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The Mental Health Parity and Addiction Equity Act (MHPAEA) Evaluation Study: Did Parity Differentially Affect SUD and Mental Health Benefits Offered by Behavioral Healthcare “Carve-Out” and “Carve-In” Plans?

Sarah A. Friedman^a,

Department of Health Policy and Management, Fielding School of Public Health, Division of General Internal Medicine and Health Services Research, Department of Medicine, David Geffen School of Medicine, University of California, Los Angeles, 911 S. Broxton Avenue, Los Angeles, CA 90095, United States, Sfriedman@unr.edu, Phone: 775-784-1816

Francisca Azocar,

Optum[®], United Health Group, 245 Market Street, San Francisco, 94105, United States, Francisca.azocar@optum.com, Phone: 415-547-6148

Haiyong Xu, and

Division of General Internal Medicine and Health Services Research, Department of Medicine, David Geffen School of Medicine, University of California, Los Angeles, 911 S. Broxton Avenue, Los Angeles, CA 90095, United States, hxu@mednet.ucla.edu

Susan L. Ettner

Department of Health Policy and Management, Fielding School of Public Health, and Division of General Internal Medicine and Health Services Research, Department of Medicine, David Geffen School of Medicine, University of California, Los Angeles, 911 S. Broxton Avenue, Los Angeles, CA 90095, United States, settner@mednet.ucla.edu, Phone: 310-794-2289

Abstract

Background: To assess whether implementation of the Mental Health Parity and Addiction Equity Act (MHPAEA) was associated with: 1. Reduced differences in financial requirements (i.e. copayments and coinsurance) for substance use disorder (SUD) versus specialty mental health (MH) care and 2. Reductions in the level of cost-sharing for SUD-specific services.

Methods: MH and SUD copayments and coinsurance, 2008–2013, were obtained from benefits databases for “carve-in” and “carve-out” plans from Optum[®]. Linear regression was used to estimate the association of MHPAEA with differences between specialty MH and SUD care financial requirements among “carve-in” and “carve-out” plans. A two-part regression model investigated whether MHPAEA was associated with changes in the use or level of financial requirements for SUD-specific services among “carve-out” plans.

Correspondence to: Sarah A. Friedman.

^aPresent address/affiliation: Health Administration and Policy, School of Community Health Sciences, University of Nevada, Reno 1664 N. Virginia Street, Reno, NV 89557

Results: MHPAEA was not associated with significant changes in the difference between SUD and MH copayments or coinsurance levels among either “carve-in” or “carve-out” plans. MHPAEA was associated with decreases in the levels of inpatient (in-network: −\$51.17; out-of-network: −\$34.39) and outpatient (in-network: −\$10.26) detox copayments, but increases in the levels of in-network outpatient detox coinsurance (6 percentage points) among all “carve-out” plans.

Conclusion: Even if SUD benefits had been historically less generous than MH benefits, SUD financial requirements were already at parity with MH financial requirements by the time MHPAEA was passed, among Optum® plans. MHPAEA’s SUD parity mandate reduced cost-sharing for detox services via copayments, but, for outpatient detox, the law simultaneously increased cost-sharing via coinsurance.

Keywords

Substance Use Disorder; commercial insurance; parity

1. Introduction

In addition to addressing historical inequities between medical/surgical and specialty mental health (MH) benefits, the Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act (MHPAEA) was the first national parity law to require parity for substance use disorder (SUD) benefits (Ettner et al., 2016). This landmark piece of legislation required commercial large-group insurance plans covering behavioral health (BH, i.e. MH and/or SUD) to do so on the same terms as medical/surgical coverage. The law applied its parity mandate not only to SUD financial requirements (e.g. copayments, coinsurance, deductibles, etc.) but also to SUD quantitative treatment limits (QTLs, e.g. annual number of inpatient days or outpatient visits covered by the plan). Additionally, MHPAEA’s Interim Final Rule (IFR), published in 2010, required parity for SUD non-quantitative treatment limits (NQTLs, e.g. utilization review, etc.) (Department of Health and Human Services, 2010).

Treatment for SUD patients often involves ongoing treatment for drugs and/or alcohol addiction, as well as any comorbid mental health conditions. This can be costly for patients over time (French, Popovici, and Tapsell, 2008). Prior work documents that expenditures are substantially higher among privately-insured, non-elderly adults with SUD diagnoses compared to the same population as a whole (Harwood et al. 2017; Friedman et al. 2017). Since sufficiently generous financial requirements, commonly used insurance benefit design features, can reduce patients’ out-of-pocket expenditures for these services, they are a key determinant of access to SUD treatment. The high burden of SUD in the U.S. (in 2013, 21.5 million people had at least one SUD) made adequate insurance coverage and generosity for these conditions a policy priority (Center for Behavioral Health Statistics and Quality, 2015).

Additionally, researchers who investigated the legislative process leading up to MHPAEA’s passage report that some legislators who championed MHPAEA had personal experiences with addiction (as well as MH conditions). For example, Senator Kennedy reported that his SUD conditions were treated as “second-class illnesses”. In several cases, these personal

experiences prompted legislators to promote inclusion of SUD in the parity law in the hopes of improving equity for SUD insurance coverage (Barry, Huskamp, and Goldman, 2010).

SUD benefits are of particular interest as outcomes in light of perceived differences between SUD benefits and MH benefits prior to MHPAEA implementation, and the expectation that MHPAEA resulted in parity between SUD and MH benefits. Frank et al note that prior to MHPAEA, exclusion of SUD treatment was more common than exclusion of MH treatment among benefits for commercially insured individuals (2014). Additionally, many states' passage of MH parity laws that excluded SUD benefits fed the perception that SUD benefits lagged in generosity behind MH benefits, as well as behind medical/surgical benefits.

