

Behavioral Health-Related Emergency Department Boarding in Massachusetts

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Table of Contents

2	Table of Contents
3	Introduction
4	Key Findings
5	Section I. ED Boarding in Massachusetts
6	Trends in BH-related ED visits and ED boarding, 2011-2015
7	BH-related ED boarding by diagnosis category
8	BH-related ED boarding by BH diagnosis category
9	ED length of stay
10	LOS for BH-related ED boarding
11	BH-related ED boarding by discharge destination: routine vs. transfer
12	BH-related ED boarding by time of arrival
13	BH-related ED boarding by HPC region
14	Section II. BH-related ED Boarding by Patient Characteristics
15	BH-related ED boarding by primary payer
16	BH-related ED boarding by age group
17	BH-related ED boarding by top BH primary diagnosis
18	Frequency of BH-related ED boarding visits
19	BH-related ED boarding by age category and season
20	BH-related ED boarding and homeless patients
21	BH-related ED boarding by median community income
22	Section III. About the BH-related ED Boarding Methodology

ABOUT THE HEALTH POLICY COMMISSION

The Health Policy Commission (HPC) is an independent state agency established through Chapter 224 of the Acts of 2012, the Commonwealth's landmark cost-containment law. The HPC, led by an 11-member board with diverse experience in health care, is charged with developing health policy to reduce overall cost growth while improving the quality of care, and monitoring the health care delivery and payment systems in Massachusetts. The HPC's mission is to advance a more transparent, accountable, and innovative health care system through independent policy leadership and investment programs.

Introduction

The number of Massachusetts patients seeking emergency department (ED) care for behavioral health (BH) conditions increased 13% from 2011 to 2015, from 22.9 visits per 1,000 residents in 2011 to 26.0 in 2015. Moreover, the proportion of BH patients who “boarded” in the ED (i.e., spend 12 or more hours in the ED from the time of their arrival to their time of departure) also increased during this time period, contributing to significant cost and care delivery inefficiencies.

Research suggests that boarding is a consequence of inadequate outpatient and inpatient supply of BH services, including post-acute placement resources and a shortage of emergency psychiatric providers.^{1,2} For example, as identified by the Executive Office of Health and Human Services (EOHHS) real-time data collection and a recent report by the Blue Cross Blue Shield of Massachusetts Foundation,³ waitlist times for outpatient BH providers (prescribing and otherwise) are considerable, often resulting in patients’ reliance upon the ED when the wait becomes so long that a situation becomes acute.

This chart pack provides descriptive analyses of ED boarding in the Commonwealth and includes 2015 data (October 2014 through September 2015), as well as time trends in boarding from 2011 to 2015. Importantly, in the past two years there have been new, significant statewide efforts to reduce ED boarding led by EOHHS. The impact of this focused work would not be apparent in the data presented here. Nonetheless, in releasing this chart pack, the HPC aims to support the state’s collective goal to fully understand the problem, as well as to identify ways to alleviate pressure on EDs and improve outcomes for patients with BH diagnoses.

The HPC’s analyses use data from the Emergency Department Database maintained by the Center for Health Information and Analysis (CHIA). In parallel, EOHHS is collecting data daily from MassHealth managed care entities (MCEs) on MassHealth members boarding in EDs.

Section I presents overall findings on ED boarding in the Commonwealth. Section II examines BH-related ED boarding by patient characteristics such as age, payer type, and homelessness. Section III describes the HPC’s data sources and methodology.

1. Olfson M. Building the mental health workforce capacity needed to treat adults with serious mental illnesses. *Health Affairs*. 2016 Jun 1;35(6):983-90.
2. Committee on Pediatric Emergency Medicine. Pediatric and adolescent mental health emergencies in the emergency medical services system. *Pediatrics*. 2011 May 1;127(5):e1356-66.
3. Access to Outpatient Mental Health Services in Massachusetts, October 2017, <https://bluecrossmafoundation.org/publication/access-outpatient-mental-health-services-massachusetts>

Key Findings

- In Massachusetts, patients with a BH diagnosis had significantly longer lengths of stay (LOS) in the ED than patients without a BH diagnosis. In 2015, the median LOS for patients with a primary BH diagnosis was twice as long as for a patient without a BH diagnosis (5.4 hours versus 2.6 hours, respectively).
- Patients with a BH diagnosis comprised a disproportionate share of ED visits that boarded. Though patients with a BH diagnosis only accounted for 14% of ED visits in 2015, they accounted for 71% of all ED visits that boarded. This represents nearly 50,000 BH visits that resulted in boarding.
- The share of visits among with a primary BH diagnosis that boarded has increased over time. In 2011, roughly 17% of visits among patients with a primary BH diagnosis boarded, compared to almost 23% in 2015.
- Of the four BH diagnosis categories¹ identified, patients with a mental health-related diagnosis were the most likely to board. In 2015, 28% of patients who arrived in the ED with a mental health-related diagnosis boarded.
- The majority (67%) of patients with a BH diagnosis who boarded had a LOS between 12 and 24 hours in 2015. However, roughly 10% of patients with a BH diagnosis who boarded stayed in the ED for 2 or more days.
- The time of day a patient with a BH diagnosis arrived in the ED affected their likelihood of boarding. The likelihood of boarding was highest for patients who arrived in the ED between the hours of 4 PM and 12 AM.
- Of patients who presented to the ED with a BH diagnosis, teens (ages 12 to 17) were the most likely to board. Twenty one percent of teens boarded in 2015, compared to 14% of adults, 12% of children ages 6 to 11, 8% of seniors, and only 2% of young children ages 5 and under.
- BH-related ED boarding is an all-payer problem: the likelihood that a patient with a BH diagnosis boarded in 2015 was 12 to 13% for most payers. MassHealth patients were most likely to board. While almost half (46%) of patients with a BH diagnosis who boarded were MassHealth members, commercially insured members accounted for 20% of patients with a BH diagnosis who boarded.

¹ HPC created four BH diagnosis categories based on the patient's primary diagnosis: mental health-related; substance use disorder-related (SUD), which excludes alcohol for this analysis; alcohol-related; and non-BH-related primary diagnosis and at least one BH-related secondary diagnosis. For more details on the categories, please see the methodology section of this report.

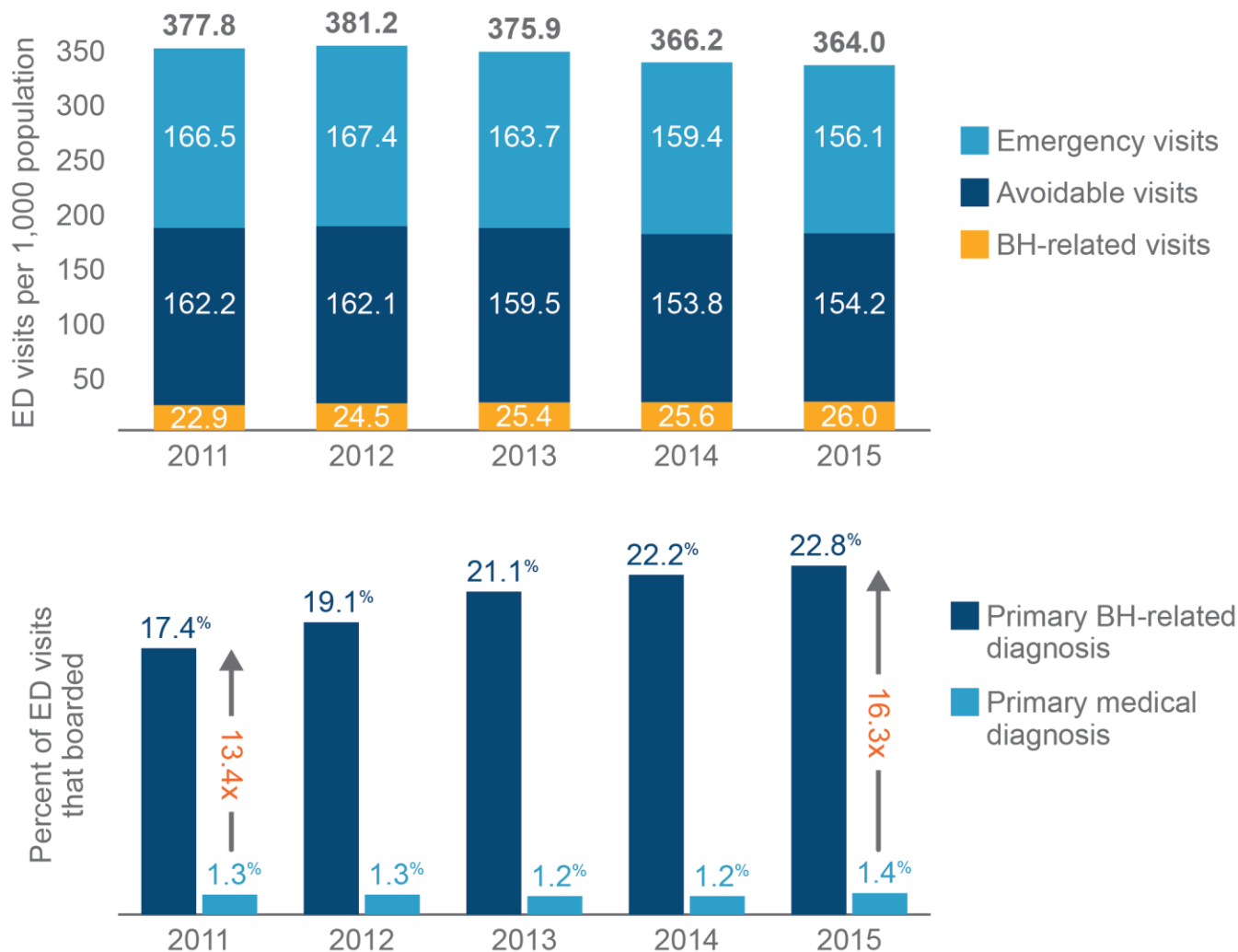
I. ED Boarding in Massachusetts

This section presents overall descriptions of BH-related ED boarding in Massachusetts. For the purposes of this analysis, HPC examined four BH diagnosis categories based on the patient's primary diagnosis: mental health-related, substance use disorder-related (SUD) (excluding alcohol); alcohol-related; and non-BH-related primary diagnosis and at least one BH secondary diagnosis. For more details on the categories, please see Section III: About the BH-related ED Boarding Methodology.

