

**Have HMOs Broadened their Hospital Networks: Changes in HMO  
Hospital Networks in California, 1999-2003**

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## **ABSTRACT**

US hospital costs continue to rise after years of little growth. Strong managed care plans were credited for controlling costs. Now, a weaker managed care system, as a result of reported consumer and employer backlash, has been widely cited as contributing to the recent surge in costs. Using California HMOs from 1999 to 2003, we empirically test whether there have been structural changes in HMO size, geographic coverage, hospital network design and patient channeling for inpatient care. We find little evidence that structural changes in provider networks by HMOs have weakened their bargaining power in the market vis-à-vis hospitals.

## **Have HMOs Broadened their Hospital Networks:**

### **Changes in HMO Hospital Networks in California, 1999-2003**

#### **Introduction**

After several years of decline, per capita spending on inpatient hospital care began to rise in 1999 and has continued to rise every year since. In 2003, price increases accounted for a large majority of the increase in hospital spending, though in prior years, utilization played a larger role.<sup>1</sup> Managed care plans, using selective contracting to generate price competition, have been credited with controlling hospital spending through most of the 1990s. Several factors have been offered as contributing to these recent increases. One factor is the "managed care backlash", where consumers and employers reject health plans that use a tightly controlled managed care approach. Under this hypothesis, we should observe both declining HMO enrollment and a general weakening of managed care plans, which limit their ability to use various cost control techniques. While the idea of a managed care backlash is widely cited as contributing to today's rising cost trends, there has been little empirical analysis documenting this relationship. In this paper, we use recent (1999-2003) patient, hospital and HMO product level data from California to empirically test the specific hypotheses that the role of HMOs is declining in the marketplace and that HMOs have broadened their hospital provider networks.

## **Managed Care Backlash**

Since 1982 when California introduced legislation that spawned the managed care revolution in the US health care system, managed care plans have evolved and grown throughout the US. Their popularity was based in part on their ability to use selective contracting with health care providers to stimulate price competition to control health care cost increases. Managed care plans used selective contracting and their enrolled population and competitive market conditions as leverage to threaten hospitals with exclusion from preferred networks.

Despite the apparent success of managed care to hold down costs, consumers reportedly became dissatisfied with managed care. Surveys and case studies reported that employees and employers began demanding less restrictive forms of managed care<sup>2</sup> including more provider choice with fewer restrictions<sup>3</sup>. For example, Mays et al. (2004) reported "employers' responses to their workers' complaints about managed care restrictions included...broader provider networks"<sup>4</sup>. Likewise, Lesser et al. (2003) reported that "selective provider networks became less and less viable in an environment where broad provider choice was so highly valued"<sup>5</sup>. It has been suggested that consumers' preferences for broader networks have led HMOs to broaden their hospital networks to the

point where providers now have the "upper hand" in contract with negotiations with plans<sup>6</sup>. Studies such as these and others have led experts to forecast that there would be a shift in enrollment to PPOs away from HMOs, which tend to have more choice and fewer restrictions as well as to a broadening provider networks, even within the HMO sector<sup>7</sup>. As a result, it is suggested that HMOs are weakened in their negotiations with hospitals by the fact that they represent a declining share of total hospital admissions as consumers shift to less restrictive PPOs. Despite the absence of empirical documentation, it has been widely reported that these changes are widespread and that as a result, they have contributed the inability of HMOs to effectively use selective contracting to hold down hospital prices and utilization as they had before<sup>8</sup>.

We use empirical data to explore several specific aspects of the managed care backlash. First, we examine whether HMOs are in retreat in the California marketplace. Next, we examine whether HMOs have altered either the structure or use of the hospitals included in their networks. Finally, we report several structural measures of HMO channeling as evidence of potential changes in HMO bargaining power.

## **Data and Methods**

**Overview:** We use empirical data to develop a series of measures to explore specific aspects of the managed care backlash. First, we developed measures of the number of competing HMOs and where they compete, both geographically and by payor segment (private, Medicare and MediCal (Medicaid)), the share of total hospital discharges accounted by HMOs and track changes over time. Next, we developed measures to describe changes in network breadth and patient channeling during the study period including measures of HMO concentration among network hospitals.

