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**Tracking Performance of  
the Medicare+Choice  
Program: Results from  
Medicare HEDIS<sup>®</sup> 1999  
and 2000**

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## **I. INTRODUCTION**

### **A. POLICY CONTEXT**

The Medicare + Choice (M+C) program, enacted in the Balanced Budget Act of 1997 (BBA 97), introduced substantial changes to Medicare managed care. The M+C program is intended to give Medicare beneficiaries wider health plan choices and to help control the growth of Medicare spending. Regulatory changes under the program include expanded eligibility requirements for managed care organizations (MCOs) contracting with Medicare, a new payment system, and new administrative, marketing, and quality requirements.

Since the BBA 97 was passed, many participating MCOs have reduced their service area or have not renewed their Medicare contracts. At the same time, few new types of plans have joined the program (MedPAC 2000). These events have potentially important implications for the M+C program in delivering care to Medicare beneficiaries. In particular, beneficiaries' access to high-quality medical care may be affected as participating MCOs change how they deliver or pay for services in response to regulations or payment changes and as many MCOs exit the Medicare market, potentially disrupting continuity of care. Performance of the M+C program is also likely to vary across local health care markets and over time as new regulations take effect.

As part of the BBA 97, Congress mandated efforts to collect data that could be used to assess M+C performance. These efforts, assumed by the Centers for Medicare & Medicaid Services (CMS), include the Medicare Consumer Assessment of Health Plans Survey (CAHPS), Medicare Health Plan and Employer Data Information Set (HEDIS)<sup>®</sup>, and the Medicare Health Outcomes Survey (HOS).

In this report, we use data from Medicare HEDIS<sup>®</sup> 1999 and 2000 to examine access to and quality of care that Medicare beneficiaries receive from MCOs. The report was prepared by Mathematica Policy Research, Inc. (MPR) under a contract with CMS to monitor trends in the M+C program. The analysis presented in this report complements earlier analysis conducted on Medicare MCO enrollees' perspectives on access and quality as measured through the Medicare CAHPS surveys (Lake and Rosenbach 2001).

## **B. OBJECTIVES OF THIS ANALYSIS**

The main goal of this analysis is to provide a preliminary and exploratory assessment of variation in HEDIS<sup>®</sup> indicators of Medicare MCOs' performance. More specifically, the analysis is intended to:

- Identify key areas of Medicare MCO performance in providing access to care and quality of care for Medicare beneficiaries, with measures of (a) the availability of ambulatory services, (b) rates of breast cancer screening for women, and (c) rates of eye exams for diabetics
- Examine variation in the selected performance measures by market area, region, and type of markets, including the identification of higher- and lower-performing areas
- Describe changes in performance measures from 1998 to 1999

Another goal of the analysis is to examine methodological issues involved in using HEDIS<sup>®</sup> data for assessing MCO performance regarding access to and quality of care in different markets and for tracking changes in performance over time. In particular, we describe how the sample design affects the monitoring of performance in the M+C program. We conclude that Medicare HEDIS<sup>®</sup> is not suitable for monitoring the effects of some recent trends in the Medicare market--including non-renewal of MCO contracts and MCO service area reductions--because the HEDIS<sup>®</sup> measures cover enrollees continuously enrolled in MCOs that were operational in a given year. At the same time, we are not able to know how MCO performance measures compare to performance in the Medicare fee-for-service environment, which is an important

performance benchmark. Yet, the data do provide estimates of M+C performance in markets for the part of the M+C program that has remained stable.

## **II. DATA AND METHODS**

### **A. DESIGN OF MEDICARE HEDIS<sup>®</sup>**

The HEDIS<sup>®</sup> data collection effort was developed by the National Committee for Quality Assurance (NCQA) to allow for measurement and reporting of health plans' performance. Effective January 1, 1997, CMS has required annual HEDIS<sup>®</sup> reporting for M+C and other MCOs (for services delivered in the previous calendar year). HEDIS<sup>®</sup> measures address the following areas:

- Health plan stability
- Cost of care
- Effectiveness of care
- Access and availability of care
- Use of services
- Health plan descriptive information

Selected Medicare HEDIS<sup>®</sup> measures for individual Medicare MCOs are now contained in CMS's Medicare Compare database and are listed on CMS's Medicare Web page ([www.medicare.gov](http://www.medicare.gov)). These publicly available results address (1) ambulatory visits to the doctor, (2) breast cancer screening for female Medicare beneficiaries, (3) eye exams for Medicare beneficiaries with diabetes, and (4) beta blockers provided to Medicare beneficiaries after a heart attack. The data analyzed in this report cover services delivered during the years 1998 and 1999. These data are contained in the Medicare HEDIS<sup>®</sup> 1999 and Medicare HEDIS<sup>®</sup> 2000 data sets, respectively (National Committee on Quality Assurance 1999).



Some MCOs are not required to submit HEDIS<sup>®</sup> data if they meet certain criteria. For example, MCOs are not required to submit data on 1999 services (for Medicare HEDIS<sup>®</sup> 2000) if:

- An MCO's first enrollment occurred on February 1, 1999 or later or if its Medicare enrollment was below 1,000 as of July 1, 1999.
- An MCO's contract was terminated on or before January 1, 2000.

Similar criteria for participation existed for Medicare HEDIS<sup>®</sup> reporting on 1998 services.

## **B. SELECTION OF SURVEY MEASURES**

For this analysis we chose to focus on three Medicare HEDIS<sup>®</sup> measures:

1. The percentage of Medicare MCO enrollees who had an ambulatory medical care visit in 1998 or 1999
2. The percentage of Medicare MCO enrollees who received a breast cancer screening over a two-year period, ending in 1998 or 1999.
3. The percentage of Medicare enrollees diagnosed with diabetes who received an eye exam in 1998 or 1999.<sup>1</sup>

These measures were selected because they have adequate numbers of Medicare beneficiaries for making reliable estimates at the metropolitan statistical area (MSA) level, they are included in the measures reported publicly by CMS on the performance of individual Medicare MCOs, and they address important areas of recommended care for Medicare beneficiaries that were not covered in our earlier analysis of Medicare CAHPS data. We have

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<sup>1</sup>Medicare HEDIS<sup>®</sup> 2000 includes five new patient-level measures of comprehensive diabetes care, in addition to eye exams. With available documentation, we believe that we have identified the variable in the data that corresponds with delivery of eye exams, but we were not able to do this with complete certainty, because of the lack of specificity in the data documentation. Our selection of the variables analyzed here was made after reviewing HEDIS<sup>®</sup> 2000 technical documentation (NCQA 1999) and after consultation with CMS staff.

not included the measure on use of beta-blockers because of concerns about the interpretation of this measure at the MSA level; this measure may reflect local provider practice patterns rather than MCO performance. Two of the three measures (breast cancer screening and diabetic eye exams) address specific areas of clinical performance. Yet it is also likely that these are correlated with other broader areas of performance in Medicare MCOs.

The three selected measures address the health care experiences of Medicare beneficiaries who were continuously enrolled in a Medicare MCO throughout 1998 or 1999. Two of the measures impose additional sampling restrictions. The eye exam measure is limited to those diagnosed with diabetes.<sup>2</sup> The breast cancer screening measure is collected for those with two years of continuous enrollment and is limited to females ages 52 to 69. Breast cancer screenings are recommended every one to two years for those over age 50, but are not necessarily recommended for those age 70 or older, depending on the willingness and appropriateness for particular patients (Goldberg and Chavin 1997). For this analysis, we have limited our attention to those ages 65 to 69, because of the different health care needs and delivery patterns of the Medicare under-65 disabled population.