KEY FINDINGS

- The share of visits among with a primary BH diagnosis that boarded has increased over time. In 2011, roughly 17% of visits among patients with a primary BH diagnosis boarded, compared to almost 23% in 2015.
- Patients with a BH diagnosis comprised a disproportionate share of ED visits that boarded (length of stay of 12 or more hours). Though patients with a BH diagnosis only accounted for 14% of ED visits in 2015, they accounted for 71% of all ED visits that boarded. This represents nearly 50,000 BH visits that resulted in boarding.
- In Massachusetts, patients with a BH diagnosis had significantly longer lengths of stay (LOS) in the ED than patients without a BH diagnosis. In 2015, the median LOS for patients with a primary BH diagnosis was twice as long as for a patient without a BH diagnosis (5.4 hours versus 2.6 hours, respectively).
- The majority (67%) of patients with a BH diagnosis who boarded had a LOS between 12 and 24 hours in 2015. However, roughly 10% of patients with a BH diagnosis who boarded stayed in the ED for 2 or more days.
- The time of day a patient with a BH diagnosis arrived in the ED affected their likelihood of boarding. The likelihood of boarding was highest for patients who arrived in the ED between the hours of 4 PM and 12 AM.
- In 2015, patients with a BH diagnosis living in the Metro South and South Shore regions were the most likely to board: 24% and 22% of patients with a BH diagnosis who presented to the ED in these areas boarded, respectively.

Trends in BH-related ED visits and ED boarding, 2011-2015

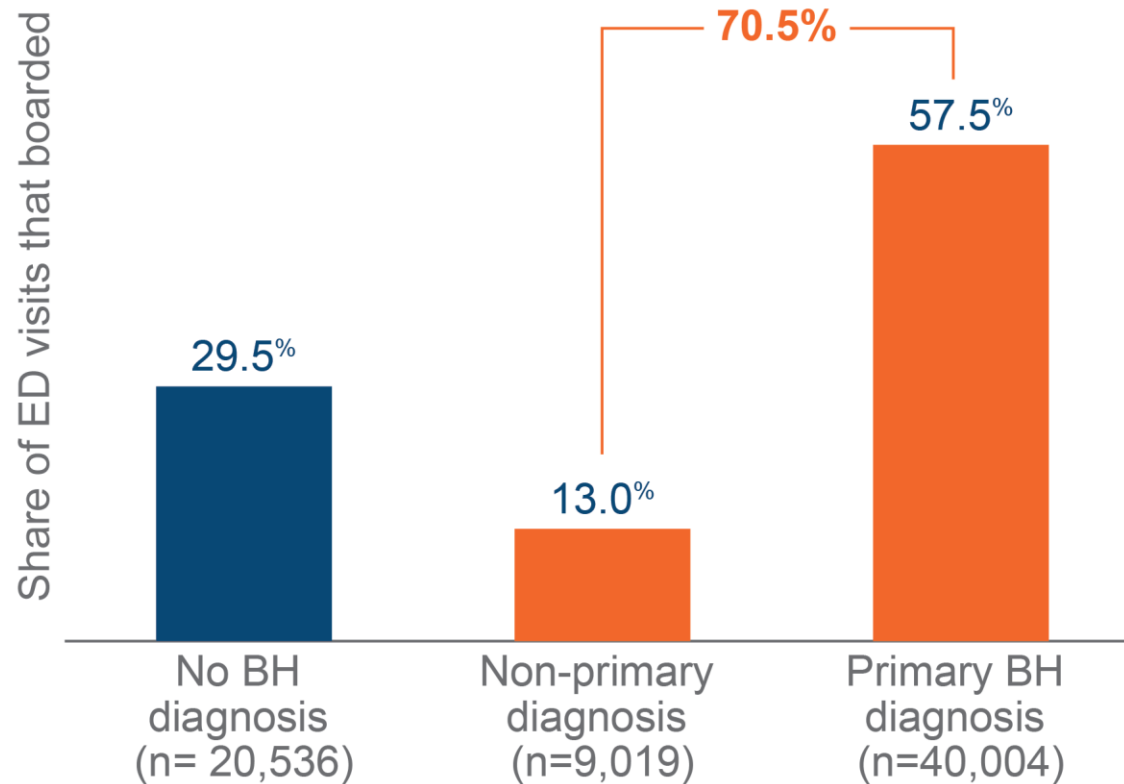


From 2011 to 2015, the number of ED visits per 1,000 residents declined by 4%, yet the rate of BH-related ED visits increased by 13%.

The second graph illustrates that the share of visits among patients with a primary BH diagnosis that boarded steadily grew during this period- from 17% in 2011 to almost 23% in 2015. Meanwhile, the share of visits among patients without a primary BH diagnosis that boarded remained constant at roughly 1%. In 2015, a visit with a primary BH diagnosis was 16 times more likely to result in boarding than a visit without a primary BH diagnosis.

Note: Definition of ED categories in the top graph is based on NYU Billings Algorithm categorization of patient's primary diagnosis. Avoidable includes two types of visit categories, non-urgent ED visits and ED visits that could have been treated by primary care providers. One category, unclassified ED visits, also grew during this time period, but is not shown in the top graph. In all subsequent analyses, BH includes patients with a primary or secondary BH diagnosis.

