savings will be smaller than the Section 2.5 estimates if the demonstration is associated with a significant increase in utilization. Conversely, the new estimates will be larger if the demonstration is associated with a significant decrease in utilization.

B.1 Polk County

Table B.1 shows the alternative estimates of demonstration savings for Polk County. In each year of Round 1, the alternative savings estimates are slightly lower than the estimated savings in Section 2.5. This occurs because the demonstration was associated with significant increases in utilization for portable gaseous oxygen and oxygen concentrators during the period, as well as a significant increase in utilization of one type of enteral feeding supply kit. The demonstration was associated with statistically significant declines in utilization of portable and stationary liquid oxygen as well as male external catheters, bedside drainage bags, and sterile gauze. However, these declines were not enough to offset the reduction in savings generated by the increases in utilization for portable gaseous oxygen, oxygen concentrators, and enteral feeding supply kits.

Table B.1
Demonstration savings: Polk County demonstration, based on utilization impact estimates

	Allowed charges under demonstration (demonstration fee × quantity)	Allowed charges in absence of demonstration (state fee schedule × quantity)	Demonstration effect on utilization (state fee schedule × change in quantity due to demonstration)	Savings	Percentage savings
Oxygen equipment and supplies					
Round 1, Year 1	\$5,857,902	\$7,026,535	\$265,865	\$902,768	12.85%
Round 1, Year 2	\$5,950,618	\$7,146,796	\$282,494	\$932,684	12.78%
Round 2	\$6,183,704	\$7,709,194	\$1,558,152	-\$32,662	-0.42%
Total	\$17,992,224	\$21,882,525	\$2,106,511	\$1,783,790	8.15%
Hospital beds and accessories					
Round 1, Year 1	\$533,048	\$653,688	\$0	\$120,640	18.46%
Round 1, Year 2	\$448,046	\$618,121	\$0	\$170,075	27.51%
Round 2	\$441,504	\$636,645	\$0	\$195,140	30.65%
Total	\$1,422,598	\$1,908,453	\$0	\$485,855	25.46%
Urological supplies					
Round 1, Year 1	\$99,170	\$120,640	-\$13,436	\$34,907	28.93%
Round 1, Year 2	\$70,644	\$85,343	-\$9,996	\$24,694	28.94%
Round 2	\$120,802	\$133,388	\$0	\$12,585	9.44%
Total	\$290,616	\$339,370	-\$23,432	\$72,186	21.27%
Surgical dressings					
Round 1, Year 1	\$161,142	\$143,871	-\$3,125	-\$14,147	-9.83%
Round 1, Year 2	\$115,813	\$102,763	-\$2,052	-\$10,998	-10.70%
Round 2	\$54,135	\$53,498	-\$1,660	\$1,022	1.91%
Total	\$331,090	\$300,131	-\$6,837	-\$24,122	-8.04%
Enteral nutrition					
Round 1, Year 1	\$935,163	\$1,117,611	\$25,836	\$156,612	14.01%
Round 1, Year 2	\$779,981	\$939,784	\$15,550	\$144,253	15.35%
Round 2	NA	NA	NA	NA	NA
Total	\$1,715,143	\$2,057,394	\$41,386	\$300,866	14.62%
All product categories					
Round 1, Year 1	\$7,586,424	\$9,062,344	\$275,140	\$1,200,780	13.25%
Round 1, Year 2	\$7,365,101	\$8,892,806	\$285,996	\$1,241,709	13.96%
Round 2	\$6,800,146	\$8,532,724	\$1,556,492	\$171,086	2.06%
Total	\$21,751,671	\$26,487,874	\$2,117,628	\$2,618,575	9.89%

SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

In Round 2, estimated savings from the demonstration under the alternative method are only \$176,086, much less than the estimated \$1,732,578 under Method 1. The main difference in the estimates arises from oxygen equipment and supplies. In Round 2, the demonstration was associated with large increases in utilization of oxygen concentrators and portable gaseous oxygen systems. Under the alternative method, this increase erased most of the impact of the lower demonstration prices. As discussed in Section 2.4, it is not clear that the demonstration caused higher utilization of these oxygen items in Round 2. Actual quantities in Polk County increased at about the same rate as in previous periods of the demonstration. However, utilization in the comparison counties was lower during the period that corresponded to Round 2, and this produced the positive coefficient associated with the Round 2 impact.

For the entire demonstration, estimated savings under the alternative method are \$2.62 million, about \$2.1 million less than the \$4.74 estimate in Section 2.5.

B.2 San Antonio

Table B.2 shows the alternative estimates of demonstration savings for San Antonio. This estimate assumes that all statistically significant effects on utilization that are associated with the demonstration are caused by the demonstration. In each year of the demonstration, the alternative estimated savings are slightly higher than the estimated savings in Section 2.5. This occurs because the demonstration was associated with significant declines in utilization for two wheelchair codes and one hospital bed code. These decreases in utilization augmented demonstration savings. The demonstration was associated with significant increases in utilization for one wheelchair code (K0006) and one wheelchair accessory code (K0021RR), but the increased expenditures associated with these items were not enough to offset the decreased expenditures from the aforementioned utilization declines.

For the entire demonstration, estimated savings under the alternative method are \$4.88 million, about \$235,000 more than the \$4.65 million estimate in Section 2.5.

Table B.2
Demonstration savings: San Antonio demonstration, based on utilization impact estimates

	Allowed charges under demonstration (demonstration fee × quantity)	Allowed charges in absence of demonstration (state fee schedule × quantity)	Demonstration effect on utilization (state fee schedule × change in quantity due to demonstration)	Savings	Percentage savings
Oxygen equipment and supplies					
Year 1 ¹	\$3,998,460	\$5,043,108	\$0	\$1,044,648	20.71%
Year 2	\$4,784,522	\$5,836,580	\$0	\$1,052,059	18.03%
Total	\$8,782,982	\$10,879,689	\$0	\$2,096,707	19.27%
Hospital beds and accessories					
Year 1 ¹	\$1,465,060	\$1,700,164	-\$14,598	\$249,702	14.69%
Year 2	\$1,262,973	\$1,672,384	-\$14,275	\$423,686	25.33%
Total	\$2,728,033	\$3,372,548	-\$28,873	\$673,388	19.97%
Wheelchairs and accessories					
Year 1 ¹	\$1,708,257	\$2,006,698	-\$106,463	\$404,904	20.18%
Year 2	\$1,662,992	\$2,161,169	-\$99,707	\$597,884	27.66%
Total	\$3,371,249	\$4,167,866	-\$206,170	\$1,002,788	24.06%
General orthotics					
Year 1 ¹	\$131,322	\$175,910	\$0	\$44,589	25.35%
Year 2	\$164,029	\$208,903	\$0	\$44,874	21.48%
Total	\$295,351	\$384,813	\$0	\$89,462	23.25%
Nebulizer drugs					
Year 1 ¹	\$1,332,030	\$1,810,416	\$0	\$478,386	26.42%
Year 2	\$1,543,614	\$2,085,300	\$0	\$541,686	25.98%
Total	\$2,875,645	\$3,895,716	\$0	\$1,020,072	26.18%
All product categories					
Year 1 ¹	\$8,635,128	\$10,736,296	-\$121,061	\$2,222,229	20.70%
Year 2	\$9,418,131	\$11,964,336	-\$113,983	\$2,660,188	22.23%
Total	\$18,053,259	\$22,700,632	-\$235,044	\$4,882,416	21.51%

¹Year 1 covers the first 11 months of the demonstration.

SOURCE: Analysis of Medicare National Claims History data, 1997–2002.

**APPENDIX C:
MARGINAL EFFECTS OF THE DEMONSTRATION ON ACCESS- AND
QUALITY-RELATED VARIABLES**

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This appendix describes our methodology for calculating the marginal effects of the demonstration on access- and quality-related survey variables. Tables C.1 and C.2 display estimates of these marginal effects along with regression-estimated coefficients, p-values, and predicted values in the absence of the demonstration for each dependent variable in the Oxygen Consumer Survey and the Medical Equipment Consumer Survey, respectively, in Polk County. Table C.3 contains similar information for each dependent variable for which the Polk County demonstration had a statistically significant impact among a subset of survey responses. Tables C.4, C.5, and C.6 display the corresponding information for San Antonio.

The calculation of marginal effects utilizes the coefficients estimated in the regression analysis of our model (see Section 3.1.2). We use three distinct regression techniques depending on the nature of the dependent variable. For variables that are continuous (such as equipment delivery times and distance from the beneficiary’s home to their supplier), we use ordinary least-squares (OLS) regression. For dependent variables defined as a binomial choice (such as whether a maintenance visit occurred in the last 30 days or whether a beneficiary uses portable oxygen), we use a logit regression technique. For variables that are ordinal in nature, we use an ordered logit regression technique. These ordinal variables are generated by survey questions such as “How would you rate the reliability of the equipment you use?” where response choices are “very reliable,” “somewhat reliable,” “somewhat unreliable,” and “very unreliable.”

We use a t-test to determine if the coefficient of the *Impact* variable on each access-related outcome is statistically significant at the 5 percent level. Where the *Impact* variable is statistically significant, we say that the presence of the demonstration had an observable effect on the measure of beneficiary access. In Tables C.1 and C.2 for Polk County and Tables C.4 and C.5 for San Antonio, statistically significant demonstration effects are relatively uncommon; the significant results are highlighted in bold. Only statistically significant results from the subset analyses are shown in Tables C.3 and C.6; therefore, these results are not highlighted in bold.

