

Narrow Medical Provider Networks: Welfare Implications and Approaches to Market Design*

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Abstract

We consider the consequences of narrow medical provider networks—offered by insurers on health care exchanges and employer-sponsored insurance markets—for inequality and welfare. We first describe current and proposed approaches to network regulation and propose a model of the health care market that can be used to evaluate the likely effects of these and other market design policies. The model, based on Ho and Lee (forthcoming), accounts for consumer demand for hospitals, household demand for insurers, and bargaining between insurers and employers over premiums and between insurers and hospitals over prices. We show that in this framework, an insurer will exclude a hospital from its network if the incremental revenue from including it (generated by increased premiums and enrollment) is outweighed by an increase in the insurer’s reimbursement payments to hospitals. However, excluding a hospital may be inefficient if the benefit to consumers from the hospital’s services exceeds its incremental cost relative to other hospitals in the insurer’s network. This divergence between insurers’ incentives and social preferences—potentially exacerbated by frictions in the health care market generated by limited patient cost-sharing and premium setting constraints—may lead to inefficiently narrow networks. We argue that a flexible approach to regulatory intervention is warranted. In particular, restrictive policies such as must-carry requirements substantially reduce insurers’ bargaining leverage from being able to exclude a provider and are likely to generate cost increases that may far outweigh their benefit to consumers. We close by proposing a research agenda that uses economic models to assess the impact of various network, reimbursement, and premium regulations.

Keywords: health insurance, narrow networks, market design, inequality, hospital prices, bargaining

JEL: I11, L13, L40

*All errors are our own.

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Health insurers are increasingly appealing to more sophisticated plan and benefit designs as a means of controlling health care costs. This paper focuses on hospital network breadth, and the increased prevalence of “narrow network” plans that exclude high-priced hospitals from enrollees’ choice sets. Such plans have been introduced on health insurance exchanges established by the Affordable Care Act, where insurers’ ability to control costs by risk-selecting or excluding particular benefits is heavily constrained by regulation. They are also increasingly common in the employer-sponsored insurance market where both insurers and employers have incentives to control costs. We consider the impact of such arrangements on consumer inequality and welfare; describe current approaches to regulation; and outline a model that can be used to assess the likely effects of these and other approaches.

1 Examples and Previous Literature

We begin by illustrating some of the issues raised by narrow networks through two examples.

First, there has been concern among commentators that top cancer centers may not be offered in the networks of plans on state health insurance exchanges. An Associated Press survey in March 2014 found, for example, that Seattle Cancer Care Alliance was excluded by five out of eight insurers on Washington’s insurance exchange; MD Anderson Cancer Center was included by less than half of the plans in the Houston, TX area; and Memorial Sloan-Kettering was included by two of nine insurers in New York City and had out-of-network agreements with two more.¹ A second survey, conducted by Avalere Health and the National Comprehensive Cancer Network the following year, confirmed that exchange plan participation was highly varied: 75% of cancer centers that responded to the survey were covered by at least some of the exchange plans offered by carriers in their state (although most were included in higher tiers, implying higher patient cost-sharing than for lower-priced hospitals). However, 25% of cancer centers still reported that they were excluded from the networks offered by most of their state’s exchange carriers.² And, at the extreme end of the spectrum, in 2016 Memorial Sloan-Kettering was excluded by all NY exchange plans. These exclusions raise clear issues of inequality: employed consumers enrolled in commercial insurance through their employer are likely to have access to these specialized providers, while many consumers enrolled in exchange plans do not.

Our second example concerns narrow networks in the market for employer-sponsored insurance. The California Public Employees’ Retirement System (CalPERS) is an agency that manages pension and health benefits for California state and public employees, retirees, and their families. It is the largest employer-sponsored health benefits purchaser in the United States. For over a decade, CalPERS employees have been able to access plans from several large carriers, including a PPO plan from Anthem Blue Cross (BC), an HMO from California Blue Shield (BS), and an HMO plan

¹See “Concerns about Cancer Centers Under Health Law”, US News and World Report, March 19 2014, available at <http://www.usnews.com/news/articles/2014/03/19/concerns-about-cancer-centers-under-health-law>.

