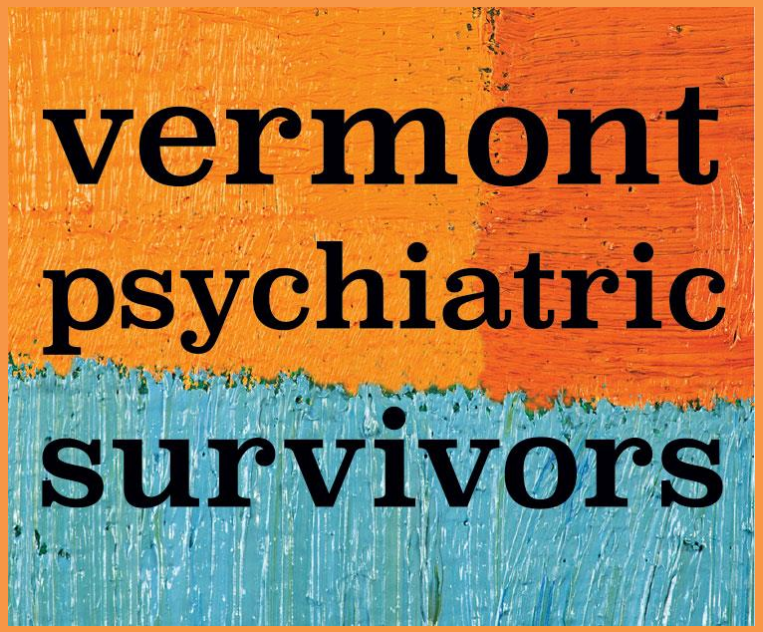

ED Waits Literature Review – As Presented

Wilda L. White

DMH S.133/Act 82 Public Meeting

Thursday, August 17, 2017

Table of Contents

Literature Review Background

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This project grows out of the work of the Data Needs Subcommittee, a subcommittee of the workgroup convened by the Department of Mental Health and Vermont Care Partner in early 2017 to address prolonged waits in Vermont emergency department for people presenting with psychiatric complaints.

The workgroup was immediately challenged by the lack of current or historical data that identified and/or quantified the issue of prolonged emergency department waits.

Therefore, the Subcommittee identified other strategies for analyzing the problem.

In a March 2017 memorandum, the Subcommittee set out alternative ways to obtain relevant data for problem-solving purposes.

The alternatives are shown on the next slide. I volunteered to explore alternative number four.

Literature Review Background

Short-term Alternatives to Prospective Data Collection	
1.	Collect length of stay (LOS) data across all settings. This data might be useful to better manage capacity and thereby increase throughput.
2.	Analyze data pertaining to high utilizers of ED and inpatient care. According to Emma Harrigan, two percent of involuntary patients (about 30 people) account for 20 percent of bed days. If we were to analyze the data pertaining to these high utilizers, we may be able to increase capacity by devising alternatives to managing their care.
3.	Accept Isabelle Desjardins, M.D. offer to perform retrospective chart analysis. Dr. Desjardins has offered to perform a retrospective chart analysis to assess demand for inpatient residential and nursing home care.
4.	Look to data and studies collected by neighboring states. The data are useful for identifying the factors associated with prolonged length of stay and may suggest a course of action to address the problem. Reviewing these studies could also be valuable in testing our workgroup assumptions and proposed solutions.
5.	Prioritize data needs. As a framework for collecting data, focus only on data that are needed to test/prove assumptions and justify proposed solutions.
6.	Call on local universities and graduate students to assist with retrospective analysis using National Hospital Ambulatory Medical Care Survey and other existing databases.
7.	Focus on a Few Metrics: (1) ED Length of Stay; (2) Inpatient Length of Stay; (3) Readmission Rate; (4) Walk-Off Rate (the rate of people who are brought to the ED for emergency examination and on warrants who are found not in need of inpatient hospitalization)

Methodology

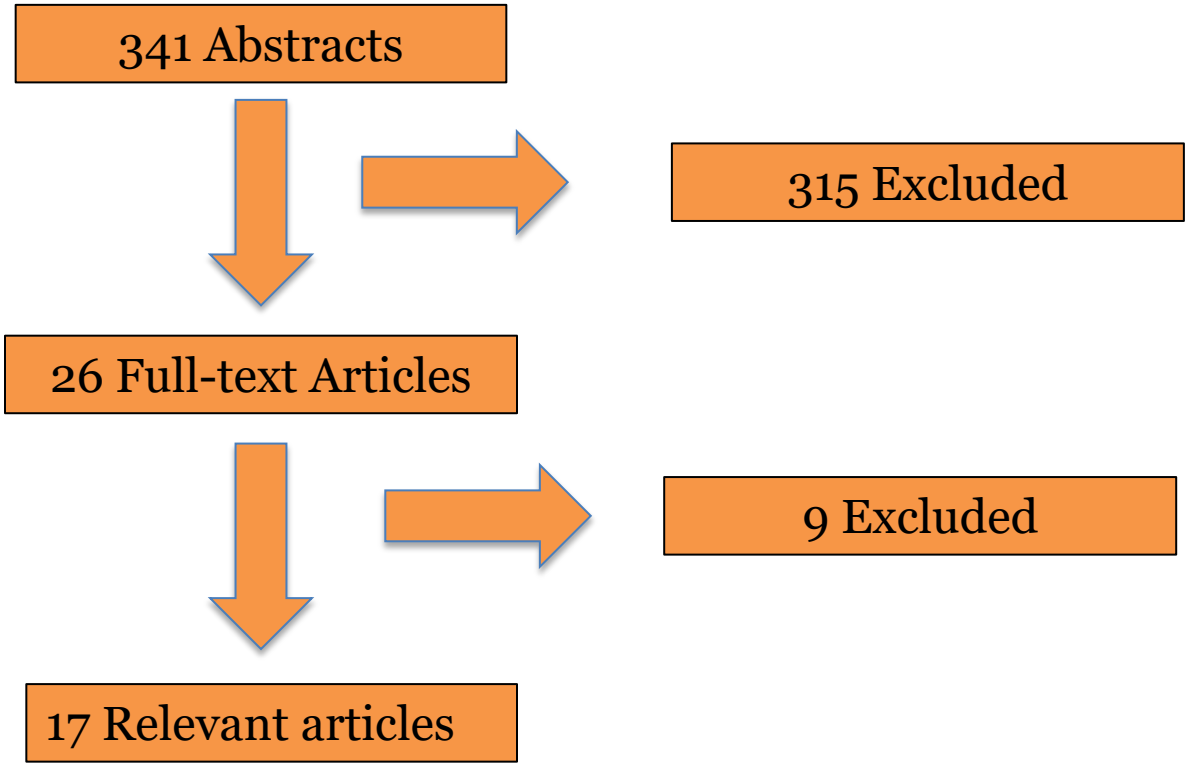
Conducted comprehensive PubMed (MEDLINE) search to identify articles that

