The Effect of Narrow Provider Networks on Health Care Use

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Abstract

Narrow provider networks are attracting widespread attention as a means of potentially controlling healthcare costs. We provide plausibly causal evidence on the effect of a narrow network plan design offered by a large national health insurance carrier in a major metropolitan market. Our econometric design exploits the fact that some firms offer a narrow network plan to their employees and some do not, allowing us to estimate effects that can be interpreted as average treatment on the treated estimates. Our results suggest that narrow network health plans lead to reductions in physician office visits, both for primary care and for specialist care. We also find sizeable decreases in specialist visits as well as laboratory and radiology services and prescription drug use. We found no evidence of increased use of the emergency department in narrow network plans. Spending was consistently lower as measured by both insurance paid and patient paid amounts in narrow network plans.

Introduction

Increasing attention is being paid to the size of provider networks in private health insurance plans. The health insurance exchanges brought about by the Affordable Care Act (ACA) are a proximate cause of the shift by insurers to scrutinize provider network size and composition, but greater scrutiny of health care costs by companies has also resulted in a "rediscovery" of provider networks as a potential means of cost control. Indeed, it can be argued that network size is one of the few variables left for carriers to adjust given that the ACA has put a floor on covered services through the mandated minimum essential benefit package and pre-determined "metallic" designations have limited the scope of traditional plan characteristics. A report by McKinsey and Company found that 70% of hospital networks in health plans offered on the exchanges in 2013 were characterized as either "narrow" or "ultra-narrow" (McKinsey and Company 2013), while the Kaiser Family Foundation/Health Research & Educational Trust (HRET) 2014 Employer Health Benefits Survey found that 6 percent of employers with 50 or more employees reported that their plan eliminated hospitals to reduce cost and eight percent offer a plan considered a narrow network plan (Kaiser Family Foundation/HRET 2014).

Much of the attention in the popular press has highlighted the "surprise" that enrollees face when enrolled in limited provider network plans. Some of the information problems could stem from the difficulty insurers have with conveying the breadth of the network. Additionally, a recent paper highlighted the inaccuracy of insurer provider network information (Resneck et al. 2014). The potentially more serious concern from an economic vantage point is ex ante an enrollee might not know the consequences of not being able to access, say, high quality cancer centers affiliated with academic health centers. Thus, when an enrollee is in the unfortunate position of having to learn about the network size ex post, the value of the insurance might be

greatly impaired. Our aim is to measure the effect of narrow network plan designs on health care spending and utilization of services.

The concept of narrow networks is not a new one in the health care industry landscape. The original notion of "selective contracting" with providers dates back to the 1980s in California where legislation adopted in 1982 allowed insurers to selectively contract with providers for Medicaid and private insurance. As stated in Zwanziger et al. (2000): "A central objective of selective contracting is to foster price competition among health care providers by encouraging the formation of Preferred Provider Organizations (PPOs)… PPOs induce price competition by providing subscribers (potential patients) with financial incentives, such as decreased costs, to encourage the use of specific providers. These providers, in turn, negotiate in advance to offer discounts from charges." From this humble start, PPOs grew to be the dominant form of managed care, almost completely displacing traditional indemnity insurance contracts and far outpacing HMOs. Evidence from this earlier generation of studies suggested that selective contracting resulted in lower prices (Zwanziger and Melnick 1988; Melnick et al. 1992; Wholey, Feldman, and Christianson 1995; Feldstein and Wickizer 1995).

In the only recent study of contemporary narrow network designs, Gruber and McKnight (2014) study Massachusetts state and municipal employees some of whom were offered a "premium holiday" if they enrolled in one of several narrow network plans. The subsidy amounted to a roughly 25% reduction in employee premium share; state employees were offered the subsidy while municipal workers were not offered the subsidy. The design provides a convenient and plausibly exogenous mechanism to induce individuals to enroll in a narrow network plan along with a contemporaneous control group of similar workers who did not receive the inducement.

The authors found that the subsidy induced about 11% of workers to enroll in narrow network plans. The induced populations (the compliers in the parlance of local average treatment effects) were found to have 40% lower spending in narrow network plans and reductions in emergency department use and visits to specialist providers. No evidence of adverse health outcomes was detected. Additionally, if improbably, the authors also found an increase in primary care utilization. The increase is difficult to reconcile with theory as there is no obvious mechanism for a greater cost of accessing care (in the form of fewer in-network providers) to be associated with increased access to primary care. It is possible, however, that other plan features not controlled for by the authors could be changing along with the provider network and these changes could lead to the increase in primary care. The authors do not look at out-of-network use, out-of-pocket spending or compute the potential resulting balance billing when individuals do go out of network. It also should be noted that their LATEs do not represent estimates of treatment on the treated, thus are less useful for policy purposes.

Setting

We focus on an under-studied, but nevertheless highly policy significant component of the employer-sponsored health insurance market: the small group market, generally defined as the 2-50 employee market. We focus on a single large metropolitan area in the US in 2013 where a large national health insurance carrier offered essentially two provider network options, a traditional large PPO network and a narrower network. The salient features of our setting are detailed below.