²“Leading Cancer Centers May Be More Widely Included in Exchange Networks than Expected”, April 22 2015, <http://avalere.com/expertise/life-sciences/insights/leading-cancer-centers-may-be-more-widely-included-in-exchange-networks-tha>.

offered by Kaiser Permanente. The BS HMO historically offered a fairly broad hospital network, although narrower than the PPO network provided by BC. In June 2004, Blue Shield filed a proposal with the California Department of Managed Health Care to exclude a number of high-cost providers including 13 hospitals from the Sutter system. Much of this proposal was approved and 28 hospitals were excluded from the network in 2005.³

The impact of this move towards narrow networks on inequality and access is less clear-cut than in the previous example. While BS enrollees would have lost access to particular physicians and hospitals if they remained with BS, they were able to switch to other plans in order to maintain access to these excluded providers.⁴ Nevertheless, the *willingness-to-pay* (WTP) for insurers' provider networks is likely to have been extremely heterogeneous across consumers: it may have been greatest for relatively sick enrollees or past Sutter hospital patients (e.g., as in Shepard, 2015). In addition, Ho and Lee (forthcoming) find that the lowest-income consumers in this market have the largest premium-sensitivity, and are the least likely to switch to a higher-premium plan. Thus low-income and sick consumers may have been the most harmed by BS's decision, since these consumers may have been willing to pay more to access the excluded providers, but not as much as the incremental premium required to switch to a broader-network plan. To the extent that a consumer would have preferred to have stayed with the excluded providers but did not—or could not—because of the premium increase required, and this disproportionately affected certain consumers (and was not outweighed by within-plan premium reductions), there were distributional implications of the network change.

Related literature. Our analysis contributes to a small but growing literature that examines the prevalence of narrow networks in different markets and investigates how they influence consumers' choices of insurers and hospitals, health care costs, utilization and outcomes. Dafny, Hendel and Wilson (2016) studied the networks offered on the federally-facilitated exchange in Texas in the first year of the marketplace. They documented wide variation in network breadth, measured as the ratio of patient discharges from in-network hospitals to the total number of discharges within the market. HMOs had narrower networks than PPO plans, and on average 57% of possible links between plans and hospitals actually resulted in a contract (a hospital included in the network). This was much lower than the 83% reported in a Ho (2006) study of HMO/POS networks in 43 commercial US markets. Hospitals with fewer beds, higher case-mix indices and critical access designations were relatively likely to be excluded. Network breadth explained little of the cross-plan variation in premiums.

Gruber and McKnight (2014) studied the introduction of limited network plans by the Massachusetts Group Insurance Commission (GIC), an organization that offered health insurance to

³The hospitals that were dropped included four major Sutter hospitals in the Greater Sacramento area and eight hospitals in the Greater Bay area. See Zaretsky and pmpm Consulting Group Inc. (2005) for details.

⁴ 44% of the 33,500 affected enrollees in Sacramento switched away from BS's HMO plan. However only 23% of those affected switched to a higher-premium PPO (paying approximately \$350 per year more in premiums) where they could retain access to Sutter physicians. See, for example, <http://www.bizjournals.com/sacramento/stories/2004/12/20/story8.html>.

state and public employees in Massachusetts. In 2012 the GIC used incentives, including a three-month “premium holiday,” to encourage adoption of these plans. Broad network plans covered nearly twice as many physicians and 50% more hospitals than narrow network plans. Claims data indicated that consumer behavior was very sensitive to financial incentives: the premium holiday caused 10% of enrollees to switch plans. The healthiest individuals were most likely to switch, while enrollees who could switch without changing carriers or physicians were 60% more likely to switch than other enrollees. The authors also investigated the implications for utilization and outcomes. They found that the marginal person induced to switch plans spent 36% less than the controls. The spending decline was caused by a reduction in both quantities of care received and prices paid for care. There was no evidence of quality reductions (e.g., no increase in readmission rates) but patients did travel further to go to hospitals.

Thus the existing literature examines current and past introductions of narrow network plans and provides initial evidence (in at least one example) that they can reduce costs. However, in order to conduct welfare analysis and evaluate the potential impact of regulatory intervention, a model is required that appropriately measures consumer preferences and firm incentives. We return to these issues after describing existing and proposed approaches to regulation.

