

Greater Milwaukee Business Foundation on Health, Inc.

The Physician Marketplace – A Comparison of Central USA Metropolitan Areas

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This study was prepared by Merton D. Finkler, Ph.D. with Wayne
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By

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Executive Summary

The Greater Milwaukee Business Foundation on Health, Inc. (GMBFH) has demonstrated a long-standing interest in understanding the cost of health care in Milwaukee in comparison with other metropolitan areas in the central part of the United States. This particular study, done on behalf of GMBFH, focuses solely on the characteristics of physician markets and their potential influence on the prices of services offered by physicians. Previous studies sponsored by GMBFH have focused on the cost of hospital services.

This study begins by identifying the distribution of commercial transactions prices (10th percentile through the 90th percentile) for specific physician services in four specialties – cardiology, orthopedic surgery, radiology, and gastroenterology – for Milwaukee and 10 other metropolitan areas. Physician prices for these services are significantly higher in the Milwaukee market than in the other metropolitan areas, and the differential between prices in Milwaukee and other metropolitan areas is even greater at the higher percentiles.

It then seeks to explain differences across these areas in both the median price and the spread of prices between the median price and the highest price. In particular, the investigation begins with four common hypotheses for the resultant pricing patterns:

- Physician pricing patterns closely follow those of hospitals.
- Physician pricing reflects a burden shifting from public sector payors to commercial payors.
- Physician pricing is limited by the concentration of health insurer market power.
- Physician pricing reflects physician group market concentration and potential bargaining power.

Preliminary investigation of these hypotheses arose from interviews with one or two stakeholders in each market and observations from the various data sets available to us. Further investigation would require both additional interviews and more comprehensive data on physician practices and episode of treatment costs.

Based on the available information, the authors reached the following conclusions:

- Transactions prices for specialty services in each of the four areas studied were higher and grew more from the 50th percentile to the 90th percentile in Milwaukee than in eight of the other metropolitan areas studied. Stated differently,

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purchasers at the 90th percentile in Milwaukee agree to pay substantially more than purchasers at the 90th percentile in other metropolitan areas. Commercial transaction prices are those prices physicians are willing to accept to provide the service, and purchasers are willing to pay for the service. It is not a single price; but a series of prices that different sellers and buyers are willing to accept and pay.²

- None of the four hypotheses posed above contains significant predictive power; thus, the authors pose several qualitative reasons why pricing and pricing trends might differ across the markets investigated.
- Further investigation should focus on the costs of specific episodes of treatment for the specialties considered.

The Distribution of Physician Prices

The authors used transaction prices (allowable charge data) for the 10th, 25th, 50th, 75th, and 90th percentiles for a total of 13 procedure codes across the four specialty categories. The specific codes were chosen to represent frequently performed procedures as well as those that constitute a significant portion of the payments to specialists who perform them.²

Allowable charges are used since they reflect transactions prices between providers and payors and, thus, to some degree reflect both provider and payor preferences. The sample of transactions claims by payor type differs markedly across metropolitan areas. Since most of the observations come from national health insurers, locally owned health plans such as the Henry Ford Health Plan in Detroit and Health Partners Health Plan in Minneapolis-St. Paul might be underrepresented.³

² These data were purchased from Ingenix, Inc.; the specific procedures and code numbers are displayed in Appendix A. The data are taken from the February 2006 release of the MDR payment system product; they reflect payments made between December 1, 2004 and November 30, 2005.

Based on observations noted in the next paragraph, the data from the Madison and Fox Valley metropolitan areas were judged as inadequate since the health maintenance organization portion of the available claims appeared to be well below a representative level. Given that only nine MSAs are included in the correlation coefficient calculations, statistical significance cannot be easily identified.

The indicated transactions prices for virtually all procedure codes for Madison and Fox Valley providers are well above those indicated for Milwaukee and the other nine metropolitan areas. Since only 3% of the included claims from Madison providers come from HMOs, we suspect that neither Dean Health Plan nor the Group Health Cooperative of South Central Wisconsin have been included. Similarly, the HMO share of paid claims for the Fox Valley only come to 9%; thus, we surmise that neither Touchpoint nor Network Health Plans claims were included in our data set. We had hoped to determine whether it would be worthwhile for Milwaukee payors to consider Madison and Fox Valley specialists as less costly competitors for the indicated specialty services. We conjecture that the transactions prices included in the data set reflect retail market prices and, thus, do not provide opportunities for Milwaukee payors to reduce the costliness of physician services unless they develop strong relationships with the integrated networks existent in Madison or the Fox Valley.

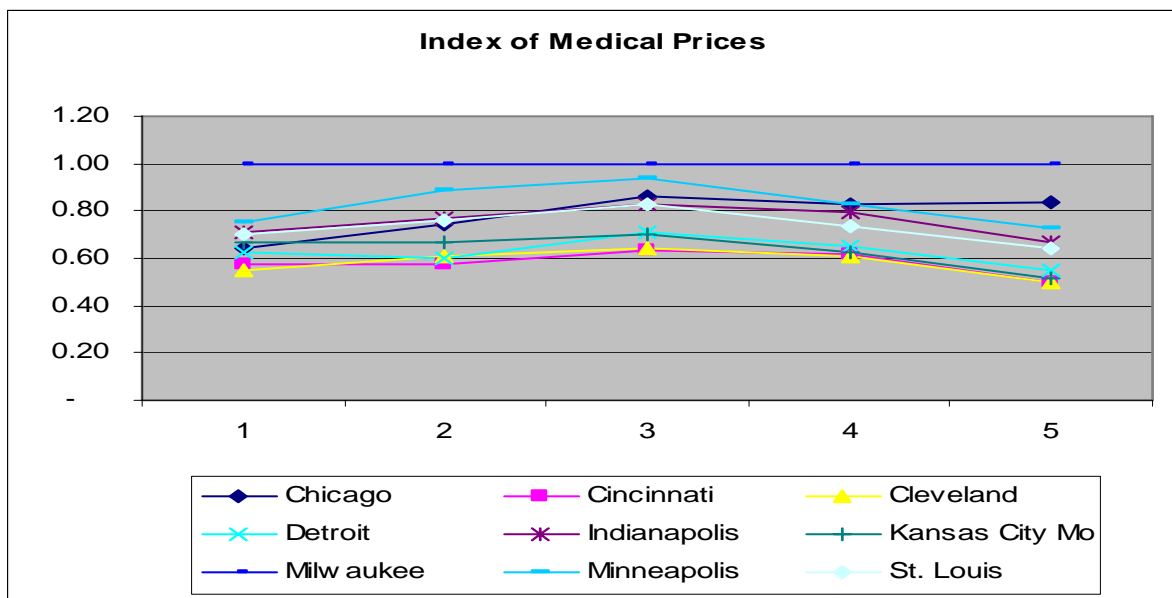
³ Appendix A contains a table with the distribution of claims by payor type

Prices for Cardiology Services

Figure 1 below illustrates the distribution of an index of prices for the four cardiology services investigated.⁴ One can readily see that the index for Milwaukee (defined in all cases as 1.00) lies above those for the other metropolitan areas for all percentiles. At the 50th percentile, the second highest priced market (Minneapolis) has an index that is 94% of Milwaukee’s index. The gap between Milwaukee and the other MSAs grows from the 50th to the 90th percentile with Chicago at 84% of Milwaukee’s prices at the 90th percentile.

For example, consider transactions prices for an intravascular stent placement (CPT – 37205). At the 50th percentile, the price in Milwaukee is \$2,176; the next closest price is \$1,276 in Minneapolis. At the 90th percentile, the gap closes somewhat as prices in the Twin Cities rise to 80% of those in Milwaukee.