To date, several studies have investigated whether BH benefits subject to MHPAEA changed post-parity. One study used plan benefit data to examine the effects of MHPAEA on specialty MH financial requirements (Friedman et al., 2016). Another study surveyed plans to examine the effects of MHPAEA on measures of BH financial requirements, but did not distinguish between benefits for specialty MH and SUD (Horgan et al., 2016). A third study examined the effects of MHPAEA on use of limits for specialty MH as well as SUD care (Thalmayer et al., 2016). However, despite the unique inclusion of SUD benefits in MHPAEA, and despite the key role of financial requirements in access to SUD care, no studies have used benefit data to examine the effect of MHPAEA on SUD financial requirements.

This study used data from the BH division of Optum[®] (hereafter called "Optum Behavioral"), a subsidiary of UnitedHealth Group, to investigate changes in copayments and coinsurance for SUD services before and after MHPAEA implementation. The data allowed for investigation of both "carve-in" plans (which administer both medical/surgical benefits together with behavioral health benefits) and "carve-out" plans (which only administer behavioral health benefits), improving the generalizability of the results. The analysis was done, in part, by comparing specialty MH cost-sharing to SUD cost-sharing to see if parity implementation resulted in equal levels of copayment and coinsurance (i.e. reduced differences between SUD and specialty MH cost-sharing) for the two types of care, (1) Among "carve-in" plans? and (2) Among "carve-out" plans? The analysis also investigated how benefits for SUD-specific services, required only among "carve-out" plans, changed following MHPAEA implementation. This component of the analysis asked: (3) Did the likelihood of any use of cost-sharing for SUD-specific services decrease post-parity? (4) Did the level of cost-sharing for SUD-specific services decrease post-parity among plans that required cost-sharing for these services? (5) Did the level of cost-sharing for SUD-specific services decrease post-parity among all "carve-out" plans, including those that did and those that did not require cost-sharing for these services?

2. Study Data and Methods

This study uses 2008–2013 administrative benefit data from Optum Behavioral, drawn from proprietary insurance databases. The data include information from both "carve-in" and "carve-out" plans. These databases determine payments for claims and calculate patient out-of-pocket costs. The benefits data include specialty MH and SUD copayment dollar amounts

and patient coinsurance rates. Additional information on employer characteristics (e.g. size, industry, region), and plan type were also provided by Optum Behavioral. The unit of analysis is the plan-year. This study compares benefits across three time-periods: (1) “pre-parity”, 2008–2009, (2) “transition”, 2010, when good-faith efforts at financial requirement and QTL parity compliance were required for plans renewing on a calendar-year basis, and (3) “post-parity”: 2011–2013, when publication of MHPAEA’s IFR required legal compliance with financial requirement and QTL provisions as well as for NQTLs.¹

The initial sampling process was done at the employer level. The initial “carve-in” sample of 661 employers contained all plans offered by contracted employers at least one year pre- and one year post-parity (based on 2008–2012), or during 2009. The initial “carve-out” sample contained 175 employers with “carve-out” contracts in any year during the study period. Both the “carve-in” and “carve-out” study samples include plans of large employers in the 50 U.S. states, which are subject to parity and renewed on the calendar year. The “carve-in” sample includes only self-insured plans, for which the employer is at risk for the costs of care, a common feature of insurance plans among large employers; the sample excludes fully-insured plans, for which the insurer is at risk for the costs of care, because this type of plan is rare in the initial sample. The final “carve-in” sample contains 385 employers, 3,822 plans, and 12,163 plan-years; the final “carve-out” sample contains 40 employers, 1,527 plans, 2,257 plan-years). The “carve-in” plans represent approximately 8.5 million unique enrollees, while the “carve-out” plans represent approximately 3.1 million enrollees.

Some “carve-in” plans cover only in-network care (INN-only plans) while others cover both in- and out-of-network care (INN/OON plans). Therefore, analyses of “carve-in” plans are stratified into an INN-only sample (3,609 INN-only plan-years) and an INN/OON sample (8,554 INN/OON plan-years). “Carve-out” plans do not make this distinction, and are analyzed as a single sample.

The “carve-in” and “carve-out” samples use different sets of outcome measures, corresponding to the different types of care for which benefits are defined for the two kinds of plans. For the “carve-in” sample, outcome measures include INN inpatient, intermediate, and office-based professional care copayments (per visit, or per-admission for inpatient care) as well as inpatient, intermediate, and outpatient office-based professional care patient coinsurance. The “intermediate” category includes a variety of settings -- some unique to SUD treatment -- such as partial hospitalization, day treatment, intensive outpatient treatment, sober living and transitional living arrangement. Separate variables measure benefits for specialty MH and for SUD care; however, the analyses use the difference of these variable (SUD copayment or coinsurance rate – specialty MH copayment or coinsurance rate).

For the “carve-out” sample, outcome measures include both INN and OON copayments and patient coinsurance rates for 8 types of care that are used to treat either specialty MH or SUD conditions: Inpatient hospitalization, inpatient emergency room, inpatient professional,

¹It is worthwhile to note that although the Final Rule (FR) took effect after the study period, the FR confirmed the IFR provisions and clarified interactions with the ACA.

inpatient emergency room professional, residential treatment, intensive outpatient, outpatient psychotherapy, and outpatient medication management. As with the “carve-in” variables, separate variables measure specialty MH and SUD benefits, but the analyses use the difference variable. Additional variables measure financial requirements for SUD-specific services for the “carve-out” sample. These include in-network and out-of-network benefits for inpatient and outpatient detox.²

Copayment amounts for inpatient and outpatient services are adjusted for inflation to 2013 values using the “inpatient hospital services” and “other medical professionals” components of the Consumer Price Index. A very small proportion of the “carve-in” study plan-years “tiered” benefits. Tiered benefits require different payment levels depending on previous use during the year (e.g. \$25 copayment for initial 5 visits, \$30 copayment thereafter). When a plan tiered benefits for a particular cost-sharing feature in a particular year, we excluded that plan-year observation from relevant analyses (Web Appendices 2 and 3 report the percent of plan-years excluded). Plans that do not cover a particular service (e.g. intermediate care for SUD treatment) in a year are also excluded from relevant analyses (Web Appendices 4 and 5 report the percent of plan-years excluded).