Narrow Network Plan Design

We study a particular implementation of a narrow provider network plan in a large metropolitan area sold by a single large national health insurance company. The plan was introduced in the market in the late-2000s. According to the insurer the plan contains fewer in-network facilities and providers than the traditional provider network, which will serve as the comparison non-narrow network plans. The traditional provider network plans in the area include roughly 97% of providers (hospitals and physicians) in the metropolitan area. The narrow network plans by contrast includes just under 90% of local hospitals and 80% of physicians in local area in network. The primary distinction between the plans is that a small number of large, academic medical centers and affiliated physicians are omitted from the network for narrow network plans. The hospitals and other health care providers in the narrow network are those willing to accept a lower negotiated rate from the insurer. From the enrollee perspective, confirming a provider's network status requires a phone call to customer service or looking up the provider on the insurer's website.

Small Group Market

The small group market (2-50 employees) is a highly policy relevant subset of the group market if only because small firms have the lowest rates of offering health insurance to employees. According to the Kaiser Family Foundation/HRET Employer Benefit Survey 44% of firms with 3 to 9 employees offer coverage, while 64% of firms with 10 to 24 employees offered coverage and 83% of firms with 25 to 49 employees offered health insurance coverage, compared to 98% of large firms (greater than 200 employees) (Kaiser Family Foundation/HRET 2014). The small group market is also relevant for policy because it is specifically exempted from the employer mandate in the ACA. Instead, the ACA mandated the creation of the Small

Business Health Options Program (SHOP) Marketplace to provide presumably easier access to health insurance policies. Though it should be noted that little is known specifically about the reasons why small firms offer (or fail to offer) the plans that they do. Small firms might be acutely sensitive to premiums, thus cheaper plans might have particular appeal.

Another important aspect of the small group market is that it is very uncommon for small firms to offer more than one plan to employees; the Kaiser Family Foundation survey indicates that in 2014 86% of small firms only offered one plan (conditional on offering any). However, the firms in our sample take part in a type of "private exchange" organized by the health insurer in which they can offer multiple plans (from only the one insurer) to employees without any additional cost. So in contrast to the broader small group market, the firms in our sample offer 1.6 plans on average. The subsample represents a significant minority of the insurer's book of business for the market. Figure 1 displays the number of plans offered by firms in our sample.

Another aspect of the small group market is that small firms virtually always work with a single insurer. That is, small firms almost never offer health plans from multiple insurance carriers. Thus, we need not be concerned about the first-order selection problem that arises when working with data from a single insurer and enrollees face plan choices from multiple insurance carriers. Finally, as discussed below, the advantage of studying the small group market is that we can take advantage of variation across firms. Thus our work provides a contrast to the more case-study approach involved in studying a single large employer (Handel and Kolstad 2013; Einav et al. 2013).

Data

All enrollment files, claims data, and health insurance policy information are extracted from the insurance carrier's data repository. The estimates of the impact of narrow networks apply to individuals (workers and their dependents) enrolled in health plans during calendar year 2013 who receive employer based health insurance policies offered by one major carrier in a single metropolitan area and are employed by one of the 970 firms in our sample with between 2 and 50 employees.

Employer-and Health Plan-level Data

Health plan details include plan type (PPO, POS, HMO), narrow network, deductible out-of-pocket maximum levels for both in- and out-of-network care, the coinsurance rate, and copayment levels for office visits. We also observe pharmacy copayment levels. Employer data contain coverage dates, standard industry codes, and firm size. Collectively, the 970 firms in the sample offered 1746 health plans to the 19,640 employees and dependents. Details on the plan characteristics between the narrow network and traditional network plans are provided in Table 1. A key take-away from the table is that narrow network plans tend to be less generous than traditional network plans along multiple margins: the deductible, out-of-pocket maximum, and copayment are all noticeably higher while the coinsurance rate (defined as the fraction paid by the insurer) is lower. The narrow network health insurance policies offered by firms in our sample were nearly 18% cheaper than the traditional plans, but when accounting for differences in other plan characteristics in a regression model the difference in the premium attributable to the network was roughly 9%.

Individual-level Data

Members, subscribers, their covered spouses or domestic partners, and children, are included in the study if they had enrollment in calendar year 2013. Member-level datasets include enrollment dates on all health plan members and their dependents and limited demographic information, such as age, gender, and zip code.

Professional and facility medical claims datasets include paid claims with unique member and employer identifiers, service dates, four diagnosis codes (ICD-9-CM), procedure codes (CPT/HCPCS), place of service codes, revenue codes, and billing and payment transaction information. Claims for both participating (in-network) and non-participating (out-of-network) providers are included. We cannot rule out the possibility of missing claims. Pharmacy claims contain National Drug Codes, units prescribed, and billing information. We assume that missing claims are randomly distributed and are most likely for low cost events and should not alter our estimates.

Key Outcome Measures

The data source allows for construction of a wide array of person-level, annual outcome measures. The outcome measures of interest fall into two categories: service utilization and spending.

Utilization. Utilization is measured in two ways. The extensive margin is a dichotomous measure for whether or not an individual had any medical claims in a given calendar year. The intensive margin measures the total number of medical claims an individual had within a given calendar year. Using CPT codes we measure primary care office visits, both for existing patients and new patients, the latter suggesting the possibility of seeking care from a new provider;

emergency department visits, inpatient hospitalizations, specialist visits, laboratory and radiology services, prescription drug use, and any out-of-network utilization.