Figure 1 – Cardiological Services



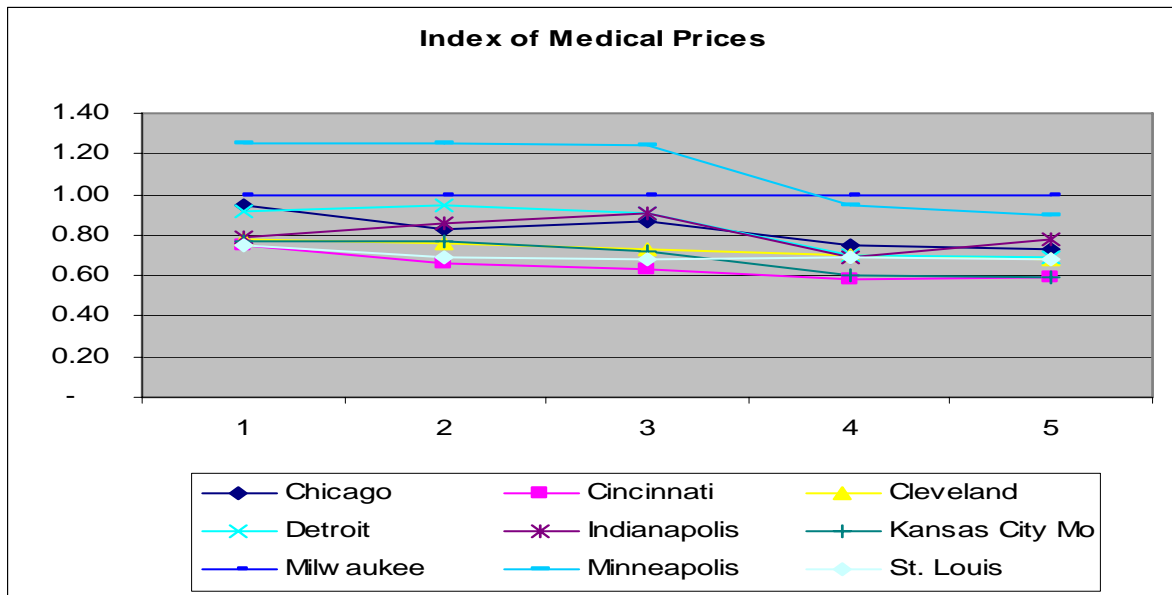
Prices for Orthopedic Services

Figure 2 illustrates the distribution of an index of prices for the three orthopedic services studied. At the 50th percentile, Minneapolis has an index that is 25% higher than Milwaukee’s index.. At the 90th percentile, Minneapolis prices have dropped to 90% of Milwaukee’s prices. If the Twin Cities data are considered unrepresentative, as suggested above, then at the 50th percentile, Detroit and Indianapolis have prices that are 91% of Milwaukee’s median and at the 90th percentile, Indianapolis at 78% is the closest to Milwaukee.

⁴ The index consists of an unweighted sum of prices for each of the services examined.

Consider in particular the prices for a knee arthroscopy (CPT – 29881). At the 50th percentile, the price in Milwaukee is \$962; just behind Minneapolis (\$999) and just ahead of Indianapolis (\$940). At the 90th percentile, the gap opens widely with the second highest prices existent in Indianapolis (\$1,296) at only 61% of Milwaukee’s \$2,215.

Figure 2 – Orthopedic Services

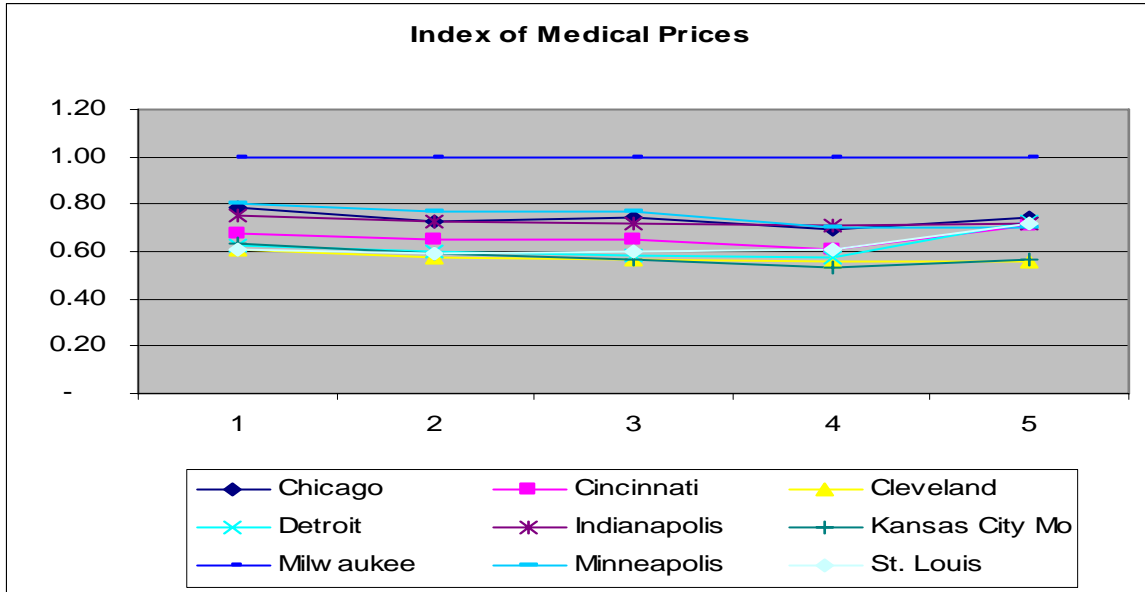


Prices for Radiological Procedures

Figure 3 illustrates the distribution of an index of prices for the four radiological services studied. The index for Milwaukee lies well above that for the other metropolitan areas for all percentiles. At the 50th percentile, Minneapolis and Chicago have indices that are about 25% lower than Milwaukee’s index. At the 90th percentile, the gap remains the same for Chicago with prices 25% lower than in Milwaukee.

Consider the price of an MRI scan (CPT – 70551). At the 50th percentile, the price in Milwaukee is \$945; the next most expensive locations -Chicago, Indianapolis, and Minneapolis - offer the same procedure for around \$700. At the 90th percentile, the gap opens widely with the second highest prices existent in St. Louis (\$1,088) at only 78% of Milwaukee’s \$1,412.

