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Narrow Networks On The Health Insurance Marketplaces: Prevalence, Pricing, And The Cost Of Network Breadth

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ABSTRACT Anecdotal reports and systematic research highlight the prevalence of narrow-network plans on the Affordable Care Act's health insurance Marketplaces. At the same time, Marketplace premiums in the period 2014–16 were much lower than projected by the Congressional Budget Office in 2009. Using detailed data on the breadth of both hospital and physician networks, we studied the prevalence of narrow networks and quantified the association between network breadth and premiums. Controlling for many potentially confounding factors, we found that a plan with narrow physician and hospital networks was 16 percent cheaper than a plan with broad networks for both, and that narrowing the breadth of just one type of network was associated with a 6–9 percent decrease in premiums. Narrow-network plans also have a sizable impact on federal outlays, as they depress the premium of the second-lowest-price silver plan, to which subsidy amounts are linked. Holding all else constant, we estimate that federal subsidies would have been 10.8 percent higher in 2014 had Marketplaces required all plans to offer broad provider networks. Narrow networks are a promising source of potential savings for other segments of the commercial insurance market.

During the period 1999–2013, employer-sponsored health insurance premiums grew at an average annual rate of 7.7 percent—4.7 percent faster than the average annual rate of growth in per capita US gross domestic product.^{1,2} Premiums for plans offered through the Marketplaces introduced under the Affordable Care Act in 2014 were projected to grow at similar rates.³ However, in the period 2014–16, both premium levels and growth rates for Marketplace plans were substantially lower than expected.⁴ For example, Loren Adler and Paul Ginsburg estimated that premiums for benchmark plans (the second-lowest-price plans in the silver tier) in 2014 were 15 percent below the 2009 projections of the Congressional Bud-

get Office (CBO).⁴ By 2016 these premiums were 20 percent below the CBO's 2009 projections, reflecting lower growth rates.

Marketplace premiums may have been lower than projected for a number of reasons, such as different expectations about the underlying health risk of enrollees and strategic underpricing by insurers seeking to attract enrollees with low premiums and then “harvest” profits through higher premiums in subsequent years.⁵ Indeed, Marketplace premiums appear to have spiked upward in 2017, although part of this spike is attributable to the expiration of two of the three programs to curb insurer risk (the reinsurance and risk corridor programs expired; risk adjustment remains).⁶ In the study presented here, we focused on the contribution of

the reduced breadth of provider networks to lower premiums.

Several recent studies have documented a high prevalence of narrow-network plans on the Marketplaces.⁷ For example, the McKinsey Center for U.S. Health System Reform reported that roughly 40 percent of hospital networks on the Marketplaces in 2014, 2015, and 2016 included fewer than 70 percent of the hospitals in a given geographic area.⁸ Physician networks are even narrower than hospital networks. Daniel Polsky and coauthors reported that the average physician network in Marketplace plans contained just 30 percent of local-market physicians in 2014.⁹

There are three primary mechanisms through which this shift to narrow provider networks may have contributed to lower premiums. First, insurers may realize lower total medical spending by identifying and contracting only with providers that are efficient—that is, those that agree to low reimbursement rates or that generate medical savings by performing only necessary services and using the lowest-cost appropriate sites of care for those services.¹⁰ In their 2016 study of the impact of narrow-network plans on spending and utilization, Jonathan Gruber and Robin McKnight found evidence consistent with this hypothesis: State employees induced by a “premium holiday” to join a narrow-network plan increased spending on primary care but decreased spending on higher-cost services such as specialist care and emergency department visits. When these effects were combined, the narrow-network plan reduced overall medical spending by 40 percent.¹¹ (Notably, Simon Haeder and coauthors found that a narrow network does not necessarily mean low quality: The average Marketplace plan in California included fewer hospitals than the average commercial plan did, but the average quality of in-network hospitals was not measurably lower.)¹²

Second, narrow-network plans may be able to negotiate lower prices from providers in return for steering greater patient volume to them, and plans could then pass these savings on to consumers in the form of lower premiums. Third, the threat of exclusion should motivate providers to become more efficient—which in turn should reduce total medical expenditures and therefore premiums.