**Data:** We use patient-level discharge data from The California Office of Statewide Health Planning and Development (OSHPD) supplemented by HMO data reported to the California State Department of Managed Care. The data for this study differ from those used in previous research in this area because we utilize actual patient flow data to determine whether a hospital is part of an HMO plan's network. Most other studies have relied on surveys and case study interviews of health plans and hospitals to track hospital/health plan contracting patterns over time<sup>9,10</sup>. Though surveys can provide more current information on potential emerging trends, they often lack the empirical data needed to test whether responses and perceptions are accurate or generalizable.

### **Identification of HMO Patients and HMO Plans' Network Hospitals:**

We used health plan code variables recently added to patient discharge records by OSHPD to count the number of inpatient hospital discharges covered by each HMO in California and to identify which acute care hospital each HMO sends its patients in each year between 1999 and 2003. We used these data to develop a hospital level database indicating which HMOs had discharges from which hospitals in California. We used a payor code variable along with health plan codes to determine whether each patient was enrolled in an HMO serving different payor segments, including private, Medicare or MediCal. Department of Managed Health Care (DMHC) regulatory filing data were used to cross check and correct miscoding of payor class where possible. Of course, some patients are admitted to hospitals that are not included in an HMO's network. To adjust for this, we developed an algorithm to identify which hospitals were included in each HMO plan's network.

The algorithm had several steps. First, we restricted our analysis to acute care hospitals with at least 100 discharges in the calendar year. Within this set of hospitals, we then defined whether each hospital was included or excluded from each HMO plan's network, where we measure an HMO's private, Medicare, and MediCal plans separately. We next defined that an HMO plan

operated in an MSA in a given year if: the plan had more than 100 discharges, or more than 10 percent of the MSA's total HMO discharges for that segment, or more than 5 percent of the plan's statewide discharges were in the MSA. From this, we created three categories of plans: local, covering 1-2 MSAs; regional covering 3-15 MSAs; and statewide, covering at least 16 of California's 25 MSAs.

Conditional on the plan operating in the MSA, we then defined a hospital as included in the plan's network if: the hospital admitted 100 or more of the plan's members or more than 2 percent of the plan's statewide inpatient admissions. Hospitals in MSAs covered by the plan that did not meet any of these criteria were coded as excluded from the network. We crosschecked our results with provider directories listed on health plan websites for selected plans and fine tuned the decision rules to minimize both false positive and false negative network status codes. While there are undoubtedly some hospitals in our data base that are miscoded in terms of their network status with a particular plan, they tend to involve small hospitals or hospitals with very few discharges, and as such are unlikely to bias our findings, many of which are patient weighted.

## **Results**

Exhibit 1 presents data on the total number of HMOs serving different payor segments (private, Medicare and MediCal) and the HMO share of hospital admissions in each payor segment and the total, by year between 1999 and 2003.

The number of HMOs serving the private market declined from 34 in 1999 to 24 in 2003, a drop of ten plans or 29 percent. This consolidation trend is not seen among HMOs serving Medicare or MediCal payor segments. The number of HMOs serving Medicare enrollees decreased by only one from 1999 to 2003 while the number of HMOs serving MediCal enrollees declined by two plans. Thus, it appears that the HMOs serving the Medicare and MediCal markets have been fairly stable despite a fairly large decline in the number of HMOs serving the private market. Further, despite the large decline in the number of HMOs serving the private market, there remains a sizeable number of HMOs serving that market in California.

An important indicator of the potential influence of HMOs on hospitals is the share of hospital admissions covered by HMOs. The bottom panel of Exhibit 1 shows the percentage of total hospital admissions in each payor segment covered by HMOs, and

the share of total hospital admissions accounted for by all HMOs summed across all payor segments, including separate statistics for the Kaiser Permanente HMO. Non-Kaiser HMOs covered 52 percent of total private (non-Kaiser) hospital admissions in 1999. By 2003, despite the decline in the number of HMOs serving this market, HMOs accounted for 48 percent of the total. Thus, although the share of private inpatient hospital admissions covered by HMOs declined by 7.7 percent, non-Kaiser HMOs still covered almost half of all private admissions in 2003.

The share of total Medicare admissions covered by HMOs fell farther during the study period. Non-Kaiser HMOs accounted for 22 percent of Medicare admissions in 1999 and by 2003 their share fell to 16 percent, a decline of 27.3 percent. This drop likely reflects HMO withdrawal from selected counties under the Medicare program. In contrast to HMOs serving the Medicare payor segment, HMOs serving the MediCal market appeared to expand their influence over hospitals. HMO share of MediCal admissions grew from 24 percent in 1999 to 26 percent in 2003.

