



MENTAL HEALTHCARE FOR ALL

2020

Team 124
DS4A Empowerment

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Table of Contents

3	Meet Our Team
4	Introduction
6	Methods and Models
7	Application/Dashboard
8	Datafolio
9	Data Wrangling and EDA
11.....	Descriptive and Statistical Analysis
13.....	Conclusion
14.....	Acknowledgements

Meet Our Team



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“What mental health needs is more sunlight, more candor, and more unashamed conversation.”

– Glenn Close

Introduction

Mental health has become an even more important topic since the start of the pandemic. The pandemic not only altered our social lives, but also changed the dynamics of how we cope with our emotions. We went from being able to socialize to all of a sudden being isolated with little to no interaction with others. This psychological change was drastic for many and still continues to be so, and with that in mind, it brought to light the issues of mental health and the impact it has on everyone. No one is safe from it, yet not everyone gets equal, if any, help or treatment.

Defining the Problem

The question that we decided to explore was, 'How to expand access to mental healthcare services, especially to vulnerable communities?'. Our preliminary course of action was to then:

- Identify gaps in mental healthcare access and propose potential solutions to fill those gaps.
- Analyze of the access of mental healthcare services provided in various states.
- Determine which states provide the greatest and least access to care.
- Research the causes for lack of access to mental healthcare
- Identify which challenges to access to care are the greatest and analyze the disparity

Why Does This Problem Matter?

Mental health is an important part of an individual's wellbeing and on a larger scale contributes to the welfare of a community. According to the National Alliance on Mental Illness, 1 in 5 people experience some form of mental illness. Access to care can allow individuals to recover and realize their potential.

Interest in measures to support emotional wellbeing has been highlighted because of the pandemic and the resulting need to socially distance. Still, some communities are particularly vulnerable to gaps in access to mental health services. Communities need to know where these gaps in services occur as well as potential solutions to cover the gaps.

Potential Audience

Government officials (federal, state and/or county) and those in the healthcare industry are our target audience. They have the greatest impact on individuals who are in need of mental health care since they are the determining factor for how their respective agencies approach mental healthcare. More specifically, our target audience would be:

- States, county, and city government agencies
- Health Associations
- Healthcare Providers
- Mental health care associations
- Healthcare Educators and Education systems

Methods and Models



Visualizations

Presenting patterns found from the data will be done best through visualizations. Our project will include these visualizations:

- Packed bubbles to explore mental healthcare treatment
- Ranking chart of states and the services provided
- Maps to display disparity across the United States



Models

To clearly identify the gaps in mental healthcare access for a community, analyses will be run on supervised models. Some of the models that will be used are:

- Tableau was used to visually analyze all data.
- To avoid skewed data resulting from outliers, we utilized median for the CDC data.
- Count was used for the MH/CLD data to assess patient demographics and diagnoses.



Tools Used

- Tableau
- Google Drive
- Google Docs
- Google Jamboard
- Canva
- Slack
- Excel
- Zoom

