



Investment in Social Marketing Campaign to Reduce Stigma and Discrimination Associated with Mental Illness Yields Positive Economic Benefits to California

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Stigma and discrimination are often cited as reasons why people with mental health issues avoid getting treatment (Kessler, Berglund, et al., 2001; Henderson et al., 2013; California HealthCare Foundation, 2013; Collins, Roth, et al., 2014; Corrigan, Druss, and Perlick, 2014; Clement et al., 2015). Both the fear of being labeled as someone with a mental health issue and internalized feelings of shame, or self-stigma, about a mental health issue are associated with a reluctance to seek treatment (Henderson et al., 2013; Clement et al., 2015). Social marketing campaigns aimed at reducing the stigma associated with mental illness have successfully changed attitudes toward people experiencing mental health challenges, at least in the short run (Clement et al., 2015). By reducing potential discrimination against people experiencing mental health challenges—and by reducing the internalization of this discrimination—these campaigns may also encourage more people to seek out the mental health services they need (Mittal et al., 2012). Effective mental health treatment not only addresses the symptoms of mental health problems and improves overall well-being but also can yield economic benefits, such as increased productivity (Lave et al., 1998; Schoenbaum et al., 2001; Smith and Smith, 2010).

Reducing the stigma and discrimination associated with mental illness was one of three objectives of the statewide prevention and early intervention (PEI) programs initiated in 2011 by the California Mental Health Services Authority (CaMHSA). To this end—and with funding from California’s 2004 Mental Health Services Act (Proposition 63)—CaMHSA, a coalition of California counties, developed and implemented a wide range of stigma and discrimination reduction (SDR) activities. The most far-reaching of these was a multipronged social marketing campaign. One part of the campaign targeted adults, and it included the creation and distribution of *A New State of Mind: Ending the Stigma of Mental Illness*, a one-hour documentary showcasing the

stories of Californians who have struggled with and recovered from mental health challenges. *A New State of Mind: Ending the Stigma of Mental Illness* was broadcast on multiple occasions by various California public television stations, shown at events for community groups and other audiences, and made available on

Key Findings

- Individuals in need of treatment who were exposed to CaMHSA’s social marketing campaign to reduce mental health stigma and discrimination associated with mental illness were more likely to seek treatment.
- The use of behavioral health services is associated with increased productivity and employment.
- Based on benefit-cost analysis, increased productivity and employment may have substantial economic benefits over several decades:
 - \$1,251 to the state as a whole for each \$1 invested in the SDR social marketing campaign.
 - \$36 in benefits to the state government for each \$1 invested.
- This finding is robust—even if the changes in use of behavioral health services or employment were much lower than we estimated, the investment in the social marketing campaign would yield a positive return to the state.
- Because our survey was conducted at only one time point, we cannot accurately estimate how much additional treatment-seeking was caused by the social marketing campaign. While existing data clearly support the view that the campaign yielded a positive return to the state, the magnitude of that return is uncertain. Longitudinal data tracking treatment-seeking and other campaign effects could improve estimates of benefit.

EachMindMatters.org. EachMindMatters.org is a CalMHSA-funded website that offers a variety of SDR education resources, as well as marketing materials, such as posters, flyers, and promotional items (pens, sunglasses, bracelets, etc.), all bearing the “Each Mind Matters” slogan. Another part of CalMHSA’s SDR social marketing campaign targeted younger adults (18 to 24 years old) and teens (16 to 18 years old). It included an online discussion forum—ReachOut.com—where visitors could seek and provide support for problems, whether emotional or related to school, relationships, or work. CalMHSA created radio, online, and print ads to promote the web forums.

In 2011, the RAND Corporation was asked to design and implement an evaluation of CalMHSA’s statewide PEI programs. As part of this ongoing evaluation, this report examines the potential impact of CalMHSA’s SDR social marketing campaign on the use of services for mental health challenges among adults in California, and it estimates benefit-cost ratios for CalMHSA’s investments. We begin by estimating how exposure to the social marketing campaign affected the treatment-seeking behavior of adults with mental health needs (McCrone et al., 2010; Evans-Lacko et al., 2013). The social marketing campaigns to reduce stigma are associated with an increase in the use of services for mental health challenges, so we estimate the future impact of CalMHSA’s SDR campaign on the target audience’s productivity, or ability to work. Finally, we estimate the ratio of benefits to costs for CalMHSA’s SDR initiative, taking into consideration the costs of the SDR social marketing campaign, the costs of increased treatment associated with the campaign, and the benefit of increased annual earnings and associated income tax revenues as a result of increased employment among Californians experiencing mental health challenges.

