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United States Government Accountability Office
Washington, DC 20548

August 18, 2004

The Honorable Paul Ryan
House of Representatives

Subject: *Milwaukee Health Care Spending Compared to Other Metropolitan Areas: Geographic Variation in Spending for Enrollees in the Federal Employees Health Benefits Program*

Dear Mr. Ryan:

Health care spending varies across the country due to differences in the use and price of health care services. Understanding the reasons for utilization and price variation may contribute to developing methods to control health care spending. This report provides preliminary results from our work on geographic variations in health care spending and prices.

You asked us to examine geographic variations in health care spending and prices in the Federal Employees Health Benefits Program (FEHBP). FEHBP is the health insurance program administered by the Office of Personnel Management (OPM) for federal civilian employees and retirees, which covered 8.5 million people in 2001. FEHBP contracts with private insurers to provide health benefits. It is the largest private insurance program in the United States. This report summarizes preliminary information provided to you at an interim briefing on July 21, 2004. The enclosed briefing slides (see enc. I) highlight the results of our work comparing Milwaukee to other areas of the country. The objectives of the briefing were to (1) compare Milwaukee health care spending per enrollee, hospital inpatient prices, and physician prices with other metropolitan areas, and (2) examine factors identified by stakeholders in Milwaukee that may affect health care spending and prices.

To estimate spending and prices in Milwaukee and other metropolitan areas, we analyzed 2001 claims data for enrollees under the age of 65 from the largest national insurers participating in FEHBP. We defined price as the payment by insurers and enrollees to a provider for a service. Spending was the sum of payments across all providers for each enrollee. We analyzed mean spending per enrollee, mean inpatient price, and mean physician price in Milwaukee and other metropolitan statistical areas (MSA) across the country. Out of a total of 331 MSAs, we included 239 MSAs in the spending per enrollee and inpatient price analyses and 319 in the physician price analysis. We also interviewed key stakeholders in Milwaukee to identify factors they thought affected health care spending and prices. Key stakeholders included representatives of health insurance companies, hospital networks, physician networks, and large employers. To determine if these factors could affect geographic

differences in spending and prices, we evaluated quantitative indicators of some aspects of the identified factors. We tested our data for consistency and reliability, and determined that they were adequate for our purposes. Our analysis is limited to geographic variation in FEHBP spending and prices in 2001, and we did not consider all of the factors that could affect health care spending and prices. However, our analysis provides important information about selected factors identified by stakeholders. Enclosure II contains additional details about our scope and methodology. We performed our work from June 2004 through August 2004 in accordance with generally accepted government auditing standards.

Results in Brief

Health care spending and prices in Milwaukee were high relative to the averages for MSAs in our study, and preliminary analyses point to providers' leverage in negotiating prices with insurers as one of the contributing factors. Milwaukee ranked among the top 20 MSAs for spending per enrollee, inpatient prices, and physician prices. Some stakeholders asserted that high spending and prices were caused in part by the leverage exerted by provider networks in Milwaukee, which limited insurers' ability to control the prices they pay. This assertion was supported by our examination of indicators of the relative strength of providers and payers. We provided a draft of this report to OPM for review. OPM informed us that it had no comments.

Milwaukee's Health Care Spending and Prices Compared to Other MSAs Were High

Milwaukee ranked 16th in overall spending among the 239 MSAs in the analysis, after accounting for differences in age and sex of those covered and the underlying costs of conducting business across the areas. Health care spending in Milwaukee was about 27 percent higher than the average across all of the MSAs in this analysis. High hospital inpatient and physician prices likely contributed to high total spending. Inpatient prices, after adjusting for differences in underlying costs and the mix and severity of cases, were 63 percent higher than average hospital inpatient prices in the 239 study MSAs. Milwaukee had the 5th highest hospital inpatient prices. Adjusted physician prices were 33 percent higher than the average across the 319 MSAs in the analysis. Milwaukee ranked 16th highest for physician prices.