Figure 3 - Radiological Services

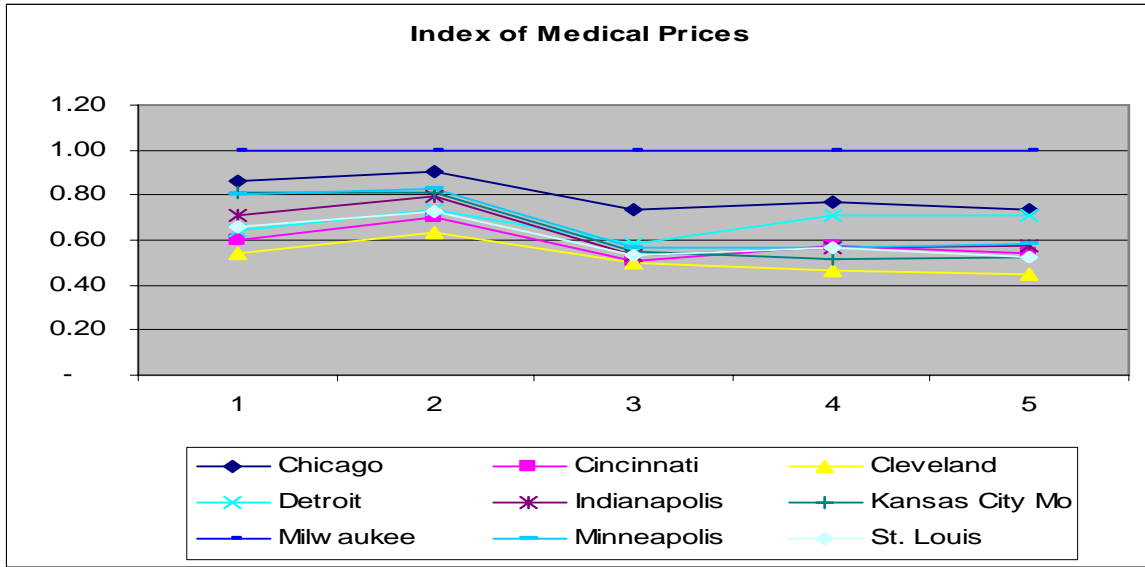


Prices for Gastroenterological Procedures

Figure 4 illustrates the distribution of an index of prices for the two gastroenterological services studied. The index for Milwaukee lies above that for the other metropolitan areas except for at the 25th percentile. At the 50th percentile, Chicago has the second highest prices - 27% lower than Milwaukee's index. At the 90th percentile, the gap remains the same for Chicago with prices 26% lower than in Milwaukee.

Consider the transaction price for a diagnostic colonoscopy (CPT – 45378). At the 50th percentile, the price in Milwaukee is \$640; Chicago (\$615) is the only other metropolitan area with a median physician fee for the service above \$500. At the 90th percentile, the gap opens widely with the second highest prices existent in Minneapolis (\$ 734) at only 65% of Milwaukee's \$1,125.

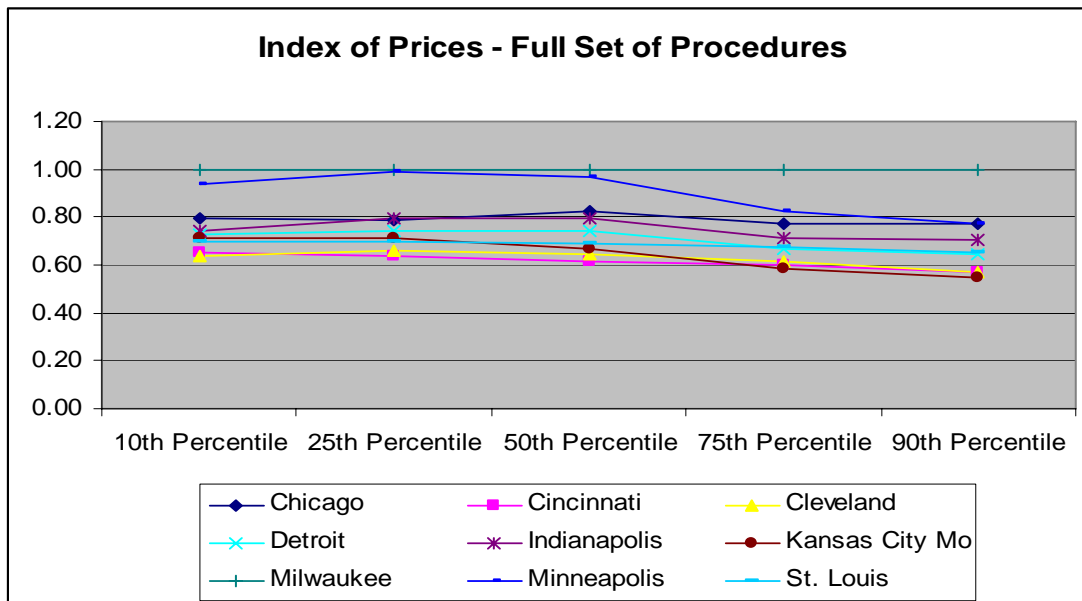
Figure 4 – Gastroenterological Services



Prices for the Full Set of Physician Procedures Studied

Figure 5 combines all of the procedures studied into an aggregate price index. The index for Milwaukee lies above that for the other metropolitan areas for all percentiles; the gap between prices in Milwaukee and other areas grows with the percentile level. At the 50th percentile, Minneapolis has the second highest prices - 3% lower than Milwaukee's index. At the 90th percentile, Minneapolis joins the other areas with prices at least 23% lower than in Milwaukee. As noted at the beginning of this section, we suspect that the data for Minneapolis are incomplete and biased upwards since the distribution of payers seems unrepresentative of the actual contracting.

Figure 5 - All Services Combined



Milwaukee Physician Practice Structure

In markets in which price competition does not function effectively, supplier bargaining power can greatly influence the level of prices charged for services. Consequently, for physician markets, it is important to understand the existent market structure and potential bargaining power for particular physician groups. American Medical Association's physician professional data file (formerly known as the physician master file and still maintained by Medical Management Services) contains detailed information on each licensed physician; users can aggregate such information at the metropolitan area level to obtain counts of the number of physicians with each licensed specialty. A separate AMA sponsored survey and data set provides information on group practices. These data were used to initially determine, for each specialty, what percentage of the physicians were employed in single specialty groups, multi-specialty groups, and in solo or dual practices. Additionally, we summed the total of physicians in group practice, in non-governmental hospitals, along with two person and one person practices to form the "effective supply" of physicians by specialty for each metropolitan area.

Physician might organize into group practices for a variety of reasons including potential economies of scale, improved integration or coordination of services, and increased bargaining power with health plans (See Stephen Page, the *Journal of Health Politics, Policy and Law*, 2004). The scale economies for single specialty group practices are typically lower than for multispecialty groups given the array of services offered in the latter. Multispecialty groups also tend to integrate and coordinate different types of specialty services, which gives rise to larger groups than one observes for single specialty practices. (See Thomas Weil, *Journal of Ambulatory Care Management*, 2002) These reasons suggest that large single specialty groups are likely to be formed primarily to obtain bargaining power.

Since we are particularly interested in accurately measuring the structure of the market for Milwaukee specialists, several sources, in addition to the AMA files, were used to determine which specialist physicians belonged to which medical groups. For the Milwaukee MSA, we cross-checked several sources including two PPO directories, the Wisconsin Medical Society database, and the online websites for all group practices to determine the counts of specialists by medical group. Finally, we phoned the major medical groups in Milwaukee to confirm our estimates and to determine whether physicians were affiliated with particular groups as members or just as part of health plan contract. The results of our search are displayed in Appendix B.

For cities other than Milwaukee, we asked our telephone interview informants about the major groups and also checked the appropriate websites to determine the allocation of specialists for the largest groups in the MSA.

Based on the defined effective supply of each specialty, we computed the market share for each group. To determine the degree of concentration of physician structure, we used the Herfindahl index (HHI) which consists of the sum of the squares of market shares when the shares are written in integer form. (For example, a market share of 25% would

be written as 25 and its square as 625.) If a market were equally divided into four groups with a 25% share for each group, the HHI for the market would be 2500.

The Department of Justice (DoJ) uses the following two guidelines to determine whether a market is concentrated and, thus, whether potential pricing power exists. The DoJ defines as concentrated any market that features an HHI above 1800; markets with a Herfindahl index above 1000 and less than or equal to 1800 are defined as moderately concentrated.

