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Introduction to GIS
10 May 2019

Final Report

Title of Project

Mental Health Illnesses, Treatment Received and Locations and Proximity of Outpatient Clinics

Project Summary

Map the amount of people that reported having any mental illness and the amount of people that received treatment in the United States, and then focus into New York City and visualize the locations of mental health outpatient facilities, public and nonpublic, in relation to median household income and race.

Purpose & Background

It is important for individuals to openly have conversations about mental health because there are individuals who want to get help but are discouraged to seek seek treatment. Many factors contribute to that such as the stigma surrounding mental health, and even ones cultures. I hope to show that mental health services need to be more accessible, and outreach needs to be more directive and inclusive. It is especially important for health care providers and policymakers to see maps that demonstrate the percent of people that suffer from mental illnesses because many provides do not cover visits to a psychologist or psychiatrists. Some providers believe that mental health is an extra service instead of a necessity for people's well-being; they have to understand that mental illnesses are "disorders of the brain… they are no different from other noncommunicable diseases" (Insel, Collins & Hyman, 2015). Mental illnesses change and impact the lives of individuals (Jamison, xi), which is why it is vital to understand and research who is being provided with treatment.

Literature Review

Previous research shows that, in 2012 43.7 million Americans over the age of 18 suffered from a mental disorder, which is 18.6 percent of the country's adult population. Close to ten million of those people, or 4.1 percent of adults Americans, struggled with serious mental illnesses, such as psychotic disorders (Insel, Collins & Hyman, 2015). It is evident that mental illnesses have profound impacts on peoples lives, which is why more efforts need to be put into providing individuals with support because no one should have to suffer through it alone. However, it did not address how we as a society must intentionally work to change the way mental illnesses are perceived because the stigma is one of the main reasons why individuals feel the need to disguise the pain. Individuals should not have to purposely avoid help or treatment because it then, consequentially, prohibits them from being diagnosed. Even in the United States, where treatment is "relatively accessible, many people do not seek or receive care until their disorders have become chronic and disabling, a length of time that one recent study found to be 11 years, on average" (Insel, Collins & Hyman, 2015). The fact that "policymakers and public health officials tend to view mental illness as fundamentally different from other medical problems" does not help encourage individuals to seek treatment (Insel, Collins & Hyman, 2015).

Vega, William, and Ruben (1991) researched the epidemiological approaches to the definition of mental health and compare the rates of depressive symptomatology among Black, Hispanic, Asian and American Indian. They explain that only a few symptoms measures were developed with specific minority patient populations, therefore patient symptom presentation is unclear as it varies across cultures or within different languages (Vega, William, & Ruben, 1991). This can definitely impact whether ethnic minorities are properly diagnosed or even diagnosed at all, and whether they are receiving the proper treatment.

Data

I. **Map #1:** *Any Mental Illness Reported in The United States*

- United States Census Bureau
  - 2018 United States Tiger Shapefile

- This served as the input feature in the clip with the United States Map provided in Class 1 Data.

- Class 1 Data
  - United States Map
    - This served as the clip feature when clipping the tiger shapefile of the United States.
- Substance Abuse and Mental Health Services Administration (National Surveys on Drug Use and Health)
  - Table 28: Any Mental Illness in the Past Year 2016-2017
    - This served as the values to demonstrate the percent of people that reported any mental illness in the United States.
- American FactFinder
  - 2018 Population Estimate
    - This served to normalize the map.

II. Map #2: *Mental Health Services Received in The United States*

- United States Census Bureau
  - 2018 United States Tiger Shapefile
    - This served as the input feature in the clip with the United States Map provided in Class 1 Data.
- Class 1 Data
  - United States Map
    - This was used as the clip feature when clipping the tiger shapefile of the United States.
- Substance Abuse and Mental Health Services Administration (National Surveys on Drug Use and Health)
  - Table 29: Received Mental Health Services in the Past Year 2016-2017
    - This was used to map the percent of people that received mental health services in the United States.
- American FactFinder

- 2018 Population Estimate
  - Used this data to normalize the map.