The main predictors indicate if the plan-year observation is drawn from the transition period (2010) or the post-parity period (2011–2013) versus the pre-parity period (2008–2009). Covariates indicate employer group size (51–1000, 1001–5000, 5001–40,000, 40,001 and up); employer group industry, based on 2-digit North American Industry Classification System codes; Census region; and whether plans are “more managed” (e.g., HMO) versus “less managed” (e.g., PPO).

The results describe distributions of each covariate for the “carve-in” and “carve-out” samples separately. Descriptive analyses present the mean, minimum, and maximum difference between SUD and specialty MH (SUD – MH) copayments and coinsurance for “carve-in” and “carve-out” plans. Additional descriptive analyses present the percent of “carve-out” plans imposing financial requirements for SUD-specific services during pre-parity, transition, and post-parity periods, with a Chi-square test determining significant change over time, as well as the median, minimum, and maximum level of financial requirements among plans requiring them pre-parity.

To address research questions 1 and 2, linear regressions test for significant changes post-parity (compared to pre-parity) in the difference between specialty MH and SUD copayments and coinsurance levels for INN-only and INN/OON “carve-in” and “carve-out” plans. To address research questions 3–5, two-part models test for changes in the probability of use and conditional level of cost-sharing for SUD-specific services post-parity (compared to pre-parity) among “carve-out” plans (Buntin and Zaslavsky, 2004). The two-part model first uses logistic regressions to report changes in the probability of use of each SUD-specific financial requirement among all “carve-out” plans. It then uses generalized linear models (with a gamma distribution³ and a log link function) to report changes in the level of

²“Carve-out” plans do not use out-of-network copayments for outpatient detox. Therefore, the analyses do not include these financial requirements.

³The Gamma distribution was used to control for skewed distributions of financial requirement variables.

each SUD-specific financial requirement among “carve-out” plans that use the SUD-specific financial requirement. Finally, the two parts are combined to report changes in the level of cost-sharing among all “carve-out” plans.

All regressions control for employer size, industry, and region, as well as plan type. P-value < 0.05 indicate significance. Generalized Estimating Equations control for non-independence of plan-year observations within employer (Ziegler, Kastner, and Blettner, 1998). All data analyses were performed in StataIC version 12 (StataCorp, College Station, TX).

3. Results

Both the “carve-in” and “carve-out” samples represented employers diverse in size, industry, and region (Table 1a and 1b). The “carve-out” sample plans primarily include PPOs and plans that were “less managed”, while the “carve-in” sample plans were primarily “more managed”. Fewer than 10% of the “carve-out” plans were fully-insured.

3.1 Differences between specialty MH and SUD financial requirements in “carve-in” plans

The average, minimum, and maximum difference between financial requirements for SUD and specialty MH care (i.e. SUD – MH) in each parity period, for “carve-in” INN-only and INN/OON plan-years, are shown in Table 2, Columns 2–7. Pre-parity, the very small negative average values indicate that SUD copayments and coinsurance levels were nearly equal, but slightly lower than specialty MH cost-sharing, on average, for most services. This was true among both the INN-only and INN/OON sample. The median difference for all services among both samples was zero in all parity periods (data not shown in Table 2). Regression-adjusted changes in the mean differences are shown in Column 8, and Column 9 presents the regression p-values associated with those changes. For most of the financial requirements, parity was not associated with significant change in the difference between SUD and specialty MH cost-sharing over time. The only financial requirements for which the average difference changed significantly were intermediate and office-based professional copayments among INN-only plans. Pre-parity, the average difference in intermediate care copayments for SUD and specialty MH was –\$2.71 (i.e. the SUD copayment was \$2.71 less than the specialty MH copayment), and post-parity, it was only –\$0.09 (i.e. essentially no difference) (p-value = 0.05). Pre-parity, the average difference in office-based professional copayments for SUD and specialty MH was –\$0.62 and post-parity it was –\$0.02 (p-value = 0.02). There were no significant regression-adjusted changes in the difference between SUD and specialty MH benefits among the INN/OON plans.

3.2 Differences between specialty MH and SUD financial requirements in “carve-out” plans

The average, minimum and maximum difference between in-network and out-of-network financial requirements for SUD and specialty MH financial requirements in each parity period are shown in Table 3, Column 2–7, with the corresponding regression estimates and p-values in Columns 8–9. Pre-parity, SUD financial requirements were either equal to or greater (i.e. less generous) than specialty MH financial requirements. Post-parity, the

average difference was zero or nearly zero for financial requirements of all service types. However, none of the regression-adjusted pre/post-parity changes in the average differences were significant. This was true of out-of-network as well as in-network financial requirements. It is also interesting to note that the median difference was zero for all services, samples, and parity periods (data not shown in Table 3).

3.3 Use and level of financial requirements for SUD-specific services among “carve-out” plans

Table 4 presents the proportion of “carve-out” plans that required financial requirements for SUD-specific in-network and out-of-network services during each parity period, and the p-value from the chi-squared test (Columns 2–5). Compared to pre-parity, post-parity, significantly fewer plan-years required copayments for in-network inpatient and outpatient detox services, out-of-network inpatient detox services, and coinsurance for out-of-network inpatient detox services. However, post-parity, significantly more plan-years required coinsurance for in-network inpatient and outpatient detox and out-of-network outpatient detox services.

Table 4 also presents the pre-parity median, minimum, and maximum level of financial requirements for SUD-specific services among “carve-out” plan-years that use these financial requirements (Columns 6 & 7). Pre-parity, the median copayment for inpatient detox (both in-network and out-of-network) was \$256, while the median copayment for outpatient detox was \$26. Additionally, pre-parity, the median coinsurance for inpatient detox was 15% for in-network services and 40% for out-of-network services, and the median coinsurance for outpatient detox was 20% in-network and 50% out-of-network services.