Methods

Using survey data collected from a sample of adults in California experiencing psychological distress, we estimate the association between exposure to CalMHSA’s SDR social marketing campaign and the use of services for mental health challenges. For our benefit-cost analyses, we link changes in the use of services to changes in finding and retaining work and, for those already employed, changes in the number of missed workdays. We estimate changes in annual earnings for these additional employees and days of work. In this section, we describe our methods for collecting data on, and analyzing changes in, the likelihood of seeking treatment; our approach to predicting the impact of mental health treatment on the ability to work; and our approach to estimating the economic costs and benefits to California for each year of CalMHSA’s investment in its SDR social marketing campaign. Throughout the section, we highlight the assumptions that we used when conducting our analyses.

Estimating Changes in the Likelihood of Seeking Treatment

To estimate the association between exposure to CalMHSA’s SDR social marketing campaign and the likelihood of seeking services for mental health challenges, we used data from RAND’s 2014 California Well-Being Survey (CWBS), collected to evaluate CalMHSA’s SDR social marketing campaigns (Wong et al., 2015). The CWBS is a follow-up survey of adults who participated in the 2013 California Health Interview Survey (CHIS) and who reported mild to moderate or serious psychological distress, as measured by the Kessler-6 (K-6) scale. The K-6 is a brief six-item scale used to screen for clinically significant mental health problems. A K-6 score ranging from 9 to 12 is indicative of mild to moderate psychological distress, and scores greater than 12 are indicative of probable serious mental illness. (Kessler, Barker, et al., 2003). The CWBS was administered between May and August 2014 in both English and Spanish. There were 1,066 respondents (45.2 percent response rate), and just under 35 percent of these respondents said that they had encountered some aspect of the SDR social marketing campaign in the 12 months prior to being surveyed (Wong et al., 2015).

The CWBS assessed exposure to the SDR campaign with items that asked respondents about their awareness of the slogan “Each Mind Matters” and advertising for ReachOut.com, their visits to EachMindMatters.org and ReachOut.com, and whether or not they had viewed the documentary *A New State of Mind: Ending the Stigma of Mental Illness* (Wong et al., 2015). People who reported one or more interactions or encounters with any of these aspects of the SDR initiative were classified as exposed to the social marketing campaign. The CWBS assessed, through a combination of three items, the use of behavioral health services in the 12 months prior to the survey. Respondents were asked whether there had been a time during the past 12 months when they felt that they were in need of professional help because of problems with mental health, emotions, nerves, or substance use. Respondents who answered “yes” to this item were asked two questions about whether they saw a primary care physician for these problems and whether they saw a mental health professional for these problems. Respondents who answered “yes” to at least one of the subsequent two questions were coded as having received services for mental health challenges in the prior 12 months.

We employed multiple logistic regression to estimate the difference in the likelihood of receiving services for mental health challenges between those who were exposed to CalMHSA’s SDR social marketing campaign and those who were not. Receiving services was the outcome in our model. The model predictors included an indicator variable for exposure to CalMHSA’s SDR campaign, and we controlled for each respondent’s race/ethnicity,

gender, age, and level of psychological distress, as measured by the K-6 score.

For our cost analyses, the marginal effect for the campaign exposure indicator is our estimate of the difference in the percentage of respondents receiving services among those who were exposed to the campaign and those who were not. We estimated the marginal effect using recycled prediction (Graubard and Korn, 1999). We used the sample survey weights provided with the CWBS that account for the sampling strategy and nonresponse.

Because both campaign exposure and treatment use survey items ask about the prior 12 months, we are unable to determine whether exposure or use of treatment occurred first. Therefore, we are unable to say with certainty that exposure causes changes in treatment, and we can only estimate an association between the two variables. We explore alternative estimates in a sensitivity analysis described later.

