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MENTAL HEALTH PARITY LEGISLATION (2008-2015): EFFECTS ON MENTAL HEALTH
OUTCOMES

by

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A thesis submitted in partial fulfillment of the requirements
for graduation with Honors in the Economics

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All requirements for graduation with Honors in the
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Mental Health Parity Legislation (2008-2015): Effects on Mental Health Outcomes

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Major

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Abstract

Mental health parity legislation has gone through a series of distinct iterations each resulting in more strict regulations being placed on insurance providers in order to ensure equality of access to mental health treatment. Parity, by requiring that health insurance plans offer the same coverage and benefits for physical and mental ailments, attempts to expand both coverage and access. From 2008-2015 two distinct federal mental health parity laws were implemented from the Mental Health Parity and Addiction Equality Act to the Affordable Care Act's essential health benefits package. Alongside these reforms, states responded in kind implementing, expanding, or neglecting the requirements outlined by the federal government. This study tested these mental health parity laws against a population of individuals who self-reported the number of poor mental health days that they had experience in the past 30 days. It found moderate effects from the passage of parity requirements on small employer plans and some, contrary to expected, worsening outcomes from the expansion of parity laws to the individual market in a state.

1. Introduction

Prior to the passage of mental health parity laws, the history of mental health insurance demarcated a clear distinction between the benefits and coverage received by individuals for physical health and mental health (Barry et al., 2003). Higher co-pays, less extensive pharmaceutical coverage, higher deductibles, non-quantitative limits, and lower yearly treatment limits hindered individuals with mental health issues from receiving care for their illnesses. In response to the disparity between physical and mental health, state governments and the United States federal government have attempted an array of methods to address the prevalence of mental illness in the United States. Among these methods have been laws which attempt to close the gap between physical and mental health coverage. In large part, this approach has been supported by research linking therapy treatment to a betterment in mental health outcomes under the economic theory that a reduction in the cost of treatment by incorporating mental health into insurance plans would result in a greater number of people receiving benefits (Banerjee, Chatterji, and Lahiri 2015).

The economic effects of mental illness occurs through both direct and indirect means. In terms of direct economic cost, mental illness has been linked to an uptick of physical illness, reduced effectiveness of physical therapy, E.R. and ambulatory services related to mental illnesses, a subsequent decrease in the value of life for untreated populations, and the cost of life lost due to suicide (Bartel and Taubman 1986; Lawrence and Kisely 2010; Rice, Kelman, and Miller 1992). The exact direct cost of mental health is variable and dependent upon the value placed upon life and quality of life. The associated indirect costs are linked to a decrease in productivity in the workplace, an increase in absent days due to mental illness, a higher rate of unemployment, the costs of incarceration, and decreased wages and wage potential (Banerjee,

Chatterji, and Lahiri 2015; Chatterji, Alegria, and Takeuchi 2011; Rice, Kelman, and Miller 1992). When combined, these two categories of cost have provided an incentive for governments in the United States to address the mental health crisis.

This study focuses upon the effectiveness of legislative responses designed to ensure mental health parity from the years 2008 to 2015 by evaluating the difference in self-reported mental health outcomes from a broad sample across the United States sourced from The Behavioral Risk Factor Surveillance System's dataset from the Center for Disease Control. In doing so, this study tracks the intent to treat, the passage of the law and the final mental health outcome, but does not evaluate the effectiveness of various therapy treatments nor determines the expansion in demand for those services.

State and federal laws are accounted for across the time-period and represented as binary statistics, variables which reflect a "1" if the law is in effect and a "0" if it is not. This study, however, does not track the precise effect that the laws have had on premium rates or out-of-pocket expenditures for the various laws. Instead, the focus of the paper is to determine whether the laws result in the intended reduction in the economic cost of mental illness through an improvement in mental health outcomes. While some would advise considering the laws at parity only if the coverage is mandated, this paper does not.

For the purposes of this study, a law is only considered to be a "parity law" if it requires consistency across the health insurance plan in terms of both quantitative and non-quantitative limits. Quantitative limits are considered equal if the deductible on the health insurance plan combines both mental and physical health costs, co-pays are equivalent across the plan for analogous treatments, and treatment limits are set to the same amount. Non-quantitative limits are considered equal if there are no distinctions in the benefits of the insurance plan between

prescription medication formularies, prior authorization, fail-first protocol, utilization management, or any other non-quantitative controls on mental health insurance when compared to the plan's coverage for physical health.

The results from this study indicate small but significant coefficients for small businesses with the largest change occurring in the binary statistics created for when "0 days" were reported. The large-business and individual market laws were, generally, not significant and may reflect a variety of economic effects which limit the ability for these laws to reduce poor mental health outcomes. In one model, parity laws in individual market were associated with worsening mental health conditions associated with the passage of the law.

2. Background

2.1 Federal and state regulations

Federal mental health parity law has evolved gradually over time from the 1996 Mental Health Parity Act (MHPA) to the roll-out of the Affordable Care Act's essential health benefits in 2014. Beginning with the 1996 MHPA, the Department of Health and Human services in conjunction with state health authorities regulated large-group plans, health insurance received by employees in firms with greater than 50 employees, to require that spending limits by the insurance company were consistent across illnesses. MHPA, however, did not require compliance across non-quantitative limits nor did it regulate other functions of mental health insurance. In essence, it increased the amount individuals could spend if their plan previously had a lower limit but did not change any of the barriers which make it difficult for patients to receive high quality care. Further, MHPA requirements only went in to effect when the plan offered mental health coverage and did not mandate that mental health coverage was offered.

The 2008 Mental Health Parity and Addiction Equity Act (MHPAEA) went a step further than the MHPA. The Health and Human Services agency released guidelines in 2010 requiring large-group plans to ensure non-quantitative limits were in compliance with parity standards. Similar to the MHPA, it does not mandate that mental health coverage is given to employees. However, the law stipulates that should the business decide to include mental health coverage in its benefits package then it must be done at parity. In the essential health benefit rules released in 2014, the Affordable Care Act extended the requirements of the MHPAEA to small-group plans and plans on the individual market. The ACA, thus, expanded federal regulations to cover mental health at parity under all plans excluding Medicaid and Medicare. Unlike the previous laws, the ACA mandates that health insurance plans provide mental health coverage as part of the essential health benefits package with the parity regulations created by the MHPAEA.

