



ACCESS TO PHYSICIANS' SERVICES FOR VNERABLE BENEFICIARIES: IMPACT OF THE MEDICARE FEE SCHEDULE

FINAL REPORT

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TABLE OF CONTENTS

PAGE

3.2	Descriptive Results.....	3-2
3.2.1	Price Changes.....	3-2
3.2.2	Outpatient Visits.....	3-4
3.2.3	Emergency Room Visits and Ambulatory Care Sensitive Admissions.....	3-5
3.2.4	Mammography and Pap Tests.....	3-6
3.2.5	Cataract Surgery.....	3-7
3.2.6	Financial Liability.....	3-8
3.3	Regression Results.....	3-9
3.3.1	Specification and Estimation.....	3-9
3.3.2	MFS Impacts.....	3-12
3.3.3	Differential Use by Vulnerable Patient Groups.....	3-15
3.3.4	Time Trends.....	3-17
4.0	EPISODES OF CARE ANALYSIS	4-1
4.1	Introduction	4-1
4.2	Descriptive Results.....	4-2
4.2.1	Time Trends in Treatment Patterns for AMI Patients	4-2
4.2.2	Time Trends in Treatment Patterns for TIA Patients.....	4-4
4.2.3	Changes in Payment Rates for Episode Services	4-6
4.3	Regression Results.....	4-7
4.3.1	Specification and Estimation	4-7
4.3.2	Results for AMI Patients	4-9
4.3.3	Results for TIA Patients.....	4-11
4.3.4	The Role of Specialty in Explaining Access to Tests and Procedures....	4-13

REFERENCES

APPENDIX A - ACCESS VARIABLE DEFINITIONS

APPENDIX B - PRICE VARIABLE DEFINITIONS

APPENDIX C - DETAILED DESCRIPTIVE TABLES FOR NATIONAL SAMPLE

TABLE OF TABLES

PAGE

TABLE 2-1	Unweighted Sample Sizes, 1991.....	2-4
TABLE 2-2	Weighted Profile of National Sample, 1991.....	2-5
TABLE 2-3	Average Annual Unweighted Sample Sizes for Episode of Care Analysis.....	2-8
TABLE 3-1	Changes in Medicare Fees and Relative Private-Medicare Fees	3-19
TABLE 3-2	Average Number of Outpatient Visits Stratified by Actual MFS Payment Change and Vulnerable Population Group, 1991-1993	3-20
TABLE 3-3	Average Number of Emergency Room Visits Stratified by Actual MFS Payment Change and Vulnerable Population Group, 1991-1993.....	3-21
TABLE 3-4	Average Number of Ambulatory Care Sensitive (ACS) Admission Rates Stratified by Actual MFS Payment Change and Vulnerable Population Group, 1991-1993	3-22
TABLE 3-5	Percent of Female Beneficiaries Receiving Mammography Stratified by Actual MFS Payment Change and Vulnerable Population Group, 1991-1993.....	3-23
TABLE 3-6	Percent of Female Beneficiaries Receiving Pap Tests Stratified by Actual MFS Payment Change and Vulnerable Population Group, 1991-1993.....	3-24
TABLE 3-7	Cataract Surgeries Stratified by Actual MFS Payment Change and Vulnerable Population Group, 1991-1993	3-25
TABLE 3-8	Average Annual Part B Coinsurance Liability by Vulnerable Population Groups, 1991-1993	3-26
TABLE 3-9	Average Annual Extra Liability by Vulnerable Populations Group, 1991-1993	3-27
TABLE 3-10	Assignment Rate by Vulnerable Population Groups, 1991-1993.....	3-28
TABLE 3-11	Means of Dependent and Independent Variables in Regressions for National Sample	3-29
TABLE 3-12	Means of Dependent and Independent Variables in Regressions for Female Beneficiaries in National Sample.....	3-30
TABLE 3-13	Regression Results: MFS Impacts on the Probability of an Outpatient Visit, Number of Outpatient Visits, Probability of an Emergency Room Visit, and Probability of an ACS Admission.....	3-31
TABLE 3-14	Regression Results: MFS Impact on the Probability of Cataract Surgery.....	3-32

TABLE OF TABLES

PAGE

TABLE 3-15	Regression Results: MFS Impact on the Probability of an Outpatient Visit, Number of Outpatient Visits, Probability of a Pap Test, and Probability of Mammography for Women	3-33
TABLE 3-16	Regression Results: MFS Impact on the Probability of Mammography for Women (Mammography Price).....	3-34
TABLE 3-17	Regression Results: Time Trends for the Probability of an Outpatient Visit, Number of Outpatient Visits, Probability of an Emergency Room Visit, and Probability of an ACS Admission	3-35
TABLE 3-18	Regression Results: Time Trends for the Probability of Cataract Surgery	3-36
TABLE 3-19	Regression Results: Time Trends for the Probability of an Outpatient Visit, Number of Outpatient Visits, Probability of a Pap Test, and Probability of Mammography for Women.....	3-37
TABLE 3-20	Regression Results: Time Trends for the Probability of Mammography for Women (Mammography Price).....	3-38
TABLE 4-1	Treatment Patterns for Black and White Patients with AMI: 1991-1993.....	4-14
TABLE 4-2	Treatment Patterns for Medicaid-Eligible and Non-Eligible Patients with AMI: 1991-1993	4-15
TABLE 4-3	Treatment Patterns for Urban Poor and Non-Poor Patients with AMI: 1991-1993	4-16
TABLE 4-4	Treatment Patterns for Rural Poor and Non-Poor Patients with AMI: 1991-1993.....	4-17
TABLE 4-5	Treatment Patterns for Urban Shortage Area and Non-Shortage Area Patients with AMI: 1991-1993	4-18
TABLE 4-6	Treatment Patterns for Rural Shortage Area and Non-Shortage Area Patients with AMI: 1991-1993	4-19
TABLE 4-7	Treatment Patterns for Disabled and Non-Disabled Patients with AMI: 1991-1993	4-20
TABLE 4-8	Treatment Patterns for Black and White Patients with TIA: 1991-1993.....	4-21
TABLE 4-9	Treatment Patterns for Medicaid-Eligible and Non-Eligible Patients with TIA: 1991-1993.....	4-22
TABLE 4-10	Treatment Patterns for Urban Poor and Non-Poor Patients with TIA: 1991-1993.....	4-23
TABLE 4-11	Treatment Patterns for Rural Poor and Non-Poor Patients with TIA: 1991-1993	4-24

TABLE OF TABLES

PAGE

TABLE 4-12	Treatment Patterns for Urban Shortage Area and Non-Shortage Area Patients with TIA: 1991-1993.....	4-25
TABLE 4-13	Treatment Patterns for Rural Shortage Area and Non-Shortage Area Patients with TIA: 1991-1993.....	4-26
TABLE 4-14	Treatment Patterns for Disabled and Non-Disabled Patients with TIA: 1991-1993	4-27
TABLE 4-15	Changes in Medicare Allowed Charges, 1991-1993.....	4-28
TABLE 4-16	Price Variables Used in Episode of Care Regressions	4-29
TABLE 4-17	AMI Weighted Means	4-30
TABLE 4-18	TIA Weighted Means	4-31
TABLE 4-19	Regression Results: MFS Impacts on AMI Patients	4-32
TABLE 4-20	Regression Results: MFS Impacts on TIA Patients.....	4-34
TABLE 4-21	Impact of Specialists on Utilization of Tests and Procedures	4-36

1.0 EXECUTIVE SUMMARY

1.1 Statement of the Problem

Beginning in January 1992, Medicare introduced a fundamental change in the method used to reimburse physician services. This new Medicare Fee Schedule (MFS) dramatically altered the relative prices paid to physicians, thereby altering the incentives to provide one type of service relative to another. Relative payment levels were greatly increased for visits, and reduced for most types of diagnostic tests and surgical procedures. How physicians have responded to these payment changes is of critical importance to policymakers who are concerned about ensuring access to care for Medicare beneficiaries. Much of the historic concern and attention has focused on the impact of fee reductions (e.g., the Medicare fee freeze, the OBRA-87 overpriced procedure payment reductions, etc.), as Medicare has limited experience with increases in payment levels. Policymakers traditionally have feared that physicians will respond to fee reductions by increasing the number of services they provide (e.g., the controversial "volume offset" assumption). It is possible, however that physicians will respond by providing fewer procedures to their Medicare patients, particularly those patients with limited ability to pay coinsurance amounts.

Work by McGuire and Pauly (1991) has shown that physician responses to payment reductions will depend on the relative magnitude of income and substitution effects. On the one hand, a Medicare fee cut reduces income leading physicians to provide more of all services (not just the services whose price was cut); this is the "income effect" of a price change. On the other hand, after the fee reduction there is less return to the physician from providing that service to Medicare patients relative to other patients, encouraging the physician to provide less to Medicare patients and more in other, better-paying markets (the "substitution effect"). Income effects are hypothesized to be stronger for those physicians with relatively larger shares of their practice devoted to the services whose fees were cut and with relatively larger Medicare shares. Substitution effects are hypothesized to be stronger when margins (the fee for the service minus the cost of providing it) are relatively greater in the non-Medicare market and when physicians' Medicare market shares are relatively smaller. Mitchell and Cromwell (1995) found considerable support for this model in their study of the OBRA-87 payment

reductions. Despite reduced fees, Medicare utilization rates for bypass surgery, joint replacement, and cataract extraction increased; these are procedures which represent relatively large practice shares for thoracic surgeons, orthopedic surgeons, and ophthalmologists, respectively. By contrast, internists and other medical specialists are not particularly dependent on any of the endoscopic procedures whose fees were cut (like bronchoscopy and upper GI endoscopy). Utilization rates for these procedures either fell or remained constant.

As noted earlier, relatively little is known about physician responses to Medicare fee increases. If physicians respond to higher visit reimbursement levels by providing more patient contacts, then access to primary care services may have greatly improved. To the extent that access to outpatient visits enhances access to other services, such as preventive care, then higher visit fees may have a multiplier effect on overall access. Furthermore, higher visit fees may encourage physicians to treat less well-insured Medicare patients (e.g., those without private supplemental policies). Alternatively, under a utility-maximizing model of physician behavior, higher net revenues per visit may lead physicians to substitute better paying Medicare patients for those less able to meet coinsurance amounts.

Policymakers are vitally concerned about how these payment changes may have either improved or exacerbated access problems for more vulnerable populations. Prior theoretical and empirical research has shown that physicians do segment their Medicare market based on ability to pay (Mitchell and Cromwell, 1982). Most attractive are nonassigned patients, while poor patients without supplemental coverage are least attractive as they may not be able to pay even the coinsurance amounts. Subgroups of the Medicare population who may be particularly vulnerable to any shifts in the supply of physician services include the following:

- *Residents of Health Professional Shortage Areas (HPSAs) and of rural areas more generally.* These residents already might have been experiencing some difficulties in obtaining physician services; did payment changes resulting from the MFS exacerbate or improve this problem?
- *Dual (Medicare-Medicaid) eligibles and other poor elderly.* Because these patients are less financially remunerative, physicians may have cut back services to these patients first. Alternatively, increased payment levels for evaluation and management services may make them relatively more attractive.
- *Very old and disabled beneficiaries.* Because these enrollees may need disproportionately more physician services, compared with relatively

healthier Medicare enrollees, even small reductions in services could produce adverse outcomes.

- *Black beneficiaries.* For reasons that are not completely understood, black Medicare beneficiaries undergo many procedures at rates well below those of white enrollees. Did this utilization gap widen during the transition to the MFS?

For the last five years, both HCFA and the Physician Payment Review Commission (PPRC) have been monitoring access to physicians' services. Both agencies have conducted extensive analyses, using both claims data and the Medicare Current Beneficiary Surveys. (See their annual reports to Congress, as well as a special PPRC 1995 report on access.¹) Their studies have failed to document any barriers to access resulting from the Medicare Fee Schedule. At the same time, however, both agencies have documented substantial differences in service use across subgroups of Medicare beneficiaries. In particular, black beneficiaries, residents of urban poverty areas, and those living in urban HPSAs were significantly less likely to receive certain kinds of physician services, compared with others. These differentials have persisted throughout the period of MFS transition (PPRC, 1995).

Our study sought to build on this prior research in three critical ways: (1) by oversampling groups of beneficiaries believed to be particularly vulnerable to payment changes; (2) by evaluating changes in treatment patterns for specific episodes of care; and (3) by conducting multivariate analyses that measured *actual* payment changes over time rather than *expected* changes due to the MFS.

1.2 Methods

Sample Design and Data

A stratified random sampling design was used to take advantage of the differential impacts of the MFS across geographic areas and to ensure adequate numbers of vulnerable beneficiaries. All geographic areas were categorized into six mutually exclusive groups based on their expected 1992 payment change under the MFS. All beneficiaries in the 1991 denominator file were then categorized into one of 60 strata defined by: (1) the six MFS

¹ A complete list of the relevant HCFA and PPRC reports is included in the References section at the end of this report.

payment change areas; and (2) ten population subgroups. The ten groups included nine groups of potentially vulnerable beneficiaries:

- those residing in a rural HPSA;
- those residing in an urban HPSA;
- those residing in a rural poverty area;
- those residing in an urban poverty area;
- those jointly eligible for Medicaid;
- those who were black;
- those who were originally entitled to Medicare because of disability or end-stage renal disease;
- those who were very old (85 years and older); and
- those residing in any rural area.

All Medicare beneficiaries not meeting any of these criteria constituted the tenth group.

A total of 2.6 million beneficiaries were selected. Replacement samples of new eligible beneficiaries were later added in 1992 and in 1993, respectively, using the same sampling criteria. Medicare Part A claims for acute hospital stays, Part B physician and outpatient claims, and denominator records were extracted for all sampled beneficiaries for each of the three study years (1991-1993).

In addition to this large national sample, we also selected two medical conditions for in-depth study of treatment patterns: (1) patients hospitalized with acute myocardial infarction (AMI); and (2) patients hospitalized with transient ischemic attacks (TIA). These conditions were chosen because they generally involve “high-tech” diagnostic testing, the results of which may lead to subsequent surgery. Many of these diagnostic tests and surgical procedures experienced substantial payment reductions under MFS. As a result, physicians may have been less likely to provide these services, especially to vulnerable patients. At the same time, increased payment for hospital visits under MFS may have encouraged more intensive evaluation and management of patients hospitalized with these conditions, especially on the part of specialists. Our sample yielded about 19,000 cases of AMI annually, and 9,000 TIA cases annually.

Access Measures

Three types of access measures were analyzed for the national sample: outcomes, utilization, and financial impacts. Outcomes were measured as ambulatory care sensitive

(ACS) admissions, i.e., hospitalizations that were potentially avoidable. Utilization measures included rates of use for a wide range of services, including visits, preventive services, and high-tech diagnostic and therapeutic procedures. Measure of financial impact included per beneficiary coinsurance and extra billing amounts, as well as assignment rates. The episode of care analyses focused on inpatient visits and consultations, diagnostic tests, and surgical procedures.

Calculating MFS Payment Changes

At the time we selected our sample, data were only available for *expected* payment changes under the MFS. By the time we were ready to conduct our final analyses, however, we were able to construct *actual* MFS payment changes for individual services at the locality level. These data were obtained from the Physician/Supplier Procedure Summary files. Thus, the payment change variables included in our regression analyses were based on the actual change in Medicare payment for the relevant service or procedure.

Statistical Tests

T-tests were used to determine the statistical significance of differences in rates between vulnerable and non-vulnerable groups, and over time. For the national sample, these comparisons were also made by geographic area, where areas had been categorized by the size of the actual MFS payment change.

Multivariate regression techniques (primarily logistic regression) were used to more fully evaluate MFS impacts, holding other factors constant. The regression models were based on a quasi-experimental design that takes advantage of cross-sectional differences in the magnitude of payment changes. Pre-post utilization was compared for vulnerable and non-vulnerable beneficiaries in areas experiencing MFS impacts of various magnitudes. This model assumes that utilization responses, if they exist, will be greater in areas experiencing relatively larger payment changes. Significant differences in the size of the response for vulnerable and non-vulnerable beneficiaries that are associated with the magnitude of the MFS price change are evidence that the MFS has had a differential impact on access to care.

1.3 Results

1.3.1 Overview

Little evidence was found that the Medicare Fee Schedule either improved or worsened access for Medicare beneficiaries. While some MFS-related changes in access were demonstrated for some vulnerable groups, the actual magnitude of these changes were relatively small. Furthermore, the direction of change was not consistently negative or positive. Given the large number of access measures used in this study, a significant finding for any single measure should not be given undue weight.

At the same time, we found that substantial access gaps existed for vulnerable beneficiaries and that these gaps persisted throughout MFS transition. Of particular concern is evidence that access to primary care may actually have worsened for one of the vulnerable groups we examined: dual Medicaid-eligibles.

All Medicare beneficiaries enjoyed reduced out-of-pocket payments over the 1991-1993 period, including both lower copayments and lower extra billing liability. Lower copayments potentially result from a combination of lower fees and/or lower utilization rates; given that overall use did not fall, lower coinsurance amounts would appear to result from payment reductions. Decreased extra billing liability resulted from both increased assignment rates over this same period, and the balance bill limits imposed on non-participating physicians as part of the MFS legislation.

1.3.2 Access to Primary Care

MFS Impacts

Although tabular comparisons were conducted for a wide range of access measures, we focused primarily on measures that captured access to primary care. These included: outpatient visits, emergency room (ER) visits, ambulatory care sensitive (ACS) admissions, and two preventive services (mammography and Pap tests). If higher reimbursement rates encouraged physicians to provide more primary care, we would expect to observe more outpatient visits, fewer ER visits, fewer ACS admissions, and more preventive services. Furthermore, these differences should be more pronounced in areas with relatively larger payment increases.

- During the 1991-1993 study period, Medicare payments for outpatient visits increased by about 12 percent.

Multivariate regression analysis revealed some evidence of differential access to primary care under the MFS, particularly with respect to outpatient visits. Although statistically significant, the actual magnitude of these effects was quite small, however. Specifically:

- Increased outpatient visit payment raised the odds that black beneficiaries and female disabled beneficiaries would make at least one outpatient physician visit in 1993.
- At the same time, joint Medicaid eligible and urban poor beneficiaries were less likely to visit the physician. Those joint Medicaid eligibles who did see the physician made significantly fewer visits.
- In all instances, the size of the MFS impact was small. The average payment increase of 12 percent for outpatient visits raised the odds of a black beneficiary seeing the physician by 3.6 percent, or from 0.696 in 1991 to 0.721 in 1993. Similarly, the odds of making at least one visit fell by 2.4 percent for joint Medicaid eligibles, and the number of such visits (among those with visits) declined by one percent.
- There were no differential MFS impacts for vulnerable groups, except for disabled beneficiaries. Increased outpatient visit payments improved their odds of receiving mammography.
- Finally, there was no evidence that increased outpatient visit payments lowered the odds of visiting the emergency room or of being hospitalized with an ACS condition.

While MFS impacts were either small or non-existent, substantial differentials in access to care were observed for vulnerable subgroups of beneficiaries. In a few instances, these differentials actually worsened from 1991 to 1993, independent of the fee schedule changes.

- Eight of the nine vulnerable groups studied (all but those living in rural poverty areas) were significantly less likely to have seen the physician even once on an outpatient basis. Those residents of urban poverty areas or rural shortage areas who did see the physician, however, made fewer such visits.

- On the other hand, while joint Medicaid eligible and disabled beneficiaries were less likely to have an outpatient visit, those who did go went significantly more often.

Over the three year study period, non-vulnerable beneficiaries experienced significant increases in both the odds of making at least one outpatient visit and in the number of such visits (conditional on the first). This greater access to outpatient care was not shared by all, however.

- The odds that a joint Medicaid eligible beneficiary would make at least one outpatient physician declined significantly, from 0.84 in 1991 to 0.77 in 1993.
- The number of outpatient visits made by those Medicaid-eligible and disabled beneficiaries who succeeded in making at least one visit declined over this same time period.

Consistent with this low rate of outpatient use, ER visit and ACS admission rates were higher for many vulnerable groups.

- Beneficiaries who were very old, black, Medicaid-eligible, or disabled were more likely to both visit the ER and to be hospitalized for ACS conditions.
- The odds of avoidable hospitalization were also higher for residents of urban poverty areas and urban shortage areas.

Also consistent with limited access to ambulatory care, women in vulnerable groups were less likely to receive preventive services.

- Eight of the nine vulnerable groups (all women except those living in rural shortage areas) were significantly less likely to receive either a Pap test or mammography over the course of a year.
- However, the mammography differential for black and white female beneficiaries began to close between 1991 and 1993.

1.3.3 Access to Services During Episodes of Care

Evaluation of MFS impacts included hospital visits and inpatient consultations, but primarily focused on access to diagnostic and therapeutic procedures. For AMI patients, these

included echocardiography, cardiac catheterization, PTCA, and CABG surgery. For TIA patients, these included non-invasive cerebrovascular tests, head CT, brain MRI, cerebral angiography, carotid endarterectomy, and anticoagulant therapy (the last proxied by prothrombin time tests). In addition, we examined access to specialist care during the inpatient stay: having a cardiologist as attending physician in the case of AMI patients, and a neurologist for TIA patients.

The MFS appeared to have virtually no effect on access to services.

- Despite dramatic reductions in payment for diagnostic tests and surgical procedures, vulnerable patients continued to receive these tests and procedures at the same rate as before MFS.

Utilization differences between vulnerable and non-vulnerable patients were less marked or non-existent among AMI and TIA patients. For example:

- There were no differences in the rate of hospital visits or consultations.

Nevertheless, difference in use of cardiac procedures shown in other studies also were documented here.

- The odds of undergoing cardiac catheterization or revascularization (PTCA or CABG) were significantly lower for four groups of AMI patients: black, Medicaid-eligible, and disabled beneficiaries, and those residing in urban poverty areas.

1.3.4 Financial Liability

Medicare beneficiaries experienced significant reduction in out-of-pocket liability from 1991 to 1993, after adjusting for inflation. These reductions were shared by all vulnerable and non-vulnerable groups.

- Coinsurance liability fell by 6 percent (about \$12).
- Extra billing liability fell by two-thirds, or \$25 from 1991 to 1993.

The extra billing reduction resulted from the greater restrictions imposed on non-participating physicians under the MFS, as well as from increased assignment rates.

- Assignment rates for physicians' services increased from 65 percent in 1991 to 75 percent in 1993.

1.4 Overview of Report

The remainder of the report consists of three chapters. Chapter 2 describes the sample design, data, and statistical methods used. Both descriptive and multivariate analyses for the national sample are presented in Chapter 3, while Chapter 4 includes both descriptive and multivariate results for the episodes of care analysis. At the end of this report are three sets of appendices. Appendix A includes definitions (including diagnosis and procedure codes) of all variables used to measure access. Definitions of all price variables (again including procedure codes) are presented in Appendix B. Appendix C contains 23 tables showing utilization rates for additional services and procedures. Please note that the payment change areas used in these tables are based on *expected* overall payment changes resulting from the MFS, not the *actual* payment changes that are used in Chapter 3.

The reader should be aware that this report is the final in a series of reports that have been produced as part of this cooperative agreement. Using the sample described in this report, we wrote the following chapters in HCFA's Reports to Congress on Monitoring Access:

Mitchell, Janet B., "Appendix IV. Impact of the Medicare Fee Schedule on Access to Physician Services", in *Report to Congress. Monitoring the Impact of Medicare Physician Payment Reform on Utilization and Access*. HCFA, 1994.

Mitchell, Janet B., Rezaul K. Khandker, and Diane N. McPartlin, "Appendix VII. Access to Physician Services for Vulnerable Beneficiaries: Impact of the Medicare Fee Schedule", in *Report to Congress. Monitoring the Impact of Medicare Physician Payment Reform on Utilization and Access*. HCFA, 1995.

Mitchell, Janet B., Diane N. McPartlin, and Rezaul K. Khandker, "Appendix XII: Impact of the Medicare Fee Schedule on Patterns of Care: Acute Myocardial Infarction and Stroke Patients", in *Report to Congress. Monitoring the Impact of Medicare Physician Payment Reform on Utilization and Access*. HCFA, 1995.

In addition, we published the following article in the *Health Care Financing Review* based on analyses performed under this cooperative agreement:

Mitchell, Janet B. and Rezaul K. Khandker, "Black-White Treatment Differences in Acute Myocardial Infarction", *Health Care Financing Review* 17: 61-70, 1995.

As part of this same cooperative agreement, we also conducted independent analyses of MFS impacts using the Medicare Current Beneficiary Surveys. These analyses were written and included in the following chapters in HCFA's Reports to Congress:

Rosenbach, Margo and Joyce Huber, "Chapter 6: Utilization, Access, and Satisfaction with Care Among Noninstitutionalized Medicare Beneficiaries: A Baseline Analysis", in *Monitoring Utilization of and Access to Services for Medicare Beneficiaries Under Physician Payment Reform*. Third Annual Report, HCFA, DHHS, 1993.

Rosenbach, Margo L. and Rezaul Khandker, "Appendix V. Changes in Utilization, Access, and Satisfaction with Care Among Noninstitutionalized Medicare Beneficiaries", in *Report to Congress. Monitoring the Impact of Medicare Physician Payment Reform on Utilization and Access*. HCFA, 1994.

Rosenbach, Margo L., Killard W. Adamache, and Rezaul Khandker, "Appendix VIII. Trends in Utilization, Access, and Satisfaction with Care Among Noninstitutionalized Medicare Beneficiaries: 1991-93", in *Report to Congress. Monitoring the Impact of Medicare Physician Payment Reform on Utilization and Access*. HCFA, 1995.

In addition, we published the following article in the *Health Care Financing Review* under this cooperative agreement:

Rosenbach, Margo L., Killard W. Adamache, and Rezaul K. Khandker, "Variations in Medicare Access and Satisfaction by Health Status: 1991-93", *Health Care Financing Review* 17: 29-50, 1995.

2.0 DATA AND METHODS

2.1 Sample Design

2.1.1 National Sample

The national sample was selected using a stratified random sampling design to: (1) take advantage of the differential impacts of the MFS across geographic areas; and (2) to ensure adequate numbers of vulnerable beneficiaries living in areas experiencing different levels of MFS payment change. The sample was drawn from the Health Care Financing Administration's 1991 denominator file. All persons eligible for both Parts A and B, resident of the 50 states and D.C., and not enrolled in an HMO constituted the universe, with a total N of 31,857,201. All beneficiaries in the denominator file were categorized into one of 60 strata defined by (1) expected MFS payment change and (2) vulnerable population subgroup. Following is a description of the methods used to define these strata and sample selection procedures.

2.1.1.1 MFS Payment Change

All geographic areas were categorized into six mutually exclusive groups based on their expected 1992 payment change under the MFS compared to the old system: (1) 8 percent or greater reduction; (2) greater than or equal to a 5 percent reduction, but less than an 8 percent reduction; (3) greater than or equal to a 3 percent reduction, but less than a 5 percent reduction; (4) greater than or equal to a 1 percent reduction, but less than a 3 percent reduction; (5) between a 1 percent reduction (not inclusive) and a 2 percent increase (not inclusive); and (6) 2 percent or greater increase. The first two categories represent areas with fairly substantial payment reductions, the third and fourth have more modest reductions, and areas in the final two categories experienced little change or even increases in payments.

These groups were defined based on the Health Care Financing Administration's calculation of MFS payment changes expected in 1992 for each reasonable charge locality, taking into account the transition rules in effect for the first year of MFS implementation.

These changes represented the percent change in payments per service compared with the pre-MFS payment system. These estimated payment changes were based on projections from 1989 data and may not accurately reflect actual change under the fee schedule. At the time the sample was selected, alternative data sources for calculating the actual payment change more accurately were not available.¹

We cross-walked all reasonable charge localities to MSAs and state rural areas. The expected MFS payment change was then merged onto the denominator file, based on the MSA-rural area in which the beneficiary resided. We then categorized the payment change variable into six groups based on a frequency distribution of beneficiaries.

2.1.1.2 Vulnerable Population Subgroup

Nine groups of potentially vulnerable beneficiaries were identified: (1) those residing in a rural Health Professional Shortage Area (HPSA); (2) those residing in an urban HPSA; (3) those residing in a rural poverty area; (4) those residing in an urban poverty area; (5) those jointly eligible for Medicaid; (6) black beneficiaries; (7) those originally entitled to Medicare because of disability or ESRD; (8) the “very old” (85 years and older); and (9) those residing in any rural area. Unlike the MFS payment change areas, these groups are not mutually exclusive. Beneficiaries who did not meet any of these criteria constituted a tenth group, the nonvulnerable.

All of the variables needed to identify these vulnerable population subgroups were available from the denominator file except residence in an HPSA or poverty area. Considerable effort was required to construct these measures, as described below.

HPSAs: A complete list of HPSAs was published in the September 1991 Federal Register. A small number of HPSAs encompass entire counties, but the majority are defined as much smaller geographic units: census tracts, census county subdivisions, enumeration districts, and the like. The smallest geographic unit available on the denominator file is the zip code, however. We purchased cross-walks linking census tracts (CTs) to zip codes and census

¹As described below, we subsequently obtained data that allowed us to estimate the actual MFS impact by locality. These payment change data are used in the analyses in this report.

county subdivisions (CCDs) to zip codes from two private vendors. These cross-walks included data on the percent of a zip code's population included in a given CCD or CT. These crosswalk, combined with detailed zip code maps, enabled us to eventually identify all but a few of the HPSAs in the Federal Register. A Medicare beneficiary was defined as living in a shortage area if 50 percent or more of the zip code's population had been identified as residing in an HPSA.

Poverty Areas: A Medicare beneficiary was defined as living in a poverty area if they resided in a zip code in which 30 percent or more elderly households were below the 1991 poverty threshold for a retired couple. Information on the 1991 income distribution of elderly households by zip code were obtained from a commercial vendor of census data. Because the federal poverty threshold is expressed in nominal dollars without any adjustment for geographic cost-of-living differences, we developed and applied a methodology for making this adjustment. A paper describing this methodology is available from the authors.

2.1.1.3 Sample and Sub-sample Selection

Once HPSA and poverty area designation had been determined, all beneficiaries in the denominator file were assigned to one of 60 strata (6 payment change categories*10 population groups). Sampling algorithms developed by Dr. Martin Frankel were used to select cases within each stratum. Sampling weights were calculated as the inverse of the probability of selection. A total of 2,637,180 beneficiaries were selected in 1991. Table 2-1 presents the unweighted sample sizes by vulnerable group category. Table 2-2 presents the frequency distribution of the vulnerable population subgroups, after weighting to reflect their population prevalence. The importance of over-sampling is clear; a 5 percent random sample would have yielded only 34,000 residents of rural shortage areas, for example, compared with our actual sample of over 250,000.

All surviving members of the 1991 sample were included in the 1992 sample. Individuals who became Medicare-eligible for the first time in 1992 were also assigned to one of the 60 strata. A sample from this group was selected to replace members of the 1991 sample

TABLE 2-1

UNWEIGHTED SAMPLE SIZES, 1991

<u>Vulnerable Group</u> ^a	<u>NATIONAL SAMPLE</u>	
	<u>All</u>	<u>Female</u>
Urban Shortage Area	224,170	120,716
Rural Shortage Area	253,556	143,128
Urban Poor Poverty Area	233,966	128,158
Rural Poor Poverty Area	374,101	221,017
Black	528,019	291,248
Medicaid-Eligible	548,534	362,447
Disabled	681,300	266,404
Very Old (85+)	421,983	304,063
Any Rural Area	1,026,729	563,159
TOTAL	2,637,180	1,500,793

NOTE: ^a The sum of observations in vulnerable groups is less than the total number of vulnerable beneficiaries due to overlapping individuals.

SOURCE: Sample of Medicare patients drawn from the 1991 denominator file.

TABLE 2-2

WEIGHTED PROFILE OF NATIONAL SAMPLE, 1991

<u>Vulnerable Subgroup</u>	<u>Percent of Beneficiaries</u>
Urban Shortage Area	3.5 %
Rural Shortage Area	2.1
Urban Poverty Area	6.2
Rural Poverty Area	1.7
Black	8.3
Medicaid-Eligible	12.1
Disabled (original reason for eligibility)	15.0
Very Old (85+)	9.1
Any Rural Area	28.2

<u>Medicare Payment Change Category</u>	<u>Percent of Beneficiaries(a)</u>
↑ Reduction 1	4.1 %
2	11.1
3	23.0
4	34.7
5	18.3
↓ Increase 6	8.8

NOTE:

(a) May not sum to 100% due to rounding.

SOURCE: Medicare 1991 denominator file.

that died. A sample of newly-eligible beneficiaries in 1993 was selected in the same way to replace members of the 1992 sample that died.

Descriptive tables for the national sample are based on the full sample of beneficiaries. Because of computer limitations, regressions could not be run on the full sample. Therefore, a one-third sub-sample was randomly selected for the regression analyses. This sub-sample was selected to ensure that only one year of data was sampled for any individual and that each sample member had a one-in-three chance of being selected in any year in which she appeared. As a result, the cross-section time-series data include different sets of beneficiaries for each year.

The original sample selection process resulted in multiple years of data for most sample members. Such a data set requires panel data estimation techniques, such as fixed or random effects models, which control for the correlation across observations for the same person over time. Panel data models were not considered feasible for our purposes for two reasons. First, the sample would be biased because only beneficiaries who survived for three years would be included. Second, most of our regressions used binary dependent variables (probability of having an office visit or a given surgical procedure), which require logistic regression or probit analysis. While fixed and random effects models are widely used with linear regression techniques, their use in the context of binary dependent variable models is limited. There are some references in the economics literature to fixed effect logit models (Chamberlain, 1980; Hsiao, 1986) and random effects probit models (Hsiao, 1986). Both models are extremely difficult to conceptualize and estimate.

Regression models other than panel data models assume the independence of observations in the sample. Failure to adjust for the correlation introduced by having multiple observations for the same individual can bias coefficient estimates and standard errors. To eliminate this panel bias, we selected our sub-sample to preserve the time series nature of the data, while avoiding panel data estimation. The sub-sample consisted of one-third of observations in each year, with no overlap across years. The final regression sample consisted of 899,365 beneficiaries in 1991 and 862,109 in 1993.²

²Regressions were run using the 1991 and 1993 samples. We also estimated regression models with the 1991 and 1992 samples. Because the results were similar to those for the 1991 and 1993 samples, they are not reported.

2.1.2 Episodes of Care Samples

Utilization of medical care services is driven in large part by a beneficiary's health status. Comparisons of per capita utilization rates do not permit any adjustment for health status, other than relatively crude proxies such as age and sex. For this reason, we also conducted analyses of service use during selected episodes of care. Two medical conditions were selected: (1) acute myocardial infarction (AMI); and (2) transient ischemic attack (TIA). These were selected because they both involve "high-tech" diagnostic testing, the results of which may lead to subsequent surgery. Patients with these conditions were selected as follows:

- AMI patients included all patients admitted with a principal diagnosis of ICD-9 code 410.x1 during the first 9 months (January 1-September 30) of each study year; and
- TIA patients included all patients admitted with a principal ICD-9 diagnosis code of 435 during the first 11 months (January 1-November 30) of each study year.

These time intervals were selected to allow 90 and 30 days of follow-up, respectively, for all AMI and TIA patients. These follow-up time periods have been used in previous studies; see Mitchell and Khandker, 1995; Peterson et al, 1994; and Udvarhelyi et al., 1992, for studies of utilization for AMI patients, and Mitchell et al, 1996b for a study of patients with TIA.

Table 2-3 displays the average annual number of AMI and TIA patients in our sample, both overall and by vulnerable group. Because some analyses were performed on subsets of these patients (e.g., only patients undergoing cardiac catheterization), we also present the sample sizes for these analyses. It should be noted that, for some vulnerable groups, sample sizes become quite small.

TABLE 2-3

AVERAGE ANNUAL UNWEIGHTED SAMPLE SIZES FOR EPISODE OF CARE ANALYSIS

<u>Vulnerable Group</u>	<u>AMI</u>		<u>TIA</u>		<u>Patients with Atrial Fibrillation and without Clinical Contraindications</u>
	<u>All</u>	<u>Patients Undergoing Cardiac Catheterization</u>	<u>All</u>	<u>Patients Undergoing Cerebral Angiography</u>	
Black	2,741	998	1,789	68	75
Medicaid-Eligible	3,718	1,204	2,378	91	169
Urban Poor	2,394	798	1,188	46	83
Rural Poor	1,725	687	1,004	71	76
Urban HPSA	1,524	602	340	43	58
Rural HPSA	1,627	684	704	43	57
Disabled	4,638	2,262	1,716	138	112
TOTAL	18,938	7,015	9,345	514	782

SOURCE: Medicare Part A and Part B claims for a sample of Medicare patients, 1991-1993

2.2 Data Sources

The analyses in this report are based on six main data sources: (1) the denominator file; (2) MedPAR claims for acute hospital stays; (3) Part B physician and outpatient department claims; (4) the physician/supplier procedure summary files; (5) claims data from a private sector insurance plan that offered national coverage; (6) the Area Resource File; and (7) the PPS Impact File. As discussed earlier, the denominator file was used to draw the sample; it also provided sociodemographic characteristics for each member of the sample. MedPAR claims were used to construct hospital admission rates and surgical rates. Part B claims were used to create a wide range of physician utilization measures, as well as summary expenditure data. MFS impact variables were estimated from the physician/supplier procedure summary files. These data, along with private sector insurance data, were also used to measure the difference between Medicare and private prices. Data on market characteristics were drawn from the Area Resource File, and hospital characteristics from the PPS Impact file.

2.3 Variable Measurement and Construction

2.3.1 Access Measures

The analysis of the national sample focuses mainly on access to primary care services (see Appendix A). We look at four access measures directly related to the utilization of primary care services. For the total population we examine office visit rates and emergency room use. We assume that high rates of emergency room use may indicate inadequate access to primary care services. Separate analyses for women look at rates of office visits, mammography, and pap tests. The latter two preventive services are presumably ordered during the course of a primary care visit, so that low rates for these services may signal poor primary care access. The analysis of the national sample includes a utilization measure for one surgical procedure—cataract surgery. (Utilization rates for other surgical procedures were too low in the population at large to permit multivariate analysis.) We conducted additional descriptive analyses, presented in Appendix C, of rates of use for a wide range of other preventive services, visits, and “high-tech” diagnostic and therapeutic procedures.

Admission rates for ambulatory care sensitive (ACS) conditions are also examined as an outcome measure related to primary care access. These admissions are considered outcomes because hospitalizations are potentially avoidable with timely and adequate outpatient care. If such admissions are higher for vulnerable populations than for comparison beneficiaries, this suggests that barriers to care may exist for these vulnerable subgroups. Billings and colleagues (1991) have developed a list of 24 ACS conditions applicable to adults based on principal diagnosis.

Financial impacts were examined as a final access measure. Descriptive analyses looked at MFS impacts on per enrollee coinsurance and extra billing amounts, as well as assignment rates.

The episode of care analyses considered access for beneficiaries hospitalized for treatment of AMI and TIA. For both samples, we looked at hospital visit and consultation rates (Appendix A). Our utilization analyses also included specific tests and procedures related to each condition. For AMI patients these were: echocardiograms, cardiac catheterization, PTCA, and CABG surgery. The TIA analyses included: noninvasive cerebrovascular tests, head CT scans, brain MRI scans, cerebral angiography, carotid endarterectomy, and anticoagulant therapy (as proxied by prothrombin time tests).

2.3.2 MFS Impacts

MFS impacts were measured in two ways. For detailed descriptive tables based on the national sample, shown in the Appendix C, we used the expected 1992 payment change under the MFS compared to the old system. As described above, geographic areas were categorized into six mutually exclusive groups based on this expected payment change. This measure of the MFS impact has several limitations. First, it is based on the predicted, rather than actual, impact. Second, it is not procedure-specific; instead, it reflects the aggregate expected change across all services. In order to develop a more precise measure of the MFS impact, we estimated Medicare's actual average allowed charge for selected procedures by pricing locality in 1991, 1992, and 1993. Price changes based on these allowed charges were then used in descriptive

and regression analyses. Following is an explanation of the methods that were used to construct these price variables.

2.3.2.1 Calculation of Medicare Average Price

The Medicare average price by Medicare payment locality was calculated from the 1991, 1992, and 1993 physician/supplier procedure summary files for: office visits, hospital visits, inpatient consultations, cataract surgery, mammography, echocardiograms, cardiac catheterization, PTCA, CABG, noninvasive cerebrovascular tests, cerebral angiography, carotid endarterectomy, CT scans of the head, and MRI scans of the brain. The procedure summary file reports the total annual amount of Medicare allowed charges and allowed services in each Medicare locality by CPT-4 procedure code.

The average price in each year was calculated as total allowed charges divided by total allowed services. Appendix B lists the procedure codes included in the price calculation for each service category. In most cases, the service categories encompass multiple procedure codes.³ In these cases, allowed charges and allowed services were summed across procedure codes. This produces an average price that is a weighted average of the prices for the individual procedure codes included in the category, with weights equal to the number of allowed services for a given procedure code in that year. The weighted average does not control for changes in the mix of procedures within these service categories over time. Therefore, price changes that are calculated based on these average prices reflect the combined impact of the MFS price change and any changes in billing practices. This parallels our access measures, which measure whether a particular service was received and do not control for changes in the procedure code mix.

In a small number of cases, an average price could not be calculated for a locality, either because no data were reported in the Medicare procedure file or because the data produced outlier average prices that were clearly in error. In these cases, the price calculation was based on data from an adjacent locality. If a usable price could not be calculated for any of the three

³In some cases the average price calculation was based on a subset of the potential procedure codes within a category to increase the homogeneity of the services included. For example, the calculation for cataracts was limited to the most common cataract surgery procedure code (cataract removal with intraocular lens implant) and to selected modifier codes.

years, (a relatively infrequent occurrence), missing data were replaced by the prices from the adjacent locality. If a price was available for any of the three years, then missing prices were imputed using rates of change over the same time intervals from an adjacent locality.

