

Narrow Networks on the Health Insurance Exchanges: What Do They Look Like and How Do They Affect Pricing? A Case Study of Texas

By LEEMORE DAFNY, IGAL HENDEL, AND NATHAN WILSON*

* Dafny: Kellogg, Northwestern University, Evanston, IL 60208, (e-mail: l-dafny@kellogg.northwestern.edu); Hendel: Department of Economics, Northwestern University, Evanston, IL 60208 (e-mail: igal@northwestern.edu); Wilson: Bureau of Economics, Federal Trade Commission, Washington DC, 20580 (e-mail: nwilson@ftc.gov). The views expressed in this article are those of the authors. They do not necessarily represent those of the Federal Trade Commission, and the work was not prepared as part of Wilson's work for the FTC. We thank Kate Ho for excellent comments, and Angela Lin, Mariano Irace, David Benson, Chris Ody, and Matthew Schmitt for expert research assistance.

The health insurance exchanges established by the Affordable Care Act opened in October 2013, potentially auguring a new era for the insurance industry and American health care overall. Myriad insurance market regulations were simultaneously implemented, most notably the requirements that insurers take all comers (“guaranteed issue”), and vary premiums only by location, household structure, age, and tobacco use. The vast majority of legal residents ineligible for public insurance and lacking access to “affordable” coverage through an employer or spouse became eligible for income-based subsidies to purchase plans on the exchange.¹

¹ The significant exception – resulting from a June 2012 Supreme Court decision – consists of individuals between 100 and 133 percent of the federal poverty line and living in states that did not elect to expand Medicaid. The Kaiser Family Foundation (2014) estimates 4.8 million individuals fall in this category.

The new exchanges (or “marketplaces” in government parlance) offer plans classified by “metal tiers.” These tiers are distinguished by actuarial value (AV), defined as the share of healthcare spending that an insurance plan pays for a typical enrollee. However, even within a given tier, plans may vary in several financial and nonfinancial dimensions. We focus on the dimension of network breadth or value, specifically with respect to hospitals. Given the new restrictions on insurers’ ability to risk-select or to exclude certain benefits, in order to keep premiums down insurers have increasingly adopted “narrow” or “limited” networks (Corlette et al. 2014). We have three primary objectives: (1) to describe networks on offer on the exchanges; (2) to construct measures of network breadth and value; and (3) to explore the link between premiums and network value, and, in so doing, gain insights into the validity of choice models commonly used in provider merger analyses. Our data is at present restricted to the state of Texas, the largest state with a federally-facilitated marketplace. Over 733,000 individuals selected a plan through the Texas marketplace

by the close of the 2014 open enrollment in March 2014 (ASPE 2014).

I. The Texas Health Insurance Marketplace

The Texas Health Insurance Marketplace is operated by the federal government. The state is divided into 26 markets called “ratings areas.” Twenty-five of these areas consist of a county or contiguous counties encompassing a city or town; the 26th (which accounts for 11.5 percent of the state’s population) is a hodgepodge of all remaining counties.² Whereas insurers’ participation decision may vary at the county level (i.e., a plan need not be available to residents of all counties within a given ratings areas), premiums can vary only at the ratings area level. We restrict attention to plans in the “silver” tier (corresponding to an AV of 70 percent), as all participating insurers must offer at least one silver plan, and all insurer-network configurations are represented in this tier.³

Eleven insurers offered plans in at least one ratings area in 2014. Ten of these insurers participated in at least two ratings areas. Blue Cross and Blue Shield of Texas (BCBS-TX)

was the only carrier participating in all ratings areas.

BCBS-TX offered two distinct networks in each ratings area, a narrow one in conjunction with an HMO product, and a very broad one linked to a PPO product. No other carrier offered more than one network in the same ratings area. Online Appendix Table 1 provides additional detail on insurer participation and networks by area.

II. Network Breadth and Value

We consider a simple measure of network breadth, and a more complex measure of network value (derived from a model of hospital demand).

