Geographic Patterns in Disability Insurance Receipt

Mental Disorders in New England

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More than 10.2 million people, including workers with disabilities, disabled widows and widowers, and disabled adult children, received benefits through the Social Security Disability Insurance (DI) program in 2015. More than 3.5 million of those people received benefits because of a mental disorder diagnosis, such as for developmental disorders, mood disorders, or schizophrenia. That's an increase from the 2.2 million people who qualified for benefits because of mental disorders in 2001. Mental disorders now constitute the largest and one of the fastest-growing reasons for DI benefit receipt.

I have two main goals with this brief. First, instead of looking at correlates with overall DI participation, as much of the previous literature has explored, I look at correlates of DI benefit receipt for people with mental disorders. I do not seek to provide a specific causal explanation for DI participation for mental disorders—instead, I explore a variety of potential factors including economics, demographics, policy, health, and access to the health care system.

My second goal is to explore unique aspects of DI participation for mental disorders in the six New England states (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont). In 2015, 1.8 percent of all 18- to 65-year-olds across the country received DI benefits because of mental disorders (the "recipiency rate"). That recipiency rate was markedly higher in New England: in Maine, 3.4 percent of 18- to 65-year-olds received benefits because of mental disorders, followed by New Hampshire (3.2 percent), Rhode Island (3.0 percent), and Vermont (2.9 percent). On average, people in New England states tend to be richer, whiter, and more highly educated, and they tend to live in more rural areas. They have higher rates of health insurance coverage and, importantly, they have more access to mental health services than people in other parts of the country.

This paper is best viewed as a starting point to better understand how and why people participate in the DI program and how those patterns vary across the country. Geographic patterns in DI participation, which are vastly underexplored in the academic literature, may have important

implications not only for the nations' communities and economies but also for the nation overall, the fiscal health of the Social Security system, and the distribution of income and health across the country.

What Are the Different Types of Disabilities Eligible for Benefits?

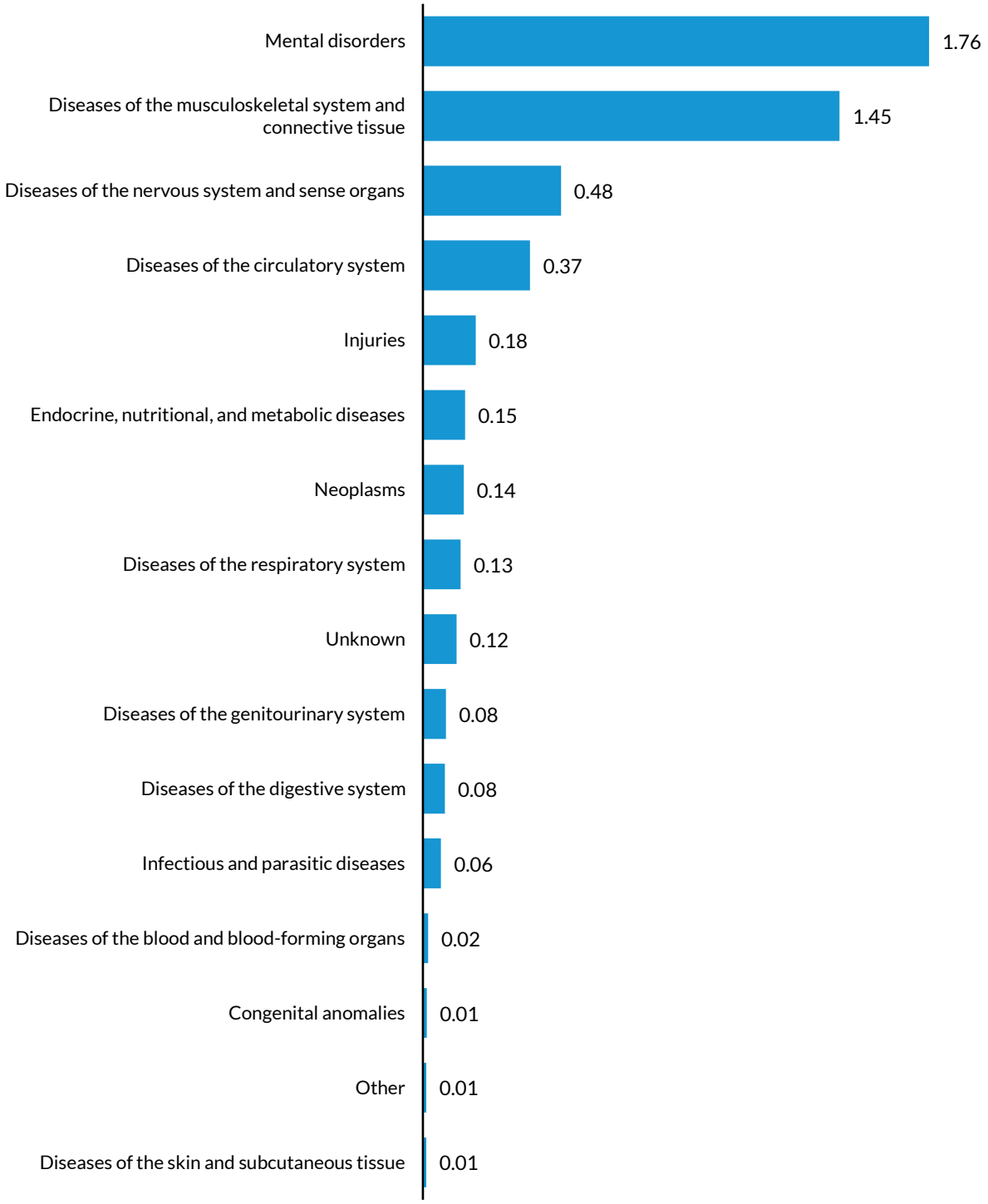
More than 12 million people receive DI benefits, including 8.9 million workers with disabilities and 3.1 million family members, an increase of 59 percent since 2000. People qualify for DI by demonstrating a "substantial" impairment that precludes them from work. Once awarded benefits, almost all beneficiaries stay on the program until they die or transfer to the Social Security retirement program at their full retirement age; very few people leave the program because they recover.

People qualify for DI by providing evidence they have a "substantial" impairment that prevents them from working and that is expected to last at least 12 months or lead to death. Applicants must not work above a specific threshold (known as the "substantial gainful activity" amount, which was $1,170 per month in 2015) for at least five months before applying (Congressional Budget Office 2012). Participants can also qualify for DI based on multiple impairments (Zayatz 2005). It is unclear what impact multiple impairments might have on this analysis, and it is unclear whether people in New England states would have higher rates of qualifying multiple impairments than people elsewhere around the country.

Starting in 2001, the US Social Security Administration (SSA) began publishing the number of DI participants in each of 15 distinct diagnostic groups by state in their Annual Statistical Report on the Social Security Disability Insurance Program. In 2015, more than 3.5 million people (or 1.76 percent of the age-18-to-65 population) received DI benefits because of mental disorders, and more than 2.9 million people (1.45 percent) received benefits because of musculoskeletal system and connective tissue diseases (figure 1). By comparison, people who qualify for benefits because of diseases of the nervous system, circulatory system, or injuries accounted for a total of 2.1 million people (1.03 percent). (Again, people may qualify for benefits based on multiple impairments, but those data are not publicly available.)

FIGURE 1

In 2015, the Largest Percentage of People Ages 18 to 65 Participated in DI Because of Mental Disorders



Source: Social Security Administration, 2016; US Census Bureau, 2015.

BOX 1

Defining DI Participation and How to Read the Graphs in This Brief

In this brief, participation in DI is measured as the recipiency rate, or the number of people receiving DI benefits for disabilities divided by the population ages 18 to 65. In 2015, more than 10.2 million people received DI benefits because of a disability, and another 1.8 million people received benefits as a non-disabled dependent of a disabled person. Where appropriate, other variables are also converted to averages or per capita rates based on that age group. For example, demographic variables, such as the percentage of white recipients, percentage of recipients living in rural areas, and percentage of recipients with more than a high school degree, are all calculated as a share of the age-18-to-65 population. For ease of explanation, the mental disorder recipiency rates for 2015 are used in all graphs; only minor differences occur when data are matched up by year (when possible).

The Social Security Administration does not publicly release counts of DI participants by state, diagnosis type, and age group all together, though age is an important factor to consider. In 2015, nearly half (48.5 percent) of DI worker beneficiaries (a subset of the overall group studied here) under age 50 received benefits because of mental disorders. By comparison, 24.4 percent of DI worker beneficiaries age 50 or older received benefits because of mental disorders (see tables 22 and 23 of SSA [2016]).

This brief does not present a complete structural statistical model to explain causality or correlation between the variables examined and participation in DI. Evidence for each relationship is shown with an accompanying scatterplot that shows the DI recipiency rate on the vertical axis and the corresponding variable of interest on the horizontal axis. Each graph below highlights the six New England states and, where applicable, the US average, as well as a "best-fit" (dashed) line, which is used to measure the correlation between the DI recipiency rate for mental disorders and the state-level characteristic in question. A statistical summary of those lines appears in the conclusion. An interactive version of the figures and data from the paper can be downloaded from http://www.urban.org/research/publication/geographic-patterns-disability-insurance-receipt.

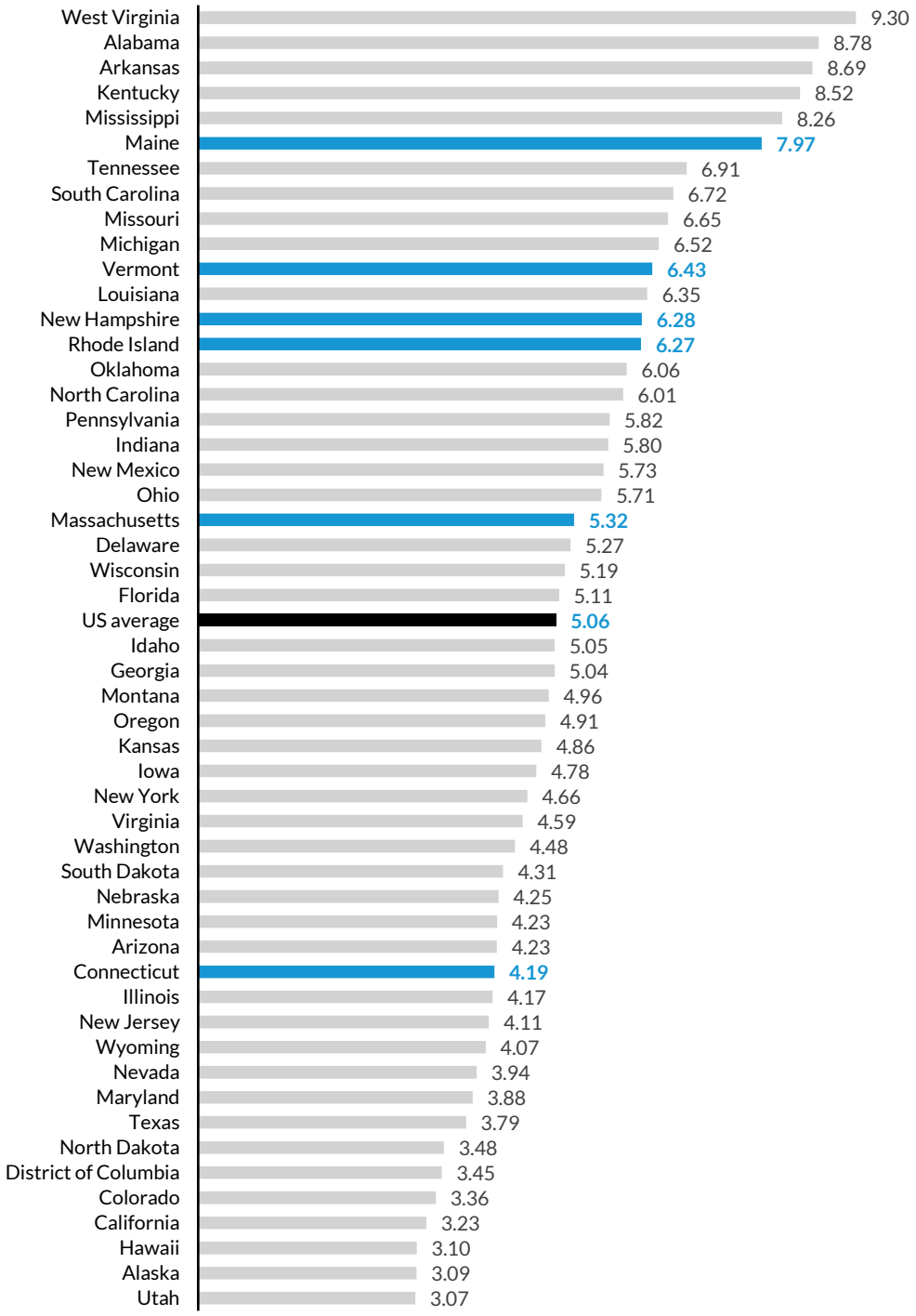
What Are the Overall Geographic Patterns in Disability Insurance?