3.4 Changes in use and level of financial requirements for SUD-specific services among “carve-out” plan-years.

Table 5 reports the regression-adjusted change between the pre- and post-parity periods in the probability of using a financial requirement for SUD-specific services (Columns 2 & 3), as well as the change in level of these financial requirements among “carve-out” plan-years that use them (Columns 4 & 5), and the change in the level among all “carve-out” plan-years (Columns 6 & 7). Focusing on Columns 6 & 7, parity was associated with several significant changes in the level of financial requirements for SUD-specific services among all plan-years. Specifically, post-parity, the level of copayments for in-network inpatient detox decreased (-\$51.17, $p=0.02$). This overall decrease in level among all “carve-out” plan-years was caused by the significant decrease (-14 percentage points, $p=0.03$) in the probability that plan-years required this financial requirement. Similarly, among all plan-years, post-parity, the level of copayments for in-network outpatient detox decreased (-\$10.26, $p<0.000$). Further, this overall decrease was caused by both a significant decrease (-30 percentage points, $p<0.000$) in the probability that plan-years required this financial requirement as well as a significant decrease in the level of in-network copayment for outpatient detox among plan-years that required it (-\$5.95, $p<0.000$). Also among all plan-years, the level of coinsurance for in-network outpatient detox increased 6.01 percentage points ($p<0.000$). This increase was driven by a significant increase (38 percentage points, $p<0.000$) in the probability that plan-years required this financial requirement. Among the

out-of-network financial requirements, only coinsurance level for outpatient detox was associated with a significant change post-parity; this financial requirement decreased by 4.54 percentage points on average ($p=0.02$), among all “carve-out” plan-years.⁴

4. Discussion

As MHPAEA was the first national law to require parity for SUD benefits among plans covering SUD services, this paper fills an important gap in the MHPAEA evaluation literature by examining how the law affected disparities in financial requirements for these services relative to MH benefits. Among “carve-in” plans, this study finds that the difference between SUD and specialty MH copayments for intermediate and office-based professional services decreased modestly among INN-only plans, but did not find any additional significant changes in the difference between the financial requirements for SUD and specialty MH care post-parity. Among “carve-out” plans, none of the differences between financial requirements for SUD and specialty MH care significantly changed. However, among these plans, MHPAEA was associated with significant decreases in copayments for in-network inpatient and outpatient detox services as well as decreases in coinsurance for out-of-network outpatient detox. MHPAEA was also associated with increases in coinsurance for in-network outpatient detox among the “carve-out” plans.

There are some caveats to this work. First, as with most evaluations of this national law, our analyses do not use a control group. This concern is somewhat attenuated by the fact that we are comparing changes to SUD benefits relative to changes in MH benefits among the same plans. Also, generalizability of findings is limited by the representativeness of the convenience sample used for this study, however the number and diversity of employers whose plan-years are studied here increase confidence about the samples’ representativeness. Finally, MHPAEA led to other benefit design changes; parity eliminated limits on the number of visits or days of inpatient care covered by the plan, reduced use of prior authorization, and expanded provider networks (Horgan et al., 2016; Goplerud, 2013; Thalmayer et al., 2016). These changes likely reduced cost-sharing for SUD treatment beyond the changes captured by this study.

Comparisons of SUD and specialty MH benefits in both the “carve-in” and “carve-out” samples point to the fact that, in the period immediately preceding implementation of the law, on average, small differences existed between benefits for specialty MH and SUD for most financial requirements. Although pre-parity differences narrowed following MHPAEA, in most cases, these changes were not statistically significant, and none were not likely to be practically significant. Despite the prevalent impression that SUD benefits were less generous than benefits for specialty MH in the decade preceding passage of MHPAEA (Frank, Beronio, and Glied 2014), in the years immediately preceding MHPAEA implementation, SUD financial requirements were not drastically different from specialty MH financial requirements, at least in the sample studied. Indeed, in the “carve-in” sample, for most services, on average, SUD financial requirements were slightly more generous than

⁴The percentage of plan-years that did not require this outcome was very low and logistic regression often failed to provide estimates; thus, rather than two-part model estimation, the change in level among all plans was determined using gamma regression.

specialty MH financial requirements during this time. These results echo findings that specialty MH benefits were already at parity with medical/surgical benefits for most plans, pre-parity (Friedman et al., 2016).

Among “carve-out” plans, the magnitudes of the average changes in financial requirements for SUD-specific services associated with MHPAEA may have been practically significant as well as statistically significant. Specifically, the decreases in in-network inpatient and outpatient detox copayments likely improved affordability of detox services for some patients. This is generally consistent with a previous analysis of behavioral health use among SUD diagnosed individuals enrolled in this study’s sample plans, which noted modest increases in outpatient and inpatient use (Friedman, 2017). Additionally, outpatient detox typically requires regular ongoing attendance, and some patients may discontinue a detox regimen due to cumulative costs. This fact motivates future work investigating whether the nearly \$10 average reduction in outpatient detox copayments, from approximately \$25 pre-parity, improved detox adherence rates over time.

On the other hand, it is disheartening to note that MHPAEA was associated with an increase in the level of outpatient detox coinsurance in “carve-out” plans, driven by an increase in the proportion of plans that required coinsurance. It is possible that many of the plans that discontinued use of a copayment for outpatient detox replaced copayment with a coinsurance requirement.⁵ Depending on the coinsurance rate, the portion of the total charges that patients pay via coinsurance can result in greater out-of-pocket costs for patients compared to a static copayment. Thus, even as financial requirements for SUD-specific services were required to be at parity with outpatient medical/surgical benefits, the net effect of parity on outpatient detox services may have been to increase, rather than decrease patients’ out-of-pocket costs.