III. Map #3. *Orientation Map: New York City Subway Lines' Proximity To Public and Non-Public Mental Health Outpatient Clinics*

- NYC Open Data
  - 2010 Census Tracts
    - Used this to map New York City and to later join public and non-public outpatient clinics using the census tract ID fields.
  - Facilities Database Shapefile (Updated April 11, 2019)
    - Downloaded and cleaned this excel sheet to acquire data regarding mental health facilities.
  - Subway Lines (Updated September 10, 2018)
    - Used to show where subway lines are in relation to the location of the outpatient clinics
- NYU Spatial Data Repository
  - 2014 New York City Neighborhood Names
    - Used this data to the label neighborhoods around the city.

IV. Map #4. *Median Household Income In Relation To The Proximity of Public and Non-Public Mental Health Outpatient Clinics in New York City*

- NYC Open Data
  - 2010 Census Tracts
    - Used this to map New York City and to later join public and non-public outpatient clinics using the Census Tract ID fields.
  - Facilities Database Shapefile (Updated April 11, 2019)
    - Downloaded and cleaned this excel sheet to acquire data regarding mental health facilities.
- NYU Spatial Data Repository

- 2014 New York City Neighborhood Names
  - Used this to label the neighborhoods in New York City.

- American FactFinder
  - Median Income In The Past 12 Months (In 2017 Inflation-Adjusted Dollars) (2017 ACS 5-year estimates) by Census Tract
    - I cleaned this data in excel and only kept median household income. I used Census Tract to join the median income table to and the New York City table.

V. Map #5. *Percent of Black or African American People In Relation To The Proximity of Public and Non-Public Mental Health Outpatient Clinics in New York City*

- NYC Open Data
  - 2010 Census Tracts
    - Used this to map New York City and to later join public and non-public outpatient clinics using the Census Tract ID fields.
  - Facilities Database Shapefile (Updated April 11, 2019)
    - This database contained the location of several outpatient clinics in New York City, which allowed me to map both public and nonpublic mental health facilities.
- NYU Spatial Data Repository
  - 2014 New York City Neighborhood Names
    - Used this data to label the neighborhoods in New York City.
- American FactFinder
  - ACS Demographic and Housing Estimates (2017 ACS 5-year estimates)
    - I used this data to get the total amount of Black or African American people and the total amount of people of all races that live in New York. This data served to visualize where Black or African American people live in the city.

VI. Map #6. P*ercent of White People In Relation To The Proximity of Public and Non-Public Mental Health Outpatient Clinics in New York City*

- NYC Open Data

- 2010 Census Tracts
  - Used this to map New York City and to later join public and non-public outpatient clinics using the Census Tract ID fields.
- Facilities Database- Shapefile (Updated April 11, 2019)
  - This database contains the locations of mental health facilities so I filter out for outpatient facilities around the city.

- NYU Spatial Data Repository
  - 2014 New York City Neighborhood Names
    - Used this information to label the neighborhoods of New York City.
- American FactFinder
  - ACS Demographic and Housing Estimates (2017 ACS 5-year estimates)
    - I used this data to get the total amount of White people and the total amount of people of all races that live in New York. This data served to visualize where White people live in the city.

VII. **Map #7.** *Percent of Hispanic or Latino People In Relation To The Proximity of Public and Non-Public Mental Health Outpatient Clinics in New York City*

- NYC Open Data
  - 2010 Census Tracts
    - Used this to map New York City and to later join public and non-public outpatient clinics using the census tract ID fields.
  - Facilities Database Shapefile (Updated April 11, 2019)
    - Cleaned this excel sheet to acquire data regarding mental health facilities.
- NYU Spatial Data Repository
  - 2014 New York City Neighborhood Names
    - This data allowed me to label the neighborhoods in New York City.
- American FactFinder
  - ACS Demographic and Housing Estimates (2017 ACS 5-year estimates)

- I used this data to get the total amount of Hispanic and Latino people and the total amount of people of all races that live in New York. This data served to visualize where Hispanic and Latino people live in the city.