To date, researchers have not provided a definitive answer to the question of how much cheaper narrow-network plans are. The McKinsey Center reported that among silver plans on the Marketplaces in 2014, plans with narrow hospital networks were priced 16 percent below similar¹³ plans with broad hospital networks, and this discount had risen to 22 percent by 2016.⁸ Polsky and coauthors reported that

among silver plans on the Marketplaces in 2014, those with “extra-small” physician networks were priced 6.7 percent below similar silver plans with “large” physician networks.⁹ There are a number of potential explanations for these substantially different magnitudes, such as the distinction between physician and hospital networks and how *similar plans* are defined, which underscores the need for further research.

This study makes a number of contributions to the literature, including a related study by Lee-more Dafny and colleagues described below.¹⁴ We considered the effect on premiums of the breadth of both hospital and physician networks, whereas previous studies have analyzed only one network type at a time.^{8,9,14} We also constructed a more accurate measure of hospital network breadth: Instead of taking a count of in-network hospitals in an area, we weighted the importance of in-network hospitals based on the volume of inpatient stays at each network hospital by residents of the relevant geographic market. Thus, more popular, conveniently located, and larger hospitals “count more” in our measure. This is the same measure used by Dafny and coauthors,¹⁴ but that study used just one state (Texas) and one year of data (2014), whereas the data in this study span eight states that collectively contain 43 percent of the US population and two years (2014 and 2015).

Finally, we also estimated the impact of narrow-network plans on federal outlays by using our model to predict what premiums would have been if all hospital and physician networks in the eight states we studied had been required to be broad and large, respectively. These definitions are adapted from the studies discussed above that quantified hospital and physician network breadth.

Study Data And Methods

DATA We obtained data from the Robert Wood Johnson Foundation (RWJF) HIX Compare on all silver-tier health insurance plans offered on the Marketplaces in 2014 and 2015 for every rating area in eight states: California, Colorado, Florida, Michigan, New Jersey, New York, Texas, and Washington.¹⁵ (A rating area is the most granular level of geography at which insurers can vary premiums.) As noted above, the sample states contain roughly 43 percent of the US population; they also have different types of Marketplace governance.¹⁶ About 65 percent of Marketplace enrollees are in silver plans, but these plans include virtually all of the unique provider networks that are offered on the Marketplaces.^{17–19}

The RWJF data set includes each plan’s type

(health maintenance organization [HMO], preferred provider organization [PPO], exclusive provider organization [EPO], or point-of-service plan), maximum out-of-pocket medical spending, in-network medical deductible, and the premium for a single twenty-seven-year-old. Because premiums are multiplied by a common factor to adjust for family size and age, analyses using the natural log of premiums—such as the regression analysis we describe below—will yield the same results for any hypothetical household.²⁰

During the summer of 2014 and the winter of 2014–15, our research staff collected from insurers' websites the names and addresses of all general acute care hospitals included in the hospital network of each plan on the relevant Marketplace for 2014 and 2015, respectively. Based on these names and addresses, we matched hospitals to discharge data sets from each state in our study. This sample of hospitals made up the universe of hospitals we considered in constructing our measure of hospital network breadth.

The hospital discharge data, which we obtained for a single recent year for all eight states, enabled us to construct a utilization-weighted measure of breadth, instead of relying on simple counts of hospitals. We defined *hospital network breadth* for a network in a given rating area as the number of discharges for patients living in the rating area that occurred at in-network hospitals, divided by the total number of discharges for patients living in the rating area.²¹ When we constructed our measure, we imposed a number of sampling restrictions on the discharge data sets—for example, including only patients ages 18–64 who were discharged from general acute care hospitals (details are available in online Appendix 1).²²

We obtained data on physician network breadth, defined as the fraction of physicians in the rating area who were included in the plan's network, from Polsky and coauthors.^{9,23} The data captured 85 percent of the silver plans offered on the Marketplaces in 2014; 2015 data were not available.

METHODS We used observational data to explore the impact of narrow-network plans on Marketplace premiums and federal premium subsidies. We lacked a quasi-experimental design, so our results are suggestive rather than conclusive. However, we gathered and controlled for a large set of factors that jointly affect both network breadth and premiums to reduce the potential sources of bias in our estimates. To aid us in that endeavor, we began by analyzing statistics on the prevalence of narrow-network plans and the factors correlated with network breadth.