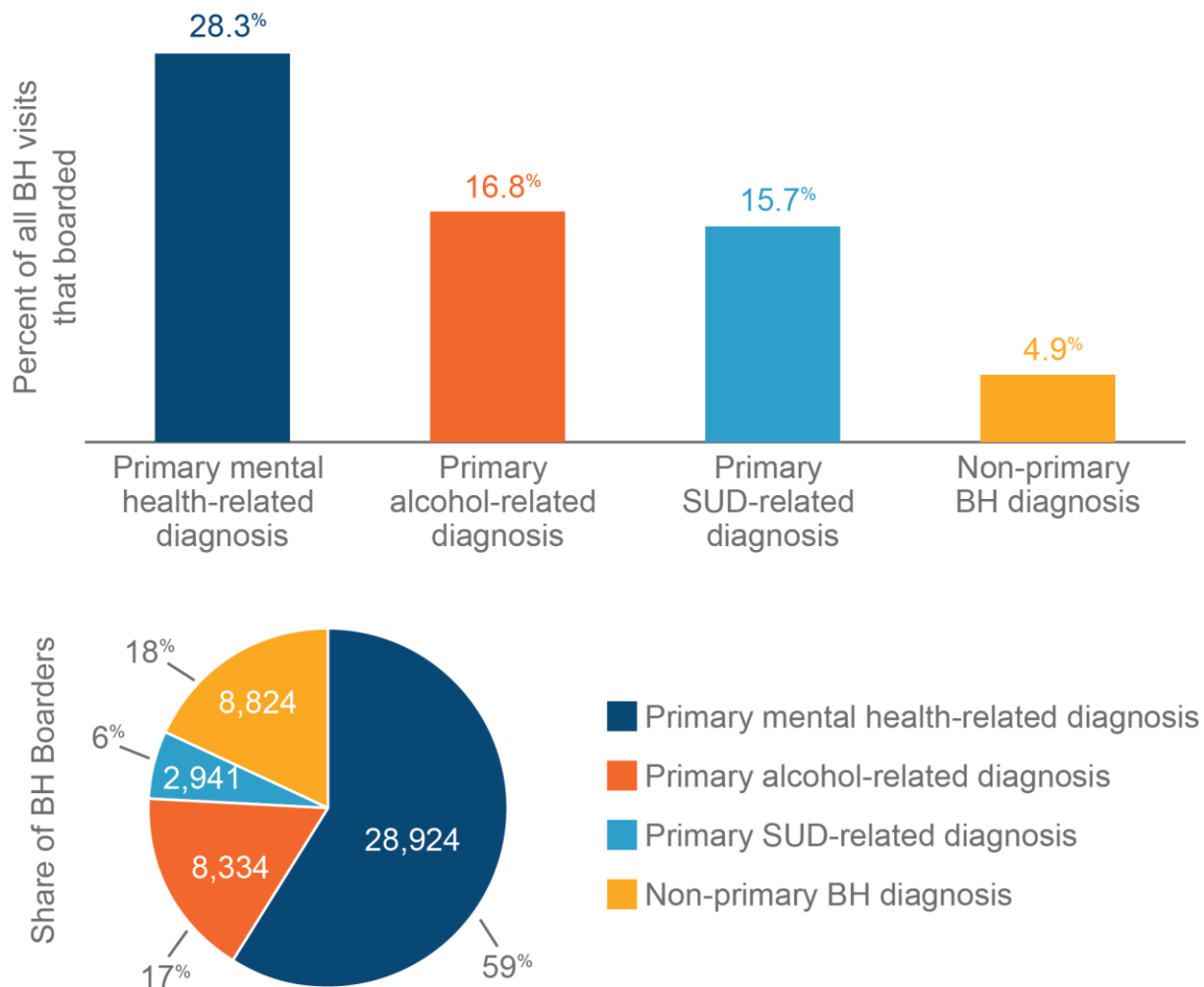
ED boarding by diagnosis category, 2015



In 2015, patients with a BH diagnosis (primary or secondary) accounted for 14% of ED visits, but 71% of all visits that boarded. This represents nearly 50,000 BH visits that resulted in boarding.

These findings suggest the need to focus on patients with behavioral health diagnoses to address boarding.

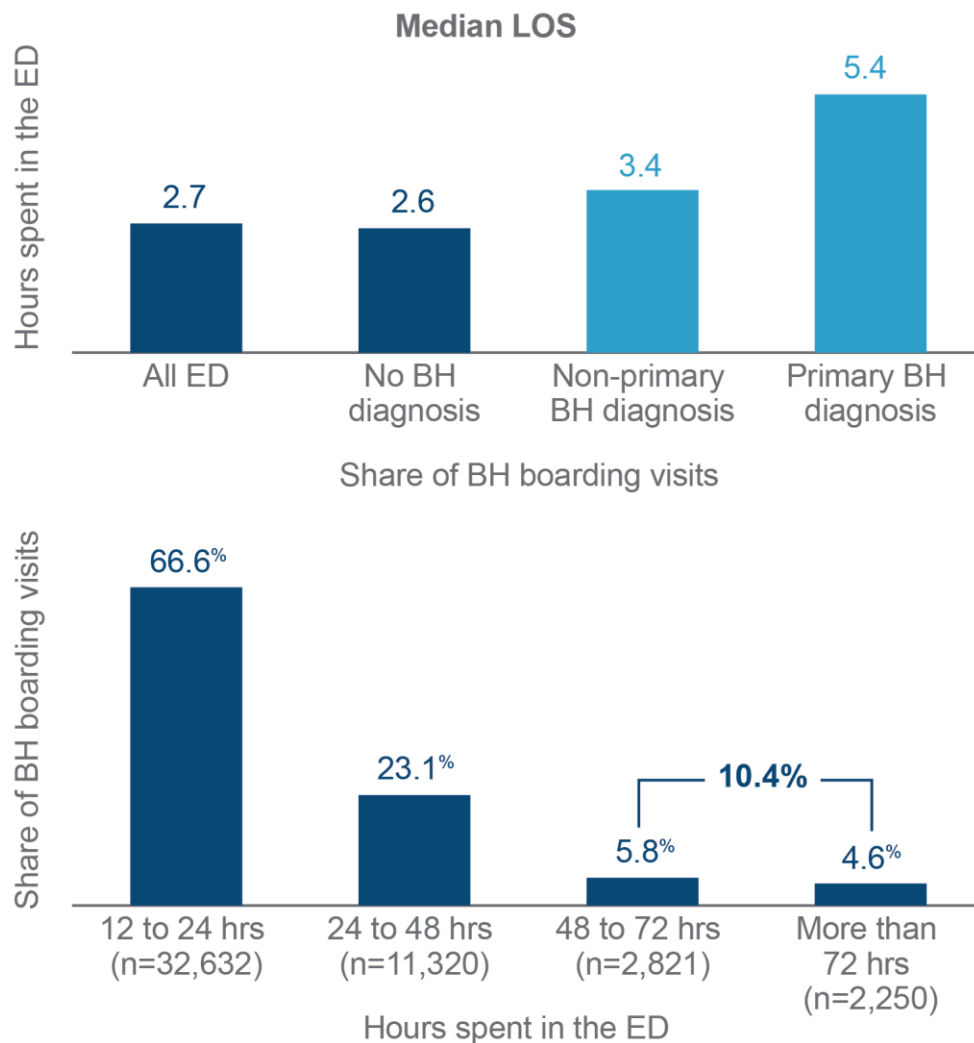
ED boarders by BH diagnosis category, 2015



In 2015, patients with a primary mental health-related diagnosis were the most likely category of BH patients to board. As shown above, 28% of patients who arrived in the ED with a mental health-related diagnosis boarded, compared to 17% of those with an alcohol-related diagnosis, 16% with a SUD-related diagnosis, and 5% with a non-primary BH diagnosis.

Not only were patients with a primary mental health-related diagnosis the most likely to board, but, as shown in the bottom graph, they also comprised the majority (59%) of all patients who boarded, followed by patients with: a non-primary BH (18%), primary alcohol-related (17%), and primary SUD-related diagnosis (6%). This has remained relatively constant since 2011.

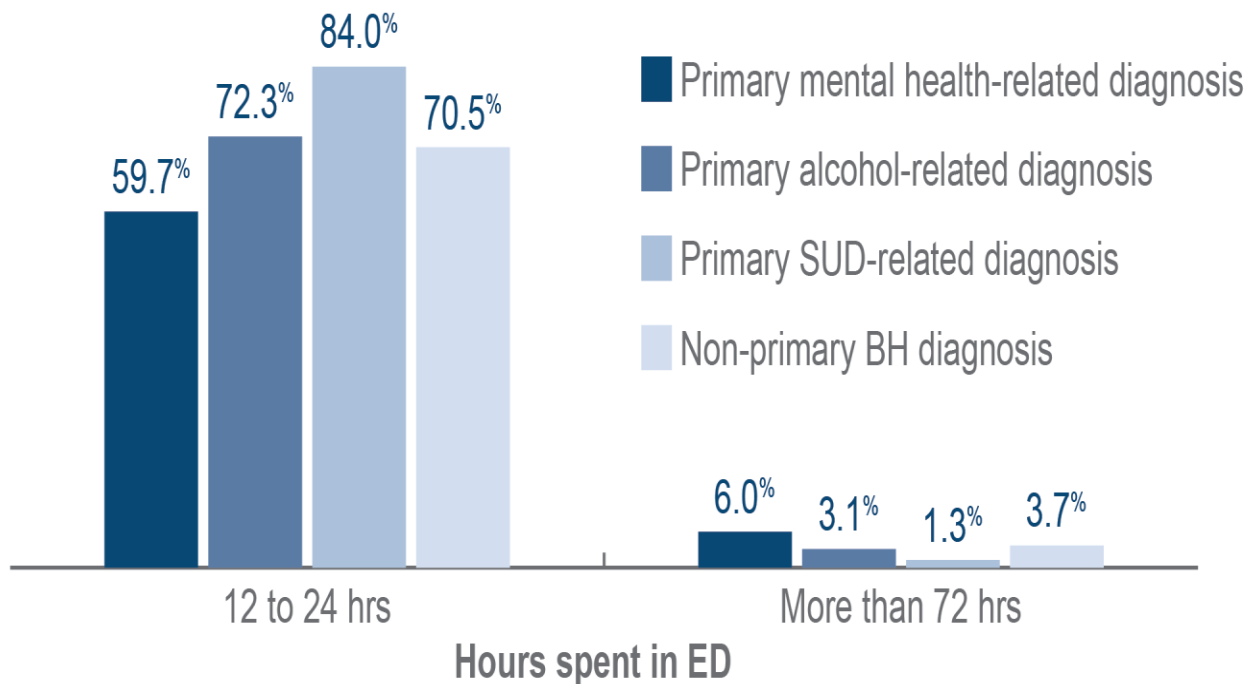
ED length of stay (LOS), 2015



In 2015, the median LOS for patients with a primary BH diagnosis was twice as long (5.4 hours) as for patients without a BH diagnosis (2.6 hours). Patients with a non-primary BH diagnosis also had longer median LOS than patients with no BH diagnosis. When comparing the top ten medical diagnoses for patients with a non-primary BH diagnosis to patients with the same diagnosis but *without* a BH-comorbidity, HPC found that patients with a BH-comorbidity were twice as likely to board as patients without a BH comorbidity were.