Previous work has noted that MHPAEA was associated with elimination of limits for SUD services (Thalmayer, 2016), but did not examine the law’s effects on SUD financial requirements. In examining the effects of MHPAEA on BH financial requirements, Horgan et al incorporates SUD financial requirements in their analysis, but do not report separately on SUD benefits (Horgan, 2015). As SUD financial requirements were believed to be less generous than specialty MH financial requirements prior to MHPAEA, and as equity for SUD benefits was a key element of the law, the law’s effect on SUD financial requirements is of interest.

5. Conclusion

This paper investigates whether, among a sample of employer-sponsored insurance plans from Optum Behavioral, MHPAEA was associated with changes in the differences between specialty MH and SUD financial requirements in both “carve-in” and “carve-out” plans, and changes in financial requirements for detox services among “carve-out” plans. It finds, among sample plans, SUD financial requirements for most services were already at parity

⁵Because the “carve-out” plans in our sample change their ID number whenever benefit design features change and therefore the same plan with changing benefits cannot be followed over time, this dynamic cannot be investigated with the available data.

with specialty MH benefits by the time of MHPAEA implementation. However, MHPAEA was also associated with substantially decreased copayment levels for inpatient and outpatient detox services among “carve-out” plans. Depending on the impact of simultaneous increases in coinsurance for outpatient detox services on total patient cost-sharing, decreased copayment levels, together with elimination in treatment limits, may lead to greater access to SUD care.

References

- Barry Colleen L, Haiden A Huskamp, and Goldman Howard H. 2010 “A Political History of Federal Mental Health and Addiction Insurance Parity.” *The Milbank Quarterly* 88 (3): 404–33. 10.1111/j.1468-0009.2010.00605.x. [PubMed: 20860577]
- Buntin Melinda Beeuwkes, and Zaslavsky Alan M.. 2004 “Too Much Ado about Two-Part Models and Transformation? Comparing Methods of Modeling Medicare Expenditures.” *Journal of Health Economics* 23 (3): 525–42. 10.1016/j.jhealeco.2003.10.005. [PubMed: 15120469]
- Center for Behavioral Health Statistics and Quality. 2015 “Behavioral Health Trends in the United States: Results from the 2014 National Survey on Drug Use and Health” HHS Publication No. SMA 15–4927, NSDUH Series H-50. Center for Behavioral Health Statistics and Quality <http://www.samhsa.gov/data/>.
- Department of Health and Human Services. 2010 Interim Final Rules Under the Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act of 2008. 45 CFR Part 146.
- Ettner Susan, Harwood Jessica, Thalmayer Amber, Ong Michael, Xu Haiyong, Bresolin Michael, Wells Kenneth, Tseng Chi-Hong, and Azocar Francisca. 2016 “The Mental Health Parity and Addiction Equity Act Evaluation Study: Impact on Specialty Behavioral Health Utilization and Expenditures among ‘Carve-out’ Enrollees.” *Journal of Health Economics* 50 (December): 131–43. 10.1016/j.jhealeco.2016.09.009. [PubMed: 27736705]
- Frank Richard G., Beronio Kirsten, and Glied Sherry A.. 2014 “Behavioral Health Parity and the Affordable Care Act.” *Journal of Social Work in Disability & Rehabilitation* 13 (1–2): 31–43. 10.1080/1536710X.2013.870512. [PubMed: 24483783]
- French Michael T., Popovici Ioana, and Tapsell Lauren. 2008 “The Economic Costs of Substance Abuse Treatment: Updated Estimates and Cost Bands for Program Assessment and Reimbursement.” *Journal of Substance Abuse Treatment* 35 (4): 462–69. 10.1016/j.jsat.2007.12.008. [PubMed: 18294803]
- Friedman Sarah, Thalmayer Amber, Azocar Francisca, Xu Haiyong, Harwood Jessica, Johnson Laura, Ong Michael, and Ettner Susan. 2016 “The Mental Health Parity and Addiction Equity Act (MHPAEA) Evaluation Study: Impact on Mental Health Financial Requirements, Among Commercial ‘Carve-In’ Plans.” (In Press) *Health Services Research*.
- Friedman Sarah, Xu Haiyong, Harwood Jessica M., Azocar Francisca, Hurley Brian, and Ettner Susan L.. 2017 “The Mental Health Parity and Addiction Equity Act Evaluation Study: Impact on Specialty Behavioral Healthcare Utilization and Spending among Enrollees with Substance Use Disorders.” *Journal of Substance Abuse Treatment* 80 (September): 67–78. 10.1016/j.jsat.2017.06.006. [PubMed: 28755776]
- Goplerud Eric. 2013 “United States Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, 2013. Consistency of Large Employer and Group Health Plan Benefits with Requirements of the Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act of 2008.” Washington DC: US Department of Health and Human Services Assistant Secretary for Planning and Evaluation Office of Disability, Aging and Long-Term Care Policy. <https://www.dol.gov/ebsa/pdf/hhswellstonedomenicimhpaealargeemployerandghpbconsistency.pdf>.
- Harwood Jessica M., Azocar Francisca, Thalmayer Amber, Xu Haiyong, Ong Michael K., Tseng Chi-Hong, Wells Kenneth B., Friedman Sarah, and Ettner Susan L.. 2017 “The Mental Health Parity and Addiction Equity Act Evaluation Study: Impact on Specialty Behavioral Health Care Utilization and Spending Among Carve-In Enrollees.” *Medical Care* 55 (2): 164–72. 10.1097/MLR.0000000000000635. [PubMed: 27632769]

- Horgan Constance M., Hodgkin Dominic, Stewart Maureen T., Quinn Amity, Merrick Elizabeth L., Reif Sharon, Garnick Deborah W., and Creedon Timothy B.. 2016 “Health Plans’ Early Response to Federal Parity Legislation for Mental Health and Addiction Services.” *Psychiatric Services* (Washington, D.C.) 67 (2): 162–68. 10.1176/appi.ps.201400575.
- Thalmayer Amber, Friedman Sarah, Azocar Fransica, Harwood Jessica, and Ettner Susan. 2016 “The Mental Health Parity and Addiction Equity Act (MHPAEA) Evaluation Study: Impact on Quantitative Treatment Limits (QTLs).” (In Press) *Psychiatric Services*.
- Ziegler Andreas, Kastner Christian, and Blettner Maria. 1998 “The Generalised Estimating Equations: An Annotated Bibliography.” *Biometrical Journal* 40 (2): 115–39. 10.1002/(SICI)1521-4036(199806)40:2<115::AID-BIMJ115>3.0.CO;2-6.