Next, we used multivariate regressions to examine the relationship between network breadth (for both hospitals and physicians) and premiums. The goal of these analyses was to understand how network breadth affects premiums, with all else held equal. The resulting estimates allowed us to consider (under admittedly stylized assumptions) alternative scenarios, such as what the impact on premiums would be if all insurers offered full network products—that is, networks that contained all hospitals, all physicians, or both, that served patients in the relevant rating area (and appeared in our underlying data samples).

Of course, plans with different network breadths could differ in a number of other ways as well, including cost-sharing characteristics (such as deductibles and coinsurance rates), plan type (for example, HMO versus PPO), reputation of the insurance carrier, and utilization patterns and costs in the relevant rating area. Failing to account for these other factors could produce misleading estimates—for example, if networks tended to be narrower in urban than in rural areas, and average prices were lower in urban areas as well, then the link between narrowness and premiums would be overstated.

In deciding how to control for potentially confounding factors, we faced a trade-off between omitting potentially important controls and including so many that our estimates would ultimately rely upon a very small share of the data. In the first case, we might have included cross-sectional covariates to capture market, insurer, and plan characteristics but allowed differences in network breadth and premiums across insurers and markets to contribute to our estimates. In the second case, we might have added indicator variables for every combination of rating area, insurer, and plan type and thus estimated the effect of network breadth on only premiums for plans of the same type, from the same insurer, and in the same rating area. In the latter case, we would be using only a small portion of the data, which would limit the generalizability of our findings.

We adopted an intermediate approach in our regression models and included separate indicator variables for each insurer–plan type combination and each insurer–rating area combination. Appendix 2 presents a number of additional details to explain these selections and includes the results of robustness tests.²²

LIMITATIONS Our study had several limitations. First, as noted above, our analysis was descriptive, relying on associations between premiums and breadth measures to infer the role of network breadth in premium setting. Although we were able to control for many factors that

would generate bias in estimating the relationship of interest, we could not establish a causal effect of changes in breadth on premiums, nor could we detect the mechanisms that generated the estimates we obtained.

Second, although our sample states contain roughly 43 percent of the US population, they might not be representative of the rest of the country. Appendix 3 presents an additional analysis of the generalizability of our results.²² We note that our sample was tilted toward more populous and geographically larger states. These states contain some of the largest US cities, where, as we show below, narrow networks are more prevalent. Thus, our summary statistics likely overestimate the prevalence of such networks nationwide.

Third, we also caution that the Marketplaces are relatively new and turbulent markets. There are a number of reasons why analyses using data from 2014–15 might not predict trends in future years. The reasons include demand-side factors such as evolving tastes for different plan designs; supply-side factors such as changes in the number of participating insurers; and policy factors such as the magnitude of subsidies, the definition of *essential health benefits*, and the presence of an individual mandate.

Study Results

IDENTIFYING NARROW NETWORKS We begin by presenting detailed information on the markets in which narrow-network plans tend to appear, the plan types that feature narrow networks, and the relationship between hospital and physician network breadth. We stratified our data across four characteristics of markets or plans: rating area population, plan type, whether a plan affected federal subsidies (that is, whether it was one of the two lowest-price plans, which by statute affected the maximum subsidy available to eligible purchasers of any plan in a given rating area), and year (2014 or 2015). For each of these characteristics, Exhibit 1 reports the mean and median breadth of hospital and physician networks, as well as the percentage of both types of networks that are full.