1) Identified and/or quantified prolonged ED wait times for psychiatric patients; and/or
2) Studied causes, effects or solutions to prolonged ED waits for psychiatric patients;
3) Described data collection and analysis methodology;
4) Occurred in general ED setting

Identified a broad set of search terms to encompass inclusion criteria:

1) Emergency, emergency department, ED, ER
2) Psychiatric, mental health, behavioral health, mental illness
3) Waiting, boarding, crowding, prolonged, length of stay

Literature Selection Process



Study Quality Assessment

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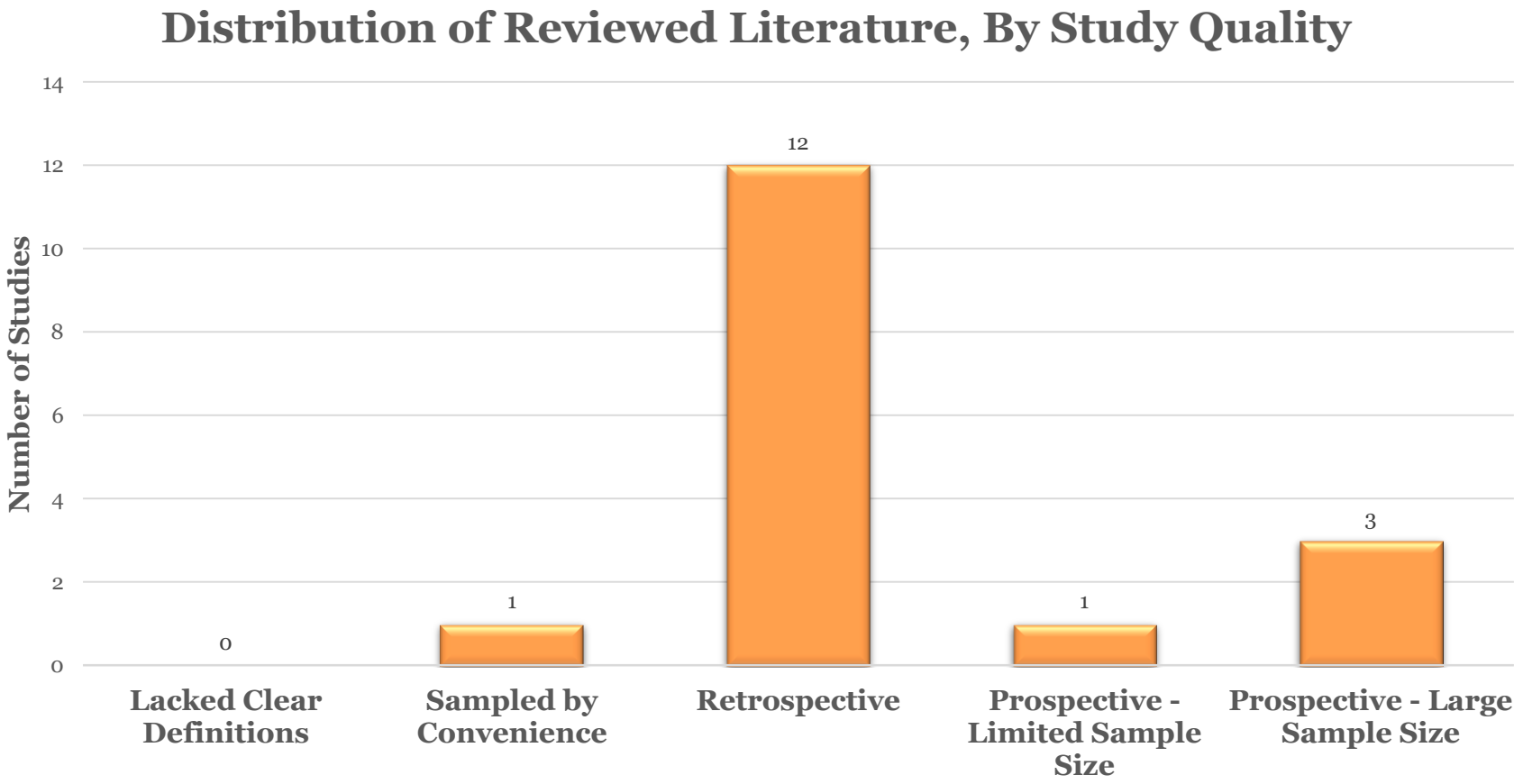
HIGH (1)	Prospective studies that studied clearly defined outcome measure with a random or consecutive sample that was large enough to achieve narrow confidence intervals and diverse enough to suggest generalizability of the findings
(2)	Prospective studies more limited in terms of sample size or generalizability
(3)	Retrospective studies that were large enough to achieve narrow confidence intervals and diverse enough to suggest generalizability of the findings
(4)	Sampled by convenience or other techniques that were prone to introduce bias
LOW (5)	Lacked clearly defined or validated outcome measure

Literature, By Study Quality



Literature Themes

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I. Characteristics of and disparities between ED psychiatric and non-psychiatric patients

II. Factors or predictors of prolonged ED waiting for psychiatric patients

III. Solutions to prolonged ED waiting for psychiatric patients

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I.