A. Discharge Shares

Discharge shares are defined at the network-ratings area level, and then matched to the plans utilizing that network. (For example, Blue Cross offers two silver HMO plans in Houston, both of which utilize the Blue Advantage HMO network.) We calculate the discharge share as the ratio of patient discharges in hospitals belonging to a network over the total number of discharges to patients residing in the ratings area.⁴ Figure 1

² We exclude ratings area 26 from our analyses owing to difficulties in gathering data on in-network hospitals for these areas.

³ This need not be true in other states, and/or in 2015 and beyond; in other words, we are unaware of a regulation requiring all networks offered by an insurer to be offered within the silver tier. Note that “plan” refers to a distinct option available on the marketplace. Multiple plans offered by the same insurer may (and often do) share the same network.

⁴ For plans only offered in a subset of counties within a ratings area, we construct the discharge share (and expected utility measure)

illustrates the variation in breadth as measured by discharge shares, for the three largest and three smallest ratings areas by population. The figure illustrates three facts: (1) there are more insurers, and more variety in network breadth, in larger markets; (2) the BCBS-TX PPO has a discharge share between 0.99 and 1 in all markets, while the BCBS-TX HMO discharge share is strictly lower;⁵ and (3) most non-BCBS-TX carriers offer plans with discharge shares beneath the BCBS-TX HMO discharge share (which averages 56 percent on a population-weighted basis).

[Insert Figure 1 Here]

B. Expected Utility

We construct a measure of the expected utility associated with a network by estimating a discrete choice model of hospital demand, and aggregating across the predicted utilities of admissions for each patient location-diagnosis-network combination using the actual data on patient locations and statewide probabilities of admissions in an exhaustive set of diagnosis categories. Additional details on the data source and estimation are described in the Data Appendix.

using data for residents in those counties. Note that hospitals outside a given ratings area may be in-network for residents of that area.

⁵ The discharge shares consider only hospitals that are included in at least one network in a given ratings area.

We find the correlation between discharge shares and expected utility is high ($r = 0.86$), but as Online Appendix Figure 1 illustrates, there is significant variation in expected utility for the broadest networks (for which the share of discharges is at or close to 1).

III. Which Hospitals Are Included in Networks?

To gain a better understanding of which hospitals are included in narrow networks, we constructed a dataset using the hospital-insurer-network-ratings area as the unit of observation. In every ratings area, observations are generated for all general acute-care hospitals located in that area that are also included in at least one network offered in that ratings area. We define an “in network” indicator that takes a value of “1” if a hospital is included in the relevant hospital-insurer-network-ratings area. Descriptive statistics and data sources are presented in Online Appendix Table 2. The mean value for “in network” is 0.57 – considerably lower than the mean of 0.83 reported in the Ho (2009) study of HMO/POS networks in 43 U.S. markets. That is, the average network on the Texas exchange is considerably narrower than the networks utilized by managed care plans in 2002 (the year of Ho’s data).

Online Appendix Table 3 reports the results of linear probability models of network inclusion.⁶ Our first specification includes only hospital characteristics (such as case-mix index, and indicators for affiliation with a medical school and for system membership of different types). We progressively add insurer fixed effects and ratings areas fixed effects. The insurer dummies are highly predictive, with all insurers apart from Cigna having less inclusive networks (on average) than the narrow Blue Cross network (the omitted category). However, there appears to be a common preference for hospitals with more beds, lower case-mix indices, and critical access designations. We do not find a measure of the commercial hospital price level (estimated using the definition in Dafny 2009) to be predictive of network inclusion. In future work, we plan to consider additional hospital and market characteristics, e.g., service lines and insurer market structure.