Both types of networks were much broader in less populous markets than in more populous markets. For example, 58 percent of hospital networks were full in the least populous markets, in contrast to only 5 percent of networks in the most populous markets (Exhibit 1). The same pattern was present for mean and median network breadth. The negative correlation between market size and network breadth might not be surprising, as smaller markets might contain too few providers to enable an insurer that excluded many of them to satisfy network ade-

EXHIBIT 1

Hospital and physician network breadth, by market and plan characteristics

Characteristic	Hospital network			Physician network		
	Mean breadth	Median breadth	Networks that are full ^a	Mean breadth	Median breadth	Networks that are full ^a
RATING-AREA POPULATION (MILLIONS)						
1st quartile (0.0–0.1)	0.91	1.00	58%	0.39	0.46	1%
2nd quartile (0.2–0.3)	0.82	0.97	35	0.33	0.39	0
3rd quartile (0.4–1.0)	0.76	0.96	21	0.25	0.22	0
4th quartile (1.1–8.8)	0.69	0.80	5	0.20	0.18	0
PLAN TYPE						
Preferred provider organization	0.86	0.99	30%	0.29	0.27	0%
Exclusive provider organization	0.82	1.00	49	0.34	0.32	1
Point-of-service plan	0.80	0.96	13	0.23	0.25	0
Health maintenance organization	0.75	0.94	22	0.29	0.28	0
LOWEST- AND SECOND-LOWEST-PRICE PLANS VERSUS ALL OTHERS						
Lowest- or second-lowest-price plans	0.74	0.90	24%	0.33	0.31	1%
Third-lowest or higher-price plans	0.81	0.98	33	0.30	0.28	0
YEAR						
2015	0.80	0.97	27%	— ^b	— ^b	— ^b
2014	0.81	0.99	37	0.31	0.28	0%

SOURCE Authors' analysis of data from the following sources: (1) Robert Wood Johnson Foundation. HIX Compare (Note 13 in text). (2) University of Pennsylvania Leonard Davis Institute of Health Economics. LDI's national database of physician networks in 2014 Marketplace plans (Note 23 in text). (3) Hospital network data and state hospital discharge data sets for California (2012), Colorado (2011), Florida (2011), Michigan (2014), New Jersey (2010), New York (2011), Texas (2011), and Washington (2010). **NOTES** "Rating area" is defined in the text. For explanations of how hospital and physician network breadth were calculated and defined, see the "Data" section of "Study Data And Methods." ^aA full network is one that contains all hospitals or physicians in a rating area. ^bNot available.

quacy requirements or to attract enough enrollees to render such an offering profitable.

More heavily managed plans had narrower hospital networks than PPOs did. For example, the mean hospital network breadth was 0.86 for PPOs, but only 0.75 for HMOs.

The lowest- and second-lowest-price silver plans in a rating area tended to have narrower hospital networks but did not appear to have narrower physician networks, compared to higher-price plans.

We found limited evidence that hospital networks grew narrower from 2014 to 2015: The share of full networks decreased from 37 percent to 27 percent, but median network breadth declined only slightly. This finding contrasts with reports that plans on the Marketplace greatly narrowed their networks, at least between 2014 and 2015.^{24,25} Those reports might reflect increasing enrollment in narrow-network plans over time. Our descriptive statistics were not enrollment weighted because the Department of Health and Human Services has not released enrollment data at the level of the plan rating area.

We also note that in general, hospital networks were much broader than physician networks. Physician networks were almost never full, and the distribution of breadth was not as skewed to