Provider Leverage Relative to Insurers May Contribute to High Prices; Payment Shortfalls Do Not Appear to Explain the Discrepancy in Prices between Milwaukee and Other Metropolitan Areas

Stakeholders asserted that high health care prices were due at least in part to Milwaukee hospitals and physicians having considerable leverage over insurers when negotiating prices. Stakeholders described highly consolidated provider networks in Milwaukee that included both hospitals and physicians. These networks had established markets in separate geographic areas, each with loyal consumers. Insurers contended that they had to contract with multiple hospital networks because

of consumers' demands for access to their local hospitals and to ensure enrollees had the ability to use hospital services across Milwaukee. Insurers further asserted that because they had to contract with multiple networks, this restricted their ability to direct enrollees to specific networks for care, thereby limiting insurers' leverage to negotiate lower prices for health care services with providers in exchange for a larger share of the insurers' business.

We found some evidence to support the stakeholders' assertion that hospitals and physicians had more leverage than insurers in negotiating prices. The two largest hospital networks in Milwaukee had 14 percent more market share, that is, share of beds, than the average across MSAs of similar size. The larger the share of the hospital service market controlled by a few providers, the greater the likelihood that insurers will have to contract with those providers to ensure enrollee access to care. Another indicator of the relative negotiating leverage of providers and insurers is the estimated share of primary care physicians' income that was paid through a capitation arrangement. Under a capitation arrangement, the insurer pays a predetermined fee to a provider to render all of an enrollee's care for a given period, regardless of how much care the enrollee ultimately uses; thus, providers have to absorb costs above the predetermined fee. Paying physicians on a capitated basis indicates that insurers had the leverage to negotiate this payment arrangement, which providers often try to resist. Milwaukee was an estimated 89 percent below the mean in the percentage of physicians' income derived from capitation payments, indicating that the providers may have had leverage to resist this payment arrangement.

Some hospital and physician group administrators in Milwaukee stated that they needed to charge higher prices to private insurers to make up for low Medicare payments and to recoup costs of uncompensated care. Milwaukee hospitals in our analysis received Medicare payments above the median for a high-volume type of inpatient stay, and one hospital's payment was higher than 90 percent of all hospitals in the country. Medicare hospital payments differ because of adjustments to account for geographic differences in costs. Hospital inpatient payments may also differ because of the mix of teaching hospitals or hospitals that provide a disproportionate share of care to low-income patients, which both receive higher Medicare payments. In Milwaukee, the Medicare payment for a typical physician office visit, which is adjusted for geographic differences in costs, was 3 percent below the median of all payment areas in the country. The percentage of uninsured people in Milwaukee is half that found in our study MSAs, which suggests that recouping the costs of uncompensated care is less of a problem in Milwaukee than elsewhere.

In an upcoming report, we will complete our analysis of spending in FEHBP. This will involve evaluating the separate contribution of price and utilization to spending and further analyzing the factors that contribute to regional variations in spending in FEHBP.

Agency Comments

We provided a draft of this report to OPM for review. OPM informed us that it had no comments.

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As agreed with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after its date. We will then send copies of this report to the Administrator, OPM, and to the insurers that provided us with claims data for FEHBP enrollees. We will make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at http://www.gao.gov.

If you or your staff have any questions or need additional information, please contact me at (202) 512-8942. Another contact and key contributors are listed in enclosure III.

Sincerely yours,

Laura A. Dummit
Director, Health Care—Medicare Payment Issues

Enclosures – 3

Enclosure I

Milwaukee Health Care Spending Compared to Other Metropolitan Areas

Geographic Variation in Spending for Enrollees in the Federal Employees Health Benefits Program

1

Enclosure I

Contents

- Introduction
- Briefing objectives
- Scope and methodology
- Summary of results
- Spending and prices in Milwaukee compared to other areas
  - Spending per enrollee
  - Inpatient price
  - Physician price
- Factors identified by Milwaukee stakeholders that could affect spending and prices

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Introduction

- Health care spending per person varies across the country.
- Spending variation could be due to differences in the use of health care services or the prices paid for health care services.
- Understanding the reasons for spending variation may contribute to developing methods to control health care spending.
- This briefing provides preliminary results from our work on geographic variations in spending and price.

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Briefing Objectives

We examined FEHBP data on health care spending and prices across geographic areas.

Our briefing objectives are to

1. compare Milwaukee health care spending per enrollee, hospital inpatient prices, and physician prices with other metropolitan areas and
2. examine factors identified by stakeholders in Milwaukee that may affect health care spending and prices.

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Scope and Methodology
Spending and Prices

Study Population

- Federal employees and their dependents enrolled in the Federal Employees Health Benefits Program (FEHBP), the largest employer-sponsored health insurance program in the country.
- FEHBP contracts with private insurers to provide health benefits.
- FEHBP
  - provides benefits to a large insured and geographically diverse population, and
  - enables us to better understand how federal dollars are spent for this large insured group.