For the breast cancer screening and eye exam measures, Medicare MCOs have a choice of submitting either administrative data on the universe of Medicare MCO enrollees meeting the criteria for each measure or data on a systematic sample of enrollees under the “hybrid” method. For the hybrid method, the systematic sample for relevant measures is developed by selecting every  $i_{th}$  member from the entire eligible population of enrollees in the reporting health plan

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<sup>2</sup>Diagnoses of diabetes for HEDIS<sup>®</sup> can be made either through analysis of pharmacy claims data (for example, prescription for insulin) or through medical claims data providing evidence of two face-to-face medical encounters with different dates of service that include a diabetes diagnoses. ICD-9-CM codes are 250, 357.2, 362.0, 366.41, 648.0. (NCQA 1999).

(sorted by last name, first name, date of birth), such that the resulting sample has a desired sample size (NCQA 1999). Because MCOs may use this hybrid method for the diabetic eye exam and breast cancer screening measures, the sample size within an MSA is not directly related to an MCO's share in enrollment in that MSA. We adjust for this by weighting MCO-level estimates within each MSA by the MCO's share in total enrollment within the MSA. For the ambulatory visit measure, MCOs are required to submit data on all eligible continuously enrolled Medicare beneficiaries, so no weighting was required.

### **C. ANALYTIC APPROACH**

The primary units of analysis in this report are the 69 MSAs nationwide in the M+C monitoring system. These include all MSAs with a population of at least 1.5 million people and all other MSAs with a Medicare MCO penetration rate of at least 30 percent.<sup>3</sup> This definition of MSAs was designed to yield a set of markets that are important in terms of monitoring the implementation of the M+C program. However, the results from these 69 MSAs are not necessarily representative of all MSAs nationwide.

We restricted our analysis to Medicare HEDIS<sup>®</sup> sample members living in these 69 MSAs and assigned each respondent to one of the 69 MSAs based on their county of residence in July of the data collection year (that is, as of July 1998 for analysis of the Medicare HEDIS<sup>®</sup> 1999 data or July 1999 for the analysis of Medicare HEDIS<sup>®</sup> 2000 data). County of residence for each enrollee was determined using CMS's Enrollment Data Base. This allowed us to generate MSA-level estimates for 1998 and 1999. By also assigning MSAs to their associated CMS region, we

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<sup>3</sup>See Chapter II in Nelson et al. (2000) for a more detailed discussion of the methods used to define these 69 MSAs as units of analysis and the rationale for these criteria.

were able to generate estimates for all 10 CMS regions.<sup>4</sup> In addition, we classified MSAs according to the following market characteristics:

- Number of Medicare MCO enrollees in the MSA in 1998 or 1999
- Medicare MCO penetration in the MSA in 1998 or 1999
- Change in Medicare MCO penetration from 1997 to 1999
- Number of Medicare MCOs operating in the market in 1998 or 1999
- Change in the number of Medicare MCOs from 1997 to 1999
- Medicare + Choice payment rates in the MSA as a percentage of average U.S. payments

Because of the sampling restrictions placed on the measures of breast cancer screenings and eye exams, sample sizes are considerably smaller than those for the measure of ambulatory care. We considered the need for performing tests of statistical significance, but concluded that this is not straightforward because of the alternative sampling approaches that are permitted (that is, developing estimates based on the universe of administrative data or a “hybrid” approach). The sampling approaches were devised for developing estimates from patient-level data aggregated to the MCO level, whereas this analysis aggregates patient-level data to the MSA level. In our tables in the Appendix, we have flagged those MSA-level estimates where at least one MCO had fewer than 50 observations and weighting by enrollment had a large impact on the weight given to that particular MCO.<sup>5</sup> The flag indicates that estimates for these MSAs may have somewhat

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<sup>4</sup>Given how the 69 markets were selected nationwide, estimates at the regional level represent the largest MSAs (or smaller, high Medicare MCO penetration MSAs) in those regions and are not necessarily representative of all geographic areas in a given region.

<sup>5</sup> We flagged those MSA level estimates where three conditions were met by an MCO within the MSA. First, fewer than 50 observations were submitted. Second, the MCO had more than 5 percent of enrollment within the MSA. Third, the ratio of the MCO’s share in total Medicare managed care enrollment within the MSA relative to the MCO’s share of HEDIS observations within the MSA (for a particular estimate) exceeded 5.

larger variances than those for other MSAs due to the large weights for observations from large MCOs with small samples.

After we constructed the MSA-level indicators, we proceeded with the analysis in three steps. First, we analyzed variation among the 69 MSAs for the three selected HEDIS<sup>®</sup> measures. Second, we assessed whether there were early national trends in any of the three measures of M+C performance between 1998 and 1999. Third, we examined trends by CMS region and MSAs classified by selected market characteristics.

### **III. RESULTS**

#### **A. DOES PERFORMANCE VARY BY LOCAL MARKET?**

For measurement years 1998 and 1999, we found substantial variation in performance among the 69 MSAs for all three measures. For example, for the middle half of the distribution (25<sup>th</sup> to 75<sup>th</sup> percentile) of MSAs, biannual breast cancer screening rates ranged from 68.3 percent to 77.5 percent in 1999 (see Table III.1). Annual rates of eye exams for Medicare MCO enrollees with diabetes ranged from 54.5 percent to 71.9 percent. Variation in rates of ambulatory medical visits was somewhat smaller, ranging from 84.2 percent to 93.1 percent.

To identify higher- and lower-performing MSAs using the Medicare HEDIS<sup>®</sup> data, we selected markets that consistently ranked in the top and bottom third of the 69 MSAs for all three measures. These MSAs and their MSA-level Medicare HEDIS<sup>®</sup> results are shown in Table III.2. Among the higher-performing MSAs in 1999, rates of ambulatory visits ranged from 93.8 percent to 97.3 percent, rates of breast cancer screenings among female enrollees ranged from 77.7 percent to 89.4 percent, and rates of eye exams among diabetic enrollees ranged from 70.2 percent to 81.1 percent. Among the lower-performing MSAs in 1999, rates of ambulatory visits ranged from 52.5 percent to 84.9 percent, rates of breast cancer screenings ranged from 55.1 to 71.4 percent, and rates of eye exams ranged from 35.7 to 57.3 percent.

A complete list of estimates for all 69 MSAs for each of the three measures is presented in Appendix A (Tables A.1 to A.3). Markets with a sample size of fewer than 200 enrollees are flagged, indicating that the estimates for these markets are less precise than for markets with a larger sample size.

TABLE III.1

VARIATION IN SELECTED MEDICARE HEDIS<sup>®</sup> MEASURES AMONG 69 MSAS,  
IN 1998 AND 1999

HEDIS <sup>®</sup> Measures <sup>a</sup>	Percentage of Medicare MCO Enrollees	
	1998	1999
At least one ambulatory visit during the year, among all enrollees <sup>b</sup>		
Highest ranking MSA	100.0	97.3
90th percentile	95.8	94.9
75th percentile	92.8	93.1
50th percentile	90.1	89.6
25th percentile	85.2	84.2
10th percentile	77.8	76.9
Lowest ranking MSA	63.7	52.5
Breast cancer screening over past two years, among female enrollees ages 65-69 <sup>c</sup>		
Highest ranking MSA	83.9	89.4
90th percentile	80.1	80.2
75th percentile	76.9	77.5
50th percentile	73.8	74.4
25th percentile	67.7	68.3
10th percentile	59.2	63.1
Lowest ranking MSA	45.4	55.1
Eye exam during year, among enrollees with diabetes <sup>d</sup>		
Highest ranking MSA	85.3	84.0
90th percentile	69.4	76.8
75th percentile	61.1	71.9
50th percentile	66.8	64.1
25th percentile	55.1	54.5
10th percentile	34.0	49.4
Lowest ranking MSA	19.5	18.3

SOURCE: Medicare HEDIS<sup>®</sup> 1999 and 2000.

<sup>a</sup>Percentiles for each measure are based on separate MSA rankings for 1998 and 1999.

<sup>b</sup>Includes only enrollees age 65 years or older who were continuously enrolled in a Medicare MCO during the year.

<sup>c</sup>Includes only female enrollees age 65 to 69 who were continuously enrolled in a Medicare MCO during the past two years.

