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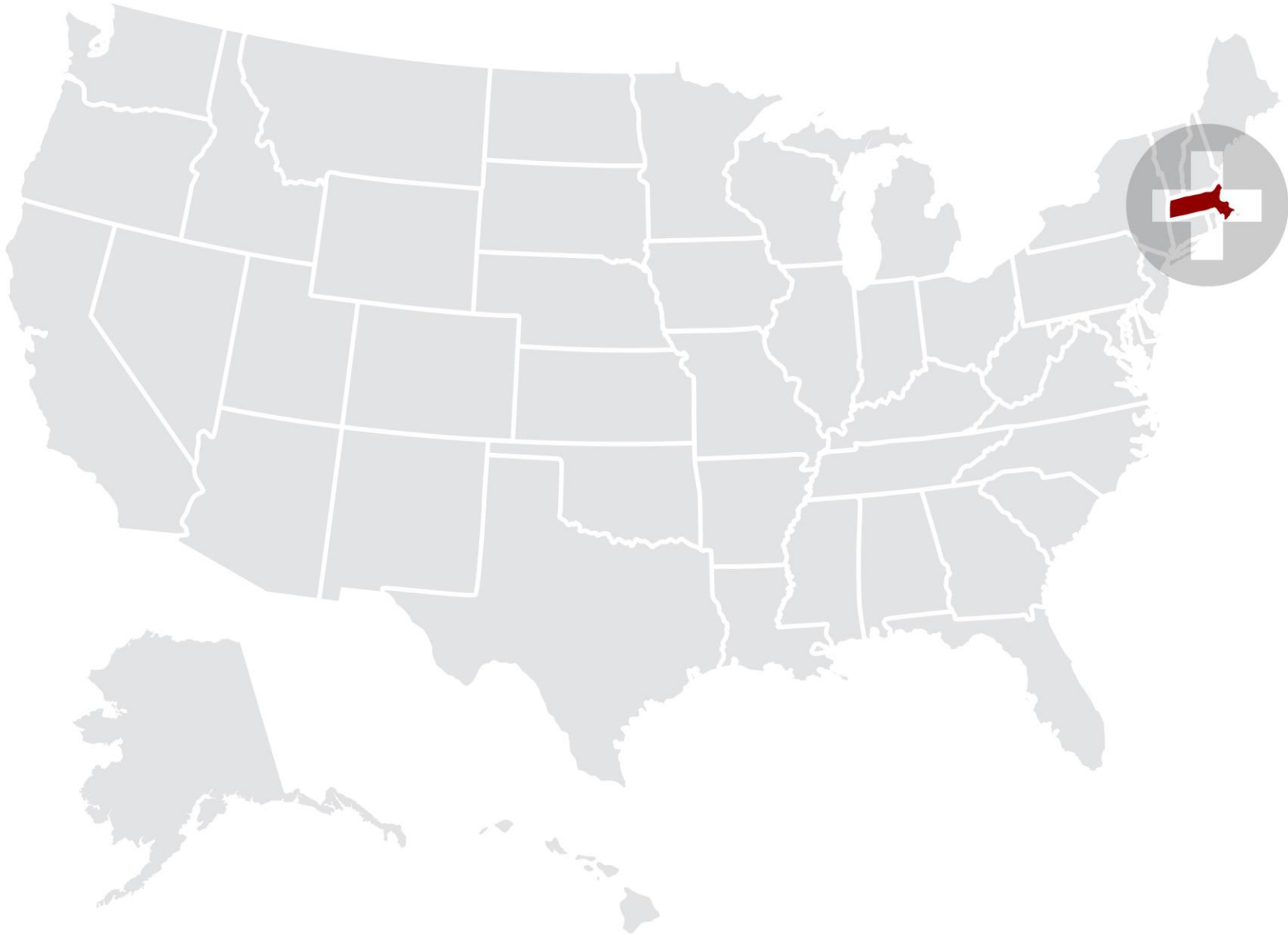
Leonard D. Schaeffer Center
for Health Policy & Economics

**THE COST OF MENTAL ILLNESS:
MASSACHUSETTS FACTS AND FIGURES**

Hanke Heun-Johnson, Michael Menchine, Dana Goldman, Seth Seabury
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MASSACHUSETTS



INTRODUCTION

Improving access to high-quality medical care for patients with behavioral health conditions remains one of the most vexing problems facing the healthcare system in the United States. While Massachusetts' health care system is considered to be among the nation's top regarding access to health care, patients with serious mental health and substance use conditions may find themselves struggling to access care in a fragmented and underfunded system.

This chartbook attempts to quantify the magnitude of the challenges facing Massachusetts in terms of the economic burden associated with mental illness. We describe the size and characteristics of the population with behavioral health challenges and show the impact on the healthcare system based on high rates of hospitalization. We also note the unmet need in terms of mental health care providers, the rates of opioid misuse and overdoses, and discuss the implications for the criminal justice system in Massachusetts.

INTRODUCTION

Key findings include:

- In Massachusetts, patients with hospitalizations for serious mental illness have a relatively long hospital stay duration, which imposes a large cost on the health care system.
- Massachusetts' per capita state mental health agency spending on community-based treatment programs is low relative to the U.S. average.
- Whereas Massachusetts has the highest per capita number of mental health care providers, shortages still exist in certain areas and facilities, particularly in correctional facilities.
- People living with mental illness are more likely to encounter the criminal justice system, resulting in a large number of arrests and incarcerations. The overall annual cost of incarcerating people with serious mental illness in state prisons in Massachusetts reaches almost \$300 million.
- During the past decades, opioid misuse and dependency have increased steadily in the U.S., and even more so in Massachusetts, despite a recent reduction in prescription opioid sales. The increase in substance misuse and dependency has resulted in a large increase in fatal overdoses from opioids and heroin in the last several years.

The data presented in this chartbook are all publicly available and represent the most recent numbers to which we had access.

The data and methods are described in more detail in the appendix that can be found at:

http://healthpolicy.usc.edu/Keck_Schaeffer_Initiative.aspx

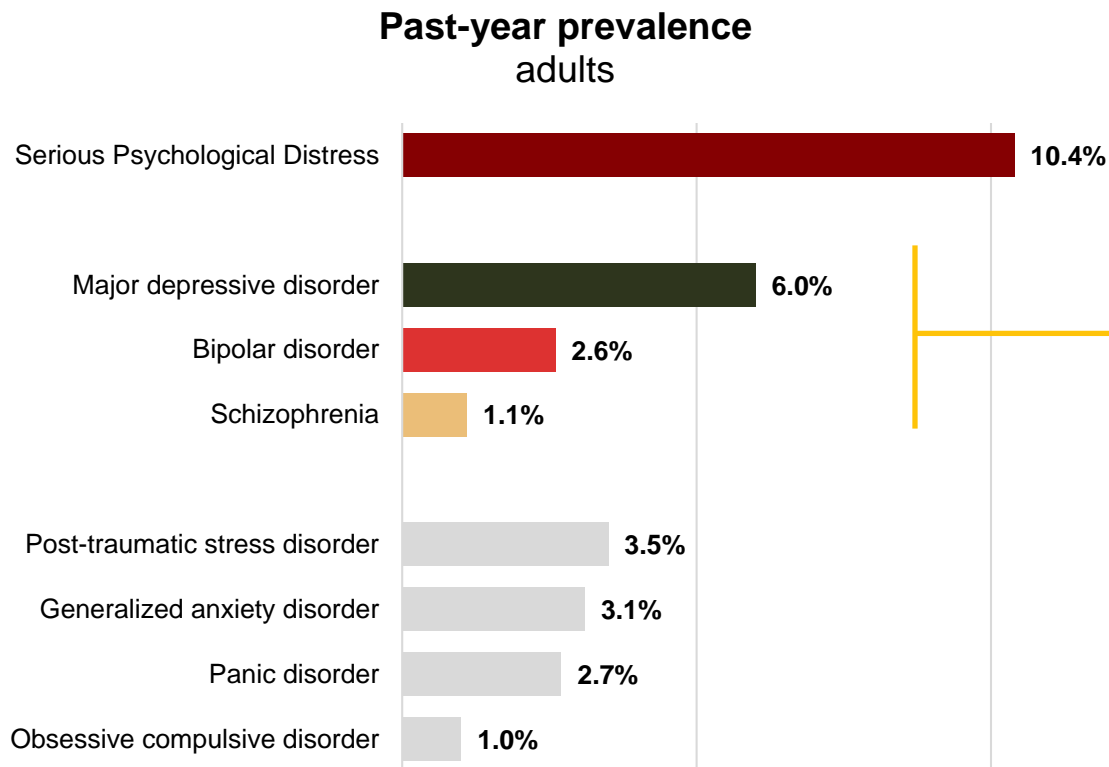
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**QUANTIFYING THE
POPULATION LIVING WITH
MENTAL ILLNESS IN
MASSACHUSETTS AND THE U.S.**

Prevalence of mental illness

UNITED STATES 2015



Many mental health conditions are fairly common in the general population.

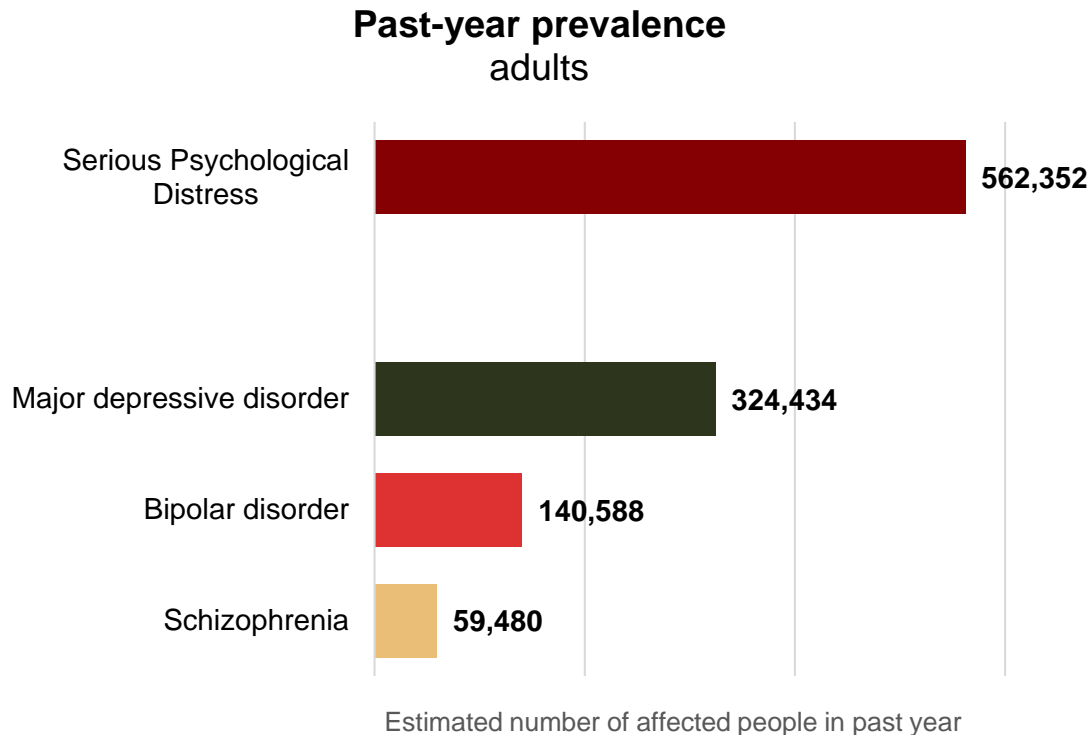
*Whereas any of these conditions can severely limit someone's normal daily activities, three disorders are often labeled as **Serious Mental Illness: major depressive disorder, bipolar disorder and schizophrenia.** These three disorders will be the focus of this chartbook*

NB: Due to symptom overlap, diagnoses of mental illnesses are not mutually exclusive

Source: National Survey on Drug Use and Health (NSDUH) 2015 (SPD), NSDUH Mental Health Surveillance Study 2008-2012 (major depressive disorder) and National Institutes of Mental Health (other conditions – see appendix for original sources)

Estimated number of people living with mental illness

MASSACHUSETTS 2015



We estimate that more than half a million adults in Massachusetts experienced Serious Psychological Distress in the past 12 months.