For dependent variables analyzed using OLS regression, β_3 (the coefficient of the *Impact* term) can be directly interpreted as the demonstration’s marginal effect. Logit and ordered logit regressions are not linear functions of the explanatory variables, so β_3 cannot be directly interpreted as a marginal effect in these regressions. We calculate these marginal effects using Stata software; with the demonstration site (*Polk* or *San Antonio*) equal to one, *Follow-up* equal to one, and the mean values of the other independent variables.¹⁶

For dependent variables estimated using logit regressions, Stata calculates the marginal effect of the demonstration as the discrete change in the dependent variable as the *Impact* variable moves from 0 to 1. The dependent variables in our logit regressions are all 0/1 variables, with means that indicate the percentage of respondents with a positive response (or,

¹⁶In the Second Annual Evaluation Report, we estimated the marginal effects at the means of all of the independent variables. By estimating the marginal effects with the demonstration site equal to one and *Follow-up* equal to one in this report, we provide a more accurate estimate of the demonstration’s marginal effect in the demonstration area during the demonstration period. The estimated marginal effects changed only modestly when we made this change. We also examined how the marginal effects varied when they were evaluated at the minimum and maximum value for the other explanatory variables. The marginal effects did not vary much, so we report the marginal effects evaluated at the mean values.

the probability that a respondent answers the survey question affirmatively). Therefore, Stata's marginal effect can be interpreted straightforwardly as a point increase in the percentage of respondents with a positive (1) response for the dependent variable.

For ordered logit regressions, Stata requires a specification of the outcome for which a marginal effect is to be calculated. For each dependent variable, we specify the most positive response outcome (e.g., "very reliable," "always," an overall satisfaction rating of "10") because the majority of responses on each of these variables fall in these categories. With this specification, Stata calculates the marginal effect of the demonstration as the increase in the probability of this most positive response outcome. Interpretation of these effects is therefore similar to that used with logit regressions. Note that this methodology will allow the sign (+/-) of the marginal effect to be opposite of the *Impact* term's coefficient. For example, a particular dependent variable measures a respondent's comfort level using their oxygen conserving device with a 1 to 4 rating of comfort. A response of "1" indicates that the respondent is very comfortable, and a response of "4" indicates that the respondent is very uncomfortable. The coefficient of the *Impact* term for this variable is negative, indicating that the demonstration makes the respondent more likely to choose 1, the lowest numeric response, which corresponds to "very comfortable." The probability of choosing "very comfortable" in the absence of the demonstration is 0.650; the marginal effect of the demonstration is to increase this probability by 0.062.

C.1 Predicted Values in the Absence of the Demonstration

In order to provide a baseline from which to judge the marginal effect of the demonstration, we calculate predicted values for each dependent variable in the absence of the demonstration. For dependent variables estimated using OLS and logit regressions, we employ the regression-estimated coefficients of each independent variable. We multiply these coefficients by the means of each independent variable at follow-up in Polk County or San Antonio under the assumption that *Impact* equals zero. We sum these terms to calculate $\beta'x$. For variables estimated using OLS regression, $\beta'x$ equals the predicted value of the dependent variable in the absence of the demonstration because of the linear nature of OLS. For variables estimated using nonlinear logit regression, we employ the following formula to calculate the predicted value using $\beta'x$:

$$\text{Value in Absence of Demonstration} = e^{\beta'x} / (1 + e^{\beta'x})$$

For the theoretical background of this formula, see Greene (1993, pp. 636-638).

For dependent variables estimated using ordered logit regressions, we calculate predicted values in the absence of the demonstration as the percentage of responses falling in the most positive response category (as described above) at follow-up in Polk County or San Antonio under the assumption that *Impact* equals zero. To calculate these values, we take the unadjusted percentage of responses falling in the most positive category at follow-up in Polk County (or San Antonio) and subtract the marginal effect of the demonstration, as calculated by Stata. Therefore, for variables estimated using ordered logit regression, the predicted value in the absence of the demonstration represents the percentage of responses that would have fallen in the most positive category if the demonstration had not existed. This allows for easier interpretation of the marginal effects calculation for ordered logit regression variables.

Table C.1
Regression outcomes: oxygen consumer survey, all respondents, Polk County

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Had major change in therapy requiring new equipment, last 6 months?	0/1 (No/Yes)	Logit	0.646	0.042	0.036	0.041
Use more than one supplier to get oxygen equipment/supplies?	0/1 (No/Yes)	Logit	0.315	0.021	0.007	0.516
Time since last respiratory checkup	Number of days since last checkup	Ordinary least-squares (OLS)	3.884	67.622	3.884	0.478
Current use of a stationary oxygen system	0/1 (No/Yes)	Logit	-0.350	0.977	-0.009	0.442
Type of stationary system used—oxygen concentrator	0/1 (No/Yes)	Logit	-0.001	0.977	-0.000	0.998
Type of stationary system used—liquid cylinder	0/1 (No/Yes)	Logit	-0.165	0.062	-0.009	0.662
Type of stationary system used—compressed gas tank	0/1 (No/Yes)	Logit	0.685	0.051	0.044	0.033
Ran out of stationary oxygen supplies, past 6 months	Number of times ran out of supplies	OLS	-0.033	0.062	-0.033	0.326
Current use of a portable oxygen system	0/1 (No/Yes)	Logit	-0.389	0.809	-0.068	0.057
Type of portable system used—portable gas tank	0/1 (No/Yes)	Logit	0.507	0.726	0.086	0.093
Type of portable system used—portable liquid cylinder	0/1 (No/Yes)	Logit	0.048	0.269	0.009	0.851
Current use of an oxygen conserving device	0/1 (No/Yes)	Logit	0.239	0.581	0.056	0.333
Comfort level using oxygen conserving device	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	-0.278	0.629 Prob(Rating=1)	0.062	0.367

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.1
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Frequency of receiving portable refills	Number of times per year receiving refills	OLS	0.120	16.338	0.120	0.949
Number of portable refills received at each interval	Number of refills at each interval	OLS	0.167	3.897	0.167	0.573
Ran out of portable oxygen supplies, past 6 months	Number of times ran out of supplies	OLS	0.003	0.109	0.003	0.959
Overall rating of satisfaction with supplier experience	Ordinal satisfaction ratings (0=worst, 10=best)	Ordered logit	0.059	0.685 Prob(Rating=10)	0.013	0.753
Willing to recommend supplier to friend?	0/1 (No/Yes)	Logit	0.023	0.971	0.001	0.964
Initial equipment delivery time	Number of days between order and delivery	OLS	-0.008	0.412	-0.008	0.932
Orderer of equipment—beneficiary self-ordering	0/1 (No/Yes)	Logit	-0.133	0.667	-0.030	0.493
Orderer of equipment—caregiver	0/1 (No/Yes)	Logit	-0.135	0.148	-0.017	0.595
Orderer of equipment—home health nurse or agency	0/1 (No/Yes)	Logit	0.876	0.016	0.022	0.036
Orderer of equipment—doctor	0/1 (No/Yes)	Logit	-0.053	0.291	-0.011	0.782
Method of equipment receipt—supplier delivery	0/1 (No/Yes)	Logit	-0.117	0.958	-0.005	0.746
Method of equipment receipt—supplier mails to home	0/1 (No/Yes)	Logit	-0.681	0.127	-0.058	0.052
Method of equipment receipt—pick up from supplier	0/1 (No/Yes)	Logit	-0.196	0.040	-0.007	0.619
Method of equipment receipt—home health agency delivery	0/1 (No/Yes)	Logit	0.852	0.039	0.045	0.006

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.1
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Distance to supplier	Number of miles from home to supplier	OLS	-0.120	10.822	-0.120	0.880
Time and energy used obtaining DMEPOS	Ordinal ratings (1=no time/energy, 4=a lot of time/energy)	Ordered logit	0.032	0.619 Prob(Rating=1)	-0.007	0.862
Rating of training given by supplier	Ordinal ratings of training (1=excellent, 5=poor)	Ordered logit	0.016	0.560 Prob(Rating=1)	-0.004	0.927
Type of training from supplier—written instructions	0/1 (No/Yes)	Logit	-0.307	0.653	-0.072	0.093
Type of training from supplier—showed how to use	0/1 (No/Yes)	Logit	-0.048	0.920	-0.003	0.904
Type of training from supplier—chose a good place	0/1 (No/Yes)	Logit	-0.191	0.659	-0.044	0.303
Type of training from supplier—showed how to put together	0/1 (No/Yes)	Logit	-0.258	0.823	-0.040	0.229
Type of training from supplier—showed how to maintain	0/1 (No/Yes)	Logit	0.304	0.749	0.053	0.161
Type of training from supplier—showed how to use safely	0/1 (No/Yes)	Logit	0.264	0.757	0.046	0.242
Type of training from supplier—showed how to replace parts	0/1 (No/Yes)	Logit	0.044	0.811	0.007	0.850
Type of training from supplier—told how to get service	0/1 (No/Yes)	Logit	-0.162	0.823	-0.025	0.480

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.1
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Type of training from supplier—told how to get after-hours assistance	0/1 (No/Yes)	Logit	0.200	0.725	0.038	0.352
Type of training from supplier—none (received no training)	0/1 (No/Yes)	Logit	0.097	0.023	0.002	0.865
Frequency of supplier maintenance visits	Number of visits per 6 months	OLS	0.178	5.080	0.178	0.679
Had a maintenance visit in last 30 days?	0/1 (No/Yes)	Logit	-0.232	0.680	-0.053	0.233
Frequency of visits from supplier's respiratory therapist	Number of visits per 6 months	OLS	0.227	1.111	0.227	0.438
306 Comfort level—controlling oxygen flow	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	-0.083	0.861 Prob(Rating=1)	0.010	0.776
Comfort level—using humidifier	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	0.116	0.803 Prob(Rating=1)	-0.019	0.735
Comfort level—attaching regulators	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	0.063	0.736 Prob(Rating=1)	-0.012	0.816
Comfort level—cleaning filter	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	0.190	0.883 Prob(Rating=1)	-0.021	0.502