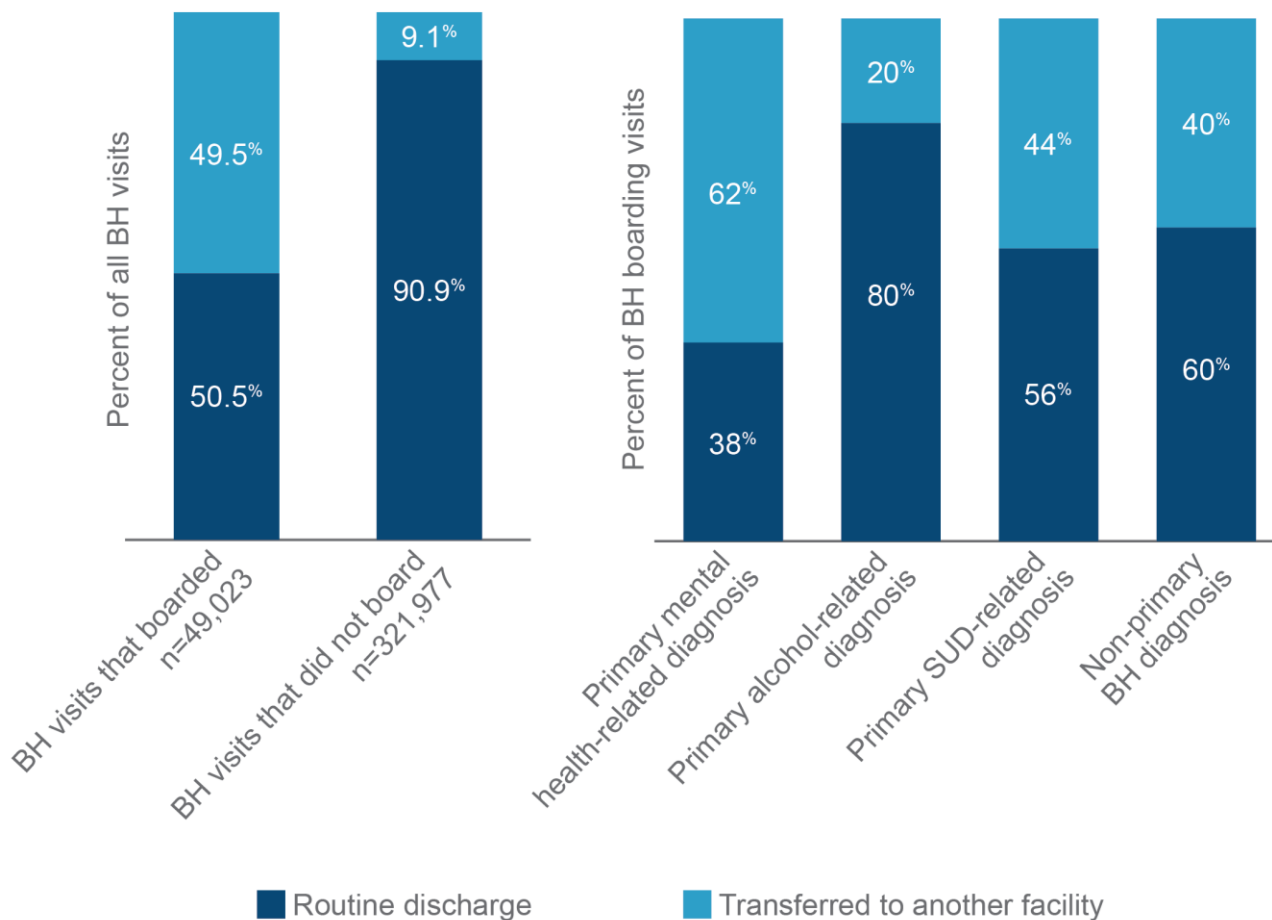
As seen in the bottom graph, in 2015, 67% of patients with a BH diagnosis who boarded had a LOS between 12 and 24 hours. Notably, approximately 10% of patients with a BH diagnosis who boarded stayed in the ED for 2 or more days.

LOS for BH-related ED boarding, 2015



Of all patients with a BH diagnosis who boarded, those with a primary mental health-related diagnosis had the longest LOS. Six percent of patients with a primary mental health-related diagnosis had a LOS of more than 72 hours, compared to 3% of patients with a alcohol-related diagnosis, 4% with a non-primary BH diagnosis, and 1% of patients with an SUD-related diagnosis.

BH-related ED boarding by discharge destination: routine vs. transfer, 2015



One reason patients may board is that they are waiting to be admitted to another facility. Of patients with a BH diagnosis who boarded, almost half were ultimately transferred to another facility*. By comparison, of patients with a BH diagnosis who did not board, only a small fraction (less than 10%) were ultimately transferred to another facility. From a different perspective, of patients with a BH diagnosis who were transferred, 47% boarded prior to the transfer.

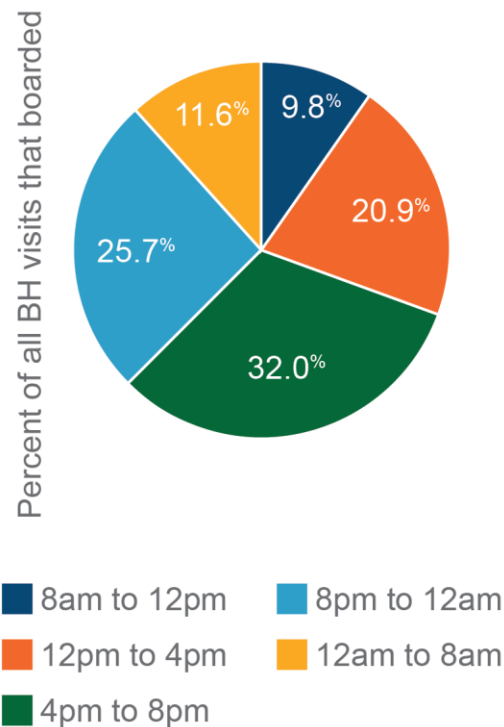
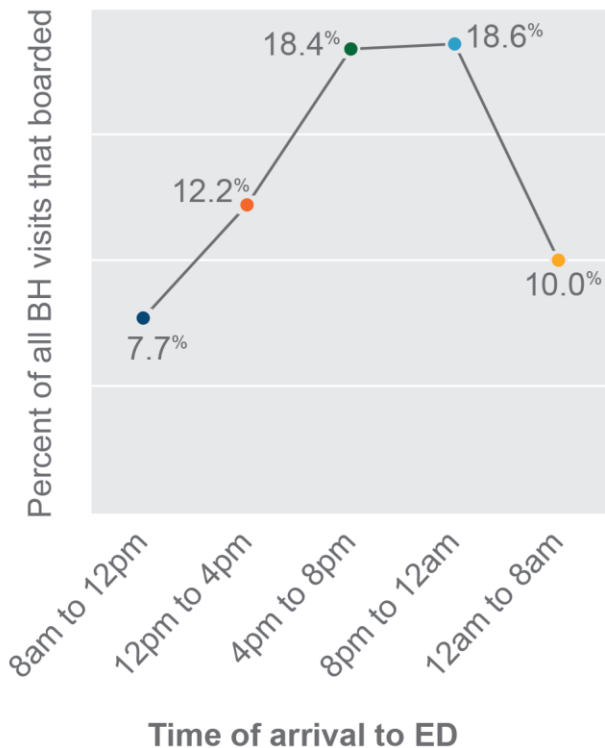
There was also variation by diagnosis category in discharge destination among patients with a BH diagnosis who boarded. Patients with a primary mental health-related diagnosis were most likely to be transferred to another facility* (62%), compared to those with a primary SUD- or alcohol-related diagnosis (44% and 20%, respectively).

This suggests that patients with SUD-related diagnoses were more likely to be discharged after medical detox in the ED, rather than transferred to another facility.*

Note: * Transferred to another facility refers to transfers to other 24-hour level of care treatment facilities, not referrals to outpatient or day treatment.

Excluded from the data are patients who were admitted to the same hospital from the ED as an observation or inpatient stay. Data shows only the top two discharge destinations. The following discharge destinations for BH ED boarders not shown here include: died (0.06%), left against medical advice (0.5%), eloped (0.5%), and within hospital referral (0.1%). MassHealth category includes both Medicaid and Medicaid Managed Care.