Note that a patient can receive multiple serious mental illness diagnoses due to a high degree of overlap between mental health conditions.

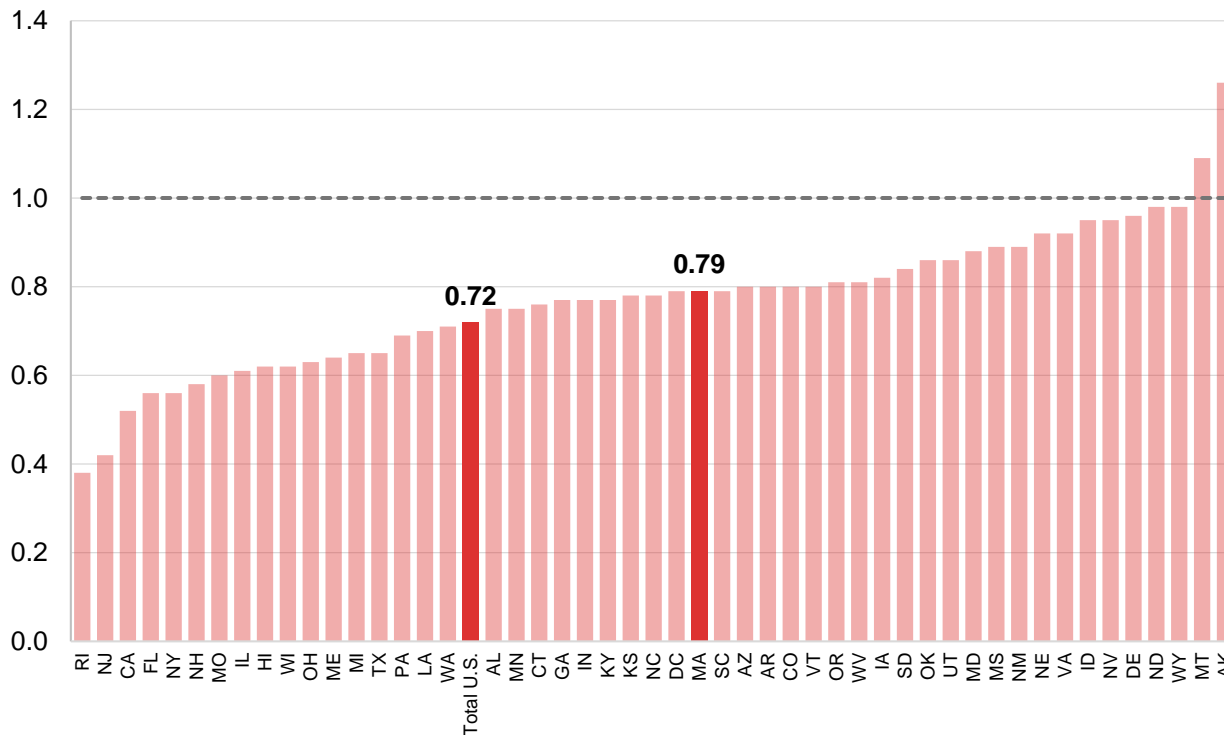
Source: National Institutes of Mental Health, National Survey on Drug Use and Health (NSDUH) 2015, and NSDUH-MHSS 2008-2012.

Estimate of # of people affected using total state population of 5,407,228 adults (18 years and over), Census Bureau data (2015)

Medicaid reimbursement rates to physicians are low

MASSACHUSETTS AND UNITED STATES 2016

Medicaid-to-Medicare fee ratio, 2016



Low reimbursement rates are a disincentive for individual physicians to accept patients with Medicaid coverage and mental health problems. Compared to Medicare fee levels, Medicaid reimbursement rates are low in most states. Although Massachusetts' fee ratio is higher than the U.S. average, Medicaid fees are still below Medicare fees. **This can be a barrier for these patients to obtain access to mental health care.**

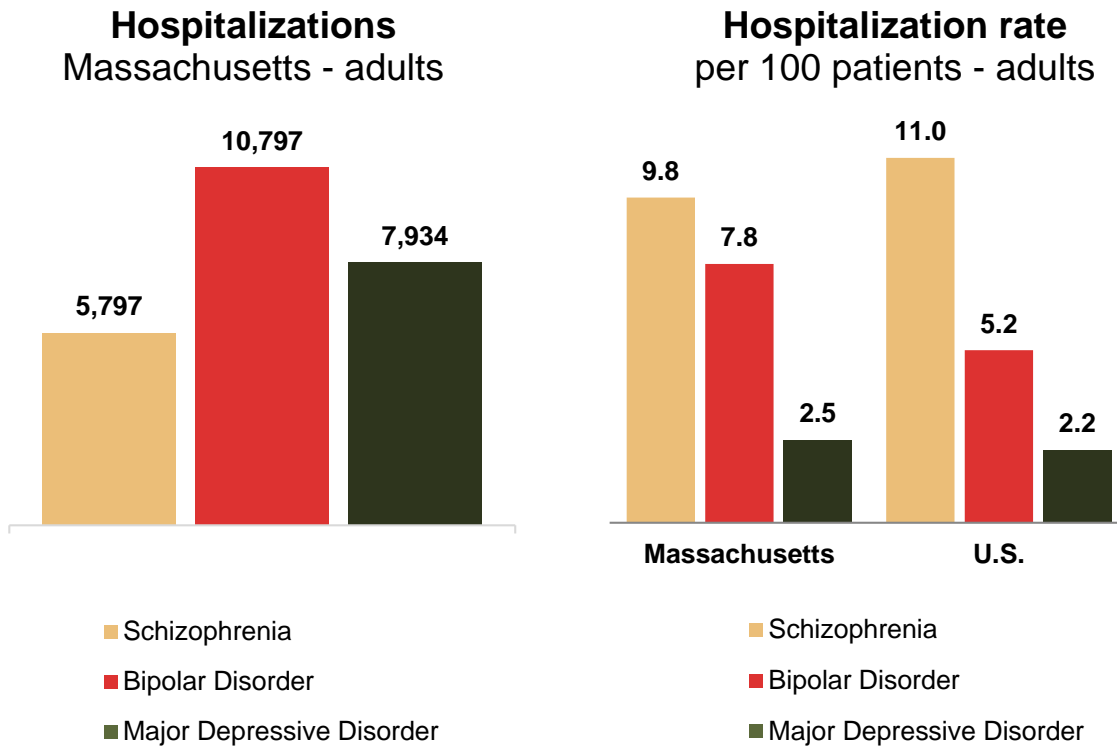
MENTAL HEALTH CARE COVERAGE, UTILIZATION & COSTS

Hospital utilization & costs

For every 100 patients with a serious mental illness, there were approximately 18 hospitalizations in the U.S. and 20 hospitalizations in Massachusetts in 2014. The average length of stay for these hospitalizations is long compared to other hospital stays. Relatively little progress has been made in reducing the length of stay for a serious mental illness over the last decade. This imposes a large financial cost on the health care system and potentially diverts resources away from other sites of care.

Hospitalizations for mental illness

MASSACHUSETTS AND UNITED STATES 2014



In Massachusetts, the number of hospitalizations is highest for adult patients with a principle diagnosis of bipolar disorder. However, patients with schizophrenia have a higher rate of hospitalizations.

The hospitalization rates in Massachusetts for adults with serious mental illness are similar compared to the U.S. average.

3.6% of all hospitalizations in Massachusetts are due to SMI

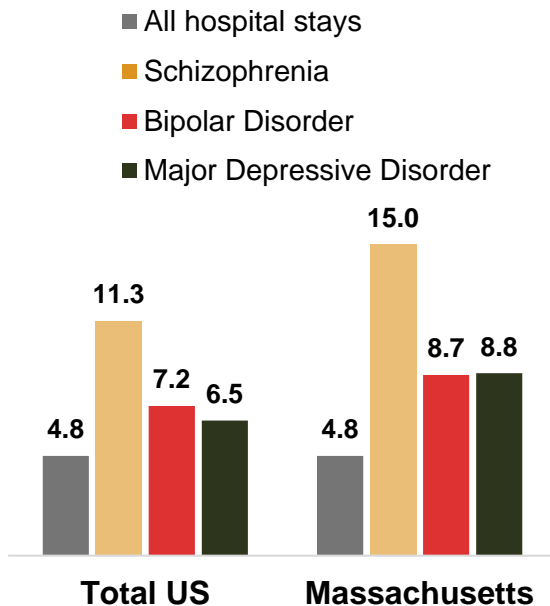
Source: Healthcare Cost and Utilization Project (HCUPnet) 2014

Estimate of hospitalization rate: based on total state population (Census bureau data, 2014) and prevalence estimates reported previously

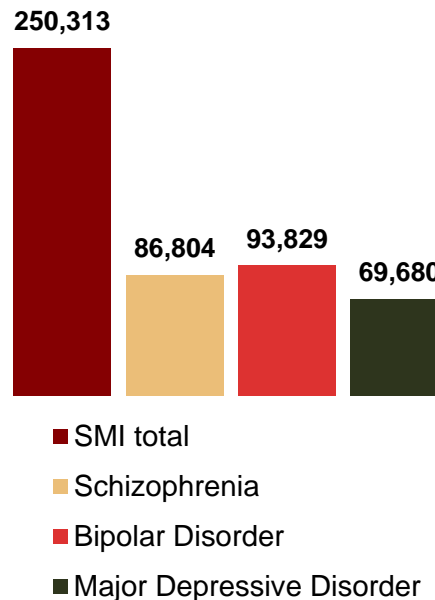
Length of stay for mental illness hospitalizations

MASSACHUSETTS AND UNITED STATES 2014

Average length of hospital stays (days) adults



Total number of hospital days in 2014 Massachusetts - adults



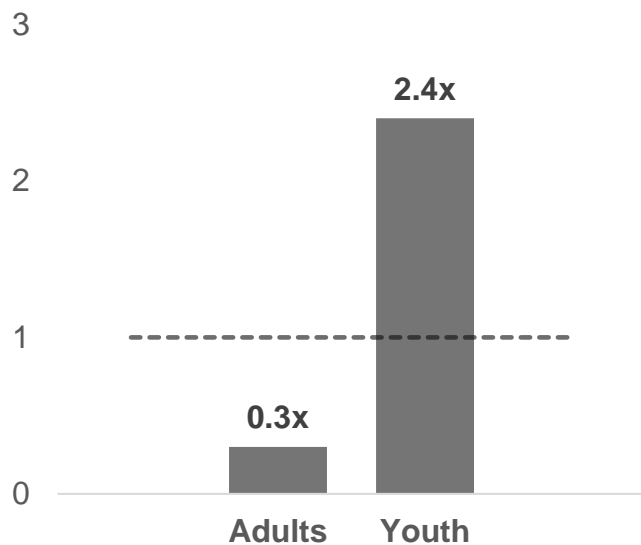
The average hospital stay duration for adult patients with serious mental illness is relatively high in Massachusetts, and compared to all hospital stays, especially for patients diagnosed with schizophrenia.

The total time spent in the hospital by adults with a primary diagnosis of schizophrenia, bipolar disorder or major depressive disorder exceeds a quarter million days each year in Massachusetts.

