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The Effect of Comprehensive Behavioral Health Parity on Choice of Provider

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Abstract

Background—“Parity” laws remove treatment limitations for mental health and substance-abuse services covered by commercial health plans. A number of studies of parity implementations have suggested that parity does not lead to large increases in utilization or expenditures for behavioral health services. However, less is known about how parity might affect changes in patients' choice of providers for behavioral health treatment.

Research Design—We compared initiation and provider choice among 46,470 Oregonians who were affected by Oregon's 2007 parity law. Oregon is the only state to have enacted a parity law that places restrictions on how plans manage behavioral health services. This approach has been adopted federally in the Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act (MHPAEA). In one set of analyses, we assess initiation and provider choice using a difference-in-difference approach, with a matched group of commercially insured Oregonians who were exempt from parity. In a second set of analyses, we assess the impact of distance on provider choice.

Results—Overall, parity in Oregon was associated with a slight increase (0.5% to 0.8%) in initiations with masters-level specialists, and relatively little change for generalist physicians, psychiatrists and psychologists. Patients are particularly sensitive to distance for nonphysician specialists.

Conclusions—Our results suggest that the MHPAEA may lead to a shift in the use of nonphysician specialists and away from generalist physicians. The extent to which these changes occur is likely to be contingent on the ease and accessibility of nonphysician specialists.

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INTRODUCTION

“Parity” for behavioral health services refers to equality of insurance coverage between behavioral health treatment and physical health (medical and surgical) treatment. After years of effort, advocates for parity celebrated the enactment of the Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act (PL 110– 343) (MHPAEA), which became effective beginning in October 2009. Although it has some exclusions (for example, group health plans covering less than 50 employees), the MHPAEA is substantially more comprehensive than the 1996 Mental Health Parity Act (PL 104–204) and considerably stronger than most state parity laws.

The reach of the MHPAEA is likely to be enhanced by the 2010 Patient Protection and Affordable Care Act (ACA). Provisions of the ACA that apply to the individual mandate and health insurance exchanges specify “minimum essential coverage” to include mental health and substance abuse treatment services. Taken together, the ACA and MHPAEA imply a notable increase in the number of people whose insurance will cover behavioral health services in a manner comparable to general medical-surgical services.

Thus far, the literature on parity has focused primarily on changes in access and expenditures, demonstrating that parity has not been to be associated with significant changes in either of these metrics.^{1–5} However, while parity may not lead to large changes in total behavioral health expenses, less is known about how it may affect the ways in which patients seek care.

Provider choice is an important issue for patients,⁶ as well as employers and health plans. Evidence suggests that the mental health specialists provide more cost-effective care than general primary care physicians^{7,8}, and that, perhaps, nonphysician mental health specialists provide the most cost-effective care of all.⁹ However, the role of generalists vs. specialists continues to be debated, particularly in the light of greater interest in team-based, collaborative care models.^{10–13}

This study aims to provide evidence on the potential impacts of the MHPAEA on provider choice, using claims data from Oregon, which implemented a comprehensive parity law in 2007. Oregon's parity law is particularly salient to the MHPAEA. Like the MHPAEA, the Oregon statute contained a broad definition of behavioral health, moving Oregon from a group of seven states with minimal parity mandates into a select group of two states (the other being Vermont) with the most comprehensive parity law in the country. Oregon's law was also unusual in its restriction on the use of managed care tools. The Oregon Insurance Division ruled that managed care tools such as “selectively contracted panels of providers, health policy benefit differential designs, preadmission screening, prior authorization, case management, utilization review, or other mechanisms designed to limit ... treatment that is medically necessary” could not be used unless there was an analog in the management of medical-surgical benefits.¹⁴

This approach foreshadowed the MHPAEA, which disallows the use of “non-quantitative” treatment limitations (NQTLs) that affect the scope or duration of benefits for treatment and that apply to behavioral health but not physical health. The restriction on NQTLs has been interpreted as a restriction on the use of managed care tools, in close alignment with the Oregon interpretation.

Thus, Oregon is the only state with a parity law that has anticipated the MHPAEA in applying parity not only to the *structure* of the benefit (i.e., removal of spending and visit limitations for behavioral health) but also the *management* of the benefit. In other words, the Oregon parity law was interpreted and regulated in a way that disallowed differential

management of the behavioral and medical-surgical benefits, and offers an early view of the similarly comprehensive approach taken by the MHPAEA. With the MHPAEA and ACA likely to expand mental health coverage, we also investigate the impact of accessibility on provider choice, using distance from patient to provider as a proxy of the “cost” or “ease” of accessing a particular provider type.