Methodology

I originally planned to look at the geographic distributions of community health survey results for mental health but the data was only accessible after a few months of requesting it, so I had to shift the direction of my research. I knew I still wanted to focus on mental health so I started researching with a wide lens to get a sense of what kind of data was available.

I was able to find data tables containing records of the amount of people that reported serious mental illnesses, any mental illnesses, received mental health services, serious thoughts of suicide and major depressive episodes in the United States from 2016-2017. This data was provided by the Substance Abuse and Mental Health Services Administration. I decided to map any mental illness because that encompasses a wide range of illnesses, not just the lowest and highest greatest extremes of illnesses. It important that individuals with any mental illnesses are acknowledged and treated because it does impact lives in one way or another, and for that reason I also decided to map the amount of people that received mental health services. Since the tables were not available as excel sheets, I created an excel sheet listing the states in one row and the amount of people that reported any mental illness in the next row. On another excel sheet, I listed the states in one row and the amount of people that received mental health services in the next row. Then I downloaded a 2018 United States Tiger shapefile in order to clip it to the downloaded United States shapefile from our Class 1 Data folder. Two separate ArcMap windows were opened and the corresponding data was used for each. The clipped shapefile of the United States served as my base map. Then the excel sheets were exported into the Table of Contents and joined to base map through the common field, which were the states. For symbology I decided to use graduated colors for any mental illness and received mental health services and ensured that two different colors were used to represent each since they are displaying distinct data. For each map, any mental illness and received mental health services

served as the value and downloaded population estimates were used to normalize the data, so that the percentages of people that reported in both cases took into account the population as a whole. I was able to join population estimates and the base map through the matching fields, which was the name of the states.