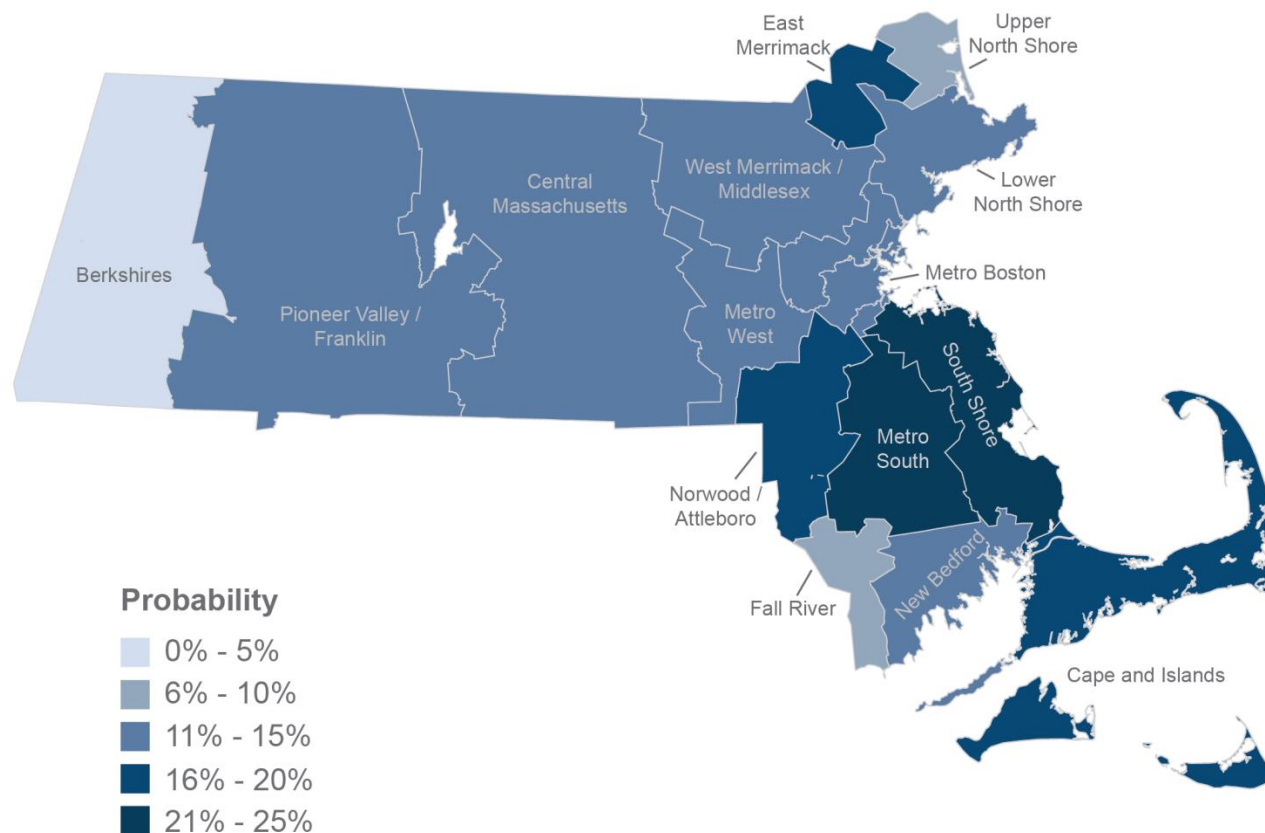
BH-related ED boarding by time of arrival, 2015



Arrival time to the ED affected the likelihood that patients with a BH diagnosis boarded. For example, about 18% of patients with a BH diagnosis who arrived in the late afternoon and evening (between 4 PM and 12 AM) boarded, compared to less than 10% of patients with a BH diagnosis who arrived in the first half of the day (between 12 AM and 12 PM).

Further, as shown on the right-hand chart, a majority of patients with a BH diagnosis who boarded (almost 58%) arrived between 4 PM and 12 AM.

BH-related ED boarding by HPC region, 2015



The likelihood that a patient with a BH diagnosis boarded varied considerably by geography. In 2015, BH patients who lived in the Metro South and South Shore regions were the most likely to board: 24% and 22% of patients with a BH diagnosis in these areas boarded, respectively. Meanwhile, patients living in Fall River and the Berkshires were the least likely to board: only 7% and 3% of patients with a BH diagnosis boarded, respectively. Since 2011, patients living in Fall River have experienced a decline in likelihood of BH-related boarding.

II. BH-related ED Boarding by Patient Characteristics

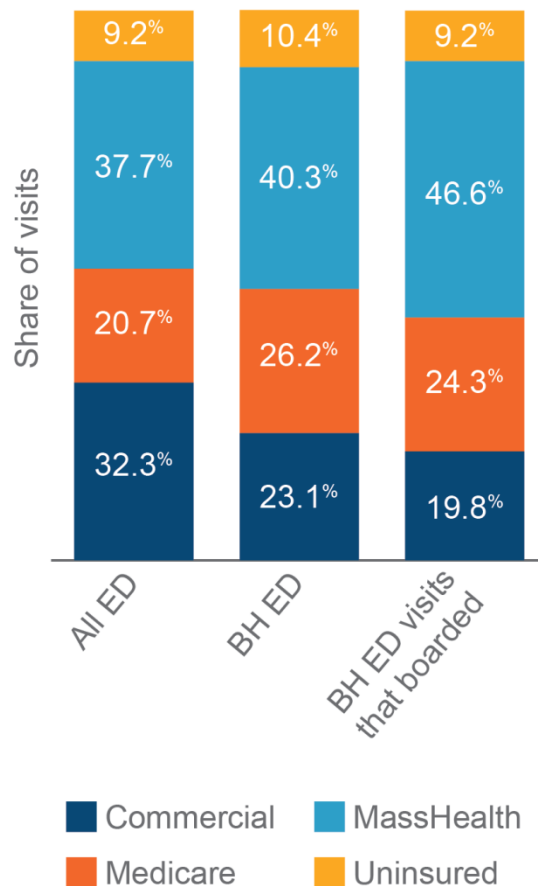
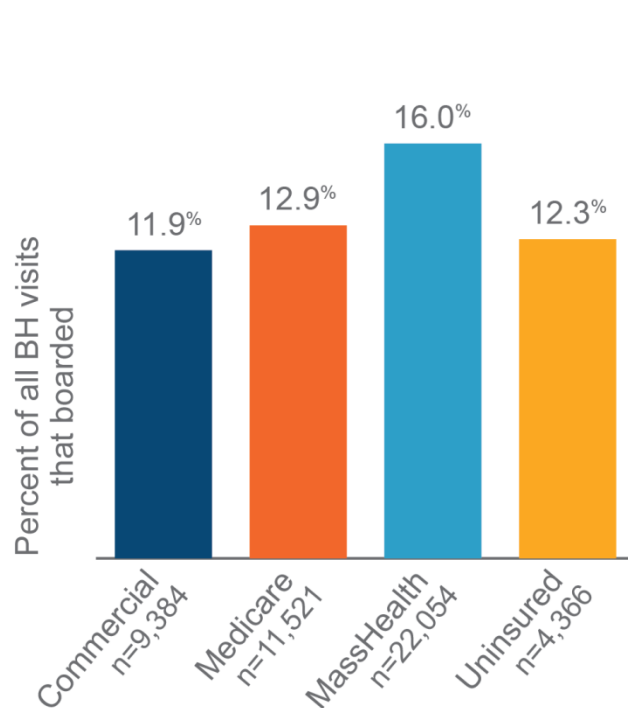
This section presents findings on BH-related ED boarding by several patient characteristics, including age, payer type, BH diagnosis, homelessness status, and community income.

In general, boarding affects all populations, and challenges in timely access to care for patients with a BH diagnosis persist across the Commonwealth regardless of payer type or age group. However, teens (especially during the school year) and children face longer boarding stays than other demographics.

KEY FINDINGS

- BH-related ED boarding is an all-payer problem: the likelihood that a patient with a BH diagnosis boarded in 2015 was 12 to 13% for most payers. While almost half (46%) of ED visits with a BH diagnosis that boarded in 2015 were MassHealth members, commercially insured members accounted for 20% of ED visits with a BH diagnosis that boarded.
- Almost a quarter of BH ED boarders boarded more than 2 times in 2015- 21% of BH ED boarders had 2 to 4 boarding visits and 3% had 5 or more boarding visits.
- Teens (ages 12 to 17) were the age group most likely to board. In 2015, 21% of teens who arrived in the ED with a BH diagnosis boarded compared to 14% of adults with a BH diagnosis.
- Compared to adults and seniors, younger patients (ages 17 and under) were more likely to board for 2 or more days.
- While BH-related ED boarding among adults and seniors (ages 18+) was fairly consistent throughout the year, younger patients (ages 17 and under) were more likely to board during the academic calendar. In particular, BH-related ED boarding among teens rose in the fall and spring.
- Homeless patients were more likely to board than non-homeless patients: 18% of homeless patients with a BH diagnosis boarded compared to 13% of non-homeless patients with a BH diagnosis.