METHODS

Study Population and Data Sources

We studied enrollees between the ages of 4 and 64 who were continuously enrolled in one of two Preferred Provider Organization (PPO) health plans affected by the 2007 Oregon parity law. From each PPO, we obtained four years of data on enrollment and medical claims, including two years before and two years after the implementation of parity. We included these plans because they were able to provide zip code information for both patients and providers, information which allowed for the estimation of distance from patient to provider.

The Oregon parity law did not apply to individuals with commercial group insurance whose employers offered “self insured” plans, in which the employer contracts with a health plan to administer the benefits but the employer assumes financial risk for the payment of all claims. Self insured plans were exempt from state insurance laws as part of the Employee Retirement Income Security Act of 1974 (ERISA). To account for changes over time unrelated to the parity law (for analyses that excluded data on provider distance) we used the Thomson Reuters’ MarketScan database to create a comparison group of Oregonians in self insured PPO plans.

We extracted provider specialties and zip codes from the non-self insured population. The distance from the patient to provider was computed as the shortest distance from the centroid of each enrollee residence zip code to the centroid of each mental health provider zip code. The study period included two years of pre-parity data (2005–2006) and two years of post-parity data (2007–2008).

Dependent Variables

We identified mental health treatment if it had a primary diagnostic code of 295 through 302, 306 through 309, and 311 through 314 in the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) or if it had a procedure code specific to mental health care. Following the previous literature, we define a new episode of mental health treatment as one occurring after an 8-week (56 days) period in which no mental health treatment was observed.^{15–18} Clinically, eight-weeks without care suggests a break in an episode of care.¹⁶ In our four years of claims data, it is unclear whether visits in the first 55 days of the first year represent new initiations or continued treatment. In order to measure initiation consistently without censoring throughout all four years of our study, we exclude initiations occurring within the first 55 days of each year.

We used claims data on specialty type to classify providers into one of four categories: generalist (primary care provider); physician specialist (e.g., psychiatrist); masters-level nonphysician specialist (e.g., licensed clinical social worker); and doctoral-level nonphysician specialist (e.g. clinical psychologist).

Analytic Models

We consider two types of analyses. First, for the two PPO plans affected by parity, we consider changes in initiation and provider choice attributable to parity using the difference-in-difference method, where a comparison sample of Oregonians in self insured plans

unaffected by parity control for secular changes. The difference-in-differences is the average difference (occurring with the implementation of parity) in outcomes of interest among Oregonians in PPOs affected by parity, minus the average difference (after the parity implementation) among the comparison group (individuals in self insured plans not affected by the parity legislation).

A second set of analyses focuses specifically on the relationship between distance and initiation of treatment and provider choice. In these analyses, we exclude the self-insured group, because zip code and distance variables are unavailable for those individuals. In order to test for changes in the impact of distance that could be attributable to parity, we include an interaction between distance and the post-parity dummy variable.

We model: initiation (the decision to seek care); provider choice, conditional on initiating care; and the unconditional probability of initiating care with a specific provider type. Our model consists of two parts. Part one is a logistic model of initiation, where the dependent variable takes a value of 1 if initiation occurs in that year, and 0 otherwise. Part two is a multinomial logit model of the choice of one of four providers, conditional on initiation. We model the unconditional probability of initiating care with a specific provider by combining the logistic and multinomial logit models:

$$(1) \Pr(\text{beneficiary } i \text{ initiates care with provider type } j \text{ in period } t) = \Pr(\text{beneficiary } i \text{ initiates care in period } t) * \Pr(\text{beneficiary } i \text{ chooses provider type } j \text{ in period } t | \text{beneficiary } i \text{ initiates care in period } t)$$

Independent variables include age, gender, and the person's relationship to the policyholder (child or spouse). We include behavioral health risk adjusters (developed by Ettner and colleagues¹⁹) based on the presence of these diagnoses in the first year of enrollment. We hold these risk adjustment variables constant because changes in parity may have led to changes in diagnoses that are more reflective of provider behavior and the regulatory environment and not directly related to underlying patient health status. Additional variables include an indicator variable assigned a value of one for the post-parity period and zero for the pre-parity period. In the difference-in-difference analyses that assess the impacts of parity, we include an indicator variable assigned a value of one for individuals covered by parity (i.e. not in a self insured plan) and zero for the comparison group, and the interaction between this variable and the post-parity indicator.

