

## 12. FRAGMENTATION IN MENTAL HEALTH BENEFITS AND SERVICES

### A Preliminary Examination into Consumption and Outcomes

BARAK RICHMAN, DANIEL GROSSMAN, AND  
FRANK SLOAN

The delivery of mental health services might offer the most paradigmatic window into the fragmentation of health services in the United States. Not only is delivery fragmented across outpatient clinicians, inpatient services, prescription drugs, and other behavioral interventions, but the rise of mental health carve-outs has meant that insurance benefits have been fragmented across mental and physical health services as well. If the financing of health care helps direct outcomes,<sup>1</sup> then carved-out mental health benefits might contribute to the many harms of fragmentation, including poorly coordinated care, overprovision and duplication of certain services, and ineffective restraints on cost.<sup>2</sup>

In this chapter, we examine consumption patterns and health outcomes within a health insurance system in which mental health benefits are administered under a carved-out insurance plan. Using a comprehensive dataset of health claims, including insurance claims for both mental and physical health services, we examine both heterogeneity of consumption and variation in outcomes. Consumption variation addresses the regularly overlooked question of how equal insurance and access does not translate into equitable consumption. Outcomes variation yields insights into the potential harms of disparate consumption and of uncoordinated care. We find that even when insurance and access are held constant, consumption of mental health services varies dramatically across race and class. We are unable, however, to find any evidence that higher levels of consumption correspond with improved health when health status is controlled. We also find some evidence of the costs of fragmentation, such as uncoordinated care, low adherence rates, and variation in sources of care.

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1. David Hyman, *Health Care Fragmentation: We Get What We Pay For*, in *OUR FRAGMENTED HEALTH CARE SYSTEM: CAUSES AND SOLUTIONS* \_\_PG?\_ (Einer Elhauge, ed. 2010).

2. Alain Enthoven, *Curing Fragmentation With Integrated Delivery Systems: What They Do, What Has Blocked Them, Why We Need Them, and How to Get There from Here*, in *OUR FRAGMENTED HEALTH CARE SYSTEM: CAUSES AND SOLUTIONS* \_\_PG? (Einer Elhauge, ed. 2010).

These findings have important implications for both the delivery of health services and the administration of health insurance benefits.

#### FRAGMENTATION IN MENTAL HEALTH INSURANCE

In recent years, insurance for mental health services has been organized by “carve-outs,” insurance benefits that are separated from insurance covering physical health services and managed under different contracts.<sup>3</sup> Carve-outs permit administrators of mental health benefits to establish specialty provider networks, negotiate competitive service fees, institute treatment protocols, and monitor consumption of mental health services. Use of carve-outs grew rapidly in the 1990s, increasing coverage from 70 million people in 1993 to 164 million in 2002.<sup>4</sup>

Although there is some debate over how the provision of mental health benefits affects overall insurance expenditures,<sup>5</sup> cost containment has been the primary motivation behind the rise of carve-outs. Separate administration of mental health benefits has been shown to reduce the costs of mental health care,<sup>6</sup> in large part by reducing mental health inpatient days and the cost of hospitalizations.<sup>7</sup> Although some of these costs appear to be pushed onto other insurance coverage, there is evidence that carve-outs reduce overall health care costs. For example, although carve-outs have been shown to increase psychotropic drug use,<sup>8</sup> such increases have been shown to decrease overall health care costs by reducing psychotherapy treatments in favor of drug use.<sup>9</sup>

One reason carve-outs might reduce overall health care costs is because mental health benefits have been associated with wasted dollars. In a study of the

3. Kyle L. Grazier & Laura L. Eselius, *Mental Health Carve-outs: Effects and Implications*, 56 *MED. CARE RES. & REV.*, 37 (1999).

4. *Id.*; Colleen L. Barry, Richard G. Frank, & Thomas G. McGuire, *The Costs of Mental Health Parity: Still an Impediment?*, 25 *HEALTH AFFS.* 623 (2006).

5. Julie M. Donohue & Richard G. Frank, *Medicaid Behavioral Health Carve-outs: A New Generation of Privatization Decisions*, 8 *HARVARD REV. OF PSYCHIATRY* 231 (2000).

6. Richard G. Frank & Rachel L. Garfield, *Managed Behavioral Health Care Carve-outs: Past Performance and Future Prospects*, 28 *ANN. REV. OF PUB. HEALTH* 303 (2007); Barry, Frank & McGuire, *supra* note 4.

7. *Id.*; Donahue & Frank, *supra* note 5.

8. Susan H. Busch, *Specialty Health Care, Treatment Patterns, and Quality: The Impact of a Mental Health Carve-out on Care for Depression*, 37 *HEALTH SERVICES RES.* 1583 (2002); Alisa B. Busch et al, *The Impact of Parity on Major Depression Treatment Quality in the Federal Employees' Health Benefits Program After Parity Implementation*, 44 *MEDICAL CARE* 506 (2006).

9. Ernst R. Berndt, *Changes in the Costs of Treating Mental Health Disorders—An Overview of Recent Research Findings*, 22 *PHARMACOECONOMICS* 37 (2004).

value of mental health treatment, Richard Frank and colleagues report findings from a panel of psychiatrists, psychologists, and primary care physicians that examined the records of mental health patients.<sup>10</sup> The panel concluded that nearly 25% of the mental health services provided were unsupported by clinical evidence and were clinically equivalent to no treatment at all for treating depression.<sup>11</sup> To the degree that carve-outs permit better monitoring of the consumption of mental health services, they might reduce health care costs without compromising health outcomes.<sup>12</sup> However, because carve-outs have made mental health benefits more affordable, they also have fueled the expansion of mental health insurance coverage, including many efforts by legislatures to require “parity” between insurance coverage for mental health and physical health services.<sup>13</sup> One recent manifestation of legislative efforts to mandate mental health benefits is the Mental Health Parity Act of 2007, which purports to expand mental health benefits to 118 million workers. The 2007 Act extends the Mental Health Parity Act of 1996, and most states have instituted their own mental health parity mandates.