2.3.2.2 Merging Price Data with Analytic Files

Price data were merged with both the file containing the national sample of Medicare beneficiaries and with the episode of care files. The Medicare average price for all three years was merged with each observation, so that a percent change over time in the Medicare price for a given procedure (the MFS impact) could be attached to each observation.

Prices were merged with the national sample based on the pricing locality in which the beneficiary resided; for the episode of care files, the merge was based on the pricing locality of the hospital where treatment was received. A Medicare pricing locality was identified for each observation in the analytic files in order to link with the average price data. To assign a pricing locality, we created a crosswalk file from ZIP code to county and Medicare pricing locality. We applied this crosswalk file to the analytic files, first attempting to assign a pricing locality based on beneficiary or hospital ZIP code. If no match was found, a second attempt to assign a locality was made based on county.⁴ Remaining non-matches were hand-assigned a pricing locality. We were left with a small number of observations (less than 0.1% of the national sample; none in the episode of care samples) for which we could not identify a pricing locality. This usually arose because ZIP code and county were missing from the file.

Ideally, prices should be assigned based on physician practice locality. However, this was not possible, both because the sources from which our analytic files were created did not contain these data and because our files are person-level summaries of utilization which may encompass services from multiple physicians. Beneficiary residence is an imperfect proxy for physician pricing locality, although this is unlikely to be a serious problem in areas with localities that cover the entire state or other large geographic areas. To the extent that our MFS impact variable is measured with error, our results are biased towards null findings.

⁴Although some localities are defined by city or other sub-county geographic unit, counties usually are not split between localities.

2.3.2.3 Calculation of Private Price

Regressions using the national sample also include a variable for the percent difference between the private and Medicare price for a procedure. Claims data for 1991-1993 were obtained from a private insurer that offered coverage nationwide. Claims data for professional services in 1991, 1992, and 1993, were used to calculate an average private price in each year for office visits, cataract surgery, and mammography by Medicare pricing locality. Claims for covered services in these three categories were selected using the same procedure code definitions applied to the Medicare data.⁵ A Medicare pricing locality code was assigned to the claims data based on ZIP code using the crosswalk file.⁶ We then calculated an average private price in a comparable manner to the Medicare price, using the total number of covered services⁷ and covered charges aggregated by locality.

The average private price for office visits, cataract surgery, and mammography was merged with the national sample by pricing locality and year. The percent difference between the private and Medicare price in that year was then calculated for each of these services. Private price data were omitted from the episode of care analyses because the incidence of the relevant procedures was too low in our data source.

2.4 Statistical Tests

2.4.1 Descriptive Analyses

T-tests were used to determine the statistical significance of differences in rates between groups and over time. All rates were standardized for age and sex using the direct method. For comparisons of very old versus younger beneficiaries, rates were standardized for sex only.

⁵Procedure modifier codes, which were used to define the Medicare average price for cataract surgery, were not available in the private sector data. Instead, the private price was based only claims for cataract surgeries where the type of service was surgery.

⁶The percentage of private insurance claims that matched with a pricing locality was lower than that achieved for the analytic files, particularly in certain states in some years. In the most extreme case, a pricing locality could not be assigned to more than 40 percent of the claims for Virginia in 1991. Nearly all of these claims were found to contain an invalid zip code.

⁷In some cases, apparent errors in the number of services produced implausibly low prices. Therefore, we set the maximum number of services per claim to two for cataracts and to ten for office visits.

For comparisons based only on female members of the sample (mammography and pap tests), only an age standardization was used. Because of the complex nature of the sample design, weighting and standard error adjustments were required in all analyses.

2.4.2 Regression Analyses

Multivariate regression techniques were used to more fully evaluate MFS impacts for selected dependent variables, holding factors other than the Medicare payment change constant. Logistic regression was used for binary dependent variables. Log-normal models were used for continuous variables. The model is based on a quasi-experimental design that takes advantage of cross-sectional differences in the magnitude of payment changes by comparing the utilization trend between 1991 and 1993⁸ for vulnerable and nonvulnerable beneficiaries in areas with large versus small MFS impacts. This model assumes that utilization responses, if they exist, will be greater in areas experiencing larger payment changes. Significant differences in the size of the response for vulnerable and nonvulnerable beneficiaries that are associated with the magnitude of the MFS price change are evidence that the MFS has had impact on access to services for vulnerable populations.

The basic multivariate model estimated for both the national sample and the episodes of care analyses was:

$$USE_{it} = f(\text{PRICE91}_{jk}; \text{MFS}_{jk}; Y93_t; \text{MFS}_{jk} * Y93_t; V; V * \text{MFS}_{jk} * Y93_t; \text{OTHER})$$

where USE_{it} = utilization of the i -th service in year t ;

PRICE91_{jk} = average 1991 Medicare allowed charge for service j in Medicare pricing locality k ;

MFS_{jk} = percent change in the average allowed charge for service j in locality k from 1991 to 1993;

$Y93_t$ = 1 if year is 1993; 0 otherwise;

⁸As noted previously, we also estimated regression models for the time trend between 1991 and 1992. The results did not differ appreciably from the 1991 and 1993 models.

$MFS_{jk} * Y93_t$ = interaction of MFS_{jk} and $Y93_t$;

V = vector of dummy variables for vulnerable groups;

$V * MFS_{jk} * Y93_t$ = vector of interaction terms;

OTHER = vector of beneficiary/patient, market area, or hospital characteristics.

PRICE91 and MFS control for baseline utilization differences across Medicare pricing localities.⁹ Baseline utilization levels are expected to be higher in areas with relatively higher fees (PRICE91). Similarly, historical growth rates in use may be greater in areas with greater historical price changes and larger expected changes under the fee schedule (MFS). Coefficients on the terms of primary interest ($MFS * Y93$ and $V * MFS * Y93$) would be biased if such differences existed and MFS was omitted from the model.

Y93 measures the average utilization time trend between 1991 and 1993 for a given service. $MFS * Y93$ captures the difference in the time trend for localities with large versus small price changes. Because this term is further interacted with V in another variable, the $MFS * Y93$ interaction by itself measures the MFS effect on the time trend for the omitted group, nonvulnerable beneficiaries. $V * MFS * Y93$ reflects the differential impact of the MFS price change on utilization time trends for vulnerable groups relative to the nonvulnerable.¹⁰ The coefficients on these interaction terms are the primary focus of our analyses. Significant coefficients suggest that the implementation of the MFS has had an impact on utilization for vulnerable groups. The sign of these coefficients may be positive or negative, with the interpretation depending on the dependent variable in the regression. A positive significant coefficient in the office visit regressions, for example, indicates that an increase in office visit fees following the implementation of the MFS improved access for a vulnerable group relative to the nonvulnerable. In contrast, a negative coefficient in the emergency room use regression is evidence that the MFS price increase improved access for the vulnerable because lower rates of emergency room use signal better access to primary care services.

⁹ In some models, the service for which PRICE91 and MFS are measured is the same as the dependent variable (i.e., $i=j$). In other cases, the relevant price variables differ from the dependent variable. The specific price variables used in each regression are described in Chapters 3 and 4.

¹⁰ We also considered including $PRICE91 * Y93$ and $V * MFS$. These terms were dropped because they were highly collinear with other variables in the model.

Baseline utilization differences between vulnerable and nonvulnerable beneficiaries are captured by the vulnerable group variables included in V. The OTHER vector incorporates other beneficiary or patient characteristics that are believed to have an effect on utilization, as well as hospital or market area characteristics. The variables included in OTHER differ for the national sample and episode of care analyses. The specific variables used in these models are described in the following chapters.

The results of logistic regressions are reported as odds ratios, while parameter estimates are shown from the log-normal models. As in the descriptive analyses, all models were estimated with weights and standard errors have been adjusted to account for the complex sampling design.

3.0 ANALYSIS OF NATIONAL BENEFICIARY SAMPLE

3.1 Introduction

The analyses in this chapter examine the impact of the Medicare Fee Schedule on access to services by vulnerable beneficiaries within the Medicare population generally. In contrast to Chapter 4, which focuses on beneficiaries with specific conditions, here we consider measures that potentially affect all beneficiaries. As described in Chapter 2, these analyses mainly view access using several indicators of the utilization of primary care services. In addition, we look at effects on a common surgical procedure (cataract extraction) and on patient financial liability. MFS impacts on most of these services are explored using both descriptive and regression analyses. We omitted the financial liability measures from the regression analyses because it was not possible to define a meaningful measure of the price change due to MFS implementation. Further descriptive analyses were undertaken for an additional set of services (Appendix C). Some of these services are explored in greater depth in the episodes of care analyses in Chapter 4.

The indicators of primary care access are utilization of outpatient visits and emergency room services, as well as hospital admissions for ambulatory care sensitive (ACS) conditions. Outpatient visits include physician visits in office, clinic, hospital OPD, and all other ambulatory care settings. (Emergency room and home visits are excluded.) The outpatient visit rate is a direct measure of primary care access, while high rates for the latter two measures signal potentially inadequate access to primary care services. For female beneficiaries only, we look at receipt of two preventive services--Pap tests and mammography. Cataract surgery, which is relatively common among the general Medicare population, is also examined. Definitions of these services are shown in Appendix A. The beneficiary financial liability measures are: coinsurance liability, extra billing liability, and the assignment rate.

The analyses for the national sample look at MFS impacts on utilization for the nine groups of potentially vulnerable beneficiaries described in Chapter 2. These groups are:

- the "very old";
- blacks;
- dual Medicaid eligibles;
- the disabled;

- residents of rural areas generally;
- residents of an urban poverty area;
- residents of a rural poverty area;
- residents of an urban Health Professional Shortage Area (HPSA); and
- residents of a rural HPSA.

As noted previously, the sample was selected to ensure adequate representation of vulnerable groups. The unweighted numbers of beneficiaries in each of the vulnerable groups was shown in Chapter 2. There are more than 200,000 sample members per year in the smallest vulnerable groups, the urban poor and residents of urban shortage areas. Even after selecting the one-third sample for regression analyses, these sample sizes should be more than adequate to detect any differences that exist between vulnerable and non-vulnerable beneficiaries.

3.2 Descriptive Results

3.2.1 Price Changes

In order to capture MFS impacts, we calculated average annual allowed charges for three services: outpatient visit, mammography, and cataract surgery. These means were constructed from the Physician/Supplier Procedure Summary Files for each of the three study years, based on the charge locality in which the beneficiary resided. (This process was described in detail in Section 2.3.2.1.)

Table 3-1 presents the mean allowed charge for each service over the study period. As expected, payment for outpatient visits increased substantially, almost 12 percent from 1991 to 1993. To the extent that higher payment for outpatient visits improves access to primary care, we would expect more outpatient visits, and fewer ER visits and ACS admissions, as a result. Since preventive services also are likely to be provided (either directly or on referral) during routine visits, we would expect higher visit payments to increase the probability of receiving mammography screening or Pap tests. It is possible, however, that the provision of mammography is determined more by its own reimbursement than that of outpatient visits; we see in Table 3-1 that Medicare allowed charges for mammography fell 12 percent over the same time period.

Medicare payments for cataract surgery (cataract extraction plus IOL insertion) also were considerably lower in 1993 than in 1991: about \$200 or 17 percent less. This decline is all

the more remarkable, given the very extensive cuts imposed earlier on cataract surgery as part of the OBRA overpriced procedure reductions.

Table 3-1 also shows the change in fees for a major private payer over the same time period, as well as the percent difference between Medicare and private fees. Increases in outpatient visit reimbursement under the MFS appears to have closed the gap somewhat between Medicare and other payers, as private payer fees rose relatively slower. Private payments for outpatient visits averaged 26.6 percent more than Medicare payments in 1991; by 1993, this differential had narrowed to 19 percent. Private reimbursement for mammography and cataract surgery fell from 1991 to 1993 at almost the same rate as Medicare fees. Private fees remained higher than those of Medicare, although the differential for cataract surgery was relatively small.

In order to more easily evaluate differential utilization trends, we classified beneficiaries based on size of the MFS impact in their locality. For analyses of outpatient visits, ER visits, ACS admissions, and preventive services (mammography and Pap tests), we compare utilization across areas categorized by the outpatient visit price change. Comparison of cataract surgery rates were made across areas categorized by the cataract price change. These categories should be distinguished from those used in tables published in earlier reports (including our chapters in HCFA's 1993, 1994, and 1995 Reports to Congress) and from those displayed in Appendix C of this report. These earlier tables had categorized payment change based on *expected* area-level impacts, averaged across *all* services; here, we use *actual* areas impacts, calculated for *individual* services.

Four price change areas were created based on the change in the outpatient visit allowed charge between 1991 and 1993: (1) no change or a reduction; (2) an increase of between 1-12 percent; (3) an increase between 13-18; and (4) greater than an 18 percent increase. Three price change areas were established for cataract fees: (1) a reduction of 20 percent or more; (2) no change, or a reduction of less than 20 percent; and (3) a price increase. These price change categories were selected based on the empirical distribution of beneficiaries across localities.

Tables 3-2 through 3-10 show the results of descriptive analyses on utilization in 1991, 1992, and 1993 for the national sample. Utilization is presented by vulnerable population group and by price change area. Statistical tests were calculated for the differences between vulnerable and non-vulnerable groups in each year (indicated by an "a" superscript) and for

the time trend between 1991 and 1993 within each vulnerable and non-vulnerable group (indicated by a “b” superscript). Tests were performed by MFS payment change area and across all payment change areas. The following sections describe the results of these comparisons.

3.2.2 Outpatient Visits

Aggregating across all payment change areas and all beneficiary groups, the number of outpatient visits grew steadily over the study period, increasing by 3 percent from 1991 to 1993. However, the actual increase was small, less than 0.2 visits over a two-year period. This increase was significant in each of the four payment change areas, although there was no uniform pattern in the magnitude of the increase. The smallest percentage increase occurred in areas with the largest payment change (2% in area 4), which is counter-intuitive, while the largest increase (4%) was observed in area 2, which had only a modest price increase.

The “All Areas” columns of Table 3-2 show that outpatient visit rates differed significantly for beneficiaries in the vulnerable and non-vulnerable comparison groups in 1991, 1992, and 1993. Vulnerable sub-populations generally had fewer outpatient visits per capita than the non-vulnerable. The exceptions were Medicaid-eligible and disabled beneficiaries, who had significantly more visits. This may be due in part to their poorer health status.

All non-vulnerable comparison groups showed significant increases between 1991 and 1993. In contrast, two vulnerable groups, residents of rural poverty areas and Medicaid eligibles, had significant decreases. The disparity is particularly striking for Medicaid dual eligibles, who experienced a 3 percent decrease in visits as compared to a 4 percent increase for non-crossover beneficiaries. With the exception of residents of rural shortage areas, all other vulnerable groups also experienced significant increases over time. Nonetheless, the time trend differences for the vulnerable and non-vulnerable do not appear to be associated with MFS price changes. For all vulnerable groups, beneficiaries in the largest price increase areas showed either no change in the number of outpatient visits over time or a significant reduction, whereas those in areas with a price reduction showed either an insignificant change or a significant increase. In contrast, with the exception of beneficiaries residing in non-poor areas that experienced fee reductions, there was a significant increase in the number of outpatient visits for beneficiaries in the comparison groups in all payment change areas.

3.2.3 Emergency Room Visits and Ambulatory Care Sensitive Admissions

Vulnerable group beneficiaries generally used emergency rooms at a higher rate (Table 3-3) and had more ACS admissions (Table 3-4) than their non-vulnerable counterparts in all years. This is consistent with lower outpatient visit rates observed in vulnerable groups because emergency room use and ACS admissions may signal inadequate access to primary care services. Nonetheless, the differences were particularly marked for the two vulnerable groups that had more outpatient visits than their non-vulnerable counterparts--Medicaid eligibles and the disabled. This supports the hypothesis that their relatively higher outpatient visit rate may be explained by poorer health status. Very old beneficiaries also had strikingly higher rates of emergency room use and admission for ACS conditions. While this may be explained by poorer health status, their lower use of outpatient visits does not reflect their greater need. An unknown number of our sample may have been residing in a nursing home for some or all of the year, a number expected to be particularly high among those aged 85 or more. Thus, lower outpatient visit rates for this cohort may be offset by higher rates of physician nursing home visits.

In contrast to other vulnerable groups, residents of rural shortage areas had significantly fewer emergency room visits per beneficiary than residents of non-shortage areas in 1992 and 1993, although the size of the difference was small in both years. In addition, their ACS admission rates did not differ significantly in 1991 and 1992.

The time trends for emergency room use and admissions for ambulatory care sensitive (ACS) conditions were not consistent with the overall trend toward increasing numbers of outpatient visits. In theory, these measures, which are indicators of poor access to primary care, should fall as the number of outpatient visits rises. Overall, however, the number of emergency room visits was unchanged between 1991 and 1993, while the number of ACS admissions showed a small but significant increase of 5 percent. One possible explanation for the secular rise in ACS admission rates is the cohort nature of our sample. Our original 1991 sample was aging over time, and older beneficiaries appear to be more likely to be hospitalized with ACS conditions. In the regressions that follow, we control for age when estimating the probability of ACS admission.

Other than beneficiaries in areas with price reductions, who had a small significant decrease in the number of emergency room visits, beneficiaries in all payment change areas

showed either significant increases or no change in the number of emergency room visits and ACS admissions, despite a consistent pattern of increasing number of outpatient visits.

There was considerable variation in the time trend for emergency room use by vulnerable and non-vulnerable comparison groups. Blacks, Medicaid eligibles, the disabled, and the very old all had significant increases while there was no significant change for their comparison groups. Emergency room use declined for residents of shortage areas, but increased for beneficiaries in non-shortage areas. Both residents of rural poor and non-poor areas had increasing numbers of emergency room visits, while the rate fell for the urban poor. There were no significant changes for residents of urban or rural areas generally. These differing time trends for vulnerable and non-vulnerable beneficiaries do not appear associated with MFS price changes.

3.2.4 Mammography and Pap Tests

Changes in preventive service utilization over our short study period need to be evaluated within the context of Medicare coverage restrictions. First, both screening mammography and Pap tests are relatively new Medicare benefits, becoming covered in 1991 and 1990, respectively. Second, neither is an annual benefit; screening mammography is covered every two years and Pap tests only every three years. Thus, an apparent decline in use could simply be the result of an initial peak in demand (when the benefit first became covered), followed by a waiting period until eligible again for screening.

The percentage of female beneficiaries receiving mammography screening (Table 3-5) and Pap tests (Table 3-6) declined between 1991 and 1993. In both cases, the magnitude of the change was very small. Only beneficiaries in areas with a price reduction for outpatient visits had a significant reduction in the mammography rate, while the probability of having a Pap test fell significantly in all areas with a price increase.

The mammography rate fell significantly over time for all non-vulnerable comparison groups except beneficiaries under the age of 85. In contrast, there was either no change or a significant increase in the probability of having a mammogram for all vulnerable groups. As a result, the gap between vulnerable and non-vulnerable beneficiaries narrowed, although the vulnerable continued to be less likely to receive mammography screening.

The time trend varied across payment change areas. In areas with fee decreases, all of the non-vulnerable comparison groups and four of the nine vulnerable groups experienced a decrease in the likelihood of having a mammogram. In contrast, significant changes over time for vulnerable beneficiaries in areas with an MFS price increase were mainly positive. On the other hand, other than white beneficiaries in areas with the largest price increase, whose mammography rate fell, there were no significant changes for non-vulnerable beneficiaries in price increase areas. This pattern is consistent with the hypothesis that increasing Medicare reimbursement for outpatient visits improved access to mammography screening for women in vulnerable groups.

Pap test rates declined among both vulnerable and non-vulnerable group beneficiaries. Significant decreases were more likely to occur in areas with moderate to large outpatient visit price increases as compared to those with price decreases or small increases. However the size of the decrease does not differ by payment change area or for vulnerable and non-vulnerable beneficiaries. Thus, declining Pap test rates would not appear to be related to the fee schedule.

Finally, it should be noted that substantial utilization gaps exist between vulnerable and non-vulnerable groups of female beneficiaries. The probability of receiving either preventive service remained significantly lower for all vulnerable groups with the exception of those in rural areas. The absolute magnitude of the differences often are large, furthermore. Dual Medicaid-eligible women were only half as likely as non-eligible women to undergo mammography, for example.

3.2.5 Cataract Surgery

The rate of cataract surgeries increased by 5 percent from 1991 to 1993, despite generally declining Medicare payments (Table 3-7). This is consistent with the McGuire-Pauly model which predicts that income effects will dominate for physicians with relatively larger Medicare shares and whose practices are disproportionately devoted to the procedures whose payments are cut. Ophthalmologists derive one-half of their Medicare revenues, and one-quarter of their total practice revenues from cataract surgery alone (Mitchell and Cromwell, 1995).

Other than residents of urban areas generally, the rate of cataract surgeries increased significantly for all non-vulnerable comparison groups. Among the vulnerable, only the disabled and residents of rural areas (including those in both rural shortage and rural poverty

areas) showed significant increases. Cataract surgery rates declined significantly for two vulnerable groups—residents of urban shortage areas and the very old. (Utilization levels were very high to start with, however, for the latter group.)

3.2.6 Financial Liability

Financial liability is assessed in three ways: coinsurance payments (Table 3-8), extra billing amounts (Table 3-9), and the assignment rate (Table 3-10). We do not present results by MFS payment change area. Our financial liability measures are constructed based on all physician services; we were not able to construct a corresponding *actual* MFS payment change variable based on all services. Appendix Tables C-9, C-10 and C-11 present descriptive results using payment change areas defined by the *expected* MFS impact, which is defined using all services.

Coinsurance and extra billing amounts are both adjusted for geographic differences in cost-of-living. In addition, 1992 and 1993 amounts are expressed in 1991 dollars using the change in the all-item Consumer Price Index (CPI) as a deflator. We used the all-item CPI, rather than the medical price index, as the deflator because our focus was on beneficiary out-of-pocket payments. Therefore, the relevant benchmark is the impact of financial liability for Medicare services on the amount of money beneficiaries have to spend on other goods and services.

Coinsurance liability was calculated as 20 percent of Medicare allowed charges. Thus, differences in coinsurance liability reflect both differences in service use, and inter-area fee differences. Changes over time will reflect both changes in service use and relative payment changes resulting from the MFS. There were significant differences between the coinsurance liability of beneficiaries in all vulnerable and non-vulnerable groups. While coinsurance amounts were lower for residents of shortage areas, residents of rural poor areas, blacks, and residents of rural areas generally, they were higher for beneficiaries in urban poor areas, Medicaid eligibles, the disabled, and beneficiaries over 85. Higher rates for the latter three groups, at least in part, are likely to reflect higher rates of service use due to poorer health status. All vulnerable groups had significantly lower extra billing liability, with the exception of residents of rural shortage areas and rural areas generally. The higher extra billing liability for these beneficiaries is explained by lower assignment rates in these areas.

Coinsurance liability fell significantly by \$12.10 (6%) from 1991 to 1993, after adjusting for inflation. Significant reductions were observed for all beneficiary groups. Residents of rural shortage areas, rural poverty areas, and rural areas generally, as well as blacks, experienced smaller than average declines. However, coinsurance amounts for all of these groups was less than the average in all three years, largely because of lower fee levels in these areas.

There was a dramatic two-thirds reduction of \$24.51 in extra billing liability between 1991 and 1993. This reduction was significant and fairly uniform across all beneficiary groups. Beyond an overall decrease in Part B spending, two additional factors explain the decline in extra billing liability: (1) greater restrictions on extra billing introduced with the fee schedule; and (2) higher assignment rates. As part of the MFS legislation, Congress capped the amount above the fee schedule payment that physicians could bill patients for (in addition to the coinsurance). Since MFS payment amounts for non-participating physicians also were set at 95 percent of the amounts paid to participating physicians, this further restricted the potential extra bill amount. It also encouraged more physicians to accept assignment (and thus forego any balance billing).

The role of assignment rates is illustrated in Table 3-10. Assignment rates increased by nearly 15 percent from 1991 to 1993. The percentage increase was lower for most vulnerable groups compared to non-vulnerable, however assignment rates were also higher for these vulnerable populations. The exceptions to this pattern are residents of rural shortage areas and rural areas generally, both of which have lower than average assignment rates and enjoyed larger than average increases between 1991 and 1993. In summary, none of the three measures indicates that fee schedule implementation imposed greater financial liability on vulnerable populations. In fact, the extra billing restrictions associated with MFS appear to have greatly reduced out-of-pocket liability.

3.3 Regression Results

3.3.1 Specification and Estimation

Regression models were used to estimate MFS impacts, while holding constant other factors that might influence service use. The basic regression model is described in Chapter 2. The following specification was used for the combined 1991 and 1993 national sample:

$$USE_{it} = f(\text{PRICE91}_{jk}; \text{MFS}_{jk}; Y93_t; \text{MFS}_{jk} * Y93_t; V; V * \text{MFS}_{jk} * Y93_t; \text{BENE}; \text{MARKET})$$

where USE_{it} = utilization of the i -th service in year t ;

PRICE91_{jk} = average Medicare allowed charge for service j in Medicare pricing locality k in 1991;

MFS_{jk} = percent change in the average allowed charge for service j in locality k from 1991 to 1993;

$Y93_t = 1$ if year is 1993; 0 otherwise;

$\text{MFS}_{jk} * Y93_t$ = interaction of MFS_{jk} and $Y93_t$;

V = vector of dummy variables for vulnerable groups;

$V * \text{MFS}_{jk} * Y93_t$ = vector of interaction terms;

BENE = vector of beneficiary characteristics; and

MARKET = vector of market area characteristics.

Regressions were estimated for the following dependent variables using the entire national sample:

- probability of an outpatient visit;
- number of outpatient visits for those with at least one visit;
- probability of emergency room use;
- probability of an ACS admission; and
- probability of cataract surgery.

Separate regressions were also estimated for female sample members only using the following dependent variables:

- probability of an outpatient visit
- number of outpatient visits for those with a visit;
- probability of mammography screening; and
- probability of a Pap test.

Separate visit regressions were estimated for female beneficiaries because it was assumed that referral for mammography screening and Pap tests occurred during the course of the visit. The probability of receiving these preventive services is, in part, a function of making an outpatient

visit. Therefore, we wanted to explore whether any observed changes in the probability of having a mammogram or a Pap test were consistent with the pattern of changes in visit utilization.

With the exception of the number of outpatient visits, all dependent variables are binary and logistic regression was used to estimate the model. Log-normal regression was used to estimate equations for number of outpatient visits in order to reduce skewness in the dependent variable.

As described earlier in this chapter, we hypothesized that, with the exception of cataract surgery, access to primary care services would be influenced by outpatient visit fees. For the outpatient visit, ER visit, ACS admission, mammography and Pap test regressions, PRICE91 and MFS were calculated using outpatient visit fees. PRICE91 and MFS were based on cataract surgery fees for the cataract regression. An alternative regression was estimated for the probability of mammography screening based on mammography fees. It is possible that mammography rates are influenced directly by the fee paid for this service rather than by the enhanced access to primary care resulting from higher outpatient visit fees.

The primary coefficients of interest in our model are those associated with V^*MFS^*Y93 . They capture differences in the impact of the MFS price change on utilization time trends for vulnerable groups relative to the non-vulnerable population. The impact of the MFS price change on the non-vulnerable group is reflected in the term, MFS^*Y93 . In general, a positive coefficient for V^*MFS^*Y93 indicates that a price increase due to the implementation of the Medicare fee schedule improved access (i.e., increased outpatient visit use) for vulnerable beneficiaries relative to the non-vulnerable population. A positive coefficient also would indicate declining relative access in areas where prices fell following MFS implementation, assuming MFS effects are symmetric. Emergency room use and ACS admissions are believed to be inversely related to outpatient visit access. If higher outpatient visit fees improved access to outpatient visits for vulnerable beneficiaries relative to the non-vulnerable, a negative coefficient on V^*MFS^*Y93 would be expected in the emergency room visit and ACS admission regressions. This would be interpreted as a desirable outcome.

The nine vulnerable group variables in our model are: OLD (age greater than or equal to 85), BLACK (black), MEDICAID (dual Medicaid eligibles), DISABLED (disabled), RURAL (resident of a rural area), UPOOR (resident of an urban poverty area), RPOOR (resident of a rural poverty area), UHPSA (resident of an urban shortage area), and RHPSA (resident of a

rural shortage area). Beneficiaries who do not fall into any of these categories constitute the non-vulnerable group (included in the intercept).

In addition to vulnerable group dummy variables, dummy variables for other beneficiary (BENE) characteristics believed to affect utilization are included in the model: MALE (gender) and AGE (age 75 to 84). An additional set of variables control for MARKET area characteristics. PRIV_MED is the percent difference between the private and Medicare fee for the same service as PRICE91 and MFS in a given regression. We hypothesize that higher private prices relative to Medicare will reduce access for Medicare beneficiaries. A variable is also included for the number of physicians per 100 population in the beneficiary's county of residence. A higher physician-population ratio is expected to improve access. The physician-population ratio is calculated for primary care physicians (PCAREPOP) for regressions using the office visit fee, ophthalmologists (OPHTHPOP) for the cataract surgery regression, and radiologists (RADPOP) for the version of the mammography regression based on the mammography fee. Finally, SHARE65, the proportion of the population that are 65 years or older in the county of residence, measures the importance of the Medicare market.

The same set of variables were included in all regressions.¹ Means of the dependent and independent variables in the regressions for the full national sample are shown in Table 3-11. Table 3-12 presents means for female members of the sample.

3.3.2 MFS Impacts

Results of regressions on primary-care-related services for the national sample are shown in Table 3-13. Table 3-14 presents regression results for the probability of having cataract surgery. Table 3-15 contains parameter estimates from regression equations for office visits and preventive services for female beneficiaries, while results from the mammography regression using mammography price variables are found in Table 3-16. Odds ratios are shown for all regressions other than those for the log number of office visits, for which regression coefficients are presented.

For categorical variables, the odds ratio is interpreted as the likelihood that a person with a given characteristic will receive a service relative to their comparison group. For example, the odds of having an office visit was 5.6 percent higher in 1993, *ceteris paribus* as

¹ MALE was excluded from regressions for female beneficiaries only.

compared to 1991 (based on the Y93 odds ratio in Table 3-13, col. 1). For continuous variables, the odds ratio is interpreted as the change in the likelihood of receiving a service given a one unit change in the independent variable. For example, a one dollar increase in the baseline Medicare fee for an office visit (PRICE91) decreases the odds of having an emergency room visit by about 2.5 percent.

The regression estimates in Table 3-13 provide little evidence that MFS implementation affected access to services for the Medicare non-vulnerable population generally (as reflected by MFS*Y93), but do demonstrate some differential impact on access for vulnerable sub-populations (reflected in the interactions between the nine vulnerable groups and MFS*Y93). The term, MFS*Y93, was not significant in any of these equations, indicating that price changes for outpatient visits under MFS did not influence the receipt of outpatient visits by non-vulnerable beneficiaries or the probability of having an emergency room visit or an ACS admission. Similarly, there is little to indicate a differential impact on vulnerable beneficiaries. The interactions of vulnerable group dummy variables and MFS*Y93 are mainly insignificant, although there is evidence for some groups that access to outpatient visits may have been affected.

MFS implementation increased the probability that black beneficiaries would make an outpatient visit. Evaluating the odds ratio for BLACK*MFS*Y93 at MFS = 12 percent (the average percent change in the Medicare fee for an outpatient visit), the odds that a black beneficiary would make at least one outpatient visit rose by about 3.6 percent, or $(1.003)^{12}$. Prior to MFS implementation, blacks were only 69.6 percent as likely as whites to make at least one physician visit (based on the odds ratio associated with BLACK), all other things equal. MFS raised these odds, but only to 72.1 percent, on average $(0.721=0.69*1.036)$.

While we hypothesized that the price increase for outpatient visits might improve access for vulnerable populations, it appears that MFS implementation may have impeded access for Medicaid dual eligibles and residents of urban poor areas (although in both cases, the effect is significant only at the 10 percent level). Again evaluating the impact at a 12 percent price increase, the odds that a Medicaid crossover beneficiary would make at least one outpatient visit fell by about 2.4 percent, while that of a beneficiary living in an urban poverty area fell by about 3.6 percent. As was the case for blacks, the impact of this change in the odds was relatively small. Medicaid eligibles were about 82 percent as likely as non-eligibles to have an outpatient visit prior to MFS implementation and about 80 percent as likely after. Similarly,

the odds for urban poor beneficiaries fell from about 81 percent to 78 percent. There is also evidence that the number of these visits fell for those Medicaid-eligible and rural beneficiaries with at least one such visit. The magnitude of the effects are again small, however. The average 12 percent increase in the outpatient visit fee only changed the number of visits by about one percent for both groups.

The cataract surgery regression (Table 3-14) showed no evidence of MFS impacts on utilization for either vulnerable or non-vulnerable beneficiaries. The MFS*Y93 and all of the V*MFS*Y93 odd ratios were insignificant, after adjusting for other factors.

The outpatient visit results for female sample members were generally similar to those for the sample of all Medicare beneficiaries (Table 3-15). Higher MFS fees slightly increased the odds of a black beneficiary having an outpatient visit and slightly decreased the odds for dual Medicaid eligibles. (However, in this women only regression, the Medicaid coefficient reaches significance at the .05 level.) The increased odds that a disabled beneficiary will have an outpatient visit approached significance, although the findings for the urban poor are no longer significant. Again, the number of office visits for residents of rural areas fell slightly.

The regression results for the probability of having a Pap test and mammography screening indicate that there was a slight decrease (about 3.5 percent) in the odds of having these preventive services in areas where the Medicare fee for an outpatient visit rose following MFS implementation. There was no evidence of differential effects for vulnerable beneficiaries in the probability of having a Pap test. Relative to the non-disabled, an increase in the fee for an outpatient visit was associated with a slight increase (approximately 3.6 percent) in the odds of having a mammogram for disabled, female beneficiaries. The net effect of MFS*93 and DISABLED*MFS*93, however, is that there was no change in the odds for this population as a result of the MFS price increase.

It is troubling that the odds of receiving preventive services are lower when reimbursement for outpatient physician visits increases. Although annual utilization rates may be confounded by coverage restrictions, the regressions have controlled for any time trend unrelated to the MFS. (In fact, the odds of receiving mammography is significantly higher in 1993 than in 1991.) An alternative specification of price, substituting mammography fees for visit fees, produces different results, however (Table 3-16). Here the odds ratio for MFS*Y93 is also less than one, suggesting lower odds when fees are higher. However, since mammography fees fell on average from 1991 to 1993, this means that the odds of receiving

mammography actually increased under the MFS. Lower copayment liability could be a possible explanation, but the actual dollars involved are trivial (about \$1 difference, using the average prices in Table 3-1). There were no differential MFS impacts by vulnerable group using this specification.

3.3.3 Differential Use by Vulnerable Patient Groups

Neither the descriptive or regression analyses provide much evidence that MFS implementation had a differential impact on access to services for vulnerable populations. Yet, our descriptive findings indicated substantial baseline utilization differences between vulnerable and non-vulnerable populations. Regression results for the main effects of vulnerable group dummy variables confirm these descriptive findings even after controlling for other beneficiary and market characteristics. With few exceptions, we find poorer access to services for vulnerable Medicare populations.

All vulnerable beneficiary groups, other than residents of rural poverty areas, were significantly less likely to have an outpatient visit than non-vulnerable beneficiaries (Table 3-13). Blacks and the disabled were each approximately 30 percent less likely to have an outpatient visit than their non-vulnerable counterparts. This is a particular concern given the presumably poorer health status of the disabled. Very old beneficiaries also were significantly less likely to make at least one outpatient visit. However, as noted earlier, we were unable to assess nursing home residence for sample members. Descriptive results shown in the appendix show significantly higher nursing home visit rates for those aged 85 plus, suggesting that a disproportionate number of these very old beneficiaries are institutionalized.

For those beneficiaries with at least one outpatient visit, beneficiaries who are eligible for Medicaid, disabled, or live in a rural poverty area have greater numbers of visits than the non-vulnerable. Combined with the fact that they were less likely to have a visit, this may indicate that those who succeed in accessing these services do so for more serious conditions. Residents of urban poverty and rural shortage areas were both less likely to have an outpatient visit and have fewer visits if they have any.

The regression results for emergency room use and ACS admissions, which show higher rates for many vulnerable groups, are consistent with limited access to primary care services. The odds for Medicaid dual eligibles (nearly twice as high), and disabled beneficiaries

(more than 60 percent higher) are particularly alarming. If this reflects poorer health status, their lower outpatient visit rates are all the more disturbing.

Residents of urban poverty and urban shortage areas also were significantly more likely to be admitted to the hospital for an ACS condition than the non-vulnerable, although their respective odds are only 9 percent and 13 percent greater. The odds ratios for rural vulnerable groups are mostly insignificant and in one case (emergency room visits for residents of rural areas generally) is significantly lower than the non-vulnerable. Given that the outpatient visit regression does not provide evidence of better access to primary care services for these vulnerable groups compared to the non-vulnerable, this may reflect poorer access to hospital services.

Several vulnerable groups also were less likely to have cataract surgery (Table 3-14). These include blacks (odds ratio=.811), Medicaid eligibles (odds ratio=.931), the disabled (odds ratio=.628) and residents of rural areas (odds ratio=.921). On the other hand, the odds that a beneficiary 85 years and over will have cataract surgery is about two-thirds greater than that of a beneficiary under 75. This undoubtedly reflects the increasing incidence of cataracts as beneficiaries age.

Among female beneficiaries, the odds of having an outpatient visit are lower for all vulnerable groups except residents of rural poverty areas and rural areas generally (Table 3-15). Medicaid and disabled beneficiaries who had a visit, on the other hand, had more visits than non-crossover and non-disabled beneficiaries (9 percent and 13 percent respectively). Residents of rural poverty areas made outpatient visits at a somewhat higher rate than the non-vulnerable. While their probability of having a visit did not differ significantly, those with at least one visit had 7 percent more visits.

With the exception of rural shortage area residents, all female beneficiaries in a vulnerable group were less likely to have a Pap test or mammogram. Dual Medicaid beneficiaries had particularly poor access to these services, e.g. mammography screening (odds ratio=.556). The vulnerable group results from the mammography regression using mammography price are similar to those using the outpatient visit price (Table 3-15).

3.3.4 Time Trends

Although we found few utilization differences attributable to the fee schedule, we did find substantial access gaps for most of the vulnerable groups. In order to determine whether these gaps had narrowed or widened over the study period, we re-estimated the equations shown in Tables 3-13 to 3-16, dropping all MFS interactions and substituting interaction terms for the vulnerable groups and the year 1993 (e.g., BLACK*Y93, MEDICAID*Y93, etc.).

The outpatient visit regressions showed a trend toward both a greater probability of having an outpatient visit and an increasing number of such visits between 1991 and 1993 for non-vulnerable beneficiaries (Table 3-17). The time trend did not differ significantly for most vulnerable groups so that there was no change in relative access during our study period. However, it appears that the gap between Medicaid and non-Medicaid dual eligibles in access to outpatient visits has widened over time. At baseline, the odds of an outpatient visit for Medicaid eligibles was only 0.84. This differential widened by an additional 7 percent by 1993 (as indicated by the odds ratio of 0.931 for MEDICAID*Y93). Furthermore, although Medicaid dual eligibles had about 8 percent more outpatient visits (conditional on having any) in 1991, this difference narrowed to about 4 percent between 1991 and 1993. Disabled and rural beneficiaries also exhibited a negative time trend in the number of outpatient visits, though the magnitudes were small.

Between 1991 and 1993 the odds of having an emergency room visit increased slightly, by 4 percent. There was no significant change in the odds of having an ACS admission. Furthermore, the time trends for emergency room use and ACS admission rates did not differ for the vulnerable and non-vulnerable. The result for residents of urban shortage areas in the emergency room use regression was marginally significant at the 10 percent level.

The likelihood of having cataract surgery also did not change over this time period. While the very old showed a negative time trend for cataract surgery relative to beneficiaries less than 75 (Table 3-18), it was only significant at $p < .10$. At baseline, the very old had a substantially higher likelihood of having cataract surgery.

The outpatient visit results for women were similar to those for the overall sample (Table 3-19). As was observed among Medicare beneficiaries generally, access to outpatient visits eroded during our study period for dual Medicaid eligible women compared to non-eligibles. There was no secular change between 1991 and 1993 in the probability of either a Pap

test or mammography screening being performed. However, there was evidence that the substantial baseline access gaps for blacks and the disabled narrowed somewhat over this time period.

TABLE 3-1

CHANGES IN MEDICARE FEES AND RELATIVE PRIVATE-MEDICARE FEES

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>Percent Change</u>
<u>Outpatient Visit</u>				
Medicare Fee (\$)	\$28.60	\$30.50	\$32.00	11.9 %
Private Fee (\$)	36.20	37.50	38.10	5.2
Difference of Private from Medicare Fee (%)	26.6 %	22.9 %	19.1 %	--
<u>Mammography</u>				
Medicare Fee (\$)	\$42.36	\$38.42	\$37.23	-12.1
Private Fee (\$)	58.58	54.10	53.31	-9.0
Difference of Private from Medicare Fee (%)	38.3 %	40.8 %	43.2 %	--
<u>Cataract Surgery</u>				
Medicare Fee (\$)	\$1,270.27	\$1,097.72	\$1,058.77	-16.6
Private Fee (\$)	1,482.41	1,284.33	1,240.88	-16.3
Difference of Private from Medicare Fee (%)	16.7 %	17.0 %	17.2 %	--

SOURCE: Medicare Physician/Supplier Summary Procedure files and private insurer claims, 1991-1993.