The MarketScan data do not include five-digit zip code data to generate patient-provider distance metrics. Thus, for the difference-in-difference analyses, we do not include distance, but do include dummy variables for the enrollee's 3-digit zip code, which serve as a proxy for region and access to providers.

We conduct more detailed analyses of distance for our two PPOs (excluding MarketScan). In these analyses, we include distance measures to the nearest provider of each of the four types, and an interaction between distance and the post-parity variable. To the extent that the distance measures represents a relative “cost” to access each provider type, these data are useful to provide an indication of how sensitive consumers may be to increases or decreases in accessibility.

The second part of our model is a multinomial logit. The dependent variable is a four-level categorical variable, which takes a value of 0 if a primary care physician was chosen for initiation; 1 for psychiatrist; 2 for masters-level nonphysician specialist; and 3 for doctoral-level nonphysician specialist. We use the standard Hausman test for the validity of the independence of irrelevant alternatives (IIA) assumptions. Multinomial logit models passed the Hausman test in Plan 1, but rejected the null hypothesis of IIA in Plan 2. However, we

compared predicted probabilities with the multinomial logit and multinomial probit for plan 2 and found no qualitative differences. Since the multinomial logit is less prone to convergence problems, we present the results from this model.

In our difference-in-difference models, we take an additional step to generate a more comparable control group, using a propensity score to reweight individuals in the self-insured group to be more comparable to individuals in the non-self insured group.^{20–22}

Our propensity score is generated through a logistic regression, with an indicator of whether the individual's health plan was subject to the parity law serving as the outcome variable. Independent variables include age, gender, policyholder, child, or spouse, dummy variables for three-digit zip codes, and behavioral health risk adjusters. The propensity score for each individual is the predicted value of this logistic regression. Weights for the “treated” group (those subject to parity) were defined to be unity, and weights for the “control” group were defined as $\hat{e}/(1 - \hat{e})$, where $\hat{e}$ is the estimated propensity score.²⁰ Once these weights were assigned, we applied them to the logistic and multinomial logistic components of our two-part model. This use of matching and regression methods in combination has been called “doubly robust.”²³

We use the standardized difference to assess the balance of covariates before and after propensity score weighting.²⁴ The standardized difference for a covariate x is defined as

$$d = \frac{100 * |\bar{x}_{treated} - \bar{x}_{control}|}{\sqrt{(\sigma_{treated}^2 + \sigma_{control}^2) / 2}} \quad (2)$$

where d is the standardized difference, $\bar{x}_{treated}$ is the average value for the covariate of interest (e.g. age) for the treated (e.g. affected by parity) population, $\bar{x}_{control}$ is the average for the control population, and σ^2 represents the variance of the covariate of interest for each population. Covariates that exhibit standardized differences greater than ten are generally considered to exhibit imbalance between the control and intervention groups.²⁵

Our unit of observation was the person year. There were four observations for each individual: two years pre-parity, and two years post-parity. To generate our estimates of interest, we used the method of recycled predictions.²⁶ We derive confidence intervals of our estimates through bootstrapping with 500 replications. To account for the multiple observations for each individual, we use block bootstrapping, with each individual defining a single block.

RESULTS

Tables 1 and 2 report descriptive data on individuals in the PPOs affected by parity and in the comparison group (i.e., those unaffected by parity). We display these characteristics for the unmatched population as well as the population matched by propensity score weighting. Prior to weighting, there were multiple covariates where the standardized differences was greater than 10 (demonstrating imbalance). After weighting, the self insured and non-self insured groups are relatively more comparable, with no covariates for which the standardized difference is greater than 10.

Table 3 reports on the unadjusted percentage of individuals who initiate care with a generalist physician, psychiatrist, masters-level behavioral nonphysician specialist, or doctoral-level nonphysician specialist, before and after parity. In our two study plans and in the control plan, the majority of initiations (46% to 66%) are with a generalist physician. The next most common choice is a masters-level specialist (14% to 27%), followed by

psychologists (12% to 21%), with psychiatrists the least likely to be chosen at initiation. The preference for generalist physicians decreases over time, while the preference for masters-level specialists increases in plans with parity. In the parity plans, the preference for psychologists is either constant or declining slightly, while the preference for psychiatrists showed a slight increase that was in line with the control group. In general, beneficiaries in Plan 1 had to travel farther than those in Plan 2, whose beneficiaries were more likely to be located in the Portland metropolitan area.

