Effect of Substance Abuse Treatment Parity Laws on Treatment Utilization

Abstract

The Affordable Care Act included as one of its provisions the mandating of certain minimum benefits called Essential Health Benefits that all insurance plans must provide. One of these Essential Health Benefits of particular interest is the mental health and substance abuse parity provision which requires insurance plans provide coverage of substance use disorder services, which are typically not covered or are only at high cost under private insurance. This provision is significant in that it greatly expands coverage and ensures the parity of substance abuse provisions under private insurance. This is noteworthy due to the fact that the only federally mandated provision prior to the ACA was that large group plans include parity benefits. All other plans were subject to state-level parity laws, if they existed. Only about half of all U.S. states had some sort of mandated substance abuse provision applied to private or Medicaid insurance under state law. The passage of the Affordable Care Act had the effect of expanding parity coverage to nearly 39 million individuals, 26.5 million of whom were under private insurance[1]. Therefore, the Affordable Care Act had the effect of suddenly and universally expanding coverage of substance use disorder (SUD) treatment services. The underlying hypothesis of this proposal is that the increase in SUD coverage due to the ACA's parity laws will decrease the most severe health outcome, emergency treatment admittance, and increase the utilization of detoxification and rehabilitation services which may have been too expensive without insurance for the SUD patient.

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[1] Au-Yeung et al. (2019)

The empirical question is therefore, "Did the mandated coverage of substance use disorder services under the Affordable Care Act have any effect on SUD treatment utilization for private insurance holders?" A specific focus is placed on three possible SUD treatment outcomes; detoxification, rehabilitation, and emergency treatment. Emergency treatment is the most severe health outcome, usually an involuntary admittance due to an overdose scenario. The other two outcomes, detoxification and rehabilitation, are voluntary for the patient. If the underlying hypothesis is correct, then we would expect to observe a decrease in emergency treatment utilization and an increase in the voluntary treatments as SUD patients are financially able to take proactive measures to combat SUD rather than utilizing emergency treatment as a last resort. This causal effect of increased healthcare coverage leading to increased treatment utilization is explored in further detail in the literature review section.

This study differs from the existing body of literature in that the focus is on individuals covered under private insurance. Most existing studies utilize the Medicaid expansions under the Affordable Care Act as the target populations of interest. These studies omit large expanses of the population and leave the question of efficacy on private insurance unknown. Additional merit to this study is that policy guidance may be drawn from the results. States without any mandated coverage laws may wish to pursue them on their own under a hypothetical situation in which the federal provision mandating SUD treatment parity is repealed.

The empirical methodology is an event study covering the years 2010 through 2018 which encapsulates the enactment of the Affordable Care Act's mandated Essential Health Benefits in 2014. Two separate regressions will be performed, one including a subset of the data including only individuals with private insurance and a second regression with only individuals covered under public insurance. Prior to the ACA's passage the only insurance plans required to

have any SUD treatment parity were large group plans, such as through a large company employer. It would be expected then that the effect of the Affordable Care Act's mandate would be slightly greater for public insurance than it would for private (of whom some individuals would already have parity coverage even in non-parity states).

Data for this project comes primarily from the Treatment Episode Data Sets compiled by the Center for Behavioral Health Statistics and Quality department of the Substance Abuse and Mental Health Services Administration. These datasets, from 2010 through 2018 for all 50 states and the District of Columbia, contain patient level data on SUD facility admissions including type of treatment, insurance coverage, and numerous demographic variables. This data will be matched with opioid prescription fulfillment data for all 50 states from 2010 to 2018 to control for correlation between availability of opioids and SUD treatment. Further information is provided in the data section.

Literature Review

The passage of the Affordable Care Act ushered in sweeping changes to health insurance mandated provisions as well as expanded coverage via Medicaid expansion, elimination of pre-existing conditions clause, and increased age limits for dependent coverage. The net effect of this legislation was a significant increase in the number of insured Americans as well as an expanded scope of covered provisions. One newly mandated provision of interest is substance abuse service coverage under public and private insurance plans. The body of literature focusing on these coverage and provision expansions tend to focus on the effects of Medicaid expansion, leaving questions about the efficacy and impact on privately insured individuals largely unexplored. This literature review will detail and summarize important works in this field.