<sup>d</sup>Includes only enrollees with diabetes who were continuously enrolled in an Medicare MCO during the year.

TABLE III.2  
HIGHER AND LOWER PERFORMING MSAS IN 1999  
FOR THREE MEDICARE HEDIS® MEASURES

	Percentage of Medicare MCO Enrollees With:		
	At Least One Ambulatory Visit In Past Year <sup>a</sup>	A Breast Cancer Screening In Past Two Years <sup>b</sup>	A Diabetic Eye Exam in Past Year <sup>c</sup>
All 69 MSAs	85.5	72.7	61.0
Higher Performing MSAs <sup>d</sup>			
Dubuque, IA	97.3	79.9	73.4
Williamsport, PA	96.5	84.0	75.1
Medford, OR	96.0	80.2	77.2
Killeen, TX	95.5	89.4	76.4
Grand Junction, CO	95.1	78.8	81.1
Honolulu, HI	95.0	77.7	71.9
Rochester, NY	95.0	81.2	80.4
State College, PA	94.8	83.3	71.6
Salem, OR	94.6	78.2	70.2
Boston, MA	94.5	82.1	72.2
Boulder, CO	93.8	80.5	78.2
Lower Performing MSAs <sup>e</sup>			
Santa Barbara, CA	84.9	64.3	53.5
San Antonio, TX	84.1	55.5	57.3
Miami, FL	83.2	71.4	54.4
Atlanta, GA	79.5	70.6	49.5
Dallas, TX	77.1	55.1	35.7
Baltimore, MD	76.0	64.5	52.8
Houston, TX	74.4	62.0	38.8
Ventura, CA	64.2	65.8	55.7
Chicago, IL	52.5	64.0	50.8

SOURCE: Medicare HEDIS® 2000.

<sup>a</sup> Includes only enrollees age 65 years or older who were continuously enrolled in a Medicare MCO in 1999.

<sup>b</sup> Includes only female enrollees age 65 to 69 who were continuously enrolled in a Medicare MCO during 1998 and 1999.

<sup>c</sup> Includes only enrollees with diabetes who were continuously enrolled in an Medicare MCO in 1999.

<sup>d</sup> Includes MSAs who consistently ranked in the top third of all 69 MSAs on each of the three measures shown. MSAs are sorted according to percentage of enrollees who had at least one ambulatory visit during the past year.

<sup>e</sup> Includes MSAs who consistently ranked in the bottom third of all 69 MSAs on each of the three measures shown. MSAs are sorted according to percentage of enrollees who had at least one ambulatory visit during the past year.



## **B. ARE THERE EARLY TRENDS IN M+C PERFORMANCE?**

### **1. Nationwide Trends for All 69 MSAs**

Nationwide rates of ambulatory visits and breast cancer screenings changed very little from 1998 through 1999, with a decrease of 1.2 percentage points and an increase of 0.8 percentage points, respectively (see Tables III.3 and III.4). The small changes found in HEDIS<sup>®</sup> data are similar to the small negative trends observed in the 1998 and 1999 Medicare CAHPS data, as reported earlier (Lake and Rosenbach 2001). Nonetheless, consistently recurring changes over several years, even if small in any given year, could lead to larger changes in the performance of the Medicare + Choice program in the longer term.

In contrast, annual rates of eye exams for diabetic Medicare MCO enrollees increased substantially, rising 8.0 percentage points, from 53.0 percent in 1998 to 61.0 percent in 1999 (see Table III.5). The reason for this large increase is not known, but it is possible that the results may be at least in part due to methodological changes. Of particular concern, we found that the sample size for the 69 MSAs reported for the eye exam measure was considerably smaller in 1999 than in 1998 (113,062 enrollees in 1999 versus 169,253 enrollees in 1998).<sup>6</sup>

### **2. Trends by Region and Types of Markets**

#### **a. CMS Region**

Variation among the 10 CMS regions is substantial, but not as large as MSA-level variation in either 1998 or 1999 (see Tables III.3 to III.5). For example, rates of ambulatory visits in 1999

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<sup>6</sup>In contrast, sample sizes for the ambulatory visit and breast cancer screenings increased from 1998 to 1999 (see Tables A.1 and A.2).

TABLE III.3

AMBULATORY VISIT RATES BY CMS REGION AND  
SELECTED MARKET CHARACTERISTICS, 1998-1999

	Percentage of Medicare MCO Enrollees With At Least One Ambulatory Visit <sup>a</sup>		
	1998	1999	Difference (1999-1998)
All 69 MSAs	86.8	85.5	-1.2
CMS region			
Region 1	92.1	94.5	2.5
Region 2	91.4	91.5	0.2
Region 3	89.0	82.0	-7.0
Region 4	88.9	87.5	-1.4
Region 5	80.1	78.0	-2.1
Region 6	80.3	83.1	2.8
Region 7	91.2	85.3	-5.9
Region 8	93.4	92.4	-0.9
Region 9	85.1	83.8	-1.3
Region 10	90.4	89.3	-1.1
Medicare MCO enrollment in MSA <sup>b</sup>			
Less than 50,000 enrollees	89.7	87.9	-1.8
50,000-99,999 enrollees	86.2	87.8	1.6
100,000-149,999 enrollees	86.8	78.9	-7.9
150,000 or more enrollees	85.6	85.7	0.1
Medicare MCO penetration in MSA <sup>b</sup>			
Less than 10 percent	92.4	88.7	-3.7
10 to 24 percent	85.5	84.8	-0.8
25 to 40 percent	86.9	85.6	-1.3
Greater than 40 percent	87.2	86.0	-1.2
Change in Medicare MCO penetration, 1997-1999			
Decrease in penetration-	83.3	85.6	2.3
0 to 5 percent increase	87.1	85.1	-2.0
Greater than 5 percent increase	86.8	88.2	1.3
Number of Medicare MCO contracts in MSA <sup>b</sup>			
One	97.4	95.6	-1.8
Two to four	89.8	83.4	-6.4
Five to eight	87.9	87.0	-0.9
Nine or more	85.2	85.0	-0.2
Change in the number of Medicare MCO contracts, 1997-1999			
Decrease of 4 or more	84.6	82.8	-1.8
Decrease of 1 to 3	86.8	83.9	-2.9
No change	87.4	88.4	1.1
Increase of 1	87.0	87.8	0.8
Increase of 2 or more	89.6	88.8	-0.8
Ratio of Medicare payment rate in MSA to national average <sup>b</sup>			
Less than 1.00	91.8	90.9	-0.9
1.00 to 1.15	87.4	88.8	1.4
Greater than 1.15	76.3	83.9	7.6

SOURCE: Medicare HEDIS® 1999 and 2000

<sup>a</sup>Includes only enrollees age 65 years or older who were continuously enrolled in a Medicare MCO in 1998 or 1999.

<sup>b</sup>Market characteristics were classified separately for each year, using 1998 and 1999 data.