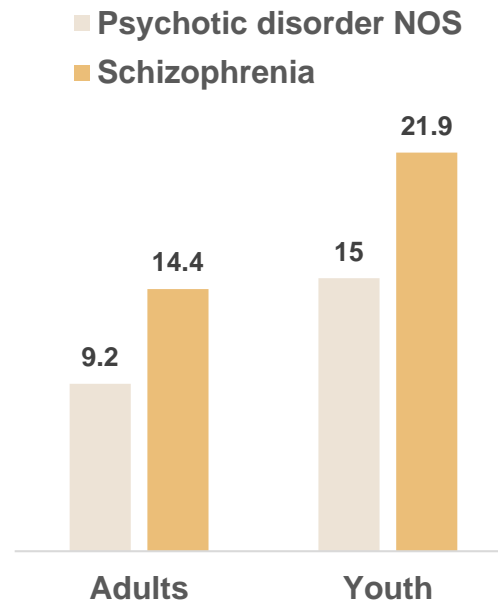
Hospitalizations of young patients with psychosis

MASSACHUSETTS 2014

Number of hospitalizations for **psychotic disorder NOS** relative to **schizophrenia**



Average length of hospital stay (days)

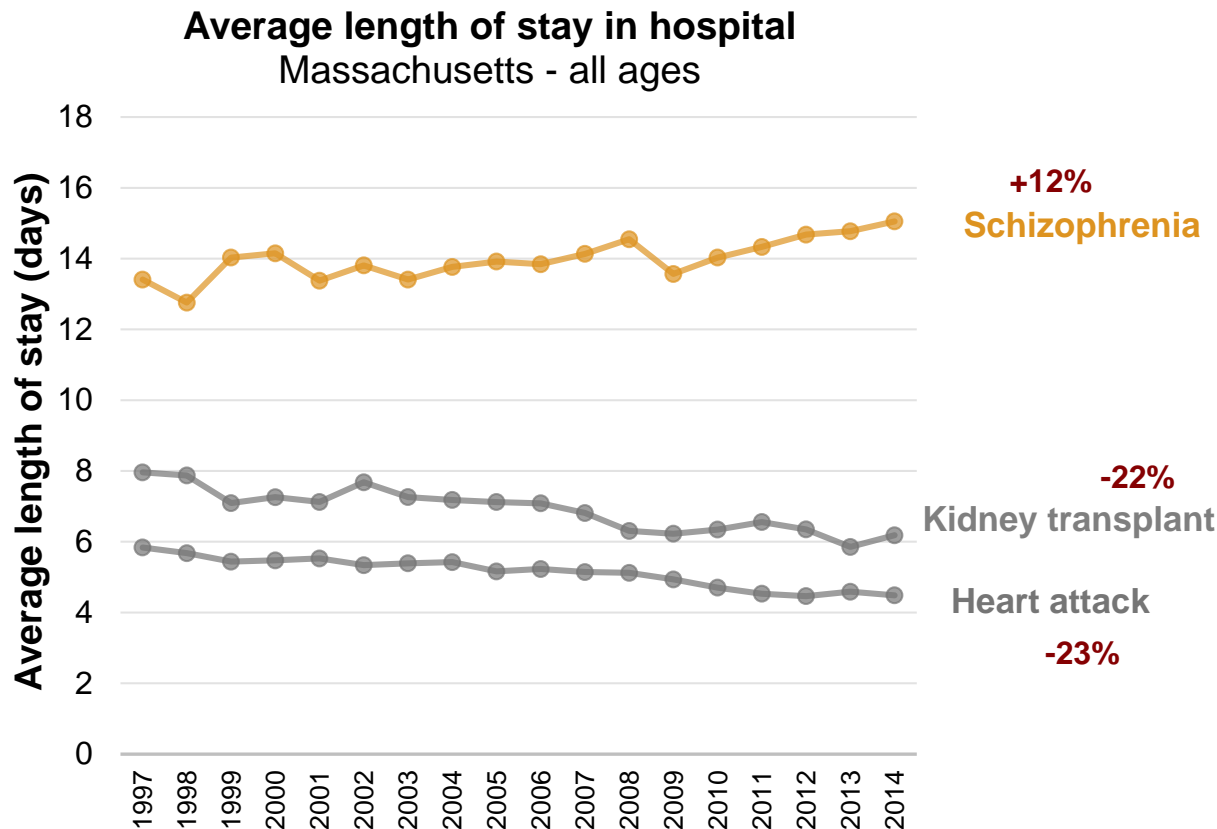


In contrast to in adults, “psychotic disorder, not otherwise specified (NOS)” is diagnosed more often than schizophrenia in the younger population (1-17 years) during hospitalizations, possibly to prevent stigmatization.

Regardless of the primary reason for a hospitalization, the average length of stay for younger people in Massachusetts is approximately one week longer than for adults, illustrating the challenges in treating and establishing an environment with appropriate follow-up care for this especially vulnerable population.

Trends in length of stay for schizophrenia hospitalizations

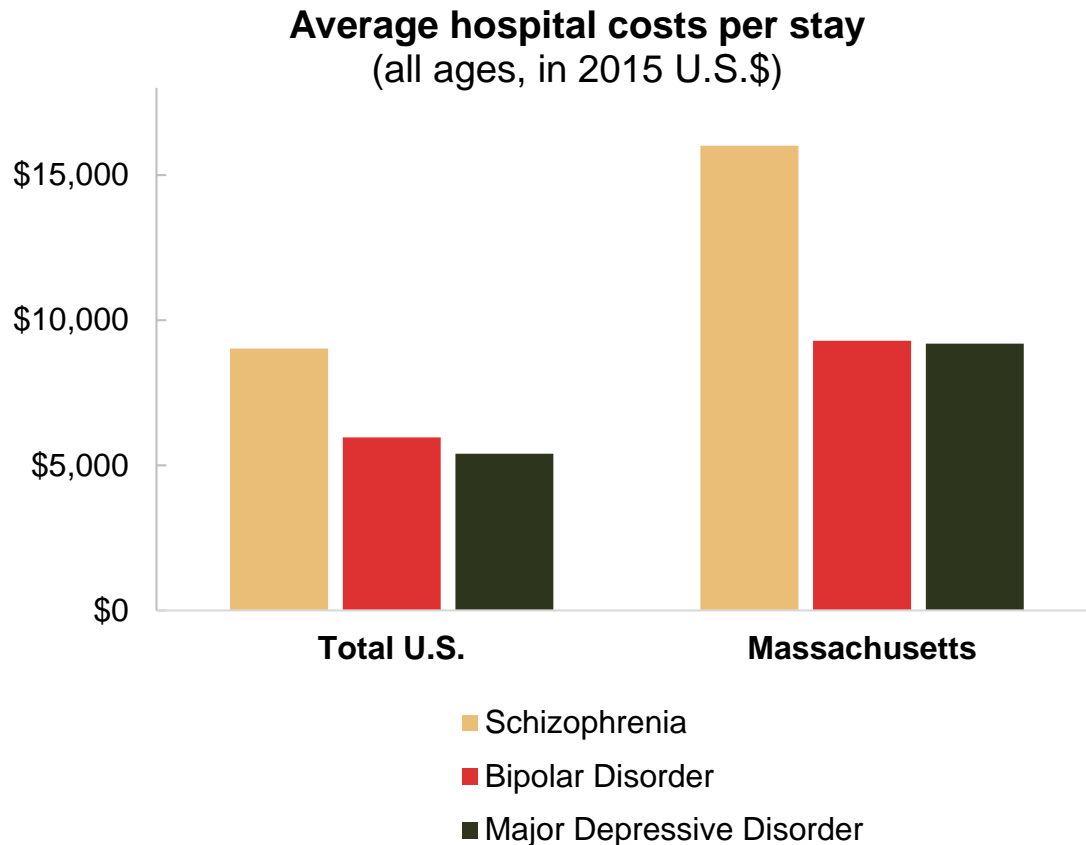
MASSACHUSETTS 1997-2014



The average length of stay for a schizophrenia hospitalization in Massachusetts was longer than those for kidney transplants and heart attacks. Moreover, the average duration for these two other conditions declined by 22% and 23%, respectively, during the last two decades, while for schizophrenia the duration increased by 12%.

Average hospital costs for mental illness hospitalizations

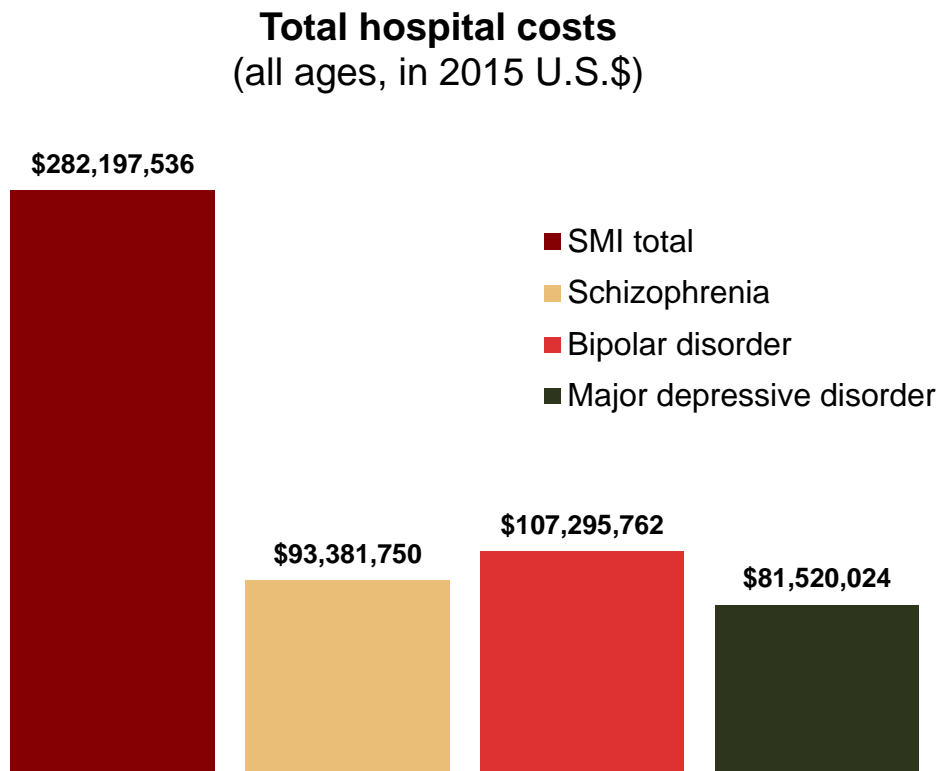
MASSACHUSETTS AND UNITED STATES 2014



*Hospital costs in the U.S. and Massachusetts ranged from \$5,000 to \$16,000 per stay for patients with serious mental illness. This is despite **a general absence of procedures or surgeries** during a hospitalization for symptoms of serious mental illness.*

Total hospital costs for mental illness hospitalizations

MASSACHUSETTS 2014



The total hospital costs in Massachusetts for hospitalizations for serious mental illness exceeded \$250 million in 2014.