The conceptual background for this study begins with Matthew Lang's 2011 paper The Impact of Mental Health Insurance Laws On State Suicide Rates. This paper predates the passage of the ACA and looks at how individual states enacted mental health benefit mandates on private insurance affected suicide rates. The specific question of interest is if access to insurance in parity states (those mandating certain minimums of mental health services) improves trends in the state suicide rate. Data was collected from a number of sources with the primary set being the CDC's National Center for Health Statistics Cause of Death report, which contained information on suicide rates for all 50 states and the District of Columbia from 1990 to 2004. Various demographic and economic data was also compiled which included information on unemployment rates from the Bureau of Labor Statistics Current Population Survey, bankruptcy data from the US Court system, numbers of workers in large firms, and timing controls to account for states enacting laws at different times. The conclusion was a substantial decrease in suicide rates of 5% in states that enacted mental health parity laws. These results provide the theoretical groundwork for this proposed study by showing how increasing access to specific health benefits can increase quality of outcomes through private insurance.

The 2014 paper Use of Hospital-Based Services Among Young Adults with Behavioral Health Diagnoses Before and After Health Insurance Expansions by Ellen Meara, Ezra Golberstein, and Rebecca Zaha looks at how expanded health insurance coverage may be having an effect on hospital-based care utilization among young adults with behavioral health diagnoses. This quasi-experimental study utilized hospital discharge data from 2003-2009 to examine the impact of Massachusetts' 2006 health reforms, of which the Affordable Care Act is strongly modeled after. A difference-in-difference study was performed comparing the changes in Massachusetts to other states. They found relative declines for in-patient admissions (2 per 1000

diagnoses), depression (0.38 per 1000), and substance abuse (1.3 per 1000). The overall conclusion was that expanded health insurance coverage did not yield large increases in hospital care utilization for behavioral health diagnoses but did increase financial protection for individuals and hospitals – which is in line with the literature's consensus on increasing health insurance coverage.

Continuing to examine the effects on mental health outcomes is Insurance Coverage and Health Outcomes in Young Adults with Mental Illness Following the Affordable Care Act Dependent Coverage Expansion by Nicole Kozloff and Benjamin Sommers. This 2017 study shifted the focus to the specific provisions of the Affordable Care Act, specifically the allowance for dependents to remain covered until reaching age 27. Data was collected from the 2008-2013 National Survey on Drug Use and Health for 19-25 and 26-34-year olds (19,051 and 7,958 individuals respectively) and utilized in a difference-in-difference study between the two age groups. In this study the results differ slightly from previous literature in that increased health coverage here did translate into some increased mental health care utilization as well as increased scores of self-reported health. This would suggest that the ACA differed somehow compared to previous health insurance expansions in terms of improved health outcomes and is a major motivator for this study.

With a basis established for potential outcomes stemming from the ACA's increased health insurance coverage this literature review can now focus specifically on substance abuse. The Affordable Care Act Transformation of Substance Use Disorder Treatment by Abraham et al looks at the effects of the ACA through the lens of the opioid epidemic. Specific provisions of the ACA include coverage expansions, mandating of substance use disorder treatment coverage

in existing plans, and parity requirements for SUD treatment. While this article is not an empirical study it nonetheless provides crucial context and background for this study.

Angélica Meinhofer and Allison Witman present an empirical study on the role of the ACA on SUD treatment in their 2017 study The role of health insurance on treatment for opioid use disorders: Evidence from the Affordable Care Act Medicaid expansion. The specific question is what are the effects of the ACA's Medicaid expansion on the market for opioid use disorder treatment and healthcare utilization? Administrative data from 2007 to 2016 is matched with census estimates of the adult population and then combined with opioid use disorder outcomes (such as hospital admissions) from the Substance Abuse and Mental Health Services Administration's Treatment Episode Data Set Admissions. The paper concludes that there was substantial OUD treatment utilization increases due to increased insurance coverage with declines in state out of pocket spending on OUD treatments, suggesting that health insurance coverage can be a useful tool in combating the opioid epidemic. An interesting observation was that rehabilitation out-patient services saw a significant increase in utilization while residential and inpatient services did not, highlighting a heterogenous effect.