TABLE 3-2

AVERAGE NUMBER OF OUTPATIENT VISITS STRATIFIED BY ACTUAL MFS PAYMENT CHANGE AND VULNERABLE POPULATION GROUP, 1991-1993 (age-sex adjusted per beneficiary)

Vulnerable Population	ACTUAL MFS PAYMENT CHANGE FOR OUTPATIENT VISITS														
	Fee Reduction			1-12 % Increase			13-18% Increase			18% + Increase			ALL AREAS		
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas															
All Shortage Combined	5.62 ^a	5.70 ^a	5.79 ^{ab}	4.71 ^a	4.79 ^a	4.80 ^{ab}	4.72 ^a	4.77 ^a	4.76 ^a	4.47 ^b	4.50 ^a	4.40 ^{ab}	4.74 ^a	4.79 ^a	4.77 ^{ab}
Urban	5.63 ^a	5.71 ^a	5.81 ^{ab}	4.80 ^a	4.84 ^a	4.83 ^a	4.97	5.06	5.12 ^b	4.64	4.66	4.57 ^b	4.93 ^a	4.99 ^a	4.99 ^{ab}
Rural	4.35 ^a	4.52 ^a	4.69 ^{ab}	4.51 ^a	4.66 ^b	4.72 ^{ab}	4.41 ^a	4.44 ^a	4.34 ^{ab}	4.38 ^a	4.41 ^a	4.31 ^{ab}	4.43 ^a	4.49 ^a	4.44 ^a
Non-Shortage	6.17	6.22	6.31 ^b	5.22	5.35	5.44 ^b	4.96	5.10	5.13 ^b	4.66	4.72	4.76 ^b	5.13	5.24	5.30 ^b
Poor Areas															
All Poor Combined	5.88 ^a	5.95 ^a	6.18 ^b	4.96 ^a	4.97 ^a	4.96 ^a	4.87 ^a	4.99 ^a	5.02 ^{ab}	4.84 ^a	4.78 ^a	4.74 ^b	5.09 ^a	5.13 ^a	5.17 ^{ab}
Urban	5.89 ^a	5.95 ^a	6.19 ^b	5.03 ^a	5.05 ^a	5.03 ^a	4.74 ^a	4.90 ^a	4.97 ^{ab}	4.70	4.63 ^a	4.60 ^{ab}	5.15	5.20 ^a	5.26 ^{ab}
Rural	4.23 ^a	4.57 ^a	4.41 ^a	4.26 ^a	4.32 ^b	4.40 ^{ab}	5.15 ^a	5.18 ^a	5.12	4.94 ^a	4.89 ^a	4.84 ^{ab}	4.89 ^a	4.89 ^a	4.86 ^{ab}
Non-Poor	6.18	6.24	6.30	5.21	5.34	5.43 ^b	4.96	5.09	5.12 ^b	4.64	4.70	4.74 ^b	5.11	5.22	5.28 ^b
Races															
Black	5.49 ^a	5.59 ^a	5.51 ^a	4.66 ^a	4.77 ^a	4.75 ^{ab}	4.69 ^a	4.76 ^a	4.79 ^{ab}	4.47 ^a	4.49 ^a	4.49 ^a	4.70 ^a	4.78 ^a	4.77 ^{ab}
White	6.25	6.29	6.39 ^b	5.31	5.42	5.52 ^b	5.06	5.17	5.20 ^b	4.74	4.77	4.80 ^b	5.21	5.30	5.36 ^b
Medicaid Eligible															
Yes	7.19 ^a	7.09 ^a	7.23 ^a	5.79 ^a	5.77 ^a	5.61 ^{ab}	5.28 ^a	5.30 ^a	5.12 ^b	5.40 ^a	5.34 ^a	5.13 ^{ab}	5.73 ^a	5.70 ^a	5.55 ^{ab}
No	6.01	6.09	6.17 ^b	5.13	5.27	5.38 ^b	4.92	5.06	5.11 ^b	4.57	4.63	4.69 ^b	5.04	5.16	5.24 ^b
Disabled															
Yes	6.60 ^a	6.64 ^a	6.65 ^a	5.53 ^a	5.64 ^a	5.63 ^{ab}	5.29 ^a	5.43 ^a	5.39 ^{ab}	5.04 ^a	5.06 ^a	5.02 ^a	5.45 ^a	5.54 ^a	5.51 ^{ab}
No	6.10	6.15	6.25 ^b	5.15	5.28	5.38 ^b	4.91	5.04	5.08 ^b	4.61	4.67	4.70 ^b	5.07	5.18	5.24 ^b
Age															
85+ Years	5.23 ^a	5.20 ^a	5.35 ^{ab}	4.36 ^a	4.53 ^a	4.49 ^{ab}	3.98 ^a	4.06 ^a	4.05 ^{ab}	3.92 ^a	3.98 ^a	3.94 ^a	4.27 ^a	4.37 ^a	4.35 ^{ab}
Less than 85	6.17	6.23	6.32 ^b	5.21	5.34	5.43 ^b	4.98	5.11	5.15 ^b	4.67	4.73	4.76 ^b	5.13	5.24	5.30 ^b
Area of Residence															
Rural	5.04 ^a	5.31 ^a	5.65 ^{ab}	4.78 ^a	4.95 ^a	5.06 ^{ab}	4.83 ^a	4.87 ^a	4.84 ^a	4.61 ^a	4.68	4.65 ^a	4.73 ^a	4.82 ^a	4.82 ^{ab}
Urban	6.17	6.22	6.30 ^b	5.27	5.39	5.47 ^b	5.03	5.21	5.28 ^b	4.70	4.74	4.83 ^b	5.26	5.37	5.45 ^b
ALL BENEFICIARIES	6.14	6.20	6.29 ^b	5.19	5.32	5.40 ^b	4.95	5.08	5.11 ^b	4.65	4.71	4.74 ^b	5.11	5.21	5.27 ^b

NOTES:

^a Significantly different from the comparison group at the 0.05 level^b Significantly different from 1991 to 1993 at the 0.05 level.

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE 3-3

AVERAGE NUMBER OF EMERGENCY ROOM VISITS STRATIFIED BY ACTUAL MFS PAYMENT CHANGE AND VULNERABLE POPULATION GROUP, 1991-1993 (age-sex adjusted per beneficiary)

Vulnerable Population	ACTUAL MFS PAYMENT CHANGE FOR OUTPATIENT VISITS														
	Fee Reduction			1-12 % Increase			13-18% Increase			18% + Increase			ALL AREAS		
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas															
All Shortage Combined	0.54 *	0.36 *	0.38 ^{ab}	0.41 *	0.37 *	0.39 ^{ab}	0.35 *	0.33 *	0.34	0.29	0.29	0.32 ^{ab}	0.38 *	0.34 *	0.36 ^{ab}
Urban	0.54 *	0.36 *	0.38 ^{ab}	0.41 *	0.39 *	0.41 *	0.36 *	0.37 *	0.39 *	0.35 *	0.35 *	0.37 ^{ab}	0.41 *	0.38 *	0.39 ^{ab}
Rural	0.27 *	0.26	0.34 ^{ab}	0.42 *	0.32 *	0.34 ^{ab}	0.31	0.28 *	0.30 ^{ab}	0.26 *	0.26 *	0.29 ^{ab}	0.32 *	0.28 *	0.31 ^{ab}
Non-Shortage	0.31	0.29	0.30	0.32	0.31	0.32	0.32	0.31	0.33 ^b	0.29	0.29	0.31 ^b	0.31	0.30	0.32 ^b
Poor Areas															
All Poor Combined	0.47 *	0.36 *	0.39 ^{ab}	0.39 *	0.38 *	0.41 ^{ab}	0.39 *	0.36 *	0.39 *	0.37 *	0.37 *	0.40 ^{ab}	0.40 *	0.37 *	0.40 *
Urban	0.47 *	0.36 *	0.39 ^{ab}	0.39 *	0.38 *	0.41 ^{ab}	0.39 *	0.35 *	0.38 *	0.39 *	0.38 *	0.40 *	0.41 *	0.37 *	0.40 ^{ab}
Rural	0.38 *	0.39 *	0.41	0.41 *	0.37 *	0.39 ^{ab}	0.37 *	0.37 *	0.41 ^{ab}	0.35 *	0.35 *	0.40 ^{ab}	0.37 *	0.36 *	0.40 ^{ab}
Non-Poor	0.30	0.28	0.29	0.32	0.30	0.32	0.31	0.30	0.33 ^b	0.29	0.28	0.30 ^b	0.31	0.30	0.32 ^b
Races															
Black	0.55 *	0.43 *	0.45 ^{ab}	0.46 *	0.46 *	0.49 ^{ab}	0.46 *	0.44 *	0.47 *	0.47 *	0.48 *	0.51 ^{ab}	0.47 *	0.45 *	0.48 ^{ab}
White	0.31	0.29	0.30	0.32	0.30	0.32	0.31	0.30	0.33 ^b	0.28	0.26	0.30 ^b	0.31	0.29	0.31
Medicaid Eligible															
Yes	0.67 *	0.59 *	0.62 ^{ab}	0.72 *	0.71 *	0.74 ^{ab}	0.70 *	0.68 *	0.72 ^{ab}	0.64 *	0.65 *	0.69 ^{ab}	0.69 *	0.67 *	0.71 ^{ab}
No	0.28	0.26	0.27 ^b	0.29	0.27	0.28	0.28	0.27	0.29	0.25	0.25	0.26	0.28	0.26	0.28
Disabled															
Yes	0.61 *	0.54 *	0.57 ^{ab}	0.59 *	0.57 *	0.60 *	0.56 *	0.55 *	0.59 ^{ab}	0.53 *	0.53 *	0.57 ^{ab}	0.57 *	0.55 *	0.59 ^{ab}
No	0.30	0.27	0.28	0.30	0.28	0.29	0.29	0.28	0.30 ^b	0.27	0.26	0.28 ^b	0.29	0.27	0.29
Age															
85+ Years	0.55 *	0.52 *	0.55 *	0.53 *	0.54 *	0.55 ^{ab}	0.54 *	0.54 *	0.57 ^{ab}	0.48 *	0.49 *	0.50 ^{ab}	0.52 *	0.52 *	0.54 ^{ab}
Less than 85	0.32	0.29	0.30 ^b	0.32	0.30	0.32	0.31	0.30	0.33 ^b	0.29	0.28	0.30 ^b	0.31	0.30	0.31
Area of Residence															
Rural	0.28 *	0.26 *	0.30	0.38 *	0.34 *	0.36 ^{ab}	0.32	0.31	0.34 ^{ab}	0.29	0.29	0.31 ^b	0.32	0.31 *	0.33 *
Urban	0.33	0.29	0.31 ^b	0.32	0.30	0.32	0.32	0.30	0.33	0.30	0.29	0.31	0.32	0.30	0.32
ALL BENEFICIARIES	0.32	0.29	0.31 ^b	0.33	0.31	0.33	0.32	0.31	0.33 ^b	0.29	0.29	0.31 ^b	0.32	0.30	0.32

NOTES:

* Significantly different from the comparison group at the 0.05 level

^b Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE 3-4

AVERAGE NUMBER OF AMBULATORY CARE SENSITIVE (ACS) ADMISSION RATES STRATIFIED BY ACTUAL MFS PAYMENT CHANGE AND VULNERABLE POPULATION GROUP, 1991-1993
(age-sex adjusted per 1,000 beneficiaries)

Vulnerable Population	ACTUAL MFS PAYMENT CHANGE FOR OUTPATIENT VISITS														
	Fee Reduction			1-12 % Increase			13-18% Increase			18% + Increase			ALL AREAS		
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas															
All Shortage Combined	79.9 ^a	82.1 ^a	89.7 ^{ab}	75.8 ^a	77.3 ^a	80.0 ^{ab}	71.4 ^a	72.9 ^a	77.1 ^{ab}	61.1	62.6 ^a	67.9 ^{ab}	71.3 ^a	72.9 ^a	77.0 ^{ab}
Urban	80.3 ^a	82.7 ^a	90.2 ^{ab}	80.6 ^a	83.7 ^a	85.8 ^{ab}	74.4 ^a	75.8 ^a	81.0 ^{ab}	65.8 ^a	68.0 ^a	73.9 ^{ab}	77.1 ^a	79.6 ^a	83.6 ^{ab}
Rural	48.1 ^a	30.7 ^a	37.0 ^{ab}	63.8 ^a	61.5	66.0 ^a	67.7	69.6	72.5 ^b	58.4	59.6	64.6 ^b	62.4	62.7	66.9 ^{ab}
Non-Shortage	56.0	55.8	58.2	58.9	59.4	61.9	66.9	67.8	70.2	59.7	58.9	61.8	60.7	60.9	63.4 ^b
Poor Areas															
All Poor Combined	75.4 ^a	74.4 ^a	82.6 ^{ab}	78.2 ^a	79.5 ^a	83.7 ^{ab}	79.4 ^a	82.3 ^a	87.1 ^{ab}	81.5 ^a	82.1 ^a	89.3 ^{ab}	78.5 ^a	79.7 ^a	85.3 ^{ab}
Urban	75.5 ^a	74.5 ^a	82.7 ^{ab}	78.0 ^a	79.4 ^a	84.2 ^{ab}	72.6 ^a	76.5 ^a	81.9 ^{ab}	74.7 ^a	74.5 ^a	76.2 ^{ab}	75.8 ^a	77.1 ^a	82.5 ^{ab}
Rural	54.3	54.7	45.7	80.1 ^a	80.6 ^a	79.3 ^b	94.7 ^a	94.9 ^a	98.5 ^{ab}	86.6 ^a	87.9 ^a	99.1 ^{ab}	88.3 ^a	89.0 ^a	95.2 ^{ab}
Non-Poor	54.2	54.3	56.1	58.5	59.0	61.5	66.0	66.8	69.2	58.5	57.8	60.6	59.9	60.1	62.6 ^b
Races															
Black	85.2 ^a	86.7 ^a	92.3 ^{ab}	84.6 ^a	85.0 ^a	88.6 ^{ab}	84.7 ^a	88.3 ^a	92.6 ^{ab}	80.3 ^a	83.8 ^a	88.5 ^{ab}	83.8 ^a	85.8 ^a	89.9 ^{ab}
White	55.5	55.4	5 ^a 2	58.3	58.8	61.1	66.0	66.8	69.0	58.1	57.2	60.3	59.8	60.0	62.5 ^b
Medicaid Eligible															
Yes	122.1 ^a	125.0 ^a	127.4 ^{ab}	132.5 ^a	132.8 ^a	140.0 ^{ab}	151.4 ^a	154.1 ^a	155.5 ^a	132.0 ^a	133.5 ^a	136.5 ^a	135.6 ^a	137.1 ^a	141.2 ^{ab}
No	49.4	48.9	51.1	52.4	52.8	54.4	58.1	58.6	60.5	51.4	50.3	52.8	53.2	53.2	55.1 ^b
Disabled															
Yes	111.1 ^a	113.1 ^a	113.8 ^{ab}	109.7 ^a	112.8 ^a	113.4 ^{ab}	115.6 ^a	123.4 ^a	123.4 ^{ab}	106.9 ^a	106.8 ^a	111.0 ^a	110.6 ^a	114.1 ^a	115.3 ^{ab}
No	52.0	51.9	54.5	54.2	54.6	57.1	61.3	61.5	64.0	54.3	53.7	56.4	55.7	55.7	58.3 ^b
Age															
85+ Years	128.7 ^a	133.5 ^a	129.7 ^{ab}	127.1 ^a	129.3 ^a	130.4 ^{ab}	140.4 ^a	141.4 ^a	144.0 ^a	125.6 ^a	124.7 ^a	127.0 ^a	130.1 ^a	131.6 ^a	132.8 ^{ab}
Less than 85	55.1	54.7	57.2	58.0	58.4	60.7	65.1	65.9	68.1	58.0	57.3	60.1	59.4	59.5	62.0 ^b
Area of Residence															
Rural	44.4 ^a	50.7	50.0 ^a	66.5 ^a	66.2 ^a	69.2 ^a	75.1 ^a	76.0 ^a	78.8 ^{ab}	64.1 ^a	64.6 ^a	67.2 ^{ab}	68.0 ^a	68.5 ^a	71.2 ^{ab}
Urban	57.6	57.2	59.9	58.4	59.1	61.5	62.3	63.2	65.5	55.4	53.5	57.0	58.6	58.8	61.4 ^b
ALL BENEFICIARIES	57.2	57.0	59.7	59.8	60.3	62.8 ^b	67.1	68.0	70.5	59.8	59.1	62.2	61.3	61.5	64.2 ^b

NOTES:

^a Significantly different from the comparison group at the 0.05 level^b Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries

TABLE 3-5

PERCENT OF FEMALE BENEFICIARIES RECEIVING MAMMOGRAPHY STRATIFIED BY ACTUAL MFS PAYMENT CHANGE AND VULNERABLE POPULATION GROUP, 1991-1993
(age-adjusted percent of female beneficiaries)

Vulnerable Population	ACTUAL MFS PAYMENT CHANGE FOR OUTPATIENT VISITS												ALL AREAS		
	Fee Reduction			1-12 % Increase			13-18% Increase			18% + Increase			1991	1992	1993
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993			
Shortage Areas															
All Shortage Combined	22.6 ^a	23.5 ^a	23.2 ^a	20.7 ^a	21.4 ^a	21.2 ^{ab}	20.9 ^a	22.1 ^a	21.1 ^a	23.8 ^a	24.0 ^a	23.4 ^a	21.7 ^a	22.4 ^a	21.9 ^a
Urban	22.6 ^a	23.6 ^a	23.2 ^a	19.7 ^a	20.2 ^a	20.1 ^a	19.9 ^a	21.2 ^a	20.9 ^{ab}	22.4 ^a	22.8 ^a	21.9 ^a	20.6 ^a	21.3 ^a	21.0 ^{ab}
Rural	26.2 ^a	19.1 ^a	20.5 ^{ab}	23.5 ^a	24.5 ^a	23.9 ^a	22.2 ^a	23.0 ^a	21.2 ^{ab}	24.6	24.6	24.2	23.7 ^a	24.2 ^a	23.3 ^a
Non-Shortage	30.8	30.1	29.1 ^b	27.0	27.6	26.7	23.8	24.3	23.7	24.6	25.1	24.1	26.1	26.5	25.6 ^b
Poor Areas															
All Poor Combined	24.3 ^a	24.4 ^a	23.3 ^{ab}	19.0 ^a	20.0 ^a	19.7 ^{ab}	17.2 ^a	18.3 ^a	17.9 ^{ab}	17.5 ^a	18.5 ^a	17.9 ^{ab}	19.4 ^a	20.2 ^a	19.6 ^{ab}
Urban	24.3 ^a	24.4 ^a	23.3 ^{ab}	18.9 ^a	19.8 ^a	19.5 ^{ab}	17.7 ^a	18.6 ^a	18.0 ^a	17.9 ^a	18.6 ^a	17.8 ^a	19.9 ^a	20.6 ^a	20.0 ^a
Rural	21.6 ^a	19.2 ^a	17.9 ^a	19.9 ^a	22.3 ^a	20.9 ^{ab}	16.1 ^a	17.6 ^a	17.7 ^{ab}	17.2 ^a	18.5 ^a	18.0 ^{ab}	17.3 ^a	18.8 ^a	18.4 ^{ab}
Non-Poor	31.5	30.6	29.7 ^b	27.2	27.7	26.9	24.2	24.7	24.0	24.9	25.4	24.4	26.4	26.8	25.9 ^b
Races															
Black	22.3 ^a	22.4 ^a	22.3 ^a	18.1 ^a	19.5 ^a	19.3 ^{ab}	15.8 ^a	17.0 ^a	16.8 ^{ab}	13.3 ^a	15.2 ^a	14.7 ^{ab}	16.9 ^a	18.2 ^a	18.0 ^{ab}
White	31.7	30.9	29.8 ^b	28.1	28.4	27.5	24.8	25.1	24.5	25.9	26.1	25.0 ^b	27.2	27.4	26.5 ^b
Medicaid Eligible															
Yes	17.4 ^a	17.3 ^a	16.6 ^{ab}	15.5 ^a	16.4 ^a	15.9 ^a	11.3 ^a	12.6 ^a	11.9 ^{ab}	11.8 ^a	13.1 ^a	12.7 ^{ab}	13.8 ^a	14.8 ^a	14.2 ^{ab}
No	32.2	31.5	30.6 ^b	28.0	28.5	27.8	25.2	25.7	25.2	26.3	26.8	25.8	27.4	27.8	27.0 ^b
Disabled															
Yes	24.4 ^a	24.1 ^a	23.5 ^{ab}	21.6 ^a	22.3 ^a	21.6 ^a	18.7 ^a	19.7 ^a	19.4 ^{ab}	19.1 ^a	19.9 ^a	19.5 ^a	20.6 ^a	21.3 ^a	20.7 ^a
No	30.8	30.1	29.2 ^b	27.1	27.6	26.8	24.0	24.5	23.9	24.9	25.4	24.4	26.3	26.6	25.8 ^b
Age															
85+ Years	7.2 ^a	8.0 ^a	8.1 ^{ab}	6.1 ^a	6.5 ^a	6.3 ^{ab}	5.0 ^a	5.2 ^a	5.2 ^a	5.2 ^a	5.9 ^a	5.7 ^{ab}	5.7 ^a	6.2 ^a	6.1 ^{ab}
Less than 85	31.4	30.7	29.8 ^b	27.4	28.0	27.3	24.3	24.9	24.4	25.2	25.8	24.8	26.6	27.1	26.3
Area of Residence															
Rural	29.4	27.5 ^a	27.7	25.5 ^a	26.4 ^a	25.4 ^a	21.4 ^a	21.8 ^a	21.3 ^a	23.3 ^a	24.1 ^a	22.9 ^a	23.3 ^a	24.0 ^a	23.1 ^a
Urban	30.5	29.8	28.8 ^b	26.9	27.4	26.7	25.0	25.5	24.8	25.7	26.1	25.1	26.8	27.1	26.3 ^b
ALL BENEFICIARIES	30.4	29.8	28.8 ^b	26.7	27.2	26.4	23.6	24.2	23.5	24.5	25.1	24.0	25.9	26.3	25.5 ^b

NOTES:

^a Significantly different from the comparison group at the 0.05 level.^b Significantly different from 1991 to 1993 at the 0.05 level.

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE 3-6

PERCENT OF FEMALE BENEFICIARIES RECEIVING PAP TESTS STRATIFIED BY ACTUAL MFS PAYMENT CHANGE AND VULNERABLE POPULATION GROUP, 1991-1993
(age-adjusted percent of female beneficiaries)

Vulnerable Population	ACTUAL MFS PAYMENT CHANGE FOR OUTPATIENT VISITS												ALL AREAS		
	Fee Reduction			1-12 % Increase			13-18% Increase			18% + Increase			1991	1992	1993
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993			
Shortage Areas															
All Shortage Combined	10.4 *	10.5 *	11.0 *	10.5 *	12.6 *	10.7 *	11.1 *	11.5 *	10.9 *	13.4	12.8 *	12.2 ^{ab}	11.4 *	11.4 *	11.2 *
Urban	10.4 *	10.5 *	11.0 *	9.7 *	10.5 *	10.0 *	9.8 *	10.4 *	10.2 *	12.8 *	12.0 *	11.6 ^{ab}	10.3 *	10.4 *	10.5 *
Rural	16.2	10.9 *	4.7 ^{ab}	12.5 *	9.8 *	12.6	12.6	12.9	11.7 ^b	13.7	13.3	12.6 ^b	13.1 *	13.0 *	12.4 ^{ab}
Non-Shortage	16.8	17.0	16.2	14.8	14.8	14.2 ^b	13.1	13.1	12.2 ^b	13.4	13.4	12.8 ^b	14.3	14.3	13.6 ^b
Poor Areas															
All Poor Combined	11.5 *	11.6 *	11.5 *	10.3 *	10.4 *	10.3 *	9.1 *	9.2 *	8.6 ^{ab}	10.0 *	10.0 *	9.5 ^{ab}	10.2 *	10.3 *	10.0 ^{ab}
Urban	11.5 *	11.6 *	11.5 *	10.2 *	10.4 *	10.2 *	8.9 *	9.0 *	8.4 *	11.0 *	10.3 *	9.9 ^{ab}	10.3 *	10.4 *	10.1 *
Rural	10.5 *	9.6 *	9.1 *	11.7 *	11.4 *	11.0 ^{ab}	9.6 *	9.7 *	9.2 ^{ab}	9.2 *	9.9 *	9.2 *	9.8 *	10.1 *	9.5 ^{ab}
Non-Poor	17.3	17.5	16.7	14.9	14.8	14.3 ^b	13.3	13.4	12.4 ^b	13.6	13.5	12.9 ^b	14.4	14.4	13.8 ^b
Races															
Black	10.3 *	9.7 *	9.9 *	9.8 *	9.9 *	10.0 *	8.6 *	8.6 *	8.4 *	8.1 *	8.6 *	8.3 *	9.2 *	9.3 *	9.2 *
White	17.3	17.5	16.7	15.3	15.2	14.5 ^b	13.6	13.7	12.6 ^b	14.1	13.9	13.3 ^b	14.8	14.8	14.0 ^b
Medicaid Eligible															
Yes	9.2 *	8.9 *	8.3 ^{ab}	8.5 *	8.9 *	8.8 *	7.1 *	7.2 *	6.5 ^{ab}	7.8 *	7.7 *	7.6 *	8.1 *	8.2 *	7.9 *
No	17.5	17.7	17.1	15.3	15.2	14.7 ^b	13.7	13.8	12.9 ^b	14.2	14.1	13.5 ^b	14.9	14.9	14.3 *
Disabled															
Yes	12.6 *	12.9 *	12.8 *	11.6 *	11.7 *	11.6 *	9.9 *	10.6 *	9.6 *	11.3 *	10.7 *	10.5 ^{ab}	11.2 *	11.3 *	11.0 ^{ab}
No	16.8	16.9	16.2	14.8	14.8	14.2 ^b	13.2	13.3	12.3 ^b	13.6	13.5	12.9 ^b	14.3	14.3	13.7 ^b
Age															
85+ Years	4.6 *	4.6 *	4.7 *	4.1 *	4.1 *	3.7 ^{ab}	3.5 *	3.6 *	3.1 ^{ab}	3.8 *	3.8 *	3.3 ^{ab}	4.0 *	4.0 *	3.6 ^{ab}
Less than 85	17.0	17.2	16.5	14.9	15.0	14.5	13.3	13.4	12.5 ^b	13.8	13.7	13.2 ^b	14.5	14.5	13.9 ^b
Area of Residence															
Rural	16.2	17.9	15.4	13.8 *	14.1	13.5	12.1 *	11.8 *	11.2 ^{ab}	12.8 *	13.0 *	12.2 ^{ab}	12.9 *	12.9 *	12.3 ^{ab}
Urban	16.5	16.6	16.0 ^b	14.7	14.6	14.1 *	13.5	13.8	12.7	25.7	13.7	13.3	14.6	14.6	14.0 ^b
ALL BENEFICIARIES	16.5	16.6	16.0	14.6	14.6	14.0 ^b	13.0	13.1	12.1 ^b	13.4	13.3	12.7 ^b	14.1	14.1	13.5 ^b

NOTES:

* Significantly different from the comparison group at the 0.05 level.

^a Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE 3-7

CATARACT SURGERIES STRATIFIED BY ACTUAL MFS PAYMENT CHANGE AND VULNERABLE POPULATION GROUP, 1991-1993 (age-sex adjusted per 1,000 beneficiaries)

Vulnerable Population	ACTUAL MFS PAYMENT CHANGE FOR CATARACT SURGERY											
	Reduction of 20% or more			No Change or Less Than 20% Reduction			Fee Increase			ALL AREAS		
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas												
All Shortage Combined	40.1 ^a	45.2 ^a	42.8 ^{ab}	38.8 ^a	41.9 ^a	37.2 ^{ab}	40.8	42.9	48.4 ^b	36.0 ^a	42.4 ^a	38.4 ^a
Urban	40.0 ^a	44.1 ^a	41.3 ^a	39.5	42.0 ^a	35.9 ^{ab}	35.1 ^a	37.7 ^a	44.4 ^b	39.5 ^b	42.0 ^a	36.6 ^{ab}
Rural	40.1 ^a	46.0 ^a	43.8 ^a	37.3 ^a	41.8 ^a	39.7 ^{ab}	46.1	47.7	51.9	38.2 ^a	43.1 ^a	41.0 ^{ab}
Non-Shortage	43.8	50.3	46.0	40.7	44.4	43.1 ^b	46.2	44.9	46.2	41.4	45.6	43.7 ^b
Poor Areas												
All Poor Combined	39.7 ^a	45.8 ^a	44.3 ^b	38.7 ^a	41.9 ^a	38.8 ^a	44.0	48.2	45.8	38.9 ^a	43.0 ^a	39.7 ^a
Urban	38.3 ^a	44.8 ^a	42.6 ^b	37.4 ^a	40.3 ^a	36.6 ^a	38.8 ^a	45.0	41.4	37.5 ^a	40.8 ^a	37.3 ^a
Rural	41.2 ^a	46.8 ^a	45.9 ^b	45.2 ^a	49.7 ^a	49.3 ^{ab}	65.0 ^a	61.3 ^a	63.9 ^a	44.0 ^b	48.8 ^a	48.3 ^{ab}
Non-Poor	43.8	50.3	46.0	40.7	44.5	43.1 ^b	45.9	44.6	46.4	41.4	45.6	43.7 ^b
Races												
Black	32.9 ^a	38.7 ^a	37.5 ^{ab}	34.3 ^a	35.5 ^a	32.4 ^{ab}	28.9 ^a	29.3 ^a	30.9 ^a	33.9 ^a	36.1 ^a	33.5 ^a
White	45.6	52.4	47.2	41.8	45.7	44.1 ^b	48.6	46.8	48.6	42.6	47.0	44.8 ^b
Medicaid Eligible												
Yes	47.0 ^a	50.8	45.3	43.8 ^a	47.5 ^a	45.0 ^a	49.9	45.8	48.0	44.6 ^a	48.2 ^a	45.1 ^a
No	43.2	50.0	45.9	40.2	44.0	42.5 ^b	45.2	44.6	46.1	40.9	45.1	43.2 ^b
Disabled												
Yes	31.8 ^a	36.9 ^a	35.0 ^{ab}	30.5 ^a	34.6 ^a	31.7 ^{ab}	34.8 ^a	37.8 ^a	35.6 ^a	30.8 ^a	35.1 ^a	32.5 ^{ab}
No	45.0	51.6	47.2	41.7	45.4	44.0 ^b	46.9	45.5	47.5	42.4	46.5	44.7 ^b
Age												
85+ Years	51.8 ^a	58.8 ^a	50.3 ^a	51.0 ^a	52.6 ^a	48.5 ^{ab}	54.4 ^a	58.7 ^a	49.9	51.2 ^a	53.9 ^a	48.9 ^{ab}
Less than 85	43.4	49.8	45.7	40.3	44.1	42.6 ^b	45.5	44.4	46.2	41.0	45.2	43.2 ^b
Area of Residence												
Rural	42.5	49.6	47.4 ^b	40.5	45.6	43.7 ^b	46.3	54.4 ^a	47.9	41.1	46.9 ^a	44.7 ^{ab}
Urban	44.4	50.4	44.7	40.6	43.9	42.4	45.6	41.6	45.8	41.2	44.7	42.8
ALL BENEFICIARIES	43.6	50.0	45.9	40.6	44.3	42.7 ^b	45.8	44.8	46.4	41.2	45.4	43.4 ^b

NOTES:

^a Significantly different from the comparison group at the 0.05 level^b Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE 3-8

AVERAGE ANNUAL PART B COINSURANCE LIABILITY BY VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted per beneficiary)

	ALL AREAS		
	1991	1992	1993
<u>Shortage Areas</u>			
All Shortage Combined	\$191.35 ^a	\$181.74 ^a	\$178.69 ^{ab}
Urban	204.92	192.75	188.67 ^{ab}
Rural	169.69 ^a	164.46 ^a	163.18 ^{ab}
Non-Shortage	203.19	194.53	191.11 ^b
<u>Poor Areas</u>			
All Poor Combined	202.65	193.15	191.10 ^b
Urban	207.34 ^a	196.30 ^a	194.03 ^{ab}
Rural	185.41 ^a	181.79 ^a	180.74 ^{ab}
Non Poor	202.54	193.89	190.40 ^b
<u>Races</u>			
Black	195.45 ^a	187.40 ^a	186.80 ^{ab}
White	206.55	196.95	192.91 ^b
<u>Medicaid Eligible</u>			
Yes	260.22 ^a	250.62 ^a	246.25 ^{ab}
No	196.29	187.57	183.89 ^b
<u>Disabled</u>			
Yes	244.73 ^a	237.49 ^a	232.36 ^{ab}
No	197.75	189.02	185.62 ^b
<u>Age</u>			
85+ Years	210.43 ^a	205.29 ^a	200.78 ^{ab}
Less than 85	202.33	193.51	190.11 ^b
<u>Area of Residence</u>			
Rural	181.30 ^a	176.27 ^a	174.31 ^{ab}
Urban	210.79	200.65	196.68 ^b
ALL BENEFICIARIES	202.55	193.84	190.45 ^b

NOTES:

^a Significantly different from the comparison group at the 0.05 level.^b Significantly different from 1991 to 1993 at the 0.05 level.SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries.
Dollars are deflated by the CPI.

TABLE 3-9

AVERAGE ANNUAL EXTRA BILLING LIABILITY BY VULNERABLE POPULATIONS GROUPS, 1991-1993
(age - sex adjusted per beneficiary)

	ALL AREAS		
	1991	1992	1993
Shortage Areas			
All Shortage Combined	\$24.88 ^a	\$16.52 ^a	\$8.72 ^{ab}
Urban	16.67 ^a	10.26 ^a	5.15 ^{ab}
Rural	37.99 ^a	26.35 ^a	14.28 ^{ab}
Non-Shortage	36.70	23.59	11.71 ^b
Poor Areas			
All Poor Combined	16.21 ^a	9.93 ^a	5.28 ^{ab}
Urban	15.22 ^a	9.45 ^a	5.11 ^{ab}
Rural	19.88 ^a	11.68 ^a	5.88 ^{ab}
Non Poor	37.66	24.26	12.03 ^b
Races			
Black	10.43 ^a	6.16 ^a	2.94 ^{ab}
White	39.23	25.22	12.55 ^b
Medicaid Eligible			
Yes	5.91 ^a	3.17 ^a	1.47 ^{ab}
No	39.34	25.43	12.73 ^b
Disabled			
Yes	27.66 ^a	17.13 ^a	8.00 ^{ab}
No	37.02	23.89	11.96 ^b
Age			
85+ Years	30.79 ^a	20.44 ^a	10.46 ^{ab}
Less than 85	36.21	23.29	11.58 ^b
Area of Residence			
Rural	39.40 ^a	26.51 ^a	13.39 ^{ab}
Urban	34.77	21.94	10.84 ^b
ALL BENEFICIARIES	36.06	23.21	11.55 ^b

NOTES:

^a Significantly different from the comparison group at the 0.05 level.

^b Significantly different from 1991 to 1993 at the 0.05 level.

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries.

Dollars are deflated by the CPI.

TABLE 3-10

ASSIGNMENT RATE BY VULNERABLE POPULATION GROUPS, 1991-1993
(age - sex adjusted per beneficiary)

	ALL AREAS		
	1991	1992	1993
Shortage Areas			
All Shortage Combined	66.8% ^a	70.3% ^a	74.1% ^{ab}
Urban	70.4 ^a	73.2 ^a	75.6 ^{ab}
Rural	61.2 ^a	65.8 ^a	71.9 ^{ab}
Non-Shortage	65.0	69.4	74.9 ^b
Poor Areas			
All Poor Combined	71.5 ^a	74.3 ^a	76.8 ^{ab}
Urban	71.8 ^a	74.1 ^a	76.2 ^{ab}
Rural	70.4 ^a	74.8 ^a	78.6 ^{ab}
Non Poor	64.6	69.1	74.7 ^b
Races			
Black	72.3 ^a	75.0 ^a	77.3 ^{ab}
White	65.0	69.5	75.2 ^b
Medicaid Eligible			
Yes	88.2 ^a	89.7 ^a	90.3 ^{ab}
No	62.6	67.2	73.0 ^b
Disabled			
Yes	71.7 ^a	75.3 ^a	78.8 ^{ab}
No	64.4	68.8	74.4 ^b
Age			
85+ Years	73.4 ^a	77.9 ^a	82.1 ^{ab}
Less than 85	64.9	69.2	74.6 ^b
Area of Residence			
Rural	61.5 ^a	66.7 ^a	73.4 ^{ab}
Urban	66.5	70.5	75.4 ^b
ALL BENEFICIARIES	65.1	69.5	74.8 ^b

NOTES:

^a Significantly different from the comparison group at the 0.05 level.

^b Significantly different from 1991 to 1993 at the 0.05 level.

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries.

TABLE 3-11

MEANS OF DEPENDENT AND INDEPENDENT VARIABLES IN REGRESSIONS
FOR NATIONAL SAMPLE

Variable	Outpatient Visit	ln(Outpatient Visits)	ER Visit	ACS Admission	Cataract Surgery
OUTPATIENT VISIT	0.782	N/A	N/A	N/A	N/A
LN(OUTPATIENT VISIT)	N/A	1.515	N/A	N/A	N/A
ER VISIT	N/A	N/A	0.208	N/A	N/A
ACS ADMISSION	N/A	N/A	N/A	0.055	N/A
CATARACT SURGERY	N/A	N/A	N/A	N/A	0.035
Y93	0.496	0.500	0.496	0.496	0.496
PRICE91	28.597	28.567	28.597	28.597	1270.270
MFS	11.942	11.919	11.942	11.942	-16.415
MFS*Y93	5.923	5.965	5.923	5.923	-8.149
OLD*MFS*Y93	0.576	0.536	0.576	0.576	-0.782
BLACK*MFS*Y93	0.472	0.426	0.472	0.472	-0.656
MEDICAID*MFS*Y93	0.802	0.745	0.802	0.802	-1.097
DISABLED*MFS*Y93	0.983	0.904	0.983	0.983	-1.348
RURAL*MFS*Y93	2.439	2.462	2.439	2.439	-2.665
UPOOR*MFS*Y93	0.226	0.203	0.226	0.226	-0.409
RPOOR*MFS*Y93	0.147	0.145	0.147	0.147	-0.154
UHPSA*MFS*Y93	0.158	0.147	0.158	0.158	-0.241
RHPSA*MFS*Y93	0.182	0.178	0.182	0.182	-0.172
OLD	0.093	0.086	0.093	0.093	0.093
BLACK	0.080	0.070	0.080	0.080	0.080
MEDICAID	0.126	0.116	0.126	0.126	0.126
DISABLED	0.158	0.143	0.158	0.158	0.158
RURAL	0.284	0.285	0.284	0.284	0.284
UPOOR	0.059	0.054	0.059	0.059	0.059
RPOOR	0.017	0.016	0.017	0.017	0.017
UHPSA	0.033	0.030	0.033	0.033	0.033
RHPSA	0.021	0.020	0.021	0.021	0.021
MALE	0.419	0.403	0.419	0.419	0.419
AGE75	0.295	0.314	0.295	0.295	0.295
PRIV_MED	22.878	22.734	22.878	22.878	16.930
PCARE POP	0.052	0.052	0.052	0.052	N/A
OPHTHPOP	N/A	N/A	N/A	N/A	0.005
SHARE65	13.670	13.738	13.670	13.670	13.670
OLD*Y93	0.048	0.045	0.048	0.048	0.048
BLACK*Y93	0.040	0.035	0.040	0.040	0.040
MEDICAID*Y93	0.065	0.060	0.065	0.065	0.065
DISABLED*Y93	0.080	0.073	0.080	0.080	0.080
RURAL*Y93	0.141	0.142	0.141	0.141	0.141
UPOOR*Y93	0.029	0.026	0.029	0.029	0.029
RPOOR*Y93	0.008	0.008	0.008	0.008	0.008
UHPSA*Y93	0.016	0.015	0.016	0.016	0.016
RHPSA*Y93	0.010	0.010	0.010	0.010	0.010

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries.

TABLE 3-12

MEANS OF DEPENDENT AND INDEPENDENT VARIABLES IN REGRESSIONS FOR FEMALE BENEFICIARIES
IN NATIONAL SAMPLE

Variable	Outpatient Visit	ln(Outpatient Visits)	Pap Test	Mammography (Mammography Price)	Mammography (Outpatient Visit Price)
OUTPATIENT VISIT	0.804	N/A	N/A	N/A	N/A
IN(OUTPATIENT VISIT)	N/A	1.543	N/A	N/A	N/A
PAP TEST	N/A	N/A	0.125	N/A	N/A
MAMMOGRAPHY	N/A	N/A	N/A	0.227	0.227
Y93	0.495	0.499	0.495	0.495	0.495
PRICE91	28.678	28.630	28.678	42.351	28.678
MFS	11.851	11.855	11.851	-10.748	11.851
MFS*Y93	5.870	5.919	5.870	-5.340	5.870
OLD*MFS*Y93	0.726	0.644	0.726	-0.624	0.726
BLACK*MFS*Y93	0.463	0.443	0.463	-0.508	0.463
MEDICAID*MFS*Y93	0.930	0.867	0.930	-0.843	0.930
DISABLED*MFS*Y93	0.680	0.673	0.680	-0.622	0.680
RURAL*MFS*Y93	2.373	2.403	2.373	-1.224	2.373
UPOOR*MFS*Y93	0.229	0.214	0.229	-0.309	0.229
RPOOR*MFS*Y93	0.140	0.142	0.140	-0.090	0.140
UHPSA*MFS*Y93	0.153	0.147	0.153	-0.181	0.153
RHPSA*MFS*Y93	0.173	0.171	0.173	-0.065	0.173
OLD	0.118	0.103	0.118	0.118	0.118
BLACK	0.079	0.074	0.079	0.079	0.079
MEDICAID	0.146	0.135	0.146	0.146	0.146
DISABLED	0.110	0.107	0.110	0.110	0.110
RURAL	0.275	0.278	0.275	0.275	0.275
UPOOR	0.061	0.057	0.061	0.061	0.061
RPOOR	0.016	0.016	0.016	0.016	0.016
UHPSA	0.033	0.031	0.033	0.033	0.033
RHPSA	0.020	0.019	0.020	0.020	0.020
AGE75	0.320	0.333	0.320	0.320	0.320
PRIV_MED	22.835	22.752	22.835	40.698	22.835
PCARE POP	0.052	0.052	0.052	N/A	0.052
RADPOP	N/A	N/A	N/A	0.007	N/A
SHARE65	13.642	13.695	13.642	13.642	13.642
OLD*Y93	0.061	0.054	0.061	0.061	0.061
BLACK*Y93	0.039	0.037	0.039	0.039	0.039
MEDICAID*Y93	0.075	0.069	0.075	0.075	0.075
DISABLED*Y93	0.056	0.055	0.056	0.056	0.056
RURAL*Y93	0.136	0.138	0.136	0.136	0.136
UPOOR*Y93	0.029	0.027	0.029	0.029	0.029
RPOOR*Y93	0.008	0.008	0.008	0.008	0.008
UHPSA*Y93	0.016	0.015	0.016	0.016	0.016
RHPSA*Y93	0.010	0.010	0.010	0.010	0.010

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries.