Predicting the Impact of Treatment on the Ability to Work

Because the goal of the present study was to evaluate the economic benefits and costs of CalMHSA's investments in its SDR social marketing campaign, we identified two measures of productivity, or ability to work. First, we estimated the change in the ability to get a job; second, we estimated the change in the number of missed days of work (Lave et al., 1998; Schoenbaum et al., 2001; Wang, Simon, and Kessler, 2003).

We relied on two sources of data to estimate the impact of receiving treatment on productivity: the CWBS and outside studies of treatment effectiveness. The CWBS includes items on employment status, as well as an item that asks respondents to recall the number of days in the past year on which they were "*totally unable* to work or carry out . . . normal activities" as a result of "feeling nervous, depressed, or emotionally stressed." Responses to these items enabled us to estimate the association between receiving treatment and productivity in terms of impairment-free days. There are two advantages to drawing on CWBS data for this estimate: The CWBS is also the source of data for our estimate of the association between exposure to CalMHSA's SDR social marketing campaign and receiving services for mental health challenges, and the CWBS targeted the same population we are interested in here—distressed adults in California. However, there are a number of drawbacks to relying on CWBS data. Again, we are faced with a challenge because the CWBS data were collected at a single point in time. The receiving of services for mental health challenges might have preceded or followed the missed workdays, so we can only estimate an association, rather than a causal link, between treatment and missed workdays. A more severe behavioral health issue may lead to more missed workdays or unemployment, as well as an increased likelihood to receive treatment. It is difficult

to disentangle the association between treatment and productivity from the influence of behavioral health status. As a result, we also estimate the association between exposure to CalMHSA's SDR social marketing campaign and number of missed workdays. While this may address the concern about confounding factors, such as the severity of a behavioral health condition, it does not address the concern about timing.

Given the drawbacks to using CWBS data, we rely on other studies for additional estimates of the impact of treatment on the ability to work. One study of treatment for major depression estimates the impact of treatment on both the likelihood of being employed and the number of depression-free days (Schoenbaum et al., 2001). This randomized controlled trial study of adults with major depression estimated an 8.1 percent higher likelihood of being employed after one year of treatment and an increase of 20 depression-free days over two years of treatment. These estimates are consistent with findings in similar studies, though those studies have weaker research designs (Wang, Simon, and Kessler, 2003). For our analyses, we assume that depression-free days are equivalent to days of work, though we recognize that depression-free days can be used for more than employment.

Because we rely, for this critical component of our analyses, on a single study limited to the benefits of treatment for a single condition, we perform sensitivity analyses to test the impact of this assumption on our results. For example, the increase in likelihood to be employed assumes effective treatment. It is not likely that all adults who receive treatment will receive effective treatment. Furthermore, our sample includes adults with a wide range of behavioral health conditions, not just major depression. It is possible that treatment for more or less serious conditions will yield different outcomes.

Investment Costs of CalMHSA's SDR Social Marketing Campaigns

For the purposes of the present study, CalMHSA's investment costs included the payments made for its statewide SDR social marketing campaign from fiscal years 2011–2012 to 2013–2014. The campaign targeted different populations within California, as noted above. Some parts of the campaign targeted youth, while the ReachOut.com forums covered adults ages 18 to 24 (in addition to teens ages 16 to 18) and EachMindMatters.org targeted adults 25 and older. We are unable to separate out spending for different branches of the campaign, so we include all payments for the whole campaign in our analyses, though we are focusing only on adults for our estimate. As a result, our benefit-cost ratio estimate conservatively overestimates the cost portion of the ratio. The total amount of these payments was \$3.6 million in nominal dollars, or \$3.8 million in 2015 dollars. Spending was evenly distributed across all three years. In 2014, the year covered by our survey data, CalMHSA spent \$1.24 million in 2015 dollars.

Financial Costs and Benefits of the Impact of CalMHSA's SDR Social Marketing Campaign

According to data from the Medical Expenditure Panel Survey, the average annual spending on mental health disorders in the United States in 2012–2013 was \$2,008 per person in 2015 dollars (Agency for Healthcare Research and Quality, 2013). We have used this as our estimate of the average cost of treatment.