Table 4 shows the bootstrapped difference-in-differences estimates of (1) the likelihood of initiating care; (2) provider choice, conditional on initiating care; and (3) the likelihood of initiating with a specific provider. After controlling for secular changes, both plans demonstrated an increase in the likelihood of initiating treatment, although this was only statistically significant for Plan 2. Conditional on treatment, parity was associated with a statistically significant increase in the use of masters-level specialists for both plans. Overall, parity was associated with a slight increase in initiations with masters-level specialists in both plans. The use of generalist physicians, psychiatrists and psychologists did not appear to change significantly.

Figure 1 demonstrates the impact of 10% decrease in distance to provider on provider choice. The sensitivity to distance varies by provider and plan. Beneficiaries are least sensitive to the effect of distance when initiating care with a psychiatrist. As shown in Table 3, the choice of psychiatrist is relatively infrequent, and may often be associated with individuals with the most severe mental illness, who may be willing to pay a greater “cost” in travel time to receive the medical training and pharmaceutical treatment that may be prescribed by a psychiatrist. Patients are most sensitive to distance when initiating care with a masters-level specialist or clinical psychologist.

When initiating care with a generalist physician, distance demonstrated a statistically significant effect for beneficiaries in Plan 1, while the effect of distance on initiation of behavioral health care with a generalist physician in Plan 2 was not significantly different than zero. Initiations among beneficiaries in Plan 2 were less sensitive to distance than Plan 1 across all provider types. This finding may reflect the urban concentration of beneficiaries in Plan 1 and the close proximity of most urban beneficiaries to all provider types.

DISCUSSION

Our results suggest that Oregon's parity law did not result in large changes in the likelihood of initiating behavioral health care. However, once the decision to initiate care was made, patients were more likely to choose masters-level behavioral health specialists and less likely to choose generalist physicians. Overall, parity in Oregon was associated with a slight increase (0.5% to 0.8%) in initiations with masters-level specialists, and relatively little change for generalist physicians, psychiatrists and psychologists. These results are similar to findings by Lindrooth and colleagues, who found that a large employer's efforts to increase access to mental health care was associated with an increase in the use of nonphysician specialty mental health providers.¹⁷

Our study also suggests that patients are sensitive to distance from provider. To the extent that distance serves as a proxy for “cost” or “access”, these results provide some indication of the ways that increased or decreased access to provider types may affect patient choice. For example, demand for psychiatrists appears to be relatively insensitive to distance. This may be attributable to the relatively small proportion of patients who initiate care with psychiatrists, or it could be that there is relatively little substitution from psychiatrists to

other providers for patients with certain mental illnesses, such as schizophrenia, major depression, or bipolar disorder.

Our results suggest that the MHPAEA will be associated with an increase in the use of masters-level specialty mental health providers, and, furthermore, this change may be enhanced through greater access to these types of providers. Since the evidence to date suggests that these nonphysician mental health specialists may be the most cost-effective care providers,⁷⁻⁹ health plans and employers may encourage these choices, which may further increase their use.

Those worried about expenses associated with parity may be reassured that the legislation did not trigger a rush to higher priced providers (psychiatrists and clinical psychologists). Parity may have stimulated a substitution (albeit small) of masters level mental health specialists for primary care providers. Given concerns about current and-or looming shortages of primary care providers, this substitution may well be generally beneficial. These topics have not previously been addressed in studies examining impact of parity legislation.