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Scope and Methodology (cont.)

Spending and Prices

Data

- Medical claims data (2001) from several large national insurers participating in FEHBP.
- Excluded enrollees age 65 and over.
- Excluded pharmaceutical claims.
- Included enrollee payments (deductibles, coinsurance, and co-payments).

Scope and Methodology (cont.)

Spending and Prices

Geographic Areas

- Claims data aggregated to the metropolitan statistical area (MSA).
- Excluded non-MSA areas.
- Excluded MSAs with few FEHBP inpatient admissions and MSAs where claims did not reflect final provider payments.
- Excluded MSAs were disproportionately those with smaller populations.

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Scope and Methodology (cont.)

Spending and Prices

Geographic Areas (cont.)

- Spending and inpatient price analyses:
  - included 239 MSAs and
  - study MSAs included 89 percent of the population in MSAs.
- Physician price analyses:
  - included 319 MSAs and
  - study MSAs included 98 percent of the population of MSAs.

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Scope and Methodology (cont.)

Spending and Prices

Measures of spending

In our study, spending is computed as the total payments for health care services (including the enrollee share) for persons enrolled with the selected insurers participating in FEHBP. Spending is adjusted for

- costs that vary across geographic areas (such as wages and rents) using methodologies similar to those used by Medicare to adjust payments and
- enrollee distribution by age and sex.

Scope and Methodology (cont.)

Spending and Prices

Measures of price

- In our study, price is the payment by insurers and enrollees to a provider for a service.
  - **Inpatient price.** The average total payment in an MSA for a hospital stay.
  - **Physician price.** The average total payment in an MSA for a physician procedure or visit.
  - Inpatient and physician prices are adjusted using methodologies similar to those used by Medicare to adjust payments to providers for geographic differences in costs and mix of services.

Scope and Methodology (cont.)

Spending and Prices

Data Reliability

We tested the claims data for completeness, internal consistency, as well as consistency across insurers and determined that they were adequate for our purposes.

Scope and Methodology (cont.)
Factors Identified by Stakeholders

Data

Interviewed key stakeholders about factors contributing to spending and prices in Milwaukee. Key stakeholders included

- physicians,
- hospital administrators,
- insurance company representatives,
- employers, and
- other individuals knowledgeable about health care spending in the area.

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Scope and Methodology (cont.)
Factors Identified by Stakeholders

Data (cont.)

We examined MSA-level indicators of factors identified by stakeholders using data from multiple sources and compared indicators in Milwaukee to the MSA averages for the sample of 239 MSAs.

Scope and Methodology (cont.)
Factors Identified by Stakeholders

Data Reliability

We tested the data for internal consistency and consistency with other sources, and we reviewed the data collection methodologies. We determined that the data were adequate for our purpose.

Scope and Methodology (cont.)

Factors Identified by Stakeholders

We calculated Medicare Payments for

- a high-volume type of admission for all hospitals in the country and
- a high-volume physician service for all physician payment areas in the country.

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Scope and Methodology (cont.)
Limitations

- Geographic variation in FEHBP spending and prices may be different in other years.
- This analysis did not consider all of the factors that could affect health care spending and prices.

Summary of Preliminary Results

Analysis of Health Care Spending and Prices

Health care spending and prices in Milwaukee were high relative to the averages for study MSAs.

- Spending, adjusted for cost and patient age and sex differences, was 27 percent higher.
- Hospital inpatient prices, adjusted for cost, case mix, and severity differences, were 63 percent higher.
- Physician prices, adjusted for cost and service mix differences, were 33 percent higher.

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Summary of Preliminary Results (cont.)

Analysis of Factors Identified by Stakeholders

Provider leverage relative to insurers may contribute to high prices; payment shortfalls do not appear to explain the discrepancy in prices between Milwaukee and other metropolitan areas.

- Milwaukee providers may be in a better position to negotiate payments with insurers compared to providers in other areas.
- Milwaukee providers are not, on average, more likely than providers in other areas to have to raise prices because of low Medicare payments or high uncompensated care costs.