Altogether, HMOs accounted for 27 percent of admissions to non-Kaiser hospitals in 1999. This decreased to 24 percent by 2003. Thus, despite consolidation among HMOs serving the private sector, the overall size of the HMO market and the potential for

HMOs to influence hospitals remained high throughout the period. In addition, Kaiser Permanente HMO expanded slightly during the period, with its share of total hospital admissions in the state growing from 12 percent in 1999 to 13 percent in 2003.

Exhibit 2 presents data for HMOs in California grouped by the scope of their geographic coverage across California's 25 MSAs: local (serving 1 or 2 MSAs), regional (serving 3 to 15 MSAs) and statewide (serving 16 or more MSAs). We report data for private and Medicare plans separately since they serve different populations and may be subject to different market forces.

For private plans, regional HMOs accounted for more than half (54 percent) of the California market in 1999. The remaining share was split between local and statewide HMOs, each accounting for more than 20 percent of total HMOs. The share of regional HMOs fell by 2003 to 33 percent of the total while both local and statewide HMOs became more prevalent. The bottom part of Exhibit 2 shows the share of HMO discharges for HMOs in the three categories. Regional HMOs' share of discharges fell in proportion with their decrease in number, declining from 17 percent to 10 percent. Statewide HMOs accounted for most of the gains in discharges among private plans (from 81 to 88 percent),

while local HMO share of discharges grew from 1 percent to 2 percent of private HMO discharges in California.

The next two columns of Exhibit 2 report the same measures for Medicare HMOs. In 1999, there was one only statewide Medicare HMO plan (Pacificare) and it had 61 percent of all Medicare HMO admissions in the state. By 2003 it had pulled back from several MSAs and became a regional HMO. While re-classification of this single large plan explains most of the increase in regional plans' share of plans and discharges, local HMOs also saw a decrease in both measures.

Exhibit 3 presents three different measures of HMO network breadth, access and channeling in 1999 and 2003. All of the mean values in this exhibit are patient-weighted. HMO network breadth is measured by the percentage of all available hospitals that plans included in their networks and the distance traveled by inpatients to network hospitals. HMO channeling is measured by an hospital level Herfindahl-Hirshman Index(HHI), calculated as the sum of the square of each hospital's share of an HMO's discharges in the MSA.

Results for private plans are presented in the first three columns while Medicare plans are reported in the last three

columns of Exhibit 3. Here we discuss the results pertaining to private HMOs in detail. The results pertaining to Medicare HMOs are quite similar to those reported for private HMOs.

Exhibit 3 shows a clear pattern in terms of the percent of hospitals included in each HMO network where the HMOs with the broadest coverage also have the broadest networks. Among private HMOs, local HMOs have the narrowest networks on average (20 percent in 1999 and 29 percent in 2003), and statewide the broadest (54 percent in 1999 and 58 percent in 2003). To rule out the possibility that the observed differences result from statewide HMOs operating in different MSAs that may have different populations and/or hospital markets that command broader networks, we conducted an additional test that took MSA differences into account. We find that the differences between state and regional and local plans are similarly large even when accounting for differences across MSAs.

When comparing the percent of available hospitals included in the HMO's network over time, we find very minimal changes. The overall average increased by five percentage points. Because these numbers incorporate both entry and exit of HMOs and a shift in discharges across HMOs (because these are patient-weighted means), we also report within-HMO changes for those

HMOs operating in both 1999 and 2003. These results provide strong evidence that HMO network breadth in California was basically unchanged between 1999 and 2003 (a 2 percent point change).

Another measure of HMO hospital network structure and breadth is the distance patients travel to be admitted to a network hospital. If HMOs were reconfiguring their networks in response to consumer demands for easier access, the average distance traveled would likely be reduced. However, we find that average travel distance for private HMO patients actually increased slightly between 1999 and 2003 (by .32 miles from 8.20 in 1999 to 8.52 in 2003) and for all three HMO types.<sup>11</sup> The within-HMO changes reflect the same overall pattern, although within-HMO distances only increased for statewide HMOs. It is important to note that while travel distance relates to an HMO's network design, a broadening network would not necessarily result in shorter distances. For example, distance could increase if an HMO added high-quality hospitals that are farther from its enrollees' home zip codes than other hospitals. Alternatively, membership location could shift over time relative to a fixed hospital network, which would increase the average travel distance of HMO members without any change in the network itself.