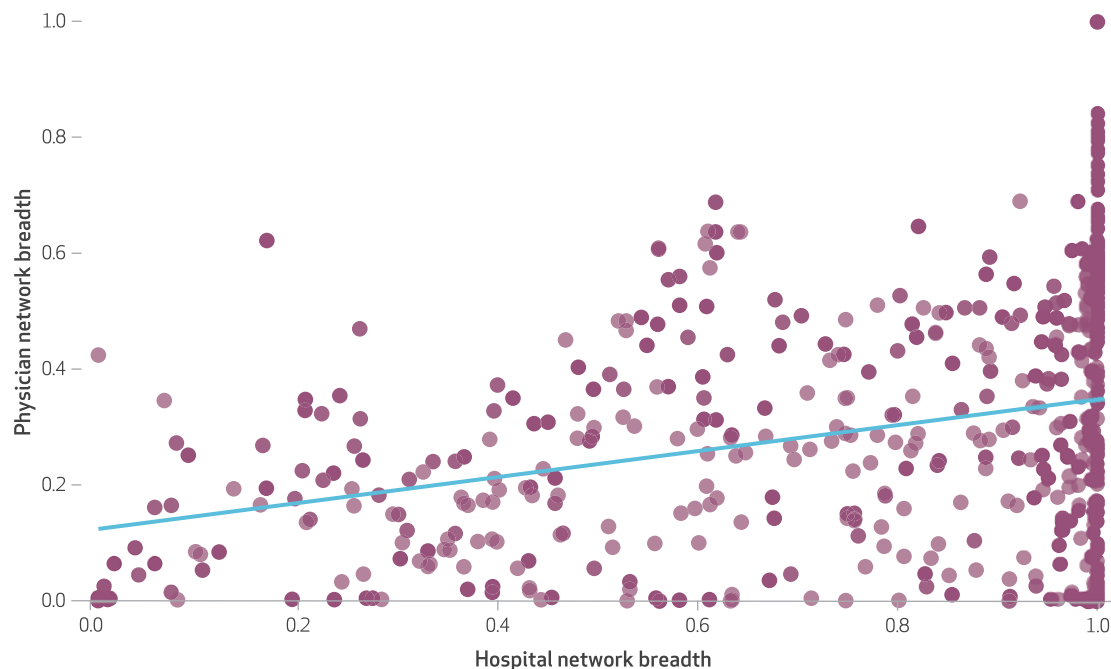
the right as was the case with hospital networks. As a result, while research on hospital network breadth tends to emphasize narrow versus full networks, Polsky and coauthors' research on physician network breadth used "t-shirt size" categories to capture finer gradations in network breadth.⁹

Exhibit 2 presents a scatterplot of hospital network breadth and physician network breadth. The r^2 value for these two network breadth measures is 0.0625 (correlation coefficient: $r = 0.25$), which indicates that 6.25 percent of the variation in each can be explained by a linear relationship with the other. The positive correlation implies that regression models excluding either measure will likely overstate the effect of the included measure. The fact that the points are not neatly arrayed along a line (that is, the correlation coefficient is far from 1.00) implies that it should be possible to isolate the independent association of each measure (holding the other constant) with premiums, as they do not always move in tandem.

RELATIONSHIP BETWEEN NETWORK BREADTH AND PREMIUMS We next examined the relationship between network breadth and premiums. The dependent variable in the regression analysis was the natural log of premiums. This transformation allowed us to interpret the resulting

EXHIBIT 2

Hospital network breadth versus physician network breadth



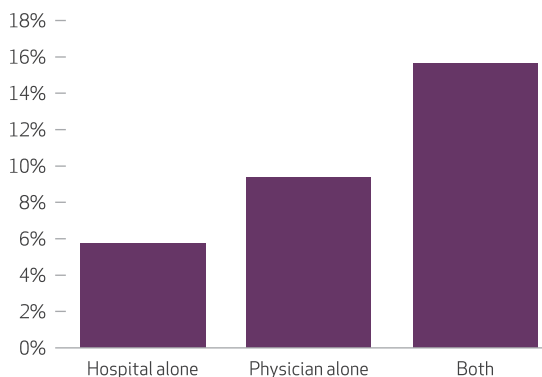
SOURCE Authors' analysis of data from the sources listed in Exhibit 1. **NOTES** Each point represents the breadth associated with a unique plan-rating area combination ("rating area" is defined in the text) for hospital and physician networks. The exhibit includes only observations for which physician network information was available—or roughly 85 percent of our 2014 observations.

coefficients as (approximate) percentage changes in premiums (Appendix Exhibit A3.3, confirms that the results were similar if we used unlogged premiums instead as the dependent variable).²² We estimated three regression models for 2014: one using hospital breadth, a second using physician network breadth, and a third using both. We also estimated a regression for 2015 using hospital network breadth alone. All specifications were weighted, so that plans in more populous areas—which have a larger effect on federal subsidy outlays and are likely to have higher enrollment—had a greater impact on the estimates.²⁶

Exhibit 3 presents estimated premium changes in response to increases in network size for the 2014 model that included measures of both hospital and physician network breadth. Both were positively and significantly associated with premiums. Using the results from our preferred regression analysis (presented in Appendix Exhibit A3.1, column 3),²² we estimated that an increase in hospital network breadth from 0.70 (the definition of *narrow* used by the McKinsey Center)⁸ to 1.00 (a full network) was linked to