The changes associated with parity are relatively small in magnitude. These impacts are in line with most studies of parity, which generally do not appear to drive large changes in expenditures or utilization.^{2,3,5,27,28} On the one hand, this is good news for parity advocates, since this pattern of evidence may have helped pave the way for the comprehensive MHPAEA. On the other hand, advocates who hoped that parity would lead to greater use of mental health treatment have not seen evidence of parity leading to large-scale changes in access or in the quality of care provided.^{29,30}

Nonetheless, parity has been shown to demonstrate some benefits, even if it does not appear to lead to substantial increases in seeking care by patients with unmet needs. For example, a study of Medicare enrollees suggested that mental health parity substantially improved the use of clinically appropriate mental health services following a psychiatric hospitalization,³¹ while Barry and Busch found that parity laws reduce the financial burden on families of children with mental health conditions.³²

Our study has several limitations. Our comparison group consisted of individuals in Oregon whose employers were self insured and thus not affected by Oregon's parity law. There is a risk that this choice did not adequately control for secular trends. The study is also limited by a lack of detailed zip code and distance data in the comparison group. However, it is reassuring that, upon weighting with the propensity score, individuals from the self insured plans generally had similar demographic characteristics. Furthermore, we did not have plan-by-plan information on the distributions of providers across years. It is possible that observed changes in access of masters-level specialists were driven in part by unobserved changes in access to available providers in either the self-insured plans or plans covered by parity.

This study is also limited in its analysis of two PPO plans in Oregon, which may not be representative of other commercial plans in Oregon or commercial plans throughout the United States. Certain aspects of Oregon's insurance market and health care delivery system may not be generalizable to other parts of the country. Oregon is generally considered to have a competitive insurance market with an adequate supply of psychologists, social workers, and counselors (of various disciplines), although psychiatrists are more difficult to access. In addition, our study does not shed light on the importance of quality. Patients, purchasers, and health plans may also be sensitive to reputation or providers who demonstrate the use of evidence-based practices.

In summary, the experience in Oregon suggests that parity, while infrequently associated with changes in access, utilization, or quality, may indeed affect provider choice, with patients more frequently seeking care from masters-level specialists and less frequently seeking care from general physicians. Patients appear to be particularly sensitive to distance travelled for masters-level specialists. Thus, the shift to these types of providers may be highly contingent on their accessibility. Given the widespread and broad-based nature of the MHPAEA and ACA, masters-level specialists may become particularly prominent providers of behavioral health care for a large group of patients in the near future.

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Figure 1.
Change in Provider Initiations based on 10% Decrease in Distance to Provider

Table 1

Comparison of Unmatched and Matched Cohorts (Plan 1)

Characteristic	Plan 1 (N=19,880)	Self Insured Comparison (unmatched)		Self Insured Comparison (matched)	
		(N=18,136)		(N=18,136)	
			Standardized Difference		Standardized Difference
Age	38.7	37.2	8.4	40.0	8.3
Female sex (%)	49	55	13.7	45	7.2
Policy holder status (%)					
Policy holder	55	49	12.2	54	1.7
Spouse	17	20	6.3	19	4.3
Dependent	28	31	7.9	27	1.8
Pre-parity presence of selected diagnoses					
Major depression (%)	1.5	1.5	0.2	1.1	4.0
Anxiety disorders (%) *	3.4	3.3	0.6	2.9	3.1
Schizophrenia & other psychotic disorders (%)	0.12	0.17	1.2	0.15	0.7
Bipolar disorders (%)	0.28	0.24	0.9	0.20	1.7
Adjustment disorders (%)	3.6	2.9	4.1	2.7	5.2
3-digit zip code					
970XX	5.3	30.1	64.3	5.5	0.3
971XX	1.5	11.8	42.2	1.6	0.2
972XX	4.1	33.2	80.7	4.1	0.3
973XX	8.1	7.2	3.3	8.2	0.5
974XX	55.3	7.4	120.8	55.2	0.3
975XX	15.1	8.2	21.4	15.4	1.0
976XX	0.3	0.5	3.0	0.3	0.2
977XX	8.3	1.1	34.4	7.7	2.0
978XX	1.3	0.4	9.7	1.3	0.1
979XX	0.8	0.1	10.6	0.7	0.0
Pre-parity initiation rates	4.4	4.2	2.3	4.3	2.3

*. Weighting based on propensity score; Pre-parity initiation rates represent the probability of any enrollee accessing mental health services in the two years before the parity law was implemented.