To approximate how much of these treatment costs were borne by the state government of California, we estimate how much of these treatment costs were covered by MediCal. Nationwide, Medicaid was responsible for 28.4 percent of spending on treatment for mental health problems and substance use disorders in 2014 (Mark et al., 2014). We do not have a better estimate of the proportion of behavioral health spending in California covered by MediCal, so we use the state's share of the 28.4 percent Medicaid estimate. We assume that the state will pay one-half of the treatment costs through MediCal for 28.4 percent of the adults who received treatment because of exposure to CalMHSA's SDR campaigns: Since we are using a single spending amount per person, assuming that one-half of 28.4 percent of spending is covered by the state through MediCal is the same as assuming that 14.2 percent of patients are covered by MediCal.

We measure the economic value of the benefits of treatment in terms of the wages associated with both an increase in employment and an increase in the number of days worked each year by those already employed. We use wages as an estimate of the value of the days of productive time gained through treatment for those already employed. We do not assume that these are additional earnings, since many who are employed are entitled to paid sick days that would cover some portion of the days missed. To estimate the present value of the lifetime wages earned by people who become employed as a result of treatment, we first assign the newly employed to age and gender categories that reflect the age and gender distribution in the CWBS sample. We then assign the wages earned by each person in each age and sex cohort, based on median weekly earnings in the United States by age and sex (Bureau of Labor Statistics, 2015), adjusted upward to better approximate California-specific wage rates. We then compute lifetime earnings by summing up wages over time while taking into account life expectancy and unemployment rates. We adjust (deflate) the number of people by their life expectancies, based on the national expected survival life table (U.S. Census Bureau, 2000), adjusted for California's racial mix (U.S. Census Bureau, 2015). We then deflate this number by the unemployment rate estimated for our sample using the employment status items from the CWBS. The unemployment rate for our sample, 18.9 percent, is higher than the average rate for California, which is 7.3 percent. Finally, we discount all wages to their value in 2015 (present value) using a 3 percent annual discount rate (see Ashwood et al., 2015, for a detailed description of this process).

To calculate the annual economic benefit attributable to treatment for each person treated, we estimate change in earnings as a result of changes in the number of days worked. We first use

the employment items in the CWBS to estimate how many additional adults seeking treatment were employed. Approximately 50 percent of the sample were employed and under the age of 65. We assign people to age and gender categories and calculate their annual wages using the same methods described above. Next, we convert change in days worked to a percentage of a full year of employment. For example, using a base of 232 workdays in a year, if the days worked increased by an average of ten, then that would be equivalent to an average increase of 4.3 percent. We then multiply the percentage change in days worked in the year by annual wages. For example, if the average annual wage in California were \$100 and the estimated change in days worked in the year were 4.3 percent, then the estimated change in earnings would be \$4.30.

The state government of California stands to benefit directly from these higher wages through increased income tax revenue. We estimate the share of increased income that the state government would earn through income tax revenue. We compute tax revenue for each year of wages based on the 2015 California income tax brackets (Ashwood et al., 2015).

The CWBS population includes people ages 65 and older, and we include this age group among those who receive treatment (and therefore in the calculation of the total cost of treatment). However, we do not include this age group in our estimate of increased wages because people over 65 are mostly unemployed. Our focus on people who are employed likely yields lower estimates of the full value of treatment. People who are not employed also potentially gain days of decreased suffering (e.g., depression-free days) from treatment, and those days have value to the individuals and those around them.

Results

Approximately 35 percent of CWBS respondents were exposed to CalMHSA's SDR social marketing campaign in the prior year. Table 1 compares the group of CWBS respondents exposed to the SDR campaign with the group that was not. For the most part, the two groups are similar after weighting, though there was a higher proportion of Latinos among the exposed group. This may reflect the fact that a portion of the campaign specifically targeted the Latino community. The percentage of survey respondents who were employed is relatively low (50 percent), compared with the percentage of all adults under 65 years of age in California who were employed in 2014 (64.5 percent) (U.S. Census Bureau, 2015). The percentage of survey respondents who were employed is lower among those who were exposed to the SDR social marketing campaigns.