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Comparison of Milwaukee Spending, Hospital Inpatient Prices, and Physician Prices with Other Metropolitan Areas

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Enclosure I

Adjusted Average Spending[1] per Enrollee, 2001

- Of the 239 MSAs in our analysis, Milwaukee ranked 16th.
- Spending was 27 percent higher than the adjusted average.

[1]Spending per enrollee excludes pharmaceutical, mental health, and chemical dependency services.

[2]Spending in Milwaukee, adjusted for patients' age and sex composition and costs, compared to average spending in study MSAs adjusted for patients' age and sex composition and costs.

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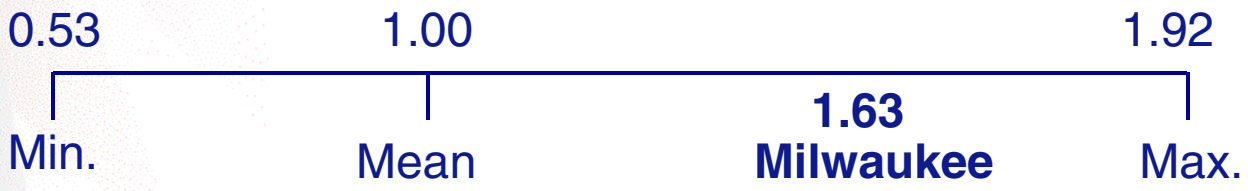
Enclosure I

Adjusted Hospital Inpatient Price[1] for a Stay, Relative to the Average, 2001



- Of the 239 MSAs in our analysis, Milwaukee ranked fifth.
- Hospital inpatient price was 63 percent above the mean.

[1]Hospital inpatient price is adjusted for differences in cost, case mix, and severity.

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Enclosure I

Adjusted Physician Price per Procedure,[1] Relative to the Average, 2001

- Of the 319 MSAs in our analysis, Milwaukee ranked 16th.
- Physician price was 33 percent above the mean.

[1]Physician price per procedure is adjusted for differences in cost and service mix. Physician price excludes anesthesiology, radiology, laboratory, mental health and chemical dependency services.

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Examination of Factors Identified by Stakeholders in Milwaukee That Could Affect Health Care Spending and Prices

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Factors Identified by Stakeholders

- We examined factors that stakeholders identified as contributing to high spending and prices in Milwaukee.
- We identified indicators that quantify aspects of selected stakeholder factors for the 239 MSAs in our study.
- We compared indicators in Milwaukee with other areas.
- This analysis provides preliminary insights into the factors that may affect health care spending and prices in Milwaukee.

Factors Identified by Stakeholders (cont.)

Selected factors identified by stakeholders were

- provider leverage,
- Medicare payment,
- uncompensated care, and
- population characteristics.

Factors Identified by Stakeholders (cont.)

- **Provider leverage**: Many stakeholders asserted that providers had more leverage than insurers in negotiating prices for services. Specifically, they contended that:
  - Milwaukee was geographically divided into subareas, each with hospitals and consumers loyal to those hospitals.
  - Employers and insurers had to contract with multiple hospital networks due to consumer demand for access to local hospitals and to ensure access to hospital services across Milwaukee. Insurers believed this limited their ability to offer providers a larger share of their business in return for discounted prices.

Factors Identified by Stakeholders (cont.)

- **Medicare payment**: Some providers asserted that they needed to charge higher prices to private insurers to make up for low Medicare payments.
- **Uncompensated care**: Some providers asserted that they needed to charge higher prices to private insurers to recoup costs of uncompensated care.
- **Population characteristics**: Some stakeholders thought that higher spending in Milwaukee might be due to an older and less healthy population that required more health care services.

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Summary of Factors and Indicators

Factor	Indicators
Provider leverage	Hospital concentration Physician capitation
Medicare payments	Medicare payments to hospitals and physicians
Uncompensated care	Percentage uninsured
Population characteristics health status	Mortality

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Provider Leverage

Our indicators of provider leverage:

- Hospital concentration: The share of hospital beds in the two largest networks of hospitals. This may indicate hospitals' leverage relative to the insurers' in negotiating payments. Higher concentration suggests more provider leverage.
- Physician capitation income: The share of a physician's compensation that is from contracted capitation arrangements, which provide a fixed, predetermined payment for caring for an enrollee, regardless of service use. This may indicate the insurers' leverage, relative to the physicians' in negotiating payments.

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Provider Leverage (cont.)