IV. How Does Network Breadth Affect Premiums?

To explore the relationship between network breadth/value and plan premiums, we estimate hedonic pricing models. The unit of observation is the plan-ratings area, and our

⁶ Probit models yielded qualitatively similar results; we use linear probability models for ease of interpretation.

regressand is the log of plan premium for a 27-year-old single policyholder.⁷ Descriptive statistics are available in Online Appendix Table 4. Table 1 presents results obtained using the discharge ratio as the regressor of interest; Online Appendix Table 5 presents the similar results obtained using expected utility. All models include control variables designed to account for non-network related variation in the different plans. In particular, we include an indicator variable for whether there is a deductible, the log of the deductible if it is non-zero, the log of the maximum out-of-pocket expenses a patient might bear, and a set of ratings area fixed effects. We report standard errors that are clustered at the ratings area x insurer network level. We weight observations to reflect the relevant population in counties with access to each plan; details are provided in the table notes.⁸

[Insert Table 1 Here]

We begin by estimating a model including all the variables described above as well as insurer fixed effects. These fixed effects control for statewide insurer strategies and characteristics, e.g., some insurers may have

⁷ Plan premiums for other ages and family structures are an affine transform of the 27-year-old single premium.

⁸ The results are qualitatively similar when we do not weight observations. Details are available upon request.

deliberately priced relatively low in order to gain a foothold in the marketplace in year 1.

The results, displayed in Column 1 of Table 1 and Online Appendix Table 5, show a positive and significant relationship: a one-standard deviation increase in discharge ratio (expected utility) is associated with a premium increase of 10 percent (8 percent). The identifying variation for this relationship derives from two sources: cross-market variation in network breadth (and premiums of associated plans) for the nine insurers participating in more than one ratings area,⁹ and within-market variation supplied by BCBS-TX. Separating the sample into non-BCBS (Column 2) and BCBS plans (Column 3) shows that the association between price and network breadth is driven entirely by the latter: the narrower BCBS networks are priced lower than the broader BCBS networks.¹⁰

Column 4 adds an indicator for HMO (which is collinear with insurer fixed effects in the non-BCBS sample). The results reveal that our estimate of the price effect of network breadth/value is largely due to lower across-the-board prices for BCBS's HMO/narrow network plan. The relative narrowness of the Blue Advantage HMO network across markets

is a small and mildly significant predictor of premiums. This result is confirmed by a simple examination of BCBS's pricing. BCBS priced its (narrow) Blue Advantage HMO plans roughly 22 percent lower than its (broad) Blue Choice PPO plans in all markets; the exact ratio for each market is given in Online Appendix Table 1.

The results imply that, at least in year 1 of the Texas Health Insurance Marketplace, network narrowness and the associated consumer valuation of these networks does not explain much of the observed premium variation.

V. Discussion

The data and analysis we present in this paper suggest that network breadth/valuation by consumers is not tightly linked to plan pricing. Narrow BCBS-TX plans are cheaper than broad BCBS-TX plans, but the discount only covaries slightly with the degree of narrowness in each relevant market. In addition, the other insurers in Texas do not appear to systematically price higher in markets where their networks are narrower. Finally, to the extent that network breadth/value does predict price, a simpler measure (discharge share) does not do measurably worse, and may in fact be superior

⁹ Tabulated after excluding ratings area 26.

¹⁰ Regressions including all plans, and excluding insurer fixed effects, show no significant relationship between network breadth/value and premiums.

in terms of fit than a measure derived from patient choice models.

Before concluding, we offer two key caveats to the results. First, we have not exhausted the range of possible measures of network breadth and valuation. For example, Ericson and Starc (2014) find that inclusion of a major academic medical center is highly predictive of pricing in Massachusetts. We plan to explore this measure, as well as measures of “network adequacy” in future work. Second, this analysis is limited to a single state and year. The marketplaces are not in long-term equilibrium and pricing will evolve to reflect consumer preferences, competition, and regulation.

Keeping these caveats in mind, our findings suggest that insurers may be relying on simple heuristics for pricing. This is likely due (at least in part) to the substantial uncertainty surrounding the first year of the marketplaces, and perhaps to the difficulty in assessing network breadth. Certainly the process to gather the data from insurers was arduous even for trained research assistants, requiring multiple web searches and repeat phone calls.

In future work, we plan to explore markets in other states and years, and to use the results to gain additional insights into the validity of models of hospital choice and hospital-insurer bargaining.