Throughout and prior to the range of this study, state governments passed mental health parity laws which often expanded on existing federal laws. When there is an overlapping of federal and state parity laws, the law functions as follows: the federal law, if providing more strict standards than the state law, supersedes state authority, but if a state law is broader in its parity requirements or requires a certain minimum threshold of benefits, then the state law's requirements are implemented by the state's health authority and are not overridden by federal parity laws. Amongst the fifty states, Alabama, Oklahoma, Texas, Wyoming, and Missouri have concluded that their state health agencies do not have the authority to enforce the ACA's extension of the MHPAEA to individual and small-group plans without new state legislation, which as of the writing of this paper has not occurred. In these instances, the HHS alone regulates the mental health insurance markets in the state. Of the states, seven prior to the study had comprehensive parity laws.

Up until the implementation of the MHPAEA, The Employee Retirement Income Security Act (ERISA) provided a large obstacle to the regulation of health insurance by the states. ERISA exempts large-group plans which are self-insured, insurance set up by the company and company unions for its employees as opposed to utilizing an outside insurance provider, from state laws regulating health insurance. Because of this, the effect of ERISA tended to bias studies which evaluate state laws towards a null effect if individuals from self-insured large group were including in the sample and, thus, undervalues the effects of parity. In sum, state mental health insurance regulations do not affect the entire population of the state (Andersen 2015). Along with the federal ERISA law, state and federal laws have included multiple exemptions such as grandfather clauses or premium thresholds designed to protect businesses from unexpected price increases (Buchmueller et al. 2007). The effect and rate at which these exemptions have reduced the impact of mental health parity laws is unclear.

2.2. Previous Literature

Many studies have attempted to determine the extent to which mental health parity has effected various dependent variables for tracking mental health outcomes. Amongst them, there have been distinct variable approaches to determining the effectiveness of the law. In relation to state laws, two studies have tracked the effect of mental health parity on suicide rates and found null effects (Klick and Markowitz 2006; Lang 2013). Suicide as a measure certainly gains some insight into one of the large costs of mental illness, the loss of life and the potential of those lives in terms of possible future labor and production. However, it does not reflect the entire scope and effect of the laws. For instance, the failure to reduce the number of suicides does not necessarily indicate that other economic costs, productivity for instance, are not improving. Instead, it

measures a single outcome at the most extreme end of mental health crises. Further, these papers took, essentially, a binary approach to mental health issues as opposed to a spectrum which the literature indicates has been a more productive approach to evaluating mental health benefits (Harris, Carpenter, and Bao 2006).

Other papers have utilized different spectrum as opposed to a binary approach. One such approach has been the utilization of the K6 scale which asks individuals a series of weighted questions designed to create a number reflecting the quality of a person's mental health (Harris, Carpenter, and Bao 2006). The paper utilizing the K6 scale found that the imposition of mental health parity requirements resulted in a betterment for those with relatively mild mental health issues. One paper tracked an uptick in the utilization of autism services (Bilaver and Jordan 2013). Another found an increase in the delivery of substance abuse aid (Wen et al. 2013). Indication of an increase in the utilization of services, while possibly correlated with an improvement in mental health, does not necessary reflect a betterment in the individual's mental health status. When taking into account diminishing returns to mental health treatment, as discussed below, there is a point at which utilization does not equate to any betterment.

Studies have also focused on specific mental health issues including specialty care, bipolar disorder, and major depression (A. B. Busch et al. 2013; Ettner et al. 2016). While singling out these specific diseases would be beneficial for advocacy centered upon those illnesses, it does not reflect the sum benefits of the program across a general population and is an incomplete analysis of the entire policy's effect on mental health.

Others studies have tracked the effects of parity laws on out-of-pocket expenditures by the individuals effected by mental illness including increased premiums and decreased out-of-pocket spending (Barry and Busch 2007; Cseh 2008a; Grazier et al. 2015; Harwood et al. 2016;

Meyerhoefer and Zuvekas 2010). Another study tracked the different benefits of health insurance plans and found that the law did result in the implementation of its financial requirements (Horgan et al. 2015). Although, several other studies have found a null effect on mental health outcomes due to state laws (Bao and Sturm 2004; A. B. Busch et al. 2013).

Amongst the various studies there have been attempts to single-out specific populations to determine precise effects of parity on those groups. Federal employees, while outside of the scope of this paper, have experience an improvement of their mental health due to the imposition of mental health parity on their health insurance and may indicate the benefits of parity more broadly (Goldman et al. 2006). Studies, also, have singled out specific firms and found overall cost reductions in managed care frameworks due to the decrease in physical ailments related to mental health coverage (Zuvekas et al. 2002). Amongst small employers, one study found a reduction in out-of-pocket expenditures for families whose children utilized mental health insurance (S. H. Busch and Barry 2008).

While research thus far has given broad overviews of the intentions and goals of the ACA's broadening of the pool of insurance plans under the purview of the MHPAEA, few have analyzed the data coming out over the past few years (Beronio, Glied, and Frank 2014). Given that the final rules for the ACA were only implemented on January 1st of 2014, this is not surprising. Contrary to previous studies which primarily focused upon a limited sample from a single employer or a list of employers, this paper gets to the core of the Affordable Care Act's goals, to provide mental health coverage across plans. Instead of using a binary variable for tracking mental health, for example suicide rates, this paper utilizes a self-reported mental health statistic with a range of possible responses. This paper has a distinct approach in that it evaluates the effect of all parity laws on the sample population.

3. Data and Methodology

3.1 BRFSS Participants and Data Collection

This paper utilizes The Behavioral Risk Factor Surveillance System's (BRFSS) from the CDC's yearly dataset of interviews. The BRFSS survey is a nationally conducted cross-section of health and risky behaviors. It utilizes phone calls to interview respondents and asks a series of questions of use to researchers. In 2007, the BRFSS added cellphones calls into their data gathering methodology where previously it had solely employed landline calls. While the effects of this change may be captured by the design of the survey, the precise effect of this shift is unclear. The individuals who respond are anonymous, but the individual's state of residence, employment, race, gender, education, and income are self-reported and reflected in the dataset. For the purposes of this study, the territories and Washington D.C. were excluded from the sample to focus upon the effects solely in states.