TABLE III.4

## BREAST CANCER SCREENING RATES, BY HCFA REGION AND SELECTED MARKET CHARACTERISTICS, 1998-1999

	Percentage of Medicare MCO Enrollees With a Breast Cancer Screening <sup>a</sup>		
	1998	1999	Difference (1999-1998)
All 69 MSAs	71.9	72.7	0.8
HCFA region			
Region 1	81.2	81.0	-0.2
Region 2	65.1	72.5	7.4
Region 3	70.9	70.8	0.0
Region 4	74.7	72.4	-2.3
Region 5	63.4	71.7	8.3
Region 6	64.2	63.6	-0.6
Region 7	74.4	76.5	2.1
Region 8	75.4	74.3	-1.1
Region 9	73.1	73.8	0.7
Region 10	77.4	72.8	-4.6
Medicare MCO enrollment in MSA <sup>b</sup>			
Less than 50,000 enrollees	71.2	71.8	0.7
50,000-99,999 enrollees	71.9	72.7	0.8
100,000-149,999 enrollees	71.1	72.6	1.4
150,000 or more enrollees	72.7	73.1	0.4
Medicare MCO penetration in MSA <sup>b</sup>			
Less than 10 percent	65.7	74.1	8.4
10 to 24 percent	67.1	70.2	3.1
25 to 40 percent	73.5	72.1	-1.4
Greater than 40 percent	74.2	75.1	0.9
Change in Medicare MCO penetration, 1997-1999			
Decrease in penetration	71.8	67.5	-4.2
0 to 5 percent increase	71.7	72.6	0.9
Greater than 5 percent increase	72.5	74.6	2.1
Number of Medicare MCO contracts in MSA <sup>b</sup>			
One	77.4	84.4	7.0
Two to four	73.5	72.2	-1.3
Five to eight	70.2	72.6	2.4
Nine or more	72.1	72.9	0.8
Change in the number of Medicare MCO contracts, 1997-1999			
Decrease of 4 or more	73.1	76.1	3.0
Decrease of 1 to 3	71.6	72.1	0.4
No change	71.8	70.4	-1.4
Increase of 1	69.8	73.3	3.5
Increase of 2 or more	75.2	76.2	1.0
Ratio of Medicare payment rate in MSA to national average <sup>b</sup>			
Less than 1.00	77.5	75.1	-2.4
1.00 to 1.15	73.0	73.2	0.2
Greater than 1.15	70.4	72.2	1.8

SOURCE: Medicare HEDIS® 1999 and 2000.

<sup>a</sup> Includes only enrollees with diabetes who were continuously enrolled in an Medicare MCO in 1998 or 1999.<sup>b</sup> Market characteristics were classified separately using 1998 and 1999 data.<sup>c</sup> After dropping 9 markets where 25 percent or more of Medicare managed care enrollees were in cost contracts, we find that the lowest payment rate markets performed better than higher payment rate markets in 1998 but not in 1999. All 9 markets were in the lowest payment rate group (ratio less than 1.00). For 1998, the estimate becomes 77.3 and for 1999 it becomes 71.0 after dropping those 9 markets. The 9 markets were Killeen, Medford, Dubuque, Minneapolis, Eugene, Grand Junction, Honolulu, Rochester and Salem.

TABLE III.5

## DIABETIC EYE EXAM RATES, BY HCFA REGION AND SELECTED MARKET CHARACTERISTICS, 1998-1999

	Percentage of Medicare MCO Enrollees With a Diabetic Eye Exam <sup>a</sup>		
	1998	1999	Difference (1999-1998)
All 69 MSAs	53.0	61.0	8.0
HCFA region			
Region 1	64.0	70.4	6.4
Region 2	54.5	67.9	13.4
Region 3	47.4	61.6	14.2
Region 4	52.9	49.8	-3.1
Region 5	42.6	58.8	16.1
Region 6	48.8	49.0	0.3
Region 7	33.8	39.0	5.2
Region 8	56.4	69.2	12.8
Region 9	56.8	64.3	7.5
Region 10	56.0	73.8	17.8
Medicare MCO enrollment in MSA <sup>b</sup>			
Less than 50,000 enrollees	54.2	59.6	5.4
50,000-99,999 enrollees	51.2	60.6	9.4
100,000-149,999 enrollees	50.3	61.3	11.0
150,000 or more enrollees	55.7	61.9	6.1
Medicare MCO penetration in MSA <sup>b</sup>			
Less than 10 percent	46.7	70.6	23.9
10 to 24 percent	46.4	58.1	11.6
25 to 40 percent	56.9	58.9	2.1
Greater than 40 percent	53.7	65.3	11.7
Change in Medicare MCO penetration, 1997-1999			
Decrease in penetration	50.4	63.0	12.6
0 to 5 percent increase	54.3	61.1	6.8
Greater than 5 percent increase	49.5	60.2	10.7
Number of Medicare MCO contracts in MSA <sup>b</sup>			
One	64.4	78.6	14.2
Two to four	48.0	54.5	6.5
Five to eight	49.8	62.9	13.1
Nine or more	55.1	61.6	6.5
Change in the number of Medicare MCO contracts, 1997-1999			
Decrease of 4 or more	56.0	72.2	16.2
Decrease of 1 to 3	52.7	61.6	8.9
No change	55.9	58.6	2.7
Increase of 1	45.9	55.6	9.8
Increase of 2 or more	57.6	62.4	4.8
Ratio of Medicare payment rate in MSA to national average <sup>b</sup>			
Less than 1.00	58.6	71.9	13.3
1.00 to 1.15	49.3	56.1	6.8
Greater than 1.15	53.3	60.2	7.0

SOURCE: Medicare HEDIS<sup>®</sup> 1999 and 2000<sup>a</sup>Includes only enrollees with diabetes who were continuously enrolled in an Medicare MCO in 1998 or 1999<sup>b</sup>Market characteristics were classified separately, using 1998 and 1999 data.<sup>c</sup>Even after dropping 9 markets where 25 percent or more of Medicare managed care enrollees were in cost contracts, we find that the lowest payment rate markets performed better than higher payment rate markets in both 1998 and 1999. All 9 markets were in the lowest payment rate group (ratio less than 1.00). For 1998, the estimate becomes 57.1 and for 1999 it becomes 69.8 after dropping those 9 markets. The 9 markets were Killeen, Medford, Dubuque, Minneapolis, Eugene, Grand Junction, Honolulu, Rochester and Salem.

ranged from 78.0 percent in Region 5 to 94.5 percent in Region 1, rates of breast cancer screening ranged from 63.6 percent in Region 6 to 81.0 percent in Region 1, and rates of eye exams ranged from 39.0 percent in Region 7 to 73.8 percent in Region 10. No one region ranked consistently as either the lowest- or highest-performing area across the three measures.

Consistent with national trends, most regions experienced relatively small changes (that is, plus or minus 3 percentage points) in estimates of ambulatory visit rates and breast cancer screening rates between 1998 and 1999, with a few notable exceptions. On the other hand, all but two regions (Regions 4 and 6) experienced substantial increases (of 5 percentage points or more) in the rates of diabetic eye exams 1998 to 1999. Increases for Regions 2, 3, 8 and 10 were the largest, with gains exceeding 10 percentage points over the two-year period.

#### **b. Market Characteristics**

Our analysis of the relationship between market characteristics and Medicare HEDIS<sup>®</sup> measures focused on two aspects of market variation. First, we examined cross-sectional differences in Medicare HEDIS<sup>®</sup> measures among MSAs categorized according to four types of Medicare market characteristics:

1. Levels of Medicare MCO enrollment in an MSA
2. Medicare MCO penetration in an MSA
3. Number of Medicare MCOs in an MSA
4. The ratio of Medicare MCO payment in an MSA to national payment levels

As part of this, we assessed whether cross-sectional variation was consistent for the two years of observations, 1998 and 1999.

Second, we examined changes from 1998 to 1999 in HEDIS<sup>®</sup> performance measures according to two types of Medicare market changes: (1) changes in levels of Medicare MCO

penetration in the MSA from 1997 to 1999 and (2) changes in the number of Medicare MCOs in the MSA from 1997 to 1999.<sup>7</sup> These two types of indicators are discussed separately for each of the three HEDIS<sup>®</sup> measures.

***Ambulatory Visits.*** Estimates of ambulatory visit rates tended to be higher in MSAs with lower levels of Medicare MCO enrollment, a smaller number of Medicare MCOs, and lower Medicare payment rates (Table III.3). However, these associations were the strongest in 1998, as differences across categories of markets became more compressed in 1999. For example, in 1998, 92 percent of enrollees had an ambulatory visit in the lowest payment category (with local-to-national payment ratio of less than 1.00), compared with 76 percent of enrollees in MSAs with higher payment rates (ratio of more than 1.15). In 1999, the ambulatory visit rate was about 91 percent in these lower payment areas, and about 84 percent in higher payment areas. We also found that ambulatory visit rates in 1998 were higher in low Medicare MCO penetration areas, but this difference had largely disappeared in 1999.