Carve-outs therefore appear to have had a dual effect on health care costs. While they might be responsible for eliminating some unnecessary and costly care, they also have helped fuel the expansion of mental health insurance. It remains to be seen whether parity under carve-outs leads to improved quality of care or simply better financing of care.<sup>14</sup> Susan Busch and colleagues, for example, found that although there were modest increases in quality of care and the timeliness of administering follow-up care following the implementation of parity legislation, quality of care still fell well short of adequate quality standards as defined by the American Psychiatric Association and the Agency for Healthcare Research and Quality.

However, unconsidered in debates over expansions in mental health insurance benefits, and debates over parity in particular, are the distributional consequences of expanded mental health benefits on individual workers. If increases in insurance coverage are fully shifted to employees as equal reductions in take-home pay, akin to a head tax,<sup>15</sup> and thus workers of all wages contribute equally

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10. Richard G. Frank et al, *The Value of Mental Health Care at the System Level: the Case of Treating Depression*, 18 HEALTH AFFS. 71 (1999).

11. See *id.*; Berndt, *supra* note 9.

12. Richard G. Frank & Thomas G. McGuire, *Savings from a Medicaid Carve-Out for Mental Health and Substance Abuse Services in Massachusetts*, 48 PSYCHIATRIC SERVICES 1147 (1997); Kyle L. Grazier et al., *Effects of a Mental Health—Carve-out on Use, Costs, and Payers: A Four-Year Study*, 26 J. OF BEHAV. HEALTH SERVICES & RES. 381 (1999); Frank et al., *supra* note 10.

13. Grazier & Eselius, *supra* note 3; Frank & McGuire, *supra* note 10.

14. Busch et al., *supra* note 8.

15. Jonathan Gruber, *Health Insurance and the Labor Market*. (Nat'l Bureau of Econ. Research, Working Paper No. 6762, 1998); Jonathan Gruber, *Statement Before the Senate*

to receive mental health insurance benefits, then equity and fairness compel us to investigate whether these insurance expansions distribute benefits equally as well. As the combination of carve-outs and parity create an increasingly common profile of mental health insurance coverage, it becomes important to consider the distribution and effectiveness of those benefits.

## DESCRIPTION OF THE DATA

We explore these questions through the lens of a valuable database of health care claims from a heterogeneous population with identical health insurance, including a mental health carve-out, and ready access to physical and mental health care services. The data provides a rare opportunity to investigate differences in health care consumption when the unfortunately common inequalities in access to care are not present. It also offers a valuable opportunity to examine how a carve-out mental health insurance scheme affects a heterogeneous population, and it provides a window into understanding more generally how vulnerable populations—who frequently are the intended beneficiaries of insurance mandates—actually fare when coverage is uniform across a heterogeneous population.

Duke University and Duke University Health System (Duke) provide health insurance to more than twenty thousand employees in over six counties in central North Carolina.<sup>16</sup> Duke's Human Resources provided limited access to deidentified records of each employee's health claims from 2001 through 2004, yielding almost 92,000 person-year observations. Each health claim includes information on the services provided, the associated diagnosis, and the amounts paid by both the insurer and patient. The data also reveal each individual's race, job category (from which education and income are derived<sup>17</sup>), and insurance benefits.

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*Finance Committee*, July 31, 2008; Clark C. Havighurst & Barak D. Richman. *Distributive Injustice(s) in American Health Care*. 69 *LAW & CONTEMP. PROBS.* 7 (2006).

16. Duke has employees living in 97 of North Carolina's 100 counties, but 95% live in the six counties surrounding the Raleigh-Durham area. The region is home to many urban, suburban, and rural residential areas.

17. To protect employees' privacy, and to ensure that the data remained deidentified, individual salaries were not released. However, Duke HR categorizes each position by job code, each with a fairly precise salary range and required levels of education, which permitted imputing education and annual income for each individual. Income was determined by the mid-point of the income range for each job code, coded in units of \$10,000 in 2004 dollars. For job codes for which wages are hourly, the hourly rate was multiplied by the individual's full-time equivalent. Job code salary ranges were not available for 2001, so 2001 incomes were imputed for each job code from the salary ranges in 2002-04. Finally, faculty member salaries and the salaries of certain administrators are not determined by job code, thus individuals with these positions are not included in the sample.

The demographic profile of the population remains stable for the period under study. Approximately sixty eight percent of the sample is White and twenty four percent is African-American, the median annual earnings of the sample member rises gradually from about \$36,000 to \$40,500 over the four years, and the seventy fifth and twenty fifth percentile incomes range from approximately \$47,800 to \$51,000 and \$28,600 to \$30,500, respectively. These figures are roughly reflective of the demographic profile of both Durham County (in which Duke University is located) and North Carolina.<sup>18</sup>

Duke offers its employees a menu of insurance coverage options for different employee-paid premiums, including an HMO (selected by over seventy percent of employees), a more expensive PPO with a wider network of participating providers (selected by about fifteen percent of employees), and other managed care options, some of which were terminated and replaced during the period of study. The different plans offer slightly varying copayments, deductibles, and rates of coinsurance for most medical services, and they also present different copayments for going to out-of-network providers. However, most of these insurance plans offer the same carve-out package of mental health benefits, including identical copayments, network, and coverage of services, so there is far less variation across plans for these benefits. In 2004, for example, three of the four insurance plans, subscribed collectively by eighty seven percent of the employees, offered a common carve-out for mental health and substance abuse benefits, with the remaining thirteen percent with a BCBS plan enjoying almost identical financial coverage but for a wider network.<sup>19</sup>

The dataset offers an unusual opportunity to examine health care consumption in a racially and economically diverse population that enjoys equal access and insurance coverage. Most data sources on health care consumption, such as the Medical Expenditure Panel Survey (MEPS), rely on self-reported surveys of populations in which individuals have different insurance benefits and confront

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Anecdotal evidence suggests that results would be even stronger if these high-income individuals remained in the data. Also omitted from the analyses were individuals with missing race data (N=784).

18. The dataset is skewed by gender since women are heavily represented in health care occupations. Approximately 65% of the individuals in the dataset are female. Female median income in the sample is nearly identical to median income for males, which is just above the median for males in Durham County.