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.1
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Number of contacts with supplier over last 6 months	Number of contacts with supplier	OLS	-0.179	3.597	-0.179	0.398
Frequency that supplier treated with courtesy and respect	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	0.164	0.882 Prob(Rating=4)	0.016	0.614
Frequency that supplier explained things understandably	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	0.190	0.718 Prob(Rating=4)	0.037	0.464
Frequency that supplier gave all information/help needed (thoroughness)	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	-0.045	0.799 Prob(Rating=4)	-0.007	0.872
Made a complaint to supplier, last 6 months?	0/1 (No/Yes)	Logit	-0.088	0.242	-0.016	0.666
Complaint settled satisfactorily?	0/1 (No/Yes)	Logit	-0.722	0.973	-0.029	0.392
Able to contact supplier by telephone?	0/1 (No/Yes)	Logit	-0.066	0.995	-0.000	0.943
Made an after-hours call to supplier, last 6 months?	0/1 (No/Yes)	Logit	-0.180	0.178	-0.025	0.447
Frequency of after-hours customer service thoroughness	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	-0.375	0.847 Prob(Rating=4)	-0.055	0.512
Supplier service call response time	Number of days until response	OLS	0.154	1.148	0.154	0.173

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.1
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Equipment reliability rating	Ordinal reliability ratings (1=very reliable, 4=very unreliable)	Ordered logit	-0.457	0.935 Prob(Rating=1)	0.023	0.249
Major problems with equipment, last 6 months	Number of major problems, last 6 months	OLS	-0.038	0.253	-0.038	0.482
Equipment replaced due to malfunction, last 6 months?	0/1 (No/Yes)	Logit	-0.130	0.182	-0.018	0.549
Assisted by supplier with insurance, last 6 months?	0/1 (No/Yes)	Logit	-0.303	0.831	-0.046	0.445
Type of insurance help—explanation of payment	0/1 (No/Yes)	Logit	0.166	0.355	0.039	0.378
Type of insurance help—offer to bill Medicare/other insurance	0/1 (No/Yes)	Logit	-0.125	0.769	-0.023	0.580
Type of insurance help—told how to get information	0/1 (No/Yes)	Logit	0.288	0.143	0.038	0.247
Type of insurance help—obtained supporting documentation	0/1 (No/Yes)	Logit	0.177	0.353	0.042	0.347
Type of insurance help—none (received no help)	0/1 (No/Yes)	Logit	0.203	0.149	0.028	0.430
Changed supplier, last 6 months?	0/1 (No/Yes)	Logit	0.539	0.032	0.021	0.135

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

Table C.2
Regression outcomes: medical equipment consumer survey, all respondents, Polk County

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Had major change in condition requiring new equipment, last 6 months?	0/1 (No/Yes)	Logit	-0.139	0.191	-0.021	0.636
Use more than one supplier to get medical equipment/supplies?	0/1 (No/Yes)	Logit	-0.075	0.308	0.016	0.780
Overall rating of satisfaction with supplier experience	Ordinal satisfaction ratings (0=worst, 10=best)	Ordered logit	0.146	0.376 Prob(Rating=10)	0.035	0.503
Willing to recommend supplier to friend?	0/1 (No/Yes)	Logit	0.203	0.908	0.016	0.667
Initial equipment delivery time	Number of days between order and delivery	OLS	0.020	1.966	0.020	0.940
Orderer of equipment—beneficiary self-ordering	0/1 (No/Yes)	Logit	-0.635	0.514	-0.142	0.043
Orderer of equipment—caregiver	0/1 (No/Yes)	Logit	0.288	0.183	0.055	0.323
Orderer of equipment—home health nurse or agency	0/1 (No/Yes)	Logit	-0.407	0.168	-0.057	0.218
Orderer of equipment—doctor	0/1 (No/Yes)	Logit	0.237	0.317	0.053	0.392
Method of equipment receipt—supplier delivery	0/1 (No/Yes)	Logit	-0.355	0.719	-0.073	0.210
Method of equipment receipt—supplier mails to home	0/1 (No/Yes)	Logit	0.189	0.133	0.020	0.640
Method of equipment receipt—pick up from supplier	0/1 (No/Yes)	Logit	-0.042	0.213	-0.006	0.892
Method of equipment receipt—home health agency delivery	0/1 (No/Yes)	Logit	0.278	0.117	0.035	0.408

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.2
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Distance to supplier	Number of miles from home to supplier	OLS	1.418	11.991	1.418	0.243
Received more equipment/supplies than needed?	0/1 (No/Yes)	Logit	0.426	0.056	0.025	0.360
Received less equipment/supplies than needed?	0/1 (No/Yes)	Logit	0.158	0.112	0.016	0.672
Time and energy used obtaining DMEPOS	Ordinal ratings (1=no time/energy, 4=a lot of time/energy)	Ordered logit	-0.205	0.374 Prob(Rating=1)	0.049	0.372
Rating of training given by supplier	Ordinal ratings of training (1=excellent, 5=poor)	Ordered logit	-0.222	0.305 Prob(Rating=1)	0.049	0.390
Type of training from supplier—written instructions	0/1 (No/Yes)	Logit	-0.042	0.320	-0.009	0.872
Type of training from supplier—showed how to use	0/1 (No/Yes)	Logit	0.197	0.522	0.048	0.448
Type of training from supplier—chose a good place	0/1 (No/Yes)	Logit	0.393	0.158	0.062	0.170
Type of training from supplier—showed how to put together	0/1 (No/Yes)	Logit	0.051	0.223	0.009	0.862
Type of training from supplier—showed how to maintain	0/1 (No/Yes)	Logit	0.120	0.218	0.022	0.660
Type of training from supplier—showed how to use safely	0/1 (No/Yes)	Logit	0.371	0.283	0.083	0.142
Type of training from supplier—showed how to replace parts	0/1 (No/Yes)	Logit	-0.037	0.183	-0.005	0.912

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.2
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Type of training from supplier—told how to get service	0/1 (No/Yes)	Logit	0.245	0.373	0.060	0.315
Type of training from supplier—told how to get after-hours assistance	0/1 (No/Yes)	Logit	0.331	0.232	0.067	0.215
Type of training from supplier—none (received no training)	0/1 (No/Yes)	Logit	0.064	0.263	0.012	0.829
Frequency of supplier maintenance visits	Number of visits per 6 months	OLS	-0.138	1.428	-0.138	0.817
Had a maintenance visit in last 30 days?	0/1 (No/Yes)	Logit	0.211	0.081	0.019	0.589
Comfort level—using equipment/supplies	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	-0.197	0.691 Prob(Rating=1)	0.040	0.469
Comfort level—taking care of equipment/supplies	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	-0.449	0.658 Prob(Rating=1)	0.093	0.113
Number of contacts with supplier over last 6 months	Number of contacts with supplier	OLS	-0.060	2.492	-0.060	0.839
Frequency that supplier treated with courtesy and respect	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	0.225	0.719 Prob(Rating=4)	0.043	0.506
Frequency that supplier explained things understandably	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	0.242	0.492 Prob(Rating=4)	0.060	0.468

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.2
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Frequency that supplier gave all information/help needed (thoroughness)	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	-0.020	0.574 Prob(Rating=4)	-0.005	0.954
Made a complaint to supplier, last 6 months?	0/1 (No/Yes)	Logit	-0.116	0.271	-0.023	0.677
Complaint settled satisfactorily?	0/1 (No/Yes)	Logit	1.134	0.566	0.230	0.133
Able to contact supplier by telephone?	0/1 (No/Yes)	Logit	-0.392	0.950	-0.023	0.418
Made an after-hours call to supplier, last 6 months?	0/1 (No/Yes)	Logit	-0.075	0.054	0.004	0.881
Frequency of after-hours customer service thoroughness	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	0.996	0.524 Prob(Rating=4)	0.225	0.381
Supplier service call response time	Number of days until response	OLS	-0.299	2.745	-0.299	0.458
Equipment reliability rating	Ordinal reliability ratings (1=very reliable, 4=very unreliable)	Ordered logit	-0.468	0.750 Prob(Rating=1)	0.077	0.138
Major problems with equipment, last 6 months	Number of major problems, last 6 months	OLS	-0.089	0.414	-0.089	0.391
Equipment replaced due to malfunction, last 6 months?	0/1 (No/Yes)	Logit	-0.428	0.165	-0.050	0.228
Assisted by supplier with insurance, last 6 months?	0/1 (No/Yes)	Logit	-0.456	0.778	-0.090	0.287
Type of insurance help—Explanation of payment	0/1 (No/Yes)	Logit	0.187	0.358	0.044	0.469

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.2
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Type of insurance help—offer to bill Medicare/other insurance	0/1 (No/Yes)	Logit	0.423	0.725	0.078	0.160
Type of insurance help—told how to get information	0/1 (No/Yes)	Logit	0.687	0.080	0.066	0.089
Type of insurance help—obtained supporting documentation	0/1 (No/Yes)	Logit	0.444	0.273	0.097	0.091
Type of insurance help—none (received no help)	0/1 (No/Yes)	Logit	0.025	0.122	0.003	0.945
Changed supplier, last 6 months?	0/1 (No/Yes)	Logit	0.477	0.061	0.032	0.311