2 Approaches to Regulation

Regulatory and institutional constraints, often imposed at the state level by exchanges or state regulators, affect insurers’ ability to offer narrow network plans. Standards for network adequacy are commonly based on consumers having local access to a hospital for every diagnosis. For example, the CalPERS proposal was vetted by the California Department of Managed Health Care (DMHC), which oversees all HMOs and most POS plans in the state, to ensure “access and continuity of care.” The proposal was assessed against the standard that the remaining in-network hospitals (and physician groups) should have sufficient capacity to treat local BS enrollees in each market.⁵ As a result of this review, some of the hospitals that BS proposed to drop were required to be reinstated; these were predominately small community hospitals in relatively isolated counties.

Network breadth for plans on the Exchanges is constrained by federal regulations, issued in March 2012, which require Qualifying Health Plans (QHPs) to ensure that their networks are “sufficient in number and types of providers, ..., to assure that all services will be accessible without unreasonable delay.”⁶ The Exchange must “ensure that the provider network of each Qualifying Health Plan meets the standards specified,” including covering a sufficient number and geographic distribution of “Essential Community Providers” (serving predominately low-income individuals) to ensure reasonable and timely access to a broad range of such providers.⁷

⁵Details are provided in a technical Report on the Analysis of the CalPERS/Blue Shield Narrow Network (Zaretsky and pmpm Consulting Group Inc. (2005)). The specific requirement was that enrollees should have access to primary medical services—both hospitals and physicians—within 30 minutes or 15 miles of their residence or workplace.

⁶45 C.F.R. 156.230(a)(2) (established by 77 FR 18469, March 27, 2012).

⁷45 C.F.R. 155.1050.

While the federal regulations provide a framework for network oversight and a qualitative description of network adequacy, states retain substantial flexibility regarding quantitative standards, implementation and enforcement. Giovanelli, Lucia and Corlette (2015) examined the specific network adequacy standards set by the 50 states and District of Columbia when marketplace coverage was initiated in 2014. They showed that 23 states set quantitative standards to measure the adequacy of plan networks. These were often based on travel time or distance: for example New Jersey required its managed care plans to have at least two primary care physicians available within 10 miles or 30 minutes driving or public transit time for 90 percent of enrollees. The California and New York exchanges, among others, had similarly-structured quantitative requirements. A few states based standards not just on distance traveled but also appointment wait times, provider-to-enrollee ratios, and/or access to providers with extended hours of operation (e.g. CA, IL, MO). In contrast, some states (e.g. MD, KS) were much less prescriptive, using qualitative standards similar to those specified in the federal regulations.

We note that even the most prescriptive states' network standards are generally based on *access* rather than *preferences*: that is, they ignore the fact that consumers may face a loss from exclusion of particular hospitals even if they can still be served by others. For example, a patient may gain substantial utility from continuing access to the physician with whom she has a longstanding relationship at a particular center of excellence. Relatedly, some well-regarded hospitals have argued that they should be considered to be “must-carry providers” that should be offered by all exchange plans. In 2013 Seattle Children’s Hospital filed a case in King County Superior Court and an Administrative Appeal with the Office of the Insurance Commissioner (OIC), arguing that, given its designated status as an Essential Community Provider for pediatric services, health plans lacking its services in 2014 failed to meet legal requirements for network adequacy.⁸ The court case was dropped for technical reasons while the appeal was eventually also dropped because the hospital reached agreement with the major insurers in the market. This example points to the importance of measuring patient preferences over selective networks when considering the trade-offs between the benefits and costs of network breadth (Ho, 2006). However the potential costs of requiring such centers to be included—particularly in terms of reduced insurer bargaining leverage, increased hospital prices and increased premiums—may be substantial. We return to these issues below.