Our analysis showed:

- Higher-than-average hospital concentration in Milwaukee, compared to study MSAs.
- Lower-than-average share of physician income from capitation arrangements in Milwaukee compared to study MSAs.
- Both indicators suggest that providers may have an advantage over insurers in negotiating prices.

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Enclosure I

Provider Leverage (cont.)

Hospital Concentration Relative to the Mean

Milwaukee compared to similarly sized[1] MSAs:

- Fourteen percent above the mean.
- A measure of hospital concentration in subareas of Milwaukee may indicate a different level of concentration than ours.
- Other measures of provider leverage may indicate different levels of provider leverage than ours.

[1]Hospital concentration is lower in MSAs with large populations. Therefore, we compared Milwaukee with cities of similar size for this analysis.

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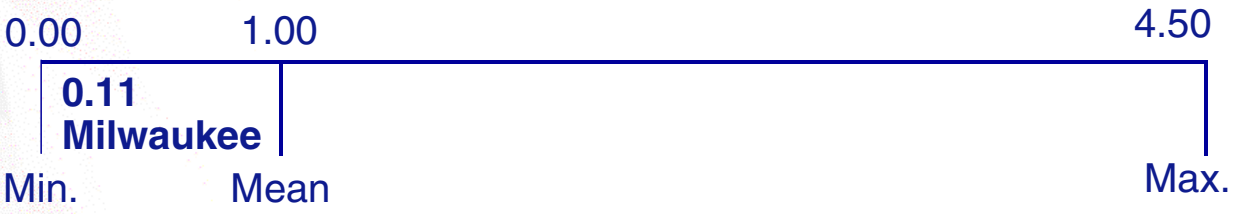
Provider Leverage (cont.)

Physician Capitation Income Relative to the Mean



- Among the 235[1] MSAs in our analysis, Milwaukee was 89 percent below the mean.
- Other measures of provider leverage may indicate different levels of provider leverage than ours.

[1]Four MSAs had missing data and were not included in this analysis.

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Medicare Payments

- Medicare pays most providers national rates, adjusted for geographic differences in costs.
- Medicare hospital inpatient payments are based on national rates, adjusted for geographic differences in costs, with additional payments for teaching and treating a disproportionate share of low-income patients.
- Physician payments are based on a national fee schedule, adjusted for geographic differences in costs.

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Medicare Payments (cont.)

Our indicators of Medicare payments:

- Medicare hospital inpatient payments. We compared the median Medicare payment for a patient admitted with "heart failure and shock," a high-volume admission, to the payment for hospitals in Milwaukee.
- Medicare physician payments. We compared the median Medicare physician payment for an "intermediate office visit," a high-volume service, to the payment for physicians in Milwaukee.

Medicare Payments (cont.)

Our analysis showed:

- The Medicare payments to Milwaukee hospitals for a patient treated for heart failure and shock were above the national median.
- The Medicare payment to a physician in Wisconsin for an intermediate office visit was about 3 percent below the national median.

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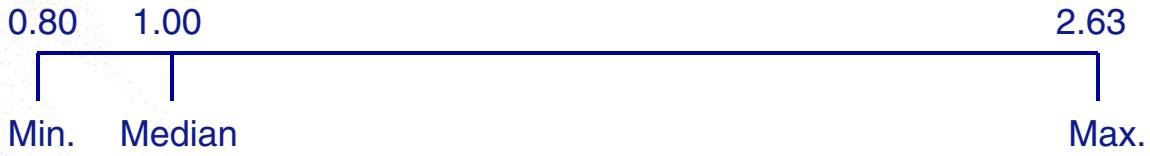
Medicare Payments (cont.)

Medicare Hospital Inpatient Payment, Relative to the Median, for "Heart Failure and Shock"

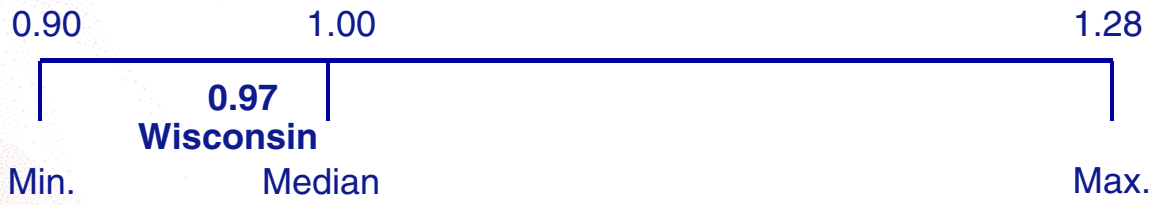


Relative Medicare Payment to Milwaukee Hospitals

Froedtert	1.43	Columbia	1.06
St. Mary	1.20	St. Luke	1.05
St. Joseph	1.14	Waukesha	1.03
St. Michael	1.14	St. Francis	1.02

Medicare Payments (cont.)