TABLE 3-13

REGRESSION RESULTS: MFS IMPACTS ON THE PROBABILITY OF AN OUTPATIENT VISIT,
NUMBER OF OUTPATIENT VISITS, PROBABILITY OF AN EMERGENCY ROOM VISIT,
AND PROBABILITY OF AN ACS ADMISSION

Independent Variable	Outpatient Visit*	In(Outpatient Visits)**	ER Visit*	ACS Admission*
PRICE91	0.991 ^a	0.0161 ^a	0.975 ^a	0.985 ^a
MFS	0.996 ^a	0.0027 ^a	0.987 ^a	0.991 ^a
Y93	1.056 ^a	0.0350 ^a	1.041 ^a	1.018
MFS*Y93	1.001	-0.0004	1.000	1.002
OLD*MFS*Y93	1.001	-0.0008	0.998	0.998
BLACK*MFS*Y93	1.003 ^a	-0.0002	0.999	0.997
MEDICAID*MFS*Y93	0.998 ^b	-0.0009 ^a	1.000	1.000
DISABLED*MFS*Y93	1.001	-0.0007	1.000	0.997
RURAL*MFS*Y93	0.999	-0.0011 ^a	0.999	1.001
UPOOR*MFS*Y93	0.997 ^b	0.0007	0.997	0.997
RPOOR*MFS*Y93	1.004	-0.0005	1.000	1.000
UHPSA*MFS*Y93	1.000	-0.0011	0.998	0.998
RHPSA*MFS*Y93	1.000	-0.0009	0.996	1.000
OLD	0.676 ^a	0.0002	2.323 ^a	3.188 ^a
BLACK	0.696 ^a	-0.0098	1.178 ^a	1.118 ^a
MEDICAID	0.819 ^a	0.0644 ^a	1.924 ^a	1.827 ^a
DISABLED	0.733 ^a	0.0710 ^a	1.657 ^a	1.674 ^a
RURAL	0.959 ^a	-0.0063	0.947 ^a	1.027
UPOOR	0.807 ^a	-0.0132 ^b	1.026	1.091 ^a
RPOOR	0.959	0.0612 ^a	0.955	1.070
UHPSA	0.877 ^a	0.0017	1.025	1.126 ^a
RHPSA	0.840 ^a	-0.0608 ^a	0.955	0.915
MALE	0.749 ^a	-0.0646 ^a	0.996	1.099 ^a
AGE75	1.359 ^a	0.1457 ^a	1.601 ^a	1.968 ^a
PRIV_MED	0.999 ^a	-0.0002 ^b	0.996 ^a	1.000
PCAREPOP	0.743	-0.8385 ^a	0.356 ^a	0.071 ^a
SHARE65	1.014 ^a	0.0014 ^a	0.997 ^a	1.000

NOTES:

^a Significant at the 0.05 level.^b Significant at the 0.10 level.

* Odds ratio from logistic regression for national sample.

** Parameter estimate from lognormal regression for sample members with an office visit.

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries.

TABLE 3-14

REGRESSION RESULTS: MFS IMPACT ON THE PROBABILITY OF CATARACT SURGERY

<u>Independent Variable</u>	<u>Cataract Surgery*</u>
PRICE91	0.999 ^a
MFS	0.997 ^a
Y93	0.997
MFS*Y93	0.998
OLD*MFS*Y93	1.003
BLACK*MFS*Y93	1.000
MEDICAID*MFS*Y93	1.003
DISABLED*MFS*Y93	1.000
RURAL*MFS*Y93	1.000
UPOOR*MFS*Y93	0.999
RPOOR*MFS*Y93	0.939
UHPSA*MFS*Y93	1.003
RHPSA*MFS*Y93	1.003
OLD	1.658 ^a
BLACK	0.811 ^a
MEDICAID	0.931 ^a
DISABLED	0.628 ^a
RURAL	0.921 ^a
UPOOR	0.964
RPOOR	1.024
UHPSA	1.009
RHPSA	0.956
MALE	0.819 ^a
AGE75	2.086 ^b
PRIV_MED	0.999
OPHTHPOP	4.824
SHARE65	1.004 ^a

NOTES:

^a Significant at the 0.05 level.

^b Significant at the 0.10 level.

* Odds ratio from logistic regression for national sample.

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries.

TABLE 3-15

REGRESSION RESULTS: MFS IMPACT ON THE PROBABILITY OF AN OUTPATIENT VISIT, NUMBER OF OUTPATIENT VISITS, PROBABILITY OF A PAP TEST, AND PROBABILITY OF MAMMOGRAPHY FOR WOMEN

<u>Independent Variable</u>	<u>Outpatient Visit*</u>	<u>ln(Outpatient Visits)**</u>	<u>Pap Test*</u>	<u>Mammography*</u>
PRICE91	0.991 ^a	0.0168 ^a	1.017 ^a	1.011 ^a
MFS	0.996 ^a	0.0027 ^a	1.004 ^a	1.004 ^a
Y93	1.059 ^a	0.0352 ^a	1.015	1.035 ^a
MFS*Y93	1.001	-0.0006	0.997 ^b	0.997 ^a
OLD*MFS*Y93	1.002	-0.0004	0.998	1.003
BLACK*MFS*Y93	1.004 ^a	-0.0003	1.001	1.001
MEDICAID*MFS*Y93	0.996 ^a	-0.0008	1.002	0.999
DISABLED*MFS*Y93	1.003 ^b	-0.0001	1.001	1.003 ^a
RURAL*MFS*Y93	0.999	-0.0012 ^a	0.999	0.998
UPOOR*MFS*Y93	0.997	0.0017	1.000	0.998
RPOOR*MFS*Y93	1.002	0.0000	1.001	1.002
UHPSA*MFS*Y93	0.999	-0.0011	1.005	1.001
RHPSA*MFS*Y93	0.999	-0.0010	1.000	1.001
OLD	0.563 ^a	-0.0568 ^a	0.215 ^a	0.156 ^a
BLACK	0.824 ^a	0.0056	0.764 ^a	0.746 ^a
MEDICAID	0.760 ^a	0.0864 ^a	0.679 ^a	0.556 ^a
DISABLED	0.904 ^a	0.1321 ^a	0.865 ^a	0.713 ^a
RURAL	0.993	0.0030	0.947 ^a	0.947 ^a
UPOOR	0.864 ^a	-0.0113	0.765 ^a	0.824 ^a
RPOOR	1.050	0.0707 ^a	0.843 ^a	0.860 ^a
UHPSA	0.893 ^a	0.0019	0.846 ^a	0.893 ^a
RHPSA	0.857 ^a	-0.0547 ^a	1.023	1.003
AGE75	1.205 ^a	0.1147 ^a	0.607 ^a	0.571 ^a
PRIV_MED	0.999 ^a	-0.0001	1.000	0.995 ^a
PCAREPOP	0.593 ^a	-0.9924 ^a	17.995 ^a	13.579 ^a
SHARE65	1.012 ^a	0.0012 ^a	1.014 ^a	1.012 ^a

NOTES:

^a Significant at the 0.05 level.

^b Significant at the 0.10 level.

* Odds ratio from logistic regression for women in national sample.

** Parameter estimate from lognormal regression for women with an office visit.

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries.

TABLE 3-16

REGRESSION RESULTS: MFS IMPACT ON THE PROBABILITY OF
MAMMOGRAPHY FOR WOMEN (MAMMOGRAPHY PRICE)

<u>Independent Variable</u>	<u>Mammography (Mammography Price)*</u>
PRICE91	1.005 ^a
MFS	1.004 ^a
Y93	0.998
MFS*Y93	0.996 ^a
OLD*MFS*Y93	0.999
BLACK*MFS*Y93	0.999
MEDICAID*MFS*Y93	1.001
DISABLED*MFS*Y93	0.998
RURAL*MFS*Y93	0.999
UPOOR*MFS*Y93	0.997
RPOOR*MFS*Y93	0.998
UHPSA*MFS*Y93	1.000
RHPSA*MFS*Y93	1.000
OLD	0.157 ^a
BLACK	0.724 ^a
MEDICAID	0.557 ^a
DISABLED	0.719 ^a
RURAL	0.916 ^a
UPOOR	0.828 ^a
RPOOR	0.869 ^a
UHPSA	0.916 ^a
RHPSA	1.029
AGE75	0.571 ^a
PRIV_MED	0.998 ^a
RADPOP	999.000 ^a
SHARE65	1.014 ^a

NOTES:

^a Significant at the 0.05 level.^b Significant at the 0.10 level.

* Odds ratio from logistic regression for women in national sample.

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries.

TABLE 3-17

REGRESSION RESULTS: TIME TRENDS FOR THE PROBABILITY OF AN OUTPATIENT VISIT, NUMBER OF OUTPATIENT VISITS, PROBABILITY OF AN EMERGENCY ROOM VISIT, AND PROBABILITY OF AN ACS ADMISSION

Independent Variable	Outpatient Visit*	ln(Outpatient Visits)**	ER Visit*	ACS Admission*
PRICE91	0.991 ^a	0.0159 ^a	0.975 ^a	0.986 ^a
MFS	0.996 ^a	0.0026 ^a	0.987 ^a	0.991 ^a
Y93	1.071 ^a	0.0499 ^a	1.037 ^a	1.030
MFS*Y93	1.000	-0.0011 ^a	0.999	1.001
OLD*Y93	1.002	-0.0108	1.021	0.988
BLACK*Y93	1.019	-0.0138	1.005	1.012
MEDICAID*Y93	0.931 ^a	-0.0470 ^a	1.014	0.991
DISABLED*Y93	0.980	-0.0239 ^a	1.010	0.961
RURAL*Y93	1.006	-0.0113 ^b	1.008	0.975
UPOOR*Y93	1.015	-0.0046	1.018	1.012
RPOOR*Y93	1.013	-0.0215	0.993	0.994
UHPSA*Y93	0.968	-0.0193	0.927 ^b	0.971
RHPSA*Y93	0.972	-0.0284	0.947	0.984
OLD	0.680 ^a	0.0005	2.275 ^a	3.161 ^a
BLACK	0.703 ^a	-0.0044	1.170 ^a	1.088 ^a
MEDICAID	0.840 ^a	0.0830 ^a	1.915 ^a	1.838 ^a
DISABLED	0.745 ^a	0.0792 ^a	1.651 ^a	1.677 ^a
RURAL	0.950 ^a	-0.0089 ^b	0.934 ^a	1.050 ^a
UPOOR	0.791 ^a	-0.0074	1.006	1.076 ^b
RPOOR	0.984	0.0659 ^a	0.962	1.068
UHPSA	0.889 ^a	0.0056	1.056 ^b	1.135 ^a
RHPSA	0.853 ^a	-0.0544 ^a	0.950	0.922
MALE	0.749 ^a	-0.0646 ^a	0.996	1.099 ^a
AGE75	1.358 ^a	0.1455 ^a	1.601 ^a	1.968 ^a
PRIV_MED	0.999 ^a	-0.0002	0.996 ^a	1.000
PCAREPOP	0.744	-0.8458 ^a	0.359 ^a	0.073 ^a
SHARE65	1.014 ^a	0.0013 ^a	0.997 ^a	1.000

NOTES:

^a Significant at the 0.05 level.

^b Significant at the 0.10 level.

* Odds ratio from logistic regression for national sample.

** Parameter estimate from logistic regression for sample members with an office visit.

TABLE 3-18

REGRESSION RESULTS: TIME TRENDS FOR THE PROBABILITY OF CATARACT SURGERY

<u>Independent Variable</u>	<u>Cataract Surgery*</u>
PRICE91	0.999 ^a
MFS	0.997 ^a
Y93	1.022
MFS*Y93	0.999
OLD*Y93	0.925 ^b
BLACK*Y93	0.970
MEDICAID*Y93	0.939
DISABLED*Y93	0.982
RURAL*Y93	0.992
UPOOR*Y93	0.990
RPOOR*Y93	1.036
UHPSA*Y93	0.922
RHPSA*Y93	0.972
OLD	1.687 ^a
BLACK	0.820 ^a
MEDICAID	0.936 ^b
DISABLED	0.632 ^a
RURAL	0.928 ^a
UPOOR	0.974
RPOOR	1.018
UHPSA	1.025
RHPSA	0.949
MALE	0.819 ^a
AGE75	2.086 ^a
PRIV_MED	0.999
OPHTHPOP	4.816
SHARE65	1.004 ^a

NOTES:

^a Significant at the 0.05 level.^b Significant at the 0.10 level.

* Odds ratio from logistic regression for national sample.

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries.

TABLE 3-19

REGRESSION RESULTS: TIME TRENDS FOR THE PROBABILITY OF AN OUTPATIENT VISIT, NUMBER OF OUTPATIENT VISITS, PROBABILITY OF A PAP TEST, AND PROBABILITY OF MAMMOGRAPHY FOR WOMEN

Independent Variable	Outpatient Visit*	ln(Outpatient Visits)**	Pap Test*	Mammography*
PRICE91	0.991 ^a	0.0166 ^a	1.017 ^a	1.011 ^a
MFS	0.996 ^a	0.0026 ^a	1.004 ^a	1.004 ^a
Y93	1.079 ^a	0.0509 ^a	1.004	1.024
MFS*Y93	1.001	-0.0011 ^a	0.998 ^b	0.997 ^a
OLD*Y93	1.018	-0.0135	0.961	1.071
BLACK*Y93	1.033	-0.0177	1.038	1.083 ^a
MEDICAID*Y93	0.907 ^a	-0.0504 ^a	1.040	1.006
DISABLED*Y93	0.988	-0.0158	1.074 ^b	1.055 ^b
RURAL*Y93	0.999	-0.0161 ^b	1.001	0.995
UPOOR*Y93	0.993	-0.0008	1.010	1.021
RPOOR*Y93	0.992	-0.0134	1.016	1.067
UHPSA*Y93	0.971	-0.0245	1.008	0.989
RHPSA*Y93	0.951	-0.0215	0.972	0.983
OLD	0.564 ^a	-0.0523 ^a	0.217 ^a	0.153 ^a
BLACK	0.830 ^a	0.0122	0.755 ^a	0.720 ^a
MEDICAID	0.782 ^a	0.1068 ^a	0.674 ^a	0.551 ^a
DISABLED	0.926 ^a	0.1403 ^a	0.840 ^a	0.708 ^a
RURAL	0.986	0.0012	0.939 ^a	0.937 ^a
UPOOR	0.854 ^a	-0.0037	0.761 ^a	0.809 ^a
RPOOR	1.074	0.0754 ^a	0.842 ^a	0.849 ^a
UHPSA	0.903 ^a	0.0082	0.863 ^a	0.902 ^a
RHPSA	0.872 ^a	-0.0531 ^a	1.038	1.020
AGE75	1.204 ^a	0.1145 ^a	0.607 ^a	0.571 ^a
PRIV_MED	0.999 ^a	-0.0001	1.000	0.995 ^a
PCAREPOP	0.594 ^a	-1.0041 ^a	17.672 ^a	13.465 ^a
SHARE65	1.012 ^a	0.0012 ^a	1.014 ^a	1.012 ^a

NOTES:

^a Significant at the 0.05 level.^b Significant at the 0.10 level.

* Odds ratio from logistic regression for women in national sample.

** Parameter estimate from logistic regression for women with an office visit.

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries.

TABLE 3-20

REGRESSION RESULTS: TIME TRENDS FOR THE PROBABILITY OF MAMMOGRAPHY FOR WOMEN
(MAMMOGRAPHY PRICE)

<u>Independent Variable</u>	<u>Mammography (Mammography Price)*</u>
PRICE91	1.005 ^a
MFS	1.004 ^a
Y93	0.982
MFS*Y93	0.996 ^a
OLD*Y93	1.070
BLACK*Y93	1.085 ^a
MEDICAID*Y93	1.004
DISABLED*Y93	1.055 ^b
RURAL*Y93	1.001
UPOOR*Y93	1.031
RPOOR*Y93	1.069
UHPSA*Y93	0.992
RHPSA*Y93	0.980
OLD	0.153 ^a
BLACK	0.701 ^a
MEDICAID	0.554 ^a
DISABLED	0.708 ^a
RURAL	0.921 ^a
UPOOR	0.826 ^a
RPOOR	0.850 ^a
UHPSA	0.921 ^a
RHPSA	1.039
AGE75	0.571 ^a
PRIV_MED	0.998 ^a
RADPOP	999.000 ^a
SHARE65	1.014 ^a

NOTES:

^a Significant at the 0.05 level.^b Significant at the 0.10 level.

* Odds ratio from logistic regression for women in national sample.

4.0 EPISODES OF CARE ANALYSIS

4.1 Introduction

The analyses presented in Chapter 3 showed relatively few utilization impacts that could be attributed to the Medicare Fee Schedule. However, these analyses were based on Medicare beneficiaries generally, and thus not able to control for health status differences that may affect utilization of services. By focusing on patients with specific illnesses, we may be better able to identify any access problems attributable to the MFS. As described earlier in Section 2.1.2, we selected two medical conditions for in-depth study:

- acute myocardial infarction (AMI); and
- transient ischemic attack (TIA).

Both conditions generally involve "high-tech" diagnostic testing, the results of which may lead to subsequent surgery. Many of these diagnostic tests and surgical procedures experienced substantial payment reductions under MFS. As a result, physicians may have been less likely to provide these services, especially to vulnerable patients. At the same time, increased payment for hospital visits under MFS may have encouraged more intensive evaluation and management of patients hospitalized with these conditions, especially on the part of specialists.

In the sections that follow, we examine changes in utilization for patients admitted with either AMI or TIA in each of the three study years. AMI patients are followed for 90 days following admission and TIA patients for 30 days. (These follow-up periods were used in similar studies of patients with AMI and TIA, respectively.) Prior research has shown that some vulnerable groups are less likely to have a specialist in charge of their inpatient care and that this may partly explain lower use of diagnostic tests and procedures (Mitchell *et al.*, 1996b). Therefore, we also examine changes in the proportion of AMI patients with a cardiologist as their attending physician and in the proportion of TIA patients with a neurologist as their attending physician. The attending physician was defined as the physician submitting bills for routine hospital visits during the first seven days of the stay, a method developed and used in previous studies (Mitchell *et al.*, 1996a). When both a primary care physician and a specialist billed for hospital visits, the attending physician was classified as a specialist. Prior work with

stroke patients found that treatment patterns for these “combinations” closely resembled those of the specialists.

The episodes of care analysis parallels that of the Medicare population generally, with one exception. We did not individually examine two vulnerable groups: the very old and rural residents in general. First, the decision to perform tests and surgery on very old patients with AMI or TIA is expected to be driven largely by the frailer health status of these patients, and not by relative payment changes. Second, residents of rural areas were found to generally have similar utilization patterns to those of urban residents (data not shown). However, we do evaluate MFS effects for two specific rural vulnerable groups: the rural poor and residents of rural shortage areas.

4.2 Descriptive Results

4.2.1 Time Trends in Treatment Patterns for AMI Patients

For AMI patients, we examined changes in utilization for the following services:

- hospital visits;
- inpatient consultations;
- echocardiography;
- cardiac catheterization with coronary angiography;
- percutaneous transluminal coronary angioplasty (PTCA)
- coronary artery bypass graft (CABG) surgery; and
- revascularization (either PTCA or CABG).

Because only those patients undergoing cardiac catheterization are potential candidates for revascularization procedures, we also analyzed:

- revascularization, conditional on having received cardiac catheterization.

Finally, we examined the percent of patients with a cardiologist as their attending physician.

Rates of use for hospital visits and consultations were calculated for the inpatient stay only. Utilization of all tests and procedures are based on the full 90-day episode of care.

Table 4-1 presents the utilization of these services by year for black and white AMI patients, respectively. Because the number of hospital visits per admission is constrained by

the length of stay, we show the number of hospital visits per day. All other services are expressed as the percentage of patients receiving that service. Two different tests of statistical significance were performed. First, we tested whether the change from 1991 to 1993 was significant for each vulnerable and non-vulnerable group separately (as indicated by an “a” superscript). Second, for each year, we tested whether utilization by the vulnerable group was significantly different from that of their comparison group (as indicated by a “b” superscript).

Hospital visit intensity grew significantly for both blacks and whites over the 1991-1993 period, increasing from 0.7 visits to 0.8 per day. With a mean length of stay of 11 days, this represents about one-half of a visit more per stay in 1993 than in 1991. There were no significant changes in utilization over time for any of the other services.

There were no significant differences between black and white AMI patients in access to inpatient evaluation and management services (visits and consultations) or in use of echocardiography (diagnostic ultrasound of the heart). However, black AMI patients were significantly less likely to receive any of the three invasive procedures, compared with whites: cardiac catheterization, PTCA, and CABG surgery. Even after limiting the comparison to those patients potentially eligible for revascularization (by virtue of undergoing cardiac catheterization), black AMI patients still were significantly less likely to undergo surgery.

White and black AMI patients were equally likely to have a specialist responsible for their inpatient care. Over one-half of all patients had a cardiologist as their attending physician.

Tables 4-2 through 4-7 present similar comparisons for the other vulnerable groups: joint Medicaid eligibles, urban poor, rural poor, urban and rural residents of health care shortage areas, and the disabled, respectively. Hospital visit intensity increased for all vulnerable groups, although the time change did not attain statistical significance for residents of urban poverty and urban shortage areas. There were no other changes in service use over time, with two exceptions: residents of rural poverty areas (Table 4-4) and residents of rural shortage areas (Table 4-6) were both significantly more likely to undergo a revascularization procedure in 1993, compared with 1991.

Like blacks, AMI patients who are joint Medicaid eligible were significantly less likely to undergo invasive procedures (cardiac catheterization, PTCA, and CABG surgery) compared with non-Medicaid eligibles (see Table 4-2). Unlike blacks, however, Medicaid-eligible patients were less likely to have a cardiologist responsible for their inpatient care. Although

revascularization rates for joint eligibles undergoing cardiac catheterization still remain below those of other patients, the difference is no longer statistically significant.

Similarly, AMI patients from urban poverty areas (Table 4-3) also were less likely to undergo invasive procedures (although the CABG differential is not statistically significant). On the other hand, they were more likely than nonpoor patients to receive echocardiography, suggesting that clinical information obtained through this diagnostic test may influence their subsequent course of treatment. Surprisingly, AMI patient from rural poverty areas (Table 4-4) were just as likely as nonpoor patients to undergo invasive procedures, but were significantly less likely to receive a consultation or echocardiography. They also were significantly less likely to have a cardiologist as their attending physician.

AMI patients from urban shortage areas (Table 4-5) were less likely to receive invasive procedures compared with those from non-shortage areas, but only the PTCA differential was statistically significant. AMI patients from shortage areas (Table 4-6) resemble those from rural poverty areas, with significantly lower rates of consultation and echocardiography compared to their reference group, but with no differences in the use of invasive procedures. Finally, there were no differences in use between AMI patients who originally became entitled to Medicare because of disability and those who did not (Table 4-7).

4.2.2 Time Trends in Treatment Patterns for TIA Patients

For TIA patients, we examined changes in utilization for the following services:

- hospital visits per day;
- consultations;
- noninvasive cerebrovascular tests (e.g., Doppler and duplex scans);
- CT scan of the head;
- MRI scan of the brain;
- cerebral angiography; and
- carotid endarterectomy.

We also analyzed the percent of TIA patients with a neurologist as their attending physician.

Utilization of all procedures was based on the 30 day-period following hospital admission. Most surgeons will not perform carotid endarterectomy without first visualizing the carotid arteries using angiography. For this reason, we also examined:

- carotid endarterectomy, conditional on having undergone cerebral angiography.

Finally, we were interested in whether higher fees for office and hospital visits would lead to more comprehensive evaluation of potential candidates for anticoagulant therapy, such as warfarin. If so, then a higher proportion of eligible TIA patients might be managed using such therapy. Based on available evidence, individuals with TIA are generally considered to be among the most appropriate candidates for anticoagulant therapy if they have atrial fibrillation (EAFT Study Group, 1993). Since Medicare does not cover outpatient prescription drugs, we could not directly identify the use of anticoagulant drugs. Patients on these drugs should be monitored with prothrombin time tests, however, and we used outpatient bills for these tests as a proxy for warfarin use. For this analysis, we limited the sample to those TIA patients with a secondary diagnosis of atrial fibrillation and who had no clinical contraindications. (Contraindications were defined as any secondary diagnoses that would preclude anticoagulant therapy, e.g., blood disorders, peptic ulcers, etc.)

Table 4-8 presents the utilization of these services by year for black and white TIA patients, respectively, using the same format shown for AMI patients. Unlike AMI patients, visit intensity actually declined over this three-year period, significantly so for white patients. With an average length of stay of 6 days for white TIA patients, this implies that patients received about 0.66 fewer visits per admissions in 1993 than in 1991. There were no significant changes in utilization for any of the other services.

While black TIA patients generally received fewer tests and procedures compared with white patients, these differences are not statistically significant. This is in marked contrast to other studies which have found substantial racial gaps in access to cerebrovascular services (e.g., Mitchell *et al.*, 1996; Oddone *et al.*, 1993). We suspect that this is largely due to our relatively small sample sizes and corresponding larger standard errors. Our sample of TIA patients is only one-half the size of our AMI sample. When we subset to those TIA patients with atrial fibrillation and without clinical contraindications, the sample size is even further diminished (e.g., fewer than 100 black patients per year).

Tables 4-9 through 4-14 present similar comparisons for the other vulnerable groups: joint Medicaid eligibles, urban poor, rural poor, urban and rural residents of health care shortage areas, and the disabled, respectively. Hospital visit intensity declined for all patients, although the time change attained statistical significance only for the non-vulnerable comparison groups. There were no other changes in service use over time. Although not statistically significant, there appears to be a considerable reduction for all groups (vulnerable and non-vulnerable) in access to neurologists. This is puzzling, because the relative supply of neurologists actually increased faster over this three-year period, compared with both internists (the specialty most likely to treat stroke inpatients) and with physicians generally (Randolph *et al.*, 1996).

TIA patients from rural poverty areas and rural shortage areas were significantly less likely to have a neurologist as their attending physician compared with other patients (Tables 4-11 and 4-13), and less likely to receive a consultation. This presumably is due to the marked concentration of neurologists in urban areas (AAN, 1993), as TIA patients in urban poverty areas and urban shortage areas appeared to enjoy the same access to neurologists as comparison patients (Tables 4-10 and 4-12). Patients from rural poverty and rural shortage areas also were less likely to undergo certain diagnostic tests, particularly CT and MRI scans, but these differences were statistically significant only in 1991.

Although many vulnerable groups displayed lower utilization levels for cerebrovascular tests and procedures, these differences generally were not significant. As discussed earlier, we suspect that our relatively small sample sizes are responsible.

4.2.3 Changes in Payment Rates for Episode Services

In order to capture MFS impacts, we calculated average annual allowed charges for each of the services and procedures of interest. These means were constructed from the Physician/Supplier Procedure Summary Files for each of the three study years, based on the charge locality in which the hospital was located. (This process, and the specific CPT procedure codes used, was described in detail in Section 2.3.2.1)

Table 4-15 presents the mean allowed charge for each service over the study period. (Since these means were calculated for our samples of AMI and TIA patients, they do not necessarily represent a true national average for each of these services. Rather, they are

average payments for those services among patients admitted with AMI or TIA.) As expected, payment for hospital visits increased substantially, almost 20 percent from 1991 to 1993. Reimbursement for consultations fell somewhat, primarily due to a one-time dislocation in 1992 when new CPT codes for consultations were introduced as part of the MFS. Beginning in 1992, separate codes are used for inpatient vs. outpatient consultations, with inpatient consultations receiving a lower RVU weight (and hence lower Medicare payments) relative to those provided in outpatient settings.

Medicare payments for all of the AMI and TIA diagnostic tests and surgical procedures fell markedly. The largest reduction was observed for CABG surgery, where the average allowed charge was almost one-quarter lower in 1993, compared with 1991.

4.3 Regression Results

4.3.1 Specification and Estimation

We tested for MFS impacts on access using the same basic model as that shown in Chapter 3. Regressions were estimated for a combined 1991 and 1993 sample, using the following specification:

$$USE_{it} = f(\text{PRICE}_{91jk}; \text{MFS}_{jk}; Y93_i; \text{MFS}_{jk} * Y93_i; V * \text{MFS}_{jk} * Y93_i; \text{PT}; \text{HOSP})$$

where USE_{it} =utilization of the i-th service in year t;

PRICE_{91jk} =average allowed charge of the j-th service in the Medicare pricing locality k in 1991;

MFS_{jk} = percent change in the average allowed charge of the i-th service from 1991 to 1993;

$Y93_i=1$ if year is 1993;

$\text{MFS}_{jk} * Y93_i$ =interaction of MFS_{jk} and $Y93_i$;

V =vector of dummy variables for the vulnerable groups;

$V * \text{MFS}_{jk} * Y93_i$ =vector of interaction terms;

PT =vector of patient characteristics; and

HOSP =vector of hospital characteristics.

The PRICE91 and various MFS variables vary according to the specific dependent variable in each regression. Table 4-16 displays each of the regression equations we estimated, along with the price variable used.

MFS impacts are captured by the interaction terms. A significant coefficient associated with the MFS*Y93 variable would indicate a change in use by the comparison group attributable to the MFS price change. Significant coefficients associated with the V*MFS*Y93 variables would indicate a change in use for the V-th vulnerable group as the result of the MFS price change. Seven V dummy variables and seven corresponding interaction terms are included to measure MFS impacts on the vulnerable groups: BLACK (black), MEDICAID (joint Medicaid eligible), UPOOR (urban poor), RPOOR (rural poor), UHCSA (urban shortage area), RHCSA (rural shortage area), and DISABLED (disabled).

Patient characteristics expected to influence utilization include dummy variables for gender (MALE) and age (AGE75 for patients aged 75 to 84 and AGE85 for patients aged 85 and older). In addition, we calculated a Charlson Clinical Comorbidity Index for each patient based on secondary diagnoses. The Charlson Index is the weighted sum of selected chronic conditions shown to be associated with poor outcomes, such as congestive heart failure and chronic obstructive pulmonary disease (Charlson *et al.*, 1987; Deyo *et al.*, 1992).

Hospital characteristics expected to affect the availability of technology include bedsize, teaching status, and location. Teaching status was captured by two dummy variables, MAJOR for hospitals with 0.25 or more residents per bed, and MINOR for those with fewer residents (with nonteaching hospitals the omitted category). Two dummy variables were used to characterize hospital size: LARGE for hospitals with 300 or more beds, SMALL for those with fewer than 100 (with medium-sized hospitals the omitted category). Location was measured by a dummy variable, HRURAL, indicating that the hospital was located in a rural area.

This same specification was used for all regressions for both the AMI and TIA samples. The hospital visit equations included one additional variable, length of stay, logged (LLOS), as the number of visits that can be provided are constrained by the duration of the hospital stay.

Table 4-16 displayed all of the dependent variables for which we estimated regression equations. The revascularization equation was estimated twice, first for all AMI patients and then just for those who had undergone cardiac catheterization. Similarly, we estimated the carotid endarterectomy equation first for all TIA patients and then for only those who had received cerebral angiography. With the exception of hospital visits, the dependent variables

were defined as the probability that a patient would receive a given service (or have a specialist as attending physician). Logistic regression was used to estimate these binary dependent variables. Since hospital visits constituted a continuous, but not normally distributed, dependent variable, we estimated these equations in logs using OLS.

Means for all independent variables used in the AMI equations can be found in Table 4-17. Table 4-18 presents similar data for the TIA equations.

4.3.2 Results for AMI Patients

MFS Impacts

Table 4-19 presents regression results for all of the equations estimated for AMI patients. The numbers for the hospital visit equation represent regression coefficients; the numbers for all other equations are odds ratios. For categorical variables, the odds ratio represents the odds that the indicator group will receive the *i*-th service relative to the omitted group. In the case of continuous variables, the odds ratio can be interpreted as the change in the odds of receiving the procedure accompanying a one unit change in the independent variable. Thus, using the consultation equation in Table 4-19 as an example, a one dollar increase in the baseline consultation fee (PRICE91) would raise the odds of receiving a consultation by 0.6 percent. Interpretation is considerably more complicated in the case of interaction terms, e.g., MFS*Y93; for these variables, it is more meaningful to simulate the change in the odds by varying the levels of the continuous portion of the interaction (e.g., MFS).

MFS impacts for the vulnerable patient groups are captured by the series of interaction terms, BLACK*MFS*Y93, etc. None of these terms are significant in the utilization equations, suggesting that there were no differential changes in access over time that could be attributed to payment changes resulting from the fee schedule. One interaction term is significant in the cardiologist equation (DISABLED*MFS*Y93), however, suggesting that increased payments for hospital visits raised the probability that disabled patients would have a cardiologist as their attending physician. (Note the very low baseline odds for disabled patients.) MFS impacts for the non-vulnerable patient groups are captured by the MFS*Y93 terms. All of these are insignificant, except in the hospital visit equation where the coefficient is negative and significant (albeit only at the 10 percent level). This implies that, in areas with a relatively

greater percent increase in hospital visit payments, non-vulnerable AMI patients received fewer hospital visits during their stay, ceteris paribus. Although inconsistent with expectations, it is important to note that this is the only significant negative MFS finding of the large number tested (and hence may be due to chance).

Differential Use by Vulnerable Patient Groups

While there was no indication that access had worsened from 1991 to 1993 as the result of the MFS, the regression results in Table 4-19 indicate that, even after controlling for patient and hospital characteristics and comorbidity, some vulnerable groups continued to utilize services at lower levels compared with non-vulnerable patients. There were no differences between vulnerable and non-vulnerable groups in the number of hospital visits or the probability of receiving a consultation during the inpatient stay. AMI patients who originally became Medicare eligible due to disability were significantly less likely to receive echocardiography compared with their non-disabled colleagues, but otherwise there were no differences in the likelihood of receiving this non-invasive diagnostic test.

There were considerable differences in the utilization of invasive tests and surgical procedures, however. Black patients, those jointly eligible for Medicaid, the disabled, and the urban poor were all less likely to undergo cardiac catheterization. AMI patients from urban poverty areas, for example, were only one-half as likely to receive this invasive test (odds ratio=0.511), compared with patients from non-poverty areas. These same four vulnerable groups also were significantly less likely to undergo either PTCA or CABG surgery. Restricted access to cardiac catheterization (a necessary precursor to either of these revascularization procedures) is one reason behind these lower surgical rates. When we limit the revascularization regression to those patients undergoing cardiac catheterization, the differences for Medicaid-eligible and urban poor patients turn insignificant. Nevertheless, even among this restricted sample of potential candidates for revascularization, black and disabled AMI patients remain significantly less likely to undergo either surgical procedure.

Finally, both disabled and urban poor patients were significantly less likely to have a cardiologist as their attending physician. Access to specialists' services may help explain lower utilization of tests and procedures for some vulnerable groups. We explore this in more detail later.

Time Trends

The significant coefficients associated with the time trend variable (Y93) indicate secular increases in hospital visit intensity, cardiac catheterization, and PTCA. The odds that an AMI patient would undergo PTCA in 1993, for example, were 32 percent higher than in 1991. In order to determine whether the utilization differential widened or narrowed over this time period for vulnerable groups, we re-estimated the equations shown in Table 4-19, dropping all MFS interactions and substituting interaction terms for the vulnerable groups and the year 1993 (e.g., BLACK*Y93, MEDICAID*Y93, etc.). None of these interaction terms were significant, suggesting that, *ceteris paribus*, utilization for vulnerable groups changed at the same rate as that for non-vulnerable groups over the 1991-1993 time period.

4.3.3 Results for TIA Patients

MFS Impacts

Table 4-20 presents results for all of the regressions estimated for TIA patients. (The reader will note a few unusually large odds ratios in the two carotid endarterectomy regressions. These reflect the difficulty in estimating the odds that a relatively small patient group will receive a relatively rare procedure.) None of the vulnerable group interaction terms are significant, suggesting that MFS payment changes had no differential impact on any of our vulnerable patient groups. Similarly, the non-vulnerable interaction term (MFS*Y93) was insignificant in all but one equation: anticoagulant therapy. Increased office visit payments raised the probability that TIA patients would receive anticoagulant therapy, as proxied by outpatient prothrombin tests. An alternative explanation is that increased office visit payments raised the odds that patients on anticoagulant therapy would be managed more appropriately (i.e., be monitored with prothrombin time tests).

Differential Use by Vulnerable Groups

While the MFS appears to have had no adverse effect on vulnerable TIA patients, considerable differences in use persist. TIA patients who are joint Medicaid-eligible received significantly fewer routine hospital visits and were less likely to receive a consultation, compared with non-eligible patients. Surprisingly, however, urban poor patients were

considerably more likely to receive a consult during their inpatient stay, compared with otherwise similar patients from non-poverty areas.

Medicaid-eligible patients also were less likely to undergo non-invasive cerebrovascular testing, and less likely to receive an MRI scan. (Disabled TIA patients also were significantly less likely to undergo MRI scanning.) Black TIA patients were only 60 percent as likely as white patients to receive cerebral angiography, an invasive diagnostic test that determines whether a patient is a potential candidate for carotid endarterectomy. Although the odds ratios associated with receiving carotid endarterectomy were very low for black patients (0.2-0.4), they were not statistically significant. We suspect this is due to the relatively small number of black TIA patients in our sample, as prior work has shown significantly lower rates of carotid endarterectomy for black TIA patients, even after restricting the sample to those having previously received cerebral angiography (Mitchell *et al.*, 1996b).

Finally, both black and Medicaid-eligible TIA patients were significantly less likely to have a neurologist as their attending physician. In a later section, we will evaluate whether this may indirectly affect utilization by these two vulnerable groups.

Time Trends

The coefficients and odds ratios associated with the Y93 variable indicate a secular trend toward fewer encounters and less testing among TIA patients. In 1993, TIA patients received fewer hospital visits per admission, were less likely to receive a consultation during their inpatient stay, and were less likely to undergo either CT scanning or cerebral angiography. A shift to outpatient testing can not explain the decline in use among these two diagnostic procedures, as utilization was counted for a 30-day post-admission period, regardless of location. The odds that a non-vulnerable TIA patient would have a neurologist as his/her attending physician in 1993 was only two-thirds the odds in 1991. To the extent that neurologists are more likely to order/perform these tests, this could explain these patterns of diminishing use. We examine the role of specialty in more detail later.

As with AMI patients, we tested whether this secular time trend was disproportionately larger (smaller) for vulnerable groups, by substituting interaction terms for 1993. None of these interactions was significant, implying that the declines observed for the non-vulnerable groups also took place among our vulnerable patient groups.

4.3.4 The Role of Specialty in Explaining Access to Tests and Procedures

In the previous sections, we found lower utilization rates of diagnostic tests and procedures for some vulnerable groups. These differences persisted, even after adjusting for patient comorbidity, and hospital characteristics that may affect the availability of these technologies. At the same time, we found that some vulnerable groups were less likely to have a relevant specialist as attending physician during their hospital stay (i.e., a cardiologist in the case of AMI patients and a neurologist for TIA patients). To the extent that the relevant specialists are more knowledgeable about tests and therapies compared with primary care physicians, this might explain differential use for these vulnerable groups. To test this, we re-estimated the equations shown in Tables 4-19 and 4-20, adding a dummy variable to indicate whether the patient had the relevant specialist as attending physician. If part of the vulnerable-nonvulnerable utilization gap is due to differential access to specialists, then controlling for attending physician specialty should reduce the gap (i.e., the odds ratios associated with vulnerable groups should move closer to 1.0). Including physician specialty had a positive, but minimal, impact on the odds ratios (regression results not shown). The odds ratio associated with being black in the AMI revascularization equation increased from 0.573 to 0.584, for example, when the cardiologist dummy variable was added.

The specialist variables themselves, however, had a powerful impact on utilization. The odds ratios associated with these variables are shown in Table 4-21. AMI patients with a cardiologist as attending physician were significantly more likely to receive echocardiography, cardiac catheterization, PTCA, and CABG surgery. The odds of cardiac catheterization increased four-fold, for example, when cardiologists were responsible for managing inpatient care. Increased surgical utilization among AMI patients with a cardiologist appears to be largely attributed to the role of cardiac catheterization in making them eligible for surgery. When the sample is limited to those patients who received cardiac catheterization, there is no significant specialty impact on the odds of revascularization.

Similarly, TIA patients with a neurologist as attending physician were significantly more likely to receive all forms of diagnostic cerebrovascular testing. There were no differences by specialty in surgical use. TIA patients with atrial fibrillation and no clinical contraindications, however, were almost twice as likely to be placed on anticoagulant therapy when treated by a neurologist versus other types of physicians.