Two tests were conducted against the total population, one which singled out only those who claimed to have insurance and another against the entire population of the survey. This was done to determine the potential effect, for example, of possible premium increases on the rate of insurance for those with mental health issues. A second sample was utilized which included solely those who claimed to have health insurance which was represented by a smaller group of individuals. These tests were used to determine whether the insured population was experiencing an improvement in their mental health outcomes.

The large sample size of the BRFSS gives a more robust understanding to the effects of mental health parity. While the survey indicates whether an individual has insurance, it does not indicate the source from which they receive their coverage. The effect of this limitation on the

dataset would tend to cause mental health parity to gravitate towards a null effect because each law, with regards to large-group, small-group, and non-group, effects a different section of the population rather than the entire set. However, phenomenon such as suicide clusters, an event where one individual committing suicide causes a series of others to commit suicide as well, may point towards spill-over effects of treatments on one section of the population (Haw et al. 2013). Further, because spouses may be beneficiaries of the insurance policies of an employee at a firm, there is a broader effect to these laws than solely the employee. The approach taken by this paper would be able to pick-up some of these spill-over effects.

The passage of the Affordable Care Act changed many of the characteristics of the insurance market. To ensure that there was little interference with the regressions, individuals below the age of 26 were dropped from the sample. In addition, to rule out those who could be receiving Medicare, an insurance program whose final-rules were published later than commercial plans, respondents over the age of 64 were likewise dropped from the sample. Respondents who either refused to answer the question about mental health or did not know their response were excluded from the sample as well.

3.2. Mental Health Parity Variable

Table 1 lists the various state laws prior to and during the timeframe of this study. The information was converted into three binary statistics to indicate that a state had adopted a mental health parity law; these were large-group parity, small-group parity, and individual market parity. While the state laws do not affect those businesses regulated by ERISA, the timeframe of the study dampens the effect of the exemption because the federal parity law, MHPAEA which altered ERISA guidelines to require parity, issued its final rulings in 2010.

A law was considered to be a “parity law” if it required both non-quantitative and quantitative equivalence in coverage and benefits. The most distinct example of a state which could push parity requirements towards a insignificant effect due to this definition would be Delaware which had a law which explicitly allowed non-quantitative treatment limitations if there was no greater financial burden associated with the limit. Under the framework of this paper, this law was not considered parity for the purposes of this parity binary variable.

Because there has been some question as to which sections of the mentally ill population have benefited from additional coverage from parity laws, three additional binary variables were used to test different mental health outcomes (Grazier et al. 2015; Harris, Carpenter, and Bao 2006). These three variables were coded as a “1”, respectively, if the mental health report of the individual was greater than 0 days, greater than 10 days, or reported exactly 30 poor days. A negative coefficient on the 0 day dummy variable would effectively indicate that people were gravitating towards completely solving their mental health issues. The 10 day variable tests whether the middle section of mental health outcomes is being treated. 30 days, while not a perfect measure, would test those who would be high utilizers of psychiatric and psychological services to determine if they are receiving care and if the regulations are helping those who are the worst off.

3.3 Mental Health Outcomes Variable

Within the BRFSS, there are multiple potential variables which can be used to track the effects of parity on mental health outcomes. While there are several binary statistics, this study utilizes a non-binary statistic which asked the individuals interviewed the number of poor mental health days that they had experienced in the past 30 days. While not the same as the K6 scale, it captures some of the benefits of self-reporting on a scale of days as opposed to diagnosis or

suicides. Figure 1 shows a histogram of the results of these interviews. Notably, the numbers aggregate around 0, 5, 10, 15, 20, and 30. This could pose a potential issue in the data because the effect of mental health parity may have to be quite large in order to cause an individual to report a lower number of days.

The use of a non-binary variable is ideal for mental health parity because of the nature of these illnesses. Because it is unlikely that an individual will be entirely cured of their illness, diagnoses do not always occur for the illnesses nor are reported with a high level of frequency, mental illness is contextualized to the individual, suicides do not reflect the entire scope of mental health outcomes, and marginal improvement can be tracked better by self-reporting, the number of days' statistic provides a better model than one which tracks individual diseases. A negative coefficient on this statistic would indicate that individuals interviewed are reporting lower numbers of days following the implementation of mental health parity laws.

3.4 Control Variables

Gender, education, and race were used to determine the effects of these demographics on mental health. Educational responses were recoded into a binary variable to reflect whether the respondent had attained a high school education or greater. Race was broken down into dummy variables: self-identified Black, Latino, and a variable which reflected any other non-white response.

Alongside these variables, this study employed several other statistics. The number of psychiatrists per 1000 jobs, collected through the Bureau of Labor Statistics, was meant to determine the effect of access and mental health economics on mental health outcomes. Binary variables for mandated offering laws and mandated minimum benefits were used to determine the effect of these other laws on mental health outcomes. In addition, a binary variable was

coded to indicate that a state was one of the five which had determined that it could not enforce federal mental health laws.

3.5 Empirical Model

State fixed and year effects were used for the ordinary least-squared (OLS) regressions in this paper. State fixed effects were used for the purposes of this paper for two distinct reasons. First, it gives each state its own baseline contextualized to its qualitative differences when compared to other states. Second, it can correct for the omission of time-invariant characteristics in random effects models. Within the literature, there is a debate over whether fixed effects should be used. For instance, when mental health effects on labor outcomes have been switched to a state fixed effects model from a random effects model, the regression were not robust indicating a possible difference in personality, state dynamics, or other non-measured characteristics rather than mental health (Andersen 2015; Cseh 2008b). In fixed effect models, there is the risk of policy endogeneity which occurs due to the difficulty of comparing states to one another. For instance, states without parity laws are used to determine the potential mental health outcomes in a state with parity if it had not passed the law. Due to the differences in states, there could be a problem in exporting one state's results to another. In the context of the BRFSS survey, this study does not make the assumption that there are individuals in the sample who are unaffected by the implementation of a parity law. For the mental health outcome Y_{ist} , the specification would be:

$$Y_{ist} = \alpha + \beta_1 Parity_{st} + \beta_2 X_{it} + \beta_3 Z_{st} + \beta_4 \gamma_t + \beta_5 S_s + \mu$$

Here, Y_{ist} is the expected mental health response by an individual in each state and time. Here the Parity variable is a stand in for the three-tiered approach of this paper. Large-business parity is coded as a "1" if the state has a law which requires large-group plans to cover mental

health at parity. Small-business parity is coded as a “1” if small-group plans are required to cover at parity. Individual parity is coded as a “1” if the individual market in the state or its equivalent requires plans to cover mental health at parity. X_{it} represents a series of covariates related to the individual in a given time: sex, race, and high school education. Z_{st} would be time-variant characteristics within the state such as other mental health regulations or psychiatric jobs per 1000 jobs. S_s and γ_t are the fixed effects for the state and year respectively and are represented in the dataset by dummy variables.