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

Table C.3
Regression outcomes: significant demonstration impacts among sample subsets, Polk County

Dependent variable	Subset (survey) ¹	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Portable system use	New users (OX)	0/1 (No/Yes)	Logit	-1.117	0.786	-0.235	0.025
Oxygen conserving device use	New users (OX)	0/1 (No/Yes)	Logit	2.064	0.320	0.442	0.017
Type of training from supplier—told how to get after-hours assistance	New users (OX)	0/1 (No/Yes)	Logit	1.316	0.645	0.229	0.025
Frequency that supplier explained things understandably	New users (OX)	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	2.004	0.382 Prob(Rating=4)	0.439	0.002
Major problems with equipment, last 6 months	New users (OX)	Number of major problems, last 6 months	OLS	-0.306	0.416	-0.306	0.048
Method of equipment receipt—supplier delivery	New users (ME)	0/1 (No/Yes)	Logit	-1.672	0.921	-0.242	0.017
Had a maintenance visit in last 30 days?	New users (ME)	0/1 (No/Yes)	Logit	-1.848	0.461	-0.338	0.042
Orderer of equipment—beneficiary self-ordering	Hospital bed users (ME)	0/1 (No/Yes)	Logit	-1.417	0.430	-0.263	0.001
Type of insurance help—told how to get information	Hospital bed users (ME)	0/1 (No/Yes)	Logit	1.065	0.067	0.104	0.036
Type of training from supplier—none (received no training)	Urologicals users (ME)	0/1 (No/Yes)	Logit	0.940	0.309	0.222	0.047

(continued)

¹OX = Oxygen Consumer Survey, ME = Medical Equipment Consumer Survey

**Table C.3
(continued)**

Dependent variable	Subset (survey) ¹	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Type of training from supplier—showed how to maintain	Surgical dressings users (ME)	0/1 (No/Yes)	Logit	-2.082	0.567	-0.401	0.032
Equipment reliability rating	Surgical dressings users (ME)	Ordinal reliability ratings (1=very reliable, 4=very unreliable)	Ordered logit	-2.040	0.450 Prob(Rating=1)	0.413	0.035
Number of contacts with supplier over last 6 months	Surgical dressings users (ME)	Number of contacts with supplier	OLS	-1.897	4.361	-1.897	0.046
Supplier service call response time	Surgical dressings users (ME)	Number of days until response	OLS	-2.061	3.348	-2.061	0.033

¹OX = Oxygen Consumer Survey, ME = Medical Equipment Consumer Survey

Table C.4
Regression outcomes: oxygen consumer survey, all respondents, San Antonio

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Had major change in therapy requiring new equipment, last 6 months?	0/1 (No/Yes)	Logit	0.095	0.081	0.007	0.758
Use more than one supplier to get oxygen equipment/supplies?	0/1 (No/Yes)	Logit	0.252	0.035	0.010	0.551
Time since last respiratory checkup	Number of days since last checkup	Ordinary least-squares (OLS)	-3.810	66.563	-3.810	0.502
Current use of a stationary oxygen system	0/1 (No/Yes)	Logit	-0.157	0.973	-0.004	0.738
Type of stationary system used—oxygen concentrator	0/1 (No/Yes)	Logit	0.299	0.898	0.024	0.408
Type of stationary system used—liquid cylinder	0/1 (No/Yes)	Logit	— ¹	— ¹	—	— ¹
Type of stationary system used—compressed gas tank	0/1 (No/Yes)	Logit	-0.050	0.101	-0.004	0.872
Ran out of stationary oxygen supplies, past 6 months	Number of times ran out of supplies	OLS	0.028	0.076	0.028	0.550
Current use of a portable oxygen system	0/1 (No/Yes)	Logit	0.243	0.756	0.042	0.252
Type of portable system used—portable gas tank	0/1 (No/Yes)	Logit	-0.443	0.911	-0.043	0.169
Type of portable system used—portable liquid cylinder	0/1 (No/Yes)	Logit	0.473	0.120	0.059	0.098
Current use of an oxygen conserving device	0/1 (No/Yes)	Logit	-0.171	0.539	-0.043	0.474
Comfort level using oxygen conserving device	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	-0.083	0.688 Prob(Rating=1)	0.017	0.811

(continued)

¹Demonstration impact could not be estimated because no one reported using liquid cylinder system during follow-up.

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.4
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Frequency of receiving portable refills	Number of times per year receiving refills	OLS	0.520	16.440	0.520	0.767
Number of portable refills received at each interval	Number of refills at each interval	OLS	0.497	3.237	0.497	0.169
Ran out of portable oxygen supplies, past 6 months	Number of times ran out of supplies	OLS	0.010	0.168	0.010	0.830
Overall rating of satisfaction with supplier experience	Ordinal satisfaction ratings (0=worst, 10=best)	Ordered logit	-0.153	0.651 Prob(Rating=10)	-0.036	0.393
Willing to recommend supplier to friend?	0/1 (No/Yes)	Logit	-0.434	0.974	-0.014	0.327
Initial equipment delivery time	Number of days between order and delivery	OLS	-0.046	0.627	-0.046	0.714
Orderer of equipment—beneficiary self-ordering	0/1 (No/Yes)	Logit	-0.0236	0.613	-0.006	0.905
Orderer of equipment—caregiver	0/1 (No/Yes)	Logit	-0.039	0.287	-0.008	0.859
Orderer of equipment—home health nurse or agency	0/1 (No/Yes)	Logit	-0.231	0.029	-0.006	0.584
Orderer of equipment—doctor	0/1 (No/Yes)	Logit	-0.162	0.251	-0.029	0.468
Method of equipment receipt—supplier delivery	0/1 (No/Yes)	Logit	-0.177	0.935	-0.012	0.577
Method of equipment receipt—supplier mails to home	0/1 (No/Yes)	Logit	0.093	0.184	0.014	0.751
Method of equipment receipt—pick up from supplier	0/1 (No/Yes)	Logit	0.471	0.022	0.013	0.281
Method of equipment receipt—home health agency delivery	0/1 (No/Yes)	Logit	-0.095	0.063	-0.005	0.768

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.4
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Distance to supplier	Number of miles from home to supplier	OLS	1.210	8.228	1.210	0.199
Time and energy used obtaining DMEPOS	Ordinal ratings (1=no time/energy, 4=a lot of time/energy)	Ordered logit	0.321	0.642 Prob(Rating=1)	-0.077	0.073
Rating of training given by supplier	Ordinal ratings of training (1=excellent, 5=poor)	Ordered logit	0.116	0.523 Prob(Rating=1)	-0.029	0.494
Type of training from supplier—written instructions	0/1 (No/Yes)	Logit	0.086	0.603	0.020	0.643
Type of training from supplier—showed how to use	0/1 (No/Yes)	Logit	-0.479	0.865	-0.066	0.114
Type of training from supplier—chose a good place	0/1 (No/Yes)	Logit	-0.225	0.527	-0.056	0.225
Type of training from supplier—showed how to put together	0/1 (No/Yes)	Logit	-0.355	0.705	-0.079	0.086
Type of training from supplier—showed how to maintain	0/1 (No/Yes)	Logit	-0.087	0.642	-0.020	0.679
Type of training from supplier—showed how to use safely	0/1 (No/Yes)	Logit	-0.299	0.703	-0.066	0.157
Type of training from supplier—showed how to replace parts	0/1 (No/Yes)	Logit	-0.317	0.705	-0.070	0.130
Type of training from supplier—told how to get service	0/1 (No/Yes)	Logit	-0.286	0.721	-0.061	0.181

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.4
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Type of training from supplier—told how to get after-hours assistance	0/1 (No/Yes)	Logit	-0.209	0.639	-0.049	0.283
Type of training from supplier—none (received no training)	0/1 (No/Yes)	Logit	-0.039	0.022	-0.001	0.945
Frequency of supplier maintenance visits	Number of visits per 6 months	OLS	0.240	5.067	0.240	0.627
Had a maintenance visit in last 30 days?	0/1 (No/Yes)	Logit	0.243	0.520	0.060	0.185
Frequency of visits from supplier's respiratory therapist	Number of visits per 6 months	OLS	0.075	1.847	0.075	0.826
319 Comfort level—controlling oxygen flow	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	-0.246	0.713 Prob(Rating=1)	0.048	0.227
Comfort level—using humidifier	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	-0.020	0.352 Prob(Rating=1)	0.005	0.911
Comfort level—attaching regulators	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	0.147	0.424 Prob(Rating=1)	-0.035	0.401
Comfort level—cleaning filter	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	-0.072	0.629 Prob(Rating=1)	0.017	0.704

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.4
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Number of contacts with supplier over last 6 months	Number of contacts with supplier	OLS	0.104	3.539	0.104	0.643
Frequency that supplier treated with courtesy and respect	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	-0.083	0.814 Prob(Rating=4)	-0.003	0.716
Frequency that supplier explained things understandably	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	0.107	0.569 Prob(Rating=4)	-0.005	0.544
Frequency that supplier gave all information/help needed (thoroughness)	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	-0.073	0.550 Prob(Rating=4)	0.004	0.676
Made a complaint to supplier, last 6 months?	0/1 (No/Yes)	Logit	0.359	0.192	0.062	0.088
Complaint settled satisfactorily?	0/1 (No/Yes)	Logit	-0.561	0.967	-0.023	0.488
Able to contact supplier by telephone?	0/1 (No/Yes)	Logit	1.151	0.954	0.031	0.116
Made an after-hours call to supplier, last 6 months?	0/1 (No/Yes)	Logit	-0.135	0.199	-0.021	0.599
Frequency of after-hours customer service thoroughness	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	-0.702	0.889 Prob(Rating=4)	-0.090	0.173
Supplier service call response time	Number of days until response	OLS	0.055	1.470	0.055	0.760