Health Care Expenditures. The claims data capture both the amount an individual and the insurer paid towards a given medical claim. From the claims data individual and company expenditure values are calculated by summing the yearly expenditures per person in the individual and company categories. When an individual sees an out-of-network provider, there is the potential for the patient to be balance billed. Note that not all out-of-network providers can balance bill for reimbursement less than charges; we obtained information on specific contract details to identify which providers reserve the right to balance bill patients for reimbursement less than charges. For out-of-network providers who have retained the ability to balance bill patients the balance billed amount is calculated by subtracting the amount paid out by the insurance company and individual, in the form of their deductible, copayment and coinsurance, from the submitted charge amount. The insurer has no means of collecting information on whether balance billing actually occurs. Thus we calculate two measures of total spending with and without the hypothetically possible balance billed amounts.

We truncate observations with spending levels in the top 1% (values exceeding $45,000 in total annual spending). These high spending values have the potential to exert outsize influence on expenditure regressions even when using log models. Figure 2 shows the kernel density plot for spending at firms offering a narrow network plan and firms not offering a narrow network plan option. The figure shows the distribution of total spending for individuals in firms that did not offer a narrow network plan to be consistently higher throughout much of spending distribution, until a very high spending level is reached at which time firms offering narrow network plans have a longer right tail. The more general point is that there is little reason to

expect network design or any other aspect of plan design to affect spending for the very acutely ill.[1] Results with the top 1% of spenders included show no differences in our utilization measure, but log-dollar spending regressions are sensitive to their inclusion [results are available upon request of the authors].

Methods

All small firms in our data can offer a narrow network plan to their employees; however not all do. We propose to use the employer's offer of a narrow network plan as an instrument for whether an employee chooses to enroll in a narrow network plan. It of course might be argued that firms choosing to offer narrow network plans differ from firms that do not in ways related to their health care spending, invalidating the exclusion restriction for our proposed instrument. We shall bring considerable evidence to bear in an effort to show that this is not the case.

The basic model is as follows. The first stage regression is:

$$Narrow_{ic} = \delta_0 + \delta_1 NarrowOffer_c + \delta_2 X_{ic} + \mu_{ic}, \quad (1)$$

where *Narrow* represents an indicator for whether individual *i* in company *c* enrolls in a narrow network plan, *NarrowOffer* is an indicator for whether the company offers a narrow network plan to employees, and *X* represents a vector of personal and other plan characteristics. The second stage is represented as:

$$y_{ic} = \pi_0 + \pi_1 \widehat{Narrow}_{ic} + \pi_2 X_{ic} + \varepsilon_{ic}, \quad (2)$$

where the predicted value of narrow from the first stage in equation (1) is indicated with the "hat" and *y* represents utilization and spending outcomes. One important note on the estimator is that the offer instrument is an example of one-sided noncompliance estimator: one is only able to

[1] The most common diagnosis in the top 1% of the spending distribution was cancer.

enroll in a narrow network plan if it is offered. The implication is that the LATE is the average treatment on the treated, a fact that is quite useful for policy.

Because health care spending outcomes are often characterized by heavily skewed distributions, we opt to use a GLM approach. In order to control for the endogeneity of narrow network enrollment we will "manually" calculate the narrow network enrollment probability from equation (1) above and include it in the second stage GLM regression. We use a bootstrap with 500 replications to calculate appropriate standard errors.

Narrow network plans actually represent a bundle of plan characteristics that, as noted previously, tend along multiple dimensions to be less generous than traditional, non-narrow network plans. Without controlling for the other plan attributes we might misattribute some of the effect of different plan characteristics to network size. To avoid this potential source of bias, our regression models also control for the minimum and maximum values of the deductible (in- and out-of-network), out-of-pocket maximum (in- and out-of-network), copayment level, and coinsurance across the plans offered by the employer. In principle these 12 variables represent plausible instruments for the employee's choice of each of the respective plan characteristics, but we employ the measures here in a reduced form capacity to control for the generosity of plan options available to enrollees apart from network size.

Results

Table 2 provides summary statistics at the employer-level for the full sample and distinguishing between firms that offered a narrow network plan or not. Companies differ very little demographically as average age and percentage female were nearly identical between firms offering a narrow network plan versus those offering traditional network plans. Firms offering

narrow network plans had a slightly higher fraction of enrollees in "single" (employee-only) plans and thus slightly fewer dependents on average. On average firms offering narrow network plans had a slightly (2.8 percentage point) higher level of employees with chronic conditions.[2] The table also indicates that firms offering narrow network plans tended to have had a longer relationship with the insurance carrier (1.9 years versus 1.2 years) and offered more plans their employees (2 versus 1.4); the mix of industries between the two groups of firms differed as well, with firms offering narrow network plans being in more blue collar industries rather than service industries. The implication is that while companies offering narrow network plans and companies offering traditional plans are not identical, their differences are comparatively slight and, importantly, do not suggest the offer decision to be obviously based upon health status.

For roughly half of the firms in the data set, we were able to obtain prior year (2012) information on plan offerings. We found that all but 3 firms had changed their plan offering such that they either began offering a narrow network plan when they did not in the prior year (two firms) or eliminated a narrow network plan (one firm). On the one hand, the lack of change over time eliminates the possibility of studying the introduction (or removal) of narrow network plans in a difference-in-differences model for example. But on the other hand, it does suggest that firms do not frequently alter the plans they offer—for example, as a result of high cost enrollees. It is reassuring from an identification perspective that firms do not adjust plans frequently.