Network oversight practices for exchange plans are still being refined at both the federal and state level. States are actively monitoring the changing markets and assessing the need for further regulation. At the federal level, the Centers for Medicare and Medicaid (CMS) proposed rule for 2017 called on all states to select a quantifiable network adequacy standard, subject to minimum criteria established by CMS. Insurers objected to this. For example America’s Health Insurance Plans (AHIP) submitted comments suggesting that tight constraints would interfere with insurer-provider negotiations: “The development of...network designs...involves extensive discussions with providers. We are very concerned that collection of detailed information about these negotiations

⁸See <http://blogs.seattletimes.com/healthcarecheckup/2014/09/02/childrens-hospital-regence-settle-dispute-over-insurance-networks/>.

would have a chilling effect on health plan efforts.”⁹ The 2017 Final Rule, released after these comments were submitted, did not adopt the proposed provisions.

There are other regulations that constrain other dimensions of plan characteristics both on the exchange and for commercial plans. Examples on the California exchange include standardized coverage by metal tier; the exchange is also involved in premium negotiation and selective contracting with insurance plans. CalPERS plays a very similar role in negotiating premiums on behalf of California state and public employees in the commercial market. There is evidence that this active involvement by the exchange or employer may be helpful in constraining premiums (Scheffler et al., 2016; Ho and Lee, forthcoming). While such regulations do not directly affect network breadth, there may be indirect effects which we return to below.

3 A Model-Based Approach to Health Care Market Design

How can we assess the ideal design for the health insurance market as it relates to network adequacy and provider access? The previous discussion suggests that network regulation is likely to affect not just network breadth, but also other dimensions of health plan offerings including premiums. To evaluate the impact of potential interventions, we require a model of the health care market that uses appropriate measures of incentives and preferences to predict insurer, provider and consumer behavior.

We highlight the value of tools from the Industrial Organization literature in this context. Insurance product characteristics (which include premiums and networks) are equilibrium objects. They are determined via insurer-provider and insurer-employer negotiations that, in turn, condition on consumer preferences for both insurance plans and hospitals. Thus, we rely on a model of premium setting, reimbursement rate bargaining, and consumer demand over insurers and providers in order to predict both the supply-side response to adjustments in regulation or market design and the associated change in consumer surplus. The theoretical and empirical contribution of our research agenda is to provide such a framework, and utilize it to conduct analyses in real world settings. Applied models of equilibrium network formation and surplus division that could be taken to these complex health care settings (characterized by bilateral oligopoly and market power) were previously not available.

3.1 A Model of the Market

We provide a sketch of the model in Ho and Lee (forthcoming) that is estimated using detailed benefit, enrollment, claims, and provider network data from CalPERS. Consider the set of insurers that are offered by a particular employer or exchange and the set of hospitals in a particular market. The analysis initially takes each insurer’s hospital network as given. Assume that a consumer who

⁹See AHIP letter at <https://assets.documentcloud.org/documents/2714580/AHIP-Comments-on-Proposed-NBPP-for-2017-Final-1-1.pdf>.

is enrolled in a particular insurance plan can only visit hospitals in that plan’s network. Consider the following timing:

1. All insurers and in-network hospitals engage in simultaneous bilateral Nash bargaining to determine hospital prices; the employer and the set of insurers simultaneously bargain in an analogous way over per-household premiums.
2. Given hospital networks and premiums, households choose to enroll in the insurance plan that maximizes their expected utility. This determines household demand for each plan.
3. After enrolling in a plan, each individual becomes sick with some probability (a function of demographics). Those that are sick choose their preferred in-network hospital.

The demand model allows insurers to be differentiated by their networks, premium, and a market-specific vertical quality. Hospitals differ by distance to the patient’s home, quality, and the fit of their specific services and technology to the patient’s diagnosis and other attributes. Hospitals and insurers are assumed to maximize their profits, which are functions of consumer demand, prices or premiums, and costs. The employer, when bargaining with insurers over premiums, maximizes the weighted sum of its employees’ surplus from the insurers that are offered and the cost of subsidizing a high proportion of insurer premiums (80% in our setting).¹⁰

The negotiation between insurers and the employer determines the trade-off made between lower insurer premiums and more generous benefits and/or networks. If an insurer offers a relatively broad network, this will increase employee welfare and therefore lead to a rise in premiums, but the increase is constrained by the employer via negotiation.