Table 1a.

Descriptive statistics on employer and plan characteristics of the “carve-in”¹ sample, at employer level and plan levels

Employer characteristics	Employers (n = 385)	
	#	%
Average number of enrolled employees		
51–4999 employees	237	61.6
5000 to 10,000 employees	70	18.2
10,001 to 40,000 employees	68	17.7
40,001 employees or more	10	2.6
Employer Industry		
Agriculture, Forestry, Fishing, and Hunting	1	0.3
Mining	14	3.6
Utilities	17	4.4
Construction	9	2.3
Manufacturing	112	29.1
Wholesale Trade	14	3.6
Retail trade	19	4.9
Transportation and Warehousing	16	4.2
Information	33	8.6
Finance and Insurance	50	13.0
Professional, Scientific, and Technical Services	35	9.1
Management of Companies and Enterprises	2	0.5
Educational services	7	1.8
Health care and social assistance	21	5.5
Arts, Entertainment, and Recreation	8	2.1
Accommodation and Food service	8	2.1
Other services (except public administration)	14	3.6
Public administration	5	1.3
Census division		
New England	21	5.5
Middle Atlantic	68	17.7
East North Central	58	15.1
West North Central	31	8.1
South Atlantic	53	13.8
East South Central	9	2.3
West South Central	76	19.7
Mountain	15	3.9
Pacific	54	14.0
Plans n = 3822		
Plan characteristic	#	%
More managed (e.g. HMO) vs. less managed (e.g. PPO)	2681	70.2

HMO: Health Maintenance Organization; PPO: Preferred Provider Organization

¹“Carve-in” plans administer behavioral health benefits along with medical benefits. This contrasts with “carve-out” plans which only administer behavioral health, and contract with a medical vendor for medical benefits.

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Table 1b.

Descriptive statistics on employer and plan characteristics of the “carve-out”¹ sample, at employer level and plan levels

Employer Characteristics	Employers (n=40)	
	n	%
Average number of enrolled employees		
>40,000	7	17.5
10,001 – 40,000	15	37.5
5,000 – 10,000	9	22.5
<5,000	9	22.5
Employer industry		
Accommodation and Food Services	2	5.0
Administrative and Support and Waste Management and Remediation Services	0	0.0
Agriculture, Forestry, Fishing and Hunting	0	0.0
Arts, Entertainment, and Recreation	0	0.0
Construction	0	0.0
Educational Services	0	0.0
Finance and Insurance	6	15.0
Health Care and Social Assistance	3	7.5
Information	4	10.0
Management of Companies and Enterprises	0	0.0
Manufacturing	9	22.5
Mining, Quarrying, and Oil and Gas Extraction	0	0.0
Other Services (except Public Administration)	0	0.0
Professional, Scientific, and Technical Services	6	15.0
Public Administration	3	7.5
Real Estate Rental and Leasing	0	0.0
Retail Trade	3	7.5
Transportation and Warehousing	2	5.0
Utilities	2	5.0
Wholesale Trade	0	0.0
Census division		
New England	3	7.5
Middle Atlantic	5	12.5
East North Central	8	20.0
West North Central	1	2.5
South Atlantic	3	7.5
East South Central	2	5.0
West South Central	5	12.5
Mountain	0	0.0
Pacific	13	32.5
Unknown	0	0.0

Employer Characteristics	Employers (n=40)	
	n	%
Plan Characteristics	Plans (n=1,527)	
	n	%
Plan Type		
Preferred Provider Organization (PPO)	1,251	81.9
Point of Service (POS)	147	9.6
Exclusive Provider Organization (EPO)	125	8.2
Managed Indemnity	0	0.0
Other	4	0.3
Funding		
Administrative Services Only (ASO)	1,385	90.7
Fully Insured (FI)	142	9.3
More managed (e.g. HMO) vs. less managed (e.g. PPO)	275	18.0

HMO: Health Maintenance Organization; PPO: Preferred Provider Organization

¹“Carve-out” plans only administer behavioral health benefits, and contract with a medical vendor for medical benefits. This contrasts with “carve-in” plans which administer behavioral health benefits along with medical benefits.

Table 2.

Among “carve-in” plan-years¹, changes in mean difference between substance use disorder (SUD) and specialty mental health (SUD – specialty mental health) in-network copayments and patient coinsurance

	Pre-parity			Transition			Post-parity			Change in Mean, Post-Pre (Linear regression)	
	Mean	Min, Max		Mean	Min, Max		Mean	Min, Max		Estimate	P-value
<i>Plans with in-network benefits only²</i>											
<i>Copayment (\$): Difference between SUD and specialty Mental Health</i>											
Inpatient	-0.91	-340, 408		0.00	0, 0		0.00	0, 0		1.06	0.41
Intermediate	-2.71	-327, 273		-0.47	-224, 0		-0.09	-72, 0		2.91	0.05
Office-based professional	-0.62	-87, 5		-0.02	-16, 0		-0.02	-31, 0		0.57	0.02
<i>Patient coinsurance (%): Difference between SUD and specialty Mental Health</i>											
Inpatient	0.07	0, 20		0.00	0, 0		0.00	0, 0		-0.06	0.25
Intermediate	-0.45	-35, 100		0.00	-35, 100		0.55	0, 100		0.79	0.12
Office-based professional	-0.26	-50, 80		-0.21	-50, 80		0.16	-10, 80		0.35	0.41
<i>Plans with in-network and out-of-network benefits³</i>											
<i>Copayment (\$): Difference between SUD and specialty Mental Health</i>											
Inpatient	-0.06	-408, 340		-0.11	-176, 0		0.12	0, 520		0.17	0.65
Intermediate	0.52	-318, 742		-0.57	-312, 0		-0.04	-72, 5		-0.49	0.60
Office-based professional	0.00	-48, 55		-0.09	-31, 36		-0.04	-26, 0		-0.03	0.77
<i>Patient coinsurance (%): Difference between SUD and specialty Mental Health</i>											
Inpatient	0.00	-20, 40		-0.01	-20, 10		0.00	0, 0		0.00	0.86
Intermediate	-0.02	-85, 80		-0.04	-30, 10		-0.01	-20, 10		0.02	0.75
Office-based professional	-0.02	-100, 100		-0.02	-50, 10		0.01	0, 20		0.04	0.62