19. The BCBS plan imposes \$35 copayments for unlimited outpatient office visits, whereas the other three plans impose \$35 copayments for up to twenty in-network visits and a \$100 deductible plus 50% coinsurance for all out-of-network visits. The non-BCBS plans also impose some precertification requirements and laboratory and outpatient charges. However important or unimportant these cost-sharing differences are, we control in each analysis for insurance plan, including controlling separately for the three plans, enjoyed by 87% of the population, that offer identical coverage.

assorted barriers to care.<sup>20</sup> In contrast, all of the individuals in the Duke dataset have comprehensive health insurance with nearly uniform mental health coverage. Moreover, the Raleigh-Durham metropolitan area is home to many providers (including two academic medical centers), so individuals in the data live near a hospital and a physician practice, and since the data includes Duke University Health System employees, a great number of individuals work at or right next to health care institutions. Thus, the Duke population faces very few logistical and institutional barriers to care, and observed consumption disparities can be primarily attributed to other factors.<sup>21</sup>

### CHARTING REGRESSIVE REDISTRIBUTIONS THROUGH MENTAL HEALTH BENEFITS

In “Insurance Expansions: Do They Hurt Those They Are Designed to Help?” (*Insurance Expansions*), one of us examined the Duke data to investigate the basic—but, from the perspective of economic policy, crucial—question of whether mental health insurance redistributes wealth in desirable directions.<sup>22</sup> Since all insureds are paying equal amounts (or, more precisely, are receiving equal reductions in their take-home pay) in exchange for employer-sponsored insurance, determining which employees are receiving more, and which are receiving fewer, insurance dollars in the form of mental health services reveals whom the benefits package favors.

*Insurance Expansions* focused on how mental health benefits redistribute wealth across race and class, in large part because mental health parity legislation—like most legislative efforts to expand health insurance—is often characterized as an effort to benefit low-income and traditionally vulnerable populations. Accordingly, the empirical tests examined whether low-income and non-White individuals use fewer mental health benefits than Whites and high-income individuals.<sup>23</sup> Measuring utilization benefits requires two distinct

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20. For a description of the Medical Expenditure Panel Survey, see <http://www.meps.ahrq.gov/mepsweb/>

21. It should be noted that the benefits offices of most large employers should have access to similarly useful data, but very few share their data with researchers. Benefits data of this kind is a valuable resource both to understand health care consumption and to explore important health policy questions. We are deeply grateful to Duke Human Resources for its cooperation in exploring research questions of both local and national importance. Medicare claims data exhibits some of these advantages, since it follows heterogeneous individuals with known insurance benefits, but it does not cover the working population.

22. Barak D. Richman, *Insurance Expansions: Do They Hurt Those They Are Designed to Help?*, 26 HEALTH AFFS. 1346 (2007).

23. *Id.*

but related calculations: (1) the probability an individual filed a claim in a given year, and (2) given the probability of filing a claim, an individual's estimated annual health expenditures. Since the relevant policy question asks who extracts benefits from insurance coverage, the empirical study focuses on the insurer's expenditures on behalf of individuals, rather than the individual's out-of-pocket expenses.

The four years of data were aggregated into 92,000 person-year observations, with all dollar amounts converted into 2004 dollars. Ordinary least-squares estimated the probabilities that individuals would receive an insurance benefit within a given year.<sup>24</sup> Then a two-stage smearing technique estimated annual individual expenditures. The two-stage technique first calculates a transformed estimation of annual expenditures only for those individuals who exhibited positive expenditures, and then the mean of these smearing estimates are multiplied by the fraction of individuals that have positive expenditures.<sup>25</sup> This two-part approach—rather than a one-step estimation of consumption—is appropriate when a substantial portion of the population has zero consumption since a one-step estimation would then generate biased results. Control variables presumed to correlate with health care consumption were age, gender, years of education, and years of work experience. A dummy variable (Exemption Status) indicated whether the employee was an hourly or salaried worker, and individual dummy controls were also added for each of the available health insurance plans. Huber-White standard errors were generated to determine the statistical significance of the parameter estimates.

The regressions measured the effects of two distinct variables (race and income) on the consumption of two separate insurance benefits (mental health and pharmaceuticals). Separate regressions were run on the consumption data for each benefit. Regressions first examined the effect of race variables alone, then income alone, then both together (to determine whether the separate effects are independent), and then gradually additional control variables were added for a robustness check.

The regression results illustrate that non-Whites and low-income individuals receive significantly fewer benefits from the mental health insurance coverage made available to them. Exhibit 1 reveals that both race and income independently

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24. Logit estimations were also used to estimate the probabilities of consumption, and the same variables were found to be statistically significant. OLS is employed instead because of the ease of interpreting OLS coefficients.

25. The smearing estimate is  $[\exp(X_0\beta) \times n^{-1} \sum [\exp(e_i)]]$  where  $X_0\beta$  is the predicted values from an OLS regression of log dollars consumed and  $e_i$  is the residuals from that regression. This is the same 2-stage smearing estimation method used previously in William G. Manning et al, *Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment*, 77 AMER. ECON. REV. 251 (1987).

**EXHIBIT 1: DEPENDENT VARIABLE: PROBABILITY OF AT LEAST ONE MENTAL HEALTH CLAIM<sup>26</sup> IN A YEAR**

Model	Race Only	Income Only	Race AND Income	Race, Income & Education	All Variables <sup>27</sup>
Intercept	0.077***	0.028***	0.071***	-0.011	0.0188
Sex <sup>28</sup>	-0.022***	-0.016***	-0.015***	-0.014**	-0.016***
Age	0.0005***	0.0002 <sup>^</sup>	0.0003*	0.0003 <sup>^</sup>	0.0002
African-American	-0.064***		-0.060***	-0.055***	-0.056***
Asian	-0.059***		-0.058***	-0.072***	-0.069***
Annual Income <sup>29</sup>		0.0087***	0.0026**	-0.0043*	-0.0073***
Education				0.0077***	0.0062***
Exemption Status <sup>30</sup>					0.024***

Source: Duke Human Resources

\*\*\* p<.001

\*\* p<.01

\* p<.05

<sup>^</sup> p<.10

contribute to an individual's likelihood of consuming mental health care. The "Race Only" model indicates that Whites are significantly more likely to file a claim for mental health benefits than African-Americans and Asians.<sup>31</sup> When controlling for age and sex, the race variables are highly significant and—in relation to the intercept—of very large magnitude. For example, a 40-year-old White male has an estimated probability of 7.5% of receiving mental health

26. Some of the claims in the data were for zero dollars. Probability estimations were made both for claims greater than \$0 and for claims of any amount, including \$0. Results were consistent and robust. Estimates shown here are for claims of any amount.