Table 2

Comparison of Unmatched and Matched Cohorts (Plan 2)

Characteristic	Plan 2 (N=26,590)	Self Insured Comparison (unmatched) (N=18,136)		Self Insured Comparison (matched) (N=17,992)	
			Standardized Difference		Standardized Difference
Age	37.3+/-17.4	37.2	0.9	37.3	1.5
Female sex (%)	51	55	9.9	51	1.7
Policy holder status (%)					
Policy holder	54	49	10.1	53	1.7
Spouse	18	20	5.9	18	1.6
Dependent	28	31	6.0	28	0.4
Pre-parity presence of selected diagnoses					
Major depression (%)	2.0	1.5	3.2	1.9	0.0
Anxiety disorders (%) *	4.0	3.3	3.4	4.0	0.2
Schizophrenia & other psychotic disorders (%)	0.11	0.17	1.5	0.15	0.3
Bipolar disorders (%)	0.30	0.24	1.2	0.20	0.1
Adjustment disorders (%)	3.8	2.9	5.0	3.8	0.1
3-digit zip code					
970XX	30.0	30.1		30.0	
971XX	17.2	11.8	15.4	17.2	0.3
972XX	34.0	33.2	1.7	34.2	0.4
973XX	7.5	7.2	1.3	7.5	0.0
974XX	9.0	7.4	5.8	8.8	0.4
975XX	0.4	8.2	39.2	0.4	0.1
976XX	0.0	0.5	10.1	0.01	0.1
977XX	1.9	1.1	6.6	1.9	0.4
978XX	0.04	0.4	7.6	0.04	0.0
979XX	0.0	0.1	4	0.01	0.1
Pre-parity initiation rates	3.8	2.9	0.6	4.4	0.5

Weighted self insured population excludes 144 individuals whose propensity score was outside the range of the propensity scores for Plan 2.

* Weighting based on propensity score; Pre-parity initiation rates represent the probability of any enrollee accessing mental health services in the two years before the parity law was implemented.

Table 3

Descriptive Statistics of Provider Choice Conditional upon Initiation

Characteristic	Self Insured Comparison		Plan 1		Plan 2	
	Pre-parity	Post-parity	Pre-parity	Post-parity	Pre-parity	Post-parity
Percentage initiating service with generalist (primary care) physician	66%	63%	53%	46%	66%	54%
Miles to nearest generalist (primary care) physician	-	-	6.6 (9.3)	6.8 (10.6)	3.8 (8.6)	3.6 (5.9)
Percentage initiating service with psychiatrist	4%	7%	7%	8%	5%	9%
Miles to nearest psychiatrist	-	-	10.7 (15.5)	10.9 (17.5)	8.7 (18.1)	5.7 (9.0)
Percentage initiating service with MA level mental health specialist	17%	17%	21%	27%	14%	21%
Miles to nearest MA level mental health specialist	-	-	9.1 (12.7)	8.2 (11.7)	5.1 (9.2)	4.6 (8.6)
Percentage initiating service with psychologist	12%	14%	19%	19%	21%	17%
Miles to nearest psychologist	-	-	12.3 (25.3)	11.1 (18.8)	6.1 (13.4)	5.3 (11.1)

(Standard deviations of distance to provider are in parentheses.)

Table 4

Difference-in-Difference Analyses of Provider Attributable to Parity

Outcome		Plan 1 ^a	Plan 2 ^a
Change in likelihood of initiation ^b		0.5% (−0.1%, 1.3%)	0.7% (0.3%, 1.1%)
Change in provide choice, conditional on initiation ^c	Generalist physician	−7.3% (−16.2%, 1.0%)	−8.0% (−11.9%, −3.8%)
	Psychiatrist	−1.1% (−3.9%, 1.4%)	0.4% (−1.1%, 1.6%)
	MA-level specialist	15.3% (7.1%, 22.8%)	7.4% (3.9%, 10.9%)
	PhD-level specialist	−6.9% (−13.3%, 0.1%)	0.2% (−3.2%, 3.1%)
Change in likelihood of initiation with provider ^d	Generalist physician	−0.02% (−0.5%, 0.5%)	0.03% (−0.3%, 0.4%)
	Psychiatrist	−0.04% (−0.2%, 0.1%)	0.07% (−0.04%, 0.2%)
	MA-level specialist	0.8% (0.4%, 1.2%)	0.5% (0.3%, 0.7%)
	PhD-level specialist	−0.2% (−0.5%, 0.1%)	0.1% (−0.02%, 0.2%)

^a A difference-in-differences analysis was used to account for secular trends. In each case, the MarketScan pool of self-insured Oregonians served as the control group. Self-insured control group was weighted via propensity score.

^b Based on multivariate logistic regression

^c Based on multivariate multinomial logit

^d Estimates represent probability of initiating multiplied by probability of selecting a provider, conditional on initiation