Cardiologists

Table 1 - Market Characteristics for Cardiologists

MSA	%SSGP	%MSGP	Other	Cardiologists per /100,000	Herfindahl
Chicago	37.6%	16.5%	45.9%	9.1	100
Cincinnati	60.8%	8.8%	30.4%	7.2	477
Cleveland	20.3%	48.0%	31.7%	15.0	1053
Detroit	27.6%	35.1%	37.3%	8.5	814
Indianapolis	68.9%	4.1%	27.0%	12.3	680
Kansas City	44.4%	43.6%	12.0%	8.0	856
Milwaukee	52.3%	20.6%	27.1%	9.6	343
Minneapolis-St.Paul	27.5%	54.6%	17.9%	6.8	910
St. Louis	29.4%	35.7%	34.9%	11.1	702
Benchmark Supply	Health Partners	3.8	USA Average	6.6	

The share of cardiologists in single specialty group practice ranges from 20% in Cleveland to 69% in Indianapolis with over 50% of Milwaukee specialists (52%) in single specialty groups. Cardiologists rarely are in multi-specialty group practices in Indianapolis (4%) and, at the other extreme, featured prominently in multi-specialty groups in Minneapolis-St. Paul (55%). Milwaukee has only one-fifth of its cardiologists in group practices. Almost half (46%) of Chicago cardiologists were identified as not in group practices, while only one in eight (12%) of Kansas City's cardiologists were not listed in group practices.

The number of cardiologists per 100,000 physicians ranges from 6.8 (Minneapolis-St.Paul) to 15.0 (Cleveland). Milwaukee at 9.6 resides in the middle in terms of these MSAs, but this ratio is well in excess of both the benchmark rate (Health Partners in the Twin Cities) and the U.S. average.

Only Cleveland, dominated by the large concentration of cardiologists at the Cleveland Clinic, generates a Herfindahl index that (just) reaches the moderately concentrated

range; Milwaukee has the least concentrated market except for Chicago. Based on DoJ criteria, none of these markets would be considered concentrated.

Orthopedic Surgeons

Table 2 – Market Characteristics for Orthopedic Surgeons

MSA	%SSGP	%MSGP	Other	Orthopedists/ 100,000	Herfindahl
Chicago	39.2%	7.6%	53.2%	7.3	73
Cincinnati	78.9%	3.3%	17.8%	3.4	541
Cleveland	49.7%	34.2%	16.1%	6.8	792
Detroit	29.8%	27.4%	42.8%	8.3	1391
Indianapolis	72.6%	0.0%	27.4%	4.5	1007
Kansas City	42.8%	8.0%	49.2%	2.0	279
Milwaukee	40.3%	41.0%	18.7%	5.0	209
Minneapolis- St.Paul	51.4%	30.5%	18.1%	4.0	382
St. Louis	35.8%	11.4%	52.8%	2.5	241
Benchmark	Kaiser Permanente	4.1	USA	6.9	

The share of orthopedic surgeons in single specialty group practice ranges from 30% in Detroit to 79% in Cincinnati. Orthopedic surgeons rarely are in multi-specialty group practices in Indianapolis (0%), Cincinnati (3%), Chicago (8%), and Kansas City (8%) but featured prominently in multi-specialty groups in Minneapolis-St. Paul (31%), Cleveland (34%), and especially, Milwaukee (41%). Over half (53%) of Chicago’s and St. Louis’s (53%) orthopedic surgeons were identified as not in group practices.

The number of orthopedists per 100,000 physicians ranges from 2.0 (Kansas City) to 8.3 (Detroit). Milwaukee at 5.0 resides in the middle in terms of these MSAs; the ratio is above the benchmark rate (Kaiser Permanente) but below the U.S. average.

Detroit and Indianapolis generate Herfindahl indices that reach the moderately concentrated range with Milwaukee the least concentrated market except for Chicago. With the possible exception of Detroit, based on DoJ criteria, none of these markets would be considered concentrated at all.

Radiologists

Table 3 - Market Characteristics for Radiologists

MSA	%SSGP	%MSGP	%Other	Radiologists/ 100,000	Herfindahl
Chicago	39.2%	9.5%	53.2%	9.9	95
Cincinnati	78.9%	5.3%	17.8%	10.0	921
Cleveland	49.7%	34.7%	16.1%	17.0	1064
Detroit	29.8%	6.6%	42.8%	12.1	88
Indianapolis	72.6%	6.8%	27.4%	14.6	530
Kansas City	42.8%	17.4%	49.2%	10.8	889
Milwaukee	40.3%	31.4%	18.7%	15.8	826
Minneapolis-St.Paul	51.4%	14.8%	18.1%	11.3	127
St. Louis	35.8%	12.1%	52.8%	13.6	200
Benchmark	Kaiser Permanente	5.3	USA	9.5	

The share of radiologists in single specialty group practice ranges from 30% in Detroit to 79% in Cincinnati with 40% of Milwaukee specialists in single specialty groups. Radiologists are typically not in multi-specialty group practices with less than 10% in such groups in Cincinnati, Detroit, Indianapolis, and Chicago. At the other extreme, radiologists are featured prominently in multi-specialty groups in Cleveland (35%) and Milwaukee (31%.) More than half of Chicago (53%) and St. Louis (53%) radiologists are identified as not in group practices, while only roughly one in six radiologists were not listed in group practices in Cleveland, Cincinnati, Minneapolis-St. Paul and Milwaukee.

The number of radiologists per 100,000 physicians ranges from 9.9 (Chicago) to 17.0 (Cleveland). Milwaukee at 15.8 resides near the high end in terms of these MSAs, and the ratio is well in excess of both the benchmark rate (Kaiser Permanente) and the U.S. average.

Again, Cleveland is the only MSA that generates a Herfindahl index that (barely) reaches the moderately concentrated range. Milwaukee at 826 lies below the minimum criterion set by the Department of Justice for a moderately concentrated market, and, thus, anti-trust policy makers should not be concerned about potential bargaining power of radiologists.

Gastroenterologists

Since the AMA group file does not separately identify gastroenterologists, the market structure can not be analyzed. The aggregate supply of gastroenterologists, as well as the number in group practices, solo practice and two physician practices, can be identified.

Table 4 provides an aggregate representation of Gastroenterologists for each of the metropolitan areas.

Table 4 – Some Market Characteristics for Gastroenterologists

MSA	% in Group Practice	% in Solo or 2 Person Practice	Gastroenterologists per 100,000 people
Chicago	77.4%	22.6%	3.4
Cincinnati	90.5%	9.5%	3.1
Cleveland	81.0%	19.0%	5.1
Detroit	64.0%	36.0%	2.5
Indianapolis	90.0%	10.0%	3.8
Kansas City	82.0%	18.0%	3.2
Milwaukee	84.4%	15.6%	4.2
Minneapolis-St. Paul	94.9%	5.1%	2.6
St. Louis	72.9%	27.1%	3.9
Benchmark	2.1	USA	3.4

Gastroenterologists are typically in group practices with at least three quarters of them in group practices in all studied metropolitan areas but Detroit and St. Louis. The number of gastroenterologists per 100,000 people ranges from a low of 2.5 in Detroit to a high of 5.1 in Cleveland. Milwaukee has 4.2 gastroenterologists per 100,000 people, above all areas studied but Cleveland. The Milwaukee ratio is twice that for the benchmark programs at Kaiser Permanente (California) and Health Partners (Minnesota) and 23% above the U.S. average.

Common Explanations for Pricing Patterns

Analysts have posed a variety of explanations as to why physician pricing might differ across geographic areas. This paper considers four such explanations in terms of simple correlation coefficients. Since only nine observations exist, no serious evaluation of statistical significance can be provided. Furthermore, the lack of degrees of freedom inhibits analysis of any confounding factors that might be investigated with multiple regression techniques or partial correlation indicators. Thus, these results should be viewed as descriptive statistics only.