The likelihood of an ambulatory visit also tended to be highest in markets with increasing levels of penetration and a stable or growing number of MCOs, with little change in these cross-sectional patterns in 1998 or 1999. For example, visit rates in 1998 ranged from 85 percent in MSAs experiencing a decrease of four or more MCOs from 1997 to 1999, to 90 percent in MSAs experiencing an increase of two or more MCOs during this period. Because changes from 1998 to 1999 in ambulatory visit rates did not vary widely or in any consistent pattern--with changes ranging from minus 3 to plus 2 percentage points across individual categories of the two

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<sup>7</sup>In Tables III.3 to III.5, we also report 1998-1999 changes for the four other types of market characteristics, but these are not the primary subject of our discussion because of the lack of clearly evident patterns and difficulty in interpreting changes given that the same MSAs may not be represented in each year in these categories.

Medicare market change variables--cross-sectional variation in ambulatory rates remained similar in 1999.

***Breast Cancer Screening.*** Breast cancer screening rates in both 1998 and 1999 tended to be higher in MSAs with the lowest payment rates as well as in MSAs with only one Medicare MCO contract (Table III.4). While MSAs with lower penetration rates did not perform as well as higher penetration rate MSAs in 1998, the lower penetration rate MSAs caught up to the higher penetration rate MSAs in 1999. In fact, some of the largest increases in performance between 1998 and 1999 were for markets with the lowest penetration rates.<sup>8</sup> Markets of varying sizes performed similarly in both 1998 and 1999, with average breast cancer screening rates of 71 to 73 percent in both years.

Markets that lost contracts between 1997 and 1999 performed nearly as well in both years as markets that gained contracts or saw no change in the number of contracts. This is reassuring in that MCOs that remain in what may be less stable markets appear to be performing as well on average as MCOs in markets with no net decline in the number of contracts. Another measure related to market stability is the change in penetration rates over the 1997 to 1999 period. In 1998, markets with decreasing M+C MCO penetration rates performed as well as markets that had an increase in their penetration rate over the 1997 to 1999 period. However, this was no longer true in 1999 as the rate of breast cancer screenings declined for markets that saw a decrease in their penetration rate. For this group of markets, the breast cancer screening rate fell by 4.2 percentage points between 1998 and 1999 to 67.5 percent.

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<sup>8</sup> Markets with only one Medicare MCO contract also saw a large increase in their performance between 1998 and 1999. However the number of markets in this group is very small, falling from four in 1998 to just two in 1999.

***Diabetic Eye Exams.*** On average across the 69 markets, performance on diabetic eye exam screenings increased by 8 percentage points between 1998 and 1999. In fact, across all market characteristic groupings, performance on this measure improved between 1998 and 1999. In both 1998 and 1999, eye exam rates for diabetics tended to be highest in MSAs with the lowest payment levels (Table III.5). These rates were also high in both 1998 and 1999 for MSAs with only one Medicare MCO, though there were relatively few MSAs that fell into this category. In 1998, markets with lower penetration rates did not perform as well as those with higher penetration rates. However, as was the case with breast cancer screenings, lower penetration rate markets improved substantially between 1998 and 1999 so that there was no longer a clear relationship between penetration rates and performance on this measure. As was the case with breast cancer screenings, MSA size does not appear to be related to performance. In 1999, diabetic eye exam rates ranged from 60 percent in MSAs with less than 50,000 enrollees to 62 percent in MSAs with more than 150,000 enrollees.

Markets that saw a decrease in their penetration rate over the 1997 to 1999 period performed as well in both years as those that saw an increase in their penetration rate. Markets that saw the number of Medicare MCO contracts decline over the 1997 to 1999 period performed as well as those that saw no change or an increase in the number of contracts over this period. Again this indicates that MCOs that remain in markets that may be experiencing volatility through Medicare MCO exits appear to be performing as well on average as MCOs in those markets that have been more stable in MCO participation.<sup>9</sup> We turn now to discussion of the results, and in

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<sup>9</sup> Our analysis includes only those MCOs that remained in the market. For example, MCOs that left the market in 1999 are not included in the 1998 estimates.



particular, the potential implications of HEDIS<sup>®</sup> sampling criteria for monitoring access and quality in the M+C program.

#### **IV. DISCUSSION**

The results from this analysis provide a preliminary look at how Medicare HEDIS<sup>®</sup> measures varied across M+C market areas during 1998 and 1999. In contrast to the Medicare CAHPS results reported earlier (Lake and Rosenbach 2001), the Medicare HEDIS<sup>®</sup> results indicate a substantial amount of variation in MCO performance across MSAs. These findings suggest that measures of clinical performance collected through claims or encounter data vary more across MSAs than individuals' perceptions of access and quality.

The underlying causes of this market variation remain unknown. In particular, we cannot conclude that differing levels of actual Medicare MCO performance in these markets are the sole or even the most important cause of this observed variation. Other factors may include prevailing patterns or standards of health care delivery in different communities, structural differences in the health care delivery system, and variation in the health care needs, health care seeking behavior, and socioeconomic characteristics of the Medicare MCO enrollees living in each of these communities. Recent work by Zaslavsky et al. (2000) indicates that sociodemographic characteristics may have an important role on HEDIS<sup>®</sup> results.

Higher Medicare HEDIS<sup>®</sup> performance in markets with only one Medicare MCO or markets that received lower M+C payments was an unexpected finding from this preliminary, exploratory analysis. One might hypothesize that larger, more mature, and perhaps more sophisticated Medicare + Choice markets would exhibit the highest levels of performance. But it is also possible that an MCO with no other competitors in the market may have been more able or willing to devote efforts to delivering the types of health care services that are measured in these indicators. It is also notable that lower payments are not associated with lower performance. In fact the opposite is true; lower paying markets performed consistently higher across all three

measures. Given the large number of factors that may play a role in market level differences, it is difficult to draw any firm conclusions from this preliminary analysis, particularly because many of the associations were stronger in 1998 than in 1999.

Similar to the Medicare CAHPS findings reported previously, we observed small nationwide changes from 1998 to 1999 for two of the three Medicare HEDIS<sup>®</sup> measures—that is, the ambulatory visit rates and breast cancer screening rates. Rates of eye exams for diabetics, on the other hand, grew by 8 percentage points, although it is not clear to what extent this result is due to sampling differences between the two years.

It should also be noted that Medicare market characteristics are likely to be correlated with other unmeasured market factors. Thus, they may be measuring some underlying or different set of market characteristics. In addition, this analysis compares only the 69 MSAs identified in this study, so they may not necessarily be representative of MSAs with these market characteristics nationwide.

The finding that the selected HEDIS<sup>®</sup> indicators of performance did not change consistently over time in MSAs categorized according to measures of Medicare market change is not surprising given the HEDIS<sup>®</sup> sampling approach. Like the Medicare CAHPS data, Medicare HEDIS<sup>®</sup> data are designed to measure delivery of services to Medicare beneficiaries while they are continuously enrolled in MCOs. However, in an environment in which a significant percentage of Medicare enrollees either disenroll voluntarily or are forced to leave their MCOs because of contract non-renewals and service area reductions, the HEDIS<sup>®</sup> design does not address these important dynamics when making market-level comparisons or tracking changes over time. For example, one would expect that many of those who disenrolled voluntarily would be more likely to have experienced access-to-care problems. Yet, these disenrollees are not captured in the HEDIS<sup>®</sup> data. CMS has initiated efforts to routinely survey beneficiaries

(through Medicare CAHPS) who voluntarily disenroll and also survey beneficiaries who disenrolled because of service area reductions or contract non-renewals, on an as-needed basis.