Table 3 displays the first stage linear probability results. The results show the predictably very strong effect of being offered a narrow network plan on the probability of enrolling in a narrow network plan: nearly 60% of individuals offered a narrow network plan chose to enroll in one. About 12% of the sample has no choice but a narrow network plan. When that portion of the

[2] Chronic conditions are defined as asthma, coronary artery disease, congestive heart failure, COPD, diabetes, or hypertension.

sample is removed and the first stage is re-estimated, we observe in column 2 that 50% of people of individuals offered a narrow network plan chose to enroll in one. In both cases the estimate is highly statistically significant.

Table 4 shows the first set of 2SLS results showing the effect of enrollment in a narrow network health plan on health care service utilization. All standard errors are clustered at the employer level. Our findings show that enrollment in a narrow network policy is associated with a 10 percentage point drop in probability of visiting a doctor's office and a drop of roughly half a visit per year. When splitting office visits by CPT code into encounters with new patients (suggesting that the individual sought care from a physician with whom he or she did not have a previous relationship) versus encounters with existing patients, both declined. The probability of seeing either a primary care physician or a specialist physician and the number of such visits was significantly lower in narrow network plans as was the probability of having laboratory or radiology services performed as well as their number. The probability of an ED visit and the number of ED visits were not significantly affected by narrow network enrollment. However, we find evidence of a reduction in the likelihood of an inpatient hospitalization but no evidence of a change in the number of inpatient stays in the calendar year or the overall number of days an individual is in the hospital during the year. While the probability of having an out-of-network service was not significantly affected, the number of out-of-network services fell significantly in narrow network plans. We also find evidence that the number of prescriptions fell by 2.7 prescriptions per year.

Table 5 displays regressions for expenditure outcomes. For spending we report percentage effects from GLM regressions with bootstrapped standard errors. The results are largely consistent with the utilization regressions. We observe that total spending was lower in

the narrow network plan. The drop in insurer spending, while somewhat imprecisely estimated, is quite similar to the previously reported premium difference between narrow network and traditional network health plans. We find even larger percentage drops in patient spending though potential balance billing dampens the effect size. Consistent with the drop in prescription drug use, prescription drug spending was lower in the narrow network plans.

Table 6 shows utilization patterns differ by facility in- and out-of-network status. We found no statistical difference in the likelihood and number of emergency room visits for the two groups. After separating in- and out-of-network services we find no evidence of differential utilization, supporting the idea that emergency room usage is not necessarily discretionary for this population. However, we find evidence that the likelihood and number of laboratory and radiology visits decreased for individuals enrolled in narrow network plans. Narrow network plans have fewer laboratory and radiology facilities in-network so it is possible that patients have to travel farther to complete these services. We investigated how this reduction in access points alters utilization by segregating in- and out-of-network visits for comparison. We found that the decrease in utilization was driven by a decrease in the likelihood and the frequency of services, while there was no change in the out-of-network utilization.

Tables 7 and 8 present a variety of robustness checks on our results. In column 1 we repeat results from the full sample from Tables 4 and 5 as a basis for comparison. If a firm's decision to offer a narrow network plan is related to expected health care use we might expect to see different results if we omit firms that *only* offer a narrow network plan to employees. Column 2 shows results that exclude the firms that only offer narrow network plans. There is also concern that in very small firms, health insurance decisions are difficult to make without consideration of individual employee health care needs; it is entirely plausible that a company

with three employees will jointly base plan choices on their own needs and preferences. As a result, in columns 3 and 4 we show results when we restrict the sample to firms with 5 or more employees and 10 or more employees, respectively. Finally, it is possible that individuals in poor health might disproportionately disenroll or separate from their employers; hence in column 5 we restrict the sample to the continuously enrolled subset.

In virtually all cases the point estimates do not differ significantly from the baseline results using the full sample. The standard errors increase in size, however, as the sample size shrinks and amount of identifying variation across firms is depleted. Overall, the alternative models presented confirm that our findings are robust.

Discussion

We provide plausibly causal evidence regarding the effect of a narrow network plan design offered by a large national health insurance carrier in a major metropolitan market. Our econometric design exploits the fact that some firms offer a narrow network plan to their employees and some do not, allowing us to estimate effects that can be interpreted as average treatment on the treated estimates.

Our results suggest that narrow network health plans lead to reductions in physician office visits, both for primary care and for specialist care. We also find sizeable decreases in laboratory and radiology services as well as prescription drug use, all of which are likely due to fewer visits to the doctor. For the prescription drug use reduction, there were no systematic differences in drug benefits between plan types. We found no evidence of increased use of the ED in narrow network plans. Spending was consistently lower as measured by both insurance paid and patient paid in narrow network plans, regardless of whether we incorporated the

possibility of provider balance billing. While we found no difference in having any out-of-network services attributable to narrow network enrollment, we did find a 50% decrease in the number of out-of-network services utilized per person for the group enrolled in narrow network plans.

A limitation of Gruber and McKnight (2014) is that they did not account for potential balance billing in spending outcomes. When we look at our patient spending results without balance billing, we see a statistically significant decrease in patient spending of about 30% off a mean of $908. Ignoring potential balance billing might overstate the impact of narrow network plans on patient out-of-pocket spending. When we included the balance billing amounts, we saw the drop in patient spending shrink slightly to a 24% decrease off a mean of $990. Thus, not accounting for balance billing makes the narrow network plans look better from a patient cost perspective but may not be measuring the appropriate outcome.