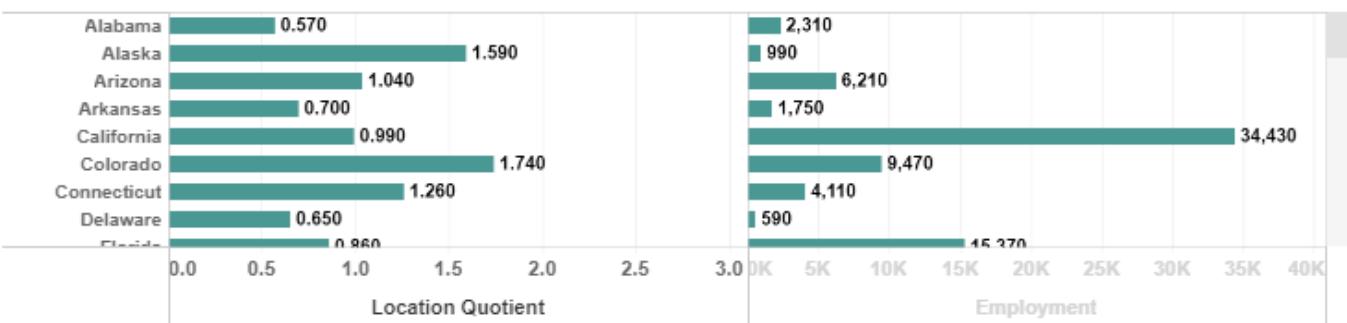
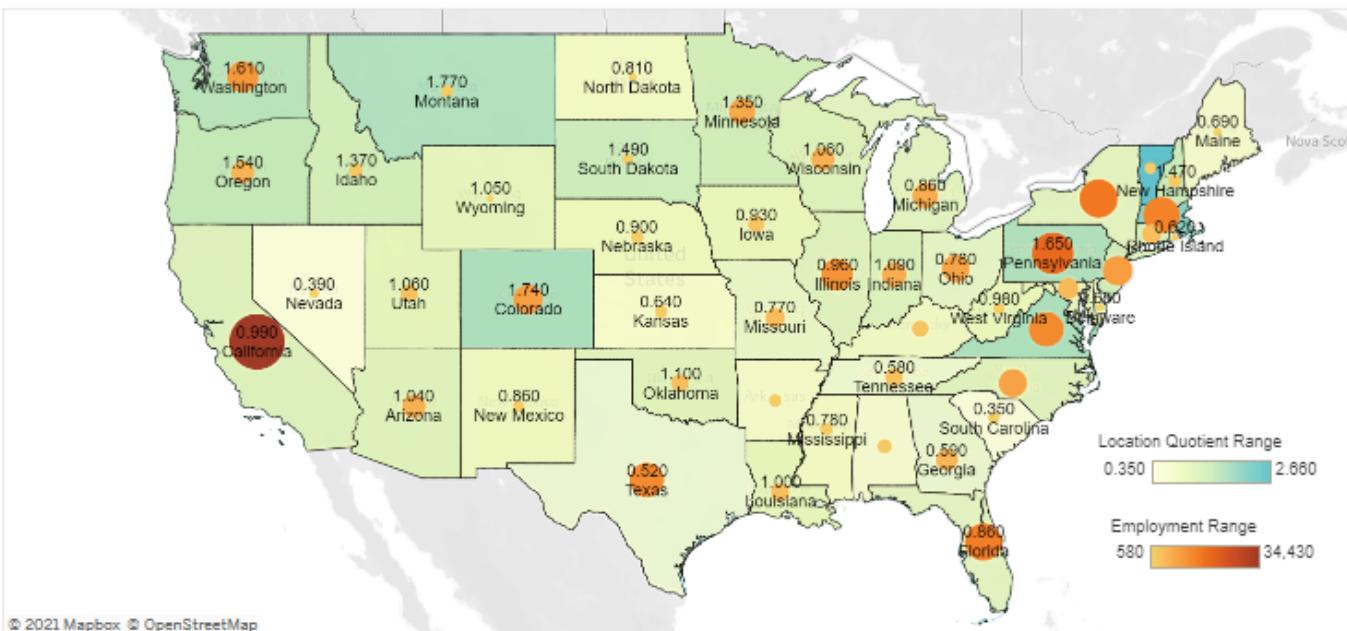
Application/Dashboard

The United States needs more mental healthcare workers, especially in bigger states. While bigger states may have a high number of workers, it does not mean that the workers are distributed evenly across the state.

Psychiatrists in the United States face the same shortage issues as other mental healthcare professionals, but surprising areas are New York, which has a high psychiatrist location quotient.

Health Professional Shortage Area (HPSA) designation areas identified by state and the number of psychiatrists needed to remove HPSA status.

Mental Healthcare Professionals Employment



Datafolio

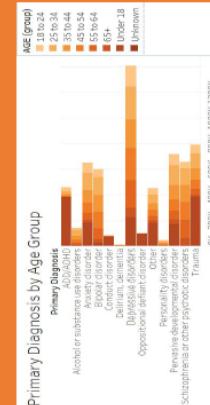
What are the challenges facing equal accessibility to mental healthcare?

Laverne Eubanks, Karla Garcia, Mwangi Kanuki, Christie Washington

Background

Mental healthcare is an important foundation of our society. With recent changes brought about by the Covid-19 pandemic, it became more apparent that mental healthcare is not equally accessible to everyone.

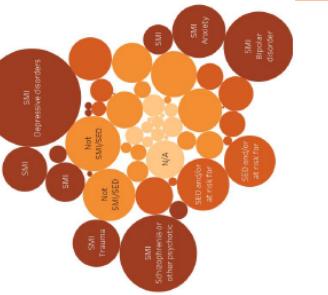
This issue affects everyone individually and in relation to a broader community.



Methods

- Tableau was used to visually analyze all data.
- To avoid skewed data resulting from outliers, we utilized median for the CDC data.
- Count was used for the MH/CID data to assess patient demographics and diagnoses.