Respondents Who Were Exposed to CalMHSA's SDR Campaign Were Significantly More Likely to Receive Treatment

After controlling for respondent demographics and mental health status, we found that respondents were more likely to have received behavioral health services if they had been exposed to

Table 1. CWBS Sample Characteristics

Characteristic	Exposed to CalMHSA Campaign (n = 1,576,337)	Not Exposed to CalMHSA Campaign (n = 2,988,169)
Total	34.5%	65.5%
Gender		
Female	61.8%	57.2%
Male	38.2%	42.8%
Race/ethnicity		
White	30.8%	43.7%
Latino	51.8%	36.8%
Asian	2.3%	9.6%
Black	8.5%	4.6%
Other	6.6%	5.3%
Age		
18–29	28.2%	30.8%
30–39	23.1%	16.7%
40–49	16.0%	18.4%
50–64	25.3%	28.0%
65 or older	7.5%	6.1%
Employment status		
Employed or self-employed ^a	42.8%	52.2%
Unemployed ^b	49.7%	41.6%
Retired	7.5%	6.1%
Level of psychological distress		
Mild to moderate	29.7%	31.2%
Probable serious mental illness	70.3%	68.8%

NOTES: The numbers reported in the table are weighted to the adult population in California with evidence of psychological distress. There are 1,066 total respondents, representing approximately 4.6 million residents. Sums might not add to 100 because of rounding.

^a Age < 65 and listed employment status as either employed for wages or self-employed.

^b Age < 65 and listed employment status as at least one of the following: looking for work, retired, homemaker/keeping house, disabled, student, refused to answer, or did not know and did not list employment status as employed for wages or self-employed (multiple selections are possible for the survey item).

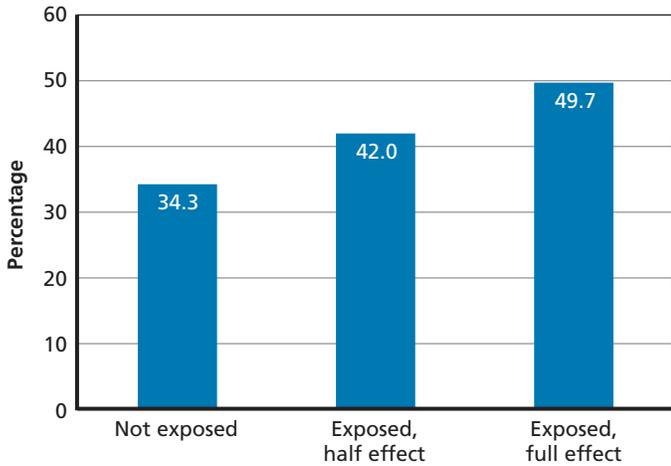
CalMHSA’s SDR campaign, relative to those who had not (see Figure 1). Almost 50 percent of respondents who were exposed to CalMHSA’s campaign in the prior 12 months received services for mental health challenges in the same period, compared with 34.3 percent of respondents who were not exposed to the campaign—a 44.9 percent difference. This difference was statistically significant at the 0.05 level. Our survey does not enable us to tell whether receiving treatment occurred before or after exposure to the campaign. Therefore, the association between campaign exposure and treatment has two possible explanations: Exposure to the campaign might have increased the likelihood that some people received treatment, or receiving treatment might have increased the likelihood that some people were exposed to the campaign. Both explanations are reasonable, and each can be expected to explain a portion of our observed association. For our cost-benefit predictions, we do not assume that the entire effect is due to the impact of the campaign on receiving

treatment. We instead choose a more conservative estimate that 50 percent of the effect is due to the impact of campaign exposure on receiving treatment, or that both directions of association are equal. This is an arbitrary choice, because we do not have better information to estimate the actual effect size. When we assume that half of the effect is due to the impact of the campaign on receiving treatment, we estimate that an additional 121,815 adults with evidence of psychological distress received services for mental health challenges as a result of their exposure to CalMHSA’s SDR social marketing campaign in 2014.