4. Results

4.1 Large Business Parity

Table 2 and 3 give the results of various effects of mental health parity requirements on mental health outcomes. In all instances, the addition of a law requiring large businesses to provide insurance at parity did not have a robust effect and, frequently, a small positive coefficient which is not inconsistent with the existing literature (Grazier et al. 2015). There are several different effects occurring within large-businesses and prior to the time period of this papers’ test that tend to push the regression of large-business parity towards insignificant.

First, important to note is that a “0” for the binary statistic representing parity does not indicate that an individual in a large firm is going from no coverage to coverage at parity. Instead, it simply indicates that the law has been put in to effect by the state or federal government. It does not guarantee that someone seeks treatment, and it is within the realm of possibilities that someone within a large business would already be receiving insurance benefits at parity before and after the passage of the MHPAEA if their employer was already offering mental health services at parity. The MHPA ensured that annual limits were the same across

mental health and physical health and occurred prior to the dates of this paper. Several sources indicate that there are diminishing returns to mental health treatments (Falkenström et al. 2016; Howard et al. 1986). Others also indicate that there is a point at which improved mental health outcomes are unlikely to occur at all (Barkham et al., 2006).

Second, outside of the existing laws, large businesses may have been incentivized to provide mental health coverage for their workers at the equilibrium point between spending company funds and the returns in terms of benefits to increased productivity of their workers. However, a market failure with regards to the mental health of workers could be possible if a company has determined that the supply of workers is sufficiently high that it would be cheaper to hire someone new instead of treating their workers. Additionally, companies may be unaware of symptoms of poor mental health which occur infrequently or are not readily apparent.

Finally and applying to all the forms of parity below, some literature indicates that there is a moral hazard attached to expanding mental health insurance coverage and benefits. There has been a strong connection in the literature linking addiction services, one of the areas covered by the MHPAEA, to an uptick in the consumption of alcohol (Klick and Markowitz 2006). Alcohol, being a depressant, could have had a downward effect on the regression. In addition, other variables associated with risky mental health behavior could be increasing along with alcohol consumption.

4.2 Small-Business Parity

Parity requirements placed upon small businesses have had the largest and most frequently significant output of all the parity requirements. Within the regressions done across the entire population of the survey, the first model including only race, sex, and education, had a negative coefficient of -0.110 which indicates a decrease in the mean number of poor mental

health days due to the imposition of a requirement on small businesses. This should be read as a large effect because it is regressed against the entire pool of respondents and not simply those who work for a small business. While the binary tests of those with greater than 10 days of poor mental health and those who reported 30 poor mental health days were insignificant, the test of whether parity resulted in an increased chance of reporting 0 poor mental health days did result in a significant negative coefficient of -0.0114 or a 1.14 percentage point improvement. This finding is consistent with previous research on the improvement of mild mental health issues (Harris, Carpenter, and Bao 2006).

When tested against the sample of individuals who indicated on their interviews that they had some form of health insurance coverage, small-business parity requirements were consistently negative and significant across all of models except for the model utilizing a greater than 10 days binary variable. The coefficient for the most simple test which included solely the characteristics of the individuals being interviewed resulted in a -0.134 coefficient. The largest coefficient again for the binary tests was the variable for an increase in the probability of individuals reporting that they had “0” poor days.

The discrepancy between the two different populations (insured and general) may indicate the occurrence of some economic and individual effects. Small-businesses due to increasing cost associated with the imposition of parity laws may be dropping their coverage of employees resulting in a smaller population being covered out of the entire sample, an effect which would have a less pronounced influence on the second test only against those who have insurance. This could be reflected as an improvement if the the people staying with insurance were generally better off than the prior population of insured individuals

The concurrence between the two populations that individuals were approaching a report of “0” may indicate that relatively minor mental health issues were being resolved quickly by parity laws. Because this survey only has one full year of data after the imposition of the Affordable Care Act’s essential health benefits, it is likely that those who are reporting 30 or greater than 10 days have more severe mental health issues requiring a greater amount of therapy in order to reduce the number of poor days.

4.3 Individual Parity

Individual parity requirements are unique when compared to the other parity requirements because in some of the models it resulted in a positive significant coefficient reflecting worsening mental health outcomes in model 5 of the general population. However, when controlled for those who have insurance, the coefficients becomes insignificant in all but the mental health binary tests. This could be occurring for many of the same reasons as explained above. Parity requirements could be linked to a moral hazard which causes individuals to experience worse mental health outcomes in the short term before addiction treatments can resolve the issue. Premium increases in conjunction with the higher probability of a lower income for those with mental illnesses may be causing those with the worst mental health to lose what coverage that they had as they decide to not purchase insurance. This would be reflected in the general population but not in the insured sample.

On the other hand, some research has indicated that there has been a reduction in health care costs due to the imposition of mental health care regulations (Zuvekas et al. 2002). If mental health services have the co-benefit of reducing physical health ailments, then the result would be a subsequent decrease in the utilization of physical health services and emergency room visits.

Finally, the increase may be reflective of other issues associated with enforcement which may affect the individual market more than businesses. A study found that across states there is general ambiguity about what type of coverage individuals are receiving and that it is not infrequent for compliance with the laws to be low (Berry et al. 2015). Because the mental health expansion went in to effect with a list of other essential benefits, enforcement and oversight could be less than it would have been otherwise as resources were spread more thin over regulating a broad pool of insurance plans. If the individuals were certain of their mental health coverage prior to the introduction of the individual markets in their state under the affordable care act but no longer are, there could be a decrease in the use of the services. In general, the policies attached to large and small employers could be more clear and consistent with Federal law resulting in the disproportional impact on those receiving their health insurance on individual marketplaces.

4.4 Covariates and Control Variables

Consistent with prior research, sex indicating that a respondent was female had a high coefficient and was significant (Dagher, Chen, and Thomas 2015). This statistic indicates that woman is on average likely to have approximately 1.3 more worse days in a 30 day period. Likewise, identifying as Latino (3), or other non-white (4) had significant coefficients reflecting more poor mental health days across the entire population.