MENTAL HEALTH CARE COVERAGE, UTILIZATION & COSTS

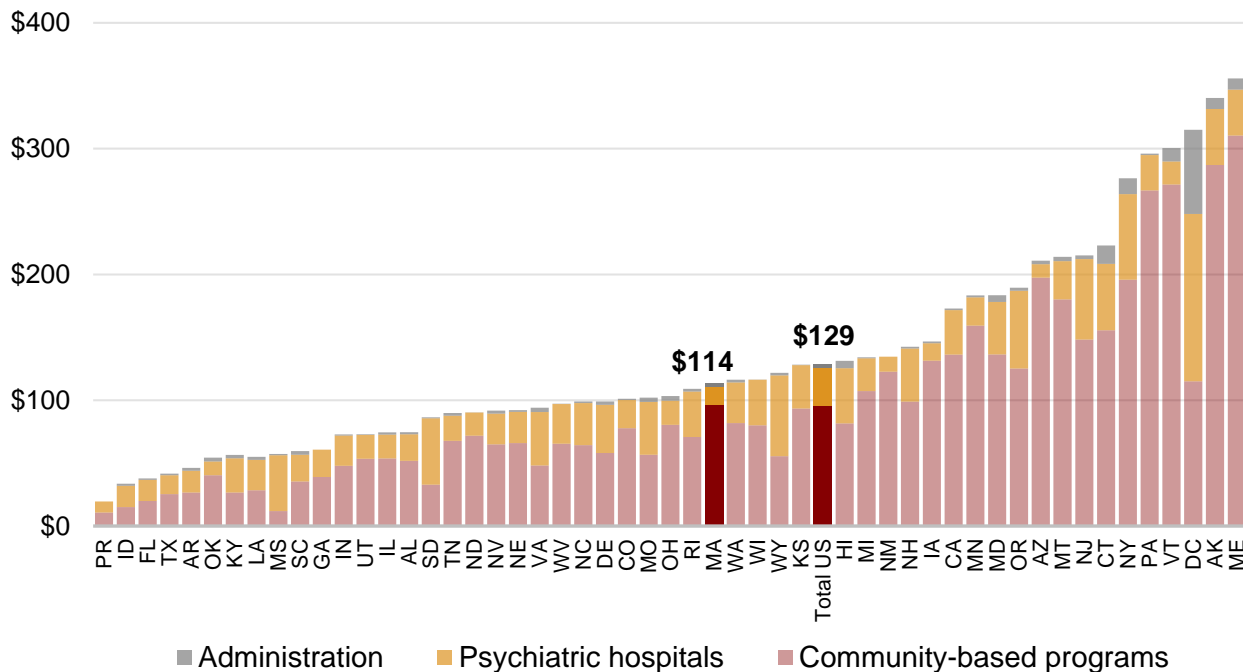
Investment in community-based programs

For several decades, a shift from hospital inpatient care towards community-based clinic outpatient treatment has taken place, as is exemplified by the budget trends of state mental health agencies. On average, approximately 72% of their budgets is now spent on community-based programs, compared to 33% in the early 1980s. Compared to the U.S. average, the Massachusetts' state mental health agency spends a lower total amount per capita, but the amount of spending on community-based programs per capita is similar to the U.S. average.

State Mental Health Agency spending

MASSACHUSETTS AND UNITED STATES 2013

**Per capita
State Mental Health Agency expenditures**
(in 2015 U.S. \$)



Massachusetts' state mental health agency spends a slightly lower per capita amount on mental health services compared to the U.S. average. However, the amount spent on community-based mental health programs is similar to the U.S. average.

Expenditures include (on average):

- 72% Community-based mental health programs funded and/or operated by state mental health agencies
- 26% Mental health services in state psychiatric hospitals
- 2% Administration/training/research/evaluation to support these services

AVAILABILITY OF MENTAL HEALTH CARE PROVIDERS

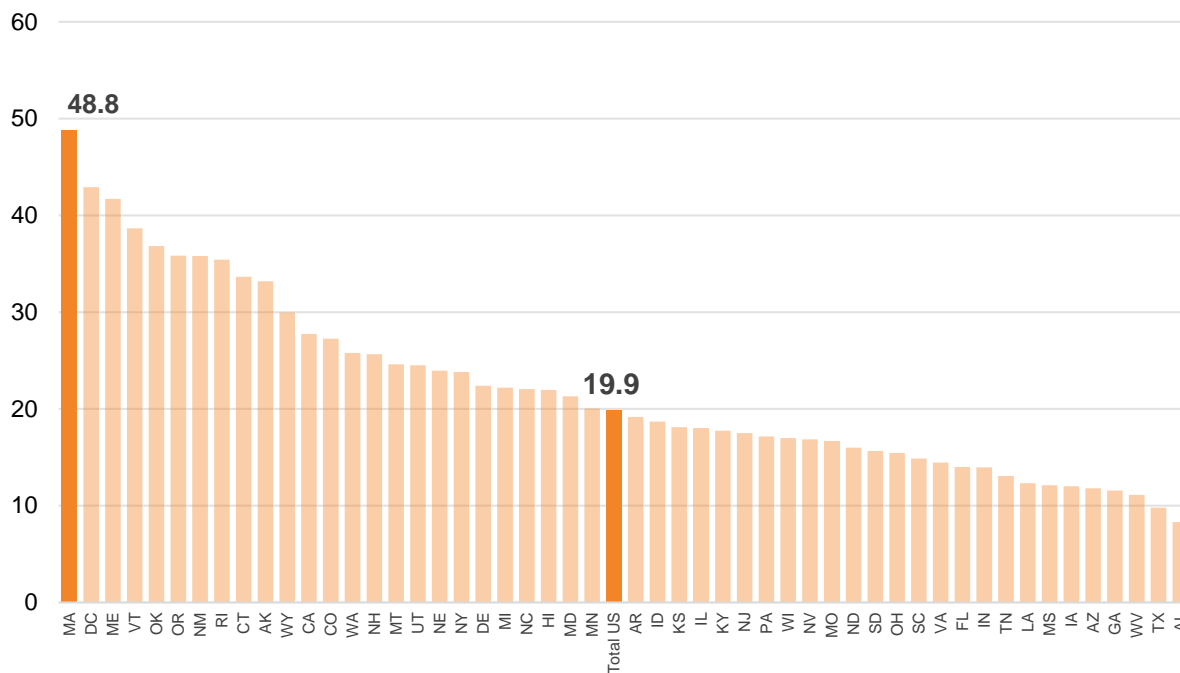
Massachusetts has the largest number of mental health care providers and hospital beds per capita in the U.S. However, to fully serve the population with mental health needs, there are still areas and facilities in Massachusetts that have a shortage of mental health care providers; 20 full-time providers are needed in addition to the current workforce in these designated “shortage areas” to reach an acceptable provider-to-patient ratio.

This shortage is particularly acute in the criminal justice system, where many people are in need of mental health treatment.

Availability of mental health care providers

MASSACHUSETTS AND UNITED STATES 2016

Number of mental health care providers per 10,000 residents



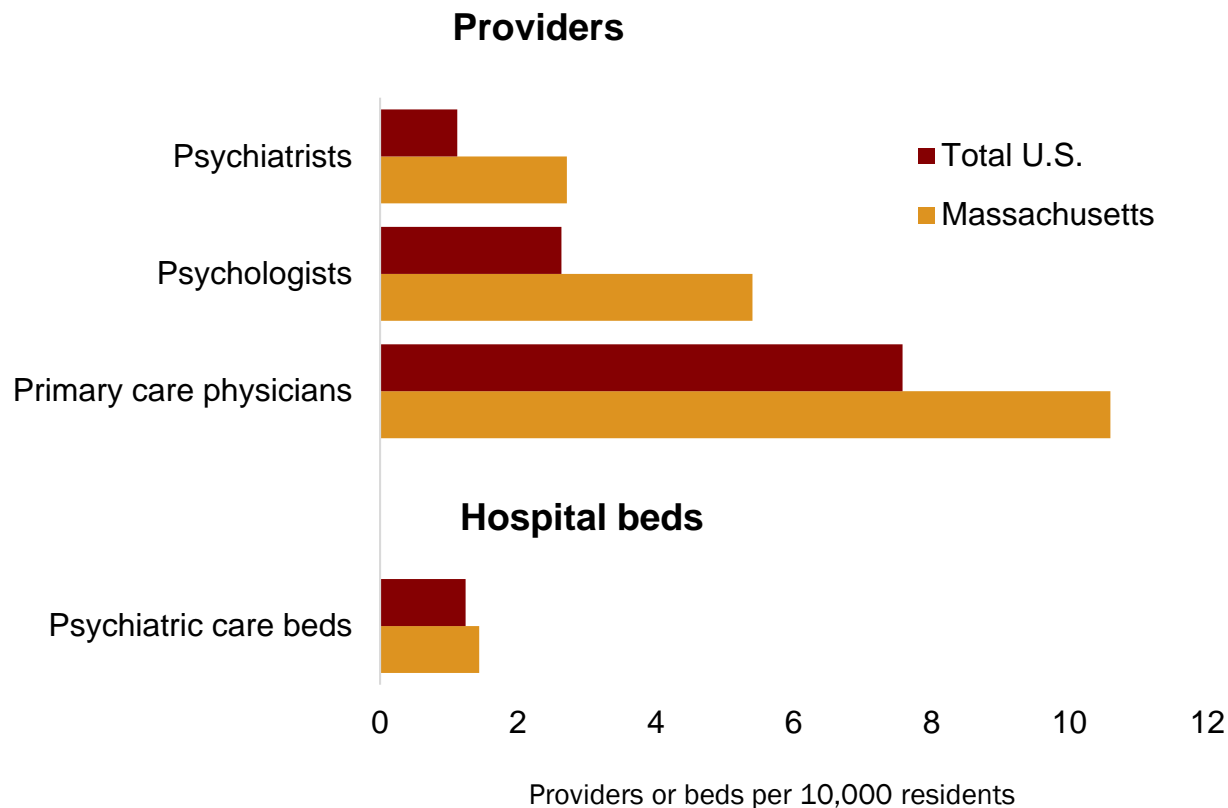
There are approximately 49 mental health care providers for every 10,000 residents in Massachusetts. This is the highest number in the U.S.

Mental health care providers include: psychiatrists, psychologists, licensed clinical social workers, counselors, marriage and family therapists, and advanced practice nurses specializing in mental health care

Source: County Health Rankings & Roadmaps, by the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute.

Availability of mental health care providers and hospital beds

MASSACHUSETTS AND UNITED STATES 2013



Per resident, Massachusetts has more psychiatrists, psychologists, and primary care physicians compared to the U.S. average, as well as a higher number of hospital beds dedicated to psychiatric care.

Source: Area Health Resource Files 2013 (psychiatrists, physicians and psychiatric care beds), and 2005-2013 Demographics of the U.S. Psychology Workforce, American Psychological Association (psychologists)

Shortage of mental health care providers

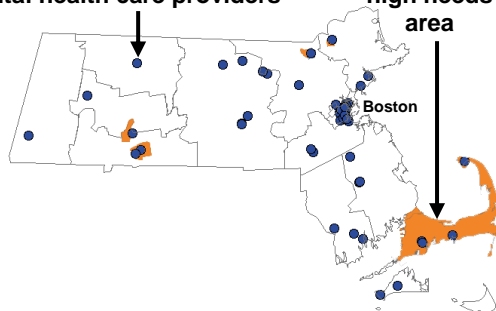
MASSACHUSETTS 2016



Currently, Massachusetts has 22 full-time equivalent mental health care providers in designated shortage areas. In order to address the shortage issue, 20 more full-time providers are needed in these areas, 15 of whom are needed in correctional facilities. 7.3% of the total population of Massachusetts resides in designated shortage areas (497,676 people)

Specific facility with shortage of mental health care providers

Geographic high needs area



Mental health care providers:

psychiatrists, clinical psychologists, clinical social workers, psychiatric nurse specialists, and marriage & family therapists

Facilities:

Federal & state correctional institutions, state & county mental hospitals, community mental health centers, and other public or nonprofit private facilities

Geographic high needs area based on population-to-provider ratio, poverty levels, elderly and youth ratio, alcohol and substance abuse prevalence, and travel time to nearest source of care outside area

Source: Health Professional Shortage Areas (HSPA), HRSA Data Warehouse data as of 1/1/2017