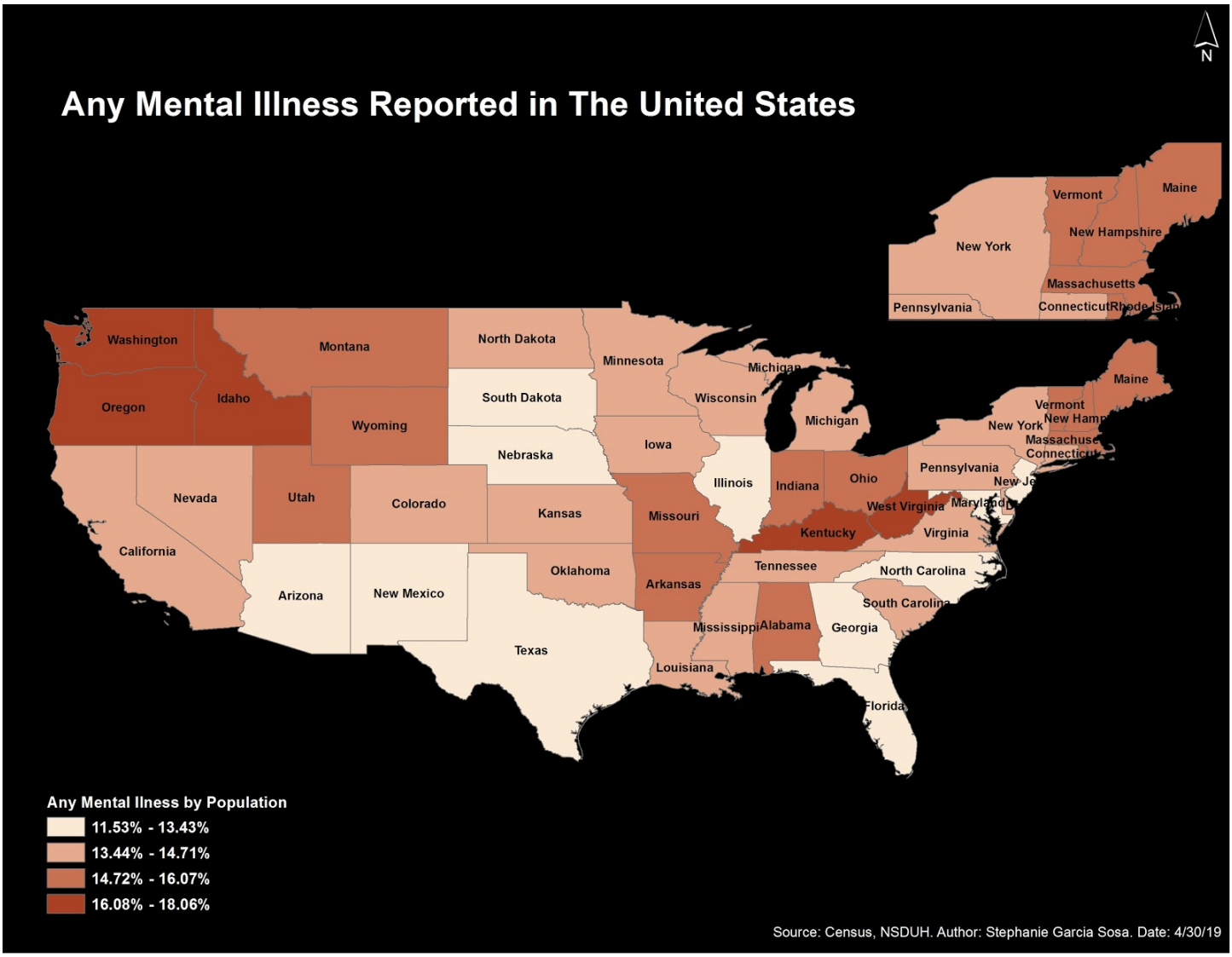
I later decided to focus on New York City due to the results of the any mental illness and received mental health services maps displayed. New York City has a system in placed called ThriveNYC, which acknowledges that mental health interrupts individuals ability to thrive (The City of New York). This program aims to prevent mental illnesses by attempting to alleviate stressors by increasing access through means such as affordable housing to lessen worries about covering cost. However, I am concerned about the individuals that have a mental illness and whether they have access to receive mental health services. Therefore, I mapped New York City, three different races, Black or African American, White, and Hispanic or Latino, along with the locations of the public and non-public clinics. I downloaded 2010 Census Tract in order to use it as my base map to display New York City. I later used it to join the public and non-public outpatient clinics using the census tract ID field. I downloaded races in New York City, cleaned the excel sheet and kept the total number of people, in order to normalize the data, and the three races I specified above. Neighborhoods were in order to compare results.

Then that drew me to the idea of mapping median household income along with public and non-public mental health outpatient clinics in New York City. I downloaded 2010 Census Tract in order to use it as my base map and to be able to, later, use it to join the public and non-public outpatient clinics using the Census Tract ID field. I downloaded median income and used the Census Tract ID to join it to the base map. I also labeled neighborhoods. I used all of that data to see the proximity of the clinics in relation to individuals median income. Lastly, I downloaded the subway line shapefile, 2010 Census Tract, outpatient clinics and labeled neighborhoods to provide an initial locator/orientation map to give people a sense of the location of these clinics without any influence of race and income. The subway lines can also help me further my analyzes as to why the clinics are located where they are. This map is choropleth like the rest of