However, identifying as Black (2) was associated with a better mental health outcome. Rather than reflecting a generally better mental health in black communities, the survey may be picked up on a more intense stigma attached to mental health issues in these communities. In general, black individuals are less likely to seek treatment and more likely to deny having mental health issues deserving of treatment (Alvidrez, Snowden, and Kaiser 2008). While every

population is effected by mental health stigma, this study indicates that it is more pronounced for black individuals.

Mandated offering schemes, similar to the parity statistics, reveal a mixed picture. Mandated individual offering was significant with a coefficient of 0.136 and 0.108 in the general population and insured population respectively. Large-group mandated offering resulted in a significant -0.117 and -0.105 a for the two populations respectively. Individual mandated offering, because it was largely a function of the Affordable Care Act and was infrequently required by state policy, may be picking up issues associated with the ACA outlined above. Mandated offering for large businesses is, most likely, negative due to requiring that businesses provide coverage with MHPAEA requirements with the issue of the final rules of the ACA's essential health benefits. Small-group mandated offering could be insignificant if companies were already offering some form of mental health coverage and simply expanded to parity standards.

The psychiatrist jobs per 1,000 jobs was never significant. This possibly indicates that variations in the statistic for psychiatrist jobs per 1,000 may be more reflective of economic trends than mental health utilization or state policies. Having a high school education results in approximately 3.2 to 3.9 better days depending on the sample and a large percentage point shift in all of the binary statistics.

Interestingly, a state which concluded that they did not have the authority to enforce the Affordable Care Act's essential health benefits received a negative and significant co-efficient in the general sample but not in the insured population sample. In the instance of a state refusing to enforce the Federal Parity Law, the department of health and human services would regulate the

individual marketplace. The greater presence of the federal authority may resolve the issue of transparency of benefits which may increase usage in the state.

5. Discussion and Limitations

Findings of significant improvements due to parity regulations is important for several reasons the first of which is it indicates that there is at least some elasticity of demand. If demand for mental health services was inelastic, indicating that individuals were willing to pay regardless of the cost, the regressions would be insignificant reflecting a possible decrease in out-of-pocket expenditures but not a real change in mental health outcomes. Instead, this paper's significant coefficients for small-group plans indicates some elasticity of demand which is consistent with research indicating that there is a greater elasticity of demand for mental health services than physical health services (Keeler, Manning, and Wells 1988). The insignificance of the large-group and small-group mandated offering statistics is important because it may indicate that businesses are offering mental health benefits regardless of the loop-hole in the law which would allow them to not offer any at all.

The regressions indicate small improvement to mental health outcomes when small businesses were required and non-robust coefficients for large businesses across the general population of the same. The finding is important because it indicates that the effect of simply mandating increased coverage may be insufficient to result in the broad economic benefits promised by these policies when each of the different parity laws is weighed. Important to note from the histogram, however, is that the mean number of days reported was already on the low end do to the large number of "0 days" responses. A small shift in the mean downward may represent a large change in the mentally ill population.

Unlike large businesses with far greater numbers of employees, the incentives to hire new individuals in small businesses may have been more prevalent than in large businesses which would see greater returns across productivity of their entire workforce should they expand mental health access. Small businesses, likewise, may have less capital to utilize in terms of insurance coverage, and the benefits could have been perceived as insignificant. These two possible explanatory variables may indicate that there is a larger market failure in relation to small businesses than in their large business counterparts.

In part, limited effects of these laws may be due to a perception of stigma. Perception of stigma, the idea that mental illness is not a real issue deserving of treatment, has been an effective predictor of whether or not individual will drop-out of treatment (Sirey et al. 2001). One study found that out of those with mental illnesses only one third consulted a therapist which may confirm a large barrier to treatment (Andrews, Issakidis, and Carter 2001). While measuring stigma's effect on the large population of individuals interviewed by the BRFSS would be difficult to ascertain, it certainly could be suppressing some of the benefits of mental health parity laws.

Another possible issue when approaching this study is the effects of intra-state disparities in access. For example, individuals in rural areas of a state, while receiving coverage for behavioral health services, are less likely to be able to utilize those services due to concerns over access, transportation time, and knowledge of available options (DeLeon, Wakefield, and Hagglund 2003). Rural individuals then would be more likely to continue to report the same mental health outcomes regardless of their insurance status

Given the results of the individual parity statistic, further research may be needed to be done to pin-point the precise reason for the finding. Those results could reflect any number of

variables from moral hazard to premium burdens. Each of which would add to the literature base of the ACA's mental health benefit stipulations.

6. Conclusion

This study, consistent with many of previous studies, found a moderate significant effect for small-group firms and an interesting increasing coefficient for individual plans when regressed against the entire population of the survey and in the binary tests. It found shifting from the laws which required equality of treatment caps (MHPA) to a broader regulation consistent with parity standards was insignificant. These results indicate that, in general, parity laws have some benefit for those with poor mental health outcomes. These results indicate that each of these different sections of the field for insurance may be experiencing varying levels of market failures. In some instances, such as individual parity, it may be inadvisable to require health insurance on the individual market to cover mental health at parity. Other policies, such as minimum benefits in the individual market, should be evaluated to determine whether they provide a better balance of cost and benefit given diminishing marginal returns to treatments. In addition, this study does suggest that if mental health is to be treated seriously additional policies designed to increase access, reduce stigma, and increase the effectiveness of therapy treatments will need to be evaluated.