TABLE 4-1

TREATMENT PATTERNS FOR BLACK AND WHITE PATIENTS WITH AMI: 1991-1993

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>% Change 1991-1993</u>
Visits/Day				
Black	0.72	0.88	0.82	13.9%
White	0.73	0.90	0.83	13.7% ^a
Consultation				
Black	54.4%	55.8%	53.2%	-2.2%
White	54.0%	54.3%	54.0%	0.0%
Echocardiography				
Black	61.1%	60.6%	58.7%	-3.9%
White	56.3%	55.5%	56.0%	-0.5%
Cardiac Catheterization				
Black	36.8% ^b	39.8% ^b	41.4% ^b	12.5%
White	46.9%	46.8%	48.8%	4.1%
PTCA				
Black	11.2% ^b	11.9% ^b	13.0% ^b	16.1%
White	16.8%	16.7%	19.9%	18.5%
CABG				
Black	9.0% ^b	8.3% ^b	9.2% ^b	2.2%
White	14.8%	15.4%	14.4%	-2.7%
Revascularization				
Black	19.3% ^b	19.6% ^b	20.8% ^b	7.8%
White	29.9%	30.5%	32.6%	9.0%
Revascularization (for patients undergoing cardiac catheterization)				
Black	50.5% ^b	47.8% ^b	48.9% ^b	-3.2%
White	62.4%	63.4%	65.2%	4.5%
Cardiologist as Attending Physician				
Black	56.8%	51.2%	53.6%	-5.5%
White	60.5%	56.2%	58.4%	-3.4%

NOTES:

^a Significant time change at the 0.05 level or better.

^b Significantly different from white patients at the 0.05 level or better.

SOURCE: Part A claims, Part B claims, and denominator file for a sample of Medicare patients admitted with AMI.

TABLE 4-2

TREATMENT PATTERNS FOR MEDICAID-ELIGIBLE AND NON-ELIGIBLE PATIENTS WITH AMI: 1991-1993

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>% Change 1991-1993</u>
Visits/Day				
Medicaid-Eligible	0.73	0.88	0.81	11.0% ^a
Non-Eligible	0.73	0.90	0.83	13.7% ^a
Consultation				
Medicaid-Eligible	50.9%	48.3%	50.1%	-1.6%
Non-Eligible	54.4%	55.4%	54.5%	0.2%
Echocardiography				
Medicaid-Eligible	55.2%	52.1%	52.6%	-4.7%
Non-Eligible	56.7%	56.4%	56.7%	0.0%
Cardiac Catheterization				
Medicaid-Eligible	31.7% ^b	32.2% ^b	33.9% ^b	6.9%
Non-Eligible	48.5%	48.5%	50.5%	4.1%
PTCA				
Medicaid-Eligible	10.0% ^b	11.0% ^b	11.3% ^b	13.0%
Non-Eligible	17.4%	17.3%	20.7%	19.0%
CABG				
Medicaid-Eligible	8.6% ^b	8.4% ^b	7.9% ^b	-8.1%
Non-Eligible	15.3%	15.9%	15.0%	-2.0%
Revascularization				
Medicaid-Eligible	18.0% ^b	18.5% ^b	18.4% ^b	2.2%
Non-Eligible	30.9%	31.5%	33.9%	9.7%
Revascularization (for patients undergoing cardiac catheterization)				
Medicaid-Eligible	53.9%	55.7%	53.0%	-1.7%
Non-Eligible	62.6%	63.3%	65.5%	4.6%
Cardiologist as Attending Physician				
Medicaid-Eligible	50.9% ^b	48.4% ^b	50.3% ^b	-1.2%
Non-Eligible	61.6%	57.0%	59.3%	-3.8%

NOTES:

^a Significant time change at the 0.05 level or better.

^b Significantly different from non-eligible patients at the 0.05 level or better.

SOURCE: Part A claims, Part B claims, and denominator file for a sample of Medicare patients admitted with AMI.

TABLE 4-3

TREATMENT PATTERNS FOR URBAN POOR AND NON-POOR PATIENTS WITH AMI: 1991-1993

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>% Change 1991-1993</u>
Visits/Day				
Urban Poor	0.74	0.85	0.81	9.5%
Non-poor	0.73	0.90	0.83	13.7% ^a
Consultation				
Urban Poor	59.2%	57.8%	57.9%	-2.2%
Non-poor	53.7%	54.2%	53.8%	0.2%
Echocardiography				
Urban Poor	63.2% ^b	63.0% ^b	64.6% ^b	2.2%
Non-poor	56.2%	55.4%	55.7%	-0.9%
Cardiac Catheterization				
Urban Poor	35.8% ^b	38.6% ^b	37.0% ^b	3.4%
Non-poor	46.9%	46.8%	49.0%	4.5%
PTCA				
Urban Poor	10.9% ^b	12.9%	12.3% ^b	12.8%
Non-poor	16.8%	16.6%	19.9%	18.5%
CABG				
Urban Poor	11.0%	11.2%	9.9%	-10.0%
Non-poor	14.7%	15.1%	14.3%	-2.7%
Revascularization				
Urban Poor	20.9% ^b	23.4% ^b	21.2% ^b	1.4%
Non-poor	29.8%	30.2%	32.5%	9.1%
Revascularization (for patients undergoing cardiac catheterization)				
Urban Poor	55.2%	58.9%	55.0%	-0.4%
Non-poor	62.1%	62.8%	64.7%	4.2%
Cardiologist as Attending Physician				
Urban Poor	61.0%	55.6%	55.8%	-8.4%
Non-poor	60.2%	55.9%	58.2%	-3.3%

NOTES:

^a Significant time change at the 0.05 level or better.^b Significantly different from non-poor patients at the 0.05 level or better.

SOURCE: Part A claims, Part B claims, and denominator file for a sample of Medicare patients admitted with AMI.

TABLE 4-4

TREATMENT PATTERNS FOR RURAL POOR AND NON-POOR PATIENTS WITH AMI: 1991-1993

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>% Change 1991-1993</u>
Visits/Day				
Rural Poor	0.69	0.87	0.77	11.6% ^a
Non-poor	0.73	0.90	0.83	13.7% ^a
Consultation				
Rural Poor	39.1% ^b	42.6% ^b	44.1% ^b	12.8%
Non-poor	54.3%	54.6%	54.1%	-0.4%
Echocardiography				
Rural Poor	46.7% ^b	48.4% ^b	48.5% ^b	3.9%
Non-poor	56.7%	55.9%	56.3%	-0.7%
Cardiac Catheterization				
Rural Poor	42.2%	45.3%	46.3%	9.7%
Non-poor	46.4%	46.4%	48.4%	4.3%
PTCA				
Rural Poor	13.0%	13.8%	17.4%	33.8% ^a
Non-poor	16.6%	16.5%	19.5%	17.5%
CABG				
Rural Poor	12.7%	13.0%	14.2%	11.8%
Non-poor	14.5%	15.0%	14.0%	-3.4%
Revascularization				
Rural Poor	24.0% ^b	25.8%	30.0%	25.0% ^a
Non-poor	29.4%	29.9%	31.9%	8.5%
Revascularization (for patients undergoing cardiac catheterization)				
Rural Poor	55.7%	56.6%	63.2%	13.5%
Non-poor	61.9%	62.7%	64.4%	4.0%
Cardiologist as Attending Physician				
Rural Poor	47.8% ^b	51.2%	51.5% ^b	7.7%
Non-poor	60.5%	56.0%	58.2%	-3.7%

NOTES:

^a Significant time change at the 0.05 level or better.^b Significantly different from non-poor patients at the 0.05 level or better.

SOURCE: Part A claims, Part B claims, and denominator file for a sample of Medicare patients admitted with AMI.

TABLE 4-5

TREATMENT PATTERNS FOR URBAN SHORTAGE AREA AND NON-SHORTAGE AREA PATIENTS WITH AMI: 1991-1993

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>% Change 1991-1993</u>
Visits/Day				
Urban Shortage Area	0.75	0.88	0.81	8.0%
Non-shortage Area	0.73	0.90	0.83	13.7% ^a
Consultation				
Urban Shortage Area	58.4%	57.0%	57.5%	-1.5%
Non-shortage Area	53.9%	54.3%	53.9%	0.0%
Echocardiography				
Urban Shortage Area	61.8%	60.8%	63.3%	2.4%
Non-shortage Area	56.4%	55.6%	56.0%	-0.7%
Cardiac Catheterization				
Urban Shortage Area	40.4%	45.0%	41.6%	3.0%
Non-shortage Area	46.5%	46.4%	48.6%	4.5%
PTCA				
Urban Shortage Area	11.7%	14.5%	13.2% ^b	12.8%
Non-shortage Area	16.7%	16.5%	19.7%	18.0%
CABG				
Urban Shortage Area	13.0%	14.8%	10.9%	-16.2%
Non-shortage Area	14.5%	14.9%	14.1%	-2.8%
Revascularization				
Urban Shortage Area	23.0% ^b	27.7%	23.2% ^b	0.9%
Non-shortage Area	29.5%	29.9%	32.1%	8.8%
Revascularization (for patients undergoing cardiac catheterization)				
Urban Shortage Area	54.0%	50.2%	54.4%	0.7%
Non-shortage Area	62.0%	62.7%	64.6%	4.2%
Cardiologist as Attending Physician				
Urban Shortage Area	62.8%	56.0%	55.6%	-11.5%
Non-shortage Area	60.2%	55.9%	58.2%	-3.3%

NOTES:

^a Significant time change at the 0.05 level or better.^b Significantly different from non-shortage area patients at the 0.05 level or better.

SOURCE: Part A claims, Part B claims, and denominator file for a sample of Medicare patients admitted with AMI.

TABLE 4-6

TREATMENT PATTERNS FOR RURAL SHORTAGE AREA AND NON-SHORTAGE AREA PATIENTS WITH AMI: 1991-1993

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>% Change 1991-1993</u>
Visits/Day				
Rural Shortage Area	0.65 ^b	0.83 ^b	0.76 ^b	16.9% ^a
Non-shortage Area	0.74	0.90	0.83	12.2% ^a
Consultation				
Rural Shortage Area	41.1% ^b	36.9% ^b	40.3% ^b	-1.9%
Non-shortage Area	54.3%	54.8%	54.3%	0.0%
Echocardiography				
Rural Shortage Area	43.0% ^b	46.7% ^b	47.4% ^b	10.2%
Non-shortage Area	56.9%	56.0%	56.3%	-1.1%
Cardiac Catheterization				
Rural Shortage Area	43.4%	45.8%	48.7%	12.2%
Non-shortage Area	46.4%	46.4%	48.3%	4.1%
PTCA				
Rural Shortage Area	13.7%	14.7%	19.1%	39.4%
Non-shortage Area	16.6%	16.5%	19.5%	17.5%
CABG				
Rural Shortage Area	14.3%	13.8%	16.8%	17.5%
Non-shortage Area	14.5%	15.0%	14.0%	-3.4%
Revascularization				
Rural Shortage Area	26.9%	27.7%	34.2%	27.1% ^a
Non-shortage Area	29.4%	29.9%	31.8%	8.2%
Revascularization (for patients undergoing cardiac catheterization)				
Rural Shortage Area	60.9%	58.4%	68.7%	12.8%
Non-shortage Area	61.9%	62.7%	64.3%	3.9%
Cardiologist as Attending Physician				
Rural Shortage Area	47.4% ^b	50.3%	52.1%	10.1%
Non-shortage Area	60.6%	56.0%	58.3%	-3.8%

NOTES:

^a Significant time change at the 0.05 level or better.^b Significantly different from non-shortage area patients at the 0.05 level or better.

SOURCE: Part A claims, Part B claims, and denominator file for a sample of Medicare patients admitted with AMI.

TABLE 4-7

TREATMENT PATTERNS FOR DISABLED AND NON-DISABLED PATIENTS WITH AMI: 1991-1993

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>% Change 1991-1993</u>
Visits/Day				
Disabled	0.70	0.89	0.83	18.6% ^a
Non-disabled	0.75	0.91	0.84	12.0% ^a
Consultation				
Disabled	53.5%	53.0%	53.3%	-0.4%
Non-disabled	54.1%	54.7%	54.1%	0.0%
Echocardiography				
Disabled	53.3%	55.2%	54.3%	1.9%
Non-disabled	57.1%	55.9%	56.5%	-1.1%
Cardiac Catheterization				
Disabled	50.0%	53.7% ^b	54.3%	8.6%
Non-disabled	45.7%	45.0%	47.3%	3.5%
PTCA				
Disabled	16.0%	18.1%	19.8%	23.8%
Non-disabled	16.6%	16.1%	19.4%	16.9%
CABG				
Disabled	14.6%	15.4%	15.1%	3.4%
Non-disabled	14.5%	14.8%	13.9%	-4.1%
Revascularization				
Disabled	29.0%	31.3%	32.6%	12.4%
Non-disabled	29.4%	29.5%	31.7%	7.8%
Revascularization (for patients undergoing cardiac catheterization)				
Disabled	55.9%	56.5%	58.6%	4.8%
Non-disabled	63.1%	64.0%	65.6%	4.0%
Cardiologist as Attending Physician				
Disabled	60.6%	58.6%	61.7%	1.9%
Non-disabled	60.2%	55.4%	57.5%	-4.6%

NOTES:

^a Significant different from ami disabled patients at the 0.05 level or better.^b Significantly different from non-disabled patients at the 0.05 level or better.

SOURCE: Part A claims, Part B claims, and denominator file for a sample of Medicare patients admitted with AMI.

TABLE 4-8

TREATMENT PATTERNS FOR BLACK AND WHITE PATIENTS WITH TIA: 1991-1993

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>% Change 1991-1993</u>
Visits/Day				
Black	0.84	0.88	0.77	-8.3%
White	0.87	0.89	0.76	-12.6% ^a
Consultation				
Black	48.2%	47.6%	44.6%	-7.5%
White	49.9%	47.0%	46.3%	-7.2%
Non-Invasive Cerebro-vascular Tests				
Black	42.5%	47.9%	46.4%	9.2%
White	48.0%	50.5%	50.9%	5.4%
CT Scan, Head				
Black	76.3%	71.6%	71.1%	-6.8%
White	74.5%	66.4%	69.1%	-7.2%
MRI Scan, Brain				
Black	9.5%	11.0%	11.6%	22.1%
White	12.5%	12.9%	12.8%	2.4%
Cerebral Angiography				
Black	4.3%	3.4%	3.2%	-25.6%
White	7.7%	7.0%	5.2%	-32.5%
Carotid Endarterectomy				
Black	0.4%	1.0%	0.9%	125.0%
White	2.2%	2.7%	1.8%	-18.2%
Carotid Endarterectomy (for patients undergoing cerebral angiography)				
Black	8.7%	13.6%	24.1%	177.0%
White	22.8%	28.6%	27.5%	20.6%
Anticoagulant Therapy (for patients with atrial fibrillation only)				
Black	20.7%	23.0%	24.3%	17.4%
White	34.4%	34.2%	32.2%	-6.4%
Neurologist as Attending Physician				
Black	26.2%	22.1%	21.3%	-18.7%
White	30.1%	22.5%	22.9%	-24.0%

NOTES:

^a Significant time change at the 0.05 level or better.^b Significantly different from white patients at the 0.05 level or better.

SOURCE: Part A claims, Part B claims, and denominator file for a sample of Medicare patients admitted with TIA.

TABLE 4-9

TREATMENT PATTERNS FOR MEDICAID-ELIGIBLE AND NON-ELIGIBLE PATIENTS WITH TIA: 1991-1993

	1991	1992	1993	% Change 1991-1993
Visits/Day				
Medicaid eligible	0.83	0.88	0.77	-7.2%
Non-Medicaid eligible	0.86	0.89	0.76	-11.6% ^a
Consultation				
Medicaid eligible	42.3%	39.6%	39.1%	-7.6%
Non-Medicaid eligible	51.2%	48.5%	47.6%	-7.0%
Non-Invasive Cerebro-vascular Tests				
Medicaid eligible	37.4% ^b	41.0% ^b	41.9%	12.0%
Non-Medicaid eligible	49.5%	52.1%	51.9%	4.8%
CT Scan, Head				
Medicaid eligible	73.7%	66.0%	68.3%	-7.3%
Non-Medicaid eligible	74.8%	67.0%	69.4%	-7.2%
MRI Scan, Brain				
Medicaid eligible	7.2% ^b	8.6%	7.4%	2.8%
Non-Medicaid eligible	13.2%	13.5%	13.8%	4.5%
Cerebral Angiography				
Medicaid eligible	4.5%	3.3%	4.1%	-8.9%
Non-Medicaid eligible	7.9%	7.4%	5.3%	-32.9%
Carotid Endarterectomy				
Medicaid eligible	1.0%	0.8%	1.0%	0.0%
Non-Medicaid eligible	2.2%	2.9%	1.9%	-13.6%
Carotid Endarterectomy (for patients undergoing cerebral angiography)				
Medicaid eligible	13.7%	17.9%	24.6%	79.6%
Non-Medicaid eligible	23.0%	28.8%	27.7%	20.4%
Anticoagulant Therapy (for patients with atrial fibrillation only)				
Medicaid eligible	24.9%	24.4%	24.0%	-3.6%
Non-Medicaid eligible	35.4%	35.2%	33.1%	-6.5%
Neurologist as Attending Physician				
Medicaid eligible	22.2% ^b	17.8%	16.0%	-27.9%
Non-Medicaid eligible	31.3%	23.3%	24.2%	-22.8%

NOTES:

^a Significant time change at the 0.05 level or better.^b Significantly different from non-Medicaid-eligible patients at the 0.05 level or better.

SOURCE: Part A claims, Part B claims, and denominator file for a sample of Medicare patients admitted with TIA.

TABLE 4-10

TREATMENT PATTERNS FOR URBAN POOR AND NON-POOR PATIENTS WITH TIA, 1991-1993

	1991	1992	1993	% Change 1991-1993
Visits/Day				
Urban poor	0.87	0.85	0.81	-6.9%
Non-poor	0.86	0.89	0.76	-11.6% ^a
Consultation				
Urban poor	65.0% ^b	59.2% ^b	58.5% ^b	-10.0%
Non-poor	48.7%	46.3%	45.3%	-7.0%
Non-Invasive Cerebrovascular Tests				
Urban poor	45.7%	48.5%	50.9%	11.4%
Non-poor	47.6%	50.4%	50.1%	5.3%
CT Scan, Head				
Urban poor	76.4%	70.7%	74.8%	-2.1%
Non-poor	74.5%	66.6%	68.9%	-7.5%
MRI Scan, Brain				
Urban poor	12.9%	10.9%	11.7%	-9.3%
Non-poor	12.2%	12.8%	12.7%	4.1%
Cerebral Angiography				
Urban poor	5.0%	2.7%	2.4%	-52.0%
Non-poor	7.5%	7.0%	5.2%	-30.7%
Carotid Endarterectomy				
Urban poor	0.5%	1.4%	1.0%	100.0%
Non-poor	2.1%	2.6%	1.8%	-14.3%
Carotid Endarterectomy (for patients undergoing cerebral angiography)				
Urban poor	10.4%	16.1%	31.6%	203.8%
Non-poor	22.6%	28.3%	27.2%	20.4%
Anticoagulant Therapy (for patients with atrial fibrillation only)				
Urban poor	22.0%	24.1%	30.5%	38.6%
Non-poor	34.3%	34.4%	31.9%	-7.0%
Neurologist as Attending Physician				
Urban poor	36.2%	24.7%	24.2%	-32.9%
Non-poor	29.4%	22.3%	22.6%	-22.8%

NOTES:

^a Significant time change at the 0.05 level or better.^b Significantly different from non-poor patients at the 0.05 level or better.

SOURCE: Part A claims, Part B claims, and denominator file for a sample of Medicare patients admitted with TIA.

TABLE 4-11

TREATMENT PATTERNS FOR RURAL POOR AND NON-POOR PATIENTS WITH TIA: 1991-1993

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>% Change 1991-1993</u>
Visits/Day				
Rural poor	0.82	0.90	0.74	-9.8%
Non-poor	0.86	0.90	0.77	-10.5% ^a
Consultation				
Rural poor	26.8% ^b	24.3% ^b	26.2% ^b	-2.2%
Non-poor	50.2%	47.6%	46.6%	-7.2%
Non-Invasive Cerebro-vascular Tests				
Rural poor	40.5%	42.5% ^b	46.9%	15.8%
Non-poor	47.6%	50.5%	50.3%	5.7%
CT Scan, Head				
Rural poor	67.7% ^b	64.9%	65.9%	-2.7%
Non-poor	74.8%	66.9%	69.3%	-7.4%
MRI Scan, Brain				
Rural poor	7.5% ^b	9.3%	10.3%	37.3%
Non-poor	12.3%	12.8%	12.7%	3.3%
Cerebral Angiography				
Rural poor	8.5%	6.9%	5.7%	-32.9%
Non-poor	7.3%	6.8%	5.0%	-31.5%
Carotid Endarterectomy				
Rural poor	2.5%	1.4%	1.3%	-48.0%
Non-poor	2.0%	2.6%	1.7%	-15.0%
Carotid Endarterectomy (for patients undergoing cerebral angiography)				
Rural poor	25.5%	18.5%	21.7%	-14.9%
Non-poor	22.0%	28.2%	27.4%	24.5%
Anticoagulant Therapy (for patients with atrial fibrillation only)				
Rural poor	31.8%	22.5%	34.6%	8.8%
Non-poor	33.8%	34.0%	32.1%	-5.0%
Neurologist as Attending Physician				
Rural poor	13.8% ^b	13.3%	13.1% ^b	-5.0%
Non-poor	30.1%	22.6%	23.0%	-23.8%

NOTES:

^a Significant time change at the 0.05 level or better^b Significantly different from non-poor patients at the 0.05 level or better

SOURCE: Part A claims, Part B claims, and denominator file for a sample of Medicare patients admitted with TIA.

TABLE 4-12

TREATMENT PATTERNS FOR URBAN SHORTAGE AREA AND NON-SHORTAGE AREA PATIENTS WITH TIA: 1991-1993

	1991	1992	1993	% Change 1991-1993
Visits/Day				
Urban Shortage Area	0.85	0.85	0.75	-11.8%
Non-shortage Area	0.86	0.89	0.77	-10.5% ^a
Consultation				
Urban Shortage Area	60.4% ^b	53.8%	55.1%	-8.8%
Non-shortage Area	49.3%	46.8%	45.8%	-7.1%
Non-Invasive Cerebrovascular Tests				
Urban Shortage Area	47.2%	44.3%	49.7%	5.3%
Non-shortage Area	47.5%	50.5%	50.2%	5.7%
CT Scan, Head				
Urban Shortage Area	77.3%	73.0%	73.0%	-5.6%
Non-shortage Area	74.5%	66.6%	69.1%	-7.2%
MRI Scan, Brain				
Urban Shortage Area	9.8%	10.4%	12.0%	22.4%
Non-shortage Area	12.3%	12.8%	12.7%	3.3%
Cerebral Angiography				
Urban Shortage Area	4.9%	3.9%	4.6%	-6.1%
Non-shortage Area	7.5%	6.8%	5.1%	-32.0%
Carotid Endarterectomy				
Urban Shortage Area	1.5%	0.8%	0.6%	-60.0%
Non-shortage Area	2.0%	2.6%	1.7%	-15.0%
Carotid Endarterectomy (for patients undergoing cerebral angiography)				
Urban Shortage Area	23.3%	22.5%	14.5%	-37.8%
Non-shortage Area	22.0%	28.1%	27.7%	25.9%
Anticoagulant Therapy (for patients with atrial fibrillation only)				
Urban Shortage Area	23.2%	31.3%	33.6%	44.8%
Non-shortage Area	34.0%	33.9%	31.8%	-6.5%
Neurologist as Attending Physician				
Urban Shortage Area	30.6%	19.6%	24.0%	-21.5%
Non-shortage Area	29.7%	22.5%	22.7%	-23.7%

NOTES:

^a Significant time change at the 0.05 level or better.

^b Significantly different from non-shortage area patients at the 0.05 level or better.

SOURCE: Part A claims, Part B claims, and denominator file for a sample of Medicare patients admitted with TIA.

TABLE 4-14

TREATMENT PATTERNS FOR DISABLED AND NON-DISABLED PATIENTS WITH TIA 1991-1993

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>% Change 1991-1993</u>
Visits/Day				
Disabled	0.86	0.90	0.76	-11.6%
Non-Disabled	0.86	0.89	0.77	-10.5% ^a
Consultation				
Disabled	52.5%	50.7%	50.4%	-4.0%
Non-Disabled	49.3%	46.6%	45.5%	-7.7%
Non-Invasive Cerebrovascular Tests				
Disabled	47.7%	51.7%	52.9%	10.9%
Non-Disabled	47.4%	50.1%	49.8%	5.1%
CT Scan, Head				
Disabled	73.9%	66.7%	71.6%	-3.1%
Non-Disabled	74.7%	66.9%	68.9%	-7.8%
MRI Scan, Brain				
Disabled	13.4%	13.5%	14.2%	6.0%
Non-Disabled	12.0%	12.6%	12.4%	3.3%
Cerebral Angiography				
Disabled	9.2%	7.2%	7.3%	-20.7%
Non-Disabled	7.1%	6.6%	4.7%	-33.8%
Carotid Endarterectomy				
Disabled	2.1%	2.1%	2.2%	4.8%
Non-Disabled	2.0%	2.6%	1.6%	-20.0%
Carotid Endarterectomy (for patients undergoing cerebral angiography)				
Disabled	16.2%	20.3%	23.9%	47.5%
Non-Disabled	23.1%	29.1%	28.1%	21.6%
Anticoagulant Therapy (for patients with atrial fibrillation only)				
Disabled	37.5%	29.9%	41.8%	11.5%
Non-Disabled	33.2%	34.2%	30.8%	-7.2%
Neurologist as Attending Physician				
Disabled	32.7%	25.8%	26.0%	-20.6%
Non-Disabled	29.4%	22.0%	22.3%	-24.2%

NOTES:

^a Significant time change at the 0.05 level or better.^b Significantly different from non-disabled patients at the 0.05 level or better.

SOURCE: Part A claims, Part B claims, and denominator file for a sample of Medicare patients admitted with TIA.

TABLE 4-15

CHANGES IN MEDICARE ALLOWED CHARGES, 1991-1993

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>% Change 1991-1993</u>
<u>Evaluation & Management</u>				
Hospital Visit	\$35.93	\$40.62	\$42.92	19.5 %
Consultation	82.64	74.47	78.88	-4.5
<u>AMI Tests/Procedures</u>				
Echocardiography	107	101	93	-13.1
Cardiac catheterization	722	637	567	-21.5
PTCA	1,396	1,220	1,137	-18.6
CABG	2,968	2,548	2,254	-24.1
<u>TIA Tests/Procedures</u>				
Non-invasive cerebrovascular tests	113	91	92	-18.6
CT, head*	64	56	54	-15.6
MRI, brain*	101	87	83	-17.8
Cerebral angiography	104	90	87	-16.3
Carotid endarterectomy	1,286	1,113	1,121	-12.8

*Interpretation and report only.

SOURCE: Physician/Supplier Procedure Summary Files 1991-1993.

TABLE 4-16

PRICE VARIABLES USED IN EPISODE OF CARE REGRESSIONS

<u>Dependent Variable</u>	<u>Price Variable</u>
Hospital visits	Hospital visits
Consultation	Inpatient consultations
AMI:	
Echocardiography	Echocardiography
Cardiac catheterization	Left/combined cardiac catheterization with coronary angiography
PTCA	PTCA
CABG surgery	CABG surgery
Revascularization	Locality average of PTCA and CABG
Cardiologist as attending physician	Hospital visits
TIA:	
Non-invasive cerebrovascular tests	Non-invasive cerebrovascular tests
CT scan, head	CT scan, head, interpretation and report only
MRI scan, brain	MRI scan, brain, interpretation and report only
Cerebral angiography	Cerebral angiography
Carotid endarterectomy	Carotid endarterectomy
Anticoagulant therapy	Office visits
Neurologist as attending physician	Hospital visits

TABLE 4-17

AMI WEIGHTED MEANS

Independent Variables	Hospital Visits	Inpatient Consultation	Echocardiography	Cardiac		CABG Surgery	Revascularization	Revascularization (for patients undergoing cardiac cath)	Cardiologist as Attending Physician
				Catheterization	PTCA				
PRICE91	36.015	82.958	106.843	721.068	1399.270	2976.890	2188.080	2191.190	36.015
MFS	0.213	-0.031	-0.103	-0.206	-0.180	-0.227	-0.218	-0.214	0.213
Y93	0.506	0.506	0.506	0.506	0.506	0.506	0.506	0.517	0.506
MFS*Y93	0.107	-0.017	-0.052	-0.104	-0.092	-0.116	-0.111	-0.112	0.107
BLACK*MFS*Y93	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.049	0.059
MEDICAID*MFS*Y93	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.089	0.128
DISABLED*MFS*Y93	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.172	0.156
UPOOR*MFS*Y93	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.040	0.052
RPOOR*MFS*Y93	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.016	0.017
UHPSA*MFS*Y93	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.025	0.029
RHPSA*MFS*Y93	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.021	0.022
BLACK	0.006	-0.001	-0.004	-0.006	-0.006	-0.007	-0.007	-0.006	0.006
MEDICAID	0.015	-0.002	-0.007	-0.014	-0.012	-0.014	-0.014	-0.019	0.015
DISABLED	0.017	-0.002	-0.009	-0.016	-0.014	-0.018	-0.017	-0.019	0.017
UPOOR	0.004	-0.002	-0.002	-0.005	-0.005	-0.006	-0.006	-0.004	0.004
RPOOR	0.002	0.000	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	0.002
UHPSA	0.003	-0.001	-0.001	-0.003	-0.002	-0.003	-0.003	-0.003	0.003
RHPSA	0.003	0.000	-0.001	-0.002	-0.002	-0.003	-0.002	-0.002	0.003
MALE	0.526	0.526	0.526	0.526	0.526	0.526	0.526	0.589	0.526
AGE75	0.365	0.365	0.365	0.365	0.365	0.365	0.365	0.288	0.365
AGE85	0.119	0.119	0.119	0.119	0.119	0.119	0.119	0.023	0.119
CHARLSON	0.909	0.909	0.909	0.909	0.909	0.909	0.909	0.706	0.909
MAJOR	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.138	0.103
MINOR	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.480	0.400
LARGE	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.612	0.471
SMALL	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.043	0.115
HRURAL	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.093	0.175
LLOS	2.221								

SOURCE:

TABLE 4-18

TIA WEIGHTED MEANS

Independent Variables	Hospital Visits	Inpatient Consultation	Non-Invasive cerebrovascular Tests	CT Scan, Head	MRI Scan, Brain	Cerebral Angiography	Carotid Endarterectomy	Carotid Endarterectomy (for patients undergoing cerebral angiography)	Anticoagulant Therapy (for patients with atrial fibrillation)	Neurologist as Attending Physician
								1291.950	29.342	
PRICE91	0.215	-0.036	-0.177	-0.175	-0.118	-0.160	-0.161	-0.163	0.106	0.215
MFS	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.390	0.540	0.482
Y93	0.102	-0.018	-0.086	-0.085	-0.058	-0.077	-0.078	-0.064	0.053	0.102
MFS*Y93	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.553	0.418	0.398
BLACK*MFS*Y93	0.009	-0.002	-0.009	-0.008	-0.004	-0.007	-0.007	-0.004	0.002	0.009
MEDICAID*MFS*Y93	0.018	-0.003	-0.018	-0.015	-0.008	-0.013	-0.014	-0.009	0.009	0.018
DISABLED*MFS*Y93	0.014	-0.002	-0.012	-0.011	-0.007	-0.010	-0.010	-0.012	0.007	0.014
UPOOR*MFS*Y93	0.005	-0.002	-0.004	-0.005	-0.004	-0.004	-0.005	-0.002	0.002	0.005
RPOOR*MFS*Y93	0.303	0.000	-0.003	-0.002	-0.001	-0.001	-0.002	-0.002	0.002	0.003
UHPSA*MFS*Y93	0.003	-0.001	-0.003	-0.003	-0.002	-0.003	-0.003	-0.002	0.001	0.003
RHPSA*MFS*Y93	0.003	0.000	-0.002	-0.002	-0.001	-0.001	-0.002	-0.001	0.002	0.003
BLACK	0.170	0.170	0.170	0.170	0.170	0.170	0.170	0.118	0.146	0.170
MEDICAID	0.127	0.127	0.127	0.127	0.127	0.127	0.127	0.168	0.107	0.127
DISABLED	0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.038	0.049	0.061
UPOOR	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.026	0.021	0.023
RPOOR	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.027	0.027	0.035
UHPSA	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.022	0.022	0.021
RHPSA	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.074	0.061	0.059
MALE	0.415	0.415	0.415	0.415	0.415	0.415	0.415	0.398	0.422	0.415
AGE75	0.202	0.202	0.202	0.202	0.202	0.202	0.202	0.054	0.258	0.202
AGE85	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.055	0.044	0.090
CHARLSON	0.230	0.230	0.230	0.230	0.230	0.230	0.230	0.177	0.234	0.230
MAJOR	0.323	0.323	0.323	0.323	0.323	0.323	0.323	0.408	0.354	0.323
MINOR	0.338	0.338	0.338	0.338	0.338	0.338	0.338	0.475	0.322	0.338
LARGE	0.178	0.178	0.178	0.178	0.178	0.178	0.178	0.094	0.173	0.178
SMALL	0.626	0.626	0.626	0.626	0.626	0.626	0.626	0.520	0.577	0.626
HRURAL										
LLOS	1.687									

SOURCE

TABLE 4-19

REGRESSION RESULTS: MFS IMPACTS ON AMI PATIENTS

<u>Independent Variable</u>	<u>Hospital Visits</u>	<u>Inpatient Consultation</u>	<u>Echocardiography</u>	<u>Cardiac Catheterization</u>
PRICE91	-0.001	1.006 ^a	1.003 ^a	1.000
MFS	-0.141	0.579 ^b	1.003	1.090
Y93	0.268 ^a	0.983	0.953	1.186 ^a
MFS*Y93	-0.186 ^b	1.214	0.867	1.062
BLACK*MFS*Y93	-0.072	1.375	1.340	0.572
MEDICAID*MFS*Y93	0.099	1.139	1.343	1.478
DISABLED*MFS*Y93	0.124	1.680	0.898	0.591
UPOOR*MFS*Y93	-0.054	1.567	0.584	0.957
RPOOR*MFS*Y93	-0.078	4.679	0.634	0.550
UHCSA*MFS*Y93	0.066	1.337	0.755	1.832
RHCSA*MFS*Y93	0.065	0.770	1.615	0.609
BLACK	0.008	0.964	1.126	0.646 ^a
MEDICAID	-0.017	1.008	0.966	0.716 ^a
DISABLED	-0.026	0.907	0.841 ^a	0.744 ^a
UPOOR	0.001	0.982	1.149	0.511 ^a
RPOOR	-0.009	0.905	0.873	1.165
UHCSA	-0.047	1.0C4	1.065	0.907
RHCSA	-0.070	0.871	0.842	1.299
MALE	-0.010	1.060	1.010	1.183 ^a
AGE75	0.058 ^a	0.943	1.036	0.349 ^a
AGE85	0.062 ^a	0.663 ^a	0.782 ^a	0.057 ^a
CHARLSON	0.033 ^a	1.085 ^a	1.054 ^a	0.697 ^a
MAJOR	-0.130 ^a	0.982	1.215 ^a	1.719 ^a
MINOR	-0.014	1.205 ^a	0.977	1.319 ^a
LARGE	-0.002	1.123 ^a	1.046	1.927 ^a
SMALL	0.008	0.469 ^a	0.552 ^a	0.428 ^a
HRURAL	-0.080 ^a	0.603 ^a	0.787 ^a	0.676 ^a
LLOS	1.113 ^a			

TABLE 4-19 (continued)

REGRESSION RESULTS: MFS IMPACTS ON AMI PATIENTS

Independent Variable	Revascularization				
	PTCA	CABG Surgery	Revascularization	(For patients undergoing cardiac cath)	Cardiologist as Attending Physician
PRICE91	1.000 ^b	1.000 ^a	1.000 ^b	1.000	1.008
MFS	7.308 ^a	0.678	2.271 ^a	1.781	0.508 ^b
Y93	1.449 ^a	0.993	1.321 ^a	1.240 ^b	0.892
MFS*Y93	1.967	0.990	1.528	1.610	0.959
BLACK*MFS*Y93	1.060	0.628	0.833	1.269	0.804
MEDICAID*MFS*Y93	1.673	1.497	1.930	1.444	0.817
DISABLED*MFS*Y93	0.404	0.933	0.536	0.579	2.589 ^a
UPOOR*MFS*Y93	1.687	1.287	1.327	0.954	0.794
RPOOR*MFS*Y93	0.391	0.630	0.396	0.382	1.600
UHCSA*MFS*Y93	0.879	1.728	1.221	1.461	0.809
RHCSA*MFS*Y93	0.694	0.654	0.479	0.438	1.650
BLACK	0.697 ^b	0.580 ^a	0.573 ^a	0.649 ^a	0.843
MEDICAID	0.744 ^a	0.721 ^a	0.700 ^a	0.814	0.935
DISABLED	0.739 ^a	0.807 ^a	0.683 ^a	0.702 ^a	0.785 ^a
UPOOR	0.628 ^a	0.734 ^b	0.586 ^a	0.795	0.814 ^b
RPOOR	0.966	1.092	1.019	0.859	1.032
UHCSA	0.736	0.994	0.818	0.845	0.913
RHCSA	1.113	1.265	1.248	1.067	1.054
MALE	1.134 ^a	1.157 ^a	1.208 ^a	1.148 ^a	1.314 ^a
AGE75	0.574 ^a	0.498 ^a	0.443 ^a	0.793 ^a	0.668 ^a
AGE85	0.129 ^a	0.121 ^a	0.094 ^a	0.821	0.384 ^a
CHARLSON	0.731 ^a	0.836 ^a	0.731 ^a	0.904 ^a	0.917 ^a
MAJOR	1.314 ^a	1.816 ^a	1.819 ^a	1.362 ^a	0.930
MINOR	1.126 ^b	1.479 ^a	1.379 ^a	1.196 ^a	1.261 ^a
LARGE	1.597 ^a	1.430 ^a	1.750 ^a	1.260 ^a	1.269 ^a
SMALL	0.369 ^a	0.657 ^a	0.467 ^a	0.892	0.342 ^a
HRURAL	0.759 ^a	0.691 ^a	0.696 ^a	0.859	0.500 ^a
LLOS					

NOTES:

^a Significant at the 0.05 level.^b Significant at the 0.10 level.

SOURCE:

TABLE 4-20

REGRESSION RESULTS: MFS IMPACTS ON TIA PATIENTS

<u>Independent Variable</u>	<u>Hospital Visits</u>	<u>Inpatient Consultation</u>	<u>Non-Invasive Cerebrovascular Tests</u>	<u>CT Scan of the Head</u>	<u>MRI Scan of the Brain</u>
PRICE91	0.000	1.011 ^a	1.002 ^a	1.000	0.997
MFS	-0.020	0.972	1.760 ^a	0.442	3.441
Y93	0.000	0.852 ^a	1.079	0.934	0.820
MFS*Y93	-0.120	1.360	0.819	4.315	0.195
BLACK*MFS*Y93	0.017	1.923	0.603	1.152	0.241
MEDICAID*MFS*Y93	0.035	0.685	0.696	1.459	3.248
DISABLED*MFS*Y93	0.009	0.478	1.128	0.293	0.571
UPOOR*MFS*Y93	0.083	2.281	0.565	0.201	2.992
RPOOR*MFS*Y93	-0.009	0.312	1.114	0.296	0.220
UHCSA*MFS*Y93	0.189	0.508	1.964	1.130	0.316
RHCSA*MFS*Y93	0.110	0.120	0.415	0.263	0.385
BLACK	0.003	0.854	0.839	1.102	0.758
MEDICAID	-0.035 ^b	0.844 ^a	0.716 ^a	1.035	0.765
DISABLED	-0.008	1.071	0.907	0.851	0.775
UPOOR	-0.005	1.361 ^a	0.952	1.018	1.127
RPOOR	0.029	0.964	1.125	0.807	0.897
UHCSA	-0.048	1.005	1.038	1.045	0.695
RHCSA	-0.023	1.026	0.904	0.745	1.015
MALE	-0.033 ^a	1.114 ^b	1.172 ^a	1.196 ^a	1.478 ^a
AGE75	-0.007	0.814 ^a	0.813 ^a	0.991	0.559 ^a
AGE85	-0.037 ^a	0.680 ^a	0.479 ^a	0.783 ^a	0.231 ^a
CHARLSON	0.012	1.027	0.925 ^a	1.037	0.813 ^a
MAJOR	-0.118 ^a	0.853	0.712 ^a	0.798	1.251
MINOR	0.001	1.227 ^a	0.970	0.956 ^a	0.946
LARGE	0.015	1.014	1.057	0.846 ^a	1.350 ^a
SMALL	-0.047 ^a	0.328 ^a	0.568 ^a	0.720 ^a	0.401 ^a
HRURAL	-0.046 ^a	0.476 ^a	0.932	0.828 ^a	0.856
LLOS	1.159 ^a				

TABLE 4-20 (continued)

REGRESSION RESULTS: MFS IMPACTS ON TIA PATIENTS

<u>Independent Variable</u>	<u>Cerebral Angiography</u>	<u>Carotid Endarterectomy</u>	<u>Carotid Endarterectomy (For patients undergoing cerebral angiography)</u>	<u>Anticoagulant Therapy</u>	<u>Neurologist as Attending Physician</u>
PRICE91	0.987 ^a	0.999	1.001	1.009	1.021 ^a
MFS	0.190 ^a	1.190	8.358	0.146	0.770
Y93	0.728	0.878	1.088	0.567 ^b	0.599 ^a
MFS*Y93	1.535	1.396	0.490	113.729 ^a	1.581
BLACK*MFS*Y93	0.784	0.007	0.001	12.577	2.337
MEDICAID*MFS*Y93	0.250	2.476	2.695	0.894	0.588
DISABLED*MFS*Y93	1.401	0.224	0.189	0.547	2.085
UPOOR*MFS*Y93	2.972	1.146	0.047	0.665	0.256
RPOOR*MFS*Y93	1.143	0.219	0.306	0.080	2.162
UHCSA*MFS*Y93	0.086	37.266	999.000	0.035	4.578
RHCSA*MFS*Y93	2.141	2.385	31.674	75.398	1.781
BLACK	0.599 ^b	0.267 ^b	0.389	0.559	0.761 ^b
MEDICAID	0.809	0.839	0.802	0.839	0.822
DISABLED	1.040	0.761	0.613	0.913	1.012
UPOOR	0.717	0.515	0.534	0.758	1.094
RPOOR	1.436	1.173	1.025	1.321	1.017
UHCSA	0.739	0.962	1.472	1.277	0.723
RHCSA	1.276	2.027	2.895	0.650	0.992
MALE	1.671 ^a	2.334 ^a	1.653 ^b	1.476 ^a	1.256 ^a
AGE75	0.704 ^a	0.708	1.187	0.529 ^a	0.832 ^a
AGE85	0.208 ^a	0.217 ^a	0.821	0.278 ^a	0.588 ^a
CHARLSON	0.870 ^a	1.020	1.412 ^a	0.984	0.973
MAJOR	1.074	2.010 ^b	2.496 ^b	1.086	1.066
MINOR	1.168	1.781 ^a	1.747 ^b	1.303	1.076
LARGE	1.559 ^a	1.242	1.003	1.063	1.520 ^a
SMALL	0.549 ^a	0.533	1.238	0.636	0.244 ^a
HRURAL	1.038	1.174	1.268	1.063	0.425 ^a
LLOS					

NOTES:

^a Significant at the 0.05 level.^b Significant at the 0.10 level.