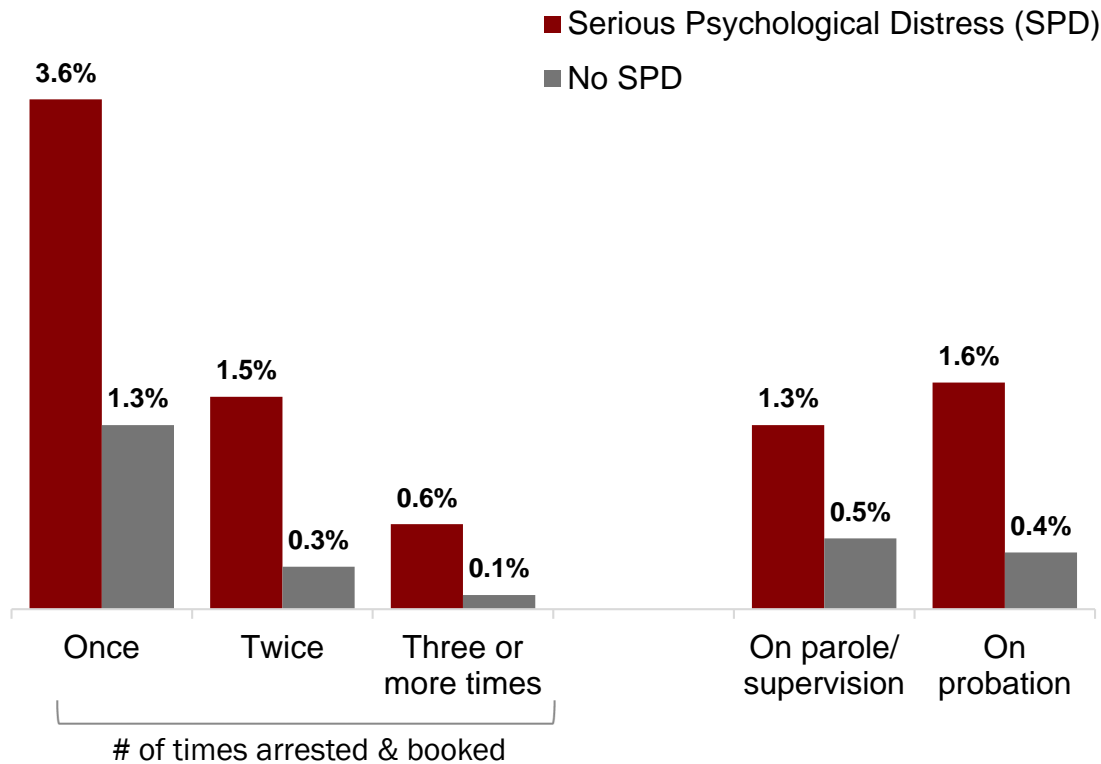
MENTAL HEALTH CONDITIONS & THE CRIMINAL JUSTICE SYSTEM

People living with mental illness are more likely to encounter the criminal justice system and to be arrested, suggesting that mental illness is a factor in incarceration risk. Whereas state and federal prisons have resources to provide mental health care to prisoners who were not receiving this before incarceration, local jails appear particularly unable to meet the health care needs of people with mental illness.

The overall cost of incarceration of the 2,000+ prisoners with serious mental illness in the state of Massachusetts reaches almost \$300 million per year.

Contact with Criminal Justice System

UNITED STATES 2015

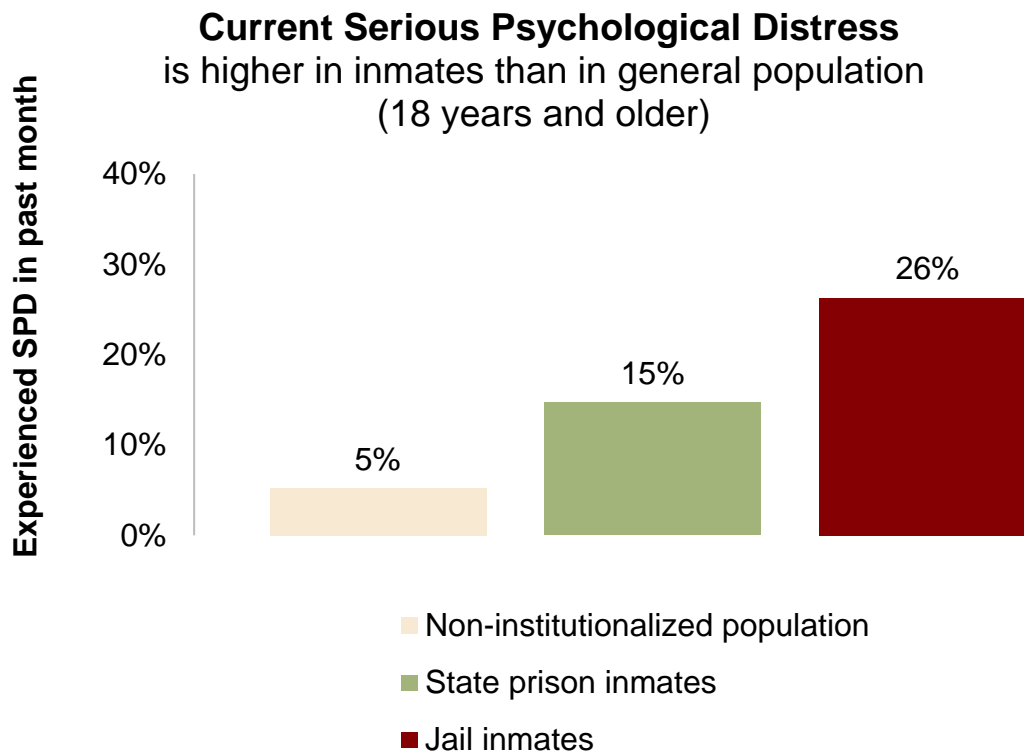


People who experienced Serious Psychological Distress (SPD) are more likely to have been arrested or be on parole or probation in the past year.

Source: National Survey of Drug Use and Health (NSDUH) 2015
Survey does not include current institutionalized population

Mental health issues in prison and jail populations

UNITED STATES



A large percentage of the U.S. adult prison and jail inmate population currently experiences Serious Psychological Distress compared to the non-institutionalized population.

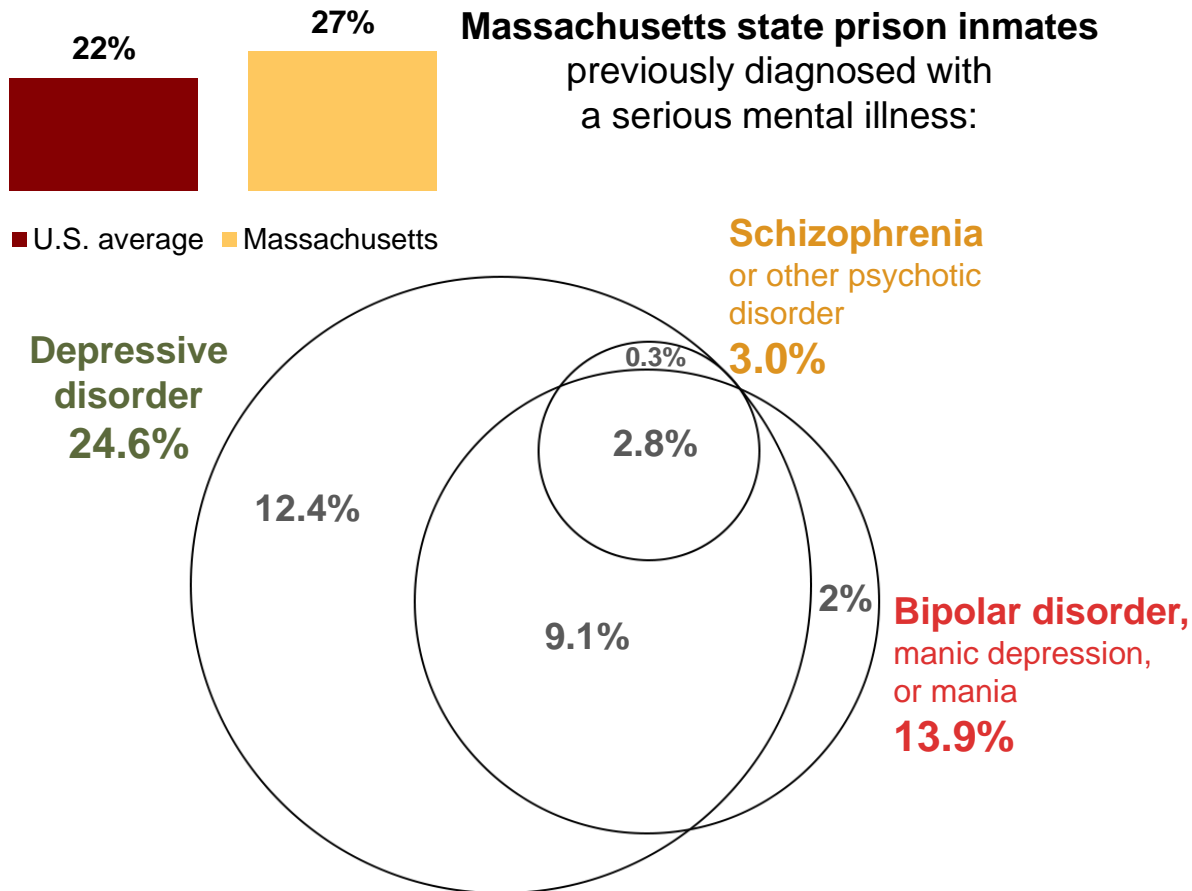
Additionally, these mental health issues are observed at higher rates in local jails than in prisons.

Source: National Survey of Drug Use and Health (NSDUH) 2015

Bureau of Justice report: Sexual Victimization in Prisons and Jails Reported by Inmates, 2011-12, based on data from the National Inmate Survey

State prison population with Serious Mental Illness

MASSACHUSETTS



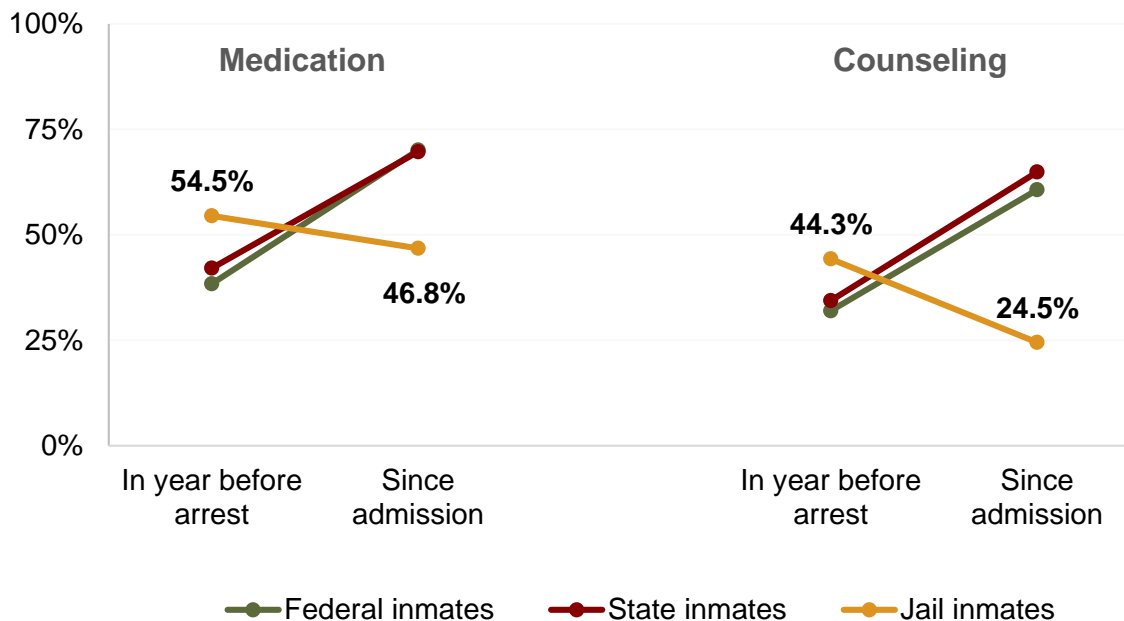
In Massachusetts state prisons, approximately 27% of prison inmates have previously been diagnosed with a serious mental illness, which is high compared to the overall U.S. prison population. Many patients have been diagnosed with two or three mental illnesses, confirming the presence of overlap in symptoms in this population.