While some states may have a large number of psychiatrist, the healthcare professionals are not equally distributed to meet the needs of all patients.



Data

CDC Data: Surveys done during Covid-19, where people were asked about their anxiety and depression symptoms. Data was transformed by removing rows flagged by a suppression flag indicator.

Bureau of Labor Statistics: Mental healthcare workers and psychiatrists employment data from May 2020. Data was compiled from the BLS.gov website.

HPSA Data: Health Professional Shortage Area (HPSA) data for states designated with HPSA status. Data was retrieved using a custom report compiler from kff.org.

Mental Health Client Level Data: state reported data of persons receiving mental health treatment. Data was first transformed by replacing values based on the data dictionary and unreferenced rows were hidden.

6,464 additional psychiatrist needed in the United States to eliminate mental healthcare psychiatrist shortage

In order to insure everyone has access to the care they need we must not only increase the number of mental healthcare professionals but also make sure rural areas are covered.

Data Wrangling and EDA

This table provides relevant information on all datasets explored in this project:

Dataset	Description	Link
Health Professionals Shortage Areas (HPSA) – Mental Health	<p>Data file for all Mental Health HPSA designations in Excel format, with one record for each Facility HPSA designation or Geographic/Population HPSA designation component (county, county subdivision, or census tract)</p> <p>27000X67 Size: 11.8MB approximate size as appears on your file explorer</p>	https://data.hrsa.gov/data/download
MENTAL HEALTH CLIENT-LEVEL DATA (MH-CLD): 2018	<p>Information on mental health diagnoses and the mental health treatment services, outcomes, and demographic and substance use characteristics of people in mental health treatment facilities. This information comes from facilities that report to individual state administrative data systems.</p> <p>1050000X40. Size: 603 MB</p>	https://www.datafiles.samhsa.gov/study-dataset/mental-health-client-level-data-2018-mh-cld-2018-ds0001-nid19104
Bureau of Labor Statistics Data	Mental healthcare workers and psychiatrists employment data from May 2020. Data was compiled from the BLS.gov website.	https://www.bls.gov/oes/current/oes211018.htm#st
mental_health_care	Household Pulse Survey conducted a survey to address the social and economic impacts of Covid-19 on American households that focuses on mental wellbeing. It is divided into four phases of data collection: Phase 1 – April 23, 2020 to July 23, 2020; Phase 2 – August 19, 2020 to October 26, 2020; Phase 3 – October 28, 2020 to March 29, 2021; Phase 3.1 – April 14, 2021 to July 5, 2021. 5080x15. Size: 960 KB	https://data.cdc.gov/NCHS/Mental-Health-Care-in-the-Last-4-Weeks/yni7-er2q
America Mental Health Index	A custom index ranking each state according to its mental health service access. Third-party data was gathered to determine access based on four pillars: Providers, Facilities, Funding, and Satisfaction. 52X7. Size: 1.09 MB.	https://www.cohenveteransnetwork.org/wp-content/uploads/2018/10/Research-Summary-10-10-2018.pdf