We also cannot conclude that aggregate year-to-year changes in performance at the MSA level are the result of changes in performance of individual Medicare MCOs, given the recent trends in MCO withdrawals. For example, if higher performing MCOs have tended to withdraw from MSAs, aggregate performance would tend to decrease in these markets, even if performance in any particular MCO did not change during the period.

Nonetheless, the HEDIS<sup>®</sup> data are useful for tracking MSA-level performance as long as it is recognized that the measures focus on the “stable” part of each MSA’s local M+C market, that is, MCOs that continue to participate in M+C and serve beneficiaries who have remained continuously enrolled in these plans. These MCOs and their enrollees still represent a large part of the M+C market nationwide. For example, about 5 percent of Medicare M+C enrollees were affected by contract nonrenewals and service area reductions in 2000.<sup>10, 11</sup>

Further work needs to be done to understand how sensitive MSA-level estimates may be to underlying differences in the demographic characteristics of Medicare M+C enrollees. For example, MSA-level variations in the ambulatory care visit rate may be a function of the age and gender distribution and the health status of M+C enrollees. To the extent that certain markets

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<sup>10</sup>The percentage of enrollees affected by withdrawals and service area reductions increased to 14.5 percent in 2001.

<sup>11</sup>There is considerable market-level variation in the proportion of enrollees affected by MCO withdrawals and service area reductions. For example, Cook and Kornfield (2001) document examples as high as 46.8 percent of enrollees affected (in San Luis Obispo, CA) in 2000.

have higher enrollment of older or sicker beneficiaries, higher utilization rates may reflect demographic differences in MCO enrollment rather than variations in MCO performance at the local level.

## REFERENCES

- Goldberg, T. and S. Chavin. "Preventative Medicine and Screening in Older Adults." *Journal of the American Geriatric Society*, vol. 45, no. 3, March 1997.
- Lake, T. and M. Rosenbach. "Tracking Performance of the Medicare+Choice Program: Results from the 1998 and 1999 Medicare CAHPS Survey." Final report submitted to CMS. Washington, D.C.: Mathematica Policy Research, Inc. January 18, 2001.
- Zaslavsky, A. et al. "The Impact of Sociodemographic Case Mix on the HEDIS Measures of Health Plan Quality." *Medical Care*, vol. 38, no. 10, October 2000.

## **APPENDIX A TABLES**

TABLE A.1

AMBULATORY VISIT RATES AMONG MEDICARE MANAGED CARE ENROLLEES  
IN 69 MSAS NATIONWIDE, 1998 AND 1999

MSA	At Least One Ambulatory Visit in the Past Year				Percentage Point Difference (1999-1998)
	1998		1999		
	Percentage of Medicare MCO Enrollees <sup>a</sup>	Sample size	Percentage of Medicare MCO Enrollees <sup>a</sup>	Sample size	
All 69 MSAs	86.8	2,993,763	85.5	3,484,484	-1.3
Albuquerque, NM	95.7	13,422	89.6	27,007	-6.1
Atlanta, GA	90.9	18,551	79.5	23,981	-11.4
Bakersfield, CA	77.9	20,243	62.2	22,620	-15.7
Baltimore, MD	82.1	23,782	76.0	39,777	-6.1
Baton Rouge, LA <sup>c</sup>	91.1	14,211	94.1	10,099	3.0
Boston, MA	95.2	112,017	94.5	138,314	-0.7
Boulder, CO	96.0	6,799	93.8	8,366	-2.2
Chicago, IL	63.7	59,103	52.5	107,393	-11.2
Cincinnati, OH	92.1	29,838	91.8	31,562	-0.3
Cleveland, OH	85.2	59,765	90.3	69,480	5.1
Colorado Springs, CO	90.0	10,436	94.9	14,597	4.9
Dallas, TX	74.6	38,837	77.1	34,479	2.5
Daytona Beach, FL	96.5	21,191	94.9	31,006	-1.6
Denver, CO	93.3	71,149	91.3	72,208	-2.0
Detroit, MI	89.3	22,980	89.1	38,782	-0.2
Dubuque, IA <sup>b</sup>	92.0	188	97.3	3,726	5.3
Eugene, OR	96.1	17,487	93.1	18,380	-3.0
Fort Lauderdale, FL	88.9	89,434	89.1	76,055	0.2
Fort Worth, TX	89.4	37,089	91.8	39,656	2.4
Grand Junction, CO	96.3	7,037	95.1	6,987	-1.2
Honolulu, HI	98.5	10,713	95.0	35,540	-3.5
Houma, LA	91.6	4,594	93.0	5,076	1.4
Houston, TX	65.2	30,579	74.4	70,893	9.2
Jacksonville, FL	86.2	25,020	86.4	29,929	0.2
Kansas City, MO	91.2	37,067	84.2	40,676	-7.0
Killeen, TX	100.0	6,944	95.5	8,274	-4.4
Las Vegas, NV	88.6	49,366	89.4	46,215	0.8
Los Angeles, CA	82.5	259,127	80.6	314,721	-1.9
Medford, OR	95.7	8,405	96.0	7,530	0.3
Miami, FL	85.5	93,418	83.2	87,373	-2.3
Minneapolis, MN	90.1	31,273	91.3	56,782	1.2
Modesto, CA	88.8	19,141	85.9	20,578	-2.9
Nassau, NY	92.8	43,823	92.0	51,286	-0.8
New Haven, CT	83.0	38,824	94.5	47,564	11.5
New York, NY	89.0	98,903	88.9	105,961	-0.1
Newark, NJ	90.0	12,153	89.8	13,226	-0.2
Norfolk, VA <sup>b,c</sup>	94.6	6,781	70.7	-- <sup>d</sup>	-- <sup>d</sup>



MSA	At Least One Ambulatory Visit in the Past Year				Percentage Point Difference (1999-1998)
	1998		1999		
	Percentage of Medicare MCO Enrollees <sup>a</sup>	Sample size	Percentage of Medicare MCO Enrollees <sup>a</sup>	Sample size	
Oakland, CA	90.3	83,408	84.6	104,143	-5.7
Olympia, WA	77.0	7,392	71.5	8,920	-5.5
Orange County, CA	78.5	83,308	79.2	103,824	0.7
Philadelphia, PA	93.2	102,690	92.6	158,874	-0.6
Phoenix, AZ	84.6	121,728	85.0	124,336	0.4
Pittsburgh, PA <sup>c</sup>	90.2	104,565	83.9	41,248	-6.3
Portland, OR	92.5	74,113	89.7	80,429	-2.8
Pueblo, CO	93.3	7,468	94.5	6,700	1.2
Riverside, CA	83.1	141,115	78.5	130,897	-4.6
Rochester, NY	91.7	313	95.0	23,204	3.3
Sacramento, CA	90.7	42,144	88.7	77,617	-2.0
St. Louis, MO	82.6	55,584	87.3	73,706	4.8
Salem, OR	94.6	14,435	94.6	16,349	-0.0
San Antonio, TX	75.5	43,313	84.1	53,734	8.6
San Diego, CA	84.6	138,300	85.0	147,948	0.4
San Francisco, CA	88.4	63,493	90.7	84,857	2.3
San Jose, CA	91.6	50,796	89.9	61,613	-1.7
San Luis Obispo, CA	90.1	7,112	91.2	8,249	1.1
Santa Barbara, CA	86.9	11,551	84.9	16,613	-2.0
Santa Rosa, CA	90.1	23,161	84.8	25,329	-5.3
Seattle, WA	86.4	59,202	87.8	79,615	1.4
Spokane, WA	88.4	8,747	93.3	8,767	4.9
State College, PA	96.2	4,450	94.8	5,333	-1.4
Stockton, CA	79.1	14,944	89.3	20,701	10.2
Tampa, FL	88.0	114,842	86.2	90,490	-1.8
Tucson, AZ	90.3	46,388	92.2	44,894	1.9
Vallejo, CA	91.6	18,823	89.8	21,423	-1.8
Ventura, CA	76.4	25,563	64.2	25,222	-12.2
Washington, DC	77.6	2,423	81.8	20,634	4.2
West Palm Beach, FL <sup>c</sup>	91.5	65,703	92.3	49,009	0.9
Williamsport, PA	95.3	5,110	96.5	6,940	1.2
Yolo, CA	92.9	1,889	83.2	6,709	-9.6

SOURCE: Medicare HEDIS® 1999 and 2000

<sup>a</sup>Includes only enrollees age 65 years or older who were continuously enrolled in a Medicare MCO in 1998 or 1999.