27. The "All Variables" model includes, but does not show, dummy controls for the available insurance plans and years of work experience, and each model includes the race category of "Latino" and "Other," but these results also are not shown. See FN6 for an explanation why Latinos are removed from the sample.

28. Male = 1, Female = 0.

29. Annual income, in units of \$10,000.

30. Salaried Worker = 1, Hourly worker = 0.

31. The Latinos in the dataset appear to be misrepresentative of other Latinos in Durham and North Carolina. Median incomes for Latinos in the sample hold steadily at approximately \$34,000 throughout the sample, just slightly below the overall median, and Latino's median education is at least one year higher than the sample's overall median. Many Latino low-wage earners working at Duke are employees of subcontractors and are not Duke employees, which might explain this skewed sample. Since few generalizable conclusions can be drawn from studying the Latinos in the sample, results for that group are omitted.



services within a year while a forty-year-old African-American male has an estimated probability of 1.1% and a forty-year-old Asian male has an estimated probability of 1.6%. These results remain extremely robust even as income, education, exemption status, and dummies for the insurance plans are added to the model. Exhibit 1 also reveals that income has a significant and independent effect on seeking mental health care, as an additional \$10,000 in annual income increased the likelihood an individual receives mental health care by nearly 0.9%. The income variable also remains robust as other control variables are added. The results suggest that race and income have independent and very significant effects on consumption. The race variables remain significant even after controlling for income and education, and income remains significant even after controlling for race.

Of perhaps greater interest is how these differences in the propensity to seek care translate into disparities in receiving dollar benefits from the insurer. Exhibit 2, showing the estimates from the two-stage smearing techniques,<sup>32</sup> indicates that Whites can expect to receive nearly four times the annual insurance dollars from mental health benefits that African-Americans expect to receive and more than three times the dollars that Asians expect to receive. Similarly, individuals with the seventy fifth percentile income receive about two-thirds more than individuals at the twenty fifth percentile. Like the results in Exhibit 1, both the race and income variables remain independently robust in the smearing estimates.<sup>33</sup>

*Insurance Expansions* puts a dollar figure on what most observers surely suspected: that Whites and high-income individuals take greater advantage of, and thus extract more financial gain from, a given menu of insurance benefits. Prior research confirms that high-income insured parties are less deterred by copayments and other cost-sharing burdens than lower-income individuals with the same insurance benefits.<sup>34</sup> Affluent individuals also are better at navigating through medical bureaucracies to obtain desired providers, high-quality

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32. See Manning et al., *supra* note 25, for a description of the two-stage smearing techniques.

33. Duke also provides employees short-term counseling, or "Personal Assistance Services" (PAS), free of charge. Utilization of PAS is not captured in the claims data, but since they constitute another form of employer-provided mental health care, a complete understanding of employee mental health care utilization requires taking PAS into account. Data on PAS consumption are not at a level of detail that would allow a replication of the analyses executed on the claims data. Overview statistics of PAS consumption are available, and they suggest that the findings on race and income would not measurably change if PAS consumption were included in the larger sample. For example, PAS data reveal that White employees visit PAS in greater proportions than African-American or Asian employees (no income data is available for PAS clients).

34. Emmet B. Keeler et al. *The Demand For Episodes of Medical Treatment in the Health Insurance Experiment*, 7 J. OF HEALTH ECON 337 (1988); JOSEPH P. NEWHOUSE, THE

**EXHIBIT 2: ESTIMATED ANNUAL INSURANCE EXPENDITURES FOR MENTAL HEALTH CLAIMS, USING TWO-STAGE SMEARING**

Control Variables	White	African-American	Asian
Age, Sex, Race	\$62.97	\$17.68	\$20.60
Age, Sex, Race, Income	61.20	16.26	20.66
Age, Sex, Race, Income, Education	66.07	16.34	13.27
All controls	66.17	16.71	13.27

Control Variables	25th Percentile Income	75th Percentile Income
Age, Sex, Income	\$33.30	\$55.77
Age, Sex, Income, Race	33.87	55.83
Age, Sex, Income, Race, Plans	33.74	56.48
All controls (including education & exemption)	42.82	50.07

Source: Duke Human Resources

treatment, and medical advocacy,<sup>35</sup> and there remains significant evidence that African-Americans receive inferior care and attention in the U.S. health system.<sup>36</sup> Moreover, consumption disparities in mental health services are further explained by different attitudes towards mental health care. Non-Whites have been shown to attribute a larger stigma to mental illnesses and seeking mental health care than Whites,<sup>37</sup> and there is evidence that non-Whites are more likely than Whites to use social support systems and religious participation as alternatives to seeking care from mental health care providers.<sup>38</sup>

Nonetheless, despite the consequent wealth transfer, mandating coverage for mental health care might still be a desirable policy. If it is determined that receiving outpatient mental health care prevents costly mental health hospitalizations, or if receiving services from an outpatient mental health provider is shown to have greater benefits (at lower costs) than receiving services from alternative

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INSURANCE EXPERIMENT GROUP. *FREE FOR ALL? LESSONS FROM THE RAND HEALTH INSURANCE EXPERIMENT* (1993)

35. M. Gregg Bloche. *Race and Discretion in American Medicine*. I *YALE J. HEALTH POL'Y L & ETHICS* 95 (2001).

36. INSTITUTE OF MEDICINE. *UNEQUAL TREATMENT: CONFRONTING RACIAL AND ETHNIC DISPARITIES IN HEALTHCARE* (2003).

37. UNITED STATES SURGEON GENERAL, *MENTAL HEALTH: CULTURE, RACE, AND ETHNICITY* (1999), available at <http://www.surgeongeneral.gov/library/mentalhealth/cre/>

38. David R. Williams & Harold W. Neighbors, *Social Perspectives on Mood Disorders*. in *TEXTBOOK OF MOOD DISORDERS* 145 (Dan J. Stein et al., eds., 2006).

sources, then perhaps coverage is desirable and low-users of mental health care should be encouraged to consume more. We report our analysis of these questions on efficacy in the following section.