While our results are broadly consistent on many dimensions with the findings of Gruber and McKnight (2014), it is more difficult to reconcile the conflicting results for primary care use: Gruber and McKnight found increases in office visits while we found decreases associated with narrow network plan enrollment. It is possible that in Gruber and McKnight's setting other aspects of the insurance plan not being controlled for changed along with the network size, for example switching from a wide network PPO to a narrow network HMO could be associated with greater emphasis on primary care. Another possibility is that the differences between our findings are attributable to comparing average treatment on the treated estimates (our paper) to local average treatment effects for the marginal complier who is induced to join a narrow network plan (their paper), and the two estimates could at least potentially coexist.

There are several potential mechanisms for the utilization and spending differences in narrow network plans: first, providers willing to be in the narrow network are cheaper, thus even comparable utilization will result in lower spending; second, the notion of being enrolled in a narrow network plan causes enrollees to be more judicious about their use of services because either they are not certain about which providers are in-network or they are less willing to travel to potentially more distant in-network providers, and when individuals to go to the doctor less they use less of all services; and third, the in-network providers might represent a subset of providers that do fewer tests or refer less often to specialists or prescribe fewer drugs. The pattern of results suggests at the very least some combination of the three mechanisms.

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Figure 1: Number of Plans Offered by Firms