SOURCE:

TABLE 4-21

IMPACT OF SPECIALISTS ON UTILIZATION OF TESTS AND PROCEDURES

<u>AMI</u>	<u>Odds Ratio</u>
Echocardiography	3.077 ^a
Cardiac Catheterization	4.248 ^a
PTCA	2.455 ^a
CABG Surgery	2.725 ^a
Revascularization (for patients undergoing cardiac catheterization)	1.415
 <u>TIA</u>	
Non-Invasive Tests	1.831 ^a
CT Scan, head	1.794 ^a
MRI Scan, brain	3.465 ^a
Cerebral Angiography	1.860 ^a
Carotid Endarterectomy	1.202
Carotid Endarterectomy (for patients undergoing cerebral angiography)	0.700
Anticoagulant Therapy (for patients with atrial fibrillation)	1.929 ^a

NOTE:

^a Significant at 0.05 level or better.

SOURCE:

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APPENDICES

APPENDIX A

ACCESS VARIABLE DEFINITIONS

ACCESS VARIABLE DEFINITIONS

<u>Variable</u>	<u>Definition</u>
<u>NATIONAL SAMPLE</u>	
Office visit	CPT Procedure code=90000, 90010, 90015, 90017, 90020, 90757, 99201-99205, 99381-99237, 99432, M0005-M0008, 90030, 90040, 90050, 90060, 90070, 90080, 90750-90755, 90760-90764, 90774, 95115, 95117, 99058, 99211-99215, 99391-99397, 99401-99404, 99411, 99412, 99420, 99429, 99438
Emergency room visit	CPT Procedure code=M0059, 90500, 90505, 90510, 90515, 90517, 90520, 90530, 90540, 90550, 90560, 90570, 90580, 90590, 99062, 99064, 99065, 99175, 99281-99285, 99288
Hospitalization for ambulatory care sensitive condition	ICD-9-CM principal diagnosis codes: grand mal status and other epileptic convulsions (345), convulsions (780.3), severe ENT infections (382, 462-463,465,472.1), tuberculosis (011-018), COPD (491,494,494,496 plus 466 only if 491,492,494, or 496 is a secondary diagnosis), bacterial pneumonia (481,482.2,482.4,482.9,483-486), asthma (493), congestive heart failure (428,402.01,402.11,402.91,518.4), hypertension (401.0,401.9,402.00,402.10,402.90), angina without accompanying surgery (411.1,411.8,413), cellulitis (681-683,686), diabetes (250.x), hypoglycemia, unspecified (251.2), gastroenteritis (558.9), kidney/urinary infection (590, 599.0,599.9), dehydration (276.5), nutritional deficiencies (260-262,268.0,268.1), pelvic inflammatory disease (614), dental conditions (521-523,525,528).
Pap test	CPT Procedure code=88150-88157, Q0060, Q0061, Q0063, Q0091, P3000, P3001
Mammography	CPT Procedure code=76090-76092
Cataract surgery	CPT Procedure code=66830, 66840, 66850, 66852, 66915, 66920, 66930, 66940, 66945, 66983-66986

EPISODE OF CARE ANALYSIS

Hospital visits	CPT Procedure code=90200-90292, 99217-99238, M0021-M0022
Consults	CPT Procedure code=90600-90654, 99251-99275
<u>AMI Only</u> Echocardiograms	CPT procedure code=93300-93350 or ICD-9 procedure code=88.72
Cardiac catheterization	CPT procedure code=75750-75775, 93510-93529, 93539-93556 or ICD-9 procedure code=37.22, 37.23, 88.53-88.57
PTCA	CPT procedure code=92982, 92984 or ICD-9 procedure code=36.0x
CABG	CPT procedure code=33510-33636 or ICD-9 procedure code=36.1x, 36.2 and type of service=surgery
<u>TIA Only</u> Noninvasive cerebrovascular tests	CPT procedure code=93850-93888 or ICD-9 procedure code=88.71
Head CT scan	CPT procedure code=70450-70470 or ICD-9 procedure code=87.03
Brain MRI scan	CPT procedure code=70551-70553 or ICD-9 procedure code=88.91
Cerebral angiography	CPT procedure code=75660-75682 or ICD-9 procedure code=88.41
Carotid endarterectomy	CPT procedure code=35301 or ICD-9 procedure code=38.12
Prothrombin time tests	CPT procedure code=85610

APPENDIX B

PRICE VARIABLE DEFINITIONS

PRICE VARIABLE DEFINITIONS

<u>Variable</u>	<u>Definition</u>
<u>NATIONAL SAMPLE</u> Office visit	CPT Procedure code=90000, 90010, 90015, 90017, 90020, 90757, 99201-99205, 99381-99387, 99432, M0005-M0008, 90030, 90040, 90050, 90060, 90070, 90080, 90750-90755, 90760-90764, 90774, 95115, 95117, 99058, 99211-99215, 99391-99397, 99401-99404, 99411, 99412, 99420, 99429, 99438
Mammography	CPT Procedure code=76090-76092
Cataract surgery	CPT Procedure code=66984 and primary modifier code=missing, LT, QB, QU, or RT
<u>EPISODE OF CARE ANALYSIS</u> Hospital visits	CPT Procedure code=90200-90292, 99217-99238, M0021-M0022
Consults	CPT Procedure code=90600-90654, 99251-99275
<u>AMI Only</u> Echocardiograms	CPT Procedure code=93307-93312, 93320-93350
Cardiac catheterization	CPT Procedure code=93547
PTCA	CPT Procedure code=92982
CABG	1991 and 1992: CPT Procedure code=33510-33516 and type of service=surgery 1993: CPT Procedure code=33510-33516, 33533-33545 and type of service=surgery
<u>TIA Only</u> Noninvasive cerebrovascular tests	1991: CPT Procedure code=93870 1992 and 1993: CPT Procedure code=93880
Head CT scan	CPT Procedure code=70450-70470 and primary modifier code=26

Brain MRI

CPT Procedure code=70551-70552 and
primary modifier code=26

Cerebral angiography

CPT Procedure code=75650, 75652, 75654,
75656, 75658, 75660, 75662, 75665, 75671,
75676, 75680, 75685

Carotid endarterectomy

CPT Procedure code=35301 and type of
service=surgery

APPENDIX C

DETAILED DESCRIPTIVE TABLES FOR NATIONAL SAMPLE

TABLE C-1

OUTPATIENT VISITS BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted visits per beneficiary)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction												Increase								
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combined	6.07 *	5.96 *	5.90 **	4.81 *	4.82 *	4.82 *	4.62 *	4.56 *	4.48 **	4.86 *	4.96 *	4.98 **	4.52 *	4.63 *	4.62 **	4.56 *	4.65 *	4.59 *	4.72 *	4.78 *	4.76 **
Urban	6.11 *	6.00 *	5.95 **	4.72 *	4.71 *	4.68 *	4.61 *	4.59 *	4.54 *	5.16 *	5.31 *	5.36 **	4.92 *	4.98 *	5.02 *	4.29 *	4.34 *	4.32 *	4.91 *	4.96 *	4.96 **
Rural	2.94 *	3.15 *	2.93 *	5.06 *	5.13 *	5.24 **	4.64 *	4.42 *	4.16 **	4.33 *	4.36 *	4.34 *	4.33 *	4.48 *	4.44 **	4.71 *	4.83 *	4.73 *	4.43 *	4.49 *	4.44 **
Non-Shortage	6.78	6.69	6.70 **	5.42	5.51	5.63 **	5.15	5.17	5.22	5.04	5.21	5.29 **	4.84	5.01	5.06 **	4.77	4.84	4.86 **	5.12	5.23	5.29 **
Poor Areas																					
All Poor Combined	8.23 *	7.82 *	8.81 **	4.71 *	4.75 *	4.72 *	4.79 *	4.80 *	4.80 **	5.18 *	5.28 *	5.31 **	4.94 *	5.04 *	5.07 **	4.94 *	4.92 *	4.90 **	5.07 *	5.11 *	5.15 **
Urban	8.32 *	7.92 *	8.92 **	4.68 *	4.70 *	4.68 *	4.77 *	4.81 *	4.85 **	5.29 *	5.40 *	5.42 **	4.89 *	4.96 *	4.97 **	4.42 *	4.42 *	4.47 **	5.12 *	5.17 *	5.23 **
Rural	2.74 *	2.78 *	3.02 **	5.03 *	5.31 *	5.12 *	4.86 *	4.68 *	4.49 **	4.54 *	4.59 *	4.69 **	5.02 *	5.16 *	5.21 **	5.12 *	5.09 *	5.04 **	4.89 *	4.89 *	4.86 **
Non Poor	6.67	6.61	6.57 **	5.43	5.52	5.65 **	5.16	5.18	5.22	5.01	5.18	5.27 **	4.81	4.99	5.02 **	4.75	4.82	4.85 **	5.10	5.21	5.27 **
Races																					
Black	5.51 *	5.37 *	5.41 **	4.42 *	4.50 *	4.56 **	4.56 *	4.59 *	4.57 **	4.68 *	4.87 *	4.86 **	4.89 *	4.96 *	4.92 **	4.62 *	4.59 *	4.58 **	4.67 *	4.75 *	4.74 **
White	6.87	6.78	6.79 **	5.35	5.63	5.75 **	5.26	5.25	5.29	5.13	5.28	5.37 **	4.90	5.05	5.09 **	4.86	4.91	4.92 **	5.21	5.30	5.36 **
Medicaid Eligible																					
Yes	8.15 *	8.01 *	8.40 **	5.98 *	5.92 *	5.88 **	5.95 *	5.79 *	5.60 **	5.29 *	5.36 *	5.19 *	5.17 *	5.20 *	5.02 **	5.63 *	5.59 *	5.33 **	5.71 *	5.67 *	5.53 **
No	6.55	6.47	6.42 **	5.33	5.44	5.57 **	5.02	5.06	5.12 **	5.00	5.18	5.29 **	4.78	4.97	5.03 **	4.63	4.71	4.77 **	5.03	5.15	5.24 **
Disabled																					
Yes	7.56 *	7.48 *	7.39 **	5.86 *	5.92 *	5.96 **	5.44 *	5.46 *	5.42 **	5.31 *	5.45 *	5.44 **	5.21 *	5.36 *	5.32 **	5.12 *	5.19 *	5.14 **	5.43 *	5.52 *	5.50 **
No	6.69	6.60	6.62 **	5.35	5.44	5.56 **	5.09	5.10	5.15	4.99	5.16	5.26 **	4.77	4.95	4.99 **	4.72	4.78	4.81 **	5.06	5.17	5.24 **
Age																					
85+ Years	6.43 *	6.31 *	6.39 **	4.71 *	4.78 *	4.83 **	4.16 *	4.17 *	4.15 **	4.19 *	4.37 *	4.34 **	3.93 *	4.08 *	4.06 **	3.97 *	4.04 *	4.00 **	4.26 *	4.36 *	4.35 **
Less than 85	6.77	6.68	6.69 **	5.41	5.50	5.63 **	5.15	5.17	5.21	5.05	5.22	5.31 **	4.84	5.02	5.06 **	4.79	4.85	4.88 **	5.12	5.23	5.30 **
Area of Residence																					
Rural	4.98 *	4.91 *	5.01 **	5.35	5.49	5.73 **	4.80 *	4.70 *	4.63 **	4.61 *	4.73 *	4.72 **	4.62 *	4.79 *	4.82 **	4.79 *	4.85 *	4.86 **	4.72 *	4.81 *	4.82 **
Urban	6.82	6.73	6.74 **	5.40	5.48	5.58 **	5.19	5.23	5.29	5.14	5.32	5.43 **	4.99	5.17	5.21 **	4.72	4.78	4.83 **	5.25	5.36	5.44 **
ALL BENEFICIARIES	6.76	6.67	6.68 **	5.39	5.48	5.60 **	5.12	5.14	5.17	5.03	5.19	5.28 **	4.82	4.99	5.03 **	4.77	4.83	4.85 **	5.10	5.20	5.27 **

NOTES

* Significantly different from the comparison group; at the 0.05 level

** Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE C-2

EMERGENCY ROOM VISITS BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted visits per beneficiary)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction 1			2			3			4			5			Increase 6					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combined	0.31 *	0.31 *	0.30 *	0.38 *	0.40 *	0.39 *	0.40 *	0.35 *	0.37 *	0.39 *	0.35 *	0.38 *	0.36 *	0.31	0.32 *	0.37 *	0.35 *	0.36 *	0.38 *	0.34 *	0.36 *
Urban	0.31 *	0.32 *	0.30 *	0.40 *	0.42 *	0.41 *	0.42 *	0.37 *	0.39 *	0.44 *	0.38 *	0.40 *	0.39 *	0.39 *	0.41 *	0.35 *	0.36 *	0.36 *	0.42 *	0.38 *	0.40 *
Rural	0.14 *	0.14 *	0.10 *	0.33 *	0.36 *	0.35 *	0.24 *	0.23 *	0.25 *	0.30	0.29	0.33 *	0.35 *	0.27 *	0.29 *	0.38 *	0.34 *	0.36 *	0.32 *	0.28 *	0.31 *
Non-Shortage	0.26	0.25	0.25 *	0.29	0.29	0.30 *	0.32	0.30	0.33	0.31	0.29	0.32	0.33	0.32	0.33	0.33	0.33	0.35 *	0.31	0.30	0.32 *
Poor Areas																					
All Poor Combined	0.37 *	0.35 *	0.34 *	0.39 *	0.40 *	0.42 *	0.44 *	0.38 *	0.41 *	0.39 *	0.34 *	0.37 *	0.43 *	0.43 *	0.46 *	0.37 *	0.38 *	0.41 *	0.41 *	0.37 *	0.40 *
Urban	0.38 *	0.36 *	0.34 *	0.40 *	0.41 *	0.42 *	0.45 *	0.39 *	0.42 *	0.38 *	0.34 *	0.36 *	0.47 *	0.48 *	0.49 *	0.37 *	0.38 *	0.38 *	0.42 *	0.37 *	0.40 *
Rural	0.28 *	0.19 *	0.41 *	0.31 *	0.34 *	0.35 *	0.34 *	0.32 *	0.35 *	0.40 *	0.38 *	0.42 *	0.37 *	0.37 *	0.42 *	0.37 *	0.38 *	0.42 *	0.37 *	0.36 *	0.40 *
Non Poor	0.25	0.24	0.24	0.29	0.29	0.30 *	0.32	0.30	0.32	0.31	0.29	0.32	0.33	0.31	0.33	0.33	0.32	0.35 *	0.31	0.30	0.32
Races																					
Black	0.44 *	0.42 *	0.40 *	0.44 *	0.46 *	0.49 *	0.48 *	0.45 *	0.48 *	0.48 *	0.44 *	0.47 *	0.48 *	0.48 *	0.51 *	0.45 *	0.46 *	0.50 *	0.47 *	0.45 *	0.48 *
White	0.26	0.25	0.25 *	0.28	0.28	0.30	0.32	0.30	0.32	0.31	0.29	0.31	0.33	0.31	0.32	0.32	0.32	0.34 *	0.31	0.29	0.31
Medicaid Eligible																					
Yes	0.55 *	0.53 *	0.54 *	0.71 *	0.73 *	0.73 *	0.69 *	0.66 *	0.70 *	0.70 *	0.67 *	0.71 *	0.72 *	0.71 *	0.75 *	0.70 *	0.71 *	0.74 *	0.69 *	0.68 *	0.71 *
No	0.22	0.21	0.21 *	0.25	0.25	0.26 *	0.28	0.26	0.28	0.28	0.26	0.28	0.30	0.28	0.29 *	0.27	0.27	0.28 *	0.28	0.26	0.28
Disabled																					
Yes	0.49 *	0.48 *	0.47 *	0.55 *	0.56 *	0.58 *	0.58 *	0.55 *	0.60 *	0.56 *	0.54 *	0.57 *	0.59 *	0.57 *	0.60 *	0.57 *	0.59 *	0.62 *	0.57 *	0.56 *	0.59
No	0.24	0.23	0.23 *	0.27	0.27	0.28 *	0.30	0.28	0.30	0.29	0.27	0.29	0.30	0.29	0.30	0.30	0.29	0.31 *	0.29	0.28	0.29
Age																					
85+ Years	0.49 *	0.49 *	0.49 *	0.54 *	0.55 *	0.55 *	0.56 *	0.53 *	0.56 *	0.50 *	0.51 *	0.53 *	0.53 *	0.52 *	0.53 *	0.55 *	0.56 *	0.59 *	0.53 *	0.53 *	0.54 *
Less than 85	0.25	0.24	0.24 *	0.29	0.29	0.30 *	0.32	0.30	0.32	0.31	0.29	0.31	0.33	0.31	0.33	0.33	0.32	0.34 *	0.31	0.30	0.32
Area of Residence																					
Rural	0.24 *	0.24	0.26 *	0.30 *	0.31 *	0.32 *	0.31 *	0.30	0.33 *	0.30	0.29	0.32 *	0.34	0.31 *	0.32 *	0.34 *	0.34 *	0.37 *	0.32	0.31 *	0.33 *
Urban	0.26	0.25	0.25 *	0.29	0.29	0.30 *	0.33	0.31	0.33	0.32	0.30	0.32	0.33	0.33	0.34	0.31	0.30	0.31	0.32	0.30	0.32
ALL BENEFICIARIES	0.26	0.25	0.25 *	0.29	0.29	0.31 *	0.33	0.31	0.33	0.31	0.30	0.32	0.33	0.32	0.33	0.33	0.33	0.35 *	0.32	0.30	0.32

NOTES:

* Significantly different from the comparison group at the 0.05 level

* Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE C-3

AMBULATORY CARE SENSITIVE (ACS) HOSPITAL ADMISSION RATES BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted admissions per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction ←			2			3			4			5			→ Increase					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combined	64.9 *	68.0 *	61.7 *	72.5 *	71.0 *	75.4 ^{bc}	66.5 *	85.9 *	90.0 *	68.1 *	70.4 *	73.1 ^{bc}	62.4	65.3	71.7 ^{bc}	74.1 *	72.3 *	78.1 ^{bc}	71.8 *	73.1 *	77.1 ^{bc}
Urban	65.0 *	68.2 *	61.8 *	79.0 *	78.5 *	84.1 ^{bc}	89.7 *	90.0 *	94.3 *	70.5 *	75.0 *	78.3 ^{bc}	70.1 *	72.0 *	78.8 ^{bc}	71.9 *	70.8	71.9	77.7 *	79.7 *	83.6 ^{bc}
Rural	58.8	58.6	52.8	52.4	48.8 *	49.9 *	66.5	61.5	64.9	63.9	62.6	64.3	58.8	62.2	68.4 ^b	75.2 *	73.2 *	81.3 ^{bc}	62.5	62.6	66.9 ^{bc}
Non-Shortage	49.0	47.5	47.4	53.6	53.8	56.0	64.4	64.8	65.3	59.9	59.7	63.9	61.4	62.7	65.6 ^b	68.2	68.2	70.6	60.8	61.0	63.5 ^b
Poor Areas																					
All Poor Combined	80.3 *	82.0 *	79.6 *	76.2 *	79.8 *	83.7 ^{bc}	84.7 *	84.5 *	88.1 *	72.7 *	74.8 *	82.3 ^{bc}	82.5 *	81.9 *	88.3 ^{bc}	84.6 *	85.8 *	88.3 *	79.1 *	80.2 *	85.3 ^{bc}
Urban	80.7 *	82.4 *	80.3 *	75.0 *	78.0 *	82.6 ^{bc}	84.6 *	84.9 *	88.5 *	70.4 *	72.3 *	78.4 ^{bc}	75.5 *	77.5 *	85.4 ^{bc}	69.3	65.5	68.6	76.6 *	77.8 *	82.6 ^{bc}
Rural	58.3 *	59.4	40.4 ^b	90.9 *	101.0 *	97.1 *	84.1 *	81.7 *	86.0 *	86.2 *	89.7 *	104.5 ^{bc}	93.1 *	88.3 *	92.4 *	89.7 *	92.4 *	94.7 ^{bc}	88.2 *	88.8 *	94.9 ^{bc}
Non Poor	47.6	46.0	46.1	53.2	53.1	55.4	63.5	63.9	64.3	59.2	59.1	62.8	60.6	62.1	65.1 ^b	67.1	66.9	69.5	59.9	60.2	62.6 ^b
Races																					
Black	80.2 *	84.6 *	79.0 *	82.4 *	81.0 *	86.3 ^{bc}	91.9 *	93.0 *	96.8 *	81.1 *	84.3 *	86.7 ^{bc}	82.5 *	84.5 *	89.2 ^{bc}	80.6 *	81.9 *	88.3 ^{bc}	84.2 *	86.1 *	89.8 ^{bc}
White	49.6	47.7	47.7	52.9	52.6	54.9	63.6	64.0	64.0	58.9	58.7	62.8	59.9	61.1	64.6 ^b	67.2	67.1	69.2	59.8	59.9	62.4 ^b
Medicaid Eligible																					
Yes	109.1 *	105.8 *	106.5 *	127.7 *	125.7 *	132.0 *	142.9 *	143.4 *	143.6 *	133.0 *	134.6 *	141.6 *	140.9 *	142.1 *	151.7 ^{bc}	142.5 *	144.1 *	145.2 *	136.1 *	136.7 *	141.3 ^b
No	40.5	39.4	39.0	46.4	46.5	48.1	56.2	56.1	56.4	53.7	53.4	56.8	53.9	55.1	57.1	56.9	56.1	58.1	53.2	53.3	55.2 ^b
Disabled																					
Yes	95.7 *	96.9 *	94.5 *	105.3 *	104.0 *	108.3 *	117.1 *	118.4 *	116.0 *	106.3 *	109.9 *	113.6 ^{bc}	111.0 *	115.2 *	120.9 ^{bc}	120.2 *	120.7 *	125.0 ^{bc}	110.7 *	112.9 *	115.5 ^{bc}
No	45.2	43.6	43.6	48.9	49.1	51.2	59.8	59.9	60.9	55.2	54.8	58.9	55.7	56.7	59.5 ^b	61.3	61.0	63.2	55.8	55.7	58.3 ^b
Age																					
85+ Years	112.8 *	118.1 *	112.5 *	120.6 *	118.8 *	123.1 *	144.8 *	140.9 *	142.0 *	126.2 *	132.4 *	133.1 ^{bc}	123.5 *	124.9 *	124.3 *	142.3 *	139.6 *	146.0 ^{bc}	130.3 *	131.6 *	132.8 ^{bc}
Less than 85	47.7	46.0	45.7	52.6	52.7	54.7	63.5	63.8	64.2	58.5	58.3	62.1	59.8	61.1	64.1 ^b	66.5	66.4	68.5	59.5	59.6	62.0 ^b
Area of Residence																					
Rural	47.4	49.3	51.1 ^{bc}	52.4	53.5	53.2 *	74.3 *	71.6 *	75.5 *	68.8 *	68.5 *	70.0 *	64.7 *	65.8 *	69.3 ^{bc}	74.3 *	74.4 *	77.1 *	68.0 *	68.5 *	71.1 ^{bc}
Urban	49.5	47.9	47.7	54.6	54.5	57.2	64.0	64.8	64.9	58.5	58.1	62.8	58.6	60.2	63.1 ^b	54.2	53.5	55.9	58.8	59.0	61.5 ^b
ALL BENEFICIARIES																					
	49.4	48.0	47.8	54.3	54.4	56.7	65.7	66.1	66.7	60.3	60.4	64.4	61.5	63.0	66.0 ^b	68.4	68.3	70.8	61.4	61.6	64.2 ^b

NOTES:

* Significantly different from the comparison group at the 0.05 level

^b Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries

TABLE C-4

MAMMOGRAPHY RATE BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - adjusted percent of female beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS				
	Reduction 1			2			3			4			5			Increase 6			1991	1992	1993		
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993					
Shortage Areas																							
All Shortage Combined	24.3% * 22.3% * 22.8% #	19.8% * 21.0% * 20.5% #	18.7% * 19.1% * 19.2% *	22.8% * 23.7% * 23.2% *	24.0% * 24.6% * 23.7% *	21.4% * 22.0% * 20.9% #	21.8% * 27.5% * 22.0% *																
Urban	24.4 * 22.3 * 22.8 #	17.8 * 19.2 * 18.7 #	18.4 * 18.9 * 19.1 *	22.2 * 23.4 * 22.7 *	23.4 * 23.9 * 23.8 *	21.5 * 21.8 * 21.0 #	20.7 * 21.5 * 21.2 #																
Rural	19.2 * 17.9 * 10.8 #	27.3 * 26.8 * 26.6 #	20.3 * 20.5 * 19.8 #	23.7 * 24.4 * 24.1 *	24.4 * 24.9 * 23.8 *	21.4 * 22.0 * 20.9 *	23.6 * 24.1 * 23.3 *																
Non-Shortage	33.2 31.3 29.5 †	29.7 29.8 29.3	25.0 25.1 24.6	25.6 26.4 25.3	26.3 26.9 25.9	22.6 22.9 22.2	26.1 26.5 25.6 †																
Poor Areas																							
All Poor Combined	21.2 * 19.3 * 18.8 #	17.0 * 11.9 * 17.8 #	18.9 * 19.9 * 19.4 *	19.9 * 20.9 * 20.2 *	21.7 * 22.4 * 21.7 *	17.0 * 17.9 * 17.9 #	19.4 * 20.2 * 19.7 #																
Urban	21.2 * 19.3 * 18.8 #	18.8 * 17.4 * 17.3 #	19.7 * 20.7 * 20.1 *	20.1 * 20.9 * 20.4 *	23.7 * 23.6 * 22.5 #	16.8 * 17.2 * 16.9 *	19.9 * 20.6 * 20.0 #																
Rural	18.3 * 18.5 * 14.0 #	21.9 * 24.4 * 24.5 #	13.5 * 15.2 * 15.2 #	18.9 * 20.8 * 19.3 *	18.5 * 20.6 * 20.4 *	17.1 * 18.1 * 18.3 #	17.3 * 18.8 * 18.5 #																
Non Poor	33.7 31.8 29.9 †	30.0 30.1 29.6	25.3 25.3 24.9	25.9 26.7 25.7	26.4 26.9 26.0	23.0 23.3 22.5	26.4 26.7 25.9 †																
Races																							
Black	18.2 * 16.7 * 16.6 #	15.9 * 17.5 * 17.4 #	16.4 * 17.6 * 17.9 #	18.3 * 20.1 * 19.3 #	18.9 * 20.1 * 20.1 #	13.1 * 14.1 * 14.1 #	17.1 * 18.5 * 18.3 #																
White	34.5 32.7 31.0 †	31.0 30.9 30.4	26.0 26.0 25.4	26.6 27.1 26.1	27.4 27.7 26.5 *	24.1 24.2 23.4 *	27.2 27.4 26.5 †																
Medicaid Eligible																							
Yes	15.9 * 15.5 * 15.1 #	15.1 * 15.9 * 15.4 *	13.4 * 14.4 * 13.9 *	14.6 * 15.6 * 15.2 *	13.7 * 15.1 * 14.0 *	10.9 * 12.2 * 11.9 #	13.8 * 14.8 * 14.3 #																
No	35.9 33.7 31.8 †	31.1 31.3 30.8	26.2 26.3 26.0	26.6 27.4 26.4	27.6 28.1 26.4	24.7 24.9 24.3	27.4 27.8 27.1 †																
Disabled																							
Yes	26.5 * 25.8 * 24.6 #	23.0 * 23.5 * 22.4 *	19.3 * 20.0 * 19.9 *	20.9 * 21.9 * 21.1 *	20.9 * 21.7 * 21.4 *	17.6 * 17.7 * 17.6 *	20.6 * 21.3 * 20.8 #																
No	33.4 31.4 29.6 †	29.7 29.9 29.5	25.0 25.2 24.7	25.8 26.5 25.5	26.6 27.1 26.1	23.0 23.3 22.6	26.3 26.6 25.8 †																
Age																							
85+ Years	8.6 * 8.7 * 8.4 *	8.7 * 7.6 * 7.2 #	5.3 * 5.8 * 5.9 #	5.7 * 6.1 * 5.9 *	5.6 * 6.2 * 6.1 #	4.7 * 5.1 * 5.1 #	5.7 * 6.2 * 6.1 #																
Less than 85	33.9 31.9 30.3 †	30.1 30.3 29.9	25.4 25.6 25.2	26.2 27.0 26.1	27.0 27.6 26.7	23.2 23.6 22.9	26.6 27.1 26.3 †																
Area of Residence																							
Rural	25.7 * 24.4 * 23.5 #	31.7 * 31.7 * 31.5 *	18.8 * 19.7 * 19.8 #	24.7 * 25.2 * 23.9 *	24.3 * 25.1 * 23.9 *	21.1 * 21.6 * 21.0 *	23.3 * 23.9 * 23.1 #																
Urban	33.2 31.3 29.5 †	29.0 29.2 28.6	25.8 25.8 25.2	25.6 26.5 25.6	27.9 28.2 27.5	26.0 26.0 24.9 *	26.8 27.1 26.3 †																
ALL BENEFICIARIES																							
	33.0 31.1 29.4 †	29.3 29.5 29.0	24.6 24.8 24.3	25.4 26.2 25.2	26.2 26.8 25.8	22.5 22.9 22.2	25.9 26.3 25.4 †																

NOTES:

* Significantly different from the comparison group at the 0.05 level.

Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE C-6

CONSULTATIONS BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted consults per beneficiary)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction		2			3			4			5			Increase						
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993			
Shortage Areas																					
All Shortage Combined	0.51 *	0.72	0.68 **	0.37 *	0.50 *	0.51 **	0.52 *	0.68 *	0.71 *	0.39 *	0.56	0.56 *	0.35	0.48	0.48 *	0.32 *	0.47 *	0.67 **	0.41 *	0.56	0.57 *
Urban	0.51	0.72	0.69 *	0.38 *	0.51 *	0.53 **	0.56 *	0.74 *	0.77 **	0.47 *	0.67 *	0.66 **	0.46 *	0.60 *	0.63 *	0.35 *	0.54 *	0.52 **	0.49 *	0.67 *	0.68 *
Rural	0.21 *	0.20 *	0.15 **	0.33 *	0.46 *	0.44 **	0.24 *	0.35 *	0.34 **	0.26 *	0.37 *	0.39 **	0.30 *	0.42 *	0.41 **	0.30	0.43	0.44 *	0.28 *	0.40 *	0.40 **
Non-Shortage	0.52	0.71	0.71 *	0.40	0.57	0.57 *	0.44	0.60	0.61 *	0.42	0.58	0.58 *	0.35	0.49	0.50 *	0.30	0.42	0.42 *	0.40	0.56	0.56 *
Poor Areas																					
All Poor Combined	0.77 *	0.99 *	1.01 **	0.39	0.59 *	0.58 *	0.55 *	0.72 *	0.73 **	0.49 *	0.71 *	0.71 **	0.37 *	0.56 *	0.55 **	0.30	0.42	0.43 *	0.48 *	0.67 *	0.67 **
Urban	0.78 *	1.01 *	1.03 **	0.40	0.60 *	0.59 *	0.60 *	0.77 *	0.79 **	0.53 *	0.77 *	0.77 **	0.44 *	0.64 *	0.64 **	0.31 *	0.47 *	0.48 **	0.54 *	0.74 *	0.75 **
Rural	0.23 *	0.28 *	0.25 *	0.28 *	0.54	0.46 **	0.26 *	0.40 *	0.40 **	0.25 *	0.35 *	0.39 **	0.26 *	0.43 *	0.42 **	0.29 *	0.41 *	0.42 *	0.27 *	0.40 *	0.41 **
Non Poor	0.50	0.69	0.69 *	0.40	0.57	0.57 *	0.43	0.59	0.60 *	0.41	0.57	0.57 *	0.35	0.49	0.50 *	0.30	0.42	0.42 *	0.40	0.55	0.55 *
Races																					
Black	0.54	0.79 *	0.79 **	0.38 *	0.60 *	0.61 **	0.54 *	0.71 *	0.71 **	0.46 *	0.67 *	0.67 **	0.42 *	0.56 *	0.58 **	0.29 *	0.41 *	0.43 *	0.45 *	0.63 *	0.64 **
White	0.54	0.74	0.74 *	0.40	0.57	0.58 *	0.44	0.60	0.61 *	0.42	0.56	0.58 *	0.36	0.49	0.50 *	0.31	0.43	0.43 *	0.41	0.56	0.56 *
Medicaid Eligible																					
Yes	0.79 *	1.07 *	1.10 **	0.57 *	0.85 *	0.56 **	0.69 *	0.93 *	0.95 **	0.59 *	0.82 *	0.83 **	0.50 *	0.69 *	0.71 **	0.44 *	0.59 *	0.59 **	0.59 *	0.82 *	0.83 **
No	0.48	0.66	0.65 *	0.38	0.54	0.54 *	0.41	0.56	0.57 *	0.40	0.56	0.55 *	0.34	0.47	0.47 *	0.28	0.40	0.40 *	0.38	0.53	0.53 *
Disabled																					
Yes	0.71 *	1.02 *	1.01 **	0.55 *	0.81 *	0.82 **	0.63 *	0.86 *	0.86 **	0.57 *	0.82 *	0.80 **	0.51 *	0.70 *	0.70 **	0.42 *	0.58 *	0.57 **	0.56 *	0.79 *	0.76 **
No	0.50	0.68	0.68 *	0.38	0.54	0.55 *	0.42	0.57	0.58 *	0.40	0.56	0.55 *	0.34	0.47	0.47 *	0.28	0.40	0.40 *	0.39	0.54	0.54 *
Age																					
85+ Years	0.68 *	1.00 *	0.97 **	0.49 *	0.73 *	0.69 **	0.57 *	0.77 *	0.80 **	0.56 *	0.80 *	0.77 **	0.40 *	0.56 *	0.54 **	0.34 *	0.47 *	0.48 **	0.51 *	0.72 *	0.71 **
Less than 85	0.51	0.70	0.70 *	0.39	0.56	0.57 *	0.44	0.60	0.61 *	0.41	0.58	0.57 *	0.35	0.49	0.50 *	0.30	0.42	0.42 *	0.40	0.56	0.56 *
Area of Residence																					
Rural	0.23 *	0.31 *	0.33 **	0.33 *	0.50 *	0.52 **	0.27 *	0.39 *	0.40 **	0.28 *	0.39 *	0.40 **	0.31 *	0.43 *	0.43 **	0.29 *	0.41 *	0.41 **	0.29 *	0.41 *	0.42 **
Urban	0.53	0.72	0.72 *	0.40	0.58	0.58 *	0.48	0.65	0.65 *	0.46	0.64	0.63 *	0.40	0.54	0.56 *	0.33	0.45	0.46 *	0.45	0.62	0.62 *
ALL BENEFICIARIES																					
	0.52	0.71	0.71 *	0.40	0.57	0.57 *	0.44	0.60	0.61 *	0.42	0.58	0.58 *	0.35	0.49	0.50 *	0.30	0.42	0.43 *	0.40	0.56	0.56 *

NOTES:

- * Significantly different from the comparison group at the 0.05 level
- ** Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE C-7

NURSING HOME VISITS BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted visits per beneficiary)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction						Increase														
	1			2			3			4			5			6			1991	1992	1993
1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	
Shortage Areas																					
All Shortage Combined	0.31 *	0.27	0.32 *	0.30 *	0.31 *	0.32 *	0.37 *	0.39 *	0.42 **	0.29 *	0.33 *	0.35 **	0.27 *	0.28 *	0.29 **	0.25 *	0.28	0.28 **	0.30	0.33	0.35 **
Urban	0.32 *	0.27	0.30 *	0.33 *	0.34 *	0.36 **	0.39 *	0.42 *	0.45 **	0.32	0.38	0.40 **	0.27 *	0.30 *	0.31 **	0.19 *	0.24 *	0.27 **	0.34 *	0.37 *	0.40 **
Rural	0.28	0.30	1.52 **	0.21 *	0.20 *	0.20 *	0.23 *	0.22 *	0.21 **	0.24 *	0.24 *	0.26 *	0.26 *	0.27 *	0.28 *	0.29 *	0.31 *	0.29	0.25 *	0.25 *	0.26 **
Non-Shortage	0.25	0.26	0.26	0.26	0.28	0.31 *	0.33	0.35	0.38 *	0.34	0.37	0.40 *	0.31	0.34	0.36 *	0.27	0.28	0.30 *	0.31	0.34	0.36 *
Poor Areas																					
All Poor Combined	0.36 *	0.35 *	0.38 *	0.42 *	0.45 *	0.46 **	0.40 *	0.44 *	0.48 **	0.40 *	0.46 *	0.52 **	0.33 *	0.36 *	0.38 **	0.23 *	0.24 *	0.25 **	0.38 *	0.42 *	0.46 **
Urban	0.37 *	0.36 *	0.38 *	0.43 *	0.45 *	0.46 **	0.43 *	0.47 *	0.51 **	0.42 *	0.49 *	0.56 **	0.36 *	0.40 *	0.43 **	0.15 *	0.18 *	0.18 **	0.41 *	0.46 *	0.50 **
Rural	0.05 *	0.14 *	0.36 *	0.35 *	0.37 *	0.43 **	0.24 *	0.27 *	0.29 **	0.27 *	0.31 *	0.35 **	0.28 *	0.30 *	0.31 **	0.26 *	0.26 *	0.27 *	0.26 *	0.29 *	0.31 **
Non Poor	0.24	0.26	0.25	0.26	0.27	0.30 *	0.32	0.34	0.37 *	0.33	0.36	0.38 *	0.31	0.33	0.36 *	0.27	0.29	0.31 *	0.31	0.33	0.35 *
Races																					
Black	0.47 *	0.49 *	0.48 *	0.39 *	0.43 *	0.46 **	0.38 *	0.43 *	0.47 **	0.40 *	0.47 *	0.51 **	0.33	0.38 *	0.42 **	0.27	0.29	0.32 *	0.37 *	0.42 *	0.46 **
White	0.26	0.26	0.27	0.26	0.28	0.30 *	0.34	0.36	0.38 *	0.34	0.37	0.39 *	0.32	0.34	0.36 *	0.28	0.29	0.31 *	0.32	0.34	0.36 *
Medicaid Eligible																					
Yes	1.27 *	1.28 *	1.27 *	1.64 *	1.66 *	1.74 **	1.59 *	1.68 *	1.78 **	1.48 *	1.60 *	1.72 **	1.61 *	1.71 *	1.91 **	1.21 *	1.23 *	1.24 *	1.51 *	1.58 *	1.69 **
No	0.10	0.11	0.11	0.12	0.13	0.14 *	0.18	0.19	0.19 *	0.23	0.26	0.26	0.19	0.20	0.19	0.12	0.13	0.14 *	0.18	0.20	0.20 *
Disabled																					
Yes	0.45 *	0.52 *	0.55 *	0.48 *	0.52 *	0.55 **	0.63 *	0.69 *	0.69 **	0.58 *	0.68 *	0.73 **	0.52 *	0.59 *	0.63 **	0.39 *	0.43 *	0.45 **	0.55 *	0.61 *	0.65 **
No	0.23	0.24	0.23	0.24	0.26	0.28 *	0.30	0.32	0.34 *	0.31	0.34	0.36 *	0.29	0.30	0.32 *	0.26	0.26	0.28 *	0.29	0.31	0.33 *
Age																					
85+ Years	2.05 *	2.04 *	1.94 **	2.13 *	2.19 *	2.17 **	2.28 *	2.42 *	2.38 **	2.43 *	2.69 *	2.69 **	2.22 *	2.39 *	2.40 **	1.89 *	1.98 *	1.94 **	2.26 *	2.43 *	2.42 **
Less than 85	0.20	0.21	0.21	0.22	0.23	0.25 *	0.28	0.29	0.31 *	0.28	0.30	0.32 *	0.26	0.27	0.29 *	0.22	0.24	0.25 *	0.28	0.28	0.29 *
Area of Residence																					
Rural	0.10 *	0.14 *	0.15 **	0.21 *	0.22 *	0.24 **	0.27 *	0.29 *	0.30 **	0.27 *	0.30 *	0.31 **	0.31	0.34	0.36 *	0.28 *	0.30 *	0.31 **	0.28 *	0.30 *	0.32 **
Urban	0.25	0.26	0.26	0.27	0.29	0.32 *	0.34	0.37	0.40 *	0.35	0.39	0.42 *	0.31	0.33	0.35 *	0.23	0.25	0.27 *	0.32	0.35	0.37 *
ALL BENEFICIARIES	0.25	0.26	0.26	0.26	0.28	0.31 *	0.33	0.35	0.38 *	0.33	0.37	0.39 *	0.31	0.33	0.36 *	0.27	0.28	0.30 *	0.31	0.34	0.36 *

NOTES:

* Significantly different from the comparison group at the 0.05 level.