Wisconsin Medicare Physician Payment, Relative to the Median, for an "Intermediate Office Visit"



National rates are adjusted by the same percentage for physicians in Wisconsin.

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Uncompensated Care

Our indicator of uncompensated care[1]: Percentage of the population that is uninsured. The percentage of uninsured is an indicator of the demand for uncompensated care.

Our analysis showed that Milwaukee has about half the percentage of uninsured population of other MSAs.

[1]Data on the percentage of the population that is uninsured were estimated at the MSA level by InterStudy Publications based on statewide data from the Current Population Survey.

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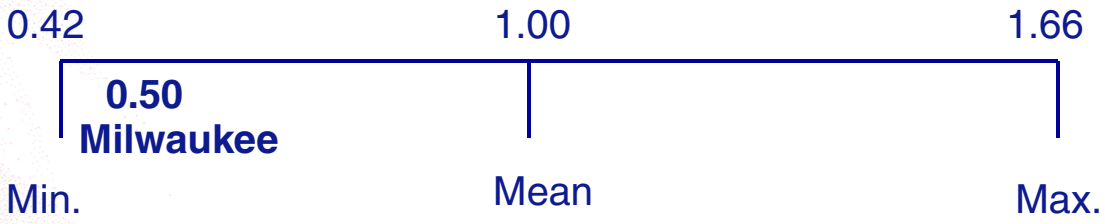
Uncompensated Care (cont.)

Percentage Uninsured Relative to the Mean



- Of the 235[1] MSAs in our analysis, Milwaukee was 50 percent below the mean.

[1]Four MSAs had missing data and were not included in this analysis.

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Population Characteristics
Health Status

Our indicator of health status: Mortality – An indicator of the health of the population; less healthy populations have higher death rates.

Our analysis showed that Milwaukee's mortality rates are just below the average.

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Enclosure I

Population Characteristics Health Status (cont.)

	Milwaukee	Study MSAs
Deaths per 100,000 people age 1-64	222	230

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Next Steps

- Continue to analyze the relationship of price to regional variation in spending in FEHBP.
- Analyze the separate contribution of price and utilization to spending.
- Continue to analyze the factors that contribute to regional variations in price and spending in FEHBP.

Scope and Methodology

This enclosure describes the data and methods we used to compare geographic variations in spending and price in Milwaukee with those of other metropolitan areas, and to explore the factors affecting the health care market in Milwaukee. Our study group comprised enrollees in selected national preferred provider organizations (PPO) participating in the FEHBP. We compared differences in per enrollee spending and in inpatient and physician service prices across Milwaukee and other metropolitan areas using medical claims data. We interviewed stakeholders in Milwaukee to identify potential factors that contribute to spending and prices, and then analyzed data related to these factors to assess their likely relevance to spending and prices in Milwaukee.

FEHBP Data and Study Eligibility Criteria

To compare health care spending, hospital inpatient prices, and physician prices for Milwaukee with other metropolitan areas, we analyzed 2001 health services claims data from FEHBP. FEHBP, the health insurance program administered by the Office of Personnel Management for federal civilian employees and retirees, covered 8.5 million people in 2001. FEHBP negotiates with private insurers to provide health benefits. It is the largest employer-sponsored insurance program in the United States.

Our study included claims data from federal employees under the age of 65 and their dependents who enrolled in selected national PPOs as their primary insurers.[1] Data for enrollees with partial year enrollment were prorated based on days of eligibility during 2001. The dates of service on claims were checked so that they were only included if the service was delivered during a period of PPO eligibility. Pharmaceutical claims were excluded from the study, and mental health and chemical dependency claims were excluded from some analyses because these services were subcontracted to other organizations by at least one of the PPOs and the associated claims for all service types were not routinely available.

In our study, price was defined as the total payment made by insurers and enrollees to a provider for a service. Spending was defined as the total payments for health care services (including the enrollee share) for persons enrolled with the selected insurers participating in FEHBP.