First, we consider the correlation between hospital revenues and physician prices under the presumption that the physician sector will tend to follow the hospital sector; thus, high hospital prices would lead physicians to also have high prices.⁵ A lack of price competition in the physician market would not be inconsistent with this view. Secondly, “cost shifting” from public payors and the poor to commercial insurers has often been posed as a reason for high commercial prices. Based on this view, we would expect MSAs that receive relatively large Medicare payments to have relatively low commercial prices and the opposite case for those MSAs paid relatively small amounts by Medicare.

⁵ Ideally, one should compare prices with prices or expenditures with expenditures, but such data were not readily available to us; so we have used the less accurate measure to gain a first impression of any systematic relationship.

Thirdly, the AMA has recently released a study which hypothesized that in markets where insurers are concentrated, the prices physicians will receive for their services will be lower than they would be in places where the insurance market is not concentrated. Finally, if market concentration can be used by providers to raise prices, then physicians would see relatively low prices in non-concentrated markets and relatively high prices in markets where physicians have concentrated into a few large groups. In contrast with the other explanations, analysis must be focused on each specialty separately.

The second column of Table 5 displays the index for all thirteen services studied.⁶ The totals range from a low of \$8,767 in Kansas City to a high of \$14,985 in Milwaukee. The remaining columns of Table 5 display the indicators for all of the other variables considered except for the concentration of physicians in group practices.

Table 5 - Potential Explanatory Factors for Physician Price Differences

	Sum of Codes 50th %tile	Net Non-Govt Rev/Non Elder	Medicare Part B	Medicare Part A	No Health Insure 2000	In Poverty 2002	AMA Insure HHI
Chicago	\$12,359	\$832	\$281	\$421	14.3%	11.2%	3188
Cincinnati	\$9,240	\$1,032	\$248	\$334	9.5%	8.9%	4370
Cleveland	\$9,613	\$1,725	\$279	\$412	10.5%	10.5%	2107
Detroit	\$11,120	\$899	\$346	\$442	11.3%	11.0%	3337
Indianapolis	\$11,920	\$1,551	\$253	\$357	11.3%	8.8%	3495
Kansas City	\$8,767	\$1,085	\$244	\$317	11.0%	8.5%	2960
Milwaukee	\$14,985	\$1,631	\$239	\$356	7.9%	10.5%	2485
Minneapolis	\$14,478	\$1,134	\$220	\$357	8.6%	6.6%	3128
St. Louis	\$10,374	\$1,096	\$262	\$444	10.3%	9.9%	2736
Correlations		0.186	-0.271	-0.206	-0.313	-0.106	-0.184

- The median commercial price of physician services is not strongly correlated with the hospital commercial revenue.

The third column of Table 5 contains the patient revenues received from all patients except those covered by Medicare and Medicaid divided by the population aged less than 65 (labeled net non-governmental revenues per non-elder.) Such commercial revenues range from a low of \$832 in Chicago to a high of \$1,631 per non-elder in Milwaukee. Clearly, Milwaukee has both the highest physician prices and the largest commercial payments per non-elder. This pattern, however, does not hold up for the entire set of MSAs. The correlation coefficient for the values found in columns two and three, though positive, amounts to only .186. See Appendix D for more detailed information on the hospital revenues including the fifth column, which indicates that Wisconsin hospitals feature lower discounts than the hospitals in the other MSAs surveyed.

⁶ As noted in footnote 4, the index is just the unweighted sum of the prices for the 13 procedures.

- The price of physician services is not strongly correlated with the payments received from Medicare for physician services (Part B)

The fourth column of Table 5 displays the Part B Medicare payments per eligible recipient for each Metropolitan area. These payments range from a low of \$220 per elder in Minneapolis-St. Paul to \$346 in Detroit. There is a negative correlation between Part B payments and physician prices, but the magnitude remains relative low at -.271. Such a low magnitude reflects the fact that Cincinnati and Kansas City specialists receive similar Part B payments to but much lower commercial prices for physician services than do Milwaukee specialists.

- A higher poverty rate is not strongly correlated with higher commercial payments to physicians.

Some analysts hypothesize that physician prices include a cost shift from those who cannot pay for services to the commercial population. We have used the percentage of the population in poverty in 2002, as displayed in the seventh column of Table 5, to represent those who cannot pay. Poverty rates in 2002 ranged from a low of 6.6% (Minneapolis-St. Paul) to a high of 11.2% in Chicago. Milwaukee at 10.5% has a higher poverty rate than all MSAs studied with the exception of Chicago, Cleveland, and Detroit. Despite the similarity in poverty rates for these four cities, commercial physician prices differ markedly across these areas.

- Higher insurance market share concentration is not strongly correlated with lower physician prices.

Early in 2006, the American Medical Association released a report entitled “Competition in Health Insurance: A Comprehensive Study of U.S. Market” – 2005 Update. The AMA study addresses the impact of consolidated markets on patient care. They assert that their “study shows unequivocally that physicians across the country have virtually no bargaining power with dominant health insurers and that those health insurers are in a position to exert monopsony (single buyer) power.” The AMA study has calculated the Herfindahl index for the HMO market, the PPO market, and a combined market. The data incorporate self-insured ERISA plans where the third party administration is also an insurance firm but not if the third party administrator is not a commercial insurer. The last column of Table 5 contains the AMA determined Herfindahls for the MSAs we studied.

All of the MSAs have indices that the DoJ identifies as “highly concentrated” markets. They range from Cleveland on the low end (2107) to Cincinnati (4370) on the high end. Milwaukee (2485) is the second least concentrated market. Although the insurer HHI and physician prices are negatively correlated, the coefficient is relatively small (-.184); thus, at most, insurer concentration plays a small role in explaining differences in prices across the nine MSAs studied.

A definition of the market that includes other insurers in addition to HMO and PPO plans would yield smaller market shares and Herfindahl indicies; thus, one would expect even weaker relationships. Additionally, since the stage of the insurance underwriting cycle influences both insurance premiums and market shares, the results might vary greatly across time and geographic area; thus, a one time view of market shares and HHI might not be very informative. Furthermore, if insurance carriers do not compete aggressively on the basis of premiums, there will be less pressure to push the cost of services down; the insurance cycle would greatly diminish: and market shares and Herfindahls would stabilize. Thus, a highly concentrated insurance market need not mean one that pushes provider prices down. If some insurers, such as Blue Cross Blue Shield plans, have strong historical alliances with key hospital systems and medical groups as well as large shares of the insurance market, then health plan competition would be limited as would downward pressure on provider prices.

- Cardiology prices appear to be negatively related to the concentration of cardiologists in group practices

If greater power market concentration yields greater pricing power, public policy makers should be concerned about high positive correlations between the two sets of indicators. As noted above (see Table 1), only Cleveland has an HHI greater than 1000. The Herfindahl index is negatively correlated with the median price of cardiac services ($r = -.398$) and strongly negatively correlated with the change in price between the 50th and 90th percentile ($r = -.743$.) These negative correlation results suggest that the concentration of cardiologists in Milwaukee (HHI = 910) does not yield pricing power for Milwaukee cardiologists. In fact, they suggest the opposite: higher concentrations of physicians seem related to lower prices. These results suggest economies of scale for cardiology practices.

- Orthopedic surgery prices do not appear to be related to the concentration of orthopedic surgeons in group practices.

Table 2 shows that only Detroit (1391) and Indianapolis (1007) had HHI indicators in the moderately concentrated range. Median orthopedic service prices were uncorrelated with the Herfindahl index ($r = .014$) and the gap between the 50th and 90th percentile had a small negative correlation with market concentration ($r = -.321$). These results suggest that provider concentration should not be a public policy concern.

- Radiology service prices do not appear to be related to the concentration of radiologists in group practices.