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.4
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Equipment reliability rating	Ordinal reliability ratings (1=very reliable, 4=very unreliable)	Ordered logit	0.070	0.925 Prob(Rating=1)	-0.005	0.829
Major problems with equipment, last 6 months	Number of major problems, last 6 months	OLS	0.017	0.245	0.017	0.774
Equipment replaced due to malfunction, last 6 months?	0/1 (No/Yes)	Logit	-0.120	0.207	-0.019	0.602
Assisted by supplier with insurance, last 6 months?	0/1 (No/Yes)	Logit	-0.387	0.698	-0.089	0.284
Type of insurance help—explanation of payment	0/1 (No/Yes)	Logit	-0.193	0.404	-0.046	0.317
Type of insurance help—offer to bill Medicare/other insurance	0/1 (No/Yes)	Logit	-0.204	0.698	-0.045	0.292
Type of insurance help—told how to get information	0/1 (No/Yes)	Logit	-0.697	0.175	-0.080	0.016
Type of insurance help—obtained supporting documentation	0/1 (No/Yes)	Logit	-0.211	0.388	-0.049	0.275
Type of insurance help—none (received no help)	0/1 (No/Yes)	Logit	0.668	0.072	0.060	0.019
Changed supplier, last 6 months?	0/1 (No/Yes)	Logit	0.182	0.085	0.015	0.556
Method of nebulizer drugs receipt—supplier delivery	0/1 (No/Yes)	Logit	0.071	0.439	0.017	0.780
Method of nebulizer drugs receipt—supplier mails to home	0/1 (No/Yes)	Logit	0.069	0.257	0.014	0.802

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.4
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Method of nebulizer drugs receipt—pick up from supplier	0/1 (No/Yes)	Logit	-0.456	0.278	-0.083	0.147
Method of nebulizer drugs receipt—home health agency delivery	0/1 (No/Yes)	Logit	1.485	0.015	0.048	0.021
Distance to nebulizer drug supplier	Number of miles from home to supplier	OLS	1.041	9.251	1.041	0.495
Type of training from nebulizer drug supplier—written instructions	0/1 (No/Yes)	Logit	-0.133	0.626	-0.032	0.595
Type of training from nebulizer drug supplier—showed how to use safely	0/1 (No/Yes)	Logit	-0.085	0.224	-0.014	0.770
Type of training from nebulizer drug supplier—told how to get service/assistance	0/1 (No/Yes)	Logit	1.133	0.005	0.012	0.323
Type of training from nebulizer drug supplier—none (received no training)	0/1 (No/Yes)	Logit	0.089	0.074	0.007	0.855
Type of training from company that provides nebulizer drug—told how to use	0/1 (No/Yes)	Logit	-0.003	0.066	-0.000	0.994
Experienced a delay in receiving drug refills because supplier did not have in stock	0/1 (No/Yes)	Logit	-0.260	0.042	-0.009	0.656
Received wrong drug from nebulizer drug supplier	0/1 (No/Yes)	Logit	0.913	0.001	0.002	0.514

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

Table C.5
Regression outcomes: medical equipment consumer survey, all respondents, San Antonio

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Had major change in condition requiring new equipment, last 6 months?	0/1 (No/Yes)	Logit	-0.133	0.272	-0.026	0.587
Use more than one supplier to get medical equipment/supplies?	0/1 (No/Yes)	Logit	0.183	0.253	0.036	0.450
Overall rating of satisfaction with supplier experience	Ordinal satisfaction ratings (0=worst, 10=best)	Ordered logit	-0.239	0.534 Prob(Rating=10)	-0.060	0.222
Willing to recommend supplier to friend?	0/1 (No/Yes)	Logit	-0.570	0.948	-0.036	0.142
Initial equipment delivery time	Number of days between order and delivery	OLS	0.576	2.278	0.576	0.080
Orderer of equipment—beneficiary self-ordering	0/1 (No/Yes)	Logit	-0.625	0.367	-0.130	0.009
Orderer of equipment—caregiver	0/1 (No/Yes)	Logit	0.155	0.328	0.035	0.552
Orderer of equipment—home health nurse or agency	0/1 (No/Yes)	Logit	-0.322	0.150	-0.037	0.286
Orderer of equipment—doctor	0/1 (No/Yes)	Logit	0.062	0.329	0.014	0.788
Method of equipment receipt—supplier delivery	0/1 (No/Yes)	Logit	0.398	0.691	0.078	0.092
Method of equipment receipt—supplier mails to home	0/1 (No/Yes)	Logit	0.119	0.296	0.025	0.624
Method of equipment receipt—pick up from supplier	0/1 (No/Yes)	Logit	-0.431	0.117	-0.038	0.179
Method of equipment receipt—home health agency delivery	0/1 (No/Yes)	Logit	-0.391	0.096	-0.029	0.268

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.5
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Distance to supplier	Number of miles from home to supplier	OLS	0.929	11.618	0.929	0.479
Received more equipment/supplies than needed?	0/1 (No/Yes)	Logit	-0.060	0.088	-0.005	0.862
Received less equipment/supplies than needed?	0/1 (No/Yes)	Logit	-0.047	0.069	-0.003	0.906
Time and energy used obtaining DMEPOS	Ordinal ratings (1=no time/energy, 4=a lot of time/energy)	Ordered logit	0.128	0.431 Prob(Rating=1)	-0.031	0.512
Rating of training given by supplier	Ordinal ratings of training (1=excellent, 5=poor)	Ordered logit	-0.049	0.321 Prob(Rating=1)	0.011	0.793
Type of training from supplier—written instructions	0/1 (No/Yes)	Logit	0.143	0.459	0.036	0.500
Type of training from supplier—showed how to use	0/1 (No/Yes)	Logit	-0.080	0.617	-0.019	0.725
Type of training from supplier—chose a good place	0/1 (No/Yes)	Logit	0.126	0.098	0.012	0.663
Type of training from supplier—showed how to put together	0/1 (No/Yes)	Logit	0.335	0.244	0.067	0.135
Type of training from supplier—showed how to maintain	0/1 (No/Yes)	Logit	0.372	0.205	0.067	0.103
Type of training from supplier—showed how to use safely	0/1 (No/Yes)	Logit	0.185	0.328	0.042	0.391
Type of training from supplier—showed how to replace parts	0/1 (No/Yes)	Logit	0.278	0.104	0.029	0.323

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.5
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Type of training from supplier—told how to get service	0/1 (No/Yes)	Logit	0.278	0.249	0.056	0.210
Type of training from supplier—told how to get after-hours assistance	0/1 (No/Yes)	Logit	0.339	0.137	0.045	0.185
Type of training from supplier—none (received no training)	0/1 (No/Yes)	Logit	-0.043	0.129	-0.005	0.892
Frequency of supplier maintenance visits	Number of visits per 6 months	OLS	-0.577	1.331	-0.577	0.194
Had a maintenance visit in last 30 days?	0/1 (No/Yes)	Logit	-0.322	0.112	-0.028	0.492
325 Comfort level—using equipment/supplies	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	-0.076	0.767 Prob(Rating=1)	0.013	0.755
Comfort level—taking care of equipment/supplies	Ordinal comfort ratings (1=very comfortable, 4=very uncomfortable)	Ordered logit	-0.092	0.756 Prob(Rating=1)	0.017	0.699
Number of contacts with supplier over last 6 months	Number of contacts with supplier	OLS	0.205	1.400	0.205	0.350
Frequency that supplier treated with courtesy and respect	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	-0.132	0.514 Prob(Rating=4)	0.008	0.505
Frequency that supplier explained things understandably	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	-0.112	0.311 Prob(Rating=4)	0.007	0.564

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.5
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Frequency that supplier gave all information/help needed (thoroughness)	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	-0.052	0.290 Prob(Rating=4)	0.003	0.790
Made a complaint to supplier, last 6 months?	0/1 (No/Yes)	Logit	0.559	0.147	0.085	0.033
Complaint settled satisfactorily?	0/1 (No/Yes)	Logit	-0.866	0.904	-0.106	0.211
Able to contact supplier by telephone?	0/1 (No/Yes)	Logit	0.700	0.776	0.098	0.026
Made an after-hours call to supplier, last 6 months?	0/1 (No/Yes)	Logit	0.244	0.062	0.016	0.577
Frequency of after-hours customer service thoroughness	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	-0.858	0.659 Prob(Rating=4)	-0.209	0.349
Supplier service call response time	Number of days until response	OLS	0.227	2.460	0.227	0.623
Equipment reliability rating	Ordinal reliability ratings (1=very reliable, 4=very unreliable)	Ordered logit	-0.041	0.736 Prob(Rating=1)	0.008	0.886
Major problems with equipment, last 6 months	Number of major problems, last 6 months	OLS	0.188	0.329	0.188	0.119
Equipment replaced due to malfunction, last 6 months?	0/1 (No/Yes)	Logit	0.225	0.082	0.019	0.579
Assisted by supplier with insurance, last 6 months?	0/1 (No/Yes)	Logit	-0.191	0.602	-0.047	0.589
Type of insurance help—explanation of payment	0/1 (No/Yes)	Logit	-0.031	0.339	-0.007	0.889