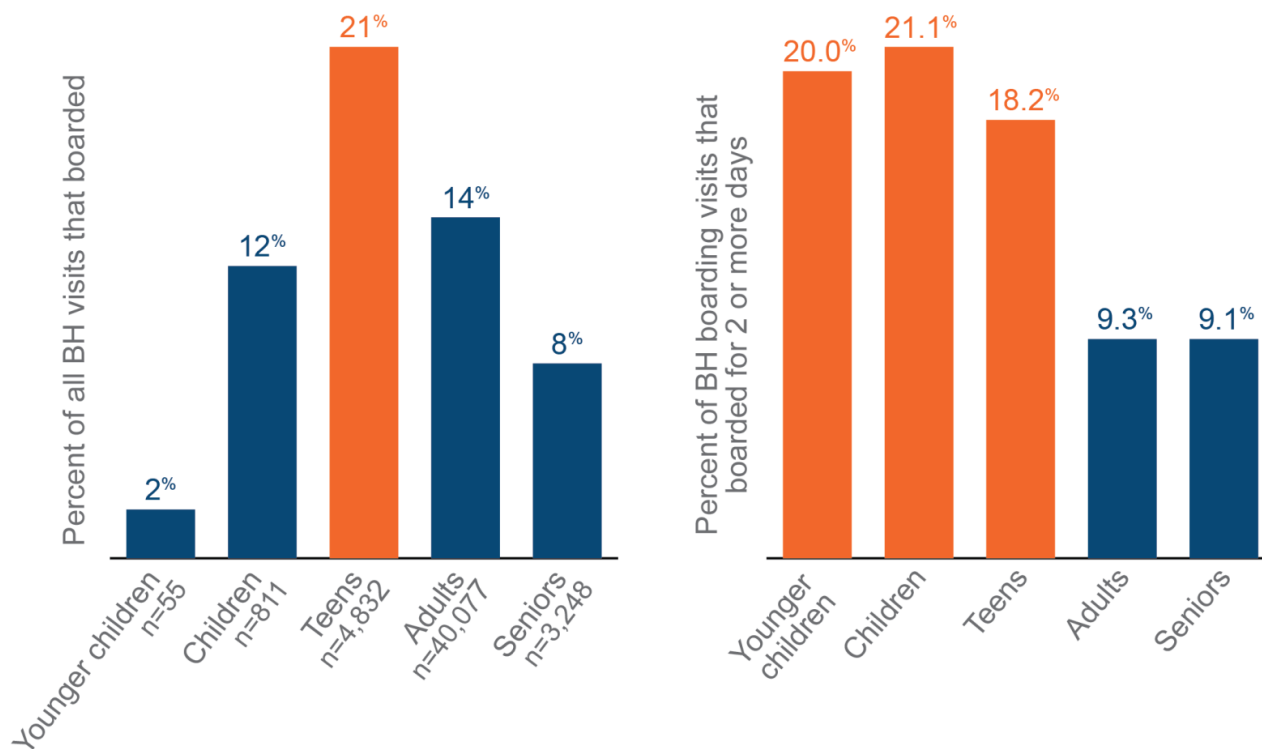
BH-related ED boarding by primary payer, 2015



BH-related ED boarding is an all-payer problem: the likelihood that a patient with a BH diagnosis boarded in 2015 was 12 to 13% for most payers. In 2015, 16% of MassHealth patients with a BH diagnosis boarded.

As shown in the right-hand graph, while almost half (46%) of patients with a BH diagnosis who boarded in 2015 were MassHealth members, commercially insured members accounted for 20% of patients with a BH diagnosis who boarded.

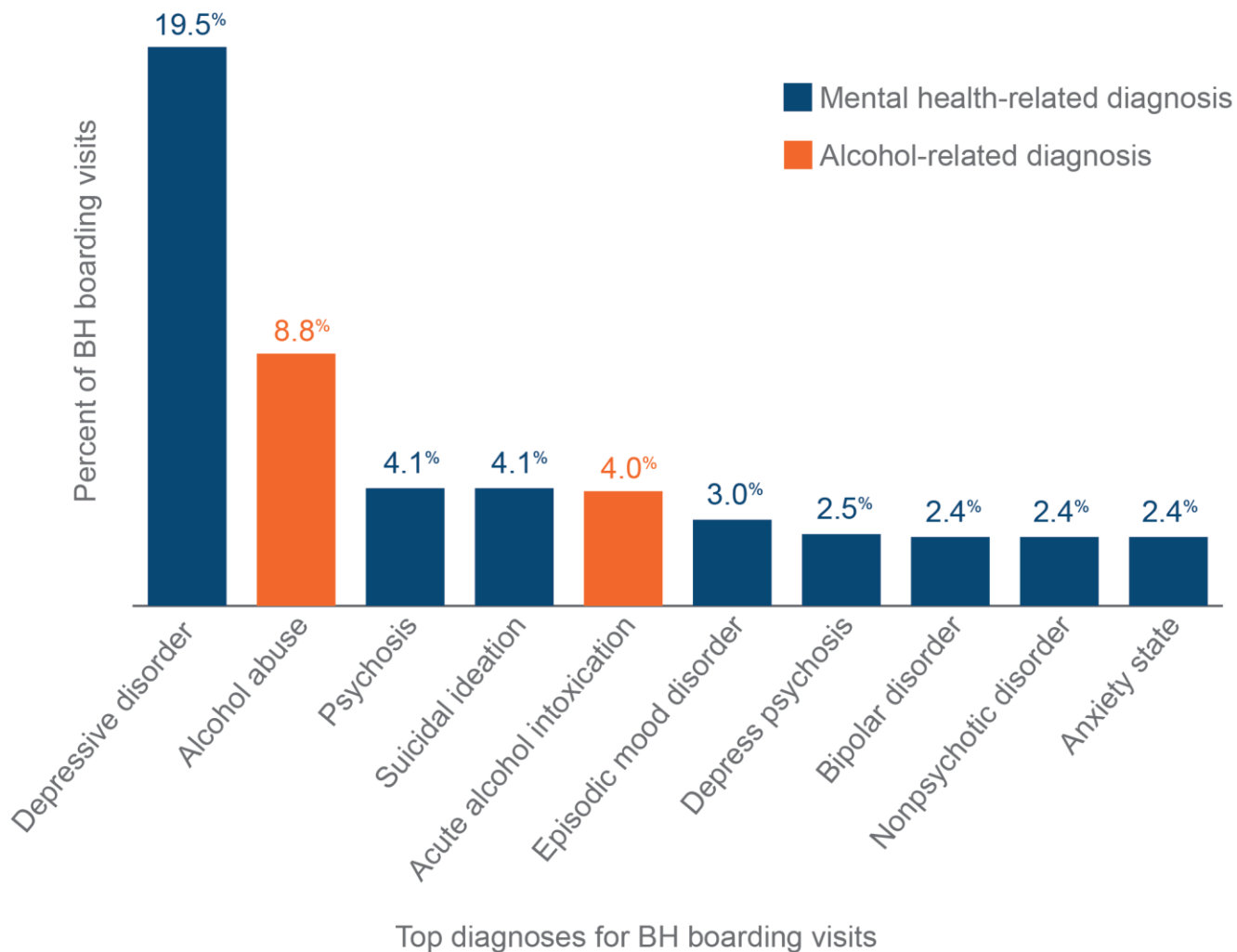
BH-related ED boarding by age group, 2015



Of patients with a BH diagnosis, teens (ages 12 to 17) were the most likely to board. Twenty one percent of teens boarded in 2015, compared to 14% of adults, 12% of children (ages 6 to 11), 8% of seniors (ages 65+), and only 2% of young children (ages 5 and under).

Teens and younger patients with a BH diagnosis were also more likely than other age groups to board for 2 or more days: approximately 20% of patients ages 17 and under boarded for 2 or more days, compared to just over 9% of adults and seniors. Further, almost 13% of children boarded for 4 or more days, compared to 10% of teens, and 4% of adults and seniors.

BH-related ED boarding by top BH primary diagnoses, 2015



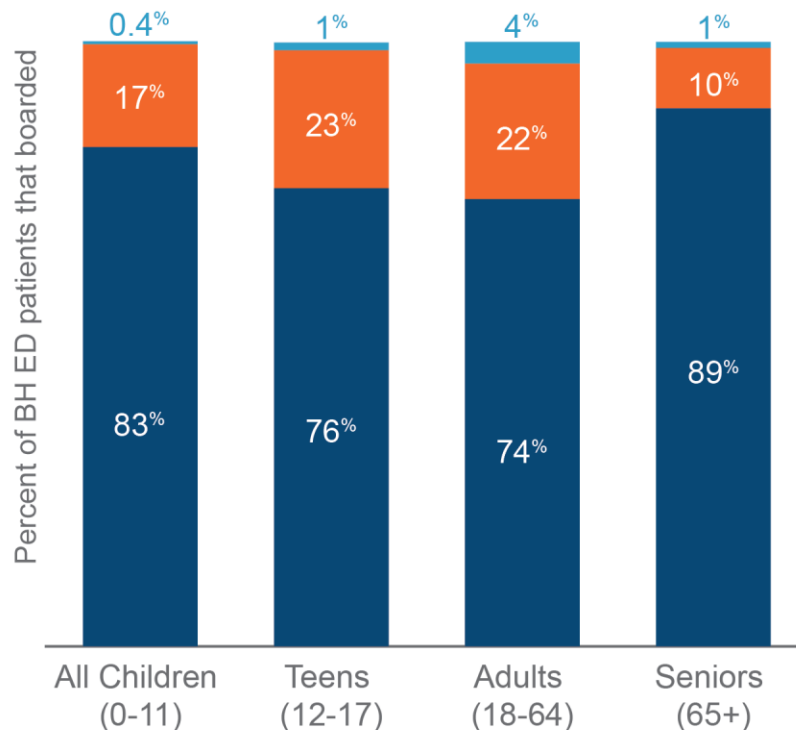
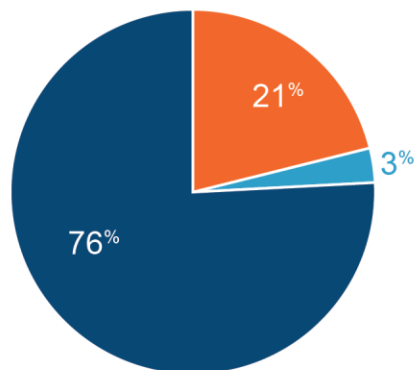
In 2015, ten BH diagnoses accounted for 53.1% of all BH-related ED boarding visits. Of the top ten BH diagnoses, 8 were mental health-related conditions and 2 were alcohol-related.