Table 3 displays the Herfindahls for the nine MSAs; only Cleveland had an HHI above 1000 (1064) with Milwaukee at 826, well below the “concentrated” level. Median radiological service prices were uncorrelated with the Herfindahl index ($r = .024$) and the gap between the 50th and 90th percentile had a small negative correlation with market concentration ($r = -.297$). These results suggest that provider concentration should not be a public policy concern.

Appendix C contains tables that also address how the above relationships changed between 2000 and 2005. The results are similar to those posited above; that is, no high correlations were found.

Other Possible Explanations for Physician Pricing Patterns

Given the small number of geographic areas studied, one cannot easily infer which factors are critical to explaining existent physician pricing patterns. If the number of degrees of freedom (number of cities) were increased, the potential to identify statistically significant factors would also increase. Based on interviews with one or two stakeholders in each of the nine markets and observation of the group practice data; however, we conjecture that several other factors might play a significant role in explaining the observed pricing differences.

Each market seems to be distinguished by which stakeholder group has the greatest influence on pricing. In some markets, hospitals and hospital systems have the most prominent role; in others, large physician groups greatly influence the pricing structure; while, yet in others, insurance plans hold the dominant position. Our interviewees gave us a sense of the relative importance of each of these factors.

In some MSAs particular hospital systems or medical group practices have significant influence and may even become “must haves” in insurance plan contracts. In short, a plan that leaves out a particular hospital or medical group may not be able to sustain its desired share of the health plan market.

In addition to “must have” providers, some markets also feature strong relationships between particular hospitals or clinics and insurers that have existed for long periods of time. Some of these relationships may lead to “most favored nations’ contracting” in which no competing health plan can obtain better provider pricing than the long established one. One of the stakeholders we interviewed indicated that “most favored nation’s contracting” might yield a 10 to 15 % discount in provider prices for the favored health plans relative to its actual and potential competitors.

Finally, in some metropolitan areas, single specialty group practices have begun to enter into the specialty hospital business. This is particularly true for both cardiology and orthopedic surgery. The implications of these efforts are not yet clear, but it is clear that if the specialty groups that run these hospitals are “must have” groups, then specialty hospitals will be part of a formula for increased expenditures on these specialty services.

Observations on a Few of the MSAs Studied

In order to compare Milwaukee with other large metropolitan areas in the center of the country, we interviewed at least one stakeholder in each of the below markets. In each case, we sought to begin with an interview of the director of the local business coalition

on health. In some cases, this led us to other informants; in other cases, we were unable to reach the director and identified others to interview.

- Cincinnati – Our sense is that Cincinnati is characterized by strong hospital systems and a fragmented physician community. Insurers contract with all of the area hospitals but insurers and coalitions have not been hesitant to exclude large physician groups that try to exert pricing power from their networks and plans. Although they have been sued by physicians groups in the past, the insurers appear to have strong influence on pricing.
- Indianapolis – There appear to be strong links between local hospitals and physician groups. Anthem (Blue Cross Blue Shield) has historically had a relatively large share of the insurance market, and its relationships tend to dominate market pricing patterns. Indianapolis also features one very large orthopedic practice. Full access appears to be very important to employers/employees; thus, no selective contracting seems to exist.
- St. Louis – Similar to Cincinnati, St. Louis is characterized by strong hospital system with associated physician groups. Other physician groups are fragmented. No selective contracting appears to exist.
- Cleveland – The Cleveland Clinic and the University System dominate the health care provider market. Contracts seem to contain unique combinations of “must haves”, but some selective contracting seems to exist. Med Mutual and Blue Cross have “most favored nation”-like contracts.
- Minneapolis-St. Paul – The Twin Cities marketplace feature strong multi-specialty group competition. It is the home of selective contracting and tiered pricing of hospital systems and physician groups. Health plan organizers focus on “adequate access and comprehensive coverage.”
- Kansas City – Kansas City seems to feature a fragmented physician community and competing hospital systems which limit provider pricing power. Similar to Cincinnati, physicians are suing insurers. Presence of a for-profit hospital has not changed the market appreciably.
- Milwaukee – Milwaukee features both strong hospital systems and large group practices. The health plan market is less concentrated than other markets, and though selected contracting has played a strong role for one insurer, only recently has tiered pricing existed in the market. The three large multi-specialty groups – Advanced, Medical College of Wisconsin and Medical Associates may not compete much with each other since their geographic locations make it difficult to exclude any of the three.

Physician Compensation

In our study, we also investigated physician compensation by specialty, years of experience, practice type (single vs. multi-specialty group), and region of the country. The data come from surveys conducted by the Medical Group Management Association. Because sample sizes for particular specialties are too small to provide at the MSA level, the MGMA only makes the data available at the state level.

The total income received by specialty based on years of experience and practice type are only available at the regional level and have been included in Appendix E.

Table 6 – Physician Compensation per Work Relative Value Unit

Specialty	Mean	Median	WI-Median	Ratio WI to US
Cardiology	\$53.85	\$51.68	\$66.41	128.1
Family Practice	\$42.30	\$41.31	\$47.01	113.8
Gastroenterology	\$50.90	\$46.83	\$64.10	136.9
Internal Medicine	\$44.36	\$42.12	\$48.33	114.7
OB/GYN	\$41.93	\$40.39	\$49.23	121.9
Orthopedic Surgery	\$53.76	\$51.71	\$70.67	136.7
Radiology	\$50.22	\$49.51	\$84.09	169.8
Surgery	\$44.70	\$43.05	\$51.47	119.6

The data in Table 6 indicate that Wisconsin physicians are paid per work unit well above the average for each of the specialties indicated. For the four specialties studied, compensation for Wisconsin specialists is at least 28% (Cardiologists) above the national median. Wisconsin Orthopedic Surgeons and Gastroenterologists are paid 37% above national median, while the median payment to Radiologists is 70% above the national level. These results are consistent with those posited in the General Accounting Office study of Federal Employees (August 2005) which indicated that a number of Wisconsin cities were among the most expensive for medical care in the U.S.

Conclusions

1. Transactions prices in the Milwaukee market for specialty services in cardiology, orthopedic surgery, radiology, and gastroenterology are higher at the median price level and grow larger from median to the 90th percentile than all other MSAs studied. Of course, utilization differs across MSAs so evaluation based on episode of treatment would be more informative than pricing information alone.

2. The study investigated four commonly posed hypotheses for the resultant pricing patterns:

- Physician pricing patterns closely follow those of hospitals.
- Physician pricing reflects a burden shifting from public sector payors to commercial payors.
- Physician pricing is limited by the concentration of health insurer market power.
- Physician pricing reflects physician group market concentration and potential bargaining power.

Existent data could not confirm the significance of any of these hypotheses.

3. Based on our observations and interviews, we believe that three key factors should be considered in understanding the differences in physician pricing patterns across MSAs:

- Physician / hospital ownership patterns.
- Medical care delivery structures that range from very fragmented (Cincinnati and Kansas City) to very integrated (Minneapolis-St. Paul).
- Health plan and employer objectives and strategies that range from a focus on adequate access with comprehensive benefits (Minneapolis-St. Paul) to full access with adequate benefits (Most MSAs.) Milwaukee appears to feature both comprehensive benefits and reasonably full access.

Next Steps

Explorations of health care costs, ideally, should identify value; that is, analysts should compare outcomes and cost for various episodes of treatment related to particular types of illnesses. First, users should determine the costliness of various treatment patterns across and within metropolitan areas. Such information could be combined with health outcome information to determine which providers (and health systems) are the most efficient; that is, generate the best outcomes per dollar spent on an episode of treatment. Thus, we recommend serious exploration and comparison of episodes of treatment.