REFERENCES

- ASPE (Assistant Secretary for Planning and Evaluation Office of Health Policy), Department of Health and Human Services. 2014. “Health Insurance Marketplace: Summary Enrollment Report for the Initial Annual Open Enrollment Period.” ASPE Issue Brief, May 1, 2014.
- Corlette, Sabrina, JoAnn Volk, Robert Berenson, and Judy Feder. 2014. *Narrow Provider Networks in New Health Plans: Balancing Affordability with Access to Quality Care*. Georgetown University Center on Health Insurance Reforms and The Urban Institute.
- Dafny, Leemore. 2009. “Estimation and Identification of Merger Effects: An Application to Hospital Mergers.” *Journal of Law and Economics* 52(3): 523–555.
- Ericson, Keith, and Amanda Starc. 2014. “Measuring Consumer Valuation of Limited Provider Networks.” National Bureau of Economic Research Working Paper 20812.
- Ho, Kate. 2009. “Insurer-Provider Networks in the Medical Care Market.” *American Economic Review* 99(1):293–330.
- Kaiser Family Foundation. 2014. “The Coverage Gap: Uninsured Poor Adults in States that Do Not Expand Medicaid.” Kaiser Family Foundation Issue Brief, March 2014.

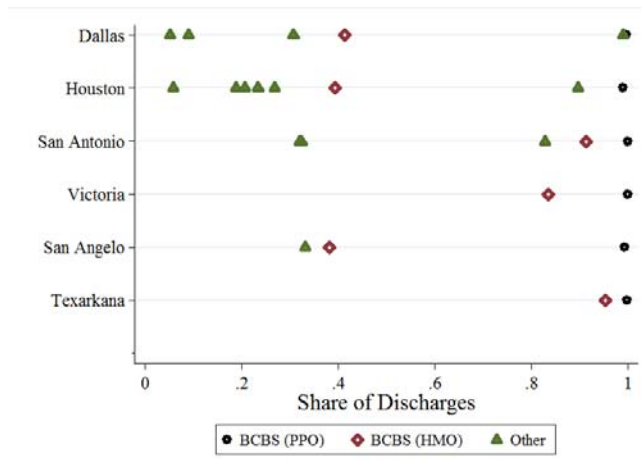


FIGURE 1. BREADTH OF NETWORKS OFFERED IN LARGEST AND SMALLEST TEXAS RATINGS AREAS

Source: Authors' calculations constructed using data described in text and Online Data Appendix.

TABLE 1—RELATIONSHIP BETWEEN NETWORK BREADTH AND PLAN PREMIUMS

Sample	All plans	Non-BCBS plans	BCBS plans	
	(1)	(2)	(3)	(4)
discharge ratio	0.268*** (0.050)	-0.036 (0.046)	0.421*** (0.013)	0.026* (0.013)
deductible is 0	-0.401** (0.154)	-0.388 (0.295)		
ln(deductible > 0)	-0.066*** (0.020)	-0.064* (0.038)	-0.044*** (0.000)	-0.044*** (0.000)
ln(maximum out-of-pocket expense)	-0.291*** (0.087)	-0.278** (0.123)		
HMO				-0.023*** (0.006)
Insurer fixed effects	Yes	Yes	N/A	N/A
R^2	0.734	0.822	0.851	0.997
Observations	251	151	100	100

Notes: Sample excludes metal colors other than Silver, ratings area 26, multi-state plans, one observation with an Exclusive Provider Network (EPO), and the sole plans offered by Sendero and Community First remaining after the other restrictions were applied. Two insurers, Community Health Choice and Molina Marketplace, have zero deductibles: ln(deductible) is coded as zero in this cases. All specifications include ratings area fixed effects. Observations are weighted using the county population divided by the number of plans offered in the county, summed over the counties within the ratings area in which the plan is offered. Standard errors (in parentheses) are clustered by ratings area \times insurer network.

Source: Authors' calculations from data described in text and Online Data Appendix.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.