¹The unit of observation is the plan-year, so one plan may count up to twice in the pre-period, once in the transition period, and three times in the post-period. Analysis excludes plan-years with one cost-sharing level for some visits and another cost-sharing level for other visits for a particular cost-sharing feature, as well as plan-years that do not cover a particular service and plan-years with missing data for a particular cost-sharing feature.

²Pre-parity (2008–2009; N=1221), Transition (2010; N=726), Post-parity (2011–2013; N=1662)

³Pre-parity (2008–2009; N=2485), Transition (2010; N=1624), Post-parity (2011–2013; N=4445)

Table 3.

Among “carve-out” plan-years^{1,2} changes in mean difference between substance use disorder (SUD) and specialty mental health (SUD – specialty mental health) in-network and out-of-network copayments and patient coinsurance

	Pre-parity			Transition			Post-parity			Change in Mean, Post-Pre (Linear regression)	
	Mean	Min, Max		Mean	Min, Max		Mean	Min, Max		Estimate	P-value
<i>In-network services</i>											
<i>Copayment (\$): Difference between SUD and specialty Mental Health</i>											
Inpatient Hospitalization	5.56	0, 340		1.94	0, 293		0.00	0, 0		-4.74	0.05
Inpatient Emergency Room	4.81	0, 340		1.94	0, 293		0.00	0, 0		-3.78	0.12
Inpatient Professional ³	0.00	0, 0		0.00	0, 0		0.00	0, 0		0.00	NA
Inpatient Emergency Room Professional ³	0.00	0, 0		0.00	0, 0		0.00	0, 0		0.00	NA
Residential Treatment ⁴	3.74	0, 272		1.20	0, 234		0.00	0, 0		-2.32	0.09
Intensive Outpatient	3.06	-16, 218		0.53	-208, 208		0.00	0, 0		-1.74	0.10
Outpatient Psychotherapy ⁵	0.72	-16, 16		0.07	0, 16		0.00	0, 0		-0.92	0.34
Outpatient Medication Management	0.71	-16, 16		0.07	0, 16		0.00	-3, 0		-0.91	0.34
<i>Patient coinsurance (%): Difference between SUD and specialty Mental Health</i>											
Inpatient Hospitalization	0.17	-20, 20		0.08	0, 20		0.04	0, 20		-0.02	0.97
Inpatient Emergency Room	0.39	-10, 20		0.08	0, 20		0.03	0, 20		-0.32	0.42
Inpatient Professional ³	0.30	-20, 20		0.13	0, 20		0.04	0, 20		-0.18	0.69
Inpatient Emergency Room Professional ³	0.63	-10, 20		0.13	0, 20		0.01	-15, 20		-0.67	0.12
Residential Treatment ⁴	0.23	-20, 20		0.13	0, 20		0.04	0, 20		-0.08	0.87
Intensive Outpatient	0.34	-20, 20		0.05	0, 20		0.00	0, 0		-0.29	0.59
Outpatient Psychotherapy ⁵	-0.19	-30, 0		0.00	0, 0		0.00	0, 0		0.22	0.22
Outpatient Medication Management	-0.19	-30, 0		0.00	0, 0		0.00	0, 0		0.23	0.22
<i>Out-of-network services⁶</i>											
<i>Copayment (\$): Difference between SUD and specialty Mental Health</i>											
Inpatient Hospitalization	5.61	0, 340		2.07	0, 293		-1.12	-550, 0		-9.51	0.06
Inpatient Emergency Room	5.57	0, 340		3.03	0, 351		0.00	0, 0		-4.21	0.12
Inpatient Professional	0.00	0, 0		0.00	0, 0		0.00	0, 0		0.00	NA

	Pre-parity			Transition			Post-parity			Change in Mean, Post-Pre (Linear regression)	
	Mean	Min, Max		Mean	Min, Max		Mean	Min, Max		Estimate	P-value
Inpatient Emergency Room Professional	0.00	0, 0		0.00	0, 0		0.00	0, 0		0.00	NA
Residential Treatment ⁴	3.52	0, 272		1.29	0, 234		-1.12	-550, 0		-6.68	0.18
Intensive Outpatient	2.84	0, 218		1.14	0, 208		0.00	0, 0		-1.06	0.17
Outpatient Psychotherapy ⁵	0.00	0, 0		0.00	0, 0		0.00	0, 0		0.00	NA
Outpatient Medication Management	0.00	0, 0		0.00	0, 0		0.00	0, 0		0.00	NA
Patient coinsurance (%): Difference between SUD and specialty Mental Health											
Inpatient Hospitalization	0.16	-50, 50		0.05	-10, 50		0.00	0, 0		-0.22	0.75
Inpatient Emergency Room	0.00	-10, 20		-0.03	-10, 20		0.00	0, 0		0.02	0.90
Inpatient Professional	0.49	-10, 50		0.05	-10, 50		0.00	0, 0		-0.60	0.31
Inpatient Emergency Room Professional	0.10	-10, 50		0.05	-10, 50		-0.01	-10, 0		-0.13	0.65
Residential Treatment ⁴	0.40	-10, 50		-0.08	-10, 0		0.00	0, 0		-0.46	0.43
Intensive Outpatient	0.17	-20, 50		-0.08	-10, 0		0.00	0, 0		-0.17	0.79
Outpatient Psychotherapy ⁵	0.27	-30, 30		-0.26	-30, 10		0.00	0, 0		-0.33	0.66
Outpatient Medication Management	0.27	-30, 30		-0.26	-30, 10		0.00	0, 0		-0.33	0.66

¹The unit of observation is the plan-year, so one plan may count up to twice in the pre-period, once in the transition period, and three times in the post-period. Analysis excludes plan-years with one cost-sharing level for some visits and another cost-sharing level for other visits for a particular cost-sharing feature, as well as plan-years that do not cover a particular service and plan-years with missing data for a particular cost-sharing feature. Change in mean in Table 3 estimated using linear regression controlling for employer size, employer's region, employer's industry, and plan type. Standard errors are adjusted for intraclass correlation at the employer group level.