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.5
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Type of insurance help—offer to bill Medicare/other insurance	0/1 (No/Yes)	Logit	0.371	0.513	0.091	0.089
Type of insurance help—told how to get information	0/1 (No/Yes)	Logit	0.197	0.054	0.011	0.611
Type of insurance help—obtained supporting documentation	0/1 (No/Yes)	Logit	-0.002	0.238	-0.000	0.995
Type of insurance help—none (received no help)	0/1 (No/Yes)	Logit	-0.065	0.106	-0.006	0.843
Changed supplier, last 6 months?	0/1 (No/Yes)	Logit	-0.380	0.088	-0.026	0.372
Method of nebulizer drugs receipt—supplier delivery	0/1 (No/Yes)	Logit	-0.267	0.531	-0.067	0.527
Method of nebulizer drugs receipt—supplier mails to home	0/1 (No/Yes)	Logit	0.697	0.220	0.151	0.131
Method of nebulizer drugs receipt—pick up from supplier	0/1 (No/Yes)	Logit	-0.726	0.222	-0.093	0.275
Method of nebulizer drugs receipt—home health agency delivery	0/1 (No/Yes)	Logit	-0.410	0.020	-0.005	0.775
Distance to nebulizer drug supplier	Number of miles from home to supplier	OLS	0.284	13.475	0.284	0.110
Type of training from nebulizer drug supplier—written instructions	0/1 (No/Yes)	Logit	-0.029	0.548	-0.007	0.944
Type of training from nebulizer drug supplier—showed how to use safely	0/1 (No/Yes)	Logit	0.124	0.254	0.024	0.801
Type of training from nebulizer drug supplier—none (received no training)	0/1 (No/Yes)	Logit	-0.544	0.055	-0.027	0.529

(continued)

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

**Table C.5
(continued)**

Dependent variable	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Type of training from company that provides nebulizer drug—told how to use	0/1 (No/Yes)	Logit	0.283	0.081	0.022	0.695
Experienced a delay in receiving drug refills because supplier did not have in stock	0/1 (No/Yes)	Logit	-0.507	0.051	-0.007	0.652
Received nebulizer drug supplier over the past 12 months	0/1 (No/Yes)	Logit	0.288	0.061	0.014	0.740

NOTE: Variables where the coefficient of the demonstration impact is statistically significant are highlighted in bold.

Table C.6
Regression outcomes: significant demonstration impacts among sample subsets, San Antonio

Dependent variable	Subset (survey) ¹	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Frequency of receiving portable refills	New users (OX)	Number of times per year receiving refills	OLS	10.43	10.492	10.43	0.035
Orderer of equipment—caregiver	New users (ME)	0/1 (No/Yes)	Logit	1.108	0.171	0.213	0.033
Orderer of equipment—home health nurse or agency	New users (ME)	0/1 (No/Yes)	Logit	-1.377	0.215	-0.151	0.017
Method of equipment receipt—supplier delivery	New users (ME)	0/1 (No/Yes)	Logit	0.933	0.615	0.187	0.034
Received more equipment/supplies than needed?	New users (ME)	0/1 (No/Yes)	Logit	-1.730	0.215	-0.168	0.015
Type of training from supplier—showed how to maintain	New Users (ME)	0/1 (No/Yes)	Logit	1.105	0.120	0.171	0.007
Able to contact supplier by telephone?	New Users (ME)	0/1 (No/Yes)	Logit	1.314	0.700	0.197	0.049
Frequency of after-hours customer service thoroughness	New Users (ME)	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	6.735	0.005 Prob(Rating=4)	0.807	0.047
Orderer of equipment—beneficiary self-ordering	All Wheelchair Users (ME)	0/1 (No/Yes)	Logit	-0.624	0.311	-0.116	0.040
Number of contacts with supplier over last 6 months	All Wheelchair Users (ME)	Number of contacts with supplier	OLS	0.496	0.935	0.496	0.040

(continued)

¹OX = Oxygen Consumer Survey, ME = Medical Equipment Consumer Survey

**Table C.6
(continued)**

Dependent variable	Subset (survey) ¹	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Initial equipment delivery time	All Hospital Bed Users (ME)	Number of days between order and delivery	OLS	1.057	1.638	1.057	0.041
Made a complaint to supplier, last 6 months?	All Hospital Bed Users (ME)	0/1 (No/Yes)	Logit	0.860	0.146	0.142	0.032
Orderer of equipment—home health nurse or agency	New Hospital Bed Users (ME)	0/1 (No/Yes)	Logit	-3.184	0.726	-0.628	0.002
Type of insurance help—offer to bill Medicare/Other insurance	New Hospital Bed Users (ME)	0/1 (No/Yes)	Logit	1.512	0.292	0.360	0.035
Willing to recommend supplier to friend?	All Nebulizer Drug Users (ME)	0/1 (No/Yes)	Logit	-3.970	0.999	-0.063	0.005
Orderer of equipment—beneficiary self-ordering	All Nebulizer Drug Users (ME)	0/1 (No/Yes)	Logit	-1.293	0.688	-0.311	0.006
Orderer of equipment—caregiver	All Nebulizer Drug Users (ME)	0/1 (No/Yes)	Logit	1.663	0.027	0.101	0.016

(continued)

¹OX = Oxygen Consumer Survey, ME = Medical Equipment Consumer Survey

**Table C.6
(continued)**

Dependent variable	Subset (survey) ¹	Description of values	Regression type	Coefficient (demonstration impact on variable)	Value in absence of demonstration	Marginal effect of demonstration	P value on coefficient
Method of equipment receipt—supplier delivery	All Nebulizer Drug Users (ME)	0/1 (No/Yes)	Logit	0.906	0.513	0.210	0.047
Frequency that supplier treated with courtesy and respect	New Nebulizer Drug Users (ME)	Ordinal frequency ratings (1=never, 4=always)	Ordered logit	3.041	0.286 Prob(rating=4)	0.560	0.009

¹OX = Oxygen Consumer Survey, ME = Medical Equipment Consumer Survey

**APPENDIX D:
DEMONSTRATION EFFECTS ON MARKET SHARES OF INDIVIDUAL FIRMS**

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DMEPOS suppliers are likely to be very interested in how individual suppliers fared during the demonstration. To provide data on this experience, we provide a set of tables summarizing market share changes for individual suppliers. For each product category in a given demonstration site, we display the market shares of individual demonstration suppliers and individual nondemonstration suppliers in certain benchmark periods. To preserve supplier anonymity, suppliers are denoted by letters. Note that suppliers are denoted separately for each product category; therefore, the supplier listed as Company A for oxygen equipment is not necessarily the same supplier listed as Company A for hospital beds. For Polk County, the tables indicate whether each demonstration supplier was included in Round 1 only, Round 2 only, or both rounds of the demonstration. The tables of nondemonstration suppliers generally include the four largest nondemonstration suppliers in the period prior to the demonstration; in some cases, we substitute shares of different nondemonstration suppliers that are of interest due to increasing market shares during the demonstration period.

D.1 Polk County

Table D.1 displays market shares of demonstration and nondemonstration suppliers of oxygen equipment and supplies. There was fairly wide variation in individual firm's market shares under the demonstration, but the changes largely matched expectations.

Each of the 5 firms that were demonstration suppliers in both Round 1 and Round 2 gained market share during the demonstration. Of the 9 suppliers that were demonstration suppliers in Round 1 but not in Round 2, 4 followed the expected pattern of gaining market share in Round 1 and losing market share in Round 2, and 1 supplier with a relatively large market share before the demonstration was acquired by another firm, causing its market share to drop to zero. Significantly, Supplier I, which had no market share until Q3 1999, saw its market share climb to 5 percent while it was a demonstration supplier in Round 1. This suggests that small suppliers can grow successfully during competitive bidding.

The remaining 4 demonstration suppliers in Round 1 only either experienced reductions in market share during Round 1 or remained at zero market share, but none of these suppliers had more than 1 percent market share before the demonstration began. The demonstration did not require individual bidders to have a substantial local presence prior to the demonstration (local presence was considered, in aggregate, during the selection process to ensure that the group of demonstration suppliers had sufficient capacity to serve the market). Some of these low-market-share firms may have entered Polk County because of the demonstration. However, gaining demonstration status was no guarantee of gaining market share.

Of the 5 suppliers that were demonstration suppliers in Round 2 but not in Round 1, 2 increased their market share during the period in which they were eligible and the remaining 3 had little or no share throughout the demonstration. The 4 largest nondemonstration suppliers all lost market share during the demonstration.

Table D.2 shows the market shares of demonstration and nondemonstration suppliers of hospital beds and accessories. All 4 of those who were demonstration suppliers in both rounds experienced increases in market share over the course of the demonstration. Of the 7 that were

Table D.1
Oxygen equipment and supplies—individual supplier market shares, Polk County demonstration

Company	Demonstration supplier in round	Predemonstration (Q3 1999)	End of Round 1 (Q3 2001)	End of Round 2 (Q3 2002)	Change in share during demonstration
A. Demonstration suppliers					
A	1,2	37.4%	42.1%	46.0%	8.7%
B	1,2	7.9%	9.7%	9.3%	1.4%
C	1,2	4.5%	6.3%	6.8%	2.3%
D	1	3.9%	0.0%	0.0%	¹ -3.9%
E	1	2.2%	9.1%	5.7%	3.5%
F	1,2	1.4%	1.3%	1.9%	0.6%
G	2	1.3%	0.7%	2.0%	0.7%
H	2	0.9%	2.4%	5.8%	5.0%
I	1	0.7%	5.1%	3.4%	2.7%
J	1,2	0.7%	3.4%	4.7%	4.0%
K	1	0.2%	0.0%	0.0%	-0.2%
L	1	0.1%	0.3%	0.0%	-0.1%
M	1	0.1%	0.0%	0.0%	¹ -0.1%
N	1	0.1%	2.8%	1.7%	1.7%
O	1	0.0%	0.0%	0.0%	0.0%
P	2	0.0%	0.0%	0.0%	0.0%
Q	1	0.0%	0.0%	0.0%	0.0%
R	2	0.0%	0.0%	0.0%	0.0%
S	2	0.0%	0.6%	0.6%	0.6%
B. Nondemonstration suppliers					
W		27.7%	12.9%	9.6%	-18.1%
X		2.8%	1.6%	0.9%	-1.9%
Y		2.1%	0.0%	0.0%	-2.1%
Z		0.9%	0.0%	0.0%	-0.9%
All Nondemonstration		40.8%	25.2%	17.7%	-23.2%

¹Acquired by another company during the demonstration

demonstration suppliers in Round 1 but not Round 2, only 2 followed the expected pattern of gaining market share during the first round before receding during the second round. The other 5 in this group, however, had only 1 percent market share or less prior to the demonstration.