** Significantly different from 1991 to 1993 at the 0.05 level.

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE C-8

PNEUMOCOCCAL PNEUMONIA VACCINATIONS BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted services per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction 1			2			3			4			5			Increase 6					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combined	19.9 *	16.9 *	26.6 ^{ab}	14.2 *	13.2 *	20.8 ^{ab}	13.8 *	11.4 *	17.7 ^{ab}	38.8	34.0	46.9	143.9 *	104.9 *	74.0 ^b	23.7 *	18.3 *	34.6 ^{ab}	54.3 *	42.4	43.2 ^{ab}
Urban	20.1 *	17.2 *	26.8 ^{ab}	14.9 *	14.0 *	21.6 ^{ab}	12.5 *	10.6 *	16.0 ^{ab}	16.2 *	18.0	33.9 ^{ab}	399.6 *	280.0 *	152.8 ^b	19.5 *	18.6 *	31.7 ^{ab}	61.1 *	46.6	40.6 ^{ab}
Rural	4.8 *	0.2 *	16.8 ^{ab}	12.2 *	10.8 *	18.4 ^{ab}	22.0	16.2 *	27.8 ^{ab}	77.8 *	61.1	69.0	25.8 *	25.2 *	38.5 ^{ab}	26.0 *	18.2 *	36.1 ^{ab}	43.3	35.9	47.2 *
Non-Shortage	21.9	22.9	35.3 ^b	24.1	22.8	41.9 ^b	23.3	20.2	35.4 ^b	36.9	41.8	60.5 ^b	78.2	65.4	102.3	24.7	21.5	41.6 ^b	38.1	36.3	57.4 ^b
Poor Areas																					
All Poor Combined	9.8 *	5.6 *	12.2 ^{ab}	14.0 *	13.2 *	23.4 ^{ab}	13.7 *	10.6 *	15.1 ^{ab}	14.5 *	12.9 *	23.8 ^{ab}	62.6	36.1 *	61.6 *	18.8 *	15.8 *	29.1 ^{ab}	19.5 *	14.7 *	26.0 ^{ab}
Urban	9.7 *	5.6 *	12.3 ^{ab}	13.9 *	12.9 *	22.8 ^{ab}	12.1 *	10.1 *	18.6 ^{ab}	13.0 *	12.3 *	22.8 ^{ab}	91.8	48.4	80.5	12.1 *	12.1 *	21.7 ^{ab}	19.0 *	14.2 *	24.4 *
Rural	17.0 *	6.3 *	5.6 ^{ab}	14.8 *	16.4 *	31.1 ^{ab}	23.9	13.4 *	32.6 ^{ab}	23.2	16.4	29.7 ^{ab}	18.6 *	17.9 *	34.6 ^{ab}	21.1 *	17.0 *	31.6 ^{ab}	21.6 *	16.2 *	31.8 ^{ab}
Non-Poor	22.6	23.8	36.3 ^b	24.2	22.9	42.0 ^b	23.8	20.7	36.2 ^b	39.0	43.8	62.8 ^b	83.7	69.5	102.1	25.1	21.8	42.3 ^b	40.5	38.4	59.0 ^b
Races																					
Black	9.9 *	11.9 *	14.1 ^{ab}	11.0 *	10.9 *	15.6 ^{ab}	11.8 *	9.6 *	14.6 ^{ab}	14.4 *	14.9	22.1 ^{ab}	101.8	68.3	80.1	13.0 *	10.2 *	18.5 ^{ab}	27.5 *	21.3 *	28.4 *
White	22.2	24.1	37.9 ^b	25.2	23.5	43.9 ^b	24.4	21.2	37.3 ^b	40.1	45.4	64.7 ^b	82.1	70.4	105.4	26.3	22.7	44.3 ^b	40.7	39.2	60.9 ^b
Medicaid Eligible																					
Yes	11.8 *	14.0 *	14.9 ^{ab}	14.0 *	12.1 *	20.2 ^{ab}	15.2 *	10.7 *	20.4 ^{ab}	24.4	25.3	32.9 *	33.7 *	22.3 *	38.2 *	17.7 *	15.2 *	25.9 ^{ab}	20.9 *	17.8 *	27.4 ^{ab}
No	23.4	24.1	38.1 ^b	24.8	23.6	43.5 ^b	23.7	20.8	36.3 ^b	38.1	42.8	62.4 ^b	87.4	72.6	106.9	25.8	22.3	44.0 ^b	40.9	38.7	60.1 ^b
Disabled																					
Yes	15.9 *	15.1 *	23.4 ^{ab}	18.0 *	16.9 *	28.0 ^{ab}	17.7 *	13.4 *	24.9 ^{ab}	30.1	31.2	48.0 ^b	58.0	38.7 *	65.5 *	19.1 *	16.1 *	30.0 ^{ab}	29.6 *	24.9 *	41.2 ^{ab}
No	22.4	23.4	36.1 ^b	24.3	23.0	42.6 ^b	23.4	20.4	35.5 ^b	37.7	42.4	61.0 ^b	85.7	71.5	104.5	25.4	22.1	43.0 ^b	40.0	37.9	58.4 ^b
Age																					
85+ Years	16.1 *	20.4	22.4 ^{ab}	16.5 *	17.9 *	32.3 ^b	15.0 *	14.0 *	22.8 ^{ab}	22.3 *	26.1	33.1 ^{ab}	46.6 *	43.0 *	34.3 ^{ab}	15.2 *	14.7 *	25.8 ^{ab}	23.7 *	24.4 *	28.8 ^{ab}
Less than 85	22.0	22.9	35.5 ^b	23.9	22.6	41.4 ^b	23.0	19.9	34.8 ^b	37.4	41.8	60.6 ^b	83.8	68.9	102.6	24.9	21.5	41.8 ^b	39.3	37.0	57.5 ^b
Area of Residence																					
Rural	23.8 *	16.7 *	19.1 ^{ab}	24.5	21.2	40.3 ^{ab}	27.1 *	19.2	37.5 ^{ab}	59.1 *	55.3	86.4 *	25.5 *	24.0 *	41.0 ^{ab}	24.8	20.5 *	40.0 ^{ab}	34.7	30.9	52.6 ^b
Urban	21.8	23.0	35.6 ^b	23.6	22.7	41.3 ^b	21.9	19.8	33.8 ^b	30.7	37.4	52.2 ^b	134.5	107.8	153.5	24.5	23.3	44.5 ^b	40.6	38.9	56.2 ^b
ALL BENEFICIARIES	21.9	22.8	35.1 ^b	23.7	22.5	41.2 ^b	22.8	19.7	34.4 ^b	37.0	41.3	59.7 ^b	82.8	68.1	100.4	24.7	21.4	41.3 ^b	38.9	36.7	55.1 ^b

NOTES:

* Significantly different from the comparison group at the 0.05 level
^a Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE C-10

EXTRA BILLING LIABILITY BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATIONS GROUPS, 1991-1993 (age - sex adjusted per beneficiary)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS			
	Reduction 1			2			3			4			5			Increase 6						
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	
Shortage Areas																						
All Shortage Combined	\$20.46 *	\$13.96 *	\$4.97 **	\$21.34 *	\$13.46 *	\$6.36 **	\$16.54 *	\$10.62 *	\$5.47 **	\$24.61 *	\$15.86 *	\$8.65 **	\$34.93 *	\$25.09 *	\$13.34 **	\$27.52 *	\$15.61 *	\$8.35 **	\$24.88 *	\$16.52 *	\$8.72 **	
Urban	20.16 *	13.77 *	4.85 **	17.93 *	10.18 *	4.51 **	12.93 *	7.83 *	4.00 **	18.09 *	11.02 *	5.36 **	17.03 *	11.65 *	6.94 **	31.65 *	18.91 *	10.12 **	16.67 *	10.26 *	5.15 **	
Rural	41.85	25.78	12.40 *	31.78 *	23.20 *	11.73 *	38.53 *	27.31 *	14.13 *	35.62	24.07	14.19 *	43.19 *	31.21 *	16.21 *	25.25 *	13.83 *	7.42 *	37.99 *	26.35 *	14.28 **	
Non-Shortage	43.25	24.65	9.78 *	41.12	26.05	12.09 *	33.26	20.63	10.36 *	36.55	24.18	12.39 *	36.24	24.59	12.52 *	38.31	23.29	11.29 *	36.70	23.59	11.71	
Poor Areas																						
All Poor Combined	9.09 *	4.86 *	2.18 **	11.74 *	10.32 *	4.60 **	13.40 *	7.60 *	4.09 **	17.81 *	11.33 *	6.46 **	15.58 *	10.42 *	5.20 **	21.83 *	12.40 *	6.17 **	18.21 *	9.93 *	5.28 **	
Urban	9.03 *	4.80 *	2.18 **	11.92 *	10.45 *	4.70 **	12.18 *	7.20 *	3.87 **	17.72 *	11.53 *	6.58 **	12.89 *	7.99 *	3.81 **	22.74 *	13.60 *	7.49 **	15.22 *	9.45 *	5.11 **	
Rural	12.55 *	8.32 *	2.56 **	11.19 *	8.89 *	3.30 **	20.82 *	11.31 *	5.39 **	18.38 *	10.17 *	5.76 **	19.61 *	14.01 *	7.17 **	21.52 *	12.00 *	5.73 **	19.86 *	11.68 *	5.88 **	
Non Poor	44.65	25.50	10.05 *	41.60	26.37	12.25 *	34.49	21.44	10.75 *	37.48	24.78	12.70 *	37.07	25.25	12.89 *	39.23	23.87	11.59 *	37.66	24.26	12.03 *	
Races																						
Black	9.11 *	4.62 *	1.59 **	11.73 *	6.90 *	2.93 **	9.62 *	5.54 *	2.78 **	10.60 *	6.59 *	3.15 **	9.60 *	5.35 *	2.39 **	12.18 *	7.07 *	3.75 **	10.43 *	6.16 *	2.94 **	
White	46.45	26.81	10.54 *	47.59	27.62	12.81 *	38.46	22.05	11.3 *	38.97	25.64	13.23 *	38.95	26.49	13.49 *	41.69	25.18	12.20 *	39.23	25.22	12.50 *	
Medicaid Eligible																						
Yes	3.73 *	1.90 *	0.69 **	5.65 *	2.91 *	1.32 **	4.52 *	2.41 *	1.11 **	6.44 *	3.57 *	1.56 **	7.42 *	3.75 *	2.11 **	6.76 *	3.79 *	1.63 **	5.91 *	3.17 *	1.47 **	
No	48.41	27.66	11.00 *	44.14	28.08	13.10 *	35.74	22.28	11.28 *	38.53	25.55	13.22 *	38.89	26.65	13.68 *	42.79	26.11	12.83 *	39.34	25.43	12.73 *	
Disabled																						
Yes	35.10 *	19.28 *	6.35 **	30.02 *	18.15 *	8.04 **	22.90 *	13.50 *	6.43 **	28.10 *	18.19 *	8.63 **	28.90 *	18.47 *	9.04 **	29.88 *	17.55 *	8.05 **	27.66 *	17.13 *	8.00 **	
No	43.33	24.82	9.94 *	41.50	26.35	12.29 *	33.38	20.79	10.51 *	36.72	24.29	12.57 **	37.00	25.33	13.00 *	39.06	23.77	11.64 *	37.02	23.89	11.96 *	
Age																						
25+ Years	35.85 *	20.68 *	9.22 **	35.69 *	23.42 *	11.09 **	26.94 *	17.68 *	8.69 **	30.88 *	21.13 *	11.38 **	30.79 *	20.71 *	10.64 **	32.71 *	20.81 *	10.41 **	30.79 *	20.44 *	10.46 **	
Less than 25	42.83	24.48	9.66 *	40.53	25.65	11.91 *	32.45	20.13	10.12 *	36.00	23.77	12.20 *	36.30	24.74	12.64 *	38.09	23.10	11.22 *	36.21	23.29	11.16 *	
Area of Residence																						
Rural	25.18 *	15.15 *	7.69 **	40.34	26.03	12.22 *	37.26 *	22.76 *	11.46 **	38.98 *	27.04 *	13.82 **	44.49 *	31.99 *	16.66 **	34.12 *	20.60 *	9.86 **	39.40 *	26.51 *	13.39 **	
Urban	43.22	24.69	9.71 *	40.42	25.53	11.83 *	31.31	19.52	9.81 *	34.98	22.75	11.72 *	28.60	17.95	8.90 **	47.22	28.40	14.39 *	34.77	21.94	10.64 *	
ALL BENEFICIARIES	42.65	24.36	9.64 *	40.41	25.59	11.86 *	32.30	20.06	10.08 *	35.86	23.70	12.18 *	36.15	24.63	12.58 *	37.95	23.04	11.20 *	36.06	23.21	11.55 *	

NOTES:

* Significantly different from the comparison group at the 0.05 level

** Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries.

TABLE C-12

CATARACT SURGERIES BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction 1			2			3			4			5			Increase 6					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combined	49.2	45.0 *	39.1 **	43.2 *	48.8 *	42.5 *	40.1	44.4	37.9 *	38.8	41.8	37.5 *	36.8 *	38.8 *	38.5	35.1 *	40.8 *	38.7 **	39.0 *	42.3 *	38.3 *
Urban	49.6	45.4 *	39.6 **	44.0 *	49.5 *	42.6 *	39.8	44.0	36.2 *	37.8	38.7	34.4 *	40.3	39.6 *	39.4	31.2 *	37.7 *	36.7 *	39.5 *	41.8 *	36.6 *
Rural	20.9 *	21.0 *	13.8 *	40.6 *	46.9 *	42.2 *	42.5	46.5	47.7 **	40.6	47.1 *	42.7	35.2 *	38.5 *	38.1	37.2 *	42.4 *	39.8 **	38.2 *	43.0 *	41.0 *
Non-Shortage	50.3	49.3	45.3 *	49.8	52.6	51.3	41.1	46.5	43.5	38.4	42.3	42.4 *	39.5	44.6	40.4	41.1	46.4	44.4 *	41.3	45.5	43.6 *
Poor Areas																					
All Poor Combined	54.0 *	54.3 *	50.9 **	45.7 *	50.0	46.8 *	38.3 *	42.0 *	38.4 *	35.3 *	38.7 *	36.1 *	42.9 *	47.6 *	45.2 *	40.1	44.1 *	43.6 *	38.8 *	42.5 *	30.7 *
Urban	54.1 *	54.4 *	51.1 **	42.8 *	48.5 *	45.0 **	37.6 *	40.9 *	36.8 *	34.1 *	36.7 *	33.8 *	39.8	45.2	42.2 *	40.1	39.8 *	39.3 *	37.5 *	40.6 *	37.3 *
Rural	49.5	50.5	37.4 *	78.9 *	68.2 *	67.9 **	42.8	48.8	47.7 **	42.8 *	50.0 *	49.5 **	47.4 *	51.2 *	49.4 *	40.1	45.5	45.0 *	43.9 *	49.1 *	48.2 *
Non-Poor	50.1	48.9	44.8 *	49.8	52.5	51.2	41.3	46.8	43.8	38.7	42.6	42.7	39.2	44.1	40.0	41.0	46.4	44.3 *	41.3	45.6	43.6 *
Races																					
Black	41.4 *	39.4 *	30.6 **	38.8 *	43.6 *	39.1 *	35.7 *	36.5 *	33.7 *	31.5 *	32.7 *	30.9 *	35.1 *	37.4 *	34.8 *	28.2 *	35.7 *	34.0 **	33.7 *	36.0 *	33.4 *
White	51.9	51.1	46.7 *	51.1	54.2	52.7	42.3	48.2	44.8	39.7	43.9	43.7	40.7	45.5	41.1	42.9	47.9	45.9 *	42.6	47.0 *	44.8 *
Medicaid Eligible																					
Yes	55.3 *	52.0 *	48.9 **	51.1 *	55.5 *	50.3	44.8 *	48.9	44.3	40.8	43.3	42.2	43.2 *	47.4 *	44.4 *	43.5 *	49.3 *	46.7 *	44.5 *	47.9 *	44.5 *
No	49.5	48.8	44.6 *	49.4	52.1	51.1	40.6	46.0	43.1	38.2	42.2	42.2	39.0	43.9	39.8	40.5	45.7	43.8 *	40.8	45.0	43.2 *
Disabled																					
Yes	38.2 *	40.0 *	33.4 **	37.2 *	42.7 *	37.5 *	30.9 *	34.3 *	32.4 *	28.7 *	33.4 *	31.3 *	30.1 *	34.8 *	32.1 *	29.2 *	32.6 *	31.3 *	30.7 *	35.0 *	32.4 *
No	51.4	50.0	46.2 *	50.8	53.4	52.4	42.2	47.7	44.5	39.5	43.2	43.4	40.4	45.3	41.2	42.5	48.1	46.0 *	42.3	46.5	44.6 *
Age																					
85+ Years	59.6 *	56.9 *	52.2 **	60.3 *	60.8 *	49.9 *	51.1 *	52.9 *	49.6 *	48.4 *	51.9 *	47.8 *	50.8 *	52.6 *	47.7 **	49.0 *	57.7 *	50.2 *	51.2 *	53.9 *	46.8 *
Less than 85	50.0	49.0	44.9 *	49.3	52.2	51.0	40.7	46.2	43.0	38.1	42.0	42.0 *	39.0	44.0	40.0	40.7	45.9	44.0 *	40.9	45.1	43.2 *
Area of Residence																					
Rural	32.6 *	35.8 *	41.5 **	50.0	53.3	52.6	43.1	52.3 *	48.5 *	41.4	47.8 *	45.3 *	38.4	42.3 *	40.8	41.2	47.3 *	45.3 *	41.1	46.9 *	44.7 *
Urban	50.9	49.7	45.3 *	49.5	52.3	50.8	40.6	45.1	42.2	37.6	40.7	41.3	40.2	45.9	39.7	40.3	43.6	41.6	41.2	44.7	42.8 *
ALL BENEFICIARIES	50.3	49.2	45.1 *	49.8	52.4	51.0	41.0	46.3	43.2	38.4	42.3	42.2 *	39.3	44.2	40.3	40.9	46.2	44.2 *	41.1	45.3	43.4 *

NOTES:

* Significantly different from the comparison group at the 0.05 level.

* Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE C-13

HEAD CT SCANS BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted scans per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																				
	Reduction 1			2			3			4			5			Increase 6			ALL AREAS		
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combined	72.2 *	64.6	63.3 *	70.8 *	68.5 *	71.7 *	76.3 *	79.9 *	81.2 *	68.7	72.1	73.4 *	68.3	66.8	66.4	67.2	71.1 *	67.5 *	70.6 *	72.3 *	73.0 *
Urban	73.1 *	65.4 *	64.1 *	78.6 *	75.4 *	77.7 *	80.8 *	84.6 *	87.0 *	76.0 *	81.4 *	81.7 *	91.8 *	90.4 *	94.5 *	66.9	74.1 *	70.5 *	79.4 *	82.3 *	83.7 *
Rural	11.2 *	17.9 *	15.3 *	47.0 *	48.0 *	54.5 *	48.9 *	51.2 *	47.1 *	56.2 *	56.4 *	59.3 *	57.5 *	56.1 *	53.8 *	67.3	69.5 *	66.0	56.6 *	56.5 *	56.3 *
Non-Shortage	65.0	61.7	59.3 *	63.8	64.8	66.8	69.5	68.5	67.2	67.3	67.5	67.3	66.8	69.3	67.9	65.2	64.4	63.6	67.0	67.2	66.7
Poor Areas																					
All Poor Combined	97.8 *	90.2 *	88.9 *	77.8 *	81.6 *	78.9 *	79.3 *	79.9 *	81.8 *	75.1 *	76.5 *	77.6 *	83.7 *	85.9 *	86.2 *	68.2 *	71.9 *	70.9 *	77.6 *	79.0 *	79.7 *
Urban	98.9 *	91.2 *	90.1 *	78.7 *	81.5 *	78.8 *	81.9 *	82.8 *	84.5 *	77.1 *	78.7 *	79.3 *	89.1 *	89.7 *	92.1 *	67.8 *	69.4 *	66.1 *	80.5 *	81.5 *	82.1 *
Rural	37.6 *	31.0 *	20.4 *	67.6 *	83.1 *	79.1 *	63.5 *	62.7 *	65.5	63.0	63.8	68.2 *	75.6 *	80.4 *	77.9 *	68.3 *	72.7 *	72.5 *	67.2	69.9 *	71.0 *
Non Poor	63.2	60.1	57.8 *	63.4	64.1	66.4	68.8	68.0	66.5	66.7	67.0	66.8	66.2	68.4	67.0	65.0	64.1	63.2	66.4	66.0	66.0
Races																					
Black	97.0 *	89.3 *	86.2 *	86.4 *	89.6 *	91.7 *	92.1 *	91.6 *	94.3 *	86.0 *	88.4 *	89.9 *	97.6 *	97.7 *	97.9 *	74.7 *	76.5 *	77.7 *	88.5 *	89.7 *	91.2 *
White	65.3	62.4	59.3 *	63.7	63.5	66.3	69.3	68.3	65.8	67.2	66.9	66.6	66.1	67.8	66.2	65.5	64.0	62.9	66.9	66.6	65.2
Medicaid Eligible																					
Yes	114.5 *	108.6 *	107.0 *	113.0 *	118.2 *	115.8 *	113.7 *	113.0 *	112.8 *	112.4 *	111.0 *	112.0 *	116.5 *	117.5 *	118.7 *	109.4 *	108.5 *	108.8	113.2 *	112.9 *	113.1 *
No	57.8	54.9	52.2 *	58.8	59.1	61.5	64.4	63.7	62.0	63.3	63.8	63.3	62.2	64.5	62.4	58.4	57.6	56.0	62.2	62.5	61.6
Disabled																					
Yes	86.5 *	88.8 *	81.1 *	85.5 *	86.0 *	91.2 *	94.1 *	91.2 *	92.1 *	89.2 *	90.2 *	89.0 *	90.5 *	92.9 *	91.3 *	80.4 *	82.2 *	81.9 *	89.2 *	89.6 *	89.4 *
No	63.2	59.4	57.4 *	61.9	62.8	64.5	67.1	66.7	65.2	64.9	65.3	65.3	64.2	66.4	65.0	63.2	62.3	61.2	64.7	65.1	61.4
Age																					
85+ Years	123.5 *	124.8 *	119.2 *	112.4 *	112.5 *	117.4 *	112.2 *	115.2 *	115.3 *	108.1 *	112.6 *	115.2 *	102.1 *	110.0 *	108.5 *	101.0 *	101.2 *	104.8 *	108.4 *	112.3 *	110.5 *
Less than 85	63.6	59.9	57.5 *	62.9	63.7	65.5	68.7	67.8	66.4	66.2	66.4	66.1	66.0	67.9	66.4	64.3	63.6	62.4	66.1	66.2	65.5
Area of Residence																					
Rural	46.5 *	46.8 *	45.6 *	56.7 *	58.9 *	62.5 *	62.1 *	61.3 *	61.5 *	58.6 *	58.9 *	61.1 *	61.8 *	61.6 *	61.0 *	67.6 *	67.0 *	64.9 *	61.9 *	61.8 *	62.0 *
Urban	65.8	62.2	59.9 *	65.2	65.8	67.7	71.4	70.8	69.3	69.8	70.3	69.5	71.6	75.9	73.8	59.6	58.0	60.9	69.3	69.7	69.0
ALL BENEFICIARIES	65.2	61.7	59.4 *	64.1	64.9	67.0	69.8	69.2	68.0	67.4	67.7	67.7	66.9	69.1	67.8	65.3	64.6	63.7	67.2	67.5	67.0

NOTES:

* Significantly different from the comparison group at the 0.05 level

* Significantly different from 1991 to 1993 at the 0.05 level

* Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE C-14

BRAIN MRI SCANS BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted scans per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS			
	Reduction 1			2			3			4			5			Increase 6						
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	
Shortage Areas																						
All Shortage Combined	18.6 *	20.7 *	17.6 *	14.4 *	19.2 *	20.2 ^{ac}	14.9 *	19.2 *	18.1 ^{ac}	12.7 *	16.2	16.0 ^{ac}	11.1 *	14.1 *	13.5 ^{ac}	13.8	18.6 *	18.6 ^{ac}	13.2 *	16.9 *	16.4 ^{ac}	
Urban	18.8 *	20.8 *	17.8 *	14.2 *	18.5 *	20.4 ^{ac}	15.5 *	19.9	18.5 ^{ac}	13.1	17.1	17.4 *	12.0 *	15.4	15.2 ^b	17.5 *	24.5 *	21.5 ^{ac}	14.2 *	18.3 *	17.9 *	
Rural	7.0 *	13.0 *	8.4 *	15.1 *	21.4	19.8 ^{ac}	11.1 *	15.5 *	15.2 ^{ac}	12.1 *	14.6	13.7 *	10.7 *	13.5 *	12.7 ^{ac}	11.8 *	15.4	17.0 ^b	11.5 *	14.7 *	14.0 ^{ac}	
Non-Shortage	21.7	26.0	24.7 ^b	19.4	23.3	24.4 ^b	18.0	22.6	22.0 ^b	14.8	18.6	18.6 ^b	13.5	16.6	16.6 ^b	13.4	16.5	17.0 ^b	16.0	19.8	19.8 ^b	
Poor Areas																						
All Poor Combined	19.4 *	18.7 *	18.4 *	15.0 *	19.6 *	20.7 ^{ac}	15.6 *	19.4 *	19.5 ^b	12.8	16.7	17.4 ^b	12.0 *	15.1	16.0 ^b	11.8 *	14.5 *	16.0 ^b	13.9 *	17.5 *	18.1 ^{ac}	
Urban	19.5 *	18.9 *	18.7 *	15.2 *	20.0 *	21.1 ^{ac}	16.2	19.8 *	20.0 ^b	13.0	16.8	17.7 ^b	13.2	14.8 *	16.8 ^b	17.6 *	21.0 *	20.7 ^{ac}	14.7 *	18.2 *	18.8 ^{ac}	
Rural	12.9 *	5.8 *	5.4 ^{ac}	13.5 *	14.8 *	16.8 ^{ac}	12.0 *	17.0 *	16.3 ^{ac}	0.0	0.0	15.4 ^{ac}	10.3 *	15.7	15.0 ^b	9.9 *	12.4 *	14.5 ^{ac}	11.0 *	15.0 *	15.3 ^{ac}	
Non Poor	21.7	26.2	24.8 ^b	19.4	23.3	24.4 ^b	18.1	22.8	22.0 ^b	14.8	18.6	18.6 ^b	13.4	16.5	16.4 ^b	13.6	16.7	17.1 ^b	16.0	19.8	19.7 ^b	
Races																						
Black	17.1 *	18.7 *	17.0 *	13.7 *	18.2 *	20.4 ^{ac}	14.6 *	18.1 *	19.2 ^{ac}	12.0 *	17.4	17.6 ^b	12.4	15.6	15.6 ^b	10.0 *	12.2 *	12.9 ^{ac}	12.8 *	16.8 *	17.5 ^{ac}	
White	23.1	27.8	26.4 ^b	19.9	23.7	24.7 ^b	18.6	23.3	22.2 ^b	15.0	18.7	18.8 ^b	13.5	16.6	16.4 ^b	14.1	17.2	17.7 ^b	16.4	20.1	20.0	
Medicaid Eligible																						
Yes	20.1 *	21.2 *	24.3 ^b	20.2	24.1	24.2 ^b	19.5	23.2	23.5 ^b	15.1	16.6	18.8 ^b	14.1	18.8 *	17.9 ^b	14.7 *	16.9	17.6 ^b	16.8 *	19.8	20.6 ^{ac}	
No	21.8	26.5	24.5 ^b	19.1	23.0	24.2 ^b	17.7	22.3	21.5 ^b	14.6	18.6	18.4 ^b	13.3	16.2	16.2 ^b	13.3	16.5	17.0 ^b	15.7	19.6	19.5 ^b	
Disabled																						
Yes	26.8 *	28.4 *	28.4 ^{ac}	21.7 *	24.9	27.2 ^{ac}	20.9 *	26.4 *	26.0 ^{ac}	17.9 *	21.2	20.6 ^b	16.7 *	19.5 *	20.0 ^{ac}	15.7 *	17.7 *	21.1 ^{ac}	18.8 *	22.4 *	22.7 ^{ac}	
No	21.1	25.6	24.1 ^b	18.9	22.9	23.9 ^b	17.5	22.0	21.3 ^b	14.3	18.2	18.2 ^b	12.9	16.1	15.9 ^b	13.2	16.4	16.5 ^b	15.5	19.4	19.3 ^b	
Age																						
85+ Years	18.9 *	17.4 *	16.8 *	11.8 *	16.6 *	16.5 ^{ac}	10.4 *	13.1 *	13.7 ^{ac}	3.0 *	11.0 *	12.1 ^{ac}	6.4 *	8.7 *	7.7 ^{ac}	7.7 *	8.9 *	9.7 ^{ac}	9.0 *	11.7 *	12.1 ^{ac}	
Less than 85	21.7	26.1	24.4 ^b	19.4	23.3	24.5 ^b	18.1	22.7	22.0 ^b	14.8	18.7	18.7 ^b	13.5	16.7	16.6 ^b	13.6	16.7	17.3 ^b	16.0	19.9	19.9 ^b	
Area of Residence																						
Rural	7.8 *	10.0 *	10.7 ^{ac}	17.1 *	20.8 *	20.2 ^{ac}	13.6 *	18.4 *	18.2 ^{ac}	12.8	14.1 ^b	15.6 ^{ac}	11.9 *	14.3 *	14.5 ^{ac}	11.6 *	14.2 *	14.9 ^{ac}	12.6 *	15.1 ^b	15.7 ^{ac}	
Urban	22.0	26.4	25.0 ^b	19.5	23.5	24.8 ^b	18.7	23.3	22.5 ^b	15.2	19.7	19.3 ^b	14.7	18.4	18.0 ^b	18.0	22.0	22.3 ^b	17.1	21.4	21.1 ^b	
ALL BENEFICIARIES	21.8	25.8	24.5 ^b	19.2	23.1	24.2 ^b	17.9	22.4	21.7 ^b	14.6	18.5	18.5 ^b	13.3	16.4	16.3 ^b	13.5	16.5	17.1 ^b	15.8	19.7	19.6	

NOTES:

* Significantly different from the comparison group at the 0.05 level

^b Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE C-15

ECHOCARDIOGRAMS BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted tests per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction 1			2			3			4			5			Increase 6					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combined	229.3	260.7 ^a	332.9 ^b	145.9 ^a	161.1 ^a	190.2 ^{ab}	174.6 ^a	198.4 ^a	236.9 ^{ab}	169.2	194.2	247.6 ^b	158.4 ^a	177.8	210.4 ^b	140.9 ^a	166.3 ^a	192.0 ^{ab}	165.9 ^a	186.6 ^a	230.6 ^{ab}
Urban	231.7	262.3 ^a	337.4 ^b	158.5	173.0 ^a	205.2 ^{ab}	187.6 ^a	212.7 ^a	255.8 ^{ab}	189.7 ^a	218.3 ^a	279.7 ^{ab}	218.3 ^a	244.4 ^a	290.5 ^{ab}	156.5 ^a	200.2 ^a	206.4 ^{ab}	189.9 ^a	216.2 ^a	265.6 ^{ab}
Rural	59.0 ^a	156.1 ^a	62.0 ^a	107.5 ^a	125.7 ^a	146.3 ^{ab}	95.2 ^a	112.7 ^a	125.2 ^{ab}	133.9 ^a	153.3 ^a	193.5 ^{ab}	130.7 ^a	147.4 ^a	174.4 ^{ab}	132.4 ^a	148.0 ^a	184.4 ^{ab}	127.6 ^a	145.4 ^a	176.3 ^{ab}
Non-Shortage	233.9	276.3	341.8 ^b	162.6	190.9	228.0 ^b	157.5	178.1	220.3 ^b	161.2	183.1	235.3 ^b	148.5	169.1	206.7 ^b	122.2	141.4	170.7 ^b	157.8	180.5	224.6 ^b
Poor Areas																					
All Poor Combined	490.2 ^a	615.4 ^a	943.5 ^{ab}	171.5 ^a	184.4	212.1 ^{ab}	183.6 ^a	210.3 ^a	263.9 ^{ab}	195.9 ^a	223.8 ^a	289.9 ^{ab}	173.8 ^a	194.7 ^a	243.1 ^{ab}	143.6 ^a	169.9 ^a	200.4 ^{ab}	192.3 ^a	220.7 ^a	282.7 ^{ab}
Urban	497.7 ^a	626.3 ^a	959.8 ^{ab}	174.6 ^a	187.0	214.0 ^{ab}	191.6 ^a	221.1 ^a	279.7 ^{ab}	208.3 ^a	234.9 ^a	304.4 ^{ab}	193.7 ^a	212.2 ^a	265.3 ^{ab}	141.6 ^a	182.0 ^a	197.4 ^{ab}	207.6 ^a	237.5 ^a	306.6 ^{ab}
Rural	54.4 ^a	80.9 ^a	80.8 ^{ab}	135.7 ^a	153.1 ^a	190.0 ^{ab}	134.8 ^a	145.9 ^a	170.9 ^{ab}	122.5 ^a	160.1 ^a	207.4 ^{ab}	143.6 ^a	168.9 ^a	211.4 ^{ab}	144.3 ^a	165.9 ^a	201.4 ^{ab}	136.0 ^a	160.2 ^a	197.9 ^{ab}
Non Poor	218.6	256.5	308.6 ^b	161.5	190.1	227.3 ^b	155.5	175.7	216.6 ^b	158.6	180.2	231.4 ^b	148.1	168.6	205.4 ^b	121.2	140.1	169.2 ^b	155.5	177.9	220.5 ^b
Races																					
Black	268.4 ^a	304.8 ^a	416.0 ^{ab}	180.1 ^a	202.5 ^a	228.7 ^b	191.9 ^a	219.5 ^a	273.5 ^{ab}	195.7 ^a	225.3 ^a	281.8 ^{ab}	195.3 ^a	213.9 ^a	265.7 ^{ab}	137.3 ^a	166.1 ^a	202.2 ^{ab}	168.0 ^a	214.6 ^a	265.5 ^{ab}
White	237.6	284.5	349.9 ^b	162.9	191.7	229.4 ^b	157.6	177.7	219.5 ^b	161.6	182.9	244.0 ^b	147.8	168.0	205.0 ^b	123.3	141.5	169.8 ^b	158.1	180.5	224.3 ^b
Medicaid Eligible																					
Yes	391.7	467.7 ^a	671.4 ^{ab}	216.7 ^a	224.6 ^a	292.0 ^{ab}	213.6 ^a	239.3 ^a	293.0 ^{ab}	208.7 ^a	240.3 ^a	298.7 ^{ab}	187.7 ^a	212.4 ^a	255.6 ^{ab}	171.0 ^a	193.9 ^a	233.2 ^{ab}	212.7 ^a	242.3 ^a	300.5 ^{ab}
No	210.3	247.8	291.9 ^b	156.1	183.9	219.2 ^b	151.6	171.7	211.7 ^b	157.4	178.5	229.9 ^b	145.6	165.5	201.9 ^b	115.4	134.0	160.8 ^b	152.3	174.2	216.1 ^b
Disabled																					
Yes	304.0 ^a	356.0 ^a	441.0 ^{ab}	212.2 ^a	241.4 ^a	297.9 ^{ab}	204.9 ^a	232.4 ^a	278.3 ^{ab}	209.1 ^a	241.2 ^a	298.5 ^{ab}	199.2 ^a	224.9 ^a	267.2 ^{ab}	159.2 ^a	182.8 ^a	219.5 ^{ab}	204.6 ^a	233.8 ^a	284.3 ^{ab}
No	227.4	268.9	332.6 ^b	156.7	184.6	219.1 ^b	153.1	173.3	214.6 ^b	156.4	177.5	229.0 ^b	143.3	163.3	199.8 ^b	117.9	136.6	164.6 ^b	152.9	175.1	218.1 ^b
Age																					
85+ Years	290.2 ^a	358.0 ^a	436.4 ^{ab}	186.7 ^a	212.5 ^a	252.3 ^{ab}	173.0 ^a	200.4 ^a	274.2 ^{ab}	182.6 ^a	209.4 ^a	264.0 ^{ab}	151.1	178.7	205.9 ^b	132.9	153.8 ^a	176.9 ^{ab}	175.2 ^a	203.2 ^a	247.8 ^{ab}
Less than 85	232.2	273.6	338.5 ^b	161.3	189.3	225.9 ^b	158.0	178.6	220.4 ^b	161.1	183.0	235.1 ^b	149.2	169.4	207.0 ^b	122.6	141.9	171.2 ^b	157.8	180.3	224.2 ^b
Area of Residence																					
Rural	112.1 ^a	115.8 ^a	129.3 ^{ab}	157.8	196.6	253.4 ^{ab}	121.1 ^a	138.5 ^a	161.9 ^{ab}	136.6 ^a	158.6 ^a	194.1 ^{ab}	131.3 ^a	146.7 ^a	183.7 ^{ab}	125.6 ^a	144.4 ^a	175.1 ^{ab}	131.4 ^a	150.9 ^a	185.1 ^{ab}
Urban	237.7	281.3	348.9 ^b	182.6	188.8	222.6 ^b	165.9	187.4	233.2 ^b	168.7	190.8	247.9 ^b	165.4	190.3	227.7 ^b	116.3	136.9	162.1 ^b	168.6	192.6	240.3 ^b
ALL BENEFICIARIES	233.8	275.9	341.6 ^b	162.0	189.9	226.6 ^b	158.5	179.2	221.3 ^b	161.7	183.7	236.0 ^b	149.2	169.7	207.0 ^b	122.9	142.2	171.4 ^b	158.2	181.0	224.9 ^b

NOTES:

^a Significantly different from the comparison group at the 0.05 level.^b Significantly different from 1991 to 1993 at the 0.05 level.

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries.