### EVALUATING EFFICACY: HOSPITALIZATIONS, REHOSPITALIZATIONS, AND FOLLOW-UP CARE

To examine both the effect and efficacy of insurance coverage for outpatient mental health services, we investigate whether low-income and non-White individuals seek substitutes to mental health services. We then discuss whether those substitutes, or forgoing mental health care altogether, lead to adverse health outcomes. We also report results from testing, more generally, whether disparate consumption of outpatient mental health services leads to disparate mental health outcomes.

#### Consumption Patterns

In “Mental Health Care Consumption and Outcomes: Considering Preventative Strategies Across Race and Class” (*Consumption and Outcomes*), we sought to determine whether race or income is systematically associated with variation in mental health care seeking behavior.<sup>39</sup> Our claims data reveal at least three ways that insureds can use insurance benefits to obtain outpatient mental health care: receiving care from a mental health care professional, filling prescriptions for psychotropic pharmaceuticals, or visiting a general practitioner. The claims data determined whether an insured sought care from a mental health provider or a general practitioner. We separated pharmaceutical claims for psychotropics from other prescriptions based on their NDC codes, and we used International Classification of Diseases ninth edition (ICD-9) diagnoses codes—relying only on the primary codes—to determine whether an insured’s visit to a general practitioner included treatment for a mental illnesses.

Insureds were separated into four mutually exclusive categories: (1) individuals who sought care from an outpatient mental health care provider (including those who also obtained psychotropic pharmaceuticals and/or sought care from a general practitioner and received a mental illnesses diagnosis), (2) individuals who filled a prescription for psychotropics (including those who sought care from a general practitioner and received a mental illnesses diagnosis) but did not obtain care from an outpatient mental health care provider, (3) individuals who sought care from a general practitioner and received a mental illnesses diagnosis but neither obtained care from a mental health care provider nor filled a

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39. Barak D. Richman et al, *Mental Health Care Consumption and Outcomes: Considering Preventative Strategies Across Race and Class* (Duke University Law School Working Paper, 2008).

prescription for psychotropics, and (4) individuals who received no form of mental health care. We labeled these categories Outpatient Mental Health (OMH), Psychotropics/No-OMH, GP-Only, and No Care.

We employed a multinomial logit test to compare how race and income affected an individual's probability of being in one of the three consumption categories. Exhibit 3 shows the relative risk ratios (RRRs) that capture the comparative probabilities. The 0.29 RRR for African-Americans in the OMH category is the probability an African-American will consume outpatient mental health care divided by the probability he/she will not consume any care. Since Whites are the reference group, it means African-Americans are only twenty nine percent ( $p < 0.001$ ) as likely as Whites to be in the OMH group compared to the No Care group. Asians are even less likely than Whites to be in the OMH group compared to the No care group, and income is found to increase the relative probability of consuming mental health care. These findings, with their significant magnitudes, corroborate those in *Insurance Expansions*.

One question raised in *Insurance Expansions* is whether non-Whites and low-income workers obtained mental health care through alternative sources. Exhibit 3 indicates that African-Americans and Asians are also much less likely to obtain mental health care from mental health providers and through psychotropic prescriptions than Whites, but are more likely to see a general practitioner for a mental health problem (RRR: 1.24;  $p < 0.001$ ) than not seek treatment at all, compared to Whites. Income, however, appears to have an opposite effect on these alternative sources, and lower incomes are associated with greater likelihoods of receiving care from general practitioners and psychotropic

**EXHIBIT 3: MULTINOMIAL LOGIT: RELATIVE RISK RATIOS (RRR) OF RECEIVING MENTAL HEALTH CARE FROM VARIOUS SOURCES OF CARE COMPARED TO RECEIVING NO MENTAL HEALTH CARE**

	Outpatient Mental Health (OMH)		Psychotropics/ No OMH		General Practitioner Only	
	RRR	P value	RRR	P value	RRR	P value
Male	0.56	0.000	0.46	0.000	1.05	0.328
Age	1.02	0.000	1.05	0.000	1.03	0.000
African-American	0.29	0.000	0.43	0.000	1.24	0.000
Asian	0.24	0.000	0.23	0.000	0.65	0.001
Income	1.03	0.002	0.94	0.000	0.91	0.000

Source: Duke Human Resources

N = 31640

Omitted reference group is "No Care"

RRR—Relative risk ratio

Covariates not shown include type of insurance, income missing, year of service

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

prescriptions compared to not seeking help, while higher incomes are associated with greater likelihoods of receiving care from mental health professionals compared to not seeking help. So, while non-Whites are less likely than Whites to consume mental health care from mental health providers or through prescription medicines, low-income individuals appear to substitute GPs and prescriptions for mental health providers.

Exhibit 4 further explores different consumption patterns by executing a multinomial logit only for those who seek some kind of care for a mental illness and excludes the No Care group. These findings confirm that rising incomes are associated with declining use of general practitioners for mental health care and increasing use of mental health care providers. Also, both Asians (RRR: 2.84;  $p < 0.001$ ) and African-Americans (RRR: 2.91;  $p < 0.001$ ) are nearly three times as likely to seek care for mental illnesses from GPs than through psychotropic prescriptions compared to Whites, while African-Americans are just two-thirds as likely (RRR: 0.65;  $p < 0.001$ ) to seek care from mental health providers than through psychotropic prescriptions compared to Whites.

These results illustrate that both the race and income variables independently (i.e., when each one is controlled for the other) are associated with different patterns of health care consumption. As a general matter, we see major differences in how individuals of different races and with different incomes seek health care for mental illnesses, as low-income and non-White individuals are more inclined compared to Whites to obtain care from GPs than mental health professionals. We also observe that non-Whites are less likely than Whites to seek outpatient mental health care or prescription medications, whereas low-income individuals, compared to their more affluent coworkers, appear to

**EXHIBIT 4: MULTINOMIAL LOGIT: RELATIVE RISK RATIOS (RRR) OF RECEIVING ALTERNATIVE FORMS OF MENTAL HEALTH CARE FROM VARIOUS SOURCES FOR THOSE WHO OBTAIN SOME FORM OF MENTAL HEALTH CARE**

	Outpatient Mental Health (OMH)		General Practitioner only	
	RRR	P value	RRR	P value
Male	1.26	0.000	2.31	0.000
Age	0.97	0.000	0.98	0.000
African-American	0.65	0.000	2.91	0.000
Asian	0.99	0.936	2.84	0.000
Income	1.10	0.000	0.96	0.065

Source: Duke Human Resources

N = 11129

Omitted reference group is "Psychotropics/no MH"

Covariates not shown include type of insurance, income missing, year of service

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

substitute care from GPs and prescriptions for psychotropics for outpatient mental health care.