Differences and Disparities between Emergency Department Psychiatric and Non-Psychiatric Patients

Description of Adult Data

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- 2001 – 2011 from NHAMCS, comprising 65 million psychiatric visits, ~ 6% of all ED visits

- Data collected included:
  - Age, Sex, Race/Ethnicity
  - Visit characteristics (visit reason, diagnosis, services ordered or provided, treatments)
  - Insurance status
  - Hospital characteristics

NHAMCS Data Results

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ED Diagnosis, By Prevalence (Adults)

Non-Psychiatric	Psychiatric
• Superficial Injury	• Alcohol-related disorders
• Nonspecific chest pain	• Anxiety disorders
• Abdominal pain/back pain	• Suicide or intentional self-harm

NHAMCS Data Results

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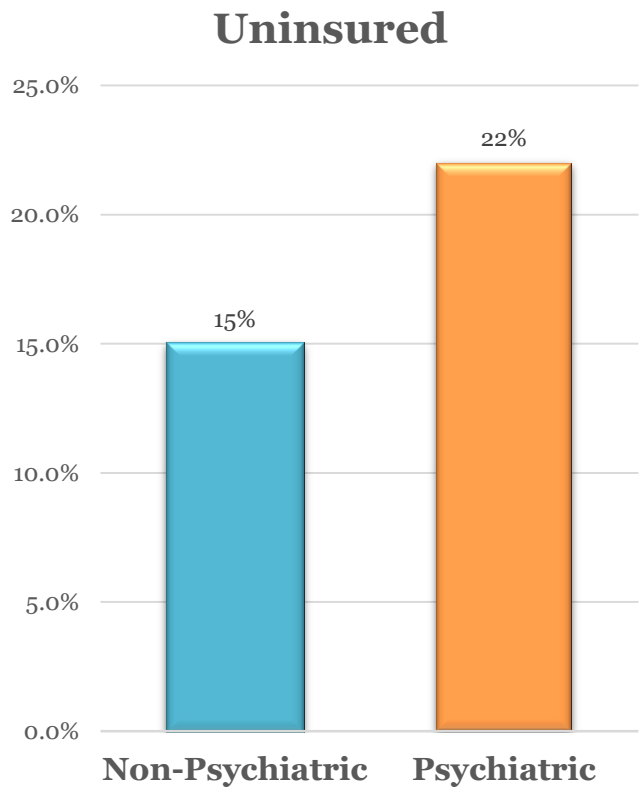
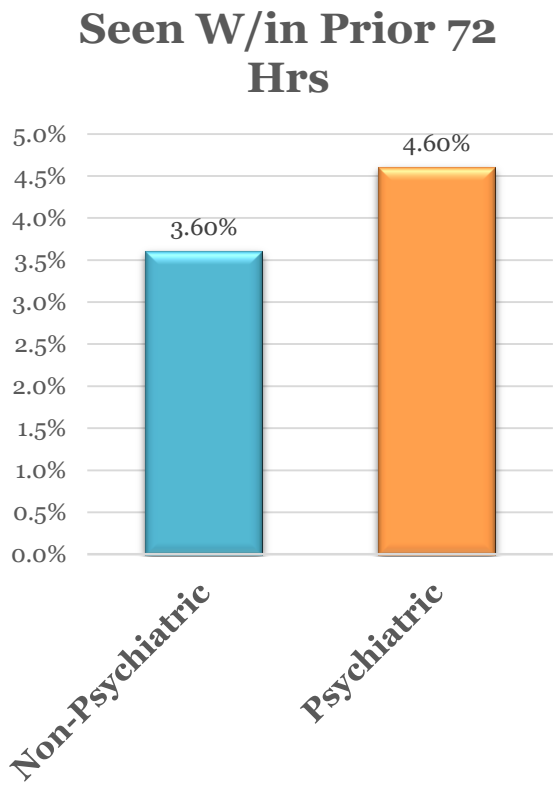
Selected Characteristics of Adult ED Patients





NHAMCS Data Results (cont'd)

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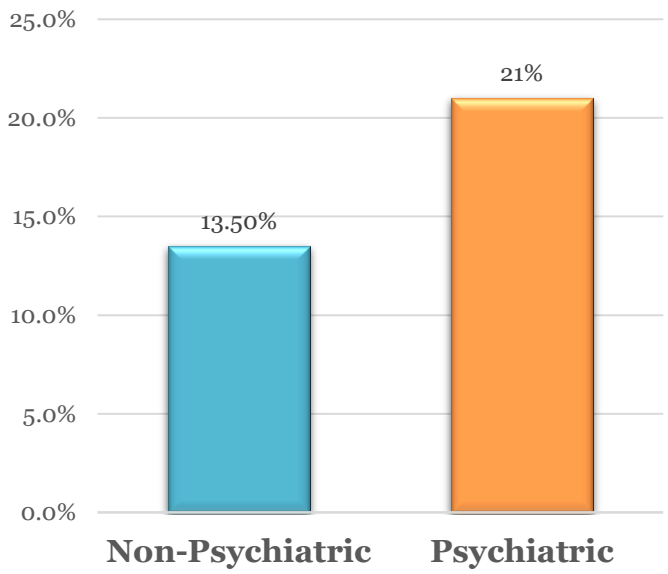
Emergency Department Disposition (Adults)