Change in treatment before and during incarceration in prison and jails

UNITED STATES

Lack of access to mental health treatment in local jails

Among inmates with a previously diagnosed serious mental illness and who have ever received respective treatment before incarceration



The increase in mental health care treatment in federal and state prisons after admission to prison suggests that these institutions are making up for the gaps in mental health treatment in the general health care system.

At the same time, local jail inmates do not have the same access to medication and counseling while incarcerated as federal and state prisoners.

Mental health conditions include prior diagnosis of depressive disorder, bipolar disorder, and/or schizophrenia. Medication and counseling data includes treatment for any mental illness.

Number of Massachusetts state prison inmates
previously diagnosed with serious mental illness:

2,779

Overall annual costs in 2015:

\$ 293,330,436

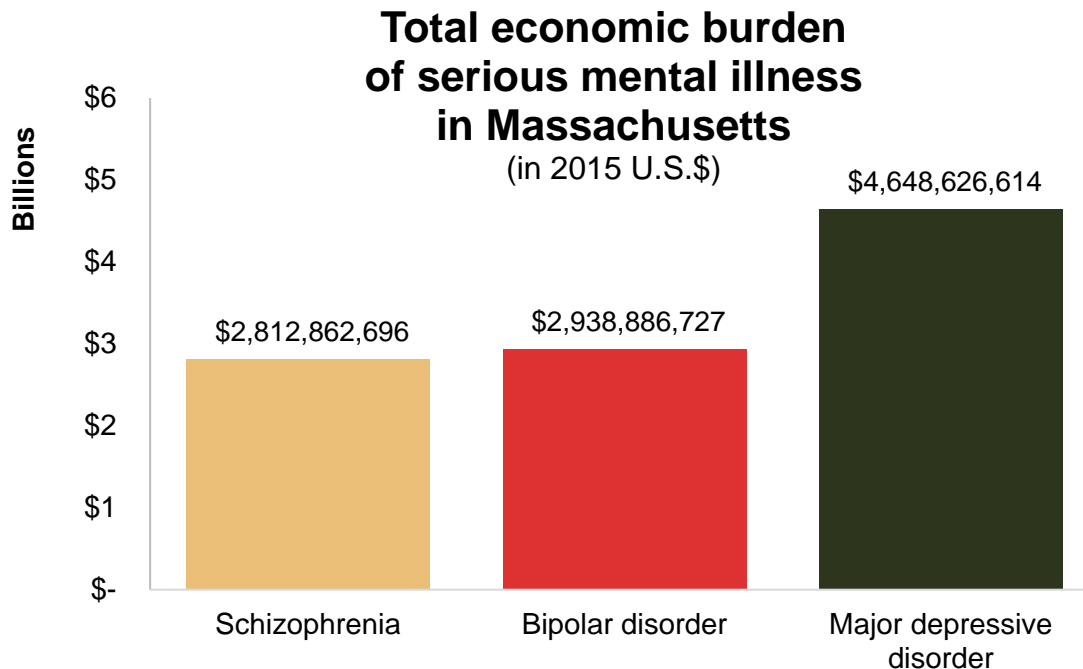
*Overall annual costs based on 2015 average of all state prison inmates in Massachusetts
Source: Annual Survey of State Government Finances 2015
Massachusetts Department of Correction - Prison Population Trends 2015*

TOTAL ECONOMIC BURDEN OF SERIOUS MENTAL ILLNESS

The economic burden of each serious mental illness in adults is estimated to be at least \$127 billion for the U.S. and \$2.8 billion for Massachusetts per year

Economic burden of serious mental illness

MASSACHUSETTS 2015



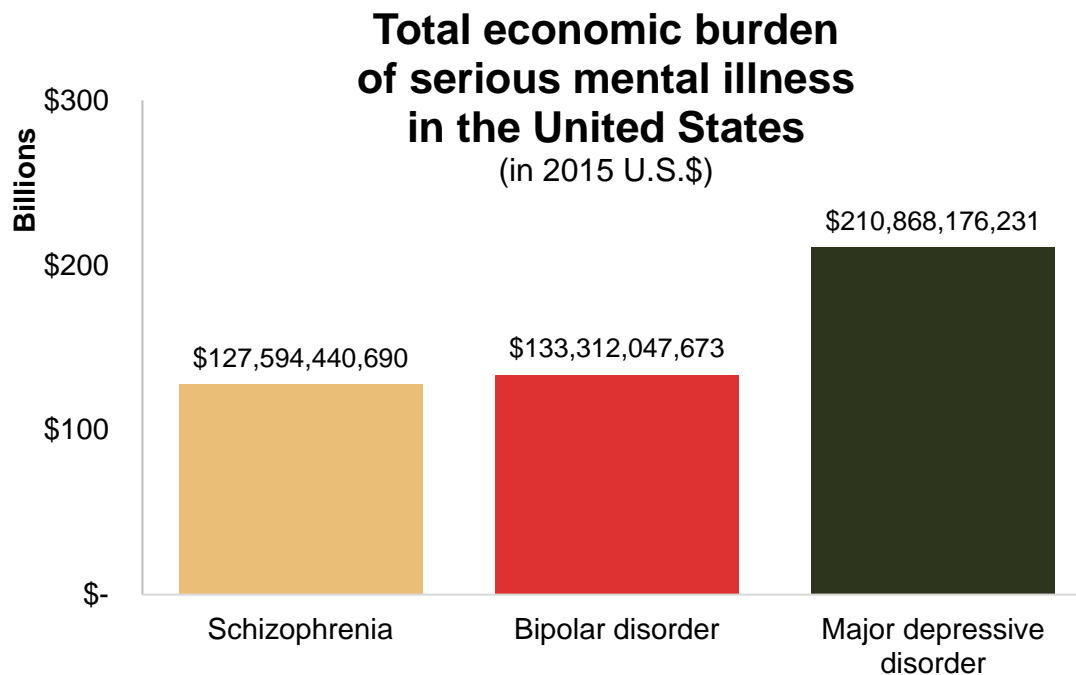
*The economic burden of schizophrenia, bipolar disorder, and major depressive disorder in adults in Massachusetts is estimated to be at **least \$2.8 billion for each serious mental illness***

Due to symptom overlap, diagnoses of mental illnesses are not mutually exclusive, therefore, patients with two or more diagnoses may be represented in multiple categories.

Source: MacEwan JP, Seabury S, et al. *Pharmaceutical innovation in the treatment of schizophrenia and mental disorders compared with other diseases. Innov Clin Neurosci.* 2016 Aug 1;13(7-8):17-25. See appendix for original sources

Economic burden of serious mental illness

UNITED STATES 2015



*The economic burden of schizophrenia, bipolar disorder, and major depressive disorder in adults in the U.S. is estimated to be at least **\$127 billion for each serious mental illness***

Due to symptom overlap, diagnoses of mental illnesses are not mutually exclusive, therefore, patients with two or more diagnoses may be represented in multiple categories.

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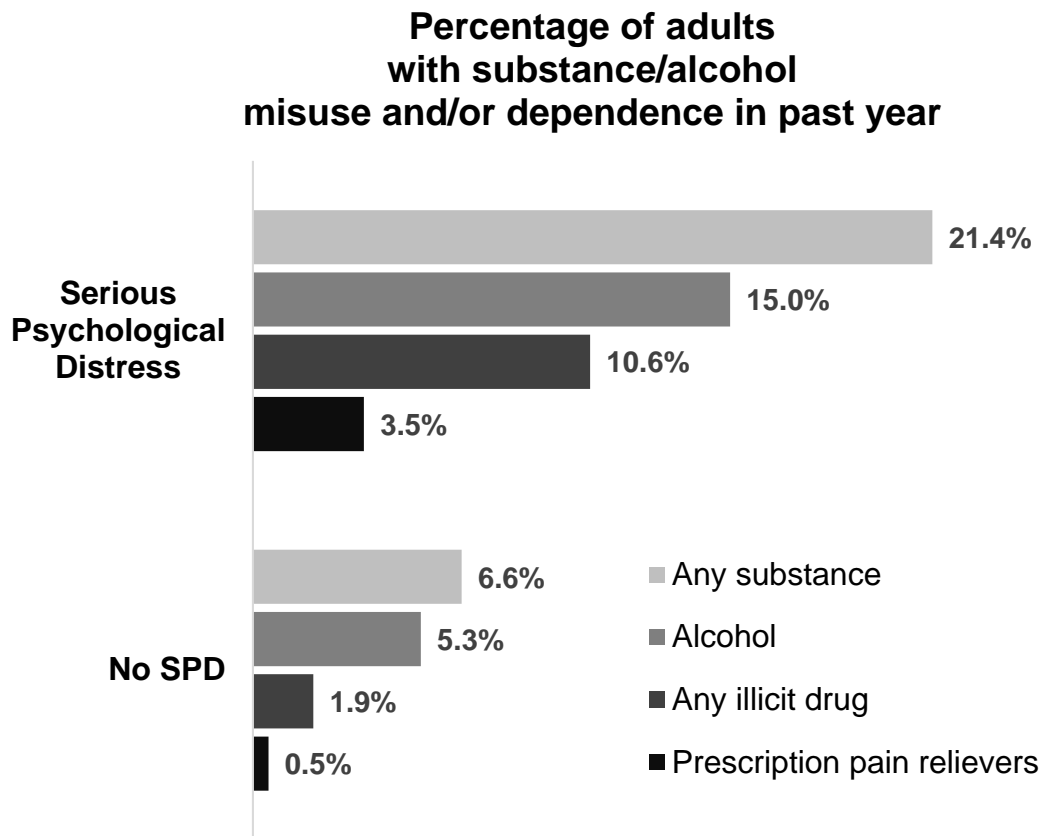
OPIOID MISUSE AND FATAL OVERDOSES

People who experience serious psychological distress are more likely to misuse or be dependent on alcohol, prescription opioids, and illicit drugs. During the past decades, the rates of opioid-related hospitalizations and emergency department visits have increased steadily in the U.S. and Massachusetts, despite a recent reduction in prescription opioid sales.

The increase in misuse and dependency has resulted in a large increase in fatal overdoses by opioids in the last several years.