### Incidence of Mental Illness and Effectiveness of Mental Health Care

Differences in consumption patterns are difficult to interpret meaningfully without evaluating the effectiveness of the alternative forms of care. In *Consumption and Outcomes*, we investigated the effectiveness of various mental health services by examining whether outpatient mental health care, compared to GP visits and psychotropics (which are covered in standard care, not by a mental health care benefit) reduce the likelihood of an adverse outcome. We used hospitalizations associated with mental illnesses as an indicator of an adverse outcome, which we gathered from three sources. We identified any individual hospitalized with a primary diagnosis of mental disorder (ICD-9 codes 290-319), any insured who sought treatment at an emergency room and received a primary diagnosis of mental disorder, and any patient who received mental health care with a service code that denoted inpatient treatment (which largely included hospital patients who had an inpatient mental health consult). With these three sources, we identified 297 individuals who were hospitalized at least once.

Since mental illnesses prevent many individuals from maintaining their employment, we employed a competing risk model to compare the probability of hospitalization with the likelihoods that individuals will leave our sample, which occurs when an employee leaves the Duke workplace. The competing risk model permits a comparison of two alternative risks for identical groups while controlling for differences in the sizes of the groups of interest. The results in Exhibit 5 reveal that the probabilities of African-Americans, Asians, and Whites being hospitalized for a mental illness are statistically indistinguishable, while low-income employees are more likely to be hospitalized than their higher-income co-workers

**EXHIBIT 5: COMPETING RISK BETWEEN THE LIKELIHOOD OF HOSPITALIZATION VERSUS EXITING THE SAMPLE**

	Hospitalization		Exiting Sample	
	HR	P value	HR	P value
African-American	0.80	0.148	1.12	0.477
Asian	0.71	0.286	1.63	0.137
Income	0.82	0.001	1.10	0.096

Source: Duke Human Resources

N= 31640

Notes: HR—Hazard ratio

Covariates not shown include gender, type of insurance, income missing, age, year of service

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

(Hazard ratio (HR): 0.82;  $p=0.001$ ) (high-income employees are also more likely to leave the employment sample, probably because of better outside labor market opportunities).

Exhibit 5 therefore dispels, in part, one potential explanation for the results in Exhibits 3 and 4, that differences in consumption across race reflect differences in need. Exhibit 5 instead suggests that non-Whites are about as likely to require hospitalization as Whites, and thus their lower levels of consumption cannot be solely attributed to differences in the incidence of mental illness. The combined results in Exhibits 3–5 also conform to research relying on survey data revealing that ethnic and racial minorities experience lower prevalence rates of acute mental illnesses than Whites but are equally likely (and often more likely) to present severe major disorders and debilitating mental illnesses.<sup>40</sup>

The bigger question by Exhibit 5 is whether interventions by medical professionals can reduce the probability of a hospitalization associated with a mental illness and whether some interventions are more effective than others (Exhibits 3–5 also suggest that low-income individuals are more likely to be hospitalized yet are less likely to seek outpatient mental health care, which additionally invites further testing of the efficacy of interventions). Exhibit 6 introduces interventions into the competing risk model and examines how outpatient interventions are associated with hospitalizations. It indicates that individuals who consume outpatient mental health care are more than nine times

**EXHIBIT 6: COMPETING RISK BETWEEN THE LIKELIHOOD OF HOSPITALIZATION VERSUS EXITING THE SAMPLE: EFFECT OF MENTAL HEALTH CONSUMPTION**

	Hospitalization		Exiting Sample	
	HR	P value	HR	P value
African-American	1.22	0.190	0.70	0.017
Asian	1.20	0.572	0.89	0.728
Income	0.80	0.000	1.12	0.071
Outpatient mental health (OMH)	9.01	0.000	0.08	0.000
Psychotropics/No OMH	3.23	0.000	0.22	0.000
General practitioner only	1.60	0.101	0.43	0.003

Source: Duke Human Resources

N= 31640

Notes: HR—Hazard ratio

Covariates not shown include gender, type of insurance, income missing, age, year of service

\*  $p<0.05$ , \*\*  $p<0.01$ , \*\*\*  $p<0.001$

40. David R. Williams et al, *Prevalence and Distribution of Major Depressive Disorder in African Americans, Caribbean Blacks, and Non-Hispanic Whites—Results from the National Survey of American Life*, 64 ARCHIVES OF GEN. PSYCHIATRY 305 (2007).

as likely to be hospitalized as individuals who receive no care, and individuals who fill prescriptions for psychotropics are more than three times as likely to do so.

Of course, Exhibit 6's results are readily explained by the endogeneity of the consumption patterns, since individuals who seek mental health care of any sort are revealing some mental illness, and individuals with some form of illness are more likely to be hospitalized. Moreover, some individuals might receive inpatient care following a referral or admission by the provider from which they receive outpatient care, so receiving outpatient care might also facilitate inpatient care. It is very difficult to control for underlying conditions if the only data available are insurance claims, and given the unobservable heterogeneity of underlying health status, it is empirically challenging to determine how outpatient services might impart benefits to subscribers.