Another similar empirical study focusing on the ACA's Medicaid expansion on SUD treatment outcomes is Medicaid Coverage in Substance Use Disorder Treatment After the Affordable Care Act by Andrews et al, 2019. This paper addresses questions of did the percentage of SUD treatment patients covered by Medicaid change due to the ACA and was the expansion of Medicaid (and thus SUD treatments) result in an overall increase in treatment utilization? Two datasets were sourced from the National Drug Abuse Treatment System Survey. Longitudinal data on SUD treatment programs from 2013 to 2017 was split into two waves of 2013-2014 and 2016-2017. This data was married to state Medicaid agency surveys covering all

50 states and the District of Columbia. The primary finding was that the proportion of uninsured

outpatient SUD treatment clients declined in states that accepted Medicaid expansion (very

similar finding to Meinhofer and Witman). The total number of SUD out-patient clients did not

increase. The authors speculate that part of the reason treatment programs appear slow to expand

is that health insurance coverage isn't actually a barrier to seeking treatment for those individuals

recently enrolled in Medicaid. This sets up an interesting question for this study, if the

individuals recently enrolled in Medicaid did not need that coverage to seek treatment, would we

instead see increased treatment among privately insured individuals? This is the logic behind

splitting up the regressions into two subsamples based on insurance type.

Data and Empirical Method

Data for this project is sourced from the Substance Abuse and Mental Health Services

Administration's Treatment Episode Data Sets. These datasets are categorical collections of

clinical medical records, demographics, and substance use characteristic records from substance

abuse treatment facility admissions that is reported to state level data systems. Each dataset

contains medical records on admissions for individuals aged 12 and older including substances

used, frequency of use, and type of treatment sought. Additional demographic variables include

age, sex, race and ethnicity, employment status, state of residence, and type of medical

insurance, which is of significant interest to this study. These identifying variables allows a quick

selection of relevant observations. A preliminary look at the data in Figure 1 shows a significant

drop in visits to rehabilitation and treatment centers from 2011 to 2014. Further analysis will

seek to determine if the dependent variable, the type of SUD treatment utilization, was affected

by mandated parity under the Affordable Care Act and if there was any difference between

private and public (Medicaid, Medicare, and Veteran's Affairs) insurance.

Separate datasets covering the years 2010-2014, 2015-2017, and 2018 were combined to include 17,586,689 observations from 2010-2018 for all 50 states as well as the District of Columbia. While the observations are made at the individual level the data does not track unique individuals across time, which makes this dataset cross-sectional. A full list of variables and summary statistics are provided in Table 1.

A secondary source of data for this study is the National Conference of State Legislatures' report on mental health and substance abuse parity laws. This report compiles information on the status of substance abuse parity laws for all 50 states as they existed before the Affordable Care Act's enforcement of parity for all states. This allows for the selection of states without pre-existing parity laws to function as the pre-treatment control. All states with their own parity laws in effect before the ACA mandate are removed from the dataset, leaving 27 states in this study[2]. Observations that occur after the implementation of the parity laws in 2014 are the treated individuals. An indicator variable PARITY will take a value of 1 to denote the observation occurred after treatment (ie the 2014 federal parity laws from the ACA) and 0 for pre-treatment.

The identification strategy for this analysis follows the tradition of the literature in utilizing a linear probability model to test the association of a binary treatment (the existence of federal substance abuse parity laws) against a utilization outcome of interest. The utilization variables are 24-hour inpatient detoxification, short- and long-term residential rehabilitation, and emergency ambulatory services. The emergency ambulatory outcome is the most severe health outcome and the result of an overdose scenario. The detox is a moderately severe health outcome

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[2] States included in this study are AL, AZ, CA, DE, DC, HI, ID, IL, KY, MA, MS, NE, NH, NJ, NM, OH, OK, PA, RI, SD, UT, VA, WA, WV, WI, WY

and includes hospitalization for acute substance withdrawal complications. Finally, the rehabilitation outcome is the least severe health outcome in that it is non-acute care and initiated willingly by the patient as opposed to the detox and ambulatory outcomes which are medical necessities and emergencies. If the causal effect of parity laws on health outcomes is true, then we would expect to see a large decrease in ER ambulatory services, a moderate increase in detox services, and a relatively large increase in rehabilitation services.

To test these outcomes the data has been split into two subgroups, one containing only private insurance holders and the other only public (Medicaid, Medicare, and VA coverage). Each of these two subgroups are used in regressions testing the existence of parity coverage laws against one of the specific health outcome services. This yields two regressions each with the same three possible health outcomes. It would be expected that there is no significant difference between the public and private insurance outcomes aside from a slightly smaller magnitude of effect for private insurance. The reasons for this is that parity laws existed for large group insurance plans before the ACA (and thus some but not all individuals with private insurance would already be exposed to the parity laws) as detailed in the introductory section. Unfortunately, the data is not granular enough to filter out individuals with large group insurance and this remains an area of refinement going forward. To control for possible correlation between the number of prescription opioids available at a point in time and SUD treatment utilization a control variable RXRATE is used.