3.2 Incentives for Narrow Networks

We can use this model to understand an insurer’s incentives to include a hospital in its network or to exclude it. An insurer has an incentive to add hospitals if this will make it more attractive to both employers and consumers: this enables it to negotiate higher premiums or attract a higher number of enrollees. However, consumer cost sharing is typically quite limited: after paying a premium, enrollees pay little or nothing to access providers, and the amount they pay is often fixed across hospitals. An insurer therefore bears the cost of paying any incremental negotiated prices to high-priced hospitals (which may exceed their incremental costs above others in the network).

Indeed, limited cost sharing—and more generally, an inability to direct or steer enrollees to particular in-network hospitals—is one of the distinguishing characteristics of the health care market. Excluding a high-priced hospital (e.g. a center of excellence) may thus be beneficial to the insurer for several reasons. First, sick consumers who have a relationship with the hospital may select out of plans that exclude it (Shepard, 2015). Second, even absent this selection issue, relatively healthy

¹⁰Although we assume that employers weight all employees equally, it would be straightforward to consider richer models: e.g., a maximization subject to a minimum utility threshold, or a minimum distance requirement, for a given employee.

consumers that remain with the insurer can be steered to more efficient alternatives for routine or standard needs if they do not have access to the high-priced hospital, implying a cost reduction. Third, exclusion may allow the insurer to negotiate lower reimbursement rates with the remaining in-network hospitals—both by promising to steer more volume to them, and by threatening to replace them with excluded hospitals (Ho and Lee, 2016). Together these features generate an incentive for insurers to exclude high-priced hospitals, particularly if they are attractive to otherwise low-cost consumers, unless any cost increases from inclusion can be recovered by increasing premiums.

However, insurers’ flexibility to adjust premiums—or price discriminate—in response to network changes is often limited by institutional factors. Premium negotiations with employers and oversight by exchanges restrict insurers’ ability to recover the costs incurred by offering high-priced hospitals (Ho and Lee, forthcoming; Scheffler et al., 2016). Further, community rating regulations may prevent plans from setting different premiums by demographic group (e.g. age, gender, or risk category).¹¹ These types of requirements, which are often intended to reduce enrollee risk exposure, exacerbate insurers’ incentives to exclude high-priced hospitals by preventing them from increasing premiums for the groups of enrollees who most value those providers.¹²

While the above-mentioned factors generate incentives for insurers to exclude hospitals, there is still a question regarding the need for network regulation. Observed network exclusions may be socially appropriate or efficient on average in the sense that the (average) benefit to consumers from including the hospital may be outweighed by that hospital’s incremental costs of care. One such example may be the exclusion of Sutter hospitals by the CalPERS Blue Shield HMO, since the majority of affected consumers were not willing to move to a higher-premium plan in order to retain access, implying that the benefit may have been small. Further, if threatening to exclude a hospital generates lower prices, this in turn may lower premiums, benefiting both those who are already insured and those who now select into insurance from a less efficient alternative.

There are also situations where networks that are offered by insurers may be inappropriately narrow. This is particularly likely when constraints on premiums, or other market interventions, exacerbate the existing divergence between insurers’ incentives and social or consumer preferences (Spence, 1975). Consider for example the potential exclusion of a high-quality pediatric hospital. Families with young children may be willing to pay an increased premium to access this particular provider, while those with older children may not. Absent the ability to charge differentially high premiums to certain families that value the hospital more, the insurer may choose to drop the pediatric hospital entirely. Since the insurer caters to the marginal enrollee and does not consider the benefits that the hospital creates for its infra-marginal enrollees (and also more generally does

¹¹For example, CalPERS allows premiums to vary only by family size, with limited variation across geographic markets and none across demographic groups. The California exchange allows age-based premium-setting, while other exchanges, such as that for New York, do not.

¹²This is similar to the issue discussed in Handel, Hendel and Whiston (2015), who consider the trade-off between adverse selection and reclassification risk when assessing the benefits of community rating. Allowing premiums to vary by health status helps address adverse selection but increases reclassification risk (i.e. increases enrollee exposure to the risk of premium increases if their health status declines).

not internalize the costs of enrollees who may switch insurers or become uninsured), this decision may be suboptimal from the social planner’s perspective. This simple example illustrates that a profit maximizing insurer may choose to exclude a hospital even if every patient who might choose to access it would receive a benefit at least as great as its cost. We view this as an “inefficient” or inappropriate exclusion in the short term, although we note that in the longer term even these exclusions could have dynamic effects, e.g. to reduce prices, that could be welfare-improving.