EXHIBIT 3

Percent change in premiums associated with shifts from narrow to broad networks of hospitals and physicians, 2014



SOURCE Authors' analysis of data from the sources listed in Exhibit 1. **NOTES** "Hospital alone" shows the percent change associated with a shift of hospital network breadth from "narrow" (0.70) to "full" (1.00). "Physician alone" shows the change associated with a shift of physician network breadth alone from small (containing 10 percent of physicians) to large (containing 40 percent). "Both" shows the change associated with the shifts above in hospital and physician networks simultaneously. Percent changes in premiums are calculated from regression results as $100 \times \exp[\beta_i \times \Delta] - 1$, where β_i is the coefficient on the relevant network breadth measure and Δ is the change in network breadth described above for hospitals and physicians (in the case of simultaneous change, the exponentiated term is the sum of the products of the individual coefficients and the change in network breadth). All results are significant ($p < 0.01$). Regression coefficients and other statistics for this model as well as for separate models using only hospital network breadth and only physician network breadth, and for a model using 2015 data, are available in the online Appendix (see Note 20 in text).

a premium increase of 5.7 percent, or \$191 per year—given the national average premium of \$3,359 for a twenty-seven-year-old in 2014. An increase in physician network breadth from small (corresponding to 10 percent of physicians) to large (corresponding to 40 percent) was linked to a premium increase of 9.4 percent, or \$316 per year.²⁷ An increase in both hospital and physician network breadth was linked to a premium increase of 15.7 percent, or \$527 per year. Thus, compared to narrow hospital networks, narrow physician networks were associated with larger premium decreases. While at first blush this result may appear surprising, given the larger size of the hospital sector, for people with commercial insurance, per capita spending on outpatient visits and medications far exceeds spending on inpatient visits.²⁸

Our models that included either breadth measure alone generated upward-biased estimates of the measures' independent association with premiums, with the bias significantly larger for the model that omitted hospital network breadth (for results, see Appendix Exhibit A3.1).²²

Our analysis of 2015 data (presented in Appendix Exhibit A3.1)²² showed no evidence that network breadth was a more important determinant of premiums in 2015 than in 2014: The estimated association between hospital network breadth and premiums had the same magnitude and significance in both years.²⁹

We could not quantify the impact of narrow networks on total premium outlays for plans sold through the Marketplaces, because enrollment data are not available for plan-rating area combinations. However, we can estimate the impact of narrow networks on federal premium outlays because subsidies are based on the premium of the second-lowest-price silver plan in each rating area, which may correspond to that of a plan with narrow provider networks. Indeed, as shown Exhibit 1, the lowest- and second-lowest-price silver plans tended to have narrower hospital networks than higher-price plans. We used the regression model in Appendix Exhibit A3.1, column 3,²² to predict counterfactual premiums for each plan in 2014, substituting hypothetical requirements for a full hospital network where networks were less than full and a large physician network where networks were smaller.

We found that if all plans offered these broader provider networks, then the population-weighted average premium for the second-lowest-price silver plan would increase by 10.8 percent, or \$330 per year. Our estimate implies that narrow networks lowered premium subsidies by roughly \$2.4 billion in 2014.³⁰

We caution that our calculation of counterfactual subsidies is highly speculative, as the corre-

lations that we measured might not reflect a causal relationship between premiums and provider network breadth. Furthermore, these results should not be taken as a prediction of the effects of a “broad network” mandate, because such a mandate would affect providers’ and insurers’ bargaining positions in ways our model did not capture. (Given that the Marketplaces are so small, this shortcoming is not as severe as it would be if the hypothetical mandate were to extend to the entire commercially insured population, but the inability to threaten exclusion from networks could result in substantially higher prices even if it applied only to this segment of the insurance market.)

It’s also important to note that lower premiums do not necessarily imply a better deal for subsidy-eligible enrollees. To the extent that narrow-network plans drive down the premium for the second-lowest-price silver plan, they reduce subsidies for all qualifying plans. Thus, the out-of-pocket premium paid by subsidy-eligible enrollees selecting higher-price plans could increase.