We begin controlling for health status by constructing our own "severity index," in which a psychiatrist assigned a 1–10 value for each mental illness-related ICD9 diagnosis, with 10 being the most severe (for a discussion of the severity index, see *Consumption and Outcomes*). In Exhibit 7, we add this severity value to the competing risk model. Each individual who received a diagnosis from either a general practitioner or an outpatient mental health care provider thus received a severity score, and in order to allow the severity index to predict hospitalizations, we based the severity score on the diagnosis individuals received before they were hospitalized (if they were hospitalized at all). The problem with employing this metric, aside from its reliance on approximations, is that it assigns a zero to all individuals who do not receive any diagnosis. Thus, since more than one-quarter of those hospitalized did not visit a GP or mental health provider before being hospitalized, and consequently did not receive a diagnosis, the metric is necessarily biased downward. Nonetheless, in Exhibit 7 the severity index is positively associated with the likelihood of hospitalization, and including it in the model makes the medical interventions less positively associated with hospitalizations. This suggests that the severity measure does help solve some of the endogeneity problem. When controlling with the severity index, the results suggest that only one of the three outpatient interventions reduce the likelihood of hospitalizations. Receiving care from a general practitioner—a service covered by standard insurance benefits, not by mental health benefits—does appear to reduce the probability of hospitalization. The results do not, however, indicate that receiving care from outpatient mental health providers reduces the likelihood of hospitalization.

For a robustness check, and to pursue another path to control for the severity of the underlying medical condition, we examined only the 297 individuals who were hospitalized for a mental illness. Even though these individuals were hospitalized under different conditions and for different illnesses, their severity is much more homogeneous than that of the whole sample. Moreover, each hospitalized individual is, at time of discharge, given an appointment to see an outpatient mental



**EXHIBIT 7: COMPETING RISK BETWEEN THE LIKELIHOOD OF HOSPITALIZATION VERSUS EXITING THE SAMPLE: EFFECT OF MENTAL HEALTH CONSUMPTION AND SEVERITY INDEX**

	Hospitalization		Exiting sample	
	HR	P value	HR	P value
African-American	1.24	0.152	0.68	0.012
Asian	1.24	0.513	0.86	0.661
Income	0.82	0.001	1.09	0.144
Outpatient mental health (OMH)	0.77	0.429	0.93	0.828
Psychotropics/No OMH	0.58	0.073	1.24	0.490
General practitioner only	0.20	0.000	3.58	0.001
Severity	1.48	0.000	0.67	0.000

Source: Duke Human Resources

N= 31640

Notes: HR—Hazard ratio

Covariates not shown include gender, type of insurance, income missing, age, year of service.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

health care provider within the first few weeks of discharge, with regular visits scheduled thereafter. We therefore can test to see if these post-hospitalization instructions are followed, and we can test to see if race or income affects the probability an individual will miss, or refuse to attend, those follow-up appointments.

To test for “failure” to attend post-hospitalization outpatient appointments, we determined whether within the first four months of discharge there is a ninety-day period in which a formerly hospitalized patient did not visit an outpatient mental health provider. We employed a competing risk model that compares the probability of an adherence failure across race and income, with results shown in Exhibit 8. Here again, African-Americans and Asians, controlling for income, exhibit a lower propensity to visit outpatient mental health care providers, even shortly after being discharged for a hospitalization (though the small sample size keeps the Asian coefficient from being statistically significant, with a p-value of 0.23). Income does not affect follow-up behavior, suggesting that the refusals of non-Whites might be a function of cultural preferences rather than financial means.

In Exhibit 9, we tested whether the failure to follow post-discharge instructions has adverse consequences. We used rehospitalization as an adverse outcome, and we determined whether discharged individuals are hospitalized after fourteen days (to ensure that the second admission reflects a second event, rather than a recurrence) but within one year of the date of initial discharge. We then employed a competing risk model to calculate whether the likelihood of rehospitalization is affected by race, income, or failure to pursue post-discharge outpatient mental health care. Exhibit 9 reveals that there is little evidence that

**EXHIBIT 8: COMPETING RISK: HAZARD RATIOS (HR) OF FAILURE TO ADHERE TO POST-HOSPITALIZATION FOLLOW-UP TREATMENT VERSUS EXITING THE SAMPLE**

	Treatment Failure		Exiting Sample	
	HR	P value	HR	P value
Male	1.21	0.265	1.23	0.653
Age	0.99	0.326	0.97	0.073
African-American	1.92	0.000	0.52	0.201
Asian	1.64	0.231	2.75	0.287
Income	0.92	0.191	0.66	0.059
Severity	0.83	0.000	1.41	0.012

Source: Duke Human Resources

N=297

Notes: Treatment failure is not seeking mental health outpatient care for a period of longer than 90 days

Included covariates were year of service, type of insurance, and income missing. None were significant.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**EXHIBIT 9: COMPETING RISK: HAZARD RATIOS (HR) OF REHOSPITALIZATION WITHIN 1 YEAR FOLLOWING INITIAL HOSPITALIZATION VERSUS EXITING THE SAMPLE: EFFECT OF TREATMENT FAILURE**

	Rehospitalization		Exiting Sample	
	HR	P value	HR	P value
Male	1.52	0.186	1.20	0.660
Age	1.02	0.186	0.96	0.036
African-American	1.05	0.908	1.68	0.357
Asian	1.00	0.997	3.80	0.234
Income	0.92	0.480	1.00	0.982
Severity	1.12	0.277	0.97	0.809
Treatment failure	0.65	0.263	0.36	0.070

Source: Duke Human Resources

N=293

Treatment failure is failure to see mental health provider for a period of 90 days within in the first four months following initial hospitalization.

Included covariates were year of service, type of insurance, and income missing. None were significant.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

failure to follow up increases the probability of a rehospitalization. In fact, a “failure” to follow up with an outpatient mental health provider is closer to decreasing, rather than increasing, the likelihood of a rehospitalization (p-value is 0.26), although this also might be a problem of unobserved severity—individuals who fail to follow-up might have less severe illnesses. These analyses that focus on hospitalized insureds, however, have a much smaller sample size, and thus are less likely to produce significant results.

Exhibit 10 reveals where discharged patients sought care, including those who fail to follow up with mental health care providers. Here again, like the results in Exhibits 3 and 4, African-Americans appear to prefer seeking care from general practitioners (or forgo care altogether) than from mental health care providers. These results are even more striking than Exhibits 3 and 4 since they follow a severe event that was accompanied by instructions to see a mental health care provider. Exhibit 11 offers similar results for the six months prior to an initial hospitalization. Of individuals who are hospitalized for mental illnesses, African-Americans were far less likely to seek care from mental health providers and receive psychotropics.