Although DI is administered at the state level, DI eligibility rules are set at the federal level, and thus variation in DI by state is not necessarily a function of the program itself but rather other factors (McCoy, Davis, and Hudson 1994; Ruffing 2015; SSAB 2012). Some states in the South and Appalachia (states that tend to have higher rates of poverty and lower overall levels of educational attainment, such as West Virginia, Alabama, and Arkansas) have higher overall rates of benefit receipt. States along the coasts and in the middle of the country (such as California and Colorado) tend to have lower rates of receipt. Although the correlation is imperfect, DI receipt also tends to be related to the age composition of the states: states that have populations with higher median ages (such as Maine, Vermont, and West Virginia) have higher recipiency rates than states with younger populations (such as Alaska, California, Texas, and Utah; figure 2).

FIGURE 2

The 2015 DI Recipiency Rate for All Diseases in Most New England States Was Slightly Higher Than the National Average

Percentage

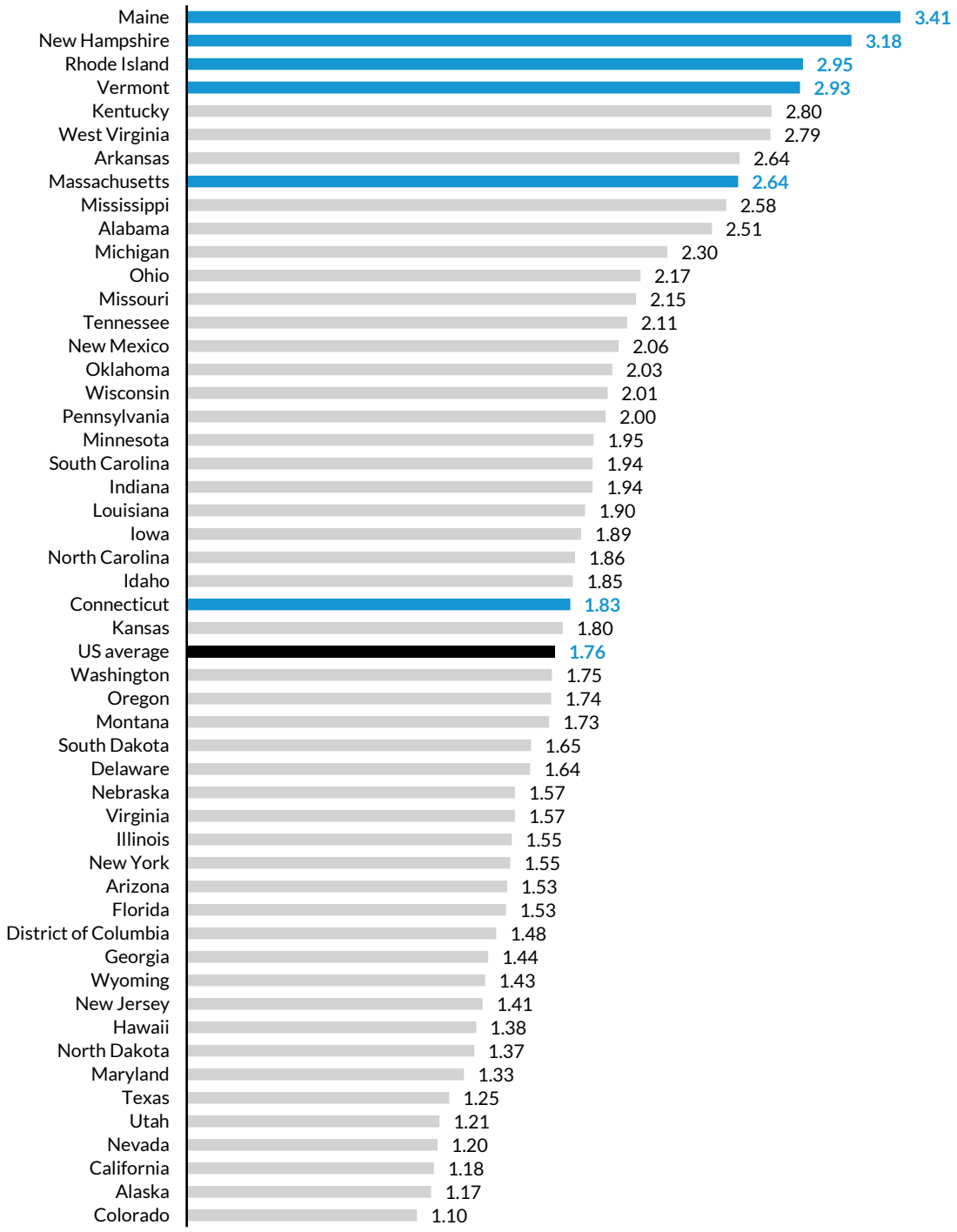


Source: Social Security Administration, 2016; US Census Bureau, 2015.

FIGURE 3

The 2015 DI Recipiency Rate for Mental Disorders in Most New England States Was Markedly Higher Than in the Rest of the Country

Percentage



Source: Social Security Administration, 2016; US Census Bureau, 2015.

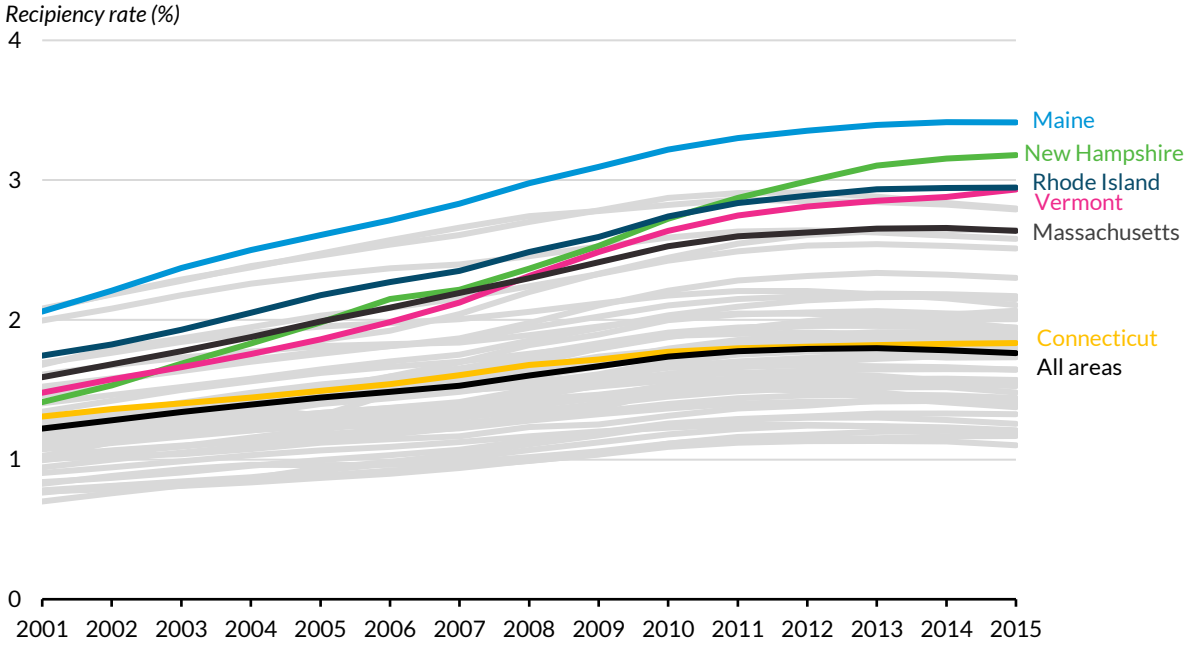
That pattern holds true for the three most common diagnoses (musculoskeletal, nervous, and circulatory diseases): Southern states such as Alabama and Mississippi, for example, are among the five states with the highest rates of receipt for musculoskeletal, nervous, and circulatory diseases, while central and coastal states, such as Utah, Alaska, and Hawaii, have some of the lowest rates.

The pattern changes, however, when looking at mental disorders: five of the top eight states are in New England. In Maine, for example, 3.4 percent of the state's age-18- to-65 population receives DI benefits because of mental disorders, ranking it first (figure 3); it ranks 5th in musculoskeletal diseases, 4th for diseases of the nervous system, and 15th for circulatory diseases. In New Hampshire, 3.2 percent of the state's 18-to-65 population receives DI because of mental disorders, as do nearly 3 percent of residents in Rhode Island and Vermont.

The high rates of DI receipt for mental disorders in the New England states is not particularly new. Since 2001, New Hampshire, Vermont, Maine, and Rhode Island rank first, second, third, and fourth in percentage-point growth in DI recipiency rate for mental disorders (at 1.78, 1.45, 1.35, and 1.20 percentage points, respectively; figure 4). By comparison, the recipiency rate for mental disorders grew by 0.54 percentage points across the nation over this period. Growth in the recipiency rate in Connecticut matches the nation as a whole, a pattern that repeats throughout the analysis; in other words, Connecticut looks more like the rest of the country than the other New England states. That fact certainly warrants further exploration, but such exploration is beyond the scope of this study.

FIGURE 4

The DI Recipiency Rate for Mental Disorders Rose Swiftly in New England States between 2001 and 2015



Source: Social Security Administration, 2002–16; US Census Bureau, 2015.

What Is Driving Higher Rates of DI Receipt for Mental Disorders in New England?

A long literature explores the characteristics of DI recipients (such as Favreault and Schwabish [2016] and SSAB [2012]) and relates those characteristics to program participation and program growth. Daly, Lucking, and Schwabish (2013), for example, show that more than half of DI program growth between 1980 and 2011 can be explained by three factors: the increase in Social Security's full retirement age, the aging of the population, and the rising percentage of women in the labor force.[1] Ruffing (2015) shows that 85 percent of the variation in the overall per capita receipt of DI in 2013 can be explained by just a few factors: educational attainment, median age, the foreign-born share of the population, industry mix, poverty rate, and the unemployment rate. But all of the literature just mentioned focuses on the overall rate of DI benefit receipt and not on the rate of receipt for specific types of disabilities. In this brief, I look specifically at correlates with DI participation for mental disorders and contrast those characteristics with those that correlate with overall DI participation.