Implications

Narrow provider networks have proved to be a contentious policy topic. As policy priorities evolve and industry participants consider alternative strategies to realize their objectives, it is useful to have realistic estimates of the premium reductions that can result from restrictive provider networks. Our analysis of the link between premiums and provider network breadth, which controlled for a wider range of potentially confounding variables than was the case in earlier studies, indicated that such networks are associated with substantial reductions in premiums.

Our results provide suggestive evidence that narrow provider networks could explain much of the roughly 15 percent gap between the CBO’s November 2009 premium projections and actual 2016 premiums. The CBO’s 2009 overestimate of health care cost growth is likely the other significant driver of the discrepancy.^{4,31}

While premiums for 2014–16 came in well below predicted levels, premiums in 2017 showed a marked increase. There are several explanations for this increase, including the expiration of the risk corridor and reinsurance programs noted above, greater uncertainty faced by remaining insurers in the wake of exits by other insurers, and the claims experience of Marketplace enrollees. Another possible explanation relates to the empirical evidence that Marketplace enrollees are more willing to switch plans from one year to the next to obtain better prices than are enrollees in other commercial insurance seg-

ments.⁶ Once insurers realized that the strategy of pricing low to build share, and raising premiums later, was not likely to pay off, they adjusted their pricing accordingly.⁵

In closing, we note that narrow networks may have important spillover effects worthy of further examination. For example, the popularity of low-premium plans (associated with narrow networks) has a positive spillover effect because it places pressure on providers within all networks to offer greater value—perhaps in the form of lower reimbursement rates or cooperation in the development of innovative, cost-saving alternatives to fee-for-service reimbursement. Unless providers in broad networks can increase their value proposition, broad network plans may become uncompetitive and ultimately exit the Marketplaces.

This dynamic may lead to a so-called death spiral of broad-network plans—particularly in the Marketplaces, whose enrollees are price-sensitive—if they cannot achieve competitive pricing in short order. The disparity in pricing at the outset leads only those enrollees (likely to be in worse-than-average health) who place a high value on broad networks to pay for plans with such networks (for example, because they wish to retain current providers who may be excluded from a given narrow network). The result is an ever-growing disparity in average spending for enrollees in plans with narrow versus broad networks. Absent perfect risk adjustment, a death spiral could result, in which broad-network plans raise premiums to cover increasing costs, causing the healthiest of their remaining enrollees to switch to less expensive plans and raising average costs even more. As this process repeats, broad-network plans could become so expensive that they are no longer offered. In fact, there are widespread reports that such plans are exiting the Marketplaces, likely to avoid costly death spirals.^{32,33}

Conclusion

Employers are embracing plans with narrow networks more slowly than the Marketplaces are, presumably because decision makers selecting plan offerings (and employees choosing among those offerings) place a greater value on breadth than does the average Marketplace enrollee. Nonetheless, these developments may spread to the group market as well. In the years ahead, regulators and employers will want to tread carefully to preserve the benefits of narrow-network plans—including the price pressure they impose on broader-network plans—while avoiding death spirals that remove broad-network plans from the set of available insurance options. ■

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NOTES

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- 21 For plans offered only in a subset of counties within a rating area, we constructed the network breadth using data for residents in those counties. Note that hospitals outside a given rating area might be in network for residents of that area.
- 22 To access the Appendix, click on the Appendix link in the box to the right of the article online.
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 - 26 This weighing decision did not substantively affect our results. For example, in column 3 of online Appendix Exhibit A3.1 (see Note 22), the coefficient on hospital network breadth decreased by 10 percent and the coefficient on physician network breadth increased by 9 percent if we did not weight specifications.
 - 27 A shift from narrow to broad corresponds to a shift from the twenty-eighth to the sixty-third percentile of the distribution for hospital networks in 2014. A shift from small to large corresponds to a shift from the nineteenth to the sixty-eighth percentile of the distribution for physician networks in the same year.
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 - 29 The 2014 coefficient on hospital breadth in a regression that included all observations (even those that lacked physician network breadth) was very similar to that using only observations for which physician network breadth was available. Hence, the specifications in columns 1 and 4 of Appendix 3, Exhibit A3.1 (see Note 22) are comparable.
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