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Table 1

	Most Recent Pre-2008	Pre-ACA (2008-2013)	Post-ACA (2014-2016)
Alabama	2001- Large employers must cover mental health at parity	N/A	N/A
Alaska	2004- Required coverage of drug abuse or alcoholism by small and large businesses	2009- Minimum mandated benefits setting floors for mental health annual limits	2014 – Passed a law indicating that the state will enforce the federal parity law.
Arizona	1998- Mandated offering of mental health insurance	N/A	N/A
Arkansas	1983- Minimum benefits in group accident policies 1987- Required treatment of alcohol and drug dependency	2009- Large Employers are no longer mandated to offer mental health insurance Individual and small businesses must offer optional mental health coverage	N/A
California	1974- Mandated coverage for mental and nervous disorders 2000- Basic Parity Amendment for all types of commercial plans	N/A	2012- Individual and small business plans must abide by and follow Federal Parity standards
Colorado	2003- Court-ordered substance abuse treatment must be covered 2006- Mandated Offering of optional mental health coverage	2013- Small Employer fully-insured plans must cover mental health (but not necessarily at parity)	2016- Parity standards are extended across all plans in the state

Connecticut	2000- Mental Health Parity across plans with a mandated coverage provision	N/A	2016- Additional regulations on NQTLs and State regulations on mental health parity
Delaware	1999- Individual, Small, Large, must cover severe mental illnesses but may place NQTLs on coverage as long as it does not place a ‘greater financial burden’	N/A	N/A
Florida	2000- Small and Large fully-insured plans must offer and cover with a minimum benefit	N/A	N/A
Georgia	1998- Individual pseudo-parity- allows annual limits Small Employers- Mandated offer with minimum benefit Large Employer-mandated offer with some exemptions	N/A	N/A
Hawaii	1988- Mental Health and Alcohol and Drug Abuse Treatment Insurance benefits must be given at parity 2005- Comprehensive Parity for serious mental illnesses – amended the definition to be more expansive	N/A	2014- Updated language of their parity law to comply with federal parity regulations.

Idaho	2006- Mental Health Parity exclusively for state employees with severe mental illness	N/A	N/A
Illinois	N/A	2011- Parity requirements for all health insurance plans regulated by state agencies	N/A
Indiana	1997- Parity for Public Employees 1999- Minimum Mandated Benefits with a small employer exemption	N/A	2014- Large, Individual, and state plans cannot restrict access unless similar restrictions are on physical health and insurance
Iowa	2005- Large Employers must cover severe mental illness	2011- Group policies must provide mental illness benefits to veterans	N/A
Kansas	N/A	2009- Minimum mandated benefits Small and individual plans can still place treatment limits Prescription medications must be covered equally	N/A
Kentucky	1986- Individual and small employers must offer 2000- Large employer fully-insured- mandated offering at parity	N/A	N/A

Louisiana	N/A	2009- All excluding individual plans must cover a clinical psychologist. A minimum benefit of coverage (still excludes individual/non-group plans) 2011- Mandated offering for businesses and state benefit plans	N/A
Maine	1983- Minimum mandated benefit required for certain small businesses 2003- small businesses not covered by the 1983 law and individual plans must offer mental health coverage	N/A	N/A
Maryland	1997- Minimum mandated benefits for all plans	2010- Fully comprehensive parity law for large businesses, small businesses, and individual plans	2016- minimum mandated benefit and expansion/implementation of Federal Parity rules
Massachusetts	1982- Minimum mandated benefits for all plans	2009- Large employer fully-insured, small employer fully-insured, individual and state all at parity for severe illnesses and mandated minimum for other illnesses	N/A
Michigan	1982- Treatment for substance abuse	N/A	N/A

	must be covered by all plans		
Minnesota	1999- Mental Health Parity, limited to “services” for all plans that offer	2008- Mental Health Parity – all plans may not be more restrictive on mental health than on physical health. It does not mandated coverage.	2013- insurance plans must meet the federal parity law
Mississippi	2001- Minimum Mandated Benefit provisions	N/A	N/A
Missouri	1999- Mandated offering for individual plans 2005- coverage and parity for large and small employers plans	N/A	2015- took effect at the beginning of 2017, requires insurance to cover eating disorders w/ a waiver if they an prove that coverage increased premiums by 2%
Montana	1999- all insurance must cover severe mental illnesses	N/A	N/A
Nebraska	1999- Large and small employers must abide by minimum mandated benefits	N/A	N/A
Nevada	1999- Mandated minimum benefits	2008- Mandatory minimum benefits for small businesses 2009- Mandated compliance with federal parity law	N/A
New Hampshire	1975- Minimum Mandated Benefits- large and small businesses must have same ration of treatment as physical ailments (the law is unclear as to what effect his has on coverage)	2009- Requires compliance with the Federal Parity Law	N/A

New Jersey	1999- Mental Health Parity for DSM severe mental disorders	N/A	N/A
New Mexico	1999- Large and small must cover mental health with allowed exemptions	N/A	N/A
New York	2006- Large and small businesses must cover mental health and financial burden must be consistent	N/A	N/A
North Carolina	1997- Bans discrimination against the mentally ill in receiving care	2008- Mandated Minimum Benefits	2015- Requires plans to abide by the Federal Parity Law
North Dakota	1985- Mandated minimum benefits	N/A	N/A
Ohio	1979- Self-insured health care plans are required to meet minimum mandated benefits 2007- Mental Health parity for all plans for biologically based mental illnesses. Exemption if premiums rise by 1%	N/A	N/A
Oklahoma	2000- Group coverage for severe mental illness	2010- Large employers are required to cover services for severe mental illnesses	N/A
Oregon	2007- Mental Health Parity for small and large business plans	N/A	N/A

Pennsylvania	1990- Must provide benefits for alcohol addiction	2010- Requires compliance with the Federal Parity Law	N/A
Rhode Island	1994- all plans must cover mental health services at parity	N/A	N/A
South Carolina	1976- large and small must offer 2006- State Employee Insurance must cover mental health at parity	2009- large employers must cover mental health at parity	N/A
South Dakota	1998- Biologically based mental illnesses must be covered at parity	N/A	N/A
Tennessee	2000- Minimum Mandated Benefits for Large employers	N/A	N/A
Texas	2007- Minimum mandated benefits for large employer plans	N/A	N/A
Utah	2010 – Must cover catastrophic mental health conditions	2010- Mandated offering for large and small businesses 2010- large employers must comply with Federal Parity Law	2014- Small and Individual plans must comply with the federal parity law
Vermont	2007- All insurance plans must cover mental health at parity with physical health	2012- Created new enforcement mechanisms for ensuring compliance with state law	2013- The Federal Parity Law applies to all commercial plans in the state
Virginia	2000- Coverage for biologically based mental illnesses 2006- Minimum mandated benefits	2010- Large employers must comply with the federal Parity Law	2013- Insurance plans must comply with the mental health requirements of the Affordable Care Act

Washington	2007- all plans must cover mental health at parity	N/A	2015- Mandated Offering for all plans
West Virginia	2002- required insurance plans to cover severe mental health	2009- Large and small businesses must cover at parity unless the coverage causes premiums to rise by a set percentage 2010- Authorized the insurance commissioner to make and enforce parity requirements	N/A
Wisconsin	N/A	2010- Small with more than 10 employees, large, and public employer plans must cover at parity. If premiums rise by more than 2%, there is an exemption	N/A
Wyoming	N/A	2008 – Accident and Sickness insurance to tax supported institutions must cover mental health at parity 2010- Public employer plans must cover mental health at parity	N/A