We aggregated payments to the MSA to compare spending and prices across MSAs. We did not examine spending or prices outside of MSAs because their expansive areas could include multiple markets that we would not be able to distinguish between.

[1]We excluded PPO enrollees age 65 and over because FEHBP is not their primary insurer, and consequently the PPOs do not have records of all claim payments. For retirees age 65 and over, FEHBP supplements Medicare benefits.

There are 331 MSAs in the 50 states and the District of Columbia. We excluded some MSAs from our study because we could not obtain complete claims information due to payment adjustments that occurred outside of the claims system or because there was an insufficient number of inpatient hospital admissions to support our analyses. In addition, we excluded one MSA because it had a high proportion of claims from enrollees that were out of the area. For our spending and inpatient analyses, we had adequate data to make comparisons among 239 MSAs, which accounted for 89 percent of the population living in MSAs. In our physician price analyses, we included 319 MSAs, which accounted for 98 percent of the population living in MSAs.

Spending Analysis

To determine average spending per enrollee in each MSA, we summed all payments for each enrollee and then assigned enrollees to their MSAs of residence. We then adjusted spending for geographic cost differences, removed outliers, and accounted for differences in the age and sex distributions across MSAs. After applying our eligibility criteria and removing outliers, we had 2.1 million enrollees in our study.

We accounted for geographic differences in the costs of providing services by applying the methodologies used by Medicare to adjust provider payments. To adjust some provider payments for geographic differences in costs, Medicare applies the Medicare hospital wage index to the portion of payments that covers labor-related costs for a specific service. We summed the payments per enrollee by service categories and then applied the hospital wage index to the labor-related portion of the total payment for each type of service. Categories of service that were adjusted for cost differences in this manner were hospital inpatient,[2] hospital outpatient, home health, rehabilitation, skilled nursing facility, other outpatient, and ambulatory surgery center. Mental health and chemical dependency services were excluded from the spending analysis. We adjusted physician services using a different methodology, again following the basic methodology used by Medicare. We applied the appropriate geographic practice cost indexes (GPCI) to the total physician payments.[3] However, our method differed slightly in that instead of applying the GPCIs at the carrier/locality level, we calculated cost indexes for each MSA.[4] By applying the Medicare cost adjustments as specified above, we obtained what we refer to as cost-adjusted spending.

[2]Medicare adjusts hospital inpatient payments for labor and capital-related variations in costs. In our study, we applied labor and capital adjustments to the hospital inpatient portion of spending and to hospital inpatient price.

[3]There are three GPCIs reflecting the cost of three different types of inputs: physician services, practice expenses, and expenses for physician liability insurance. Each GPCI is used to adjust to the price level for related inputs in the local market where the service is furnished.

[4]There are 92 carrier/locality regions nationwide and 331 MSAs in the 50 states and District of Columbia. Thus, a carrier/locality area is, on average, much larger than an MSA. We used county-level data for the GPCIs and aggregated those data to the MSA level.

We excluded enrollees with high total health care spending because spending for those enrollees could distort average spending in an area with low enrollment. To identify enrollees with high spending, we used a standard statistical distribution (the lognormal). We removed enrollees from this analysis whose spending was at least three standard deviations above the mean.

We adjusted spending for the age and sex distribution of each MSA's population. To do this, we calculated the average age- and sex-specific spending rates of all 239 MSAs combined, and applied these averages to the actual age and sex distribution in each MSA. This yielded an "expected" spending rate for each MSA: the spending in that MSA if it had the study average spending rate, given the age and sex distribution of that MSA's population. We then calculated the ratio of actual cost-adjusted spending to expected cost-adjusted spending. This yielded an index of how much higher or lower spending in the specific MSA was from what would be expected if it had average spending rates, given its age and sex composition. An index value greater than one implies spending was higher than expected and an index value less than one implies spending was lower than expected. We refer to the spending index as the *adjusted average spending per enrollee*.

Inpatient and Physician Price Analyses

We calculated prices for hospital inpatient and physician service categories. We selected these service categories because they represented nearly two-thirds of total health care spending and we could identify standard units of service, inpatient stays, and physician procedures, to which we could link prices. We could also adjust the associated spending for the mix of services provided. We derived our price estimates by aggregating payments from individual claims for the respective category to the MSA based on the place of service.