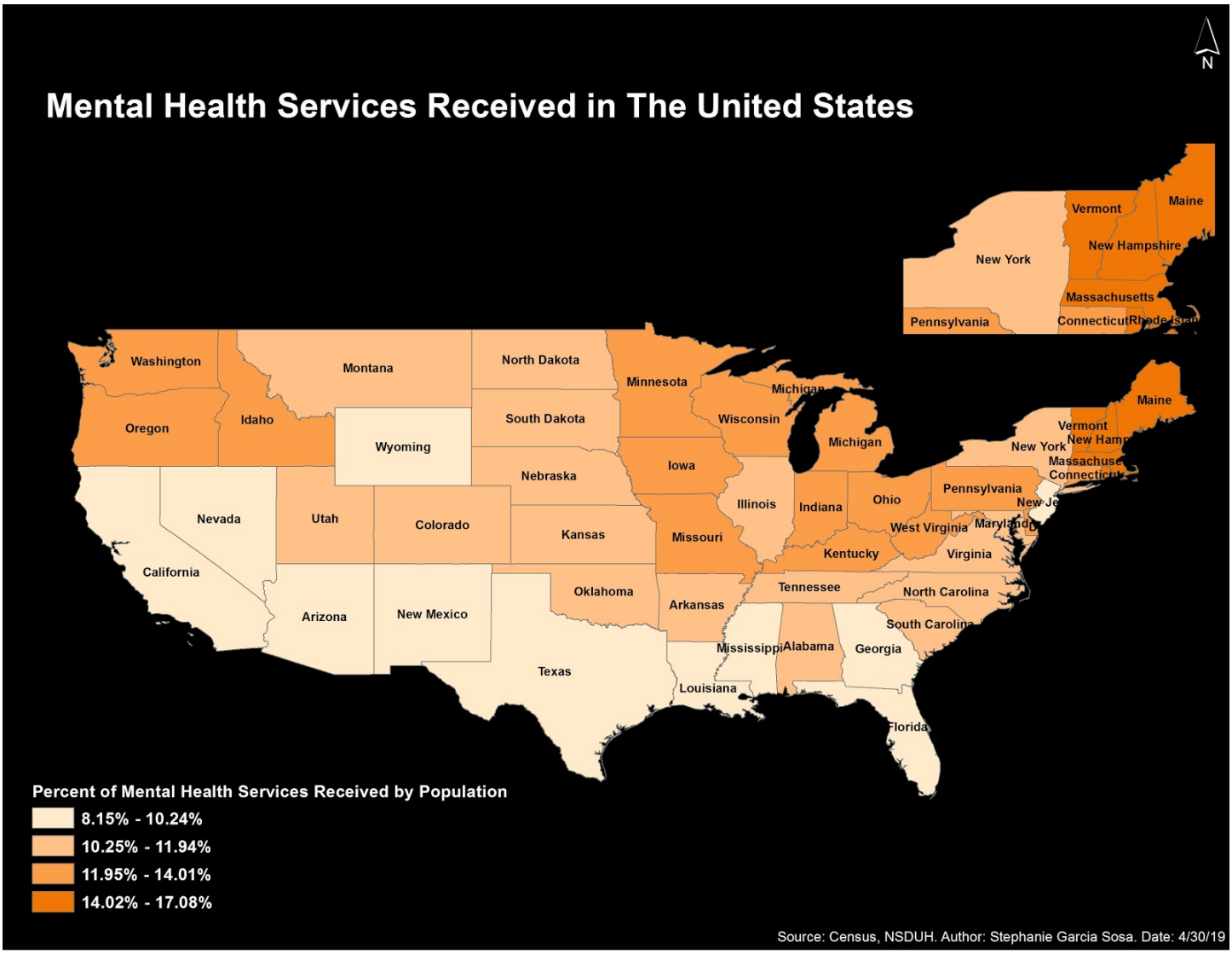
my maps because it allows me to demonstrate how the values vary from one area to another. I also used contracting colors to display the data as clear as possible.