Of the 4 suppliers that were demonstration suppliers in Round 2 but not in Round 1, only 1 had more than 0.5 percent market share either prior to or during the demonstration. This supplier followed the expected pattern of losing market share during the first round and then gaining market share during Round 2. Of the 4 largest nondemonstration suppliers before the demonstration began, all lost market share.

Table D.2
Hospital beds and accessories—individual supplier market shares, Polk County demonstration

Company	Demonstration supplier in round	Predemonstration (Q3 1999)	End of Round 1 (Q3 2001)	End of Round 2 (Q3 2002)	Change in share during demonstration
A. Demonstration suppliers					
A	1,2	9.3%	26.0%	38.8%	29.5%
B	1,2	9.2%	25.3%	21.1%	11.9%
C	1	9.0%	0.0%	0.0%	¹ -9.0%
D	1	9.0%	19.4%	4.3%	-4.7%
E	2	6.1%	0.5%	16.8%	10.6%
F	1,2	6.0%	8.3%	8.5%	2.5%
G	1	1.0%	0.0%	0.0%	-1.0%
H	1	0.4%	0.0%	0.0%	¹ -0.4%
I	1,2	0.1%	6.3%	2.1%	2.0%
J	1	0.0%	1.2%	0.2%	0.2%
K	2	0.0%	0.0%	0.3%	0.3%
L	1	0.0%	1.2%	0.2%	0.2%
M	1	0.0%	0.2%	0.0%	0.0%
N	2	0.0%	0.0%	0.0%	0.0%
O	2	0.0%	0.2%	0.0%	0.0%
B. Nondemonstration suppliers					
W		33.4%	3.6%	2.5%	-30.9%
X		2.0%	1.2%	0.9%	-1.2%
Y		2.0%	0.1%	0.1%	-1.9%
Z		2.0%	0.7%	0.3%	-1.7%
All Nondemonstration		49.8%	11.3%	7.6%	-42.2%

¹Acquired by another company during the demonstration

Table D.3 displays the market shares of demonstration and nondemonstration suppliers of surgical dressings. This market was dominated prior to the demonstration and most of Round 1 by Company A, which was a demonstration supplier in Round 1 but not Round 2. This supplier's market share increased by 5 percentage points during the first 5 quarters of Round 1 before beginning to fall. At the end of Round 1, Company A's market share was 46 and quickly declined to zero by the second quarter of Round 2. Company B, which was a demonstration supplier in Round 2 only, experienced a 28 percent increase in market share during the second round. It appears that Company A's exit from the market to some degree facilitated Company B's increase, as the latter had little or no market share in the preceding periods. The other 3 demonstration suppliers, 2 of whom were demonstration suppliers in both rounds, had less than 1 percent market share in each benchmark period.

Table D.3
Surgical dressings—individual supplier market shares, Polk County demonstration

Company	Demonstration supplier in round	Predemon- stration (Q3 1999)	End of Round 1 (Q3 2001)	End of Round 2 (Q3 2002)	Change in share during demonstration
A. Demonstration suppliers					
A	1	86.7%	46.1%	0.0%	-86.7%
B	2	0.3%	0.0%	28.2%	27.9%
C	1,2	0.0%	0.0%	0.0%	0.0%
D	1	0.0%	0.0%	0.0%	0.0%
E	1,2	0.0%	0.9%	0.0%	0.0%
B. Nondemonstration suppliers					
W		4.9%	0.0%	0.0%	-4.9%
X		1.9%	1.6%	1.1%	-0.8%
Y		1.3%	0.0%	0.0%	-1.3%
Z		0.3%	24.6%	36.2%	35.9%
All Nondemonstration		13.0%	53.0%	71.8%	58.8%

The 3 largest nondemonstration suppliers prior to the demonstration (Companies W, X, and Y) experienced declines in market share during the demonstration. The fourth supplier shown, Company Z, increased its market share during each round of the demonstration. Company Z provided surgical dressings primarily to nursing home residents. Nursing home residents accounted for most of the business of the nondemonstration suppliers in this product category.

Table D.4 displays the market shares of demonstration and nondemonstration suppliers of urological supplies. All of the firms that were demonstration suppliers in Round 1 gained market share during Round 1, with one supplier's market share rising from 0 to 32 percent. Similarly, the demonstration suppliers in Round 2 all gained market share in Round 2, with the exception of 1 supplier that had a 0 market share in Round 1 and Round 2. The 2 suppliers that were demonstration suppliers in Round 1 but not Round 2 both lost market share in Round 2. One of the suppliers that was a demonstration supplier in Round 2 but not in Round 1 lost 20 percent of market share in Round 1 and gained 29 percent of market share in Round 2. The 4 largest nondemonstration suppliers before the demonstration all experienced declines in market share during the demonstration.

Table D.5 show the market shares of demonstration and nondemonstration suppliers of enteral nutrition. Enteral nutrition was only included in the demonstration in Round 1. Of the 8 demonstration suppliers, 3 gained market share during the demonstration, 1 lost market share, 1 was acquired (so that its market share fell to zero), and 3 served no patients before and during the demonstration. One of the demonstration suppliers increased its market share from less than 1 percent before the demonstration to more than 15 percent at the end of the demonstration. Of the 4 largest nondemonstration suppliers, 2 lost market share and 2 gained market share during the

Table D.4
Urological supplies—individual supplier market shares, Polk County demonstration

Company	Demonstration supplier in round	Predemonstration (Q3 1999)	End of Round 1 (Q3 2001)	End of Round 2 (Q3 2002)	Change in share during demonstration
A. Demonstration suppliers					
A	2	26.0%	6.2%	35.1%	9.1%
B	1,2	9.4%	33.6%	35.4%	25.9%
C	1	0.5%	5.6%	0.0%	-0.5%
D	1	0.0%	32.3%	0.0%	0.0%
E	1,2	0.0%	0.8%	10.1%	10.1%
F	1,2	0.0%	3.1%	6.6%	6.6%
G	2	0.0%	0.0%	0.0%	0.0%
B. Nondemonstration suppliers					
W		10.4%	0.0%	0.0%	-10.4%
X		5.1%	0.0%	0.0%	-5.1%
Y		4.7%	0.0%	0.0%	-4.7%
Z		4.6%	0.0%	0.1%	-4.6%
All Nondemonstration		64.0%	18.4%	12.9%	-51.1%

Table D.5
Enteral nutrition—individual supplier market shares, Polk County demonstration

Company	Predemonstration (Q3 1999)	End of Round 1 (Q3 2001)	Change in share during demonstration
A. Demonstration suppliers			
A	9.3%	9.9%	0.6%
B	7.0%	0.0%	¹ -7.0%
C	0.9%	2.0%	1.1%
D	0.9%	0.2%	-0.7%
E	0.2%	15.6%	15.4%
F	0.0%	0.0%	0.0%
G	0.0%	0.0%	0.0%
H	0.0%	0.0%	0.0%
B. Nondemonstration suppliers			
W	22.1%	0.8%	-21.3%
X	10.0%	10.3%	0.3%
Y	7.8%	2.6%	-5.2%
Z	7.8%	19.4%	11.6%
All Nondemonstration	81.7%	72.3%	-9.4%

¹Acquired by another company during the demonstration

demonstration. Increases in market share for nondemonstration suppliers were possible in enteral nutrition because the demonstration rules allowed nursing homes to honor contracts with nondemonstration suppliers.

D.2 San Antonio

Table D.6 shows the market shares of demonstration and nondemonstration suppliers of oxygen equipment and supplies in San Antonio. Of the 33 demonstration suppliers, 20 experienced increases and 12 experienced decreases in market share over the course of the demonstration. The remaining supplier, Company A, saw its market share fall to zero after it was acquired by Company B in a consolidation of the two largest oxygen suppliers in San Antonio. Most other changes in market share were very small, with 21 suppliers having changes of less than 1 percentage point.

The four largest nondemonstration suppliers in the oxygen category all experienced declines in market share over the course of the demonstration. These suppliers had relatively small market shares (less than 4 percent) prior to the demonstration. Over the course of the demonstration, one of the companies shown (Company ZC) dropped out of the market entirely while the other three experienced gradual declines in their market shares.

It should be noted that many of the largest oxygen suppliers in San Antonio were selected for the demonstration. Given this, it is not surprising that many demonstration suppliers did not experience large market share increases arising from the demonstration.

Table D.7 displays market shares over time for suppliers of hospital beds and accessories. Of the 24 demonstration suppliers, 15 experienced increases during the demonstration, 6 experienced decreases, and 3 had no change in market share. Company A, which was the largest supplier of hospital beds prior to the demonstration, experienced the largest increase in market share among demonstration suppliers (11 percentage points). The four largest nondemonstration suppliers in the category all experienced declines in market share during the demonstration.