Treatment for Mental Health Disorders Likely Leads to Higher Levels of Employment and Fewer Missed Workdays

We were unable to detect a significant association between receiving treatment or exposure to the SDR campaign and employment status or missed workdays using the CWBS data. This is not sur-

Figure 1. Treatment Proportions for Adults by Exposure Status



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prising given the methodological challenges described above. We therefore relied on the estimates from the outside study described above for our estimates of the impact of treatment on productivity.

To estimate the number of adults who are able to get a job as a result of receiving services for mental health challenges, we applied the 8.1 percent difference observed in the depression study described above to the CWBS sample. We estimated that 2,955 adults would become employed as a result of treatment after exposure to CalMHSA’s SDR social marketing campaign. To estimate how many workdays would be gained as a result of treatment, we multiplied the number of additional adults who received treatment and who were also employed by 20 days, using the estimate from the literature. Based on the CWBS estimates, this equals 52,192 adults, and 1.0 million person-days.

There Is a Positive Return to California for CalMHSA’s Investment in Its SDR Social Marketing Campaign

Table 2 contains the benefit-cost calculations associated with the 22.5 percent increase in the number of adults receiving services for mental health challenges. These calculations assume that all of the additional 121,815 adults who received treatment did so because they were exposed to the SDR social marketing campaign. We test the effect of this assumption in our sensitivity analyses described below. The cost of treatment for these additional 121,815 adults was \$244.6 million, of which the state government paid \$34.7 million through MediCal, since it covers half of Medicaid payments. If 2,955 adults get jobs after receiving treatment, the net present value of their lifetime earnings is \$1.6 billion, and the net present value of the state income tax revenue is \$71.4 million. Assuming that treatment increases the number of days of work by 20 over two years for each treated adult who is already employed, the total value of the additional days is \$177.6 million over two years, and the state income tax portion of that value is \$7.4 million. The net societal benefit to

Table 2. Benefit-Cost Calculations

Cost/Benefit	Estimated Value
1. CalMHSA’s investment in social marketing campaigns to reduce stigma and discrimination, 2014	\$1,236,014
2. Additional adults receiving treatment for behavioral health disorders, 2014	121,815
3. Total cost of treatment for additional adults	\$244,603,705
4. State government’s share of costs through MediCal	\$34,733,726
5. Adults who are able to get a job after treatment	2,955
6. Net present value of lifetime earnings for newly employed	\$1,613,168,276
7. State government’s share through income tax	\$71,368,174
8. Additional person-days of employment in 2014–2015 because of treatment (20 per treated adult already employed)	1,043,833
9. Present value of increased earnings for additional treated adults	\$177,638,704
10. State government’s share through income tax	\$7,389,213
11. Present value of net benefits of treatment (#6 + #9 – #3)	\$1,546,203,274
12. State government’s share of costs (#7 + #10 – #4)	\$44,023,661
13. Broader societal perspective: benefit-cost ratio (dollars returned for each dollar invested = #11 / #1)	1,251.0:1
14. . . . Of which, California state government budget perspective: benefit-cost ratio (dollars returned for each dollar invested = #12 / #1)	35.6:1

NOTE: All monetary amounts are in 2015 U.S. dollars.

California for CalMHSA’s annual investment in its SDR social marketing campaign is \$1.5 billion. The high net benefit is based primarily on the large increase in lifetime wages for those who become employed after receiving treatment. This benefit accrues over the lifetime of the newly employed. The increase in wages from additional days of work among those already employed is much smaller and accrues over two years. When we divide the net benefit by the amount invested in the social marketing campaign, we estimate a benefit-to-cost ratio of 1,251 to 1. For each dollar invested by CalMHSA in its social marketing campaign to reduce stigma and discrimination among adults, \$1,251 returns to society over several decades, as young adults who become employed continue to work through retirement. When we focus just on spending and benefits for the state government, we estimate a positive benefit-to-cost ratio of 36 to 1.