Data Wrangling and EDA Cont'd

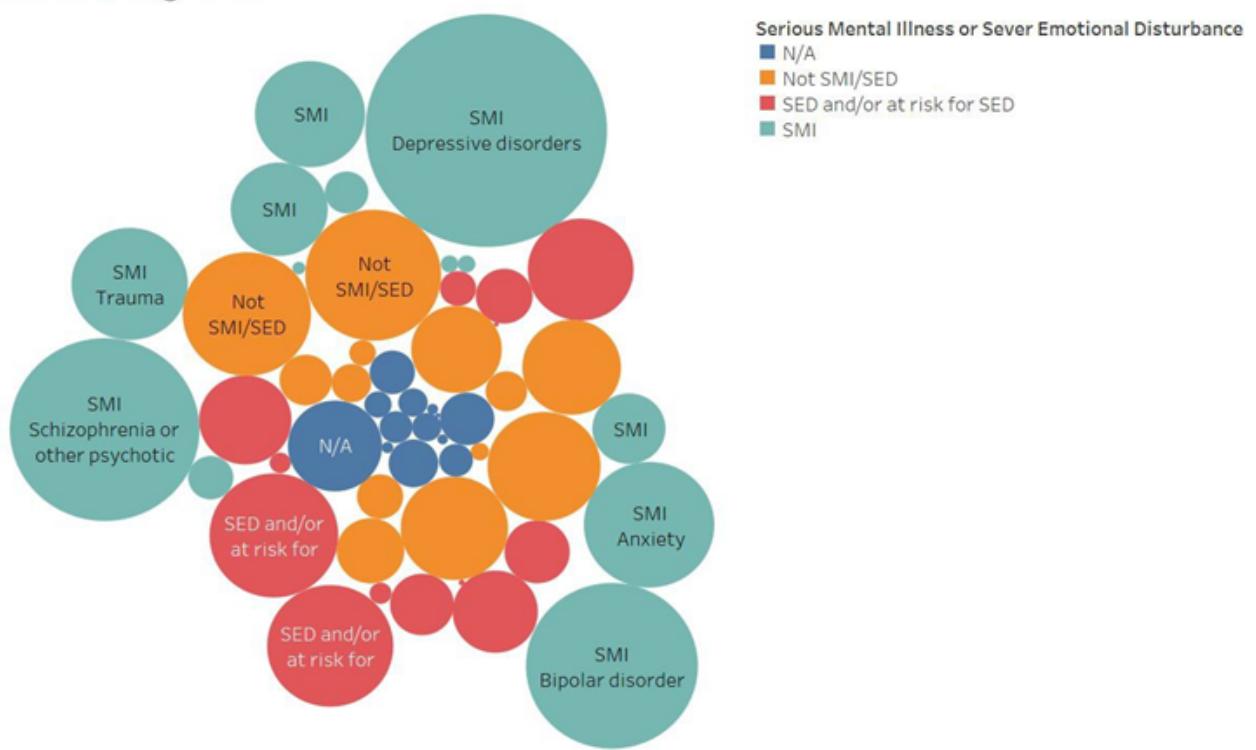
This table provides relevant information on all datasets explored in this project:

Dataset	Description	Link
Mental Health Ranking 2021	This is a collection of data that provides a baseline for answering some questions about how many people in America need and have access to mental health services. The data and table include state and national data and sharable infographics. ~53 row & 4 columns. Size: ~27KB.	https://www.mhanational.org/issues/2021/mental-health-america-all-data
MENTAL HEALTH AND SUICIDE RATES(MHSR): 2016	Information on suicide rates of different age groups in each country, along with available health facilities and human resources in each country. Data is per 100000 population in different age range 585X29 Size: 58KB	https://www.kaggle.com/twinkle0705/mental-health-and-suicide-rates
American Community Survey Poverty Levels: 2015–2019	This dataset shows the estimated number of families living below the U.S. Federal Poverty Guidelines (USFPL), using the U.S. Census American Community Survey (ACS) five-year survey data. Some of the columns will need to be renamed to follow conventional standards. Rows: 52 Columns: 6 Size: 193 kB	https://data.hrsa.gov/tools/data-explorer?ds=29,36
mental_health_care	Household Pulse Survey conducted a survey to address the social and economic impacts of Covid-19 on American households that focuses on mental wellbeing. It is divided into four phases of data collection: Phase 1 – April 23, 2020 to July 23, 2020; Phase 2 – August 19, 2020 to October 26, 2020; Phase 3 – October 28, 2020 to March 29, 2021; Phase 3.1 – April 14, 2021 to July 5, 2021. 5080x15. Size: 960 KB	https://data.cdc.gov/NCHS/Mental-Health-Care-in-the-Last-4-Weeks/yni7-er2q
America Mental Health Index	A custom index ranking each state according to its mental health service access. Third-party data was gathered to determine access based on four pillars: Providers, Facilities, Funding, and Satisfaction. 52X7. Size: 109 MB.	https://www.cohenveteransnetwork.org/wp-content/uploads/2018/10/Research-Summary-10-10-2018.pdf

Descriptive and Statistical Analysis

This section contains information and insights we gained from the descriptive and statistical analysis that were completed during our project:

SMI and Diagnosis



Serious Mental Illness or Severe Emotional Disturbance and Primary Diagnosis. Color shows details about Serious Mental Illness or Severe Emotional Disturbance. Size shows count of Primary Diagnosis. The marks are labeled by Serious Mental Illness