For our inpatient price estimates, we first aggregated payments from separate inpatient hospital claims to determine the total payments for a hospital admission. This involved combining inpatient claims for the same enrollee that had contiguous dates of service and the same provider. We excluded stays that involved multiple hospital providers.

To account for differences in the mix of inpatient admissions across MSAs, we first classified each admission into an All Patient Refined Diagnosis Related Group (APR-DRG), using information on length of stay, diagnoses, procedures, and the patients' demographic characteristics. Each APR-DRG is associated with a weight that reflects the expected resources required to treat a typical privately insured patient under age 65 in the same APR-DRG, relative to the average resources required for all patients. We used the APR-DRG weight to adjust the inpatient price for case mix. We excluded stays from the analysis for which there was insufficient information on the claim to assign a valid APR-DRG.

We adjusted inpatient prices for differences in local costs of doing business by applying the Medicare hospital wage index to 65 percent of the price, which is Medicare's estimate of the wage-related component of the costs and the geographic adjustment factor to 9 percent of the price, which is Medicare's estimate of the capital cost component.

We trimmed our adjusted inpatient price data for outliers using a method similar to that used for trimming the spending data. We used a lognormal distribution to identify and remove prices more than three standard deviations above or below the mean.

For our physician price analysis, we excluded laboratory, radiology, anesthesiology, mental health and chemical dependency, unspecified services, and services billed with certain modifiers and codes, because these services were not uniformly classified or billed across the PPOs. We aggregated the prices for the remaining services to the MSA based on the provider's place of service.

To account for differences in the mix of physician services across MSAs, we applied the Medicare methodology used to adjust physician payments. For each service, we applied the appropriate relative value unit to reflect the value of the specific service relative to an intermediate office visit.

To adjust physician prices for geographic differences in costs, we applied the Medicare methodology used to adjust physician payments. We applied the appropriate GPCI to each physician payment. However, instead of applying the GPCIs used for Medicare payments, which are based on geographic areas larger than an MSA, we aggregated county-level cost indexes to MSAs and then applied them.

We trimmed the cost and service-mix adjusted data for outliers using the same method used for trimming our inpatient price data, namely, using the lognormal distribution to remove observations more than three standard deviations above or below the mean.

Analysis of Factors Identified by Stakeholders in Milwaukee That May Contribute to High Health Care Spending and Prices

We interviewed key stakeholders in Milwaukee, including representatives of health insurance companies, hospital networks, physician networks, and large employers, to identify factors that might affect heath care spending. In all, we interviewed individuals from 17 organizations. To determine whether the factors could affect spending and prices, we identified indicators that quantify some aspects of each factor. This methodology enabled us to compare Milwaukee with other areas across the indicators. Factors identified by stakeholders and our associated indicators and data sources are listed in table 1.

To calculate the Medicare payment rates for inpatient hospitals, we identified a frequent payment category, "Heart Failure and Shock," Diagnosis Related Group 127. We calculated the Medicare payments for all hospitals, using Medicare payment formulas for 2002. Similarly, we chose one of the procedures that is widely used by physicians, Intermediate Office Visit (Current Procedural Terminology code 99213), and calculated the Medicare payments for all physician localities for 2002.

Table 1: Stakeholder Analysis: Factors, Indicators, and Data Sources

Factors identified by stakeholders	Indicators	Data source
Provider leverage	Hospital concentration: market share[a] of the MSA's two biggest hospital networks	Verispan, LLC
	Primary care physician capitated payments[b] weighted by health maintenance organization enrollment per MSA population	InterStudy Publications United States Census Bureau
Medicare payments	Medicare hospital payments Medicare physician payments	Centers for Medicare & Medicaid Services
Uncompensated care	Uninsured, percentage of population	InterStudy Publications U.S. Census Bureau
Population characteristics health status	Mortality, deaths per 100,000 population aged 1-64, as a health status proxy	National Center for Health Statistics U.S. Census Bureau

Source: GAO analysis of factors, indicators, and data sources.

[a]Market share is defined in this study as the ratio of a hospital network's staffed beds to the total number of staffed beds in the MSA. Hospitals unaffiliated with a network are treated as sole hospital networks for this analysis.

[b]Capitated payments to providers typically require providers to care for a group of patients, regardless of the volume of services they ultimately use, for a predetermined payment for each patient.

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