3.3 A Research Agenda

As we have argued, a carefully specified and constructed model is needed to assess the benefits and risks of different potential regulatory schemes and adjustments to market design. Ideally, we should begin by investigating whether relatively flexible market oversight schemes, such as those on the exchanges with quantitative standards, are reasonable. A functioning market—perhaps with time or distance standards—might be preferable to a more constrained environment since insurers explicitly trade off consumer utility and costs (albeit imperfect measures of each). Insurers may also have a more accurate understanding of consumer preferences in their local markets than a central regulator would.

The current regulatory schemes and ideas outlined in Section 2 should also be considered. One example is the possible designation of must-carry providers. While this idea has the benefit of ensuring access to major centers of excellence, we view its implications with concern. An insurer’s ability to credibly threaten to exclude a hospital is essential for price negotiation; this is clear from the model in Ho and Lee (forthcoming), and also from bargaining theory much more generally. Must-carry requirements would remove that threat. They would likely lead to health care cost increases that could far outweigh the benefits to consumers.

Transparency requirements are important. Consumers cannot make informed choices if they face barriers to observing the networks offered by each insurer; conversely, plans have a clear incentive not to advertise exclusions of popular hospitals. Several state exchanges have established explicit requirements regarding the accuracy of plans’ provider directories and the frequency with which they are updated. This is a pre-requisite for the model in Ho and Lee (forthcoming) and clearly an important area for regulatory oversight.

What other approaches could be used to prevent inappropriately narrow networks? As discussed above, institutional constraints that prevent premiums from responding to network changes may lead to exclusion. Employer or exchange involvement in premium negotiations is likely to have important benefits in terms of controlling consumer costs, but the incidental effects on network breadth (and other dimensions of insurance plan offerings) should not be ignored. Similarly, if community rating laws were relaxed so that premiums were permitted to differ across individuals or geographic regions or were based on finer groupings of consumers, risk exposure might increase but exclusionary incentives could be reduced.

Other insurer initiatives to design more sophisticated plan offerings could also help address the issues we have outlined. Examples include tiered networks, in which hospitals are assigned to

groups that require different levels of patient cost-sharing, with higher-priced hospitals on higher-cost-sharing tiers within the plan (e.g., Prager, 2016). Insurers can also offer multiple plans to a single employer, each with a different network breadth and an appropriate premium level. Each of these arrangements permits more effective price discrimination across consumers than is possible when offering a single plan with a single cost-sharing level. The outcome may provide access to broader networks than under a system with limited tiering because the implied increase in cost-sharing reduces the insurer’s incentives to exclude. Base premiums may also fall, permitting low-income consumers to buy at least a narrow-network plan. The welfare implications of tiering require further investigation.

The model needed to investigate the costs and benefits of these potential strategies must contain additional features beyond those included in the Ho and Lee (forthcoming) framework. An explicit model of network formation must be added. Assessing consumer risk exposure and adverse selection would require incorporating unobserved consumer sickness and risk aversion into the model. Given the inter-dependent issues and concerns outlined above, developing such a model is an important next step in the literature. This is the subject of ongoing research by the authors (Ho and Lee, 2016), and we call on others to further investigate these and related questions.

We close by noting that there are many other important aspects of market design in the US health care markets, all of which have distributional implications. The subsidies on the Affordable Care Act exchanges are explicitly linked to the prices set by insurers. This generates incentives for higher prices (Jaffe and Shepard (2016), Tebaldi (2016)). Allowing subsidies to vary by age (given age-based heterogeneity in demand and costs) would make all consumers better-off and reduce public spending per person (Tebaldi (2016)). In Medicare Part D, consumer inertia, and lack of defaults, provides incentives for plans to increase their prices (Ericson (2012), Ho, Hogan and Scott Morton (2016)). In Medicare Advantage, the method used to determine the premium benchmark generates incentives for plans to increase their premium bids (Curto et al. (2016)). Recent trends towards increased consolidation in both insurance and provider markets may further alter incentives and adjust predictions. Work is ongoing, and more is needed, on all of these issues.

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