<sup>b</sup>Sample size is less than 200 in either 1998 or 1999.

<sup>c</sup>Sample size declined by 25 percent or more between 1998 and 1999. Further investigation is required to account for these decreases.

<sup>d</sup>All MCOs withdrew in 2000 and did not report HEDIS® measures for 1999.

TABLE A.2

BREAST CANCER SCREENING RATES AMONG FEMALE M+C ENROLLEES  
IN 69 MSAS NATIONWIDE, 1998 AND 1999

	Breast Cancer Screening in Past Two Years				Percentage Point Difference (1999-1998)
	1998		1999		
	Percentage of Medicare MCO Enrollees <sup>a</sup>	Sample size	Percentage of Medicare MCO Enrollees <sup>a</sup>	Sample size	
All 69 MSAs	71.9	172,486	72.7	198,018	0.8
Albuquerque, NM	80.1	580	68.3	799	-11.8
Atlanta, GA	70.7 <sup>d</sup>	1,440	70.6 <sup>d</sup>	2,238	-0.1
Bakersfield, CA	59.2 <sup>d</sup>	286	73.6 <sup>d</sup>	837	14.4
Baltimore, MD	59.2 <sup>d</sup>	1,307	64.5	998	5.3
Baton Rouge, LA <sup>c</sup>	54.0	1,518	74.8	1,078	20.8
Boston, MA	81.7	12,624	82.1	15718	0.3
Boulder, CO	70.3 <sup>d</sup>	667	80.5	1,092	10.1
Chicago, IL	48.7	1,030	64.0 <sup>d</sup>	1,061	15.2
Cincinnati, OH	67.0	774	67.0	1,263	0.0
Cleveland, OH	74.1	4,859	74.4	6,187	0.4
Colorado Springs, CO	76.9	225	72.1	1,573	-4.7
Dallas, TX	59.7 <sup>d</sup>	689	55.1	1,695	-4.6
Daytona Beach, FL	83.4	1,534	79.8	1,625	-3.6
Denver, CO	75.9	6,562	73.5	10,174	-2.4
Detroit, MI <sup>c</sup>	72.0 <sup>d</sup>	5,070	76.5 <sup>d</sup>	3,531	4.5
Dubuque, IA <sup>b</sup>	76.0	50	79.9	98	3.9
Eugene, OR	71.7	1,507	75.3	1,876	3.6
Fort Lauderdale, FL <sup>c</sup>	75.2	4,718	75.8 <sup>d</sup>	2,703	0.6
Fort Worth, TX <sup>c</sup>	71.1	3,050	72.2	3,839	1.1
Grand Junction, CO	77.8	944	78.8	1,112	1.0
Honolulu, HI	83.9	1,749	77.7	4,134	-6.3
Houma, LA <sup>b</sup>	55.1	198	67.0	526	12.0
Houston, TX	57.0	1,001	62.0	2,635	4.9
Jacksonville, FL	73.5	2,003	66.1	1,878	-7.4
Kansas City, MO	75.2	2,170	76.3	2,330	1.1
Killeen, TX	83.3	228	89.4	199	6.1
Las Vegas, NV	63.3	1,517	63.3	3,496	0.0
Los Angeles, CA	72.6	2,400	71.6	4,468	-1.0
Medford, OR	77.1	594	80.2	743	3.0
Miami, FL <sup>c</sup>	69.3	8,542	71.4	2,550	2.1
Minneapolis, MN <sup>c</sup>	75.9	1,757	82.4 <sup>d</sup>	849	6.5
Modesto, CA	74.0	606	75.7	1,295	1.7
Nassau, NY <sup>c</sup>	70.0	5,396	71.3	1,729	1.3
New Haven, CT	79.8 <sup>d</sup>	1,757	78.1 <sup>d</sup>	2,942	-1.7
New York, NY <sup>c</sup>	65.3	11,508	71.9	2,081	6.7
Newark, NJ	45.4 <sup>d</sup>	607	63.1	1,105	17.7
Norfolk, VA <sup>c</sup>	73.3	750	e	e	e
Oakland, CA	76.5	11,148	77.1	12,942	0.7
Olympia, WA <sup>b</sup>	80.1	108	56.1	509	-24.0
Orange County, CA	72.0	742	71.6	1,582	-0.4

	Breast Cancer Screening in Past Two Years				Percentage Point Difference (1999-1998)
	1998		1999		
	Percentage of Medicare MCO Enrollees <sup>a</sup>	Sample size	Percentage of Medicare MCO Enrollees <sup>a</sup>	Sample size	
Philadelphia, PA	73.8	2,272	70.3	3,427	-3.5
Phoenix, AZ	74.5	1,558	71.9	2,986	-2.6
Pittsburgh, PA	70.1	10,386	73.1	13,056	3.0
Portland, OR	77.4	2,995	71.6	7,746	-5.8
Pueblo, CO <sup>b</sup>	71.1	172	75.4 <sup>d</sup>	752	4.3
Riverside, CA	75.5	1,710	77.5	1,861	1.9
Rochester, NY <sup>b</sup>	N/A	N/A	81.2	455	
Sacramento, CA	70.2	6,776	74.8	8,660	4.5
St. Louis, MO	73.9	4,015	76.5	5,286	2.6
Salem, OR	79.0	1,374	78.2	1,895	-0.8
San Antonio, TX	65.6	970	55.5	3,226	-10.1
San Diego, CA	73.7	1,240	74.6	2,434	0.9
San Francisco, CA	74.2 <sup>d</sup>	6,809	78.0 <sup>d</sup>	8,414	3.8
San Jose, CA	73.2	5,498	79.0	6,314	5.7
San Luis Obispo, CA <sup>b</sup>	76.7	120	56.1	143	-20.6
Santa Barbara, CA	67.7	478	64.3	835	-3.4
Santa Rosa, CA	74.6 <sup>d</sup>	2,806	78.0 <sup>d</sup>	2,496	3.4
Seattle, WA	78.0	661	72.8	2,843	-5.2
Spokane, WA <sup>c</sup>	77.9	589	74.6	340	-3.3
State College, PA	81.4	584	83.3	713	1.8
Stockton, CA	60.2 <sup>d</sup>	1,128	63.1	1,627	2.8
Tampa, FL <sup>c</sup>	74.9	5,290	68.3	3,364	-6.6
Tucson, AZ	77.4 <sup>d</sup>	3,150	77.3 <sup>d</sup>	3,058	-0.1
Vallejo, CA	76.9 <sup>d</sup>	2,373	76.8 <sup>d</sup>	2,623	-0.2
Ventura, CA <sup>c</sup>	65.2 <sup>d</sup>	538	65.8 <sup>d</sup>	296	0.5
Washington, DC <sup>b</sup>	66.9	64	70.6 <sup>d</sup>	2,662	3.6
West Palm Beach, FL <sup>c</sup>	79.6	3,692	77.3	1,251	-2.3
Williamsport, PA	83.0	666	84.0	873	1.0
Yolo, CA	58.6 <sup>d</sup>	357	76.5	892	17.9

SOURCE: Medicare HEDIS® 1999 and 2000. We first constructed MCO level estimates of the HEDIS indicators within each MSA. We then took the weighted average of the MCO level estimates within each MSA (weighting by the MCO's share in total Medicare managed care enrollment within the MSA). MCOs with 5 or fewer HEDIS observations within an MSA were dropped from the analysis.