For each year from 2010 to 2015, depressive disorder and alcohol abuse were the two most common diagnoses among BH-related ED boarding visits. However, the share of BH-related ED boarding visits accounted for by these categories decreased between 2010 and 2015 by 2.5 and 1 percentage points respectively, while the share of boarding visits accounted for by suicidal ideation and acute alcohol intoxication grew.

Note: Depressive disorder defined as a diagnosis of ICD-9 311.0- "depressive disorder, not elsewhere classified." Depressive disorder is defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM), published by the American Psychiatric Association (APA) as (1) a mental state of depressed mood characterized by feelings of sadness, despair and discouragement; (2) mild depression that is not considered clinical depression; and (3) unpleasant, but not necessarily irrational or pathological, mood state characterized by sadness, despair or discouragement, the "blues"; may also involve low self-esteem, social withdrawal, and somatic symptoms such as eating and sleep disturbance.

Frequency of BH-related ED boarding visits, 2015

Percent of BH ED patients that boarded



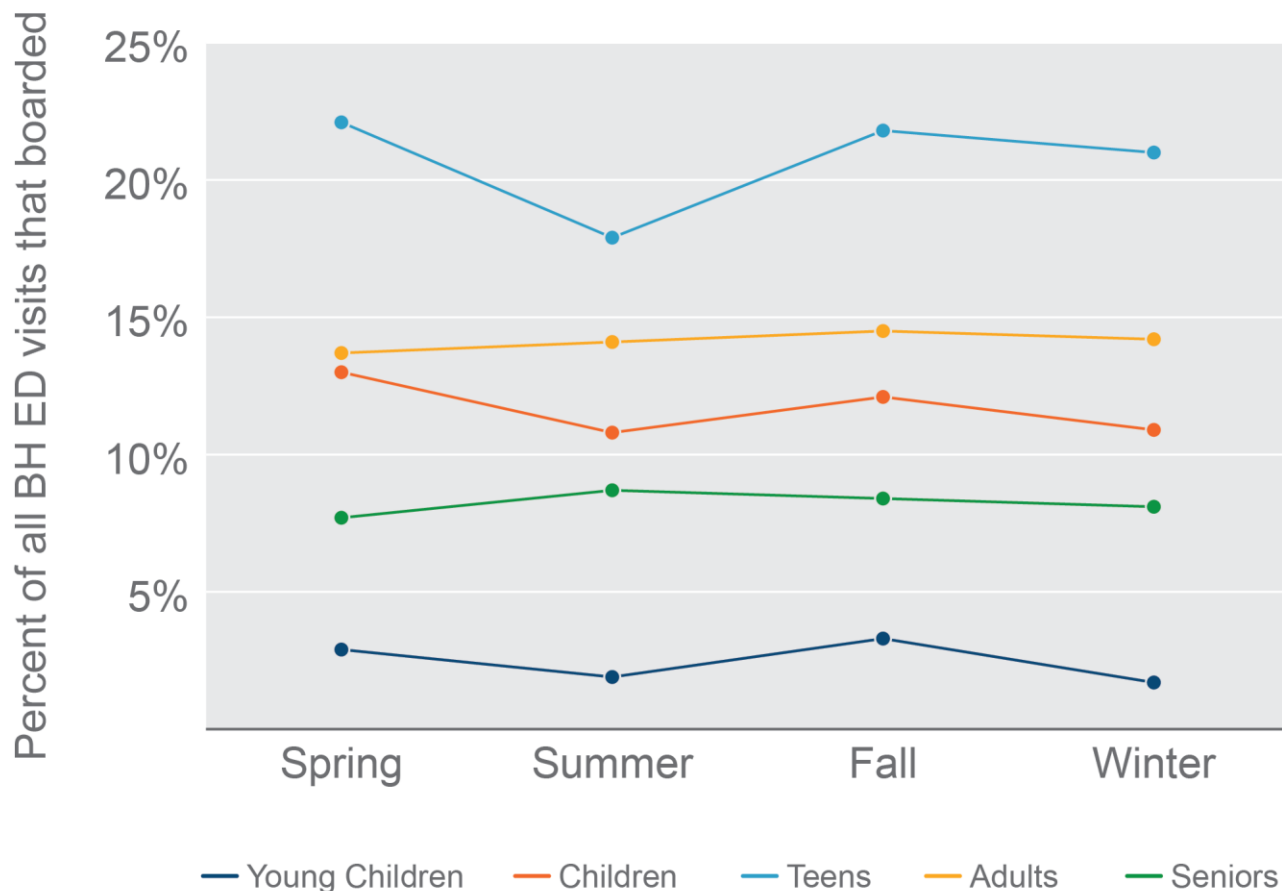
Number of BH ED boarding visits:

■ 1 visit ■ 2 to 4 visits ■ 5 or more visits

While the majority of BH ED boarders boarded once in 2015, almost a quarter boarded two or more times- 21% of BH ED boarders had 2 to 4 ED boarding visits and 3% had 5 or more.

Teens and adult BH ED boarders were more likely to have more than one BH ED boarding visit in 2015 - 26% of adult and 24% of teen BH ED boarders boarded two or more times, compared to 17% of all children and 11% of seniors.

BH-related ED boarding by age category and season, 2015



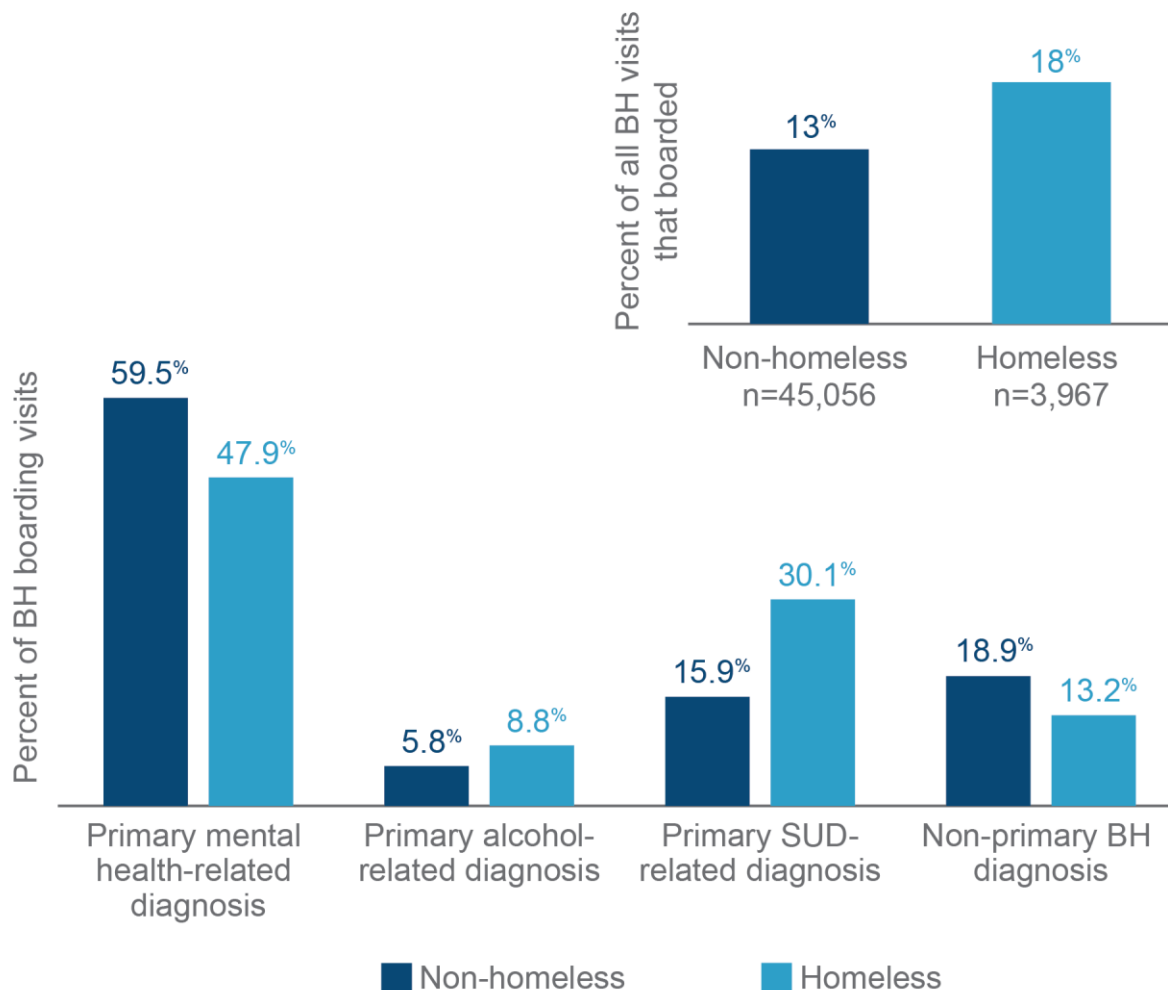
For most patients, the likelihood of boarding did not vary throughout the year. However, younger patients, especially teens, were more likely to board during the academic calendar year than the summer. In particular, the likelihood that teens, children, and young children with a BH diagnosis boarded rose during the fall and spring and fell during the summer.