Our third measure examines how concentrated HMOs patients are across hospitals within their networks as a measure of channeling. If HMOs engaged in less channeling, then the HHI defined here would decrease as discharges become more evenly spread across hospitals. These results show little change over time, either overall or within HMO. Local plans' patients are more highly concentrated, which is consistent with the smaller number of hospitals in their networks.

As previously mentioned, the data for the Medicare HMOs follow the same patterns, with very little change in networks over time, and narrowest networks for local HMOs. On average, Medicare plans tend to be narrower, with patients more concentrated among network hospitals and shorter distances traveled.

### **Discussion**

We investigated changes in California's HMO sector from 1999 to 2003 to test whether weaker managed care might explain growth in hospital costs. Results indicate there have been few changes in HMOs' size, geographic coverage, hospital network design, or patient channeling over this time period. Thus in contrast to conventional wisdom we find little support in our data for the notion that structural changes by HMOs have weakened their

bargaining power in the market vis-à-vis hospitals. These results suggest that other factors are responsible for the surge in hospital costs.

First, we examined the number of HMOs and the share of total hospital discharges accounted for by HMOs for three large payor segments -- private, Medicare and MediCal. We found a reduction in the number of HMOs over time, primarily in the private segment, but there were still a large number of HMOs operating in California in all payor segments as of 2003. Further, the share of total hospital discharges accounted for by HMOs remained relatively constant between 1999 and 2003. These results suggest that in California, hospitals continue to operate in an environment where a significant share of their patients are covered and paid for by HMOs.

Overall, the number of HMOs declined, with almost all of the decrease occurring among regional HMOs serving the private market. Local HMOs appeared to have held their place in the market both in terms of number of HMOs and their share of total HMO discharges. Though it is a relatively small share, two percent of private HMO admissions in 2003, the fact that these HMOs have continued to operate suggest that they may have some

competitive value in the market that has allowed them to retain their niche.

We presented data on several aspects of HMO hospital network design and use. First, we looked at the percent of all available hospitals in an MSA that each HMO includes in its network and tracked changes over time. We found very little movement in this measure. We did observe a fair amount of cross-sectional variation across HMOs and across MSAs, but these measures were fairly stable when viewed over time. Despite suggestions to the contrary, we found no evidence of HMOs broadening (or narrowing) their hospital networks.

We did find some small changes in distance traveled for inpatient discharges over time. However, it was not in the direction typically expected if networks were being broadened. We found that average distance traveled to HMO network hospitals by private patients increased by about .32 miles from 1999 to 2003. Likewise, we found very little change in HMOs' channeling of patients to hospitals within their networks, suggesting that HMOs were not to be any more or less dependent on particular hospitals in 2003 relative to 1999. Again, this is contrary to a model of a weakened managed care system or one where the

hospitals have improved their bargaining position with HMOs via structural broadening of HMO networks.

In summary, we found little support for the hypothesis that there have been structural changes to HMO hospital networks leading to reduced HMO bargaining power. Hospital cost increases in California have mirrored those across the US, averaging double digits since 2000.<sup>12</sup> However, the data presented in this paper suggest that broader or reconfigured HMO hospital networks are not likely to be a primary explanation of recent cost increases. Rather, it appears necessary to look elsewhere.

A number of potential factors might be considered in future research. One is the role and structure of PPOs and whether the managed care backlash may have had greater or different effects on them compared to HMOs. Alternatively, one might examine the role of increasing hospital input costs such as nurses' wages. Another factor might be tightening of inpatient hospital capacity that may have changed selective contracting bargaining dynamics without the need for a structural change in hospital networks, although it is important to note that average hospital occupancy rate for staffed beds in California in 2003 was only 66 percent. Another potential factor is the growth of multi-hospital systems. In 1990, 30 percent of all hospitals in

California were part of systems. By 2003, more than 75 percent of all hospitals were part of system with other hospitals. Hospital systems are reported to be demanding higher prices from HMOs under threat that they will disrupt networks by removing all the hospitals in their systems from the HMOs' networks.

Finally, a note regarding a potential limitation in the data used in our analysis provides another potential area for future research. We used actual hospital discharge records and a statistical algorithm to determine whether a hospital belonged to an HMO's network. Our approach creates the possibility that a hospital is part of an HMO's network but that the HMO did not send patients to the hospital. Such "contingent contracts" were reported by Gaskin et al. (2002) as representing seven percent of the hospital contracts based on a survey of HMOs. Our approach precludes such hospitals and thus may understate the true number of HMO network hospitals. To the extent such contracts exist and have meaningful impact on managed care selective contracting outcomes, more needs to be understood in this area.