The following sections describe the relationship between DI recipiency rates for mental disorders relative to six different classes of variables (table 1). As noted, Ruffing (2015) shows that certain economic and demographic characteristics, such as educational attainment and the median age, can explain about 85 percent of overall DI participation. Here, I examine how closely those and other factors are correlated with state variation in DI receipt for mental disorders, particularly the high rates of receipt in New England. Those covariates are based on the existing literature on DI participation (Ruffing 2015) and correlates with mental health treatment (Aron, Honberg, and Duckworth 2009). This brief does not present a unified statistical model to explain causality or correlation between all of these factors and the DI recipiency rate; instead, I explore the relationship between each characteristic and the recipiency rate individually.

TABLE 1

Data Descriptions

Variable	Year used	Source[a]	Direction of relationship[b]	Statistically significant?
Disability insurance recipiency rate				
Disability insurance participation	2015	SSA		
Population	2015	Census		
Non-health-related factors				
Demographics				
Race (% white)	2015	IPUMS	+	Yes
Rural status	2010	Census	+	Yes
Median age	2015	IPUMS	+	Yes
Educational attainment	2015	IPUMS	–	Yes
Economics				
Median household income	2015	Census	–	Yes
Unemployment rate	2015	BLS	~0	No
Program practice				
Disability insurance award rates	Fiscal year 2016	SSA	~0	No
Health-related factors				
Self-reported health status	2015	KFF	+	Yes
Mental illness (age 18+)	Average 2014–15	SAMHSA	~0	No
Health insurance				
Health insurance rates	2014	KFF	+	Yes
Drug use and treatment				
Oxycodone use	2000	Curtis et al. (2006)	+	Yes
Drug and alcohol treatment admissions	2011	SAMHSA	+	Yes
Drug overdose deaths	2014	CDC	+	Yes
Mental health				
Concentration of psychiatrists	May 2016	BLS	+	Yes

Notes: BLS = Bureau of Labor Statistics; CDC = Centers for Disease Control and Prevention; IPUMS = Integrated Public Use Microdata Series (Flood et al. 2015); KFF = Henry J. Kaiser Family Foundation; SAMHSA = Substance Abuse and Mental Health Services Administration; SSA = Social Security Administration.

[a] See appendix A for more details on each variable.

[b] Signs are based on separate, simple regressions of the recipiency rate on each characteristic; they do not refer to a single regression that includes all variables. More details can be found in this brief's conclusion.

Non-Health-Related Factors

The analysis begins by looking at demographic and economic factors, and Social Security Administration policy to help explain the high recipiency rate in the New England states. The relationships shown here are like those found in the previously mentioned literature, with some exceptions for levels of educational attainment and household income.

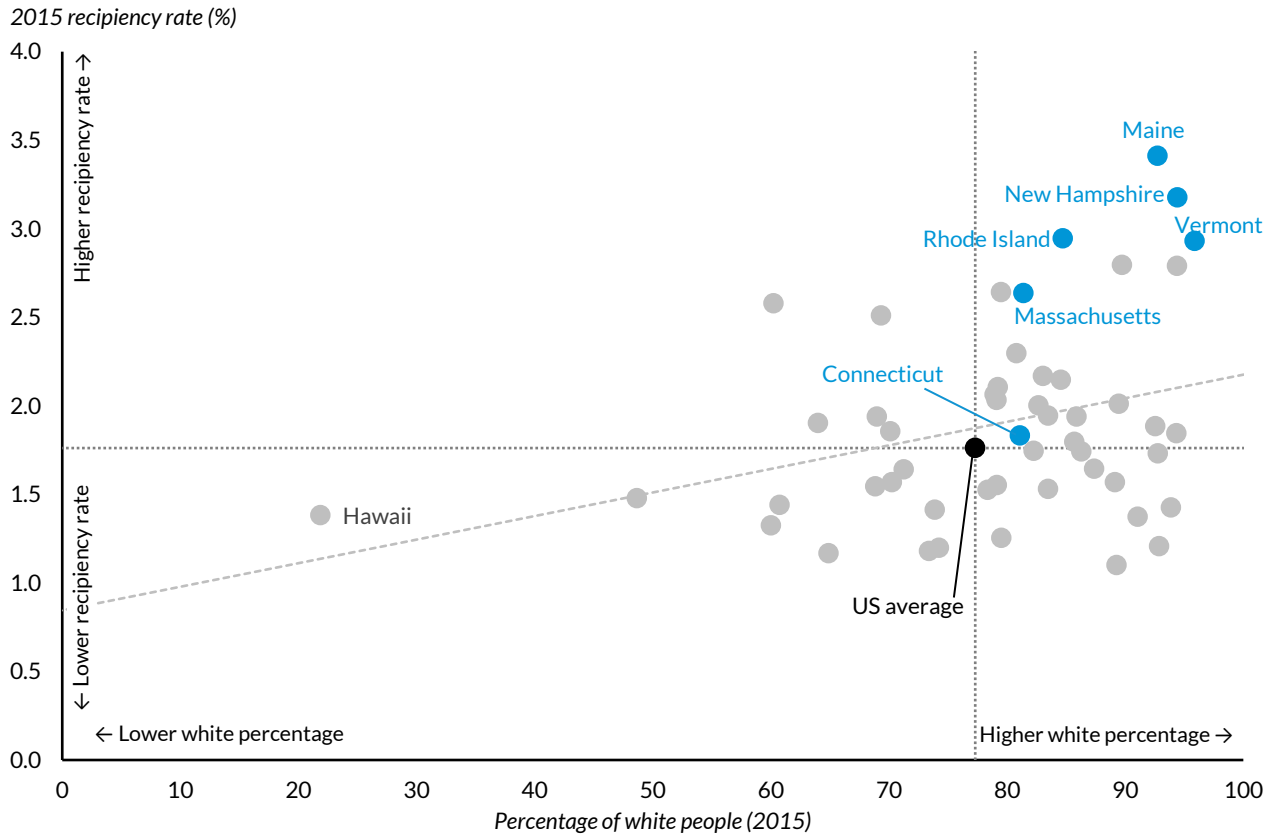
Demographics

As Ruffing (2015, 1) notes, "states with high rates of disability receipt tend to have populations that are less educated, older, and more blue-collar than other states; they also have fewer immigrants." Some of those factors are also related to recipiency rates for mental disorders.

The share of the age-18-to-65 population that is white in New England states is greater than it is in the nation as a whole. Overall in the United States, 77 percent of the age-18-to-65 population is white; that share is much higher in Maine (93 percent), New Hampshire (94 percent), and Vermont (96 percent).

FIGURE 5

The Percentage of White People and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Positively Correlated

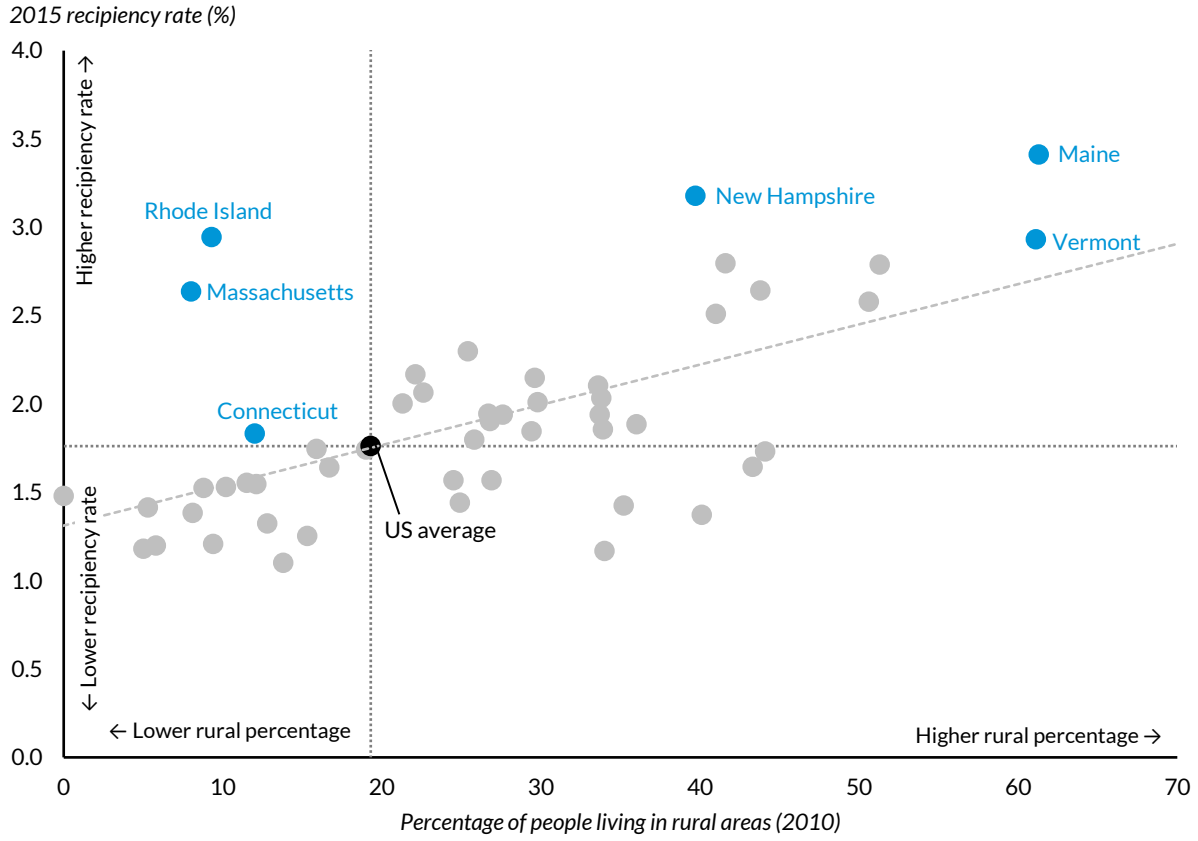


Source: Social Security Administration, 2016; March Current Population Survey, 2015; US Census Bureau, 2015.

Three of six New England states have a higher percentage of the population living in rural areas than the rest of the nation; the other three states are more urban than the nation on average. Vermont and Maine, especially, are rural states, and Manchester and Tweed (2015) examine them in their analysis of high and growing rates of DI participation. In 2015, 61 percent of 18- to 65-year-olds lived in rural areas in Maine and Vermont compared with 19 percent on average across the nation. It is unclear what mechanism, if any, exists between living in rural communities and participating in the DI program for mental disorders (a similar relationship is present for overall DI participation).