Market dynamics differ greatly across metropolitan areas. Our interviews helped us gain a broad sense of each market. Additional interviews with a variety of stakeholders should be conducted to determine the patterns and trends for hospital/physician relationships, the degree of integration or fragmentation of existent medical delivery systems, and to what degree selective contracting is a purchaser strategy; that is, to what degree purchasers trade off broad access for cost control. It is important to note that the Milwaukee market was considered to be “an average cost” or “just below average cost” market in the mid 1990s.⁷ Now, clearly, Milwaukee resides at the expensive end of the health care cost spectrum.

⁷ In a proprietary study done by a major actuarial consulting firm in the mid 1990's, to which one of the authors had access, it was determined that commercial medical costs in the Milwaukee metropolitan area were slightly below the national average after controlling for differences in age, gender and benefit plan design (including HMO, PPO and indemnity plan design).

Given the magnitude and character of the needed data, we recommend that future work of the Greater Milwaukee Business Foundation on Health should coordinate the efforts of its consultants, whenever possible, with those of the Wisconsin Collaborative on Health Care Quality, the Wisconsin Health and Hospital Association and the Wisconsin Health Information Organization.

Finally, to compare the efficiency of Milwaukee's health care system with other MSAs as well as to understand market dynamics, efforts should be made to obtain episode of treatment data from the health insurers who serve these areas. Business coalitions on health might take a leadership role in encouraging insurers to provide sufficient data to make episode of treatment comparisons possible.

Key References

1. Page, Stephen, "How Physicians' Organizations Compete," *Journal of Health Politics, Policy, and Law*, Volume 29, Number 1, February 2004, pages 75 – 105.
2. Weil, Thomas P. "Multispecialty Physician Practices: Fixed and Variable Costs, and Economies of Scale," *Journal of Ambulatory Management*, 2002, Volume 25, Number 3, pages 70 -77.
3. Weiner, Jonathan P. "Prepaid Group Practice Staffing and U.S. Physician Supply: Lessons for Workforce Policy," *Health Affairs* Web Exclusive Article, February 4, 2004.
4. United States Department of Justice, The Herfindahl Hirschman Index (HHI), retrieved from <http://www.usdoj.gov/atr/public/testimony/hhi.htm> on June 15, 2006.
5., "Competition in Health Insurance: A Comprehensive Study of U.S. Markets – 2005 Update", 2006, American Medical Association

Data Sources

1. Prices for Physician Services – Ingenix , 2006
2. Physicians Professional Data 2005 – American Medical Association Surveys, Medical Management Services, 2006
3. Hospital Revenues – American Hospital Association Resource Center
4. Physician Income Data – Physician Compensation and Production Survey 2004, Medical Group Management Association
5. Population and Income Data – Area Resource File 2005, Quality Resource Systems, Inc

Appendix A - Procedure Codes and Distribution of Claims by Payor Type

Cardiology Procedures	CPT Code	Radiology Procedures	CPT Code
Cardiac Catheterization	92992	Cat Scan	70450
Left Heart Catheterization	93510	MRI	70551
Echocardiography w/ image documentation	93307	Read MRI	73550
Intravascular Stent Placement	37205	Read CT scan	76360
Orthopedic Surgery Procedures		Gastroenterology Procedures	
Arthroplasty, knee	27447	Colonoscopy - diagnostic	45378
Carpal Tunnel Surgery	64721	Gastroduodenostomy	43810
Arthroscopy, knee	29881		

MDR Allowed Medical, March 2006

MSA	Geozip	% HMO	% PPO	% OTH
Cleveland	441	10%	24%	66%
Cincinnati	452	22%	23%	55%
Indianapolis	462	2%	39%	59%
Detroit	482	0%	38%	62%
Milwaukee	532	24%	19%	58%
Madison	537	3%	55%	42%
Fox Valley	549	9%	11%	80%
St. Paul	551	0%	34%	65%
Minneapolis	554	0%	32%	68%
Chicago	606	4%	38%	58%
St. Louis	631	21%	17%	63%
KC, MO	641	5%	19%	76%
KC, K	661	6%	16%	78%

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2006

Appendix B - The Structure of Milwaukee's Physician Market - 2005

Cardiologists

Group Name	Market Share
Advanced Health Care	4.7%
Cardiovascular Associates of WI	14.0%
Heart Care Associates	19.6%
Medical Associates	1.9%
Medical College of WI	14.0%
Waukesha Heart Institute	2.8%
WI Cardiovascular Group	3.7%
WI Heart and Vascular	8.4%
WI Heart Group	3.7%
Herfindahl Index	910

Orthopedic Surgeons

Group Name	Market Share
Advanced Health Care	9.7%
Blount	5.2%
Milwaukee Ortho Group	5.2%
Medical College of WI	14.9%
Medical Associates	4.5%
Orthopedic Associates of Waukesha	5.2%
Association of Orthopedic Surgeons	4.5%
Sports Medicine and Ortho Center	5.2%
West Bend Clinic	1.5%
North Shore Clinic	3.7%
Aspen Ortho	4.5%
Milwaukee Orthopedic Specialists	3.7%
West Allis Ortho	3.7%
Aurora Health Care	4.5%
Milwaukee Clinic	3.0%
Bluemound Orthopedic	2.2%
Herfindahl Index	564

Sources: Medical Management Services, Provider Network Directories for HealthEOS and Blue Cross Blue Shield PPOs, various websites, and telephone interviews.

Appendix C – Cardiologists by MSA – 2005 Levels and Growth Between 2000 and 2005

	2005	2005	2000	Growth	2005	2000	Growth
MSA	Cardiologists/100K	Effective Supply	Effective Supply		Herfindahl	Herfindahl	Herfindahl
Chicago	9.1	620	591	4.9%	100	159	-37.1%
Cincinnati	7.2	102	98	4.1%	477	306	55.9%
Cleveland	15.0	227	211	7.6%	1053	119	784.9%
Detroit	8.5	279	253	10.3%	814	397	105.0%
Indianapolis	12.3	148	139	6.5%	680	1284	-47.0%
Kansas City	8.0	133	103	29.1%	856	1352	-36.7%
Milwaukee	9.6	119	107	11.2%	343	655	-47.6%
Minneapolis-St. Paul	6.8	171	140	22.1%	910	621	46.5%
St. Louis	11.1	221	207	6.8%	702	207	239.1%
Benchmark	3.8	Health Partners - Minneapolis-St. Paul					
U.S. Average - 2002	6.6						

Benchmark and US Average taken from Jonathan P. Weiner, "Prepaid Group Practice Staffing and U.S. Physician Supply: Lessons for Workforce Policy," Health Affairs Web Exclusive Article, February 4, 2004.

MSA	Growth in Effective Supply	Growth in Herfindahl	Median Cardiology	50 - 90 Cardiology	2005 Share MSG	2005 Share SSG
Chicago	4.9%	-37.1%	4,055	4,567	16.5%	37.6%
Cincinnati	4.1%	55.9%	2,976	2,197	8.8%	60.8%
Cleveland	7.6%	784.9%	3,034	2,089	48.0%	20.3%
Detroit	10.3%	105.0%	3,347	2,326	35.1%	27.6%
Indianapolis	6.5%	-47.0%	3,919	2,966	4.1%	68.9%
Kansas City	29.1%	-36.7%	3,322	1,991	43.6%	44.4%
Milwaukee	11.2%	-47.6%	4,712	5,593	20.6%	52.3%
Minneapolis-St. Paul	22.1%	46.5%	4,416	3,039	54.6%	27.6%
St. Louis	6.8%	239.1%	3,901	2,719	35.7%	29.4%

Median Price and Median Change in Price from 50th to 90th Percentile Data were provided by Ingenix.