<sup>a</sup> Includes only female enrollees age 65 to 69 who were continuously enrolled in a Medicare MCO during 1997 and 1998, or 1998 and 1999.

<sup>b</sup> Sample size is less than 200 in either 1998 or 1999.

<sup>c</sup> Sample size declined by 25 percent or more between 1998 and 1999. Further investigation is required to account for these decreases.

<sup>d</sup> For this MSA level enrollment weighted estimate, one MCO within the MSA had fewer than 50 observations and accounted for over 5 percent of total M+C enrollment within the MSA. In addition, the ratio of the MCO's share in M+C enrollment relative to the MCO's share in the number of HEDIS observations exceeded 5.

<sup>e</sup> All MCOs withdrew in 2000 and did not report HEDIS® measures for 1999.

NA = Not available. Sample size too small in 1998.

TABLE A.3

DIABETIC EYE EXAM RATES FOR M+C ENROLLEES  
IN 69 MSAS NATIONWIDE, 1998 AND 1999

	Eye Exam for Diabetics in the Past Year				
	1998		1999		Percentage Point Difference (1999-1998)
	Percentage of		Percentage of		
	Medicare MCO Enrollees <sup>a</sup>	Sample size	Medicare MCO Enrollees <sup>a</sup>	Sample size	
All 69 MSAs	53.0	169,25	61.0	113,062	8.0
Albuquerque, NM	61.1	561	55.7	867	-5.4
Atlanta, GA	45.1	3,131	49.5	2,118	4.4
Bakersfield, CA	63.9 <sup>d</sup>	464	49.4 <sup>d</sup>	885	-14.4
Baltimore, MD	21.1	4,084	52.8	897	31.7
Baton Rouge, LA	49.6	2,451	57.7	1,349	8.1
Boston, MA	66.8	7,954	72.2	1,302	5.4
Boulder, CO <sup>b</sup>	67.4	102	78.2	119	10.8
Chicago, IL	26.3	1,389	50.8	1,341	24.6
Cincinnati, OH	38.7	1,917	50.2	1,360	11.5
Cleveland, OH	55.0	3,190	58.9	2,132	3.9
Colorado Springs, CO	43.0	259	65.5	383	22.5
Dallas, TX	47.2	1,515	35.7	984	-11.5
Daytona Beach, FL	60.3	2,092	18.3	624	-42.1
Denver, CO	57.3	2,539	67.8	1,175	10.5
Detroit, MI	60.8	828	69.5 <sup>d</sup>	1,593	8.7
Dubuque, IA <sup>b</sup>	68.4	19	73.4	68	5.0
Eugene, OR	50.3	1,527	75.6	418	25.4
Fort Lauderdale, FL	56.6	3,772	61.6 <sup>d</sup>	1,810	5.0
Fort Worth, TX	49.9	3,342	59.2	632	9.4
Grand Junction, CO	71.6	689	81.1	222	9.5
Honolulu, HI	85.3	1,560	71.9	1,662	-13.4
Houma, LA	34.0	650	50.0	989	16.0
Houston, TX	44.2	1,274	38.8	2,612	-5.4
Jacksonville, FL	47.2	1,643	51.4	1,588	4.2
Kansas City, MO	55.1	2,271	59.7	1,906	4.5
Killeen, TX <sup>b</sup>	73.4	233	76.4	199	3.0
Las Vegas, NV	33.1	1,571	49.4	3,941	16.3
Los Angeles, CA	57.2	2,669	62.7	3,934	5.5
Medford, OR	67.1	641	77.2	275	10.1
Miami, FL	51.4	8,876	54.4 <sup>d</sup>	2,235	3.0
Minneapolis, MN	56.5	3,393	71.4	1,558	14.9
Modesto, CA	59.2	562	55.5 <sup>d</sup>	863	-3.7
Nassau, NY	56.5	4,987	61.7	938	5.2
New Haven, CT	56.5	4,	65.7	3,37	9.2
New York, NY	54.2	16	69.0	2,52	14.9
Newark, NJ	49.9	94	54.5	1,52	4.6
Norfolk, VA	51.0	1,			c
Oakland, CA	58.0	8,	74.1	7,90	16.0
Olympia, WA <sup>b</sup>	73.9	96	84.0	155	10.0
Orange County, CA	60.0	58	63.7 <sup>d</sup>	1,01	3.7
Philadelphia, PA	60.0	4,	67.6	4,31	7.7
Phoenix, AZ					

	Eye Exam for Diabetics in the Past Year				
	1998		1999		Percentage Point Difference (1999-1998)
	Percentage of		Percentage of		
	Medicare MCO Enrollees <sup>a</sup>	Sample size	Medicare MCO Enrollees <sup>a</sup>	Sample size	
Pittsburgh, PA	37.5	9,	50.5	10,6	13.1
Portland, OR	46.7	2,	69.6	1,60	22.9
Pueblo, CO	47.4	39	70.6	207	23.2
Riverside, CA	57.5	1,	55.3	1,51	-2.2
Rochester, NY			80.4	395	80.4
Sacramento, CA	54.5	5,	75.1	5,02	20.5
St. Louis, MO	19.5	6,	25.5	882	6.0
Salem, OR	41.2	1,	70.2	523	29.0
San Antonio, TX	46.8	1,	57.3	1,49	10.5
San Diego, CA	58.7	1,	68.2	1,88	9.5
San Francisco, CA	52.7	4,	72.0	5,05	19.3
San Jose, CA	65.3	4,	76.8	4,03	11.5
San Luis Obispo, CA <sup>b</sup>	66.5	15	62.0	313	-4.5
Santa Barbara, CA	53.1	58	53.5	674	0.4
Santa Rosa, CA	58.2 <sup>d</sup>	2,	70.2 <sup>d</sup>	1,50	12.0
Seattle, WA	67.0	92	79.6	1,35	12.6
Spokane, WA	67.1	75	64.1	484	-3.0
State College, PA <sup>b</sup>	70.2	12	71.6	88	1.4
Stockton, CA	54.7	1,	67.0	1,33	12.4
Tampa, FL	49.7	4,	37.1	2,61	-12.6
Tucson, AZ	48.1 <sup>d</sup>	2,	60.7	1,01	12.6
Vallejo, CA	71.6 <sup>d</sup>	2,	76.9 <sup>d</sup>	1,81	5.3
Ventura, CA	69.4 <sup>d</sup>	54	55.7 <sup>d</sup>	233	-13.7
Washington, DC	30.8 <sup>d</sup>	42	72.2	717	41.4
West Palm Beach, FL	58.4	2,	64.8 <sup>d</sup>	832	6.4
Williamsport, PA	69.6	31	75.1	350	5.5
Yolo, CA	22.5 <sup>d</sup>	28	64.8	626	42.3

SOURCE: Medicare HEDIS® 1999 and 2000. We first constructed MCO level estimates of the HEDIS indicators within each MSA. We then took the weighted average of the MCO level estimates within each MSA (weighting by the MCO's share in total Medicare managed care enrollment within the MSA). MCOs with 5 or fewer HEDIS observations within an MSA were dropped from the analysis.

NOTE: A large number of individual MSAs experienced substantial declines in sample sizes between 1998 and 1999. Further work is required to account for these decreases.

<sup>a</sup>Includes only enrollees with diabetes who were continuously enrolled in a Medicare MCO in 1998 or 1999.

<sup>b</sup>Sample size is less than 200 in either 1998 or 1999.

<sup>c</sup>All MCOs withdrew in 2000 and did not report HEDIS® measures for 1999.

<sup>d</sup>For this MSA level enrollment weighted estimate, one MCO within the MSA had fewer than 50 observations and accounted for over 5 percent of total M+C enrollment within the MSA. In addition, the ratio of the MCO's share in M+C enrollment relative to the MCO's share in the number of HEDIS observations exceeded 5.

<sup>e</sup>Sample size fewer than 10, estimate not reported.

NA = Not available. Sample size too small in 1998.