FIGURE 6

The Percentage of People Living in a Rural Area and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Positively Correlated

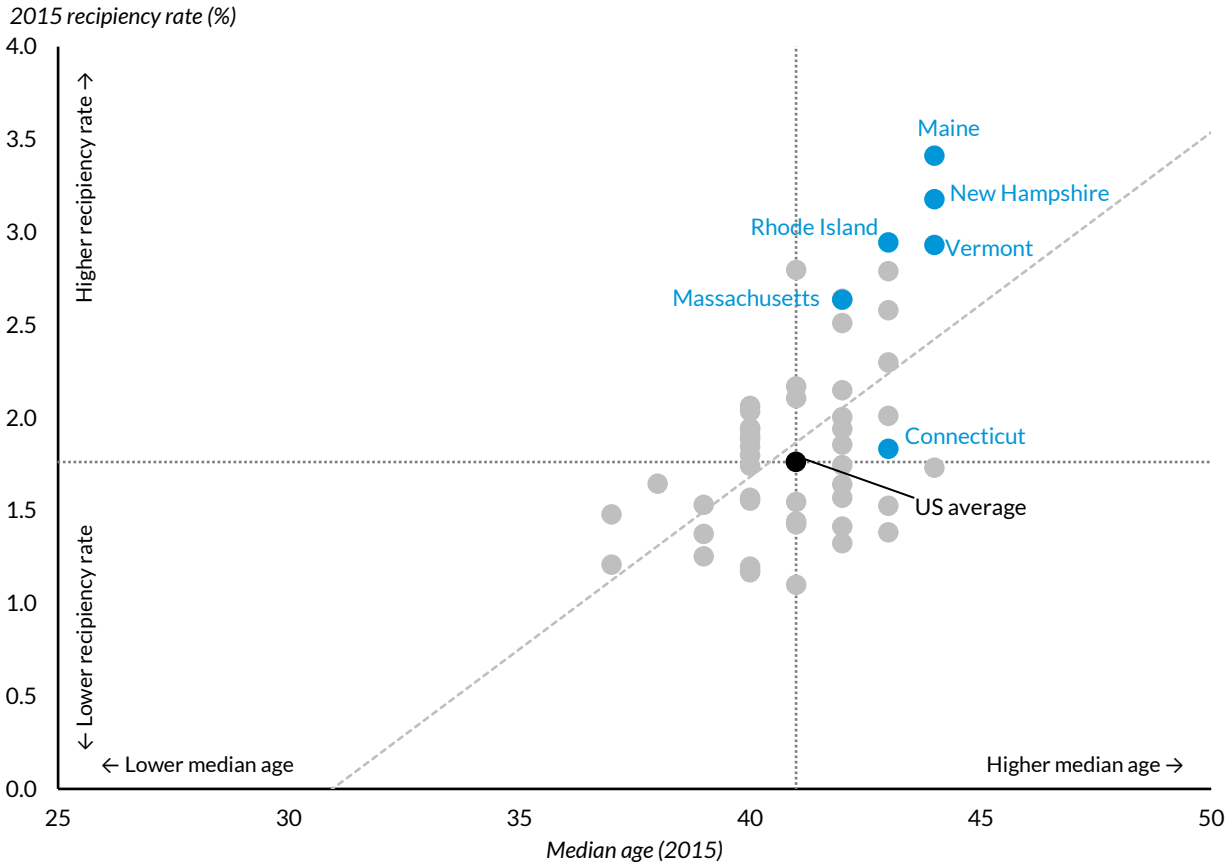


Source: Social Security Administration, 2016; Iowa State University, 2010; US Census Bureau, 2015.

Reflecting previous work on overall DI participation, a strong positive correlation also exists between the DI mental disorder recipiency rate and the median age. The New England states tend to be older than the rest of the nation; at 44, the median age in Maine is the highest in the nation. This may simply reflect DI program rules and the aging of the US population.

FIGURE 7

Median Age and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Positively Correlated

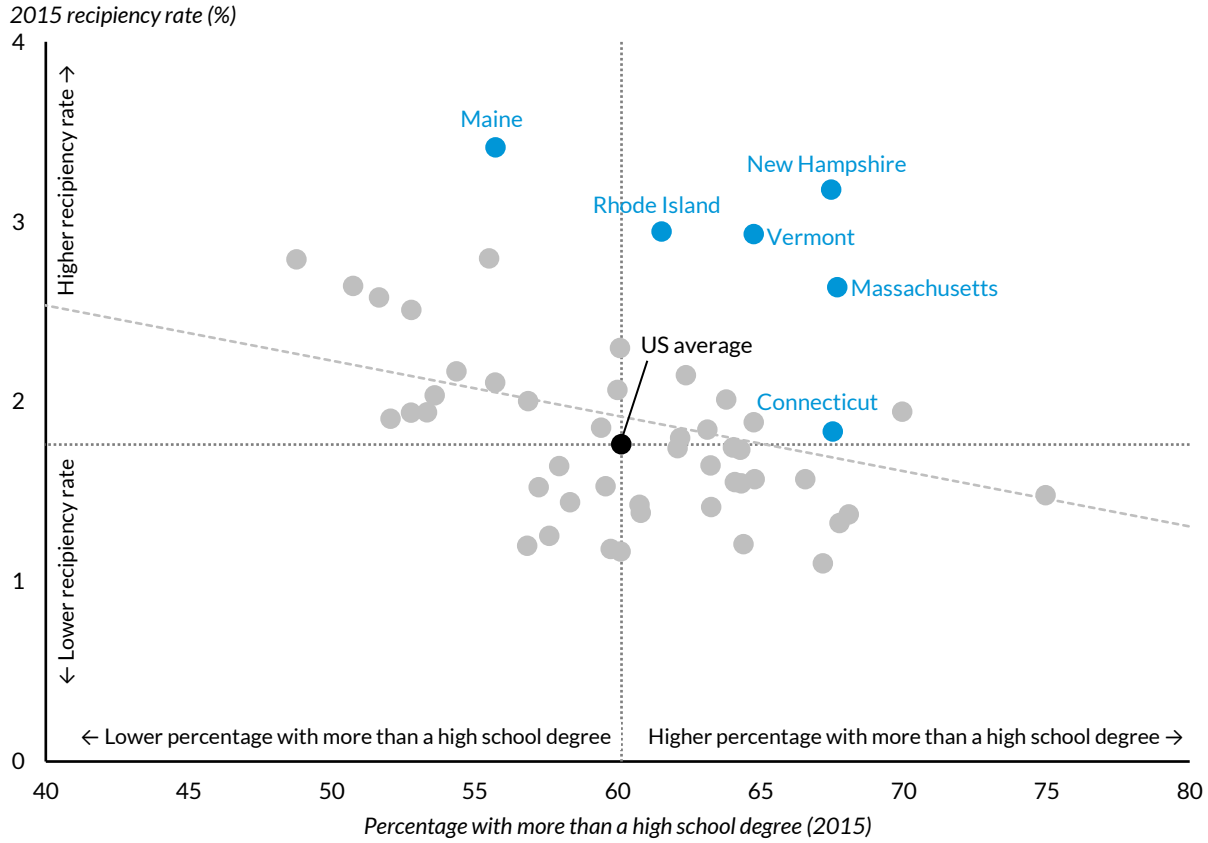


Source: Social Security Administration, 2016; March Current Population Survey, 2015; US Census Bureau, 2015.

Finally, the percentage of people in New England with education beyond a high school degree is somewhat higher than the national average, and educational attainment appears to be negatively correlated with the DI recipiency rate. Thus, except in Maine, which has lower average levels of education and a higher DI recipiency rate, educational attainment does not appear to help explain DI participation for mental disorders.

FIGURE 8

High Educational Attainment and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Negatively Correlated



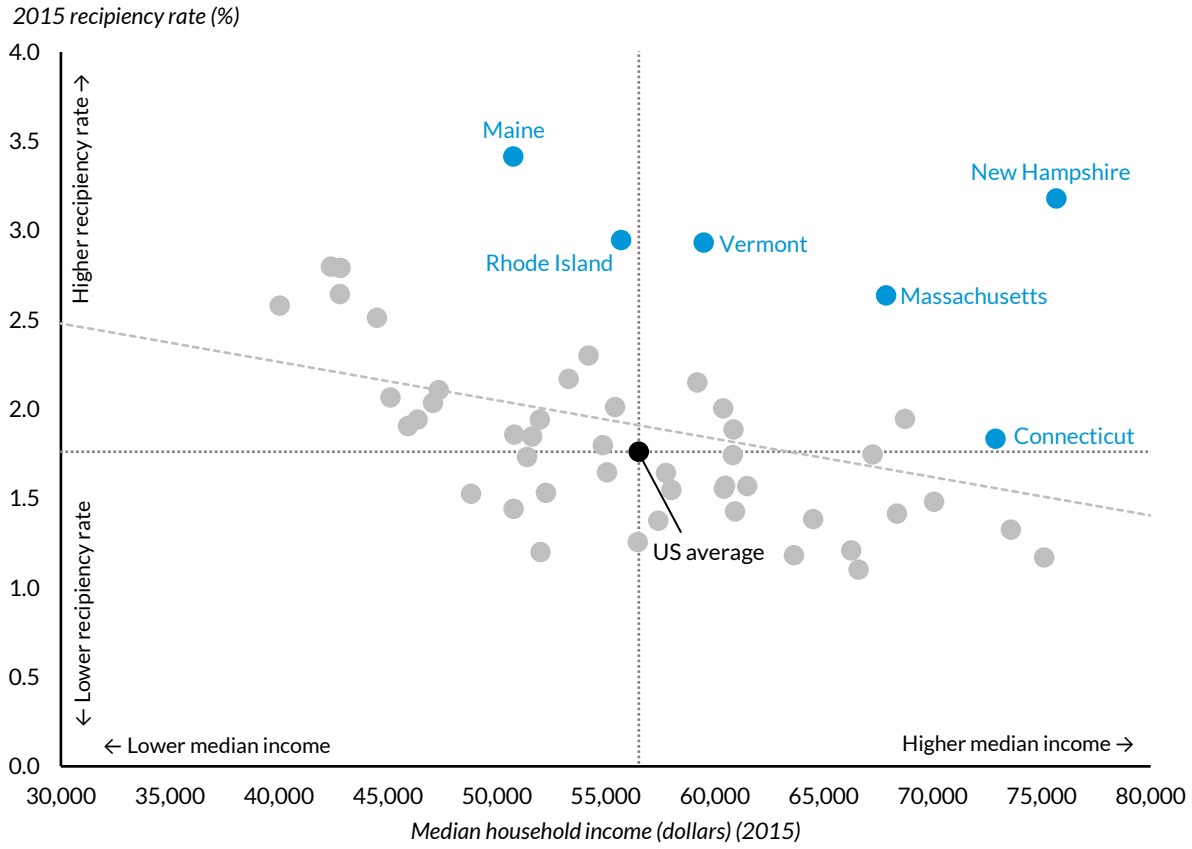
Source: Social Security Administration, 2016; March Current Population Survey, 2015; US Census Bureau, 2015.

Economics

The economic status of households and individuals can affect an individual's decision to apply for DI (Rutledge 2011). In 2015, median household incomes in most New England states were higher than the national median of $56,516. In fact, New Hampshire has the highest median income in the country ($75,675) followed by Alaska ($75,112) and Maryland ($73,594). Maine and Rhode Island have median incomes that are slightly below the national average. These medians, however, mask the distribution of incomes within these states, which warrants further exploration.

FIGURE 9

Median Household Income and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Negatively Correlated

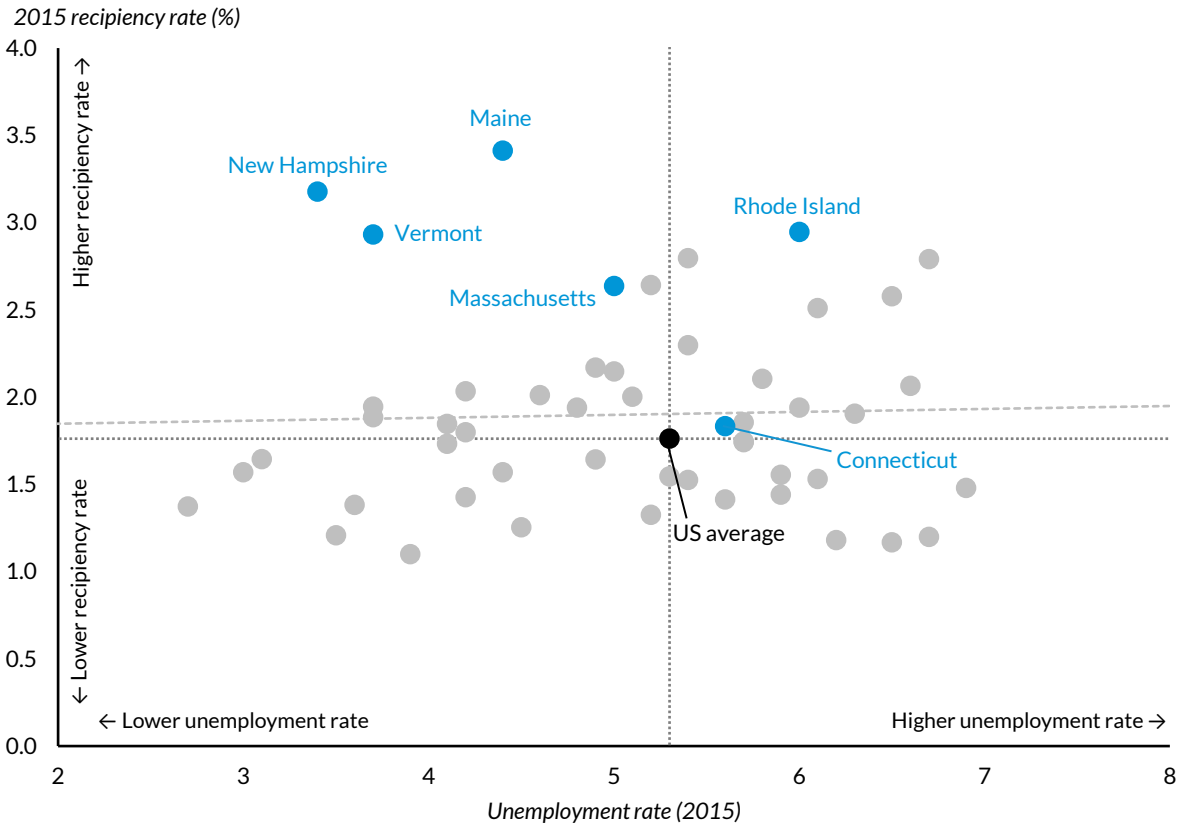


Source: Social Security Administration, 2016; US Census Bureau, 2016; US Census Bureau, 2015.