The regression model is detailed below.

$$Outcome_{it} = \beta_1 + \beta_2 PARITY_t + \beta_3 EDUC_{it} + \beta_4 EMPLOY_{it} + \beta_5 GENDER_i + \beta_6 AGE_{it}$$
$$+ \beta_7 RACE_i + \beta_8 RXRATE_{st} + \varepsilon$$

$Outcome_{ist}$ denotes one of the three health outcomes of interest for individual i at time t. PARITY is a dummy indicator for the treatment and takes a value of 1 when parity is enacted through the ACA in 2014 and 0 otherwise. EDUC, EMPLOY, and AGE are the education, employment status, and age control variables for individual i at time t. GENDER and RACE are gender and race dummy variables for individuals. RXRATE is the filled prescription rate of opioids per 100 individuals of the state population per year.

Results and Conclusion

Initial regression results in Tables 1 and 2 do not support the hypothesis that mandatory parity laws decrease the utilization of emergency SUD treatments while simultaneously increasing utilization of non-emergency rehabilitation and detoxification services. Rather surprising is that the opposite outcome is observed. Individuals with private insurance are 6.7% less likely to utilize rehabilitation services, 31.7% less likely to utilize detoxification services, and 26.6% more likely to utilize ER ambulatory services. The results for public insurance show similar effects. Public insurance holders after the passage of parity laws are 25.7% less likely to utilize detoxification services and 18.9% more likely to utilize ER ambulatory services. Rehabilitation utilization is barely statistically significant, a 0.7% increase relative to pre-treatment at the 5% significance level. Interestingly it is found that private insurance did indeed have a slightly smaller magnitude of effect than public insurance holders, although the unexpected algebraic signage prevents this paper from putting too much stock in that result.

This finding that public insurance holders do not exhibit much change in rehabilitation service utilization specifically may reflect what was previously discovered in the literature, that insurance coverage itself is not a barrier to utilization. One minor finding of note is that additional educational attainment seems to have a small but statistically significant positive effect on rehabilitation utilization for both private and public insurance, 1.9% and 3% respective increases in probability of utilization.

Additional refinement to this model is needed, especially with regards to the identification of control and treatment groups. The inclusion of some unknown number of individuals who have SUD treatment parity as a part of large group insurance should not be overlooked going forward. Another consideration is the fact that insurance coverage increased for both private and public plans and is not controlled for at present. One confounding effect that could be occurring is this model is catching the raw increase in the total number of people insured and the effect that has on treatment utilization and not the desired effect of changing utilization within a group. Sufficiently controlling for the increases in private and public enrollment requires substantial data accumulation and processing as it needs to capture enrollment numbers for 27 states across eight years. These results are not entirely out of line with the literature's previous findings and indeed only motivate further interest in this subject area.

Figures and Graphs

Figure 1 - Time Trend of Substance Abuse Treatment Admissions (in tens
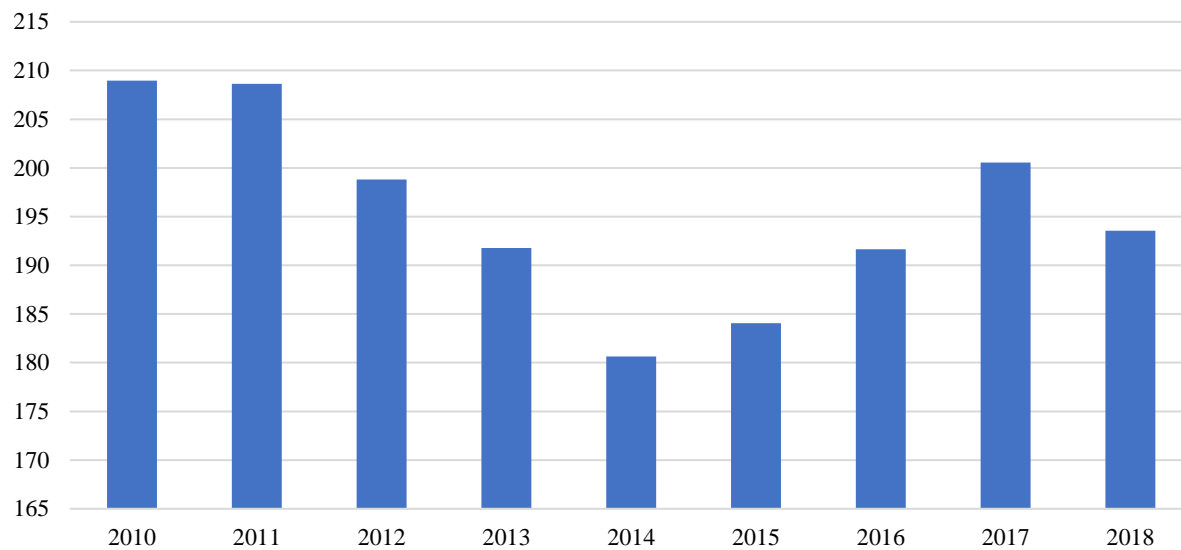of thousands) Total across all states