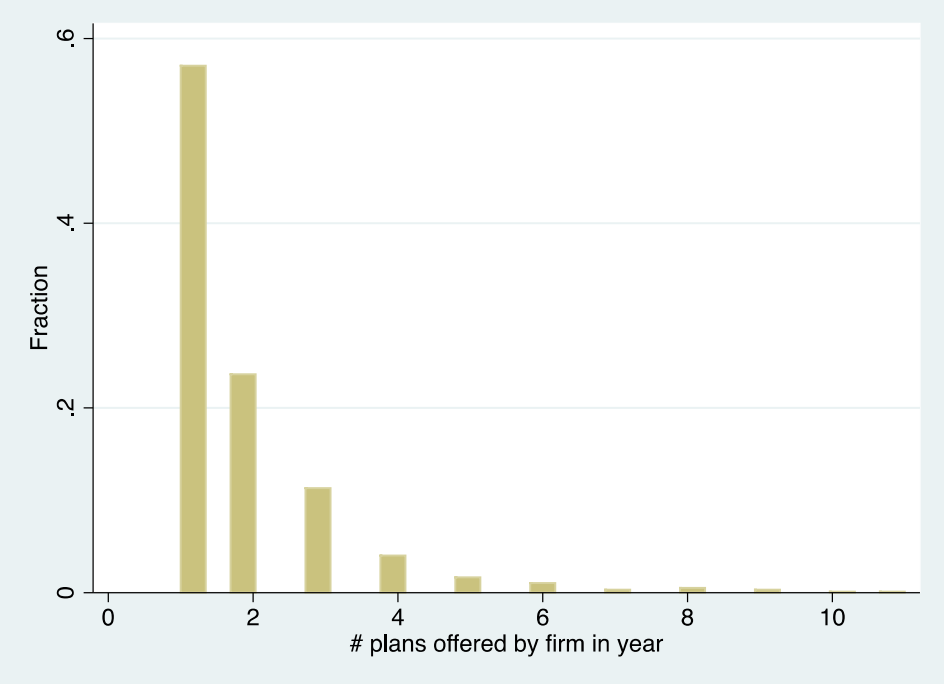

Figure 2: Spending Distributions

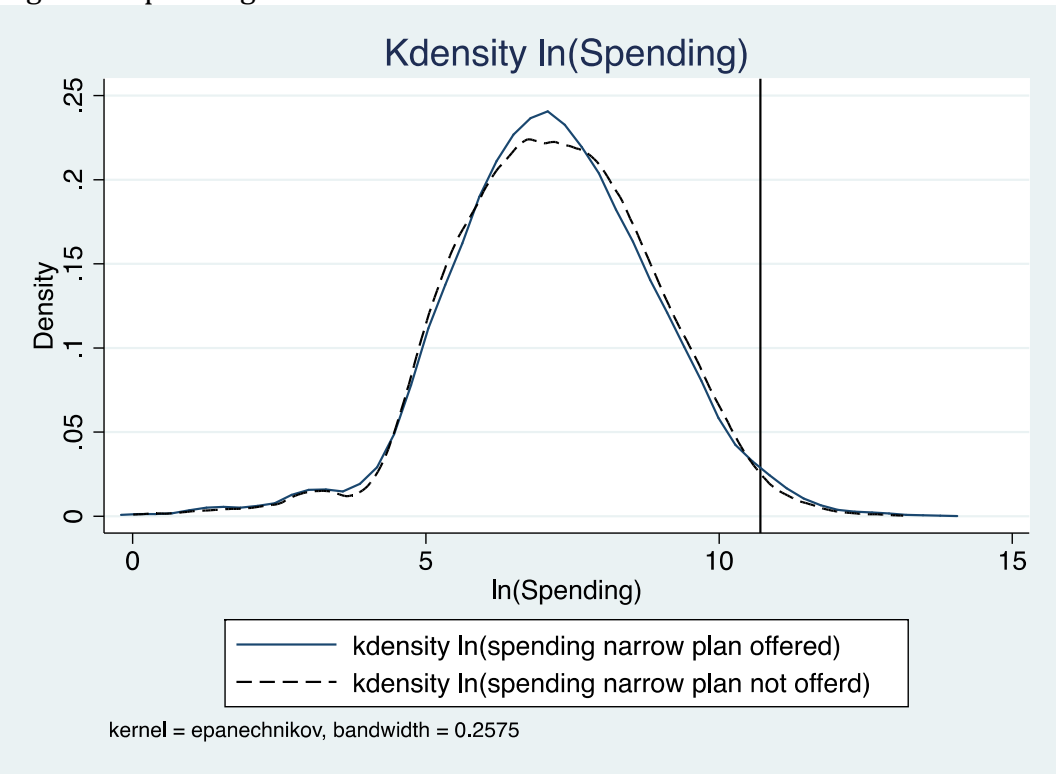

Table 1: Generosity of Plans

	Mean (SD)	
	Non-Narrow Plans	Narrow Plans
Premium (monthly)	$768	$632
	(379)	(302)
Individual Deductible	$1,421	$1,617
	(1,021)	(1,236)
Out of Network Individual Deductible	$2,826	$5,024
	(1,887)	(1,754)
Individual OOP Max	$2,941	$3,458
	(1,282)	(1,682)
Out of Network OOP Max	$5,259	$10,004
	(2,528)	(2,053)
Co-pay	$24	$28
	(11)	(9)
Co-insurance	0.877	0.836
	(0.090)	(0.068)
Number of plans	1,247	499

Table 2: Descriptive Statistics

	All Firms	No Narrow Network Offered	Narrow Network Offered	Only Narrow Network Offered
Firm Level Employee Characteristics				
Age	37.4	37.2	37.6	37.5
Female %	46.0	46.1	45.9	42.5
Single enrollee %	43.2	43.2	43.5	45.5
Dependents	1.41	1.44	1.35	1.26
Retrospective risk score	1.23	1.22	1.25	1.28
Demographic risk score	1.16	1.16	1.17	1.15
Any chronic conditions %	19.7	18.6	21.4	19.9
Employer Characteristics				
Years with insurer	1.5	1.2	1.9	1.9
Eligible employees	12.9	11.8	14.5	9.3
Industry %				
Ag/mining/construction	14.6	13.1	16.8	17.7
Manufacturing, transportation	15.5	12.8	19.6	18.2
Wholesale, Retail trade	27.7	28.3	26.8	21.6
Finance/Ins/real estate	20.3	20.3	20.4	23.8
Service/Pub admin	22	25.5	16.5	18.8
Insurance Plan Characteristics				
Max Premium	$808	$819	$783	$675
Min Premium	$655	$720	$563	$632
Max deductible (in-net)	$1,777	$1,624	$1,994	$1,718
Min deductible (in-net)	$1,661	$1,176	$1,138	$1,534
Max deductible (out of net)	$4,060	$3,183	$5,304	$5,254
Min deductible (out of net)	$2,771	$2,300	$3,439	$5,033
Max OOP max (in-net)	$3,447	$3,101	$3,938	$3,713
Min OOP max (in-net)	$2,689	$2,609	$2,802	$3,463
Max OOP max (out of net)	$7,605	$5,746	$10,242	$10,276
Min OOP max (out of net)	$5,582	$4,564	$7,029	$10,028
HSA Offered	0.224	0.237	0.204	0.061
Number of plans offered	1.627	1.36	2.007	1.149
Number of firms	970	569	401	181

Table 3: First-Stage Linear Probability Regression Results

	Main Results	Excludes Firms only Offering Narrow Network Plans
Narrow Offered	0.586***	0.496***
	(0.031)	(0.010)
Age	0.001	0.000
	(0.002)	(0.001)
Age^2	-0.00003	-0.00002
	(0.00005)	(0.00004)
Age^3	0.0000001	0.00000006
	(0.0000004)	(0.00000039)
Female	-0.004	0.001
	(0.005)	(0.005)
Enrollee Type (Child Omitted Category)		
Employee	0.027	0.040***
	(0.017)	(0.012)
Newborn	-0.065	-0.071
	(0.069)	(0.072)
Stepchild	-0.085	-0.179***
	(0.108)	(0.063)
Spouse	0.030*	0.039***
	(0.016)	(0.012)
In-state Resident	0.007	0.000
	(0.022)	(0.006)
Family Size	-0.008**	-0.010***
	(0.004)	(0.002)
Min Individual Deductible	-0.00010***	-0.00003*
	(0.00003)	(0.00001)
Maximum Individual Deductible	-0.00002	-0.00003***
	(0.00003)	(0.00001)
Min OON Individual Deductible	0.00003	0.00001*
	(0.00002)	(0.00001)
Max OON Individual Deductible	0.00004**	0.000037***
	(0.00002)	(0.000004)
Min Individual Out of Pocket	0.00002	0.000004
	(0.00002)	(0.000004)
Max Individual Out of Pocket	-0.00001	-0.000004
	(0.00002)	(0.000005)
Min OON Out-of-Pocket	0.00002**	0.000002
	(0.00001)	(0.000002)
Max OON Out-of-Pocket	-0.00001	-0.000003
	(0.00001)	(0.000003)
Max Copay	-0.003	-0.002***

	(0.001)	(0.000)
Min Copay	0.003	0.003***
	(0.001)	(0.000)
Max Coinsurance	-0.0002	-0.0001
	(0.0017)	(0.0005)
Min Coinsurance	0.001	0.000
	(0.002)	(0.000)
Constant	-0.103	-0.001
	(0.155)	(0.051)
R-squared	0.577	0.438
N	19,640	17,295

*p<0.1, **p<0.05, ***p<0.01

Note: Each column in this table shows the coefficient (and robust standard errors) for an OLS regression. Column 1 is for the full sample and column 2 excludes individuals at firms that only offer narrow network plans. Standard errors are clustered at the company level.