In 2015, the unemployment rate in Maine, Massachusetts, New Hampshire, and Vermont was below the national average of 5.3 percent. The unemployment rate was slightly higher than the national average in Rhode Island and Connecticut, but a strong relationship does not appear to exist between the recipiency rate and unemployment rate in 2015.

FIGURE 10

The Unemployment Rate and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Not Strongly Correlated



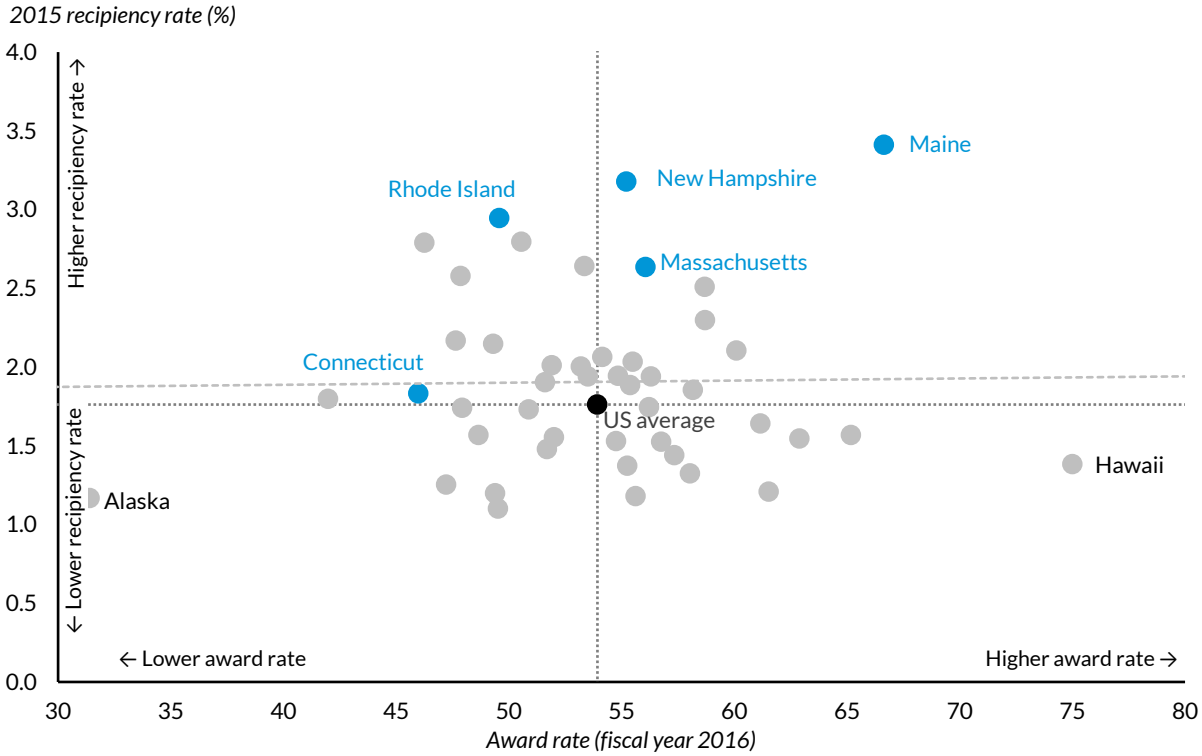
Source: Social Security Administration, 2016; Bureau of Labor Statistics, 2016; US Census Bureau, 2015.

Program Practice

Although DI is administered at the state level following federal rules, states vary in the share of people who are awarded benefits and those who are denied benefits (at least initially; applicants can appeal a rejection). But systematic differences in award rates in the New England states are not evident. In 2015, about 54 percent of applicants were awarded benefits nationally; in four New England states (no data were available for Vermont for this period), the award rate ranged from 45 to 60 percent, right around the national average, while the award rate in Maine was 67 percent, second only to Hawaii.

FIGURE 11

The Social Security Disability Insurance Award Rate and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Not Strongly Correlated



Source: Social Security Administration, 2016, 2017; US Census Bureau, 2015.
Notes: Average awards rate is the unweighted average of states. Data are unavailable for Idaho, New Jersey, South Dakota, Vermont, and Wyoming.

Summary of Non-Health-Related Factors

The evidence suggests that demographics play a large role in shaping who and where people receive DI benefits, both for the overall DI participation rate (as the literature suggests) and for mental disorders specifically. Educational attainment and median income, however, do not appear to be big factors explaining the mental disorder recipiency rate. But do health status, health insurance, and access to

mental health services affect the DI recipiency rate for mental disorders? The next few sections explore those possibilities and raise questions for future research.

Health-Related Factors

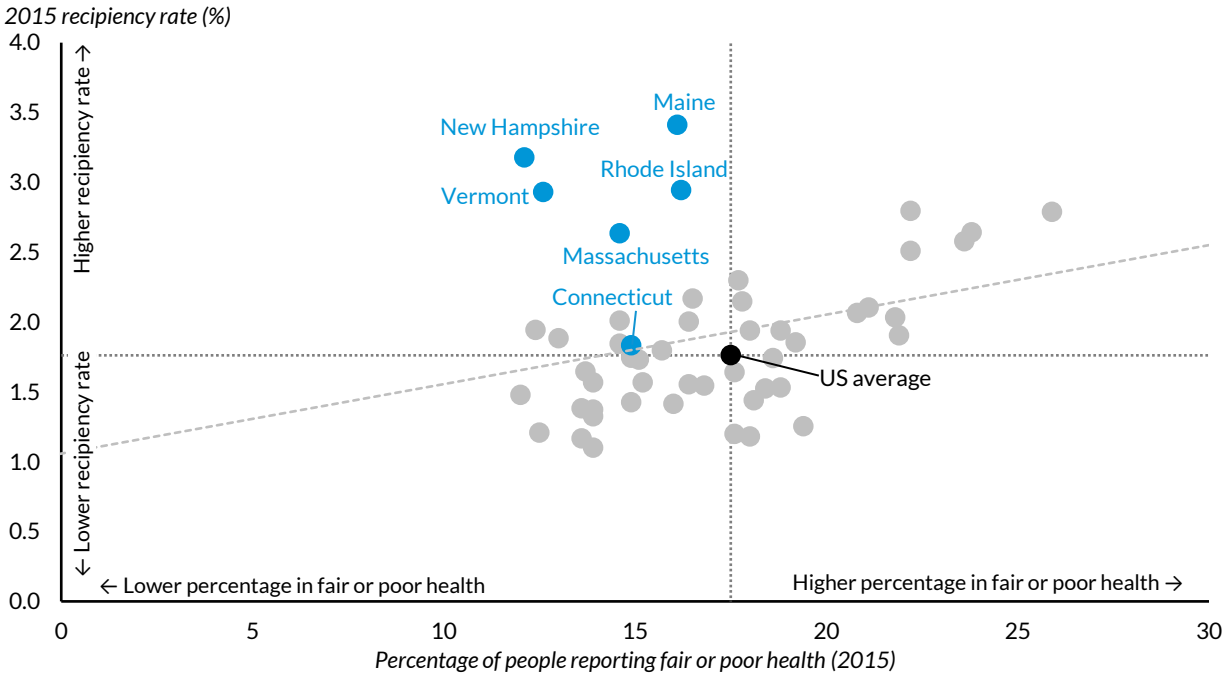
Although demographics, economics, and Social Security Administration policy appear to play important roles in the DI recipiency rate, health status and access to the health care system may also play a large role in who receives benefits and participates in the DI program.

Health Status

Naturally, health status is important when considering DI participation. A smaller share of people in the New England states reported having fair or poor health in 2015 relative to the national average. In New Hampshire, 12.1 percent of people report having fair or poor health compared with 17.5 percent of the nation overall. In Vermont, that share was 12.6 percent, and it was 14.6 percent in Massachusetts. Overall, by this measure of health status, there is slight positive (and statistically significant) relationship between poor health and DI recipiency, but the New England states seem to buck this trend by having higher participation and better health.

FIGURE 12

The Percentage of People Reporting Fair or Poor Health and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Positively Correlated

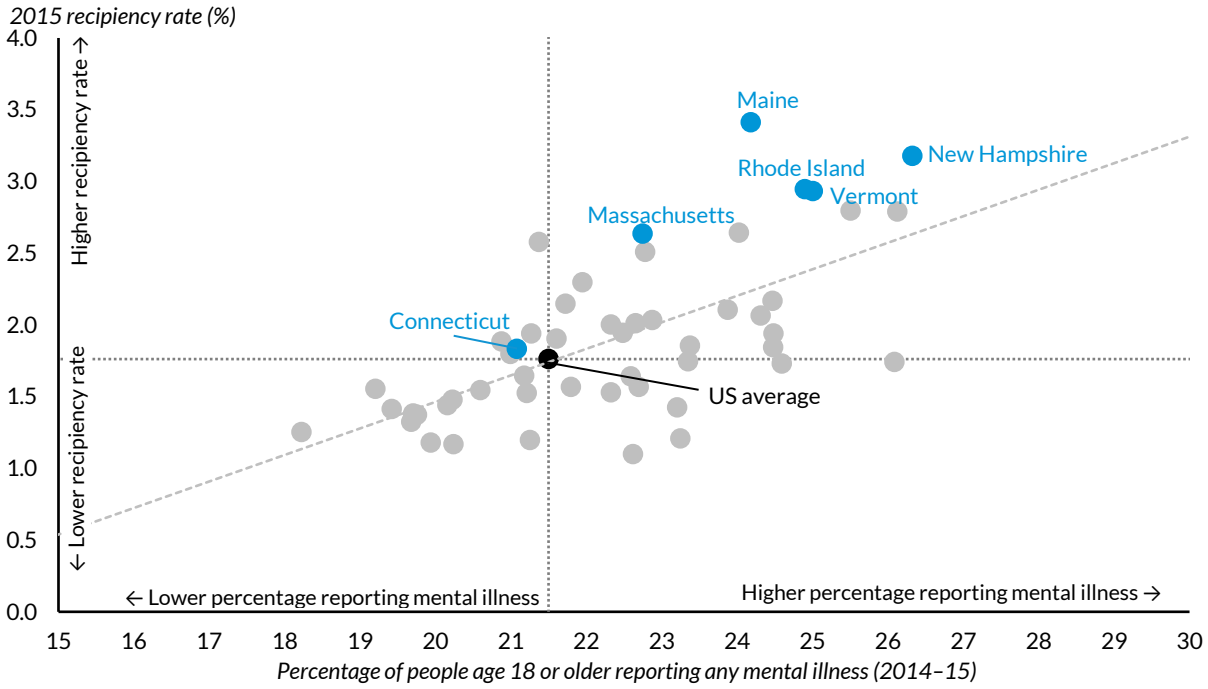


Source: Social Security Administration, 2016; Henry J. Kaiser Family Foundation, 2015; US Census Bureau, 2015.