Admission Required



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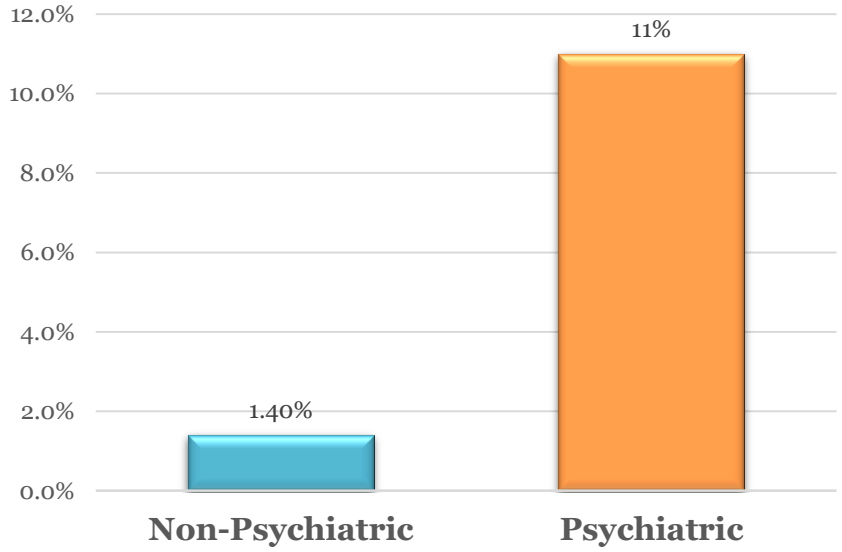

NHAMCS Data Results (cont'd)

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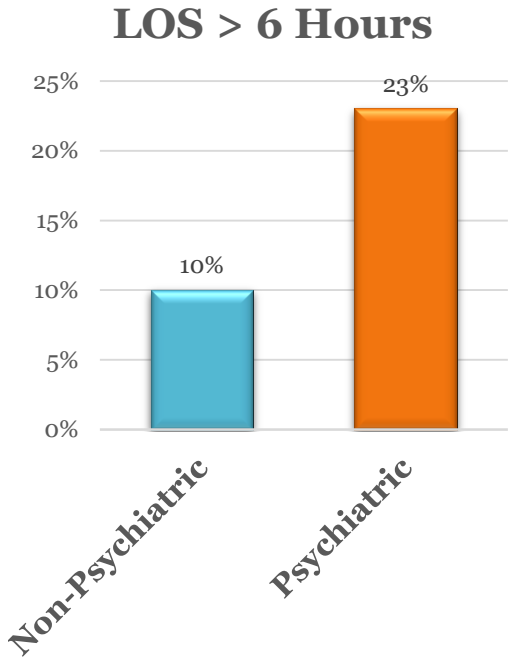
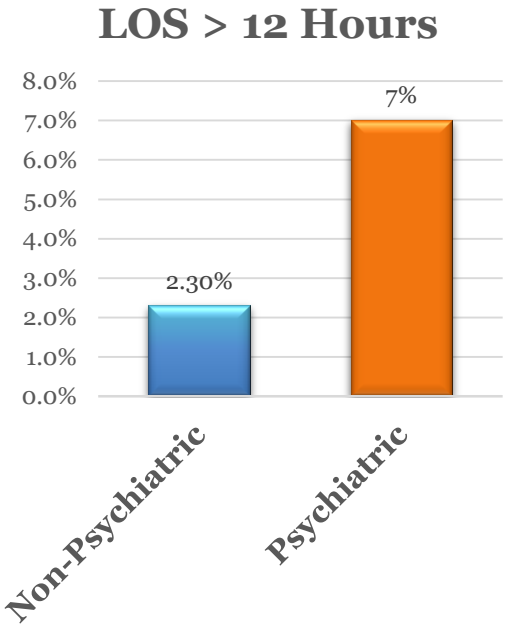
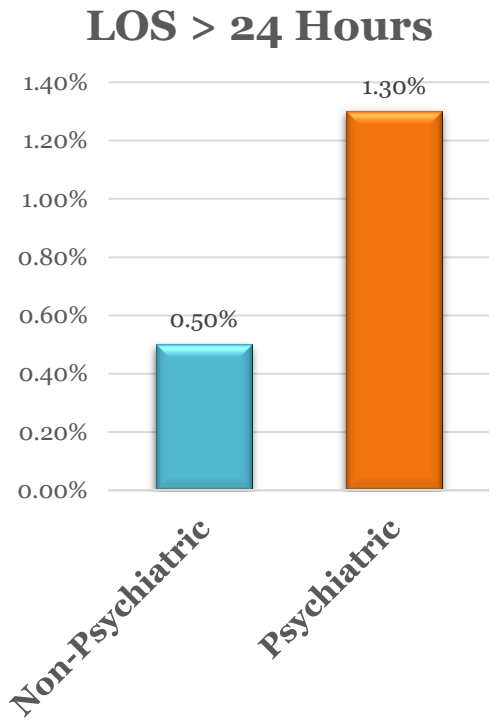
Emergency Department Length of Stay (LOS)







NHAMCS Data Results (cont'd)

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2011 90-Percentile LOS compared

	Psychiatric	Non-Psychiatric	Difference
Observation	23 hours	9 hours	14 hours
Transferred	12 hours	6 hours	6 hours
Discharged	8 hours	6 hours	2 hours

90th-percentile LOS offers a more complete picture of the outliers that may be driving prolonged ED waits. It is an accepted measure of LOS in other countries, including Canada and Australia.