Sensitivity Analyses

We made a number of assumptions in our analyses. The four main assumptions were: (1) One-half of the increase in the number of adults receiving treatment is due to exposure to CalMHSA’s SDR social marketing campaign, (2) many adults

who receive treatment will increase their chances of finding and retaining jobs, (3) employed adults who receive treatment will be able to work 20 more days over two years because of treatment, and (4) the average cost of treatment is \$2,008 per year. We tested each of these assumptions by choosing alternative values for each and then estimating new benefit-cost ratios for the state government. In Table 3, we summarize the values of each of our four assumptions that would yield a benefit-cost ratio of 1. This would be the value at which the state government of California would break even, or receive \$1 of net benefits for each \$1 invested. To estimate the values in Table 3, we assumed that the other inputs to our model were held constant at their original values. For example, in estimating the break-even value for increased workdays, we held constant our estimates of the increase in adults receiving treatment (121,815), the number of newly employed adults (2,955), and the average cost of treatment (\$2,008 per year). The only exception we made was for the number of treated adults. In that analysis, we changed the number of treated adults and held constant the number of workdays and the cost of treatment, but we allowed the number of newly employed adults to vary in proportion to the number of treated adults. We held constant the 8.1 percent difference in employment and applied it to the estimated number of nonemployed adults who received treatment. This number will decrease as the number of adults receiving treatment decreases. For example, if the number of treated adults is 100,000, then we estimate that 52 percent, or 52,000, are employed and 48,000 are not. In this case, we would estimate that 2,016 adults would be able to get a job (8.1 percent of the 52 percent employment rate is 4.2 percent).

We estimated that the number of adults receiving treatment because of exposure to the CalMHSA’s SDR campaign could be as low as 3,547 and the state government would still at least break even (Table 3). This represents 2.9 percent of the association between exposure and treatment that we assumed in our analysis above and 1.5 percent of the full association we observed in the CWBS data. The number of adults who get jobs as a result of treatment after exposure could be as low as 1,186 and the state government would still at least break even. This is 40.1 percent of the number we estimated using the results of the outside study and assumed was due to exposure. The relative contribution of the additional days of employment for those already working is so low compared with the contribution of the newly employed that we could assume that there is no effect on this variable and the

state government would still have a positive benefit-to-cost ratio. Finally, the cost of treatment could be more than twice as high as the amount we assumed and the state government would at least break even. Each of these values could be much lower and the broader society would break even, since the benefit-to-cost ratio is much higher.

Discussion

Our findings indicate that California will benefit from CalMHSA’s investment in its SDR social marketing campaigns in multiple ways, the most important of which is that more adults will seek treatment for their behavioral health needs. The use of behavioral health services has many positive outcomes. In this study, we have focused on getting a job and regaining productive time, and we show that adults who receive behavioral health treatment may earn higher wages.

There are limitations to our analysis, some of which might have led to an overestimation of the value of social marketing campaigns and some of which might have led to an underestimation. These limitations mean that our estimate of the benefit-to-cost ratio must be interpreted with caution. While our sensitivity analyses provide reassurance that there is likely a positive return to California for investment in these programs, the true value of these returns is difficult to estimate. One should not compare the returns we estimate in this analysis with returns estimated for another intervention that may have better evaluation data. Because of the limitations of our data, we are only able to identify an association between exposure to CalMHSA’s SDR social marketing campaign and receiving services for mental health challenges. The association we observe is positive, but we are unable to say that the link is causal. It is possible that the association between exposure and receiving services is caused by an increased awareness of the SDR campaign among those who are treated, rather than by the increased use of services among those who are exposed to the campaign—or the association could be caused by a combination of the two. For example, given concerns about the shortages in the mental health workforce, it may not be feasible that 120,000 more patients initiated treatment in one year following exposure to social marketing campaigns. However, the additional treatment does not have to come from specialists. Receiving a prescription from a primary care physician for medication to treat depression is included along with receiving cognitive behavioral therapy from a psychologist. It is reassur-

Table 3. Sensitivity Analyses

Model Input	Original Value Used in Main Analysis	Break-Even Value for State Government	Relationship to Original Value
Additional adults receiving treatment	121,815	3,547	2.9%
Newly employed adults	2,955	1,186	40.1%
Increased workdays	20	0	0%
Average treatment cost	\$2,008	\$4,480	223.1%

ing that we estimate a positive return to California even if a very small percentage of the association we observe is attributable to the fact that people who are exposed to the campaign are more likely to seek treatment. So, while actual causation could go both ways, even a small amount of causation from exposure to use of services would yield positive financial results. Another limitation is our reliance on an outside study for our estimates of the effect of treatment on productivity (Schoenbaum et al., 2001). That study looked only at a patient population suffering from a single condition, major depression. The impact of treatment on a broader population could be different. Again, we are reassured by our conclusion that the effect of treatment could be much lower and still yield positive financial benefits for California.