TABLE C-16

CARDIAC CATHETERIZATIONS BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS			
	Reduction 1			2			3			4			5			Increase 6						
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	
Shortage Areas																						
All Shortage Combined	22.5	21.2 *	18.6 **	20.9 *	22.3 *	22.8 **	19.1 *	20.2 *	20.3 *	19.4	22.9	22.1 *	18.6 *	20.0 *	20.6 **	18.9 *	21.0 *	23.1 *	19.3 *	21.4 *	21.3 *	
Urban	22.7	21.2 *	18.6 **	21.4 *	21.7 *	21.9 *	18.8 *	20.1 *	20.3 *	18.5 *	21.4	19.5 *	19.1	20.2 *	21.6	17.0 *	20.3 *	20.1 **	19.0 *	20.8 *	20.3 *	
Rural	9.6 *	21.3	5.7 *	19.5 *	24.0 *	25.3 **	20.9 *	20.9 *	19.9 *	21.1	25.4	25.3 **	18.3 *	19.9 *	20.1 *	20.0 *	21.3 *	24.7 *	19.7 *	22.3 *	23.0 *	
Non-Shortage	23.6	23.4	23.9	24.3	29.0	28.6 *	23.6	25.1	24.7	21.2	23.8	23.1	21.2	23.4	23.6 *	21.3	22.9	23.0 *	22.2	24.6	24.2 *	
Poor Areas																						
All Poor Combined	17.8 *	19.4 *	19.4 **	19.4 *	19.8 *	21.0 **	18.8 *	20.9 *	20.1 *	15.2 *	17.3 *	17.3 *	18.6 *	20.9 *	21.5 **	17.6 *	19.7 *	19.3 **	17.3 *	19.3 *	19.2 *	
Urban	18.0 *	19.5 *	19.5 **	19.2 *	19.5 *	20.3 *	18.1 *	20.6 *	19.5 *	14.3 *	16.3 *	15.9 *	15.2 *	17.5 *	17.3 **	14.6 *	16.0 *	15.5 *	16.3 *	18.3 *	17.7 *	
Rural	9.3 *	11.9 *	13.9 *	22.2 *	23.0 *	29.2 *	22.8	22.9 *	24.0	20.6	23.5	25.8 *	23.6 *	25.8 *	27.6 **	18.6 *	20.9 *	20.6 **	21.0 *	23.0 *	24.2 *	
Non Poor	23.9	23.5	24.0	24.4	29.2	28.7 *	23.9	25.3	24.9	21.6	24.3	23.5	21.1	23.3	23.4 *	21.5	23.1	23.2 *	22.4	24.8	24.4 *	
Races																						
Black	16.7 *	16.6 *	15.7 *	16.1 *	17.7 *	18.5 **	17.5 *	19.2 *	18.8 *	15.3 *	16.6 *	16.9 *	15.3 *	17.1 *	18.2 **	10.2 *	13.0 *	17.1 **	15.4 *	17.1 *	17.3 *	
White	24.9	24.5	24.8	25.0	30.2	29.5 *	24.5	25.7	25.4	21.9	24.7	23.8	21.8	23.8	23.8	22.9	24.2	24.2	23.0	25.3	24.1 *	
Medicaid Eligible																						
Yes	22.0 *	20.6 *	20.0 **	24.6	26.5 *	27.8 *	22.4	23.8	23.6	17.5 *	21.0	20.8 *	19.0 *	19.3 *	20.7 *	17.9 *	21.2 *	19.0 *	20.1 *	22.1 *	22.0 *	
No	23.8	23.7	24.4	24.1	29.0	28.4 *	23.5	25.0	24.6	21.4	24.0	23.3	21.2	23.5	23.6 *	21.7	23.1	23.6 *	22.3	24.6	24.3 *	
Disabled																						
Yes	38.8 *	37.7 *	36.7 **	37.7 *	41.3 *	41.7 **	33.4 *	36.2 *	33.6 *	26.9 *	33.4 *	31.9 **	31.2 *	34.1 *	33.2 *	29.1 *	33.2 *	30.6 *	31.0 *	35.1 *	33.6 *	
No	22.2	22.1	22.6	22.7	27.5	27.0 *	22.2	23.6	23.4	20.4	22.8	22.0	19.8	21.9	22.2	20.1	21.5	21.9 *	21.0	23.2	23.0 *	
Age																						
85+ Years	5.0 *	5.0 *	4.8 *	3.7 *	4.8 *	4.4 **	3.6 *	4.8 *	4.2 *	2.8 *	3.7 *	4.0 **	2.3 *	3.0 *	3.3 **	2.3 *	2.8 *	3.3 **	3.0 *	3.9 *	3.9 *	
Less than 85	24.1	23.8	24.4	24.7	29.4	29.1 *	23.9	25.4	25.1	21.6	24.4	23.7	21.5	23.8	24.0 *	21.7	23.4	23.6 *	22.6	25.0	24.7 *	
Area of Residence																						
Rural	14.8 *	13.9 *	16.0 *	26.3 *	30.4	30.7 **	24.1	26.8	25.5	20.8	24.2	24.0 *	19.4 *	22.5	23.2 *	21.6	23.2	23.3 *	21.3	24.1	24.1 *	
Urban	23.9	23.6	24.1	23.8	28.5	28.0 *	23.2	24.4	24.2	21.1	23.7	22.8	22.4	23.8	23.5	20.3	22.0	22.1 *	22.3	24.5	24.0 *	
ALL BENEFICIARIES																						
	23.6	23.3	23.8	24.1	28.7	28.4 *	23.3	24.8	24.4	21.1	23.8	23.0	21.0	23.2	23.4 *	21.2	22.9	23.0 *	22.0	24.4	24.1 *	

NOTES:

* Significantly different from the comparison group at the 0.05 level

** Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE C-17

UPPER GI ENDOSCOPIES BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS			
	Reduction 1			2			3			4			5			Increase 6						
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	
Shortage Areas																						
All Shortage Combined	41.2	39.4	39.3 *	39.8	41.7	42.1 ^b	40.5	39.3	41.8	35.2	35.7	39.1 ^b	31.5	34.3	36.0 ^b	37.6 *	39.0 *	40.9 ^{bc}	36.2	36.9	37.4	
Urban	41.4	39.7	39.7	42.0 *	44.1 *	44.2 *	42.1 *	40.4	43.5	38.5	37.8	41.1	36.8 *	40.0 *	41.6 *	38.6 *	43.1 *	46.5 ^{bc}	39.9 *	39.8 *	42.4 *	
Rural	27.6 *	19.2 *	15.6 *	33.0 *	34.6 *	36.2 ^{bc}	31.1 *	33.3 *	31.6 *	29.5 *	32.0 *	35.7 ^b	29.1 *	31.7 *	33.5 ^b	37.0 *	36.9	38.0	30.3 *	32.5 *	34.7 ^{bc}	
Non-Shortage	42.3	40.9	42.5	37.6	39.4	40.4	37.8	38.2	39.9	34.9	36.1	38.2	33.7	34.8	35.4	35.3	37.0	38.7 ^b	36.0	37.0	38.6 ^b	
Poor Areas																						
All Poor Combined	50.4 *	51.3 *	51.1 *	40.0 *	44.5 *	42.4 ^b	40.6	41.8 *	42.6	35.3	38.6	41.7 ^b	36.4 *	39.2 *	39.8 ^{bc}	36.9	37.6	41.0 ^{bc}	38.1 *	40.4 *	42.1 *	
Urban	50.8 *	51.7 *	51.6 *	40.0	44.8 *	42.5 ^b	41.6 *	42.4 *	43.0	35.3	38.4	42.1 ^b	36.4 *	36.9	38.1 *	34.9	37.4	39.0 ^b	38.5 *	40.7 *	42.4 *	
Rural	25.7 *	28.4	28.7 *	39.5	41.1	40.7	35.1	38.0	40.4 ^b	35.2	39.5	39.7 ^b	36.5 *	42.5 *	42.3 ^{bc}	37.5 *	37.7	41.6 *	36.2	39.2 *	41.0 *	
Non Poor	41.8	40.2	41.9	37.6	39.2	40.4	37.7	37.9	39.7	34.9	35.8	38.0	33.4	34.6	35.2	35.3	37.1	38.6 ^b	35.9	36.7	38.3 ^b	
Races																						
Black	44.8	44.8 *	47.5 ^{bc}	43.6 *	46.7 *	48.2 ^{bc}	45.2 *	46.7 *	46.2 *	38.1	40.5 *	41.6 ^b	41.0 *	42.7 *	45.0 ^{bc}	35.4	39.3 *	40.2 ^b	40.8 *	43.1 *	44.0 *	
White	43.4	41.9	43.3	38.0	39 ^a	40.5	37.9	37.8	39.2	35.4	36.2	38.3	33.5	34.4	35.0	36.1	37.1	38.9 ^b	36.3	36.9	38.4	
Medicaid Eligible																						
Yes	61.7 *	62.9 *	65.5 ^{bc}	65.5 *	64.8 *	68.6 *	61.0 *	66.2 *	66.1 ^{bc}	50.4 *	52.4 *	55.1 *	54.0 *	54.4 *	57.4 *	52.0 *	56.3 *	57.3 ^{bc}	56.2 *	58.7 *	60.6 *	
No	39.4	37.6	38.9	34.7	36.7	37.3	35.1	34.7	36.5	33.5	34.5	36.6	31.6	32.9	33.1	32.8	34.0	35.6 ^b	33.8	34.6	36.0	
Disabled																						
Yes	58.2 *	58.2 *	57.2 *	54.1 *	56.2 *	56.8 ^{bc}	52.8 *	55.5 *	55.4 *	46.5 *	46.5 *	49.7 *	45.7 *	51.4 *	49.8 ^{bc}	45.9 *	49.8 *	52.8 ^{bc}	48.9 *	51.3 *	52.3 *	
No	40.8	39.3	41.1	36.0	37.8	38.7	36.3	36.3	38.2	33.6	34.9	37.0	32.1	32.9	33.7	33.9	35.4	36.8 ^b	34.6	35.4	37.0	
Age																						
85+ Years	53.5 *	53.0 *	58.3 ^{bc}	49.5 *	49.6 *	51.5 *	46.9 *	46.8 *	46.6 *	40.6 *	43.0 *	44.6 ^{bc}	36.6 *	38.4 *	37.2	39.7 *	41.7 *	43.5 ^{bc}	42.7 *	44.0 *	44.9 *	
Less than 85	42.0	40.5	41.9	37.4	39.2	40.1	37.7	38.0	39.8	34.8	35.8	38.1	33.5	34.7	35.4	35.3	37.0	38.6 ^b	35.8	36.8	38.4 *	
Area of Residence																						
Rural	23.5 *	24.1 *	23.5 *	33.6 *	34.1 *	38.0 ^b	36.0	40.2	40.7 ^b	31.3 *	33.4	33.0 *	32.1	33.7	33.6 *	35.8	37.1	38.8 ^b	33.3 *	35.2 *	35.7 *	
Urban	42.9	41.4	43.1	38.4	40.3	40.8	38.4	37.9	39.9	35.9	36.8	39.8	34.9	35.7	37.1	34.3	37.0	38.6 ^b	37.1	37.7	39.7	
ALL BENEFICIARIES	42.3	40.8	42.4	37.7	39.5	40.5 ^b	38.0	38.3	40.0	34.9	36.0	38.3	33.5	34.8	35.4	35.4	37.1	38.7 ^b	36.0	37.0	38.6 ^b	

NOTES:

* Significantly different from the comparison group at the 0.05 level

^b Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE C-18

SIGMOIDOSCOPIES BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction 1			2			3			4			5			Increase 6					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combined	37.4 *	32.2 *	23.1 ^{ac}	35.7 *	30.7 *	27.6 ^{ac}	27.8 *	25.0 *	22.6 ^{ac}	32.2 *	30.3 *	25.3 ^{ac}	37.6 *	35.8 *	30.0 ^{ac}	28.3 *	23.9 *	21.3 ^{ac}	32.6 *	30.0 *	25.7 *
Urban	37.3 *	31.9 *	23.1 ^{ac}	37.8 *	30.8 *	28.6 ^{ac}	26.8 *	23.9 *	22.0 ^{ac}	31.8 *	29.9 *	24.8 ^{ac}	35.7 *	33.4 *	29.6 ^{ac}	33.7 *	29.7 *	25.2 ^b	31.3 *	28.4 *	24.7 *
Rural	44.3 *	52.4 *	23.8 ^{ac}	29.3 *	30.4 *	24.5 ^{ac}	33.9 *	31.6 *	26.2 ^{ac}	33.0 *	30.9 *	26.2 ^{ac}	38.4 *	36.8 *	30.1 ^{ac}	25.3 *	20.8 *	19.3 ^{ac}	34.5 *	32.5 *	27.1 *
Non-Shortage	59.1	51.8	43.7 ^b	53.9	47.7	43.5 ^b	43.2	39.9	35.7 ^b	46.3	41.2	38.8 ^b	45.2	41.5	37.2 ^b	31.0	29.9	26.3 ^b	45.4	41.2	37.5 ^b
Poor Areas																					
All Poor Combined	30.1 *	27.0 *	20.9 ^{ac}	33.0 *	29.2 *	29.2 ^{ac}	27.6 *	24.8 *	21.8 ^{ac}	31.7 *	28.1 *	25.1 ^{ac}	32.2 *	29.6 *	26.4 ^{ac}	25.1 *	23.5 *	21.2 ^{ac}	29.9 *	26.8 *	24.0 ^{ac}
Urban	30.2 *	27.0 *	20.9 ^{ac}	33.2 *	29.3 *	29.4 ^{ac}	27.9 *	25.5 *	22.4 ^{ac}	32.4 *	28.9 *	25.9 ^{ac}	33.7 *	31.1 *	27.6 ^{ac}	25.1 *	22.7 *	22.8 ^{ac}	30.7 *	27.7 *	24.8 ^{ac}
Rural	24.2 *	27.9 *	22.7 *	29.7 *	27.8 *	26.6 ^{ac}	25.2 *	21.0 *	18.6 ^{ac}	27.5 *	23.2 *	20.6 ^{ac}	29.9 *	27.4 *	24.8 ^{ac}	25.1 *	23.7 *	20.7 ^{ac}	26.8 *	23.8 *	21.2 *
Non Poor	60.2	52.6	44.4 ^b	54.3	48.0	43.6 ^b	44.0	40.7	36.4 ^b	48.7	41.7	39.2 ^b	45.2	41.6	37.2 ^b	31.4	30.2	26.5 ^b	45.9	41.6	37.8 ^b
Races																					
Black	26.3 *	22.3 *	17.4 ^{ac}	30.6 *	28.1 *	27.3 ^{ac}	25.9 *	23.6 *	21.3 ^{ac}	29.6 *	27.1 *	23.2 ^{ac}	30.1 *	29.0 *	25.3 ^{ac}	20.2 *	17.6 *	17.3 ^{ac}	27.7 *	25.5 *	22.7 ^{ac}
White	61.3	53.8	45.9 ^b	56.0	49.3	45.1 ^b	44.7	41.2	37.0 ^b	47.7	42.4	39.6 ^b	46.7	42.8	38.0 ^b	32.7	31.5	27.5 ^b	47.0	42.5	38.6 ^b
Medicaid Eligible																					
Yes	24.3 *	21.8 *	18.9 ^{ac}	27.6 *	25.8 *	21.6 ^{ac}	26.1 *	23.5 *	19.9 ^{ac}	26.5 *	24.2 *	21.4 ^{ac}	28.2 *	23.6 *	21.6 ^{ac}	23.0 *	20.3 *	18.4 ^{ac}	26.3 *	23.5 *	20.0 ^{ac}
No	63.6	55.6	46.8 ^b	56.1	49.4	45.4 ^b	44.3	41.0	37.0 ^b	47.2	42.1	39.7 ^b	46.2	42.8	38.3 ^b	32.2	31.2	27.5 ^b	46.7	42.4	38.7 ^b
Disabled																					
Yes	42.1 *	36.4 *	30.4 ^{ac}	38.1 *	31.8 *	30.4 ^{ac}	29.9 *	27.8 *	24.8 ^{ac}	33.1 *	29.5 *	28.8 ^{ac}	32.4 *	31.0 *	27.7 ^{ac}	24.0 *	22.6 *	18.9 ^{ac}	32.1 *	29.1 *	26.8 ^{ac}
No	60.0	52.6	44.3 ^b	54.9	48.6	44.3 ^b	43.7	40.3	36.2 ^b	46.8	41.8	39.1 ^b	46.1	42.3	37.8 ^b	31.9	30.7	27.2 ^b	45.2	41.8	38.0 ^b
Age																					
85+ Years	34.8 *	34.6 *	58.3 ^{ac}	31.2 *	28.6 *	25.0 ^{ac}	25.8 *	22.9 *	21.4 ^{ac}	29.0 *	26.8 *	21.7 ^{ac}	25.9 *	23.4 *	20.7 *	20.7 *	20.4 *	17.6 ^{ac}	27.4 *	25.2 *	21.8 ^{ac}
Less than 85	59.2	51.7	41.9 ^b	53.8	47.6	43.5 ^b	42.8	39.6	35.4 ^b	45.9	41.0	38.6 ^b	45.2	41.6	37.3 ^b	31.2	30.0	26.4 ^b	45.2	41.0	37.3 ^b
Area of Residence																					
Rural	53.4 *	42.6 *	36.5 ^{ac}	42.1 *	36.7 *	33.4 ^{ac}	31.5 *	28.2 *	24.0 ^{ac}	39.5 *	33.8 *	31.0 ^{ac}	41.4 *	37.6 *	33.5 ^{ac}	28.0 *	27.8 *	24.4 ^{ac}	36.7 *	33.1 *	29.5 ^{ac}
Urban	58.7	51.6	43.4 ^b	55.0	48.7	44.4 ^b	44.5	41.3	37.2 ^b	47.1	42.5	40.0 ^b	47.6	44.3	39.7 ^b	38.0	34.2	30.4 ^b	47.9	43.4	39.7 ^b
ALL BENEFICIARIES	58.6	51.3	43.2 ^b	53.3	47.1	43.0 ^b	42.3	39.1	35.0 ^b	45.4	40.6	38.0 ^b	44.7	41.1	36.7 ^b	30.9	29.7	26.1 ^b	44.7	40.6	36.8 ^b

NOTES:

- * Significantly different from the comparison group at the 0.05 level.
- ^a Significantly different from 1991 to 1993 at the 0.05 level.

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE C-19

COLONOSCOPIES BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction 1			2			3			4			5			Increase 6					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combined	41.2 *	41.0 *	45.8 **	32.5 *	36.7 *	35.2 **	33.4 *	35.1 *	35.7 *	33.9 *	37.4 *	37.7 *	32.1 *	35.5 *	38.1 ^b	34.8 *	38.3	40.9 **	33.5 *	36.5 *	37.5 **
Urban	41.2 *	41.1 *	46.1 **	33.1 *	37.1 *	35.4 **	34.1 *	35.9 *	36.7 *	35.7	39.3	38.5 *	34.4	39.3	44.9 **	37.5 *	43.8 *	46.2 **	35.0 *	38.1 *	38.9 **
Rural	40.9 *	34.4 *	23.7 *	30.7 *	35.5 *	34.6 **	29.6 *	30.6 *	29.8 *	30.8 *	34.3 *	36.4 **	31.1 *	33.8 *	35.0 **	33.4	35.4 *	38.1 ^b	31.0 *	33.9 *	35.3 **
Non-Shortage	51.8	54.6	54.0	43.5	47.1	49.1 *	40.7	42.2	42.8	38.0	42.2	43.8 *	36.0	38.4	38.7 ^b	33.4	37.7	38.9 ^b	39.1	42.2	43.3 ^b
Poor Areas																					
All Poor Combined	44.5 *	42.7 *	44.1 *	32.4 *	36.0 *	36.7 **	34.5 *	37.4 *	37.1 **	36.2	38.7 *	39.6 **	34.3	37.2	40.4 ^b	29.4 *	32.6 *	34.7 **	34.9 *	37.5 *	38.4 **
Urban	45.0 *	43.2 *	44.3 *	32.2 *	35.9 *	36.7 **	35.4 *	38.2 *	37.9 *	36.7	39.0	40.0	34.0	35.7 *	39.0 ^b	29.1 *	32.9 *	33.7 **	35.8 *	38.1 *	38.9 **
Rural	15.9 *	14.4 *	30.0 *	34.6 *	37.3 *	36.3 *	29.3 *	33.0 *	32.3 **	33.3	37.1	37.6 **	34.8	39.5	42.4 **	29.5 *	32.5 *	35.0 ^b	31.6 *	35.2 *	36.6 **
Non Poor	52.0	54.9	54.3	43.7	47.2	49.2 ^b	41.0	42.3	43.0	37.9	42.2	43.8 *	35.8	38.2	38.6 ^b	33.8	38.1	39.3 ^b	39.1	42.2	43.3 ^b
Races																					
Black	35.6 *	36.6 *	36.4 *	35.2 *	36.9 *	39.2 **	38.4	37.6 *	38.5 *	32.5 *	35.9 *	36.9 **	32.3 *	37.1	38.4 ^b	27.9 *	32.2 *	34.1 **	33.8 *	36.3 *	37.5 **
White	54.3	57.1	56.8	44.5	47.9	50.3 ^b	41.2	42.9	43.6	38.7	43.0	44.5 ^b	36.8	38.5	39.1	34.7	38.8	39.9 ^b	39.9	42.9	44.1 ^b
Medicaid Eligible																					
Yes	38.3 *	40.5 *	41.5 **	38.0 *	39.3 *	41.4 **	36.9 *	38.7 *	39.9	32.7 *	36.0 *	36.9 **	30.6 *	33.1 *	34.6 **	30.5 *	34.4 *	35.3	34.1 *	36.6 *	37.8 **
No	53.5	56.2	55.6	43.7	47.5	49.5 ^b	40.7	42.2	42.7	38.2	42.4	44.1 ^b	36.2	38.7	39.1 ^b	33.9	38.2	39.6 ^b	39.3	42.5	43.6 ^b
Disabled																					
Yes	47.4 *	50.8 *	51.5 **	42.5	46.2	46.7 ^b	38.3	41.0	40.4	36.8	39.4	39.3 *	33.2 *	38.7	38.0 ^b	31.4 *	35.6 *	38.5 ^b	36.8 *	40.3 *	40.4 ^b
No	51.9	54.5	54.0	43.2	46.7	48.8 ^b	40.5	41.9	42.6	37.8	42.2	44.0 ^b	36.1	38.1	38.8 ^b	33.7	38.0	39.1 ^b	39.0	42.1	43.3 ^b
Age																					
85+ Years	36.0 *	40.4 *	41.9 **	28.6 *	32.9 *	33.4 **	26.8 *	29.0 *	29.5 **	26.5 *	28.4 *	27.7 *	22.5 *	23.8 *	25.3 **	24.6 *	27.2 *	26.1 **	26.3 *	28.5 *	28.7 **
Less than 85	52.0	54.6	54.2	43.5	47.1	49.1 ^b	40.7	42.2	42.8	38.0	42.3	44.0 ^b	36.1	38.6	39.1 ^b	33.7	38.0	39.4 ^b	39.1	42.3	43.4 ^b
Area of Residence																					
Rural	26.9 ^b	28.0 *	28.0 *	41.3	45.8	50.4 ^b	34.2 *	37.5 *	38.3 **	34.4 *	37.9 *	37.8 **	32.4 *	35.4 *	34.6 *	32.6 *	36.9 *	38.7 ^b	33.7 *	37.2 *	37.7 ^b
Urban	52.4	55.1	54.7 ^b	43.4	46.8	48.4 ^b	41.5	42.7	43.2	38.7	43.0	45.1 ^b	38.8	40.7	42.4 ^b	35.6	39.5	39.6 ^b	40.7	43.7	45.0 ^b
ALL BENEFICIARIES	51.6	54.2	53.8 ^b	43.1	46.7	48.6 ^b	40.3	41.8	42.4	37.7	41.9	43.5 ^b	35.8	38.2	38.7 ^b	33.4	37.7	39.0 ^b	38.7	41.9	43.0 ^b

NOTES:

* Significantly different from the comparison group at the 0.05 level

^b Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE C-20

CORONARY ARTERY BYPASS GRAFT SURGERIES BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction 1			2			3			4			5			Increase 6					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combine	3.9 *	3.6 *	3.3 *	3.5 *	4.1 *	4.2 ^{ab}	4.1 *	4.1 *	3.7 *	4.3	4.5	4.1	4.6	4.7	4.6	4.2	4.7	4.8 ^b	4.3 *	4.4 *	4.2 *
Urban	4.0 *	3.5 *	3.3 *	3.4 *	3.9 *	4.0 ^{ab}	4.0 *	3.9 *	3.5 *	4.0	4.4	3.2 *	3.9 *	4.1 *	4.1 *	3.1 *	4.0 *	3.9 ^{ab}	3.9 *	4.1 *	3.5 *
Rural	0.0 *	8.6	2.1	3.8 *	4.5 *	5.0 ^b	4.7	5.1	4.5	4.9	4.6	5.6	4.9	5.0	4.9	4.8	5.1	5.3	4.8	4.9	5.2
Non-Shortage	4.7	4.4	4.7	5.0	5.6	5.1	5.2	5.5	5.2	4.7	5.2	5.1	4.9	5.1	5.0	4.6	4.8	5.0	4.9	5.2	5.1
Poor Areas																					
All Poor Combined	3.5 *	3.4 *	3.1 ^{ab}	3.4 *	3.0 *	3.3 *	4.0 *	3.8 *	3.6 *	3.0 *	3.2 *	3.2 *	3.7 *	3.8 *	3.8 *	3.7 *	4.2 *	4.7 ^b	3.5 *	3.5 *	3.5 *
Urban	3.6 *	3.5 *	3.2 *	3.3 *	2.9 *	3.0 *	3.8 *	3.6 *	3.3 *	2.9 *	3.1 *	2.7 *	2.9 *	3.0 *	2.8 *	3.2 *	3.7 *	6.1 ^{ab}	3.3 *	3.3 *	3.1 *
Rural	1.3 *	1.0 *	1.7 *	4.3	4.4 *	7.2 ^{ab}	5.2	4.7	4.8	3.8 *	3.7 *	6.0 ^b	5.1	4.8	5.1	3.8 *	4.3	4.2 *	4.4 *	4.3 *	5.0 ^b
Non Poor	4.7	4.4	4.7	5.0	5.7	5.1	5.3	5.6	5.3	4.8	5.3	5.2	4.9	5.1	5.0	4.6	4.9	5.0	5.0	5.3	5.1
Races																					
Black	1.9 *	2.0 *	1.5 ^{ab}	1.9 *	2.1 *	2.2 ^{ab}	2.6 *	2.9 *	2.6 *	1.8 *	2.1 *	2.6 ^{ab}	2.1 *	2.2 *	2.3 *	1.6 *	1.7 *	1.5 *	2.0 *	2.3 *	2.4 ^{ab}
White	5.0	4.5	5.0	5.2	5.8	5.3	5.5	5.8	5.4	5.0	5.5	5.3	5.1	5.2	5.1	4.9	5.2	5.4	5.2	5.5	5.3
Medicaid Eligible																					
Yes	3.3 *	3.6 *	3.4 *	3.3 *	3.5 *	3.6 *	3.8 *	3.9 *	4.0 *	3.1 *	3.2 *	3.1 *	2.8 *	3.1 *	3.4 *	3.1 *	3.2 *	3.2 *	3.3 *	3.4 *	3.5 *
No	4.8	4.5	4.8	5.1	5.8	5.2	5.3	5.6	5.3	4.8	5.3	5.2	5.1	5.2	5.1	4.8	5.1	5.3	5.0	5.4	5.2
Disabled																					
Yes	7.9 *	6.5 *	6.6 ^{ab}	6.3 *	7.0 *	6.7 *	6.2 *	6.6 *	5.9	6.4 *	6.4 *	5.7	6.5 *	6.2 *	6.0 *	6.2 *	6.5 *	6.1 *	6.4 *	6.5 *	6.0 ^{ab}
No	4.4	4.2	4.5	4.8	5.4	4.9	5.0	5.3	5.0	4.5	5.0	4.9	4.7	4.9	4.8	4.3	4.6	4.8	4.7	5.0	4.9
Age																					
85+ Years	0.6 *	0.6 *	0.8 *	0.4 *	0.6 *	1.0 ^{ab}	0.5 *	0.5 *	0.7 ^{ab}	0.3 *	0.5 *	0.6 *	0.3 *	0.4 *	0.3 *	0.2 *	0.4 *	0.4 ^{ab}	0.4 *	0.5 *	0.6 ^{ab}
Less than 85	4.8	4.5	4.8	5.0	5.7	5.2	5.3	5.6	5.3	4.8	5.3	5.2	5.0	5.2	5.1	4.7	4.9	5.1	5.0	5.3	5.2
Area of Residence																					
Rural	3.2 *	3.9	3.4 *	5.2	5.3	5.7	5.4	5.8	5.1	4.6	5.1	5.4	4.8	5.0	4.8	4.6	4.8	5.1	4.8	5.1	5.1
Urban	4.7	4.4	4.7	4.9	5.6	5.0	5.1	5.4	5.1	4.7	5.2	4.9	5.0	5.1	5.0	4.4	4.8	4.7	4.9	5.2	5.0
ALL BENEFICIARIES																					
	4.6	4.4	4.7	4.9	5.5	5.1	5.1	5.4	5.1	4.7	5.2	5.0	4.9	5.1	4.9	4.6	4.8	5.0	4.8	5.2	5.0

NOTES:

* Significantly different from the comparison group at the 0.05 level.

^a Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries

TABLE C-21

PTCAs BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction 1			2			3			4			5			Increase 6					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993			
Shortage Areas																					
All Shortage Combine	3.2 *	3.1 *	3.2 *	3.2 *	3.6 *	4.5 **	2.5 *	3.0 *	3.3 **	3.0 *	4.3	4.5 *	3.0 *	3.5	3.7 **	3.4 *	3.6 *	4.4 *	2.9 *	3.7 *	4.0 **
Urban	3.2 *	3.2 *	3.3 *	3.1 *	3.1 *	4.0 **	2.4 *	3.0 *	3.3 *	2.5 *	3.8	3.6 *	2.5 *	3.0 *	3.8 **	3.1 *	2.8 *	3.0 *	2.5 *	3.3 *	3.5 **
Rural	0.0 *	0.0 *	1.2 *	3.5 *	4.9	5.7 *	3.5 *	3.6	3.0 *	4.0	5.2	6.1 **	3.2	3.7	3.7 *	3.6	4.0	5.2 **	3.6 *	4.3	4.7 *
Non-Shortage	4.2	4.4	5.0 *	4.3	5.2	5.3 *	4.4	4.4	5.0	4.1	4.6	4.6	3.8	4.2	4.8 *	3.9	4.1	4.1	4.1	4.5	4.8 *
Poor Areas																					
All Poor Combined	2.3 *	2.6 *	3.7 **	3.2 *	3.0 *	3.6 *	2.9 *	3.1 *	3.1 *	2.3 *	3.2 *	3.3 **	2.9 *	4.0	3.9 **	2.7 *	3.1 *	3.6 *	2.6 *	3.2 *	3.4 **
Urban	2.3 *	2.6 *	3.7 **	3.2 *	3.1 *	3.6 *	2.9 *	3.1 *	3.0 *	2.0 *	2.6 *	3.0 **	2.4 *	3.4 *	3.0 **	2.4 *	2.4 *	2.8 **	2.4 *	2.9 *	3.1 **
Rural	1.5 *	2.7	0.5 *	2.5 *	2.4 *	3.2 *	3.0 *	3.1 *	3.3 *	4.0	6.8 *	5.4 *	3.6	4.9	5.4 *	2.9 *	3.3 *	3.8 *	3.3 *	4.5	4.4 **
Non Poor	4.3	4.5	5.1	4.3	5.2	5.4 *	4.5	4.4	5.1	4.1	4.7	4.7	3.8	4.1	4.8 *	4.0	4.2	4.1	4.2	4.5	4.8 *
Races																					
Black	1.8 *	1.6 *	2.4 **	2.2 *	2.2 *	2.7 **	1.9 *	2.5 *	2.4 *	1.9 *	2.2 *	2.5 *	2.1 *	2.4 *	3.3 **	1.4 *	1.7 *	1.5 *	1.9 *	2.2 *	2.5 **
White	4.4	4.7	5.1	4.4	5.4	5.5 *	4.5	4.5	5.2	4.2	4.8	4.7	3.9	4.3	4.8 *	4.3	4.4	4.3	4.3	4.7	4.9 *
Medicaid Eligible																					
Yes	3.1 *	3.0 *	3.2 *	4.2	4.9	4.9	3.5	3.6	3.8 *	2.5 *	3.6	3.4	2.7 *	2.8 *	3.9 *	2.7 *	3.6	2.7 *	3.1 *	3.6 *	3.7 **
No	4.4	4.6	5.3 *	4.2	5.2	5.3 *	4.4	4.4	5.0	4.1	4.7	4.7	3.9	4.3	4.8 *	4.1	4.2	4.3	4.2	4.6	4.9 *
Disabled																					
Yes	6.2 *	6.4 *	6.8 **	5.9 *	6.6 *	7.6 **	5.6 *	5.3 *	6.0 *	3.9	5.2	5.8 **	4.7 *	5.5 *	6.7 **	4.2	5.1 *	4.6	4.8 *	5.4 *	6.1 **
No	4.0	4.2	4.8 *	4.1	5.0	5.1 *	4.1	4.2	4.8	4.0	4.5	4.4	3.6	4.0	4.5 *	3.9	4.0	4.0	4.0	4.3	4.6 *
Age																					
85+ Years	0.7 *	1.3 *	1.1 **	0.7 *	0.9 *	0.9 *	0.5 *	1.2 *	0.7 *	0.7 *	0.8 *	0.7 *	0.5 *	0.8 *	1.0 **	0.5 *	0.5 *	0.8 **	0.6 *	0.9 *	0.8 **
Less than 85	4.3	4.4	5.1 *	4.3	5.2	5.4 *	4.4	4.4	5.0	4.1	4.7	4.7	3.8	4.2	4.9 *	4.0	4.2	4.2	4.1	4.6	4.9 *
Area of Residence																					
Rural	3.3 *	2.3 *	3.7 *	4.6	5.5	5.8 *	3.6	4.6	4.4 *	3.9	5.1	4.7	3.4	4.0	4.9 *	4.0	4.3 *	4.1	3.8	4.5	4.6 *
Urban	4.2	4.4	5.0 *	4.2	5.1	5.2 *	4.4	4.2	5.0	4.0	4.5	4.6	4.1	4.3	4.6	3.7	3.6	4.0	4.2	4.4	4.8 *
ALL BENEFICIARIES																					
	4.2	4.4	5.0 *	4.2	5.1	5.3 *	4.3	4.3	4.9	4.0	4.6	4.6	3.8	4.1	4.7 *	3.9	4.1	4.1	4.0	4.5	4.7 *

NOTES:

* Significantly different from the comparison group at the 0.05 level.

** Significantly different from 1991 to 1993 at the 0.05 level.

SOURCE: CHER analysis of Medicare Part A claims and denominator for a sample of beneficiaries.

TABLE C-22

JOINT REPLACEMENTS BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS															ALL AREAS					
	Reduction 1			2			3			4			5			Increase 6					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combine	7.0	6.9	6.1*	6.0*	6.3*	6.9 ^{ab}	4.7*	4.9*	4.7*	6.7	6.8	6.9	6.9	8.6	8.2*	6.1	6.4*	6.2*	6.2*	6.7*	6.6 ^{ab}
Urban	7.0	6.9	6.2*	5.6*	5.6*	6.6 ^{ab}	4.1*	4.5*	4.2*	5.6	5.9	5.2*	5.6*	6.4*	6.6 ^{ab}	5.7*	6.2*	5.7*	5.1*	5.9*	5.2*
Rural	5.1	5.4	4.2	7.2	8.7*	7.7	8.0*	7.6	7.7	8.5*	8.5	9.6*	7.5	9.6	8.9	6.4	6.4*	6.5*	7.8*	8.7*	8.8 ^{ab}
Non-Shortage	6.5	6.8	7.3	7.5	7.6	8.2	6.7	7.0	7.4	6.9	7.3	8.0	7.5	8.6	8.7*	6.5	7.4	7.7*	7.0	7.5	7.9*
Poor Areas																					
All Poor Combined	5.8*	5.8*	5.3*	4.9*	5.1*	6.6 ^{ab}	4.6*	4.9*	4.8*	4.0*	4.9*	4.7*	5.5*	5.8*	5.8*	5.0*	5.6*	5.8 ^{ab}	4.5*	5.1*	5.1 ^{ab}
Urban	5.8*	5.8*	5.3*	4.7*	4.9*	6.4 ^{ab}	4.5*	4.7*	4.5*	3.7*	4.6*	4.3*	5.3*	5.5*	5.0*	4.1*	5.1*	4.6*	4.3*	4.9*	4.7*
Rural	2.9*	4.4	3.9*	6.2*	7.2	8.3*	5.2*	5.9*	6.4 ^{ab}	5.6*	6.3	6.5 ^{ab}	5.8*	6.2*	6.9 ^{ab}	5.3*	5.7*	6.3 ^{ab}	5.5*	6.1*	6.5 ^{ab}
Non Poor	6.6	6.9	7.4	7.6	7.6	8.3	6.8	7.1	7.5	7.2	7.4	8.2	7.5	8.7	8.8*	6.6	7.6	7.8*	7.1	7.6	8.1*
Races																					
Black	5.3*	5.3*	6.4 ^{ab}	4.5*	5.6*	5.6 ^{ab}	4.5*	4.6*	4.7*	4.3*	4.6*	4.8*	4.9*	5.3*	5.1*	4.3*	4.9*	4.6*	4.5*	4.8*	4.9 ^{ab}
White	6.9	7.3	7.8	7.8	7.8	8.5	6.8	7.3	7.7	7.2	7.5	8.3	7.6	8.8	8.9*	6.8	7.7	8.0*	7.2	7.7	8.3*
Medicaid Eligible																					
Yes	6.5	6.8	5.9*	7.0	5.7*	6.5*	5.1*	5.4*	6.1	5.6	5.4*	6.1*	6.4*	7.6	5.9*	5.2*	5.9*	6.5 ^{ab}	5.8*	5.9*	6.2*
No	6.5	6.8	7.5*	7.5	7.7	8.4	6.8	7.1	7.4	7.0	7.4	8.1	7.6	8.7	8.9*	6.7	7.7	7.9*	7.1	7.6	8.1*
Disabled																					
Yes	7.9*	7.9*	8.3*	9.0*	8.1	8.4	6.9	7.9	7.6	7.5	8.2	8.0	7.4	8.9	7.9	6.6	7.1	7.5*	7.4*	8.1*	7.9*
No	6.4	6.7	7.2	7.3	7.5	8.2	6.6	6.8	7.2	6.8	7.1	7.9	7.5	8.6	8.7*	6.5	7.4	7.7*	6.9	7.4	7.9*
Age																					
85+ Years	5.9*	5.0*	5.4 ^{ab}	4.8*	4.6*	4.5*	4.1*	4.2*	3.5 ^{ab}	3.7*	4.1*	3.4*	4.0*	4.9*	4.8 ^{ab}	4.2*	4.8*	3.7 ^{ab}	4.1*	4.4*	3.9*
Less than 85	6.6	6.9	7.3	7.5	7.6	8.3	6.7	7.0	7.4	7.0	7.3	8.0	7.5	8.7	8.8*	6.5	7.5	7.8*	7.0	7.5	8.0*
Area of Residence																					
Rural	4.0*	5.8*	6.0 ^{ab}	8.8*	8.6*	9.0	7.2	8.0*	8.4 ^{ab}	8.1	8.5	8.6	8.3*	8.8	9.3	6.2*	7.4	7.5 ^{ab}	7.7*	8.3*	8.5 ^{ab}
Urban	6.6	6.9	7.3	7.3	7.4	8.1	6.5	6.7	7.0	6.6	6.9	7.7	6.7	8.4	8.0*	7.1	7.4	8.4*	6.7	7.1	7.6*
ALL BENEFICIARIES	6.5	6.8	7.3	7.5	7.5	8.2	6.6	6.9	7.3	6.9	7.2	7.9	7.4	8.6	8.6*	6.5	7.4	7.7*	6.9	7.4	7.9*

NOTES:

* Significantly different from the comparison group at the 0.05 level
 † Significantly different from 1991 to 1993 at the 0.05 level.

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries

TABLE C-23

AR THROSCOPES BY EXPECTED MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	EXPECTED MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction 1			2			3			4			5			Increase 6					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combined	5.4 *	8.4	8.5 *	4.3	5.3 *	4.2 *	2.9	3.5	3.4 *	2.6	3.3	4.1 *	2.5	3.6	3.1	2.6	3.6	3.4 *	2.8 *	3.7 *	3.7 *
Urban	5.5 *	8.3	8.6 *	3.5 *	4.9 *	3.4 *	2.6 *	3.3	3.2 *	2.5	2.8	3.3	1.5 *	2.6 *	2.0 *	3.3	4.6 *	4.8 *	2.6 *	3.4 *	3.3 *
Rural	0.0 *	14.8	0.0 *	6.7 *	6.6	6.7	4.5	5.0	4.1	2.8	4.1	5.5 *	3.0	4.1	3.5	2.2 *	3.0	2.7 *	3.2 *	4.2	4.4
Non-Shortage	7.6	8.2	8.3	4.8	6.7	5.8	3.9	4.4	5.1	3.2	4.0	4.1	2.8	4.0	3.7 *	3.3	3.6	3.6	3.7	4.5	4.6
Poor Areas																					
All Poor Combined	4.4 *	3.9 *	6.2 *	2.3 *	3.1 *	3.0 *	2.2 *	2.3 *	2.7 *	2.1 *	2.2 *	2.7 *	1.9 *	2.7 *	3.1 *	2.1 *	2.8 *	3.2 *	2.2 *	2.4 *	2.9 *
Urban	4.5 *	3.9 *	6.2 *	2.3 *	3.0 *	2.9 *	2.1 *	2.1 *	2.7 *	2.0 *	2.0 *	2.5 *	1.3 *	2.3 *	1.9 *	2.0 *	2.3 *	2.2 *	2.1 *	2.3 *	2.7 *
Rural	3.1 *	3.5 *	5.3	2.4 *	4.2 *	3.9 *	2.9 *	3.0 *	2.5 *	2.7	3.1	3.8 *	2.8	3.1 *	5.0	2.1 *	3.0	3.5 *	2.6 *	3.1 *	3.7 *
Non Poor	7.7	8.5	8.5	4.9	6.8	5.8	4.1	4.6	5.2	3.2	4.1	4.2	2.9	4.0	3.7 *	3.4	3.6	3.7	3.7	4.6	4.6
Races																					
Black	2.5 *	3.8 *	4.9 *	1.5 *	2.1 *	2.0 *	1.5 *	2.2 *	2.1 *	1.8 *	2.5 *	1.9 *	1.2 *	2.0 *	1.6 *	1.1 *	1.7 *	1.5 *	1.6 *	2.2 *	1.9 *
White	8.3	8.9	8.5	5.2	7.1 *	6.1	4.2	4.7	5.3	3.3	4.1	4.3	2.9	4.1	3.9 *	3.6	3.8	3.9	3.8	4.7	4.8 *
Medicaid Eligible																					
Yes	4.6 *	4.7 *	6.7 *	3.8	4.3 *	3.5 *	2.5 *	2.8 *	3.3 *	2.1	2.8	2.6 *	1.9 *	1.8 *	2.8	1.9 *	2.1 *	2.4 *	2.5 *	2.8 *	3.1 *
No	8.0	8.7	8.6	4.9	6.9	5.9	4.1	4.6	5.2	3.2	4.0	4.2	2.9	4.2	3.8 *	3.5	3.8	3.8	3.7	4.7	4.7 *
Disabled																					
Yes	7.2	8.0	8.9	6.0 *	6.6	6.5	3.9	3.8	5.5 *	3.9	3.8	3.8	3.0	3.5	3.9 *	3.4	3.5	4.2 *	4.0	4.1	4.7
No	7.6	8.2	8.3	4.7	6.7	5.6	3.9	4.4	4.9	3.0	3.9	4.1	2.8	4.0	3.7	3.3	3.6	3.5	3.8	4.5	4.5
Age																					
85+ Years	1.3 *	1.9 *	1.0 *	0.7 *	1.8 *	0.7 *	0.6 *	1.3 *	0.8 *	0.5 *	0.6 *	1.4 *	0.4 *	0.6 *	0.7 *	0.6 *	0.4 *	0.6 *	0.6 *	0.9 *	1.0 *
Less than 85	7.7	8.4	8.6	4.9	6.8	5.8	4.0	4.5	5.1	3.2	4.0	4.2	2.9	4.0	3.8 *	3.4	3.7	3.7	3.7	4.6	4.6
Area of Residence																					
Rural	2.4 *	2.4 *	3.4 *	5.2	6.1	5.9	3.0	3.8	3.6 *	3.3	4.0	4.6 *	3.2	3.9	3.6	2.9 *	3.2 *	3.4	3.3	3.9 *	4.0 *
Urban	7.7	8.4	8.5	4.7	6.7	5.7	4.1	4.5	5.2	3.1	3.9	3.9	2.5	4.0	3.8 *	4.2	4.4	4.2	3.8	4.7	4.7 *
ALL BENEFICIARIES	7.5	8.2	8.4	4.8	6.7	5.7	3.9	4.4	5.0	3.1	3.9	4.1	2.8	3.9	3.7 *	3.3	3.6	3.6	3.6	4.5	4.5

NOTES:

* Significantly different from the comparison group at the 0.05 level
 † Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

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