If poor health status is positively correlated with DI recipiency, we might expect an indicator of mental health status to be even more strongly correlated. Data from the 2014–15 National Survey on Drug Use and Health show a strong positive relationship between (per capita) reports of any mental illness and serious mental illness, and the share of people on DI because of mental disorders (see appendix A for specific definitions of "any mental illness" and "serious mental illness"). In 2014–15, 26 percent of people in New Hampshire reported having any mental illness (the highest percentage in the nation). Vermont ranked 5th with 25 percent, Rhode Island 6th with 25 percent, and Maine 12th with 24 percent. Perhaps unsurprisingly, a strong and statistically significant positive relationship exists overall between mental illness status and DI recipiency for mental disorders.

FIGURE 13

The Percentage of People Reporting Any Mental Illness and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Positively Correlated



Source: Social Security Administration, 2016; Substance Abuse and Mental Health Services Administration, 2015; US Census Bureau, 2015.

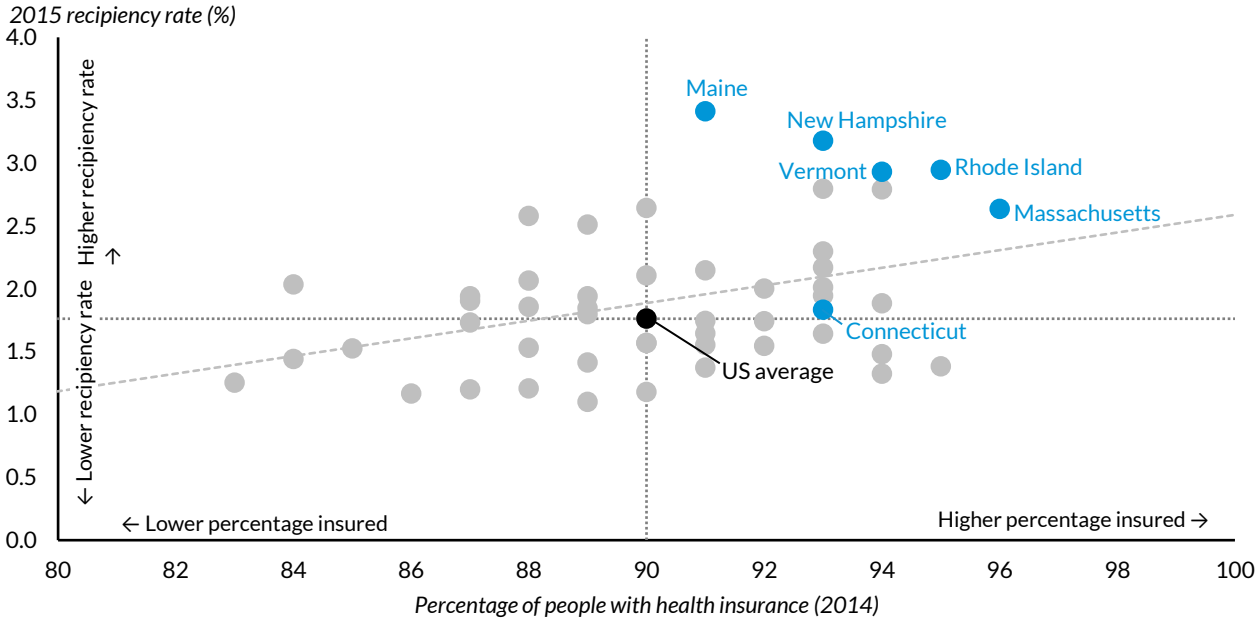
Health Insurance

The higher rates of mental illness in New England may reflect a greater awareness of mental illness and a willingness to report it to surveys and health practitioners. If so, then more access to healthcare providers may lead to more care. That, however, does not explain why more care would translate into greater participation in DI.

New England states have significantly higher health insurance rates than do other parts of the country. Massachusetts and Rhode Island have the highest insurance rates in the country, with Vermont only slightly behind. People in these states have higher-than-average employer-provided health insurance and about average coverage through Medicaid and Medicare (DI recipients are eligible for Medicare coverage after a two-year waiting period). Overall, a strong positive relationship seems to exist between the recipiency rate and the health insurance rate. Access to the health care system may not resolve a person's "substantial impairment" that would preclude them from obtaining DI benefits, but such access may instead connect them with services and programs that would lead them to the DI program (and, ultimately, after a two-year waiting period, to health services through Medicare).

FIGURE 14

The Health Insurance Rate and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Positively Correlated



Source: Social Security Administration, 2016; Henry J. Kaiser Family Foundation, 2014; US Census Bureau, 2015.

Drug Use and Treatment

Manchester and Tweed (2015) posited that one of the reasons for the higher prevalence of people receiving DI benefits for mental disorders in Vermont is because of rising opioid addiction. Between 1999 and 2002, 85 people in Vermont died from opiate overdoses; between 2009 and 2012, 182 people died from such overdoses (Borofsky, Bowse, and Davis 2013). Across the country, from 1999 to 2015, more than 183,000 people have died from overdoses related to prescription opioid drugs.[2]

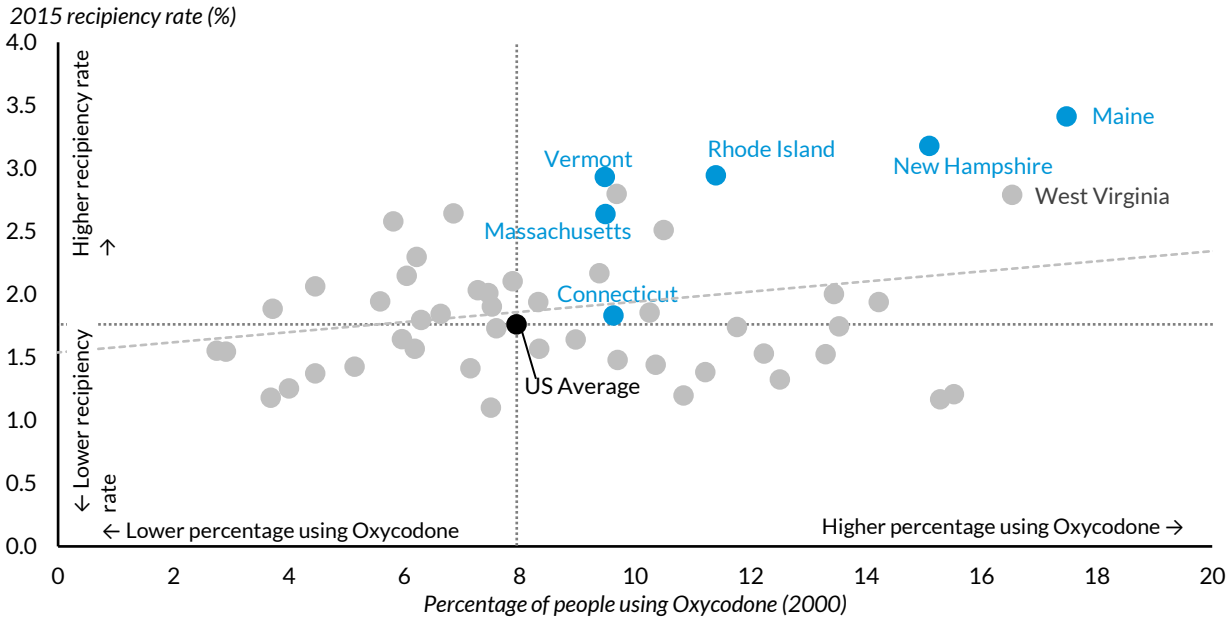
Illicit drug use in New England is significant. In 2010–11, about 3.3 percent of people nationwide age 12 or older reported using illicit drugs other than marijuana in the past month. In Rhode Island and

Vermont, 4.8 and 4.5 percent of people age 12 or older, respectively reported using such drugs, the highest rates in the nation. New Hampshire ranked 7th in the nation, Connecticut 22nd, Massachusetts 24th, and Maine 30th (see table 6 of SAMHSA [2011]).

Estimates are consistent (though slightly different) for oxycodone use. (These data are from 2000 and published in Curtis et al. [2006], so they are out of date and should be therefore used with caution. The data represent claims for "controlled-release oxycodone" and are expressed as claims per 1,000 total claims.) Relative to the DI mental disorder recipiency rate, a positive relationship exists nationally between oxycodone use and mental disorders, though it is statistically weak (significant at the 10 percent level). When viewed together, Maine and New Hampshire (and West Virginia) are clear outliers.

FIGURE 15

The Percentage of People Using Oxycodone and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Positively Correlated



Source: Social Security Administration, 2016; Curtis et al. (2006); US Census Bureau, 2015.

Given the current national discussion about use and abuse of opioids, the relationship between opioid use and DI participation for reasons of mental disorders seems warranted. In their analysis of the high prevalence of DI participation in New England states, Manchester and Tweed (2015) document an increasing use of opiates and treatment for opiate abuse in Vermont. They note that "many individuals suffering from substance abuse experience an onset or worsening of one or more mental disorders ... Mental disorders most commonly associated with substance abuse are schizophrenia and bipolar, depressive, anxiety, conduct, and personality disorders" (13). Rising rates of opioid use in these states could result from DI participation or cause DI participation, or the rates could have little to no causal relationship to DI and simply be an incidental finding. The evidence presented here suggests a small and

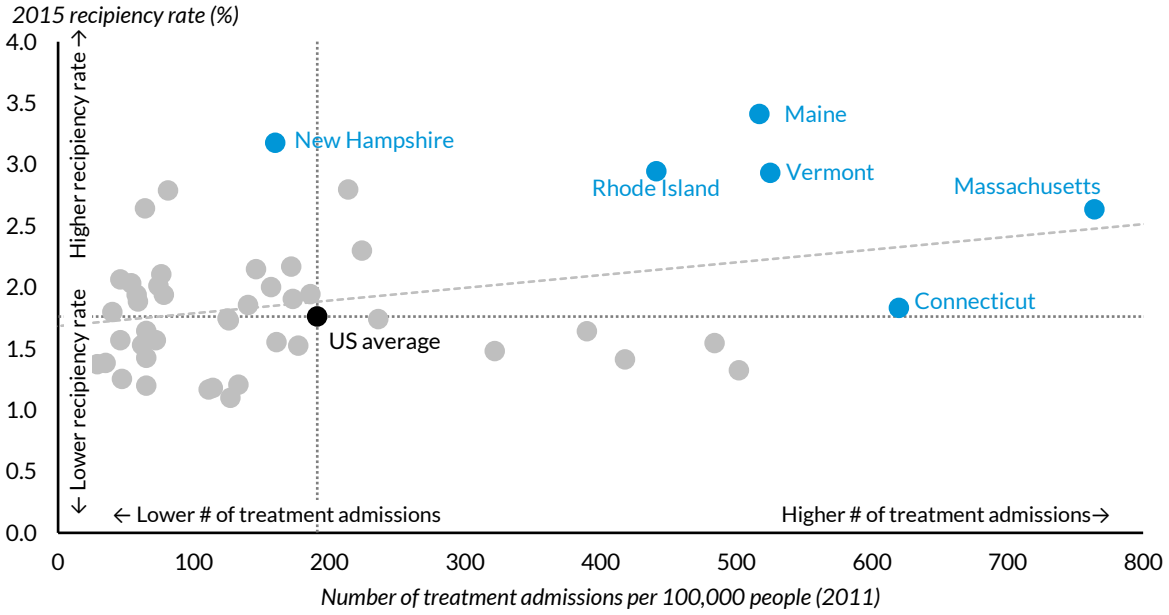
weakly positive relationship between opioid use and DI participation, but better data and further study are warranted.