Figure 1

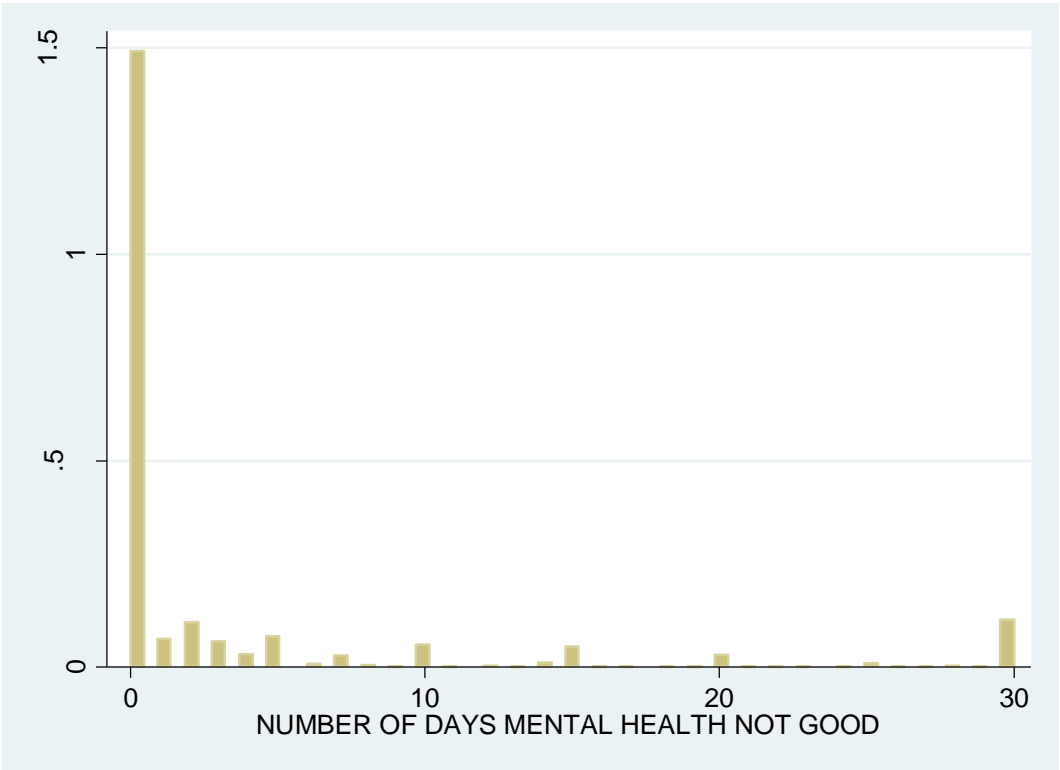


Table 2 – 1

General Population

	Model 1	Model 2 - 0	Model 3 - 10	Model 4 - 30	Model 5	Model 6	Model 7
Large-Group Parity	-0.00181 (0.0290)	0.00222 (0.00169)	0.000403 (0.00127)	-0.000398 (0.000854)	-0.0203 (0.0298)	-0.0303 (0.0304)	-0.0299 (0.0304)
Small-group parity	-0.110* (0.0497)	-0.0114*** (0.00291)	-0.00348 (0.00219)	-0.00254 (0.00147)	-0.114* (0.0500)	-0.108* (0.0508)	-0.111* (0.0508)
Individual Parity	0.101 (0.0523)	0.00821** (0.00306)	0.00258 (0.00230)	0.00373* (0.00154)	0.115* (0.0527)	0.0503 (0.0556)	0.0542 (0.0557)
High School Degree	-3.186*** (0.0228)	-0.0972*** (0.00133)	-0.129*** (0.00100)	-0.0783*** (0.000672)	-3.193*** (0.0233)	-3.194*** (0.0233)	-3.194*** (0.0233)
RESPONDENTS SEX	1.307*** (0.0113)	0.119*** (0.000663)	0.0525*** (0.000499)	0.0184*** (0.000334)	1.305*** (0.0116)	1.305*** (0.0116)	1.305*** (0.0116)
race=1	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)
race=2	-0.449*** (0.0231)	-0.0299*** (0.00135)	-0.0183*** (0.00102)	-0.0113*** (0.000682)	-0.458*** (0.0234)	-0.457*** (0.0234)	-0.457*** (0.0234)
race=3	0.247*** (0.0213)	0.00134 (0.00124)	0.0129*** (0.000935)	0.00222*** (0.000627)	0.253*** (0.0217)	0.254*** (0.0217)	0.254*** (0.0217)
race=4	0.694*** (0.0241)	0.0145*** (0.00141)	0.0265*** (0.00106)	0.0180*** (0.000711)	0.664*** (0.0246)	0.665*** (0.0246)	0.665*** (0.0246)
INTERVIEW YEAR=2008	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)
INTERVIEW YEAR=2009	0.0644** (0.0226)	-0.00308* (0.00132)	0.00393*** (0.000992)	0.00142* (0.000665)	0.0559* (0.0234)	0.0563* (0.0234)	0.0554* (0.0234)
INTERVIEW YEAR=2010	0.185*** (0.0295)	-0.000176 (0.00173)	0.00851*** (0.00130)	0.00437*** (0.000871)	0.183*** (0.0301)	0.184*** (0.0303)	0.190*** (0.0306)
INTERVIEW YEAR=2011	0.250*** (0.0292)	0.00451** (0.00171)	0.0114*** (0.00129)	0.00477*** (0.000862)	0.241*** (0.0299)	0.244*** (0.0301)	0.250*** (0.0304)
INTERVIEW YEAR=2012	0.284*** (0.0294)	0.00581*** (0.00172)	0.0130*** (0.00129)	0.00570*** (0.000867)	0.284*** (0.0301)	0.288*** (0.0302)	0.294*** (0.0305)
INTERVIEW YEAR=2013	0.112*** (0.0295)	-0.00615*** (0.00173)	0.00595*** (0.00130)	0.00219* (0.000870)	0.101*** (0.0304)	0.105*** (0.0305)	0.111*** (0.0308)
INTERVIEW YEAR=2014	0.0369 (0.0341)	-0.00960*** (0.00200)	0.00332* (0.00150)	0.000493 (0.00101)	0.0212 (0.0346)	0.0110 (0.0359)	0.0161 (0.0361)
INTERVIEW YEAR=2015	0.118*** (0.0340)	-0.00517** (0.00199)	0.00679*** (0.00149)	0.00139 (0.00100)	0.104** (0.0345)	0.0961** (0.0357)	0.101** (0.0358)
No. Psychiatris-1000					0.271 (0.140)	0.245 (0.141)	0.241 (0.141)
Large Mandated Offer						-0.117* (0.0483)	-0.119* (0.0483)
Small Mandated Offer						0.0452 (0.0595)	0.0485 (0.0595)
Individual Mandate-r						0.136** (0.0467)	0.136** (0.0467)
Minimum Benefit						0.0889 (0.0489)	0.0813 (0.0492)
HHS Enforcement							-0.0732 (0.0478)
Constant	5.964*** (0.0295)	0.380*** (0.00172)	0.234*** (0.00130)	0.121*** (0.000870)	5.956*** (0.0386)	5.938*** (0.0430)	5.941*** (0.0430)
Observations	2130951	2130951	2130951	2130951	2047334	2047334	2047334