Because we have focused on a population of adults who have evidence of psychological distress, we are unable to draw conclusions for the broader population. For example, children may also benefit from SDR social marketing campaigns, perhaps through changes in their parents' or other caregivers' attitudes or beliefs. If so, then the benefits of CalMHSA's SDR campaign could be even larger, since early treatment can yield benefits over the course of a lifetime (Smith and Smith, 2010). It is also possible that other adults who do not currently exhibit signs of psychological distress could benefit over time if they become more likely to seek treatment at the onset of symptoms of psychological distress—that is, before a problem becomes something that interferes with productivity.

CalMHSA's SDR campaign was not designed to nudge those in distress to seek treatment but rather to create a more supportive and inclusive social environment that would *indirectly* increase the use of services for mental health challenges. In other analyses, we found evidence that the campaign did have a positive effect on the general population's acceptance of people experiencing mental health challenges (Collins, Wong, et al., 2015). Thus, an additional unknown portion of distressed individuals in California who *themselves* were not exposed to the campaign may in fact have sought treatment as a result of the state's investment in reducing the stigma and discrimination often associated with mental illness. Our analyses do not account for these individuals and might underestimate benefits for this reason as well.

We have focused on employment-related benefits for this analysis, though we believe that there are benefits beyond this narrow aspect of life. For example, managing a household more productively or spending more quality time with a loved one are other ways in which adults, including those who do not have

jobs, could benefit from gaining 20 days of symptom-free time over two years as a result of treatment. We have also assumed that, for employed adults, all 20 symptom-free days gained will be spent on the job. But it is possible that some or all of these days could be devoted to leisure or family pursuits. We do not include an estimate of the value of increased non-employment-related symptom-free days. Others have estimated the financial value of home production (Becker, 1965). We chose to focus on those who are employed for wages, or who become employed, because of our interest in estimating the economic benefits of CalMHSA's investment from the perspective of the state government, which does not receive income tax revenue from those who do not earn an income. This means that we have likely underestimated the full benefit of CalMHSA's SDR initiative.

Additional limitations include our use of average annual California wages in our calculations, as well as our use of a cost-of-treatment estimate that is based on a national sample. It is possible that the wages earned by adults with evidence of psychological distress are lower than the state average. If so, then our estimates are higher than they should be. It is also possible that the cost of treatment is different from the estimate we use, though it is unclear whether our estimate is high or low. It is reassuring that the actual cost of treatment could be more than twice as high and still yield a positive economic benefit to California.

Conclusion

The findings from this study contribute substantially to our understanding of the potential impact and benefits of social marketing campaigns to reduce the stigma and discrimination associated with mental illness. We found that a statewide SDR campaign can lead to more adults getting treatment for mental health challenges. Investment in SDR efforts has a significant societal benefit: We found that spending on behavioral health services is later recouped through increased wages. The high potential return for investment in SDR social marketing campaigns is driven by the relatively low cost of reaching a large population. Our estimate of the returns to California must be interpreted with caution. Further longitudinal research is needed to better understand the impact of the campaign, over time, on treatment-seeking and population well-being. Despite the limitations of our data, these early results evaluating California's EachMindMatters.org campaign support the conclusion that the campaign generates a positive economic benefit for the state.

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RAND Health

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CalMHSA

The California Mental Health Services Authority (CalMHSA) is an organization of county governments working to improve mental health outcomes for individuals, families, and communities. Prevention and early intervention programs implemented by CalMHSA are funded by counties through the voter-approved Mental Health Services Act (Prop. 63). Prop. 63 provides the funding and framework needed to expand mental health services to previously underserved populations and all of California's diverse communities.

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