Table 4: 2SLS Utilization Regression Results

	Control Mean	Any Visit	Control Mean	Number of Visits/days
Office Visits	0.637	-0.107***	2.410	-0.566**
		(0.033)		(0.226)
Office Visits New Provider	0.271	-0.083***	0.365	-0.118***
		(0.025)		(0.037)
Office Visits Old Provider	0.577	-0.085**	2.046	-0.448**
		(0.033)		(0.207)
Emergency Room	0.118	-0.010	0.294	-0.050
		(0.018)		(0.047)
Inpatient Hospitalization	0.039	-0.018*	0.908	-0.133
		(0.010)		(0.224)
Length of Stay	---	---	0.208	-0.011
				(0.044)
Out-of-Network Provider	0.218	-0.020	0.907	-0.436***
		(0.023)		(0.167)
Primary Care Visit	0.494	-0.079**	1.212	-0.282*
		(0.035)		(0.145)
Specialist Visit	0.348	-0.081***	1.008	-0.277**
		(0.027)		(0.118)
Rx	---	---	7.936	-2.716***
				(0.834)
Lab & Radiology	0.839	-0.208***	2.879	-0.636***
		(0.052)		(0.247)
N=		19,640		19,640

*p<0.1, **p<0.05, ***p<0.01

Note: Each cell shows the coefficient (and robust standard error) for a single instrumental variables regression. Control variables include age, gender, relationship to employee, family size and in-state residency. Standard errors are clustered at the company level.

Table 5: GLM Spending Results

	Control Mean	Main Results
		(GLM)
Total Medical and Rx Spending	$3,951	-0.179
		(0.132)
Medical and Rx Insurance Spending	$2,960	-0.155
		(0.149)
Medical and Rx Patient Spending (w/ balance billing)	$990	-0.239*
		(0.144)
Medical and Rx Patient Spending (w/o balance billing)	$908	-0.305**
		(0.129)
Total Medical Spending	$2,998	-0.193
		(0.133)
Medical Insurance Spending	$2,416	-0.201
		(0.143)
Medical Patient Spending (w/ balance billing)	$582	-0.204
		(0.151)
Medical Patient Spending (w/o balance billing)	$500	-0.317**
		(0.132)
Rx Patient Spending	$408	-0.284**
		(0.143)
Rx Total Spending	$544	-0.127
		(0.205)
N=		19,640
Number of Firms		970

*p<0.1, **p<0.05, ***p<0.01

Note: Each cell shows the coefficient (and bootstrapped standard error) for a single GLM regression. Control variables include age, gender, relationship to employee, family size and in-state residency. Standard errors are clustered at the company level.

Table 6: 2SLS Utilization Results for in and out-of-network ED and Lab & Radiology Usage

	Control Mean		All Utilization		In-Network Provider Utilization		Out-of-Network Provider Utilization	
	Any Visit	Number of Visits	Any Visit	Number of Visits	Any Visit	Number of Visits	Any Visit	Number of Visits
Emergency Room	0.118	0.294	-0.010	-0.050	-0.058	-0.016	0.006	0.007
			(0.018)	(0.047)	(0.040)	(0.018)	(0.010)	(0.014)
Lab & Radiology	0.839	2.879	-0.208***	-0.636***	-0.216***	-0.709***	0.004	0.076
			(0.052)	(0.247)	(0.052)	(0.222)	(0.025)	(0.063)
N=			19,640	19,640	19,640	19,640	19,640	19,640

*p<0.1, **p<0.05, ***p<0.01

Note: Each cell shows the coefficient (and robust standard error) for a single instrumental variables regression. Control variables include age, gender, relationship to employee, family size and in-state residency. Standard errors are clustered at the company level.