Table D.8 shows market shares for demonstration and nondemonstration suppliers of wheelchairs and accessories. Of the 23 demonstration suppliers, 15 experienced increases during the demonstration, 4 experienced decreases, and 4 had no change in market share. Company A experienced the largest increase in market share, from 9 percent in January 2001 to 17 percent in September 2002. This supplier was the largest in the category prior to the demonstration. Many of the smallest demonstration suppliers experienced very small changes in their market share during the demonstration; however, one company that had no allowed charges in the predemonstration period (Company W) gained a 2 percent market share by September 2002. Three of the four largest nondemonstration suppliers prior to the demonstration lost market share over the course of the demonstration; the fourth experienced a slight increase.

Table D.6
Oxygen equipment and supplies—individual supplier market shares, San Antonio demonstration

Company	Predemonstration (January 2001)	Late demonstration (September 2002)	Change in share during demonstration
A. Demonstration suppliers			
A	15.4%	0.0%	¹ -15.4%
B	8.9%	22.3%	13.3%
C	6.8%	6.2%	-0.6%
D	5.6%	5.8%	0.2%
E	5.1%	3.9%	-1.2%
F	4.8%	9.0%	4.2%
G	4.0%	5.1%	1.0%
H	3.4%	2.5%	-0.9%
I	3.3%	4.4%	1.1%
J	3.0%	4.8%	1.8%
K	2.6%	2.0%	-0.6%
L	2.6%	3.1%	0.5%
M	1.9%	3.1%	1.3%
N	1.8%	0.0%	-1.8%
O	1.5%	2.4%	0.8%
P	1.5%	4.8%	3.3%
Q	1.4%	1.0%	-0.4%
R	1.3%	3.5%	2.1%
S	1.3%	1.9%	0.6%
Y	1.2%	1.1%	-0.1%
U	1.1%	2.4%	1.3%
V	0.8%	0.5%	-0.4%
W	0.8%	1.6%	0.8%
X	0.7%	0.7%	0.1%
Y	0.5%	0.7%	0.3%
Z	0.4%	0.6%	0.3%
AA	0.3%	0.1%	-0.2%
AB	0.2%	0.5%	0.2%
AC	0.2%	0.5%	0.3%
AD	0.2%	0.0%	-0.2%
AE	0.1%	0.2%	0.1%
AF	0.1%	0.0%	-0.1%
AG	0.1%	0.0%	-0.1%
B. Nondemonstration suppliers			
ZA	3.6%	1.6%	-2.1%
ZB	1.9%	0.8%	-1.1%
ZC	1.8%	0.0%	-1.8%
ZD	1.1%	0.5%	-0.6%
All Nondemonstration	17.2%	5.5%	-11.6%

¹Acquired by another company during the demonstration

Table D.7
Hospital beds and accessories—individual supplier market shares, San Antonio demonstration

Company	Predemonstration (January 2001)	Late demonstration (September 2002)	Change in share during demonstration
A. Demonstration suppliers			
A	12.5%	23.6%	11.0%
B	5.7%	7.4%	1.8%
C	4.7%	7.3%	2.6%
D	3.4%	1.9%	-1.5%
E	3.3%	7.2%	3.8%
F	3.3%	6.6%	3.3%
G	2.9%	4.9%	2.0%
H	2.7%	2.7%	-0.1%
I	2.6%	1.6%	-0.9%
J	2.5%	5.5%	3.1%
K	2.1%	1.3%	-0.8%
L	2.0%	3.2%	1.2%
M	2.0%	3.2%	1.3%
N	1.9%	2.4%	0.6%
O	1.3%	4.0%	2.6%
P	1.0%	3.2%	2.2%
Q	0.8%	0.6%	-0.2%
R	0.7%	0.3%	-0.5%
S	0.7%	1.0%	0.3%
T	0.6%	1.4%	0.9%
U	0.0%	0.1%	0.1%
V	0.0%	0.0%	0.0%
W	0.0%	0.0%	0.0%
X	0.0%	0.0%	0.0%
B. Nondemonstration suppliers			
ZA	6.3%	0.0%	-6.3%
ZB	5.5%	3.6%	-1.9%
ZC	3.5%	0.9%	-2.6%
ZD	2.3%	0.0%	-2.3%
All Nondemonstration	43.3%	10.6%	-32.7%

Table D.8
Wheelchairs and accessories—individual supplier market shares, San Antonio demonstration

Company	Predemonstration (January 2001)	Late demonstration (September 2002)	Change in share during demonstration
A. Demonstration suppliers			
A	9.0%	17.2%	8.2%
B	4.1%	8.2%	4.1%
C	3.8%	6.8%	3.0%
D	3.4%	6.0%	2.5%
E	3.3%	3.1%	-0.2%
F	3.2%	4.0%	0.7%
G	2.5%	4.4%	2.0%
H	2.3%	9.4%	7.2%
I	2.2%	2.1%	-0.1%
J	2.2%	2.9%	0.8%
K	1.9%	0.8%	-1.1%
L	1.7%	2.1%	0.3%
M	1.4%	2.4%	1.0%
N	1.3%	2.8%	1.5%
O	1.3%	1.2%	-0.1%
P	1.3%	2.2%	0.9%
Q	0.9%	1.9%	0.9%
R	0.8%	0.8%	0.0%
S	0.2%	0.7%	0.5%
T	0.1%	0.1%	0.0%
U	0.1%	0.0%	0.0%
V	0.0%	0.0%	0.0%
W	0.0%	2.1%	2.1%
B. Nondemonstration suppliers			
ZA	6.9%	1.1%	-5.7%
ZB	6.6%	7.1%	0.5%
ZC	5.9%	0.7%	-5.2%
ZD	3.5%	1.2%	-2.3%
All Nondemonstration	53.0%	18.8%	-34.2%

Table D.9 displays the market shares of suppliers of general orthotics. Market shares in this product category are generally more volatile than in others due to smaller total allowed charges in the category. Therefore, these results should be interpreted cautiously. Of the 8 demonstration suppliers, 6 experienced market share increases and none experienced declines. The remaining 2 suppliers had no allowed charges in San Antonio in the period prior to the demonstration and were unable to increase their market shares during its operation. Company B had the largest increases in market share among demonstration suppliers, rising from 3 percent in January 2001 to 20 percent in September 2002. Each of the four largest nondemonstration suppliers of orthotics experienced declines in market share over the course of the demonstration.

Table D.9
General orthotics—individual supplier market shares, San Antonio demonstration

Company	Predemonstration (January 2001)	Late demonstration (September 2002)	Change in share during demonstration
A. Demonstration suppliers			
A	8.9%	9.3%	0.4%
B	2.8%	19.8%	17.0%
C	1.0%	2.7%	1.7%
D	0.6%	6.0%	5.4%
E	0.4%	4.2%	3.8%
F	0.3%	1.5%	1.2%
G	0.0%	0.0%	0.0%
H	0.0%	0.0%	0.0%
B. Nondemonstration suppliers			
W	10.3%	1.0%	-9.4%
X	9.6%	7.6%	-2.0%
Y	9.1%	1.6%	-7.5%
Z	7.2%	0.0%	-7.2%
All Nondemonstration	86.0%	56.4%	-29.6%

Table D.10 shows market shares for demonstration and nondemonstration suppliers of nebulizer drugs. Of the 12 demonstration suppliers, 9 experienced market share increases and 2 experienced declines. The remaining supplier, Company B, was acquired by another company and thus its market share fell to zero. Company C experienced the largest increase in market share among demonstration suppliers, rising from 6 percent prior to the demonstration to 21 percent near the demonstration's end. Each of the four largest nondemonstration suppliers experienced declines in market share during the demonstration.

Table D.10
Nebulizer drugs—individual supplier market shares, San Antonio demonstration

Company	Predemonstration (January 2001)	Late demonstration (September 2002)	Change in share during demonstration
A. Demonstration suppliers			
A	8.7%	17.3%	8.6%
B	6.2%	0.0%	¹ -6.2%
C	5.7%	21.0%	15.3%
D	5.4%	8.3%	3.0%
E	2.8%	2.2%	-0.6%
F	1.7%	5.0%	3.4%
G	1.6%	2.3%	0.6%
H	1.3%	0.0%	-1.3%
I	1.2%	15.9%	14.6%
J	0.4%	1.4%	1.0%
K	0.3%	5.8%	5.5%
L	0.0%	0.1%	0.1%
B. Nondemonstration suppliers			
W	11.7%	1.3%	-10.4%
X	9.4%	4.8%	-4.6%
Y	5.7%	2.4%	-3.3%
Z	4.4%	2.6%	-1.8%
All Nondemonstration	64.8%	20.7%	-44.1%

¹Acquired by another company during the demonstration

D.3 Summary

Overall, the individual market share analysis supports the following conclusions:

- As expected, suppliers generally gained market share if they were demonstration suppliers and lost market share if they were nondemonstration suppliers.
- Some demonstration suppliers gained substantial market share.
- Some suppliers that had small market shares before the demonstration began were able to substantially increase their market share as demonstration suppliers.
- Being named as a demonstration supplier was no guarantee of increased market share; some demonstration suppliers that had small or zero market shares before the demonstration still had small or zero market shares at the end of the demonstration. The demonstration may have induced some of these suppliers to enter the demonstration area, but it did not ensure entry would be successful.

- In San Antonio, many of the suppliers selected in the oxygen category already had substantial market share prior to the demonstration. Because of this, large increases in market share for demonstration suppliers were uncommon.