Substance misuse in people with Serious Psychological Distress

UNITED STATES 2015

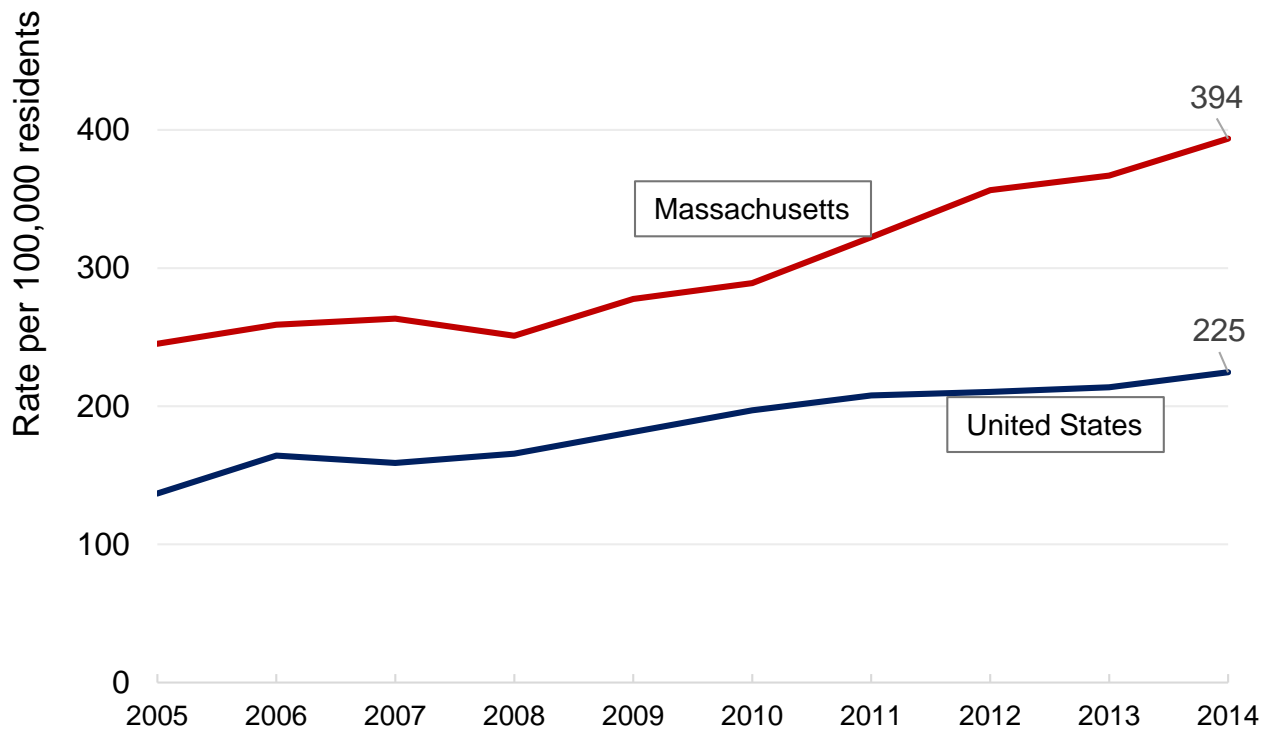


People who experienced Serious Psychological Distress in the past 12 months are more likely to misuse or be dependent on alcohol or illicit drugs during that same time period

Opioid-related hospitalizations are on the rise

MASSACHUSETTS AND UNITED STATES 2005-2014

Opioid-related hospitalizations



The rate of opioid-related hospitalizations has been rising steadily over the last decade. In Massachusetts, the hospitalization rate in 2014 was 75% higher than the U.S. average.*

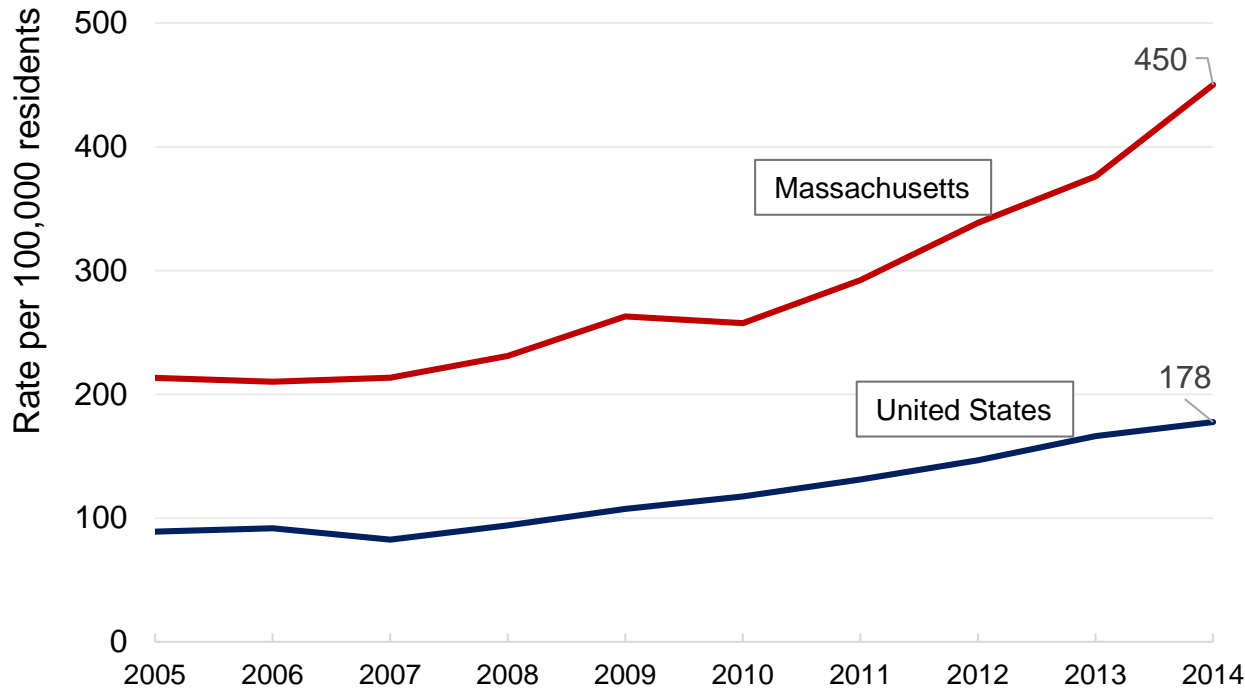
Source: Healthcare Cost and Utilization Project (HCUP Fast Stats - Opioid-Related Hospital Use)

* Opioid refers to both opioids and opiates in this chartbook

Opioid-related emergency department visits are on the rise

MASSACHUSETTS AND UNITED STATES 2005-2014

Opioid-related ED visits

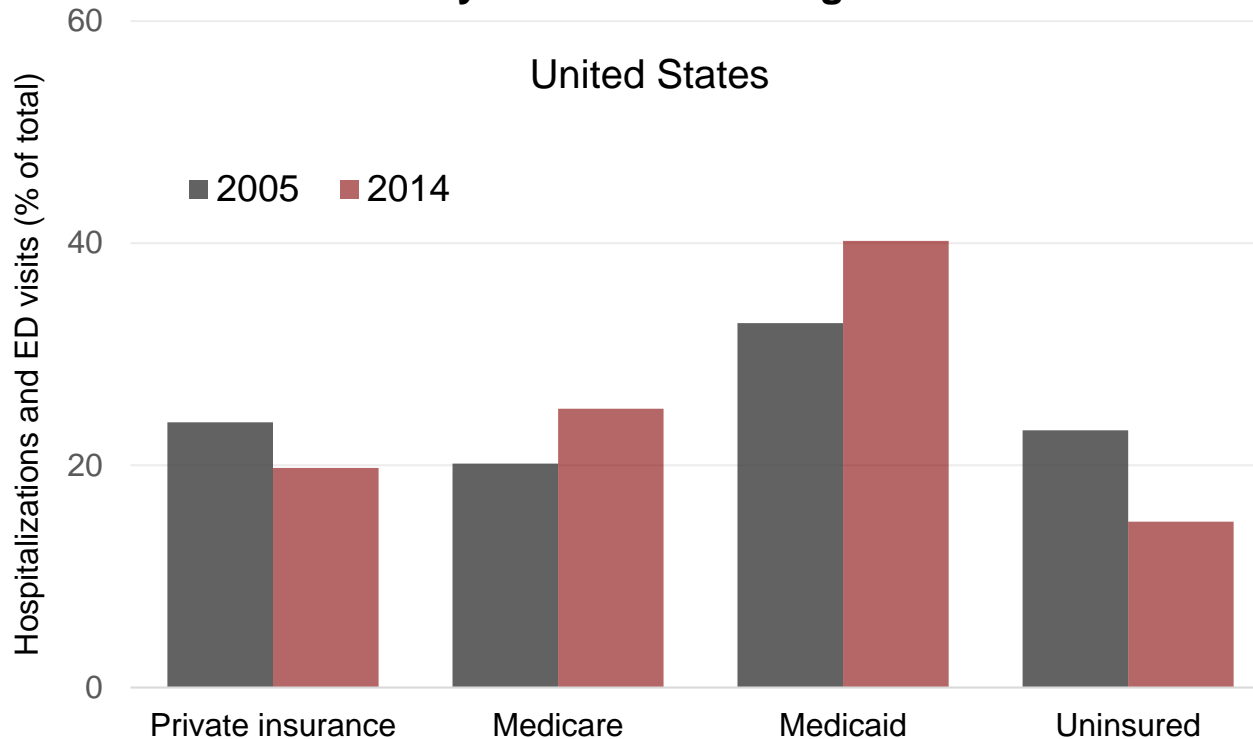


The rate of opioid-related emergency department (ED) visits doubled between 2005 and 2014 in Massachusetts, and is 2.5 times greater than the average rate in the U.S.

Insurance coverage for opioid-related hospitalizations and ED visits

UNITED STATES 2005-2014

Opioid-related hospitalizations and ED visits
- by insurance coverage -

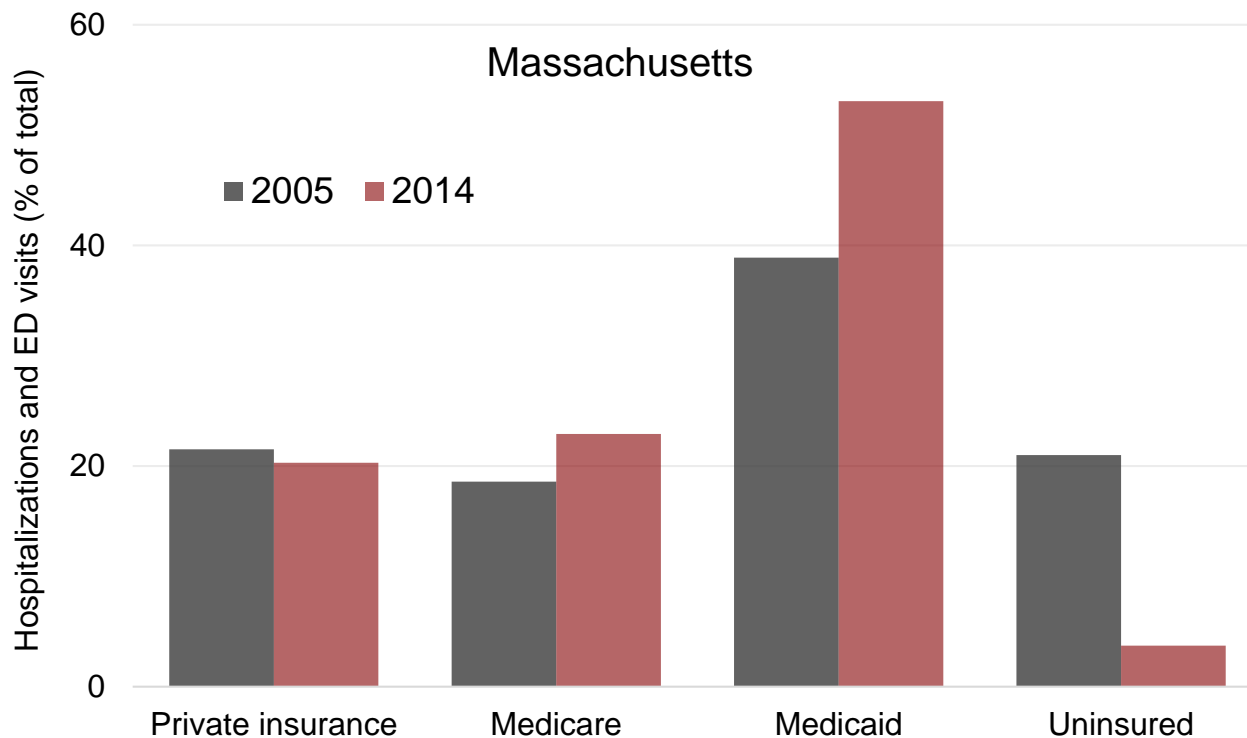


Most opioid-related hospitalizations and ED visits in the U.S. are by patients with Medicaid coverage, although a large percentage of patients are not covered by any health insurance.