Table 7: Robustness Checks for Utilization Outcomes

	Main Results		Excludes Firms Only Offering Narrow Plans		Firms with > 5 Employees		Firms with > 10 Employees		Continuously Enrolled Individuals	
	Any Visit	Number of Visits	Any Visit	Number of Visits	Any Visit	Number of Visits	Any Visit	Number of Visits	Any Visit	Number of Visits
Office Visits	-0.107***	-0.566**	-0.116***	-0.663**	-0.109***	-0.444**	-0.115***	-0.469*	-0.080**	-0.244
	(0.033)	(0.226)	(0.042)	(0.281)	(0.036)	(0.246)	(0.040)	(0.282)	(0.033)	(0.265)
Office Visits New Provider	-0.083***	-0.118***	-0.990***	-0.139***	-0.085***	-0.119***	-0.078***	-0.100**	-0.081**	-0.119**
	(0.025)	(0.037)	(0.031)	(0.048)	(0.026)	(0.039)	(0.030)	(0.045)	(0.032)	(0.050)
Office Visits Old Provider	-0.085**	-0.448**	-0.089**	-0.525**	-0.074**	-0.327	-0.085**	-0.370	-0.050	-0.126
	(0.033)	(0.207)	(0.042)	(0.257)	(-0.327)	(0.225)	(0.042)	(0.257)	(0.035)	(0.246)
Emergency Room	-0.010	-0.050	-0.019	-0.072	-0.007	-0.046	-0.005	-0.059	0.003	-0.001
	(0.018)	(0.047)	(0.023)	(0.060)	(0.019)	(0.051)	(0.022)	(0.061)	(0.025)	(0.064)
Inpatient Hospitalization	-0.018*	-0.133	-0.017	-0.067	-0.018*	-0.076	-0.024*	-0.094	-0.011	-0.055
	(0.010)	(0.224)	(0.013)	(0.294)	(0.011)	(0.243)	(0.013)	(0.285)	(0.011)	(0.277)
Length of Stay	---	-0.011	---	0.005	---	0.006	---	0.000	---	-0.014
		(0.044)		(0.060)		(0.048)		(0.057)		(0.048)
Out of Network Service	-0.020	-0.436***	-0.039	-0.461**	-0.016	-0.401**	-0.022	-0.475**	-0.006	-0.402*
	(0.023)	(0.167)	(0.030)	(0.211)	(0.025)	(0.178)	(0.030)	(0.218)	(0.030)	(0.234)
Primary Care Visit	-0.079**	-0.282*	-0.082*	-0.321*	-0.074**	-0.225	-0.086**	-0.280	-0.054	-0.012
	(0.035)	(0.145)	(0.044)	(0.184)	(0.038)	(0.160)	(0.042)	(0.178)	(0.040)	(0.170)
Specialist Visit	-0.081***	-0.277**	-0.090***	-0.343**	-0.075***	-0.223*	-0.073**	-0.207	-0.087**	-0.292*
	(0.027)	(0.118)	(0.034)	(0.149)	(0.029)	(0.122)	(0.035)	(0.147)	(0.035)	(0.165)
Rx	---	-2.716***	---	-2.978***	---	-2.236**	---	-2.416**	---	-2.917***
		(0.834)		(1.046)		(0.909)		(1.078)		(1.049)
Lab & Radiology	-0.208***	-0.636***	-0.241***	-0.743**	-0.203***	-0.486*	-0.220***	-0.577*	-0.222***	-0.492
	(0.052)	(0.247)	(0.066)	(0.313)	(0.056)	(0.262)	(0.065)	(0.299)	(0.054)	(0.331)
N=	19,640	19,640	17,295	17,295	18,019	18,019	14,767	14,767	12,344	12,344
Number of Firms	970	970	789	789	726	726	467	467	856	856

*p<0.1, **p<0.05, ***p<0.01

Note: Each cell shows the coefficient (and robust standard error) for a single instrumental variables regression. Control variables include age, gender, relationship to employee, family size and in-state residency. Standard errors are clustered at the company level.

Table 8: Heterogeneity by Sample for Spending Outcomes

	Main Results	Excludes Firms Only Offering Narrow Plans	Firms with > 5 Employees	Firms with > 10 Employees	Continuously Enrolled Individuals
	(GLM)	(GLM)	(GLM)	(GLM)	(GLM)
Total Medical and Rx Spending	-0.179	-0.133	-0.144	-0.120	-0.059
	(0.132)	(0.166)	(0.142)	(0.177)	(0.136)
Medical and Rx Insurance Spending	-0.155	-0.087	-0.132	-0.114	-0.058
	(0.149)	(0.187)	(0.168)	(0.179)	(0.148)
Medical and Rx Patient Spending (w/ balance billing)	-0.239*	-0.226	-0.175	-0.128	-0.071
	(0.144)	(0.185)	(0.159)	(0.177)	(0.151)
Medical and Rx Patient Spending (w/o balance billing)	-0.305**	-0.321*	-0.244*	-0.197	-0.152
	(0.129)	(0.168)	(0.143)	(0.181)	(0.135)
Total Medical Spending	-0.193	-0.126	-0.164	-0.155	-0.085
	(0.133)	(0.165)	(0.142)	(0.172)	(0.125)
Medical Insurance Spending	-0.201	-0.122	-0.183	-0.178	-0.119
	(0.143)	(0.174)	(0.152)	(0.181)	(0.135)
Medical Patient Spending (w/ balance billing)	-0.204	-0.158	-0.142	-0.101	-0.036
	(0.151)	(0.193)	(0.163)	(0.202)	(0.158)
Medical Patient Spending (w/o balance billing)	-0.317**	-0.319*	-0.262*	-0.222	-0.177
	(0.132)	(0.168)	(0.144)	(0.183)	(0.138)
Rx Patient Spending	-0.284**	-0.317*	-0.216	-0.157	-0.118
	(0.143)	(0.181)	(0.162)	(0.189)	(0.128)
Rx Total Spending	-0.127	-0.138	-0.100	-0.014	-0.009
	(0.205)	(0.257)	(0.222)	(0.271)	(0.253)
N=	19,640	17,295	18,019	14,767	12,344
Number of Firms	970	789	726	467	856

*p<0.1, **p<0.05, ***p<0.01

Note: Each cell shows the coefficient (and bootstrapped standard error) for a single GLM regression. Control variables include age, gender, relationship to employee, family size and in-state residency. Standard errors are clustered at the company level.