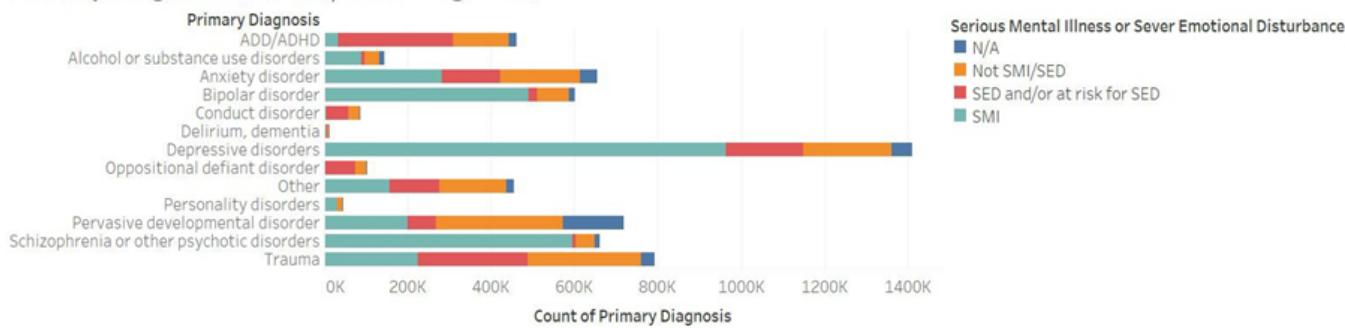
This data set provide information on mental health diagnoses and the mental health treatment services, outcomes, and demographic and substance use characteristics of people in mental health treatment facilities

People with SMI (Serious Mental Illness) make up the largest group receiving treatment with the largest treatment being for Depressive disorders followed by psychotic disorders, bipolar and anxiety.

Descriptive and Statistical Analysis

Cont'd

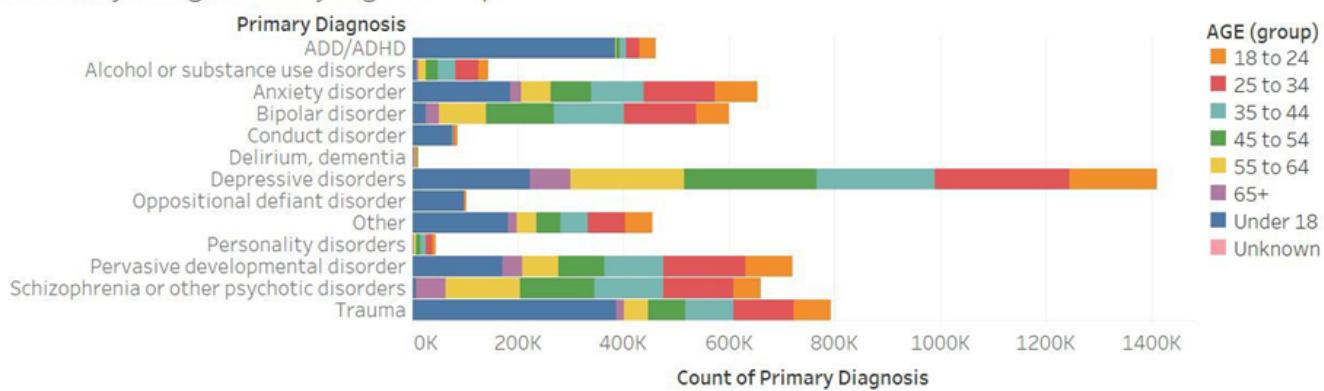
Primary Diagnosis and SMI/SED Designation



Count of Primary Diagnosis for each Primary Diagnosis. Color shows details about Serious Mental Illness or Sever Emotional Disturbance.

Here we can see more clearly the the majority of treatment is for depressive disorders. We can also see that for a large number of people diagnosed are classified as having serious mental illness.

Primary Diagnosis by Age Group



Count of Primary Diagnosis for each Primary Diagnosis. Color shows details about AGE (group). Details are shown for AGE (group).

Here we can see a comparison of the number of people treated and their primary diagnosis as well insight on the age groups of each diagnosis

It is interesting to see that people under 18 make up a large number of those treated for trauma as well as ADD/ADHD. It seems that a relatively small number of people are treated for ADD/ADHD into adulthood.

Conclusion

Our findings

- Number of providers does not mean equal accessibility. Bigger states are not equally distributed/proportioned.
- The majority of states do not have the manpower necessary to assist those in need
- Additional data and research will need to be done in order to better grasp the challenges facing access to mental healthcare services.

Future Work

Some of the solutions that we've found that address mental healthcare accessibility is:

- Telemedicine
- Workforce development programs
- Encouraging students to become psychiatrists
- Incentives to providers to practice in provider shortage areas.
- Adequate reimbursement for psychiatric services.
- Integrating mental health into primary care settings

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- Our Mentors: Anne Lin & Maya Najarian
- Team 124 Members