Description of Pediatric Data

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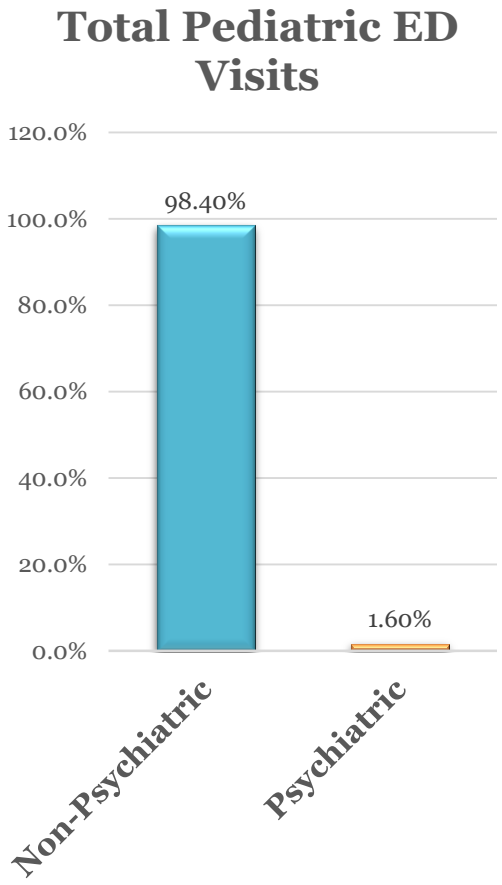
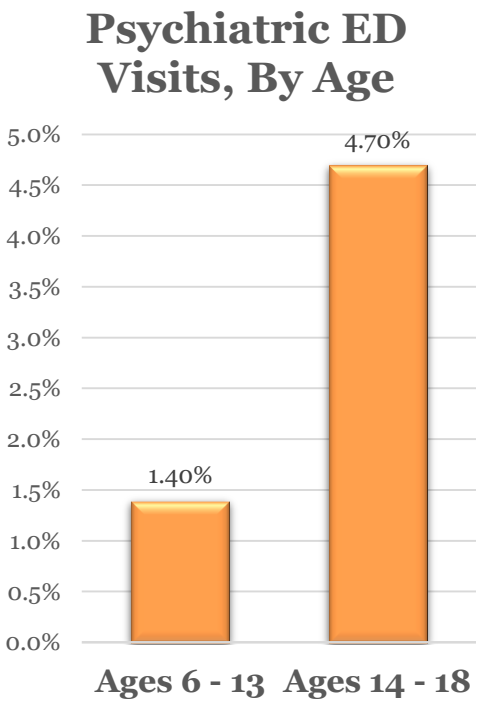
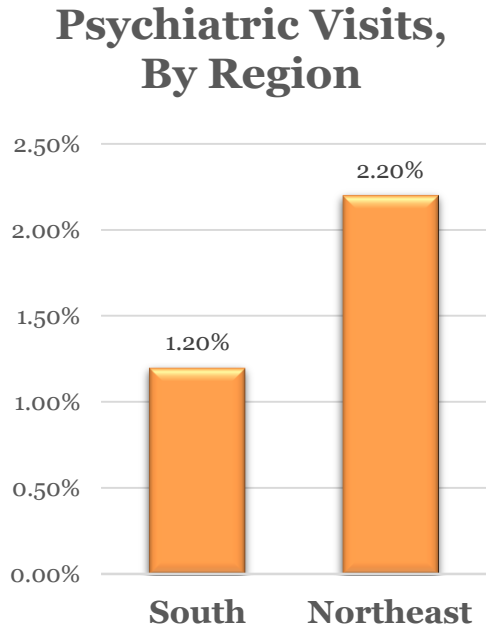
- 2001 – 2008 from NHAMCS, patients < or 18 years old

- Data collected included:
  - Age, Sex, Race/Ethnicity
  - Visit characteristics (visit reason, diagnosis, services ordered or provided, treatments)
  - Insurance status
  - Hospital characteristics

NHAMCS Data Results (Pediatric)







NHAMCS Data Results (Pediatric)

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ED Diagnosis, By Prevalence

Non-Psychiatric	Psychiatric
• Fever and otitis media	• Depression
• Open wounds of head, neck and trunk	• Anxiety
• Abdominal pain	• Disruptive behavior or ADHD

NHAMCS Data Results (2001 - 2008)