In response to the opioid epidemic, treatment for opiates increased in many states across the country. In New England specifically, Vermont Governor Peter Shumlin announced in his January 2014 State of the State speech that "treatment for all opiates statewide increased more than 770 percent between 2000 and 2012."[3] The top four states with the most heroin and nonheroin treatment admissions in 2011 (the latest data available) were all in New England: Massachusetts, Connecticut, Vermont, and Maine. In Massachusetts, there were 764 treatment admissions per 100,000 state residents in that year. There were more admissions in those top four states (2,426) in 2011 than in the bottom 28 states combined.

A clear, positive relationship exists between the number of treatment admissions and people on DI for mental disorders. Four of the New England states sit far to the right of the US average in figure 16. Connecticut had more admissions (620 per 100,000) than all but one state in 2011, but its mental disorder recipiency rate is close to the national average. New Hampshire, by comparison, has the second-highest recipiency rate, but its number of treatment admissions (160 per 100,000) is slightly less than the national average.

FIGURE 16

Treatment Admissions for Opiate Use and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Positively Correlated



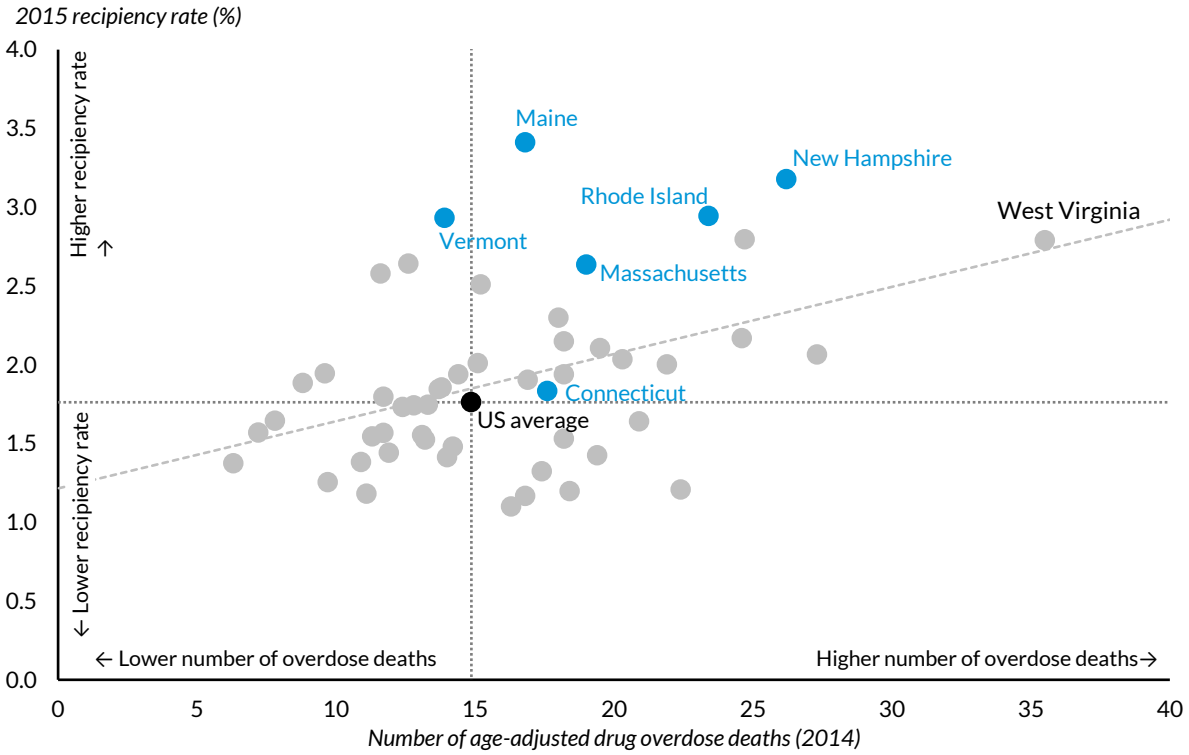
Source: Social Security Administration, 2016; Substance Abuse and Mental Health Services Administration, 2011; US Census Bureau, 2015.
Notes: Average estimate is unweighted average of states. Data are unavailable for Alabama, Georgia, Idaho, and Mississippi.

Again, this is not to argue that higher treatment for illicit drugs is causing participation in the DI program (or vice versa) but rather to point out that there does appear to be some correlation between the two.

Consistent with drug and alcohol treatment admissions, many of the New England states also have a higher-than-average number of overdose deaths. Opioids (both prescription and illicit) are the main driver of drug overdose deaths, with such deaths quadrupling since 1999.[4] That there exists a positive correlation with the recipiency rate is consistent with the previous evidence but again does not point to a single explanation or causal direction.

FIGURE 17

Drug Overdose Deaths and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Positively Correlated



Sources: Social Security Administration, 2016; Centers for Disease Control and Prevention, 2014; US Census Bureau, 2015.

The Bureau of Labor Statistics calculates a "location quotient" for all occupations, which shows the concentration of a specific occupation in an area relative to the national average. Specifically, the Bureau of Labor Statistics defines the location quotient as:

> the ratio of the area concentration of occupational employment to the national average concentration. A location quotient greater than one indicates the occupation has a higher share

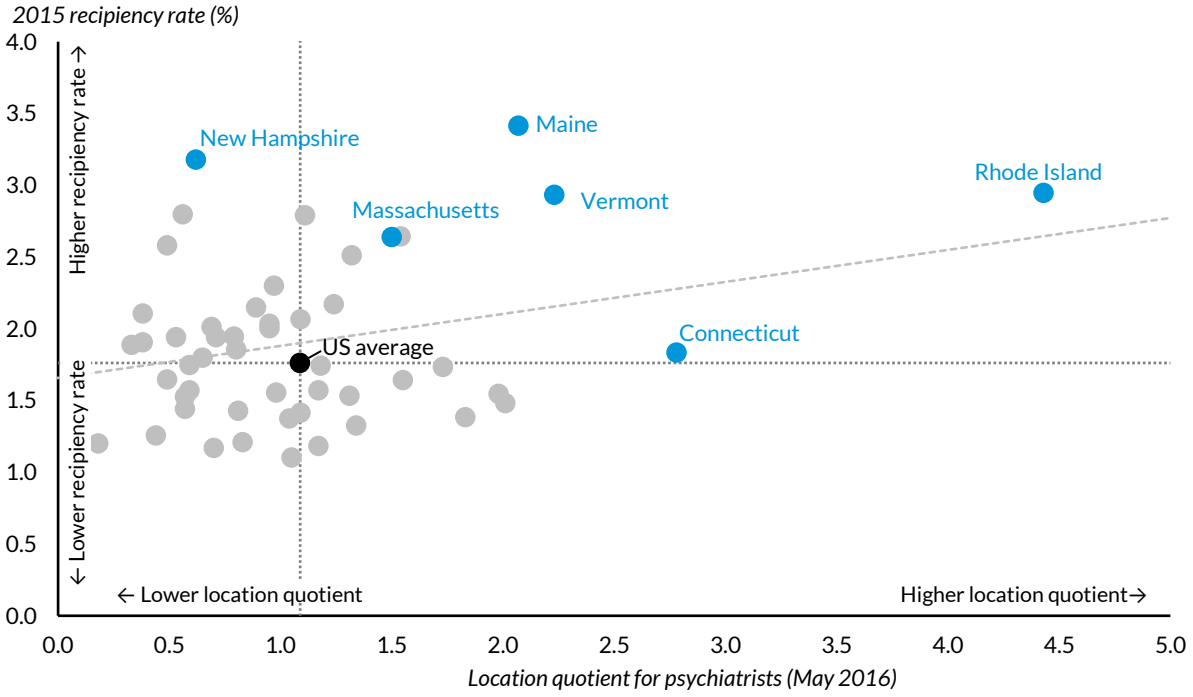
of employment than average, and a location quotient less than one indicates the occupation is less prevalent in the area than average.[5]

Rhode Island, Connecticut, Vermont, and Maine have the highest location quotients for psychiatrists in 2016, and these are again positively correlated with the recipiency rate. That positive correlation does not persist, however, when the New England states are excluded from the sample; instead, the relationship does not significantly differ from zero.

Perhaps it is openness around mental health (and drug use) and access to health and mental health providers in New England states that leads to more and better diagnosis of mental health issues. But an open question remains: if median incomes are higher and unemployment is lower, why is the DI recipiency rate higher in these states? Recall that to be eligible for DI, an applicant must have a "substantial" impairment that prevents them from working and that is expected to last at least 12 months or lead to death. Thus, not only does an individual need to have a mental illness, but it needs to be severe enough to prevent them from working. One explanation may be found in the distribution of incomes and employment that medians and per capita measures are masking; further research is certainly needed.

FIGURE 18

The Psychiatrist Location Quotient and the Percentage of People Receiving Social Security Disability Insurance Because of Mental Disorders Are Positively Correlated



Sources: Social Security Administration, 2016; Bureau of Labor Statistics, 2016; US Census Bureau, 2015.

Summary of Health-Related Factors

This section has explored the relationship between the DI recipiency rate for mental disorders and illicit drug use, treatment, overdose deaths, and access to the health care system. People in New England appear to have slightly better health and about average mental health, but their rates of drug use and treatment and their number of deaths appear to be much higher than those of people in other states. At the same time, the health insurance rate among people in New England is much higher, and they have greater access to psychiatric care.

Conclusion

This brief builds on existing evidence about the characteristics of people who receive DI and focuses on mental disorders as a specific reason for benefit receipt. Reflecting the existing research, the evidence shown here supports the idea that demographics play a large and important role in who receives DI. For mental disorders specifically, there may also be interactions between health status, health insurance, and access to health care.

For those who desire a slightly more sophisticated treatment, table 2 summarizes the one-to-one correlates with DI recipiency for mental disorders and all diagnoses (each row shows the coefficient estimate from a simple regression of the characteristic variable against the recipiency rate for mental disorders or all diagnoses; the t-statistic for statistically significant results at the 95 percent confidence level are marked with an asterisk). Not only does the table provide some quantities for the discussion above, it importantly shows that race, health insurance, the concentration of psychiatrists (i.e., the location quotient), and drug and alcohol treatment admissions are statistically significant (marked with an asterisk) for only the mental disorders recipiency rate.

New England states tend to have older, whiter, and richer populations. Consequently, the question remains as to why the recipiency rate of DI for mental disorders is so much higher for these states than for the rest of the country. At least some of the evidence presented here suggests that access to the health care system, including the treatment it affords and the connection with services it provides, may help people not only identify their illnesses but also get in contact with the DI program and other services. Further exploration of those factors and others, as well as the distribution of those factors, may be especially important to understanding the mechanisms by which people apply for and participate in DI.

It is unclear whether *causation* exists among these factors and, if it does, in which direction that causality would run. On one hand, people may seek services for mental illness or drug use, and those interactions with the public sector may lead them to the DI program. On the other hand, people may receive DI for mental disorders and, as part of their health care, use or abuse opioid drugs.