²Pre-parity (2008–2009; N=374), Transition (2010; N=401), Post-parity (2011–2013; N=1482)

³Two inpatient SUD services rarely have an in-network copayment (<1% of plan-years); professional, emergency room professional.

⁴Partial hospitalization has nearly identical benefits to residential treatment.

⁵Three other outpatient SUD services (diagnostic interview, medication management, and group therapy) have nearly identical benefits to outpatient psychotherapy.

Table 4.

Among “carve-out” plan-years,¹ proportion requiring copayment or patient coinsurance for substance use disorder (SUD)-specific services, and median, minimum and maximum cost-sharing levels among plans requiring financial requirement

	% Requiring financial requirement, by parity period ²			Median and Min, Max among plan-years using financial requirement, Pre-parity		
	Pre-parity	Transition	Post-parity	Chi-Square P-value	Median	Min, Max
<i>In-network SUD-specific services</i>						
<i>Copayment³</i>						
Inpatient Detox	27.9	37.7	21.6	0.00	256	6, 680
Outpatient Detox	75.7	60.4	30.3	0.00	26	6, 54
<i>Patient coinsurance</i>						
Inpatient Detox	59.6	49.5	69.7	0.00	15	10, 30
Outpatient Detox	16.0	38.6	68.5	0.00	20	10, 50
<i>Out-of-network SUD-specific services⁴</i>						
<i>Copayment⁵</i>						
Inpatient Detox	25.6	15.7	7.8	0.00	256	128, 768
<i>Patient coinsurance</i>						
Inpatient Detox	99.4	96.4	96.5	0.03	40	15, 50
Outpatient Detox	98.7	99.7	99.9	0.01	50	15, 70

¹The unit of observation is the plan-year, so one plan may count up to twice in the pre-period, once in the transition period, and three times in the post-period. Analysis excludes plan-years with one cost-sharing level for some visits and another cost-sharing level for other visits for a particular cost-sharing feature, as well as plan-years that do not cover a particular service and plan-years with missing data for a particular cost-sharing feature.

²Pre-parity (2008–2009; N=374), Transition (2010; N=401), Post-parity (2011–2013; N=1482)

³Two inpatient SUD services rarely have an in-network copayment (<1% of plan-years): professional, emergency room professional.

⁴Among plan-years with out-of-network benefits: Pre-parity N=316; Transition N=367; Post-parity N=1403.

⁵Less than 1% of plan-years required a out-of-network copayment for Outpatient Detox.

Table 5.

Among “carve-out” play-years¹, changes in the probability of use and in the mean level of financial requirements for substance use disorder (SUD)-specific associated with MHPAEA, comparing the post period to the pre-parity period.

	Change in the probability of using financial requirement ²		Change in mean level of financial requirement, among plan-years using it ²		Change in mean level of financial requirement, among all plan-years ²	
	Estimate	P-value	Estimate	P-value	Estimate	P-value
<i>In-network SUD-specific services</i>						
<i>Copayment</i>						
Inpatient Detox	(percentage points)		(\$)		(\$)	
	-14	0.03	-19.31	0.35	-51.17	0.02
Outpatient Detox	(percentage points)	0.00	-5.95	0.00	-10.26	0.00
<i>Patient coinsurance</i>						
	(percentage points)		(percentage points)		(percentage points)	
Inpatient Detox	1	0.89	2.00	0.11	1.49	0.29
Outpatient Detox	38	0.00	-3.72	0.25	6.01	0.00
<i>Out-of-network SUD-specific services³</i>						
<i>Copayment⁴</i>						
Inpatient Detox	(percentage points)		(\$)		(\$)	
	-8	0.10	-54.50	0.22	-34.39	0.09
<i>Patient coinsurance</i>						
	(percentage points)		(percentage points)		(percentage points)	
Inpatient Detox ⁵	--	--	--	--	-2.99	0.11
Outpatient Detox ⁵	--	--	--	--	-4.54	0.02

¹Pre-parity (2008–2009; N=374), Transition (2010; N=401), Post-parity (2011–2013; N=1482). The unit of observation is the plan-year, so one plan may count up to twice in the pre-period, once in the transition period, and three times in the post-period. Analysis excludes plan-years with one cost-sharing level for some visits and another cost-sharing level for other visits for a particular financial requirement as well as plan-years that do not cover a particular service and plan-years with missing data for a particular financial requirement.

²Change in probability determined using logistic regression. Change in level among plans using financial requirement determined using a generalized linear model regression with a gamma distribution and a log link function. Change in level among all plans determined using recombined two-part model estimation. All regressions control for employer size, employer's region, employer's industry, and plan type. Standard errors are adjusted for intraclass correlation at the employer group level.

³Among plan-years with out-of-network benefits: Pre-parity N=316; Transition N=367; Post-parity N=1403.

⁴Outpatient detox rarely has an out-of-network copayment (<1% of plan-years)

⁵These SUD services almost always have an out-of-network patient coinsurance (>95% of plan-years); for each outcome the percentage of zero values was low and logistic regression often failed to provide estimates; thus, rather than two-part model estimation, the change in level among all plans was determined using gamma regression.