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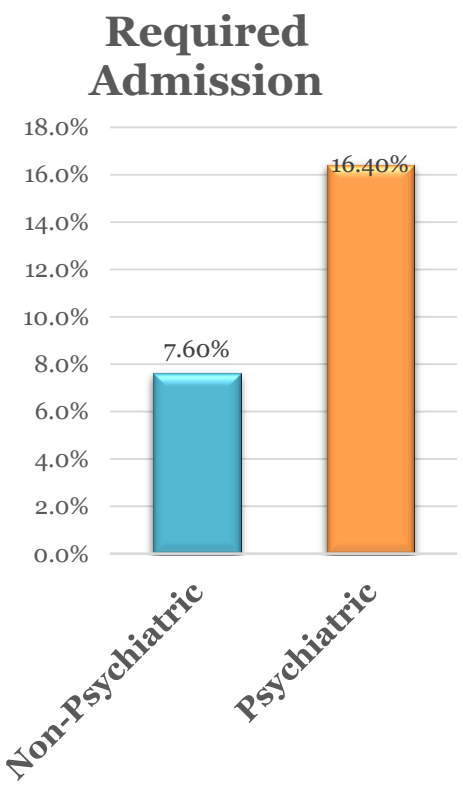
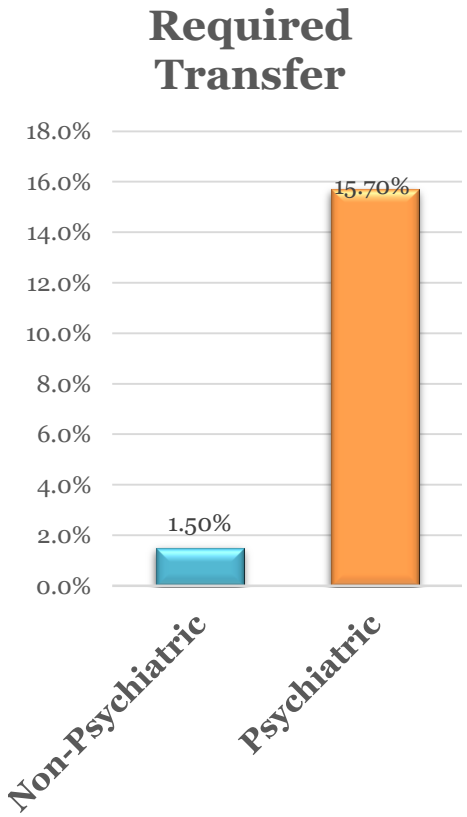
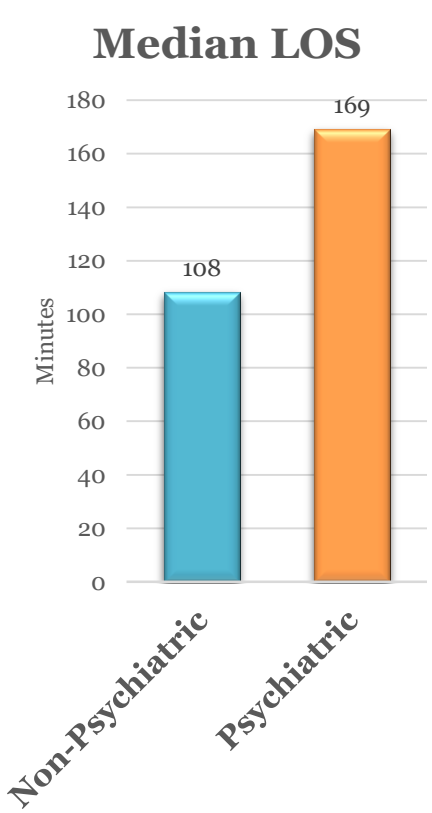
ED Pediatric Non-Psychiatric v. Psychiatric Patient







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II.

Factors or Predictors of Prolonged ED Waits for Psychiatric Patients

Predictors of Prolonged Adult ED Waits

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Insurance	Medicaid/Uninsured two times more likely to remain in ED for >24 hours compared to privately insured
Age	> 65
Visit Reason	Suicidal Ideation/Homicidal Ideation
Diagnosis	Cognitive disorder; personality disorder
Visit Characteristics	Use of restraints or sitters; history of aggressive behavior
Living Situation	Experiencing homelessness

Predictors of Prolonged Child ED Waits

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Region of Residence	Live in Northeast, South, metropolitan area
Age	Six to 13 years of age
Visit Reason	Intentional self-injury
Diagnosis	Autism; developmental and intellectual disabilities
Time of Visit	Weekend
Season	Months without school vacation

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III.

Solutions to Prolonged ED Waits for Psychiatric Patients

Solutions in the Literature

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- Quantify and monitor prolonged waits
- Improve ED care for psychiatric patients
- Make more efficient use of existing capacity (e.g., computerized bed management system)
- Collaborate between emergency rooms and community outpatient alternatives
- Work with law enforcement to divert patients away from ED
- Invest in comprehensive community crisis services
- Invest in continuity of care

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IV.

Themes Supported by Nationwide Data and/or Data from Other States

Themes Supported by Data

- **More people are presenting at Emergency Departments**
  - Between 2002 – 2011, 30% increase in total ED visits
  - Psychiatric visits as a percentage of total visits increased by 18.5%
  - Total number of psychiatric visits increased by 55%
- **Client presentation (past and present) impacts willingness of providers to accept patients**
  - Homelessness; use of restraints and sitters; history of aggressive behavior; diagnosis; age, all affect LOS in ED

Themes Supported by Data

- **Workforce issues (variation in staff experience, undertrained ED nursing staff) impact ED LOS**
  - Undertrained staff may increase need for restraints, sitters, involuntary emergency procedures, all of which lead to prolonged ED waits
  - Undertrained staff may misinterpret patient behavior, which may lead to prolonged ED waits

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V.

Themes Unsupported by Nationwide Data and/or Data from Other States

Themes Unsupported by Data

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- **Longer stays in inpatient hospitals reduce availability to those who are waiting**
  - Prolonged ED waits driven also by characteristics of patients, rather than solely lack of in-patient beds
- **Increase in acuity of patients presenting to Emergency Departments**
  - Psychiatric diagnoses in ED, by prevalence, have remained constant over last 15 years; nationally, alcohol-related disorders; anxiety; and suicide or intentional self-harm are most prevalent psychiatric diagnoses in ED

Themes Unsupported by Data

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- **Increase in acuity of patients presenting to Emergency Departments (cont'd)**

	2-year average rates of reasons (%)				
Reason	2002-03	2004-05	2006-07	2008-09	2010-11
Mood disorders	8.9	11.1	11.6	12.4	10.9
Alcohol-related disorders**	27.9	31.3	30	32.5	33.7
Anxiety disorders	25.4	25.3	22.9	24.8	24.3
Schizophrenia or psychotic disorders	9.2	7.4	7.4	6.3	7.2
Nonalcohol substance abuse disorders	12.7	11.7	13.5	10.6	11.5
Suicide attempt or intentional self-harm	10.8	9.1	8.8	10.2	14.7
Other	5.3	4.2	5.9	3.4	2.3