Table 1 – Variables
Categorical Description and Percentage of Observations

Year of Admission		Race and Ethnicity	
2010	0.12	Alaska Native	0.01
2011	0.12	American Indian	0.02
2012	0.11	Asian or Pacific Islander	0.01
2013	0.11	Black	0.19
2014	0.1	White	0.65
2015	0.1	Asian	0.01
2016	0.11	Other, Single Race	0.09
2017	0.11	Other, Two or More Races	0.02
2018	0.11	Hawaiian/Pacific Islander	0.01
Highest Level of Education		**Health Insurance Type**	
Less than one school grade	0.07	Private	0.05
Grades 9 to 11	0.24	Medicaid	0.14
Grade 12 or GED	0.42	Medicare, Other	0.04
1-3 Years College	0.18	None	0.18
4 Years College/Post Grad	0.05	**Employment Status**	
Treatment Service		Full-Time	0.15
Detox, Inpatient	0.03	Part-Time	0.07
Detox, Residential	0.17	Unemployed	0.36
Rehab, Hospital	0	Not in Labor Force	0.38
Rehab, Short Term	0.01	**Gender**	
Rehab, Long Term	0.08	Male	0.66
Ambulatory, intensive	0.11	Female	0.34
Ambulatory, non-intensive	0.50		
Ambulatory, Detox	0.01		
Age at Admission			
12-14	0.01		
15-17	0.05		
18-20	0.05		
21-24	0.11		
25-29	0.17		
30-34	0.15		
35-39	0.11		
40-44	0.1		
45-49	0.1		
50-54	0.1		
55-64	0.07		
65-95	0.01		

Table 2 – Effect of Parity Laws on SUD Treatment Utilization – Private Insurance

	PARITY	EDUC	EMPLOY	GENDER	AGE	RACE	RXRATE
Rehab	-0.067 ***	0.019 ***	0.073 ***	-0.003	0.004 ***	-0.02 ***	0.001 ***
	(0.018)	(0.006)	(0.002)	(0.005)	(0.001)	(0.002)	(0.000)
Detox	-0.317 ***	-0.034 ***	0.028 ***	0.039 ***	0.025 ***	-0.002	-0.014 ***
	(0.006)	(0.001)	(0.001)	(0.005)	(0.001)	(0.002)	(0.000)
ER	0.266 ***	0.019 ***	-0.065 ***	-0.030 ***	-0.022 ***	0.018 ***	0.009 ***
	(0.005)	(0.001)	(0.001)	(0.005)	(0.009)	(0.001)	(0.000)

Note: Standard Errors in parenthesis. *** Statistically significant at 0.1 percent level;
** Statistically significant at 1 percent level; * Statistically significant at 5 percent level.
All regressions have a sample size of 320,930.

Table 3 - Effect of Parity Laws on SUD Treatment Utilization – Public Insurance

	PARITY	EDUC	EMPLOY	GENDER	AGE	RACE	RXRATE
Rehab	0.007 *	0.030 ***	0.086 ***	-0.023 ***	-0.027 ***	0.000	-0.003 ***
	(0.003)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.000)
Detox	-0.257 ***	0.037 ***	0.048 ***	-0.204 ***	0.009 ***	0.033 ***	-0.016 ***
	(0.002)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)
ER	0.189 ***	-0.044 ***	-0.086 ***	0.196 ***	0.008 ***	-0.027 ***	0.014 ***
	(0.002)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)

Note: Standard Errors in parenthesis. *** Statistically significant at 0.1 percent level;
** Statistically significant at 1 percent level; * Statistically significant at 5 percent level.
All regressions have a sample size of 1,652,403 observations.

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