**EXHIBIT 10: MULTINOMIAL LOGIT: RELATIVE RISK RATIO (RRR) OF RECEIVING MENTAL HEALTH CARE FROM VARIOUS SOURCES IN THE FOUR MONTHS AFTER INITIAL HOSPITALIZATION VERSUS EXITING THE SAMPLE**

	Outpatient Mental Health		Psychotropics or General Practitioner (No OMH)		Exit Sample	
	RRR	P value	RRR	P value	RRR	P value
Male	0.57	0.187	0.74	0.514	1.06	0.903
Age	1.02	0.318	1.01	0.518	1.00	0.953
African-American	0.27	0.004	0.57	0.249	0.24	0.008
Asian	0.21	0.177	0.44	0.470	0.66	0.694
Income	1.14	0.346	1.09	0.603	0.97	0.862
Severity	1.38	0.013	1.14	0.366	1.25	0.129

Source: Duke Human Resources

N=297

Notes: Omitted reference group is “No Care”

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

**EXHIBIT 11: MULTINOMIAL LOGIT: RELATIVE RISK RATIOS (RRR) OF RECEIVING MENTAL HEALTH CARE FROM ALTERNATIVE PROVIDERS IN THE 6 MONTHS PRIOR TO INITIAL HOSPITALIZATION**

	Outpatient Mental Health		Psychotropics/No OMH		General Practitioner Only	
	RRR	P value	RRR	P value	RRR	P value
Male	0.50	0.117	0.38	0.035	1.64	0.505
Age	1.04	0.087	1.04	0.087	1.03	0.439
African-American	0.08	0.000	0.19	0.000	4.07	0.162
Asian	0.87	0.323	0.94	0.651	0.61	0.179
Income	1.09	0.553	0.96	0.748	0.82	0.512
Severity	0.50	0.117	0.38	0.035	1.64	0.505

Source: Duke Human Resources

N=220

Notes: Omitted reference group is "No Care"

Asians were excluded from this analysis due to insufficient sample size

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

## DISCUSSION & CONCLUSION

Although the rise of mental health carve-outs might deserve credit for reducing the costs of providing mental health care, including reducing wasteful treatment and substituting costly care with less expensive alternatives, there has been little investigation into how carve-outs might contribute to the shortcomings of fragmented care. Moreover, if carve-outs have facilitated the spread of mental health insurance benefits, the efficacy and distributive consequences of such insurance also deserve greater scrutiny. Our investigations into consumption patterns and health outcomes under carved-out mental health insurance suggest that mental health carve-outs are associated with many of the costs of fragmentation.

We first find that insureds vary widely in how they receive mental health care. Care is received from GPs, hospitals, and mental health outpatient providers, and the consumption rates of each of these services vary widely across race and class, with non-Whites and low-income workers less likely to receive specialized care. We also find low and varied adherence rates following hospitalization, with non-White and low-income workers exhibiting a lower likelihood of receiving outpatient care following a hospitalization for a mental health diagnosis. The post-hospitalization findings are striking because upon discharge, every patient is instructed to seek outpatient mental health care.

Moreover, if mental health carve-outs, in addition to fragmenting the delivery of care, are also responsible for the expansion of mental health insurance, we observe that those benefits channel more benefits to White and high-income

individuals than their non-White and low-income coworkers. Non-Whites and low-income individuals do not take advantage of their mental health benefits at the same rates as their White and more affluent coworkers, and to the degree that they seek care for mental illnesses, they are more likely to seek care from general practitioners, whose services are generally covered by standard insurance benefits. Differences in consumption patterns across race are also evident among those who are hospitalized, both before and after hospitalization. These findings sound a sharp warning to those who advocate mental health parity legislation or other mandates of mental health insurance—especially those who do so claiming that mandates equalize health benefits across race and class—since these results suggest that expanding mental health benefits increases regressive and undesired wealth transfers.

Perhaps most intriguing are our findings concerning how consumption disparities translate into health outcomes. Despite significant differences in consumption patterns, especially between African-Americans and Whites but also between Asians and Whites and across income, we find no evidence that these differences affect the probability of hospitalizations for mental illnesses. Specifically, receiving care from a mental health provider does not reduce the probability of hospitalization, and following a hospitalization, receiving outpatient care from a mental health provider does not reduce the probability of rehospitalization. In sum, we find that White and affluent workers take greater advantage of the mental health insurance benefit than their non-White and lower-income co-workers, that non-Whites, especially African-Americans, are significantly more likely to seek care from general practitioners than from mental health care providers, and that there is no statistically significant evidence that receiving outpatient care from a mental health care provider reduces the likelihood of adverse mental health. In short, we find nothing to temper the provisional conclusions in *Insurance Expansions*.

The limitations of these results should be recognized. The studied population works in a university setting, and it is unclear how generalizable the findings are. Moreover, relying on hospitalizations as a measure for adverse mental illnesses is fairly coarse, and more sensitive measurements—such as lost workdays or surveyed responses—would improve our ability to measure effectiveness. More important, it is not clear what drives these results. The potential causes for the consumption disparities range from different attitudes towards necessary care, enmeshed in ethnic histories with health care providers or cultural attitudes towards mental illnesses, to different preferences and needs for care, to discriminatory referral practices and the effectiveness of care. Much more needs to be known about how individuals engage with their insurance benefits and health care providers and whether those benefits and providers meet the needs of the insureds. Many of these questions can be further explored with employer claims data, and we also hope to supplement these econometric investigations with surveys and focus groups that inquire into attitudes and practices that shape

health care-seeking behavior. Given the complexity of the behavior we studied, employing multiple methodologies and several data sources might be necessary before arriving at meaningful conclusions about mental health interventions and benefits policies.

Nonetheless, these studies yield findings that raise serious questions about the provision of mental health insurance. Carve-outs appear to facilitate some of the downsides of fragmentation, and mandating mental health benefits, as Congress (like many state legislatures) has done again, amounts to transfer payments from non-Whites to Whites and from low-income to higher-income workers. Before insurance expansions spread further, in part fueled by carve-outs, serious attention should be given to studying how insurance benefits and our fragmented health care system can improve mental health outcomes without charging vulnerable populations for services they do not want or need.