APPENDIX

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1. Citations to literature reviewed
2. Definitions
3. Other resources consulted

Citations to Literature Reviewed

vermont psychiatric survivors

	Citation
1.	Analysis of Emergency Department Length of Stay for Mental Health Patients at Ten Massachusetts Emergency Departments. Pearlmutter MD, Dwyer KH, Burke LG, Rathlev N, Maranda L, Volturo G. Ann Emerg Med. 2016 Dec 30. pii: S0196-0644(16)31217-3. doi: 10.1016/j.annemergmed.2016.10.005. [Epub ahead of print] PMID: 28063614
2.	Hours and Miles: Patient and Health System Implications of Transfer for Psychiatric Bed Capacity. O'Neil AM, Sadosty AT, Pasupathy KS, Russi C, Lohse CM, Campbell RL. West J Emerg Med. 2016 Nov;17(6):783-790. Epub 2016 Oct 7. PMID: 27833689
3.	Correlates of Length of Stay and Boarding in Florida Emergency Departments for Patients With Psychiatric Diagnoses. Smith JL, De Nadai AS, Storch EA, Langland-Orban B, Pracht E, Petrila J. Psychiatr Serv. 2016 Nov 1;67(11):1169-1174. Epub 2016 Jul 1. PMID: 27364809

Citations to Literature Reviewed (cont'd)

vermont psychiatric survivors

	Citation
4.	Factors Associated With the Likelihood of Hospitalization Following Emergency Department Visits for Behavioral Health Conditions. Hamilton JE, Desai PV, Hoot NR, Gearing RE, Jeong S, Meyer TD, Soares JC, Begley CE. Acad Emerg Med. 2016 Nov;23(11):1257-1266. doi: 10.1111/acem.13044. Epub 2016 Oct 31. PMID: 27385617
5.	Emergency Department Length-Of-Stay For Psychiatric Visits Was Significantly Longer Than For Nonpsychiatric Visits, 2002-11. Zhu JM, Singhal A, Hsia RY. Health Aff (Millwood). 2016 Sep 1;35(9):1698-706. doi: 10.1377/hlthaff.2016.0344. PMID: 27605653
6.	Prolonged length of stay in ED psychiatric patients: a multivariable predictive model. Warren MB, Campbell RL, Nestler DM, Pasupathy KS, Lohse CM, Koch KA, Schlechtinger E, Schmidt ST, Melin GJ. Am J Emerg Med. 2016 Feb;34(2):133-9. doi: 10.1016/j.ajem.2015.09.044. Epub 2015 Oct 3. PMID: 26527177
7.	Exceeding the Legal Time Limits for Involuntary Mental Health Examinations: A Study of Emergency Department Delays. Brennaman L. Policy Polit Nurs Pract. 2015 Aug;16(3-4):67-78. doi: 10.1177/1527154415602296. Epub 2015 Sep 8. PMID: 26351215

Citations to Literature Reviewed (cont'd)

vermont psychiatric survivors

	Citation
8.	Lengths of stay for involuntarily held psychiatric patients in the ED are affected by both patient characteristics and medication use. Wilson MP, Brennan JJ, Modesti L, Deen J, Anderson L, Vilke GM, Castillo EM. Am J Emerg Med. 2015 Apr;33(4):527-30. doi: 10.1016/j.ajem.2015.01.017. Epub 2015 Jan 20. PMID: 25708970
9.	Predictors of psychiatric boarding in the emergency department. Misek RK, DeBarba AE, Brill A. West J Emerg Med. 2015 Jan;16(1):71-5. doi: 10.5811/westjem.2014.10.23011. Epub 2014 Nov 26. PMID: 25671012
10.	Factors associated with longer length of stay for mental health emergency department patients. Stephens RJ, White SE, Cudnik M, Patterson ES. J Emerg Med. 2014 Oct;47(4):412-9. doi: 10.1016/j.jemermed.2014.04.040. Epub 2014 Jul 26. PMID: 25074781
11.	Psychiatric boarding incidence, duration, and associated factors in United States emergency departments. Nolan JM, Fee C, Cooper BA, Rankin SH, Blegen MA. J Emerg Nurs. 2015 Jan;41(1):57-64. doi: 10.1016/j.jen.2014.05.004. Epub 2014 Jul 14. PMID: 25034663

Citations to Literature Reviewed (cont'd)

vermont psychiatric survivors

	Citation
12.	The impact of psychiatric patient boarding in emergency departments. Nicks BA, Manthey DM. Emerg Med Int. 2012;2012:360308. doi: 10.1155/2012/360308. Epub 2012 Jul 22. PMID: 22888437
13.	Patient- and practice-related determinants of emergency department length of stay for patients with psychiatric illness. Weiss AP, Chang G, Rauch SL, Smallwood JA, Schechter M, Kosowsky J, Hazen E, Haimovici F, Gitlin DF, Finn CT, Orav EJ. Ann Emerg Med. 2012 Aug;60(2):162-71.e5. doi: 10.1016/j.annemergmed.2012.01.037. Epub 2012 May 2. PMID: 22555337
14.	Characteristics of adult psychiatric patients with stays of 24 hours or more in the emergency department. Chang G, Weiss A, Kosowsky JM, Orav EJ, Smallwood JA, Rauch SL. Psychiatr Serv. 2012 Mar;63(3):283-6. doi: 10.1176/appi.ps.201000563. PMID: 22267250