TABLE 2

Regression Results of Disorder Type on Separate Explanatory Variables

	Mental Disorders				All Diagnoses			
Dependent variable	Coef.	Std. error	t-statistic	# of obs.	Coef.	Std. error	t-statistic	# of obs.
Race (% white)	1.329	0.561	2.366*	51	2.177	1.659	1.312	51
Rural status	0.023	0.004	5.299*	51	0.069	0.012	5.924*	51
Median age	0.186	0.039	4.772*	51	0.459	0.117	3.932*	51
Educational attainment	-3.077	1.362	-2.259*	51	-18.832	3.061	-6.152*	51
Median household income ($ thousands)	-0.022	0.008	-2.637*	51	-0.121	0.018	-6.779*	51
Unemployment rate	0.018	0.073	0.239	51	0.393	0.202	1.950	51
Disability insurance award rates	0.004	0.012	0.310	46	-0.001	0.036	-0.017	46
Self-reported health status	0.050	0.023	2.198*	51	0.332	0.048	6.864*	51
Mental illness (age 18+)	0.185	0.031	5.992*	51	0.451	0.096	4.695*	51
Health insurance rates	7.039	2.402	2.930*	51	4.424	7.389	0.599	51
Oxycodone use	0.040	0.021	1.922	51	0.086	0.060	1.430	51
Drug and alcohol treatment admissions	0.001	0.000	2.319*	47	0.001	0.001	0.469	47
Drug overdose deaths	0.043	0.013	3.320*	51	0.119	0.037	3.232*	51
Concentration of psychiatrists	0.231	0.107	2.154*	50	0.087	0.319	0.274	50

Note: Coef. = coefficient; obs. = observations; std. = standard. This table represents the results from 28 separate regressions; the results are not from a single regression. Mental disorders are measured as the recipiency rate in 2015; all other variables measured as mentioned in the text and described in more detail in appendix A.
* $p \leq 0.05$.

Nearly half of Americans will develop at least one mental illness at some point in his or her life (Kessler et al. 2005). Yet the service system responsible for helping those with mental illness is fragmented and uncoordinated. How that system interacts with the DI program is a link worth continued exploration. Perhaps states in New England approach mental illness services in a different way. This paper concludes with this passage from Aron, Honberg, and Duckworth (2009) about the challenges of mental illness and the lack of care.

> Anyone living with a serious mental illness knows that recovery can take many years. The milestones are familiar: the onset of symptoms, an initial diagnosis, an *accurate* diagnosis, beginning treatment, and, hopefully, effective evidence-based treatments. Tragically, too many people are never diagnosed or accurately diagnosed, and many never receive effective treatments.
>
> The data are staggering: one study found that 60 percent of people with a mental disorder received no services in the preceding year; another revealed that the time between symptom onset and receiving any type of care ranged from 6 to 23 years. The situation is even worse for traditionally underserved groups, such as people living in rural or frontier areas, the elderly, racial and ethnic minorities, and those with low incomes or without insurance.

Appendix A. Data Sources and Descriptions

Number of DI participants by state and diagnostic group. Data come from multiple years of the *Annual Statistical Report on the Social Security Disability Insurance Program*, published annually by the Social Security Administration. See specifically "Table 10: Number, by state or other area and diagnostic group," as well as reports from 2001 through 2014, in SSA (2015).

Population. Data come from the US Census Bureau. The population is restricted to the 18-to-65 age group. For data from 2000 to 2010, see "Population and Housing Unit Estimates Datasets," US Census Bureau, accessed June 23, 2017, https://www.census.gov/programs-surveys/popest/data/data-sets.2009.html; for data from 2010 to 2016, see https://www.census.gov/programs-surveys/popest/data/data-sets.html.

Race. Data come from the Current Population Survey via IPUMS (see Flood et al. 2015). I use the percentage of people in each state identified as "white."

Rural status. Data come from the 2010 decennial census via Iowa State University (see "Urban Percentage of the Population for States, Historical," Iowa State University, accessed June 23, 2017, http://www.icip.iastate.edu/tables/population/urban-pct-states). I use the urban percentage of the population for states, historical; converted to rural status (100-x).

Median age. Data come from the Current Population Survey via IPUMS (Flood et al. 2015) for all ages.

Educational attainment. Data come from the Current Population Survey via IPUMS (Flood et al. 2015). I use the share of people ages 18 to 65 with more than a high school degree or equivalent.

Median household income. Data come from the US Census Bureau, Historical Income Tables: Households. For data from 2000 to 2015, see "Historical Income Tables: Households," US Census Bureau, last revised September 13, 2016, accessed June 23, 2017, https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-income-households.html.

Unemployment rate. Data come from the Bureau of Labor Statistics. For data from 2001 to 2015, see "Labor Force Statistics from the Current Population Survey," US Department of Labor, accessed June 23, 2017, https://www.bls.gov/cps/.

SSA award and denial rates. Data come from the Social Security Administration. For Administrative law judge (ALJ) Disposition Data for fiscal year 2016 (for reporting purposes, September 26, 2015, through April 29, 2016, see "ALJ Disposition Data FY 2017," Social Security Administration, accessed June 23, 2017, https://www.ssa.gov/appeals/DataSets/03_ALJ_Disposition_Data.html. SSA reports total dispositions, decisions, awards, and denials for each of 1,800 ALJ hearing offices across the country, designated by location. Those locations were mapped to state names. Although ALJs may work in multiple hearing offices, the data were aggregated at the state level, not by ALJ.

Health status. Data are from the Henry J. Kaiser Family Foundation. I use the percentage of Adults reporting fair or poor health status, and data are based on the Behavioral Risk Factor Surveillance System. For data from 2013 to 2015, see "Percent of Adults Reporting Fair or Poor Health Status," Kaiser Family Foundation, accessed June 23, 2017, http://kff.org/other/state-indicator/percent-of-adults-reporting-fair-or-poor-health-status/.

Mental illness. Data are from the Substance Abuse and Mental Health Services Administration (SAMHSA). I use state estimates of substance use and mental disorders from the 2014–15 NSDUHs [National Survey on Drug use and Health]: 12 or Older. Table 23. Any Mental Illness in the Past Year, by Age Group and State: Estimated Numbers (in Thousands), Annual Averages Based on 2014 and 2015 NSDUHs. Note that "any mental illness" (AMI) is defined as having a diagnosable mental, behavioral, or emotional disorder, other than a developmental or substance use disorder, assessed by the Mental Health Surveillance Study Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition—Research Version—Axis I Disorders, which is based on the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders. I use estimates for the 18-or-older group. For data from 2014 to 2015, see "State Estimates of Substance Use and Mental Disorders from the 2010–2011 NSDUHs: 12 or Older Excel and CSV Tables," Substance Abuse and Mental Health Services Administration, accessed June 23, 2017, http://archive.samhsa.gov/data/NSDUH/2k11State/NSDUHsaeTOC2011.htm.

Mental health spending. Data are from the Henry J. Kaiser Family Foundation. I used the State Mental Health Agency Per Capita Mental Health Services Expenditures from fiscal year 2004 through fiscal year 2013. The reporting period reflects spending in state fiscal years, which vary by state. Data are converted to 2013 CPI-U adjusted dollars. I calculated per capita estimates using the state civilian population. For data from 2004 to 2013, see "State Mental Health Agency (SMHA) Per Capita Mental Health Services Expenditures," Kaiser Family Foundation, accessed June 23, 2017, http://kff.org/other/state-indicator/smha-expenditures-per-capita/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D.

Health insurance. Data are from the Henry J. Kaiser Family Foundation. I used the Health Insurance Coverage of the Total Population. These data are based on the US Census Bureau March Supplement to the Current Population Survey by the Kaiser Commission on Medicaid and the Uninsured. For data from 2013 to 2015, see "Health Insurance Coverage of the Total Population," Kaiser Family Foundation, accessed June 23, 2017, http://kff.org/other/state-indicator/total-population/?currentTimeframe=1&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D.

Oxycodone use. Data are from Curtis et al. (2006). Data values are from 2000 and expressed as number of claims of Controlled-Release Oxycodone (oxycodone is the generic name for oxycontin) per 1,000 total claims in each state.

Illicit drug use. Data are from the Substance Abuse and Mental Health Services Administration (SAMHSA). I use state estimates of substance use and mental disorders from the 2010-2011 NSDUHs [National Survey on Drug use and Health]: 12 or Older. Table 1. Illicit Drug Use in the Past Month, by Age Group and State: Percentages, Annual Averages Based on 2010 and 2011 NSDUHs; and Table 6. Illicit Drug Use Other Than Marijuana in the Past Month, by Age Group and State: Percentages, Annual Averages Based on 2010 and 2011 NSDUHs. For data from 2010 to 2011, see "State Estimates of Substance Use and Mental Disorders from the 2010–2011 NSDUHs: 12 or Older Excel and CSV Tables," Substance Abuse and Mental Health Services Administration, accessed June 23, 2017, http://archive.samhsa.gov/data/NSDUH/2k11State/NSDUHsaeTOC2011.htm.

Treatment. Data are from the Substance Abuse and Mental Health Services Administration (SAMHSA). I use the Treatment Episode Data Set (TEDS), 2001-2011: State Admissions to Substance Abuse Treatment Services. Table 1.6b. Primary heroin admissions, by Census division and State or jurisdiction: 2001-2011; and Table 1.9b. Primary non-heroin opiates/synthetics admissions,1 by Census division and State or jurisdiction: 2001-2011. All data are admissions per 100,000 population age 12 and older and adjusted to per capita rates using population data from the US Census Bureau. Data include substance abuse characteristics of admissions to treatment centers in facilities that report to state administrative data systems; thus, the data may not include all treatment data, but they are a proxy for use of services in different areas of the country. For data from 2001 to 2011, see "Treatment Episode Data Set (TEDS) 2001–2011," Substance Abuse and Mental Health Services Administration, accessed June 23, 2017, https://www.samhsa.gov/data/sites/default/files/TEDS2011St_Web/TEDS2011St_Web/TEDS2011St_Web.pdf.

Drug overdose deaths. Data are from the Centers for Disease Control and Prevention. I use prescription opioid overdose data from 2014 to 2015.

Psychiatrist location quotient. Data are from the Bureau of Labor Statistics, Occupational Employment Statistics, Occupational Employment and Wages, May 2016. I use occupation 29-1066 Psychiatrists: Physicians who diagnose, treat, and help prevent disorders of the mind. See "Occupational Employment and Wages, May 2016," US Department of Labor, accessed March 2017, https://www.bls.gov/oes/current/oes291066.htm. The location quotient is defined as "the ratio of the area concentration of occupational employment to the national average concentration. A location quotient greater than one indicates the occupation has a higher share of employment than average, and a location quotient less than one indicates the occupation is less prevalent in the area than average."

Notes

1. See also Autor and Duggan (2006); Congressional Budget Office (2016); Goss (2014); Liebman (2015); and Pattison and Waldron (2013).
2. Centers for Disease Control and Prevention, "Prescription Opioid Overdose Data," last updated December 16, 2016, accessed June 6, 2017, https://www.cdc.gov/drugoverdose/data/overdose.html.
3. Page 2 of Peter Shumlin, "State of the State Address" (address, Vermont Statehouse, Montpelier, VT, January 8, 2014). http://www.governing.com/topics/politics/gov-vermont-peter-shumlin-state-address.html.
4. Centers for Disease Control and Prevention, "Prescription Opioid Overdose Data," last updated December 16, 2016, accessed June 6, 2017, https://www.cdc.gov/drugoverdose/data/overdose.html.
5. Bureau of Labor Statistics, "Occupational Employment Statistics: Occupational Employment and Wages, May 2016, 29-1066 Psychiatrists," last modified Marc 31, 2017, accessed June 6, 2017. https://www.bls.gov/oes/current/oes291066.htm.

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