Change in insurance coverage for opioid-related hospitalizations and ED visits

MASSACHUSETTS 2005-2014

Opioid-related hospitalizations and ED visits
- by insurance coverage -



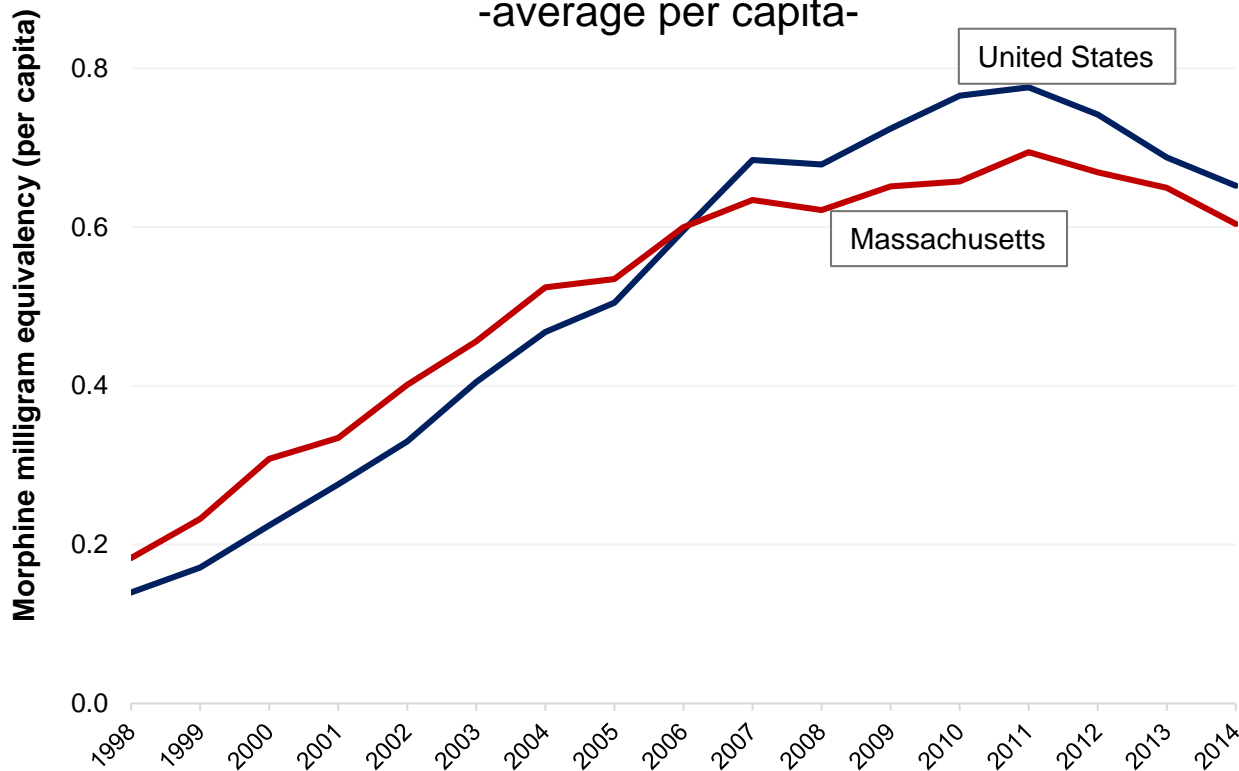
In 2005, 21% of opioid-related hospitalizations and ED visits in Massachusetts were by patients without health insurance.

Since then, the health insurance situation has changed significantly, and this is exemplified by a change in payer type; In 2014, only 4% of opioid-related hospitalizations and ED visits were by patients without health insurance.

Prescribing of opioids started to decrease in 2011

MASSACHUSETTS AND UNITED STATES 1998-2014

Prescription opioid sales
-average per capita-



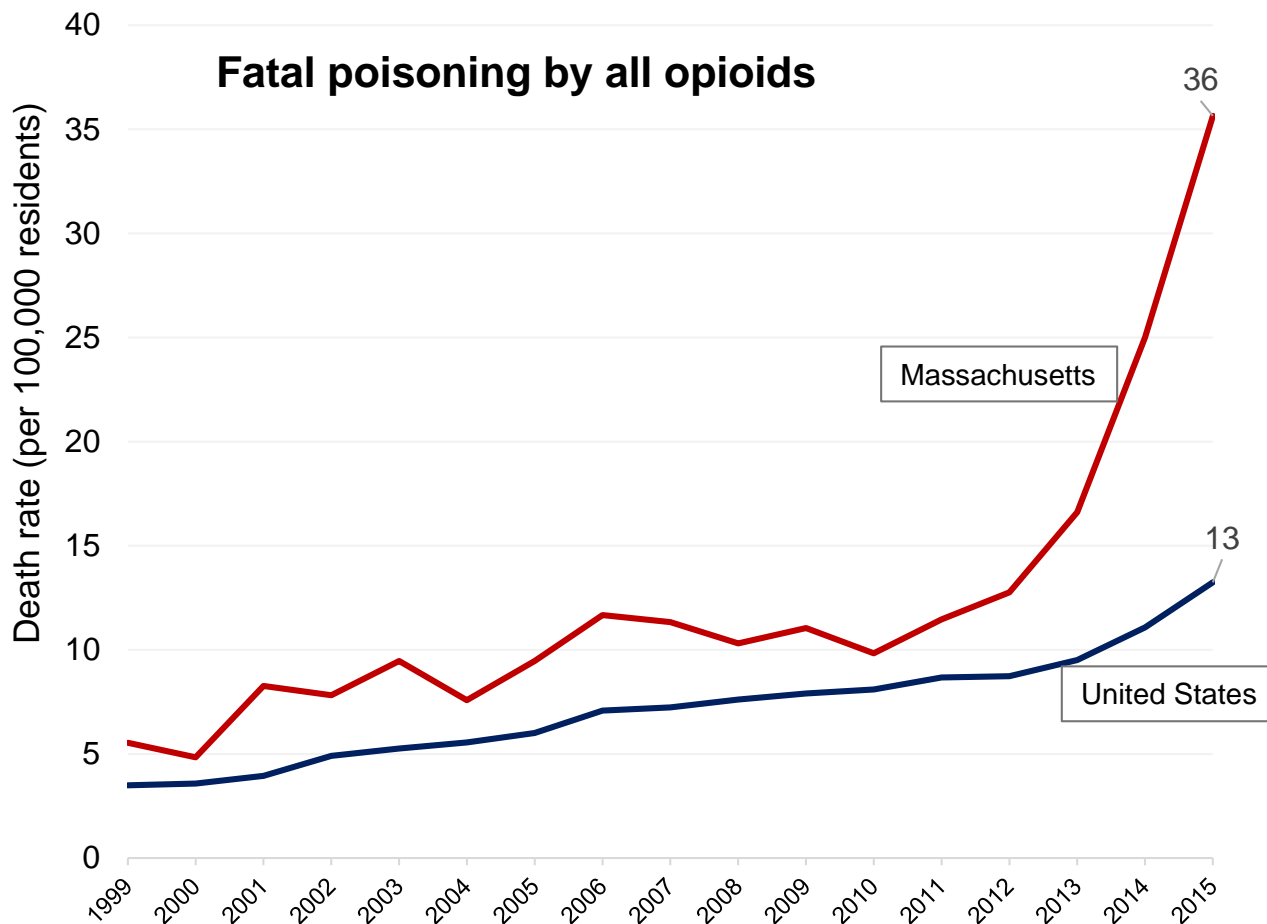
Source: Automation of Reports and Consolidated Orders System (ARCOS), Drug Enforcement Administration. United States data includes all states except DE, MO and PA

Between 1998 and 2011, average prescription opioid sales in the U.S. increased more than five-fold, followed by a decline in the last several years.

Prescription opioid sales in Massachusetts have followed the same trend, and have been slightly below the national average since 2007.

Fatal overdoses by opioids are on the rise

MASSACHUSETTS AND UNITED STATES 1999-2015

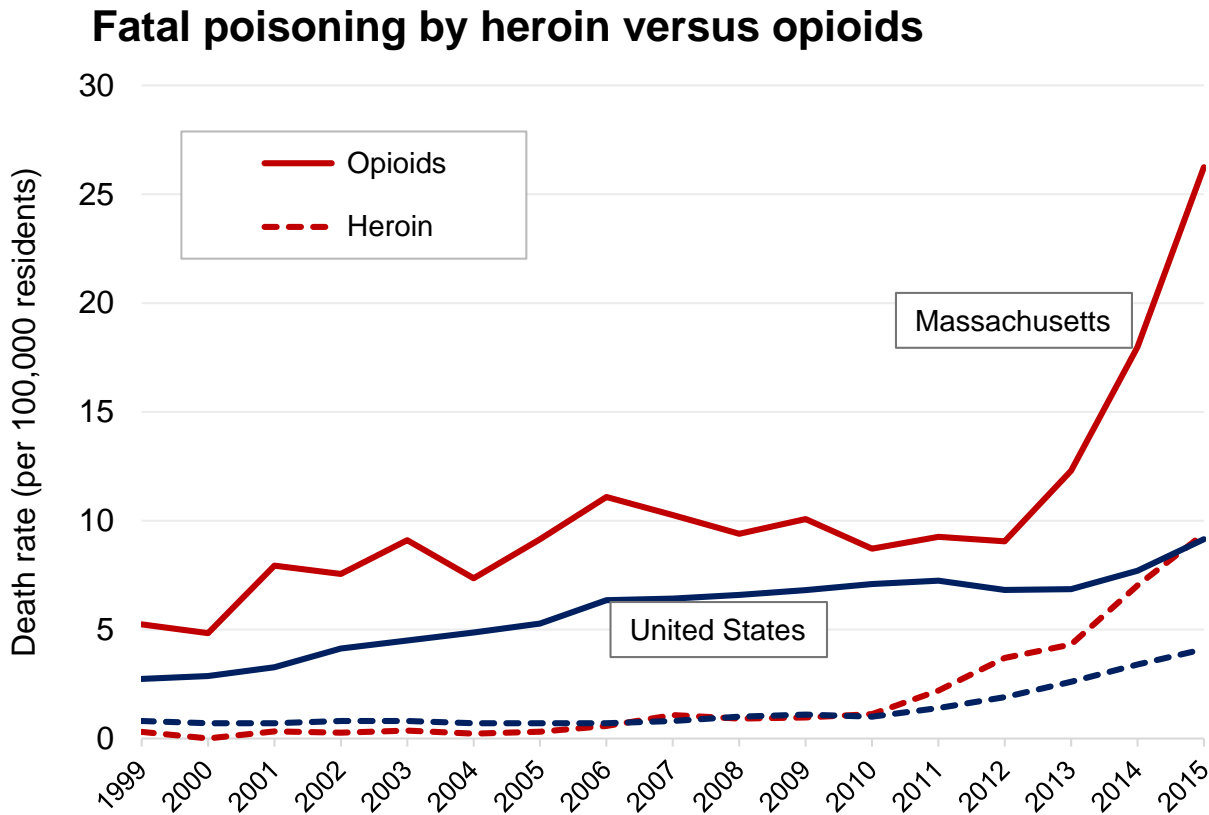


Despite the moderate decline in opioid drug prescriptions in recent years, there has been an increase in the number of opioid overdose deaths in the United States. In Massachusetts, this recent increase in overdose deaths is even more pronounced than for the U.S. as a whole.

Source: Centers for Disease Control and Prevention, CDC Wonder – Multiple Cause of Death Data

Disproportionate increase in fatal heroin overdose deaths

MASSACHUSETTS AND UNITED STATES 1999-2015



Whereas the absolute number of fatal overdoses by heroin is still lower than overdoses by opioids in Massachusetts, the relative increase in the heroin overdose death rate between 2010 and 2015 is much higher (844%) than the increase in death rate due to opioids (301%).

ACKNOWLEDGMENTS

Authors:

Hanke Heun-Johnson,
PhD

Michael Menchine,
MD, MPH

Dana P. Goldman,
PhD

Seth A. Seabury,
PhD

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References, data sources and methods are described in more detail in the online appendix.

This chartbook and the appendix can be downloaded at:

http://healthpolicy.usc.edu/Keck_Schaeffer_Initiative.aspx

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