Citations to Literature Reviewed (cont'd)

vermont psychiatric survivors

	Citation
15.	Length of stay of pediatric mental health emergency department visits in the United States. Case SD, Case BG, Olfson M, Linakis JG, Laska EM. J Am Acad Child Adolesc Psychiatry. 2011 Nov;50(11):1110-9. doi: 10.1016/j.jaac.2011.08.011. Epub 2011 Oct 2. PMID: 22023999
16.	Predictors of psychiatric boarding in the pediatric emergency department: implications for emergency care. Wharff EA, Ginnis KB, Ross AM, Blood EA. Pediatr Emerg Care. 2011 Jun;27(6):483-9. doi: 10.1097/PEC.0b013e31821d8571. PMID: 21629148
17.	Hospital variability in emergency department length of stay for adult patients receiving psychiatric consultation: a prospective study. Chang G[1], Weiss AP, Orav EJ, Jones JA, Finn CT, Gitlin DF, Haimovici F, Hazen E, Kosowsky JM, Schechter MD, Rauch SL. Ann Emerg Med. 2011 Aug;58(2):127-136.e1. doi: 10.1016/j.annemergmed.2010.12.003. Epub 2011 Jan 12.

Literature Definitions

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Disposition means (a) discharge; (b) admission to medical or psychiatric bed; and/or (c) transfer to an acute facility

Length of Stay means time of arrival to the ED to disposition

Literature Definitions (cont'd)

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National Hospital Ambulatory Medical Care Survey is a survey conducted by the Centers for Disease Control and Prevention.

It collects data on the use and delivery of ambulatory care services in a variety of settings, excluding federal hospitals.

Using a four-stage probability procedure, NHAMCS derives unbiased national estimates based on sampling visits to hospital emergency and outpatient departments.

Literature Definitions (cont'd)

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Non-psychiatric visit (aka "medical") means any visit that is not classified as a psychiatric visit by ICD code (see definition of psychiatric visit)

Pediatric patient means a patient less than 18 or 18 years of age

Prolonged ED Wait means a wait greater than four hours for discharge or eight hours for admission

Literature Definitions (cont'd)

vermont psychiatric survivors

Prolonged ED Wait means a wait greater than four hours for discharge or eight hours for admission

Psychiatric visit means one of three recorded ICD 9th Rev (ICD-9) diagnostic codes indicative of substance use or primary psychiatric diagnosis

Other Resources Consulted

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	Citation
1.	Who's Boarding in the Psychiatric Emergency Service? Simpson SA, Joesch JM, West II, Pasic J West J Emerg Med. 2014 Sep;15(6):669-74. doi: 10.5811/westjem.2014.5.20894. PMID: 25247041 PMCID: PMC4162727 DOI: 10.5811/westjem.2014.5.20894
2.	Predictors of Hospital Length and Cost of Stay in a National Sample of Adult Patients with Psychotic Disorders. Bessaha ML, Shumway M, Smith ME, Bright CL, Unick GJ. Psychiatr Serv. 2017 Jun 1;68(6):559-565. doi: 10.1176/appi.ps.201600312. Epub 2017 Feb 1.
3.	Length of Inpatient Stay of Persons With Serious Mental Illness: Effects of Hospital and Regional Characteristics Sungkyu Lee, Ph.D., Aileen B. Rothbard, Sc.D., and Elizabeth L. Noll, M.A. View Author and Article Information Published online: September 01, 2012 | https://doi.org/10.1176/appi.ps.201100412
4.	Behavioral Health Patient Boarding in the ED IAHSS-F RS-15-02, December 26, 2015 IAHSS Foundation, Evidence Based Healthcare Security Research Series

Other Resources Consulted (cont'd)

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	Citation
5.	Vidhya Alakeson, Nalini Pande and Michael Ludwig A Plan to Reduce Emergency Room 'Boarding' of Psychiatric Patients Health Affairs 29, no. 9 (2010): 1637-1642 Doi: 10.1377/hlthaff.2009.0336
6.	Waiting for Care: Causes, Impacts and Solutions to Psychiatric Boarding in Arizona Presented by the Arizona Hospital and Healthcare Association July 2015
7.	ED Length of Stay Issues for Behavioral Health Patients Commonwealth of Massachusetts Executive Office of Health and Human Services January 2, 2013
8.	Massachusetts General Court Mental Health Committee Report, Phase I and Phase II, Final #SCDMH821030H120000 June 2014 Submitted by Abt Associates in partnership with The Technical Assistance Collaborative (TAC)
9.	Report of the Mental Health Advisory Committee in accordance with Section 186 of Chapter 139 of the Acts of 2010 and Chapter 38 of the Acts of 2013, submitted June 30, 2014

Other Resources Consulted (cont'd)

	Citation
10.	Emergency Department Boarding of Psychiatric Patients in Oregon: Report Briefing Oregon Health Authority Public Health Division February 1, 2017
11.	Care of the Psychiatric Patient in the Emergency Department White Paper Emergency Nurses Association, 2013
12.	Emergency Department Visits Related to Schizophrenia Among Adults Aged 18 – 64: United States 2009 – 2011 NCHS Data Brief NO. 215, September 2015 Michael Albert, M.D., M.P.H.; and Linda F. McCaig, M.P.H.
13.	Overview of Emergency Department Visits in the United States, 2011 (Statistical Brief #174) Audrey J. Weiss, Ph.D., Lauren M. Wier, M.P.H., Carol Stocks, Ph.D., R.N., and Janice Blanchard, M.D., Ph.D. Healthcare Cost and Utilization Project (Agency for Healthcare Research and Quality) June 2014
14.	Reasons for Emergency Room Use Among U.S. Adults Aged 18-64: National Health Interview Survey, 2013 and 2014 Renee M. Gindi, Ph.D., M.P.H.; Lindsey I. Black, M.P.H.; and Robin A. Cohen, Ph.D., Division of Health Interview Statistics National Health Statistics Reports, Number 90; February 18, 2016 U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics

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