**Exhibit 1: Number of HMOs in California and HMO Share of Hospital Admissions, 1999 and 2003**

<b>Payer Segment Served by HMO</b>	<b>1999</b>	<b>2003</b>
Private	34	24
Medicare	17	16
MediCal	28	26
All three	7	8
<b>Total offering Commercial, Medicare, or MediCal</b>	<b>44</b>	<b>36</b>
<b>HMO Share of Admissions, By Payer Segment<sup>^</sup></b>		
Private	0.52	0.48
Medicare	0.22	0.16
MediCal	0.24	0.26
<b>HMO Share of Admissions - All Payer Segments<sup>^</sup></b>	<b>0.27</b>	<b>0.24</b>
<b>Kaiser share of discharges from non-Kaiser hospitals</b>	<b>0.02</b>	<b>0.02</b>
<b>Kaiser share of total discharges</b>	<b>0.12</b>	<b>0.13</b>

<sup>^</sup> Excluding discharges from Kaiser hospitals and other Kaiser HMO patients

Notes: Number of HMOs comes from enrollment data while share of discharges comes from OSHPD discharge data.

Unlike the HMO share, Kaiser share measure includes Kaiser hospitals.

<sup>1</sup> B.C. Strunk and P.B. Ginsburg, "Tracking Health Care Costs: Trends Turn Downward in 2003," *Health Affairs* 9 June 2004 content.healthaffairs.org/cgi/reprint/hlthaff.w4.354v1 (15 April 2005).

<sup>2</sup> D. A. Draper, R. Hurley, C. Lesser, and B. Strunk. 2002. "The Changing Face of Managed Care." *Health Affairs* 21 (1): 11-23.

<sup>3</sup> J.B. Christianson and S. Trude. "Managing Costs, Managing Benefits: Employer Decisions in Local Health Care Markets." *Health Services Research*. Volume 38 Issue 1, 357 - February 2003. S. Trude, S., J. B. Christianson, C. S. Lesser, C. Watts, and A. M. Benoit. "Employer-sponsored health insurance: pressing

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problems, incremental changes." *Health Affairs*, Vol 21, Issue 1, 66-75.

<sup>4</sup> Len M. Nichols, Paul B. Ginsburg, Robert A. Berenson, Jon Christianson, and Robert E. Hurley, "Are Market Forces Strong Enough To Deliver Efficient Health Care Systems? Confidence Is Waning", *Health Affairs*, Vol 23, No 2, 2004.

<sup>5</sup> Lesser, C.S., Ginsburg, P.B., Devers, K., 2003. "The End of an Era: What Became of the "Managed Care Revolution" in 2001? *Health Services Research* 38:1, Part II, 337-355.

<sup>6</sup> D.A. Draper et al., "The Changing Face of Managed Care".

<sup>7</sup>Devers, K., L. Brewster, and L. Casalino. 2003. "Changes in Hospital Competitive Strategy: A New Medical Arms Race?" *Health Services Research* 38 445-67, and D.A. Draper et al., "The Changing Face of Managed Care".

<sup>8</sup> Ginsburg, P. B. June 22, 2004. Congressional Testimony. "Hearing on Pricing Practices of Hospitals." [www.hschange.org/CONTENT/684/](http://www.hschange.org/CONTENT/684/)

<sup>9</sup> D.J. Gaskin, J. J. Escarce, K. Schulman, and J.Hadley. 2002. "The Determinants of HMOs' Contracting with Hospitals for Bypass Surgery." *Health Services Research*. Volume 37 Issue 4 Page 963.

<sup>10</sup> Rainwater, J. A., P. S. Romano. 2003. "What data do California HMOs use to select hospitals for contracting?" *Am J Manag Care*. 2003 Aug;9(8):553-61.

<sup>11</sup> These average distances were calculated based on patients who were discharged from a hospital within 90 miles of their home zip code.

<sup>12</sup> Kaiser Family Foundation, "Trends and Indicators in the Changing Health Care Marketplace" 2004. [www.kff.org/insurance/7031/index.cfm](http://www.kff.org/insurance/7031/index.cfm)