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

¹ Race (2) = Black, Race (3) = Latino/a, Race (4) = Non-white Other

Model 2 – Regressed against a binary mental health statistic - 0 if “0 days” were reported, 1 otherwise.

Model 3 – Regressed against a binary mental health statistic – 0 if less than 10 days reported, 1 if greater or equal

Model 4 – Regressed against a binary mental health statistic – 0 if less than 30 days reported, 1 if 30 days.

Table 3-

Insured Population

	Model 1	Model 2 - 0	Model 3 - 10	Model 4 - 30	Model 5	Model 6	Model 7
Large-Group Parity	0.0258 (0.0301)	0.00261 (0.00181)	0.00167 (0.00133)	0.000427 (0.000881)	0.00927 (0.0310)	0.00694 (0.0316)	0.00710 (0.0316)
Small-group parity	-0.134** (0.0511)	-0.0124*** (0.00307)	-0.00434 (0.00226)	-0.00352* (0.00149)	-0.133** (0.0514)	-0.122* (0.0522)	-0.128* (0.0523)
Individual Parity	0.0869 (0.0535)	0.00841** (0.00322)	0.00187 (0.00237)	0.00361* (0.00157)	0.0965 (0.0539)	0.0520 (0.0570)	0.0591 (0.0570)
High School Degree	-3.869*** (0.0269)	-0.123*** (0.00162)	-0.156*** (0.00119)	-0.0945*** (0.000786)	-3.889*** (0.0274)	-3.889*** (0.0274)	-3.889*** (0.0274)
RESPONDENTS SEX	1.312*** (0.0118)	0.122*** (0.000711)	0.0524*** (0.000523)	0.0183*** (0.000346)	1.313*** (0.0121)	1.313*** (0.0121)	1.313*** (0.0121)
race=1	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)
race=2	-0.0149 (0.0263)	-0.0136*** (0.00158)	-0.000106 (0.00117)	-0.00103 (0.000770)	-0.0202 (0.0266)	-0.0202 (0.0266)	-0.0201 (0.0266)
race=3	0.317*** (0.0227)	0.00243 (0.00137)	0.0158*** (0.00101)	0.00416*** (0.000666)	0.319*** (0.0232)	0.319*** (0.0232)	0.319*** (0.0232)
race=4	0.697*** (0.0253)	0.0135*** (0.00152)	0.0268*** (0.00112)	0.0183*** (0.000740)	0.665*** (0.0258)	0.665*** (0.0259)	0.665*** (0.0259)
INTERVIEW YEAR=2008	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)
INTERVIEW YEAR=2009	0.00153 (0.0234)	-0.00521*** (0.00141)	0.00149 (0.00104)	-0.0000953 (0.000686)	-0.00493 (0.0243)	-0.00570 (0.0243)	-0.00738 (0.0243)
INTERVIEW YEAR=2010	0.112*** (0.0306)	-0.00276 (0.00184)	0.00548*** (0.00135)	0.00254** (0.000895)	0.109*** (0.0312)	0.104*** (0.0314)	0.115*** (0.0317)
INTERVIEW YEAR=2011	0.171*** (0.0303)	0.00131 (0.00183)	0.00791*** (0.00134)	0.00296*** (0.000888)	0.164*** (0.0310)	0.160*** (0.0312)	0.172*** (0.0315)
INTERVIEW YEAR=2012	0.217*** (0.0306)	0.00371* (0.00184)	0.00999*** (0.00135)	0.00402*** (0.000894)	0.218*** (0.0313)	0.217*** (0.0314)	0.228*** (0.0317)
INTERVIEW YEAR=2013	0.0592 (0.0306)	-0.00834*** (0.00184)	0.00372** (0.00136)	0.000784 (0.000897)	0.0493 (0.0315)	0.0482 (0.0317)	0.0594 (0.0320)
INTERVIEW YEAR=2014	0.0742* (0.0349)	-0.00833*** (0.00210)	0.00500** (0.00155)	0.00124 (0.00102)	0.0623 (0.0355)	0.0693 (0.0368)	0.0782* (0.0370)
INTERVIEW YEAR=2015	0.190*** (0.0347)	-0.00214 (0.00209)	0.00976*** (0.00154)	0.00288** (0.00102)	0.178*** (0.0353)	0.186*** (0.0365)	0.195*** (0.0367)
No. Psychiatris~1000					0.246 (0.144)	0.197 (0.145)	0.191 (0.145)
Large Mandated Offer						-0.105* (0.0505)	-0.108* (0.0505)
Small Mandated Offer						-0.00798 (0.0621)	-0.00128 (0.0622)
Individual Mandate-r						0.108* (0.0485)	0.107* (0.0485)
Minimum Benefit						0.0799 (0.0498)	0.0667 (0.0501)
HHS Enforcement							-0.135** (0.0510)
Constant	6.412*** (0.0332)	0.395*** (0.00199)	0.252*** (0.00147)	0.132*** (0.000970)	6.418*** (0.0422)	6.429*** (0.0463)	6.434*** (0.0463)
Observations	1835764	1835764	1835764	1835764	1765624	1765624	1765624

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001