Orthopedic Surgeons by MSA – 2005 Levels and Growth Between 2000 and 2005

MSA	2005 Orthopedists/ 100K	2005 Effective Supply	2000 Effective Supply	Growth	2005 Herfindahl	2000 Herfindahl	Growth Herfindahl
Chicago	7.3	553	570	-3.0%	73	105	-30.5%
Cincinnati	3.4	123	116	6.0%	541	833	-35.1%
Cleveland	6.8	187	198	-5.6%	792	198	300.0%
Detroit	8.3	252	255	-1.2%	1391	117	1088.9%
Indianapolis	4.5	157	120	30.8%	1007	982	2.5%
Kansas City	2.0	138	130	6.2%	279	194	43.8%
Milwaukee	5.0	145	134	8.2%	209	239	-12.6%
Minneapolis-St. Paul	4.0	210	197	6.6%	382	1190	-67.9%
St. Louis	2.5	201	188	6.9%	241	821	-70.6%
Benchmark	4.1	Kaiser Permanente					
U.S. Average - 2002	6.9						

Benchmark and US Average taken from Jonathan P. Weiner, "Prepaid Group Practice Staffing and U.S. Physician Supply: Lessons for Workforce Policy," Health Affairs Web Exclusive Article, February 4, 2004.

MSA	Growth in Effective Supply	Growth in Herfindahl	Median Orthopedics	50 - 90 Orthopedics	2005 Share MSG	2005 Share SSG
Chicago	-3.0%	-30.5%	4,783	3,015	7.6%	39.2%
Cincinnati	6.0%	-35.1%	3,499	2,854	3.3%	78.9%
Cleveland	-5.6%	300.0%	4,042	3,227	34.2%	49.7%
Detroit	-1.2%	1088.9%	4,997	2,464	27.4%	29.8%
Indianapolis	30.8%	2.5%	5,014	3,315	0.0%	72.6%
Kansas City	6.2%	43.8%	3,976	2,325	8.0%	42.8%
Milwaukee	8.2%	-12.6%	5,507	5,234	41.0%	40.3%
Minneapolis-St. Paul	6.6%	-67.9%	6,865	2,768	30.5%	51.4%
St. Louis	6.9%	-70.6%	3773	3549	11.4%	35.8%

Median Price and Median Change in Price from 50th to 90th Percentile Data were provided by Ingenix.

Radiologists by MSA – 2005 Levels and Growth Between 2000 and 2005

	2005	2005	2000	Growth	2005	2000	Growth
MSA	Radiologists/ 100K	Effective Supply	Effective Supply		Herfindahl	Herfindahl	Herfindahl
Chicago	9.9	933	750	24.4%	95	45	111.1%
Cincinnati	10.0	206	139	48.2%	921	100	821.0%
Cleveland	17.0	363	267	36.0%	1064	606	75.6%
Detroit	12.1	542	467	16.1%	88	467	-81.2%
Indianapolis	14.6	237	191	24.1%	530	4	13150.0%
Kansas City	10.8	207	166	24.7%	889	649	37.0%
Milwaukee	15.8	239	206	16.0%	826	142	481.7%
Minneapolis-St. Paul	11.3	352	234	50.4%	127	373	-66.0%
St. Louis	13.6	380	320	18.8%	200	110	81.8%
Benchmark	5.3	Kaiser Permanente	U.S. Average -	2002	9.5		

Benchmark and US Average taken from Jonathan P. Weiner, "Prepaid Group Practice Staffing and U.S. Physician Supply: Lessons for Workforce Policy," Health Affairs Web Exclusive Article, February 4, 2004.

MSA	Growth in Effective Supply	Growth in Herfindahl	Median Radiology	50 - 90 Radiology	2005 Share MSG	2005 Share SSG	2005 Non- Group
Chicago	24.4%	111.1%	1,814	839	9.5%	44.1%	46.4%
Cincinnati	48.2%	821.0%	1,589	936	5.3%	89.8%	4.9%
Cleveland	36.0%	75.6%	1,382	608	34.7%	31.1%	34.2%
Detroit	16.1%	-81.2%	1,424	1,166	6.6%	29.2%	64.2%
Indianapolis	24.1%	13150.0%	1,740	825	6.8%	59.9%	33.3%
Kansas City	24.7%	37.0%	1,531	660	17.4%	68.6%	14.0%
Milwaukee	16.0%	481.7%	2,433	1,128	31.4%	64.4%	4.2%
Minneapolis-St. Paul	50.4%	-66.0%	1,874	638	14.8%	79.0%	6.3%
St. Louis	18.8%	81.8%	1,458	1,085	12.1%	38.4%	49.5%

Median Price and Median Change in Price from 50th to 90th Percentile were provided by Ingenix.

Appendix D – Hospital Expenditure Patterns

	Population	Percentage 65+	Non-Medicare Pop	NGOV Disc	Net NG Rev / Non-Elder 2004	Net NG Rev / Non-Elder 2000
Appleton	369,294	11.3%	327,676	26.8%	\$925.05	Not available
Chicago-Naperville-Joliet	9,333,511	10.6%	8,343,024	58.7%	\$842.31	901.61
Cincinnati-Middletown	2,047,333	11.5%	1,812,217	53.2%	\$1,039.10	Not available
Cleveland-Elyria-Mentor	2,285,182	14.4%	1,956,503	55.1%	\$1,620.98	1005.59
Detroit-Livonia-Dearborn	4,483,853	11.9%	3,950,737	62.9%	\$417.07	862.88
Indianapolis	1,595,377	10.2%	1,432,989	41.7%	\$1,580.20	1164.47
Kansas City	1,904,908	11.1%	1,692,800	60.2%	\$1,099.84	587.35
Madison	526,742	9.6%	476,267	29.7%	\$1,537.83	1137.68
Milwaukee-Waukesha-West Allis	1,514,313	12.5%	1,325,625	34.5%	\$1,636.95	1110.45
Minneapolis-St. Paul-Bloomington	3,083,637	9.2%	2,798,694	51.3%	\$1,146.34	854.23
St. Louis	2,759,440	12.8%	2,405,514	57.3%	\$1,113.28	745.28
Median	2,047,333	11.3%	1,812,217	53.2%	\$1,113.28	\$882.25
Low	369,294	9.2%	327,676	26.8%	\$417.07	\$0.00
High	9,333,511	14.4%	8,343,024	62.9%	\$1,636.95	\$1,164.47

Sources: Columns 2 – 4 – Area Resource File, Columns 5 – 7 AHA Resource Center

NGOV Disc – Difference between gross and net revenues for non-governmental payors

Net NG Rev/ Non-Elder – Net non-governmental revenues per resident aged less than 65

Appendix E - Specialist Income Breakdown by Experience, Group Type, and Region

Physician Collection for Professional Charges - Cardiology

Cardiology	Mean (\$K)	Median (\$K)	75th Percentile (\$K)	90 th Percentile (\$K)
8-17 years of Experience	823	773	1096	1311
Single Specialty Group	686	591	860	1111
Multi-Specialty Group	812	786	933	1331
East	682	691	933	1149
Midwest	801	809	918	1237
South	840	738	1098	1591
West	731	750	864	1071
Overall	780	750	918	1250

Physician Collection for Professional Charges – Orthopedic Surgery

Orthopedic Surgery	Mean (\$K)	Median (\$K)	75th %ile (\$K)	90th %ile (\$K)
8-17 years of Experience	865	763	1025	1297
Single Specialty Group	817	756	950	1095
Multi-Specialty Group	824	735	971	1240
East	777	749	955	1108
Midwest	907	834	1093	1354
South	860	841	974	1222
West	675	637	962	1215
Overall	822	744	962	1215

Source: Physician Compensation and Production Survey 2005 Reports, based on 2004 data, Medical Group Management Association