Findings

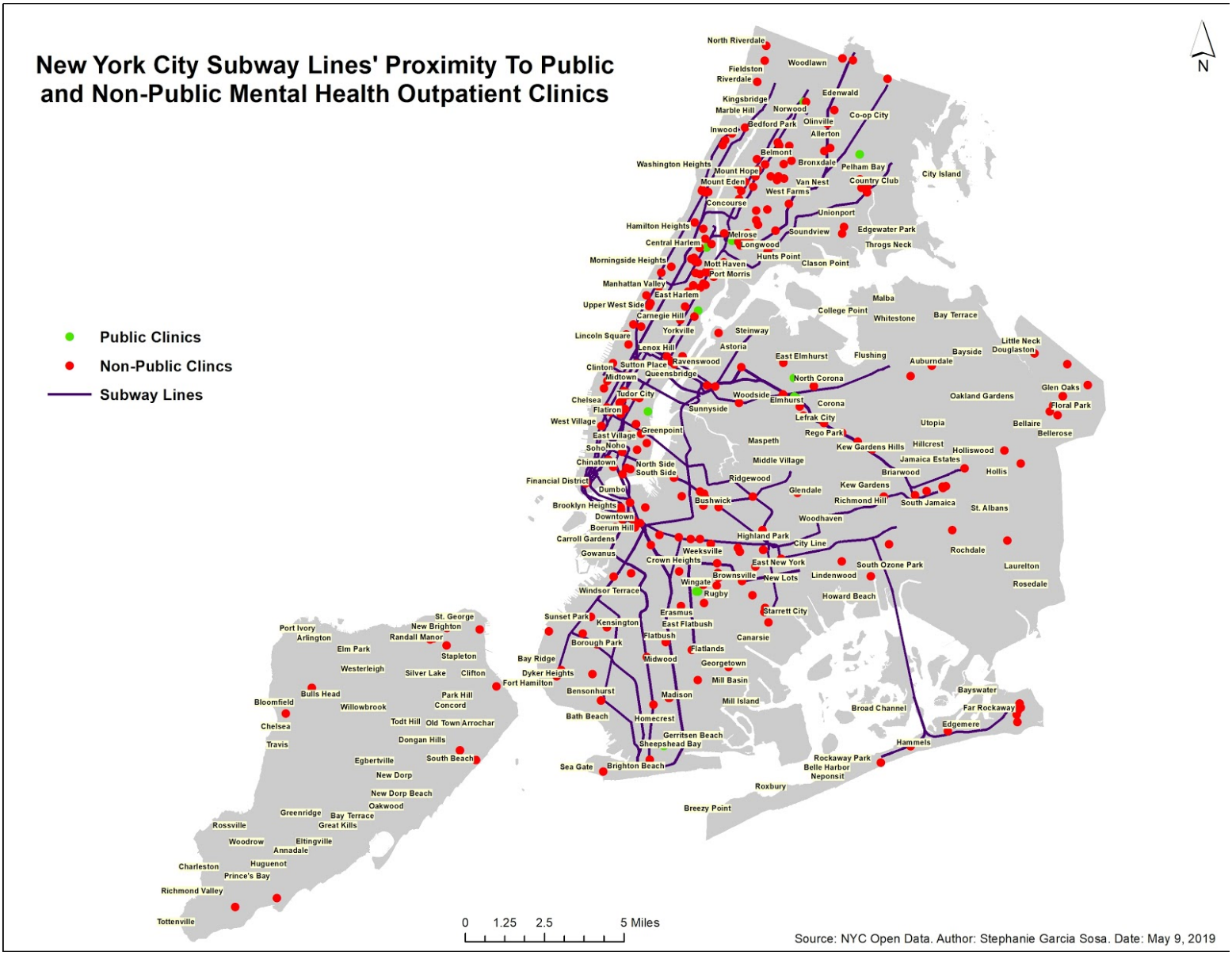
Map #1



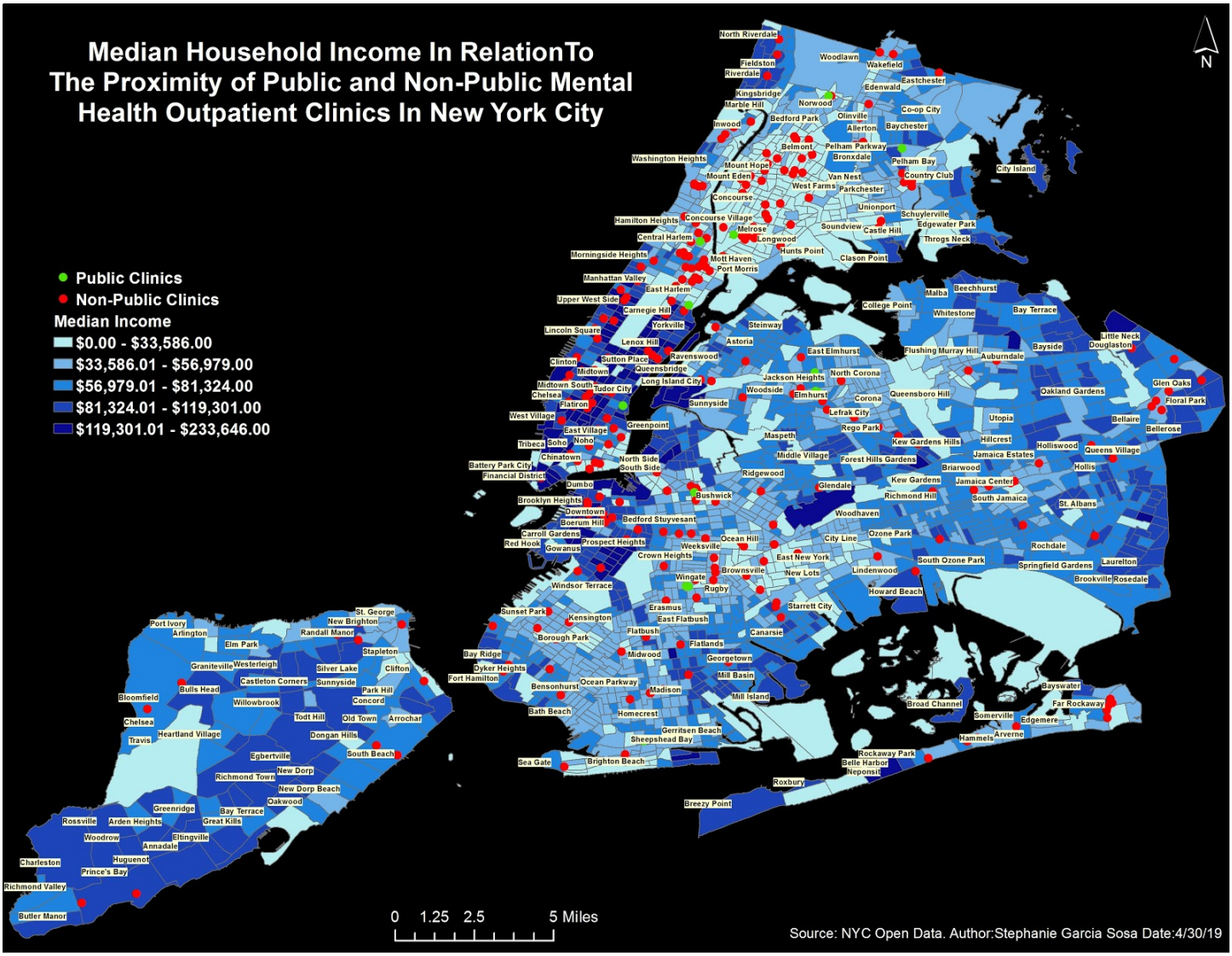
Map #2


Mental Health Services Received in The United States
N
Washington
Oregon
California
Nevada
Idaho
Montana
Wyoming
Utah
Arizona
Colorado
New Mexico
North Dakota
South Dakota
Nebraska
Kansas
Oklahoma
Texas
Minnesota
Iowa
Missouri
Arkansas
Louisiana
Wisconsin
Illinois
Michigan
Indiana
Ohio
Kentucky
Tennessee
Mississippi
Alabama
Georgia
Florida
South Carolina
North Carolina
Virginia
West Virginia
Pennsylvania
New York
Vermont
New Hampshire
Maine
Massachusetts
Connecticut
Rhode Island
Maryland
Percent of Mental Health Services Received by Population
8.15% - 10.24%
10.25% - 11.94%
11.95% - 14.01%
14.02% - 17.08%
Source: Census, NSDUH. Author: Stephanie Garcia Sosa. Date: 4/30/19