Consistent with other research, this pattern may reflect BH needs that are aggravated during the academic calendar year and a need for greater services for children during this period.^{1,2}

1. Hansen B, Lang M. Back to school blues: Seasonality of youth suicide and the academic calendar. *Economics of Education Review*. 2011 Oct 31;30(5):850-61.
2. Reinke WM, Stormont M, Herman KC, Puri R, Goel N. Supporting children's mental health in schools: Teacher perceptions of needs, roles, and barriers. *School Psychology Quarterly*. 2011 Mar;26(1):1.

Notes: Age cohorts defined as: younger children (ages 5 and under); children (ages 6-11); teens (ages 12-17); adults (ages 18-64); and seniors (ages 65+).

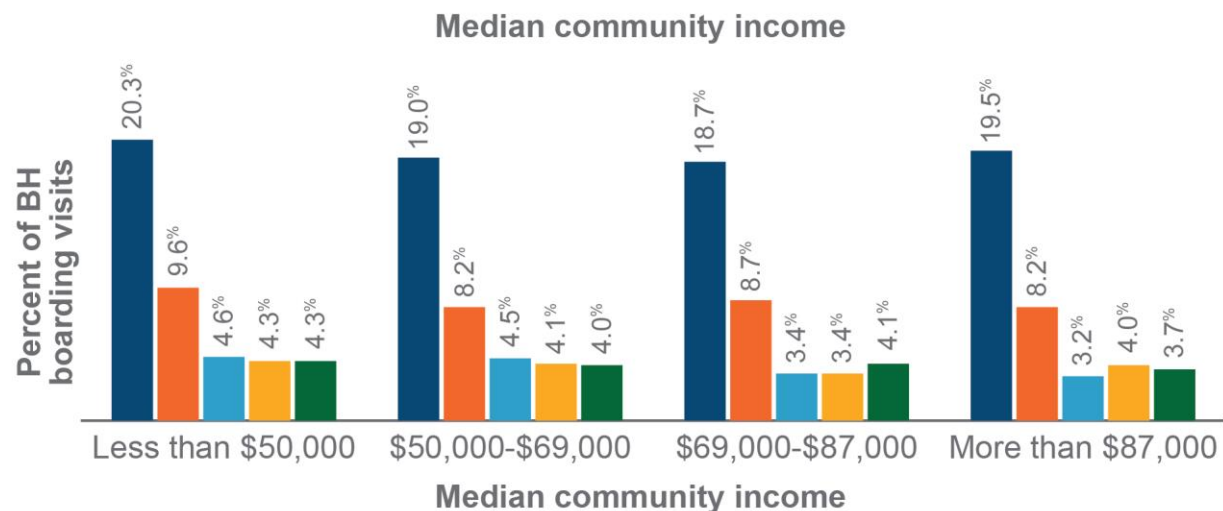
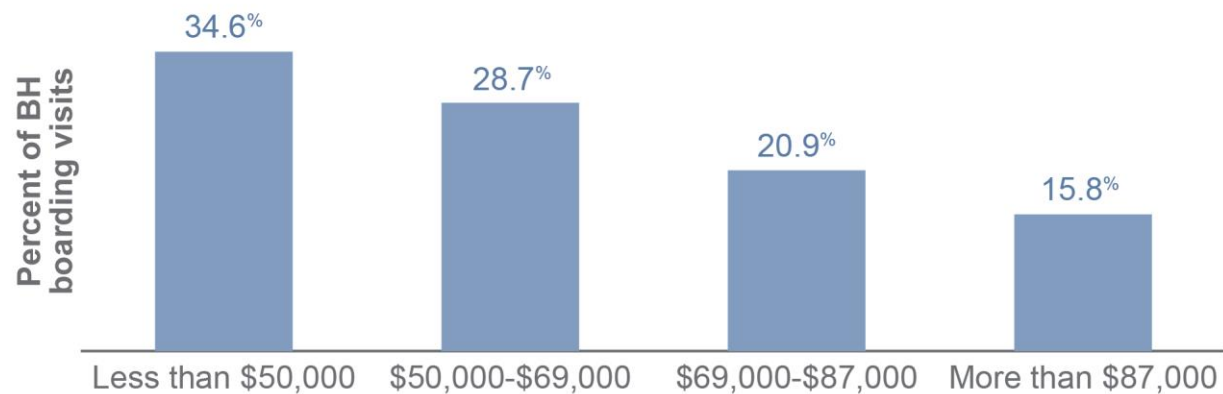
BH-related ED boarding and homeless patients, 2015



Compared to non-homeless patients, homeless patients were more likely to board. As seen in the top graph, 18% of homeless patients with a BH diagnosis boarded compared to 13% of non-homeless patients with a BH diagnosis.

The bottom graph shows that larger shares of homeless BH boarders had a primary SUD-related or alcohol-related diagnosis, compared to non-homeless BH ED boarders. Thirty percent of homeless BH boarders had a primary SUD-related diagnosis compared to 16% of the non-homeless BH ED boarding population.

BH-related ED boarding by median community income, 2015



■ Depressive disorder
 ■ Alcohol abuse
 ■ Psychosis
 ■ Acute alcohol intoxication
 ■ Suicidal ideation

Despite accounting for only 25% of the Commonwealth's population, residents residing in the lowest-income areas of the state accounted for 35% of all BH-related ED boarding visits.

As shown in the bottom graph, the 5 most common diagnoses for BH-related boarding visits were fairly consistent across income quartiles.

III. BH-related ED boarding methodology

To report on ED boarding, HPC used the Center for Health Information and Analysis' (CHIA) Emergency Department Database from 2011 to 2015 (10/1/2011- 9/30/2015). Included in the data are all ED visits, including Satellite Emergency facility visits. Excluded from the data are patients whose permanent zip code was outside of Massachusetts and ED visits that resulted in an outpatient observation stay or an inpatient admission of the patient at the reporting ED facility. Based on rough comparisons to data collected from the Department of Public Health, HPC estimates that 10 to 13% of BH ED boarders did not appear in CHIA's ED database. The length of stay in the ED was calculated by taking the difference between the registration and discharge times.

HPC identified BH-related ED visits using the ED Algorithm developed by John Billings and colleagues at New York University.¹ Any visit with a Billings' classified mental health, substance abuse, or alcohol-related diagnosis code (primary or otherwise) was included. HPC then created four BH diagnosis categories based on the patient's primary diagnosis: mental health-related; substance use disorder-related (SUD), which excludes alcohol for this analysis; alcohol-related; and non-BH-related primary diagnosis and at least one BH-related secondary diagnosis.

Payer categories were defined by CHIA based on expected payer and were grouped as follows:

- **Medicare:** expected primary payer source is fee-for-service Medicare or managed care Medicare.
- **MassHealth:** expected primary payer source is MassHealth, including MassHealth managed care.
- **Commercial:** Blue Cross and Blue Cross Managed Care; Commercial Insurance and Commercial Managed Care; HMO; PPO/Other managed care plans not elsewhere classified; point-of-service plans; exclusive provider organizations; and other non-managed care plans.
- **Uninsured:** self pay and free care.

Payer sources not included in the current reporting: Health Safety Net; Commonwealth Care/ConnectorCare Plans; Other Government Payment; Auto Insurance; and Worker's Compensation.

Finally, the findings in this chart pack may underestimate the number of people seeking care in the ED due to underlying BH conditions, as it is known that somatic presentations of BH complications (e.g., chest pain, headache, abdominal pain) are sometimes misdiagnosed and coded as medical conditions.^{1,2} At the same time, people who are known to have serious mental illness may have true medical emergencies mischaracterized or misdiagnosed as psycho-somatic symptoms.^{2,3}

1. Billings, J. Emergency Department Use in New York City. NYU Wagner School's Center for Health and Public Service Research. 2000. Available from: <http://wagner.nyu.edu/faculty/billings/nyued-background>.
2. Shefer G, Henderson C, Howard LM, Murray J, Thornicroft G. Diagnostic overshadowing and other challenges involved in the diagnostic process of patients with mental illness who present in emergency departments with physical symptoms—a qualitative study. PloS one. 2014 Nov 4;9(11):e111682.
3. Hert M, Cohen DA, Bobes J, Cetkovich-Bakmas MA, Leucht S, Ndeti DM, Newcomer JW, Uwakwe R, Asai I, Möller HJ, Gautam S. Physical illness in patients with severe mental disorders. II. Barriers to care, monitoring and treatment guidelines, plus recommendations at the system and individual level. World psychiatry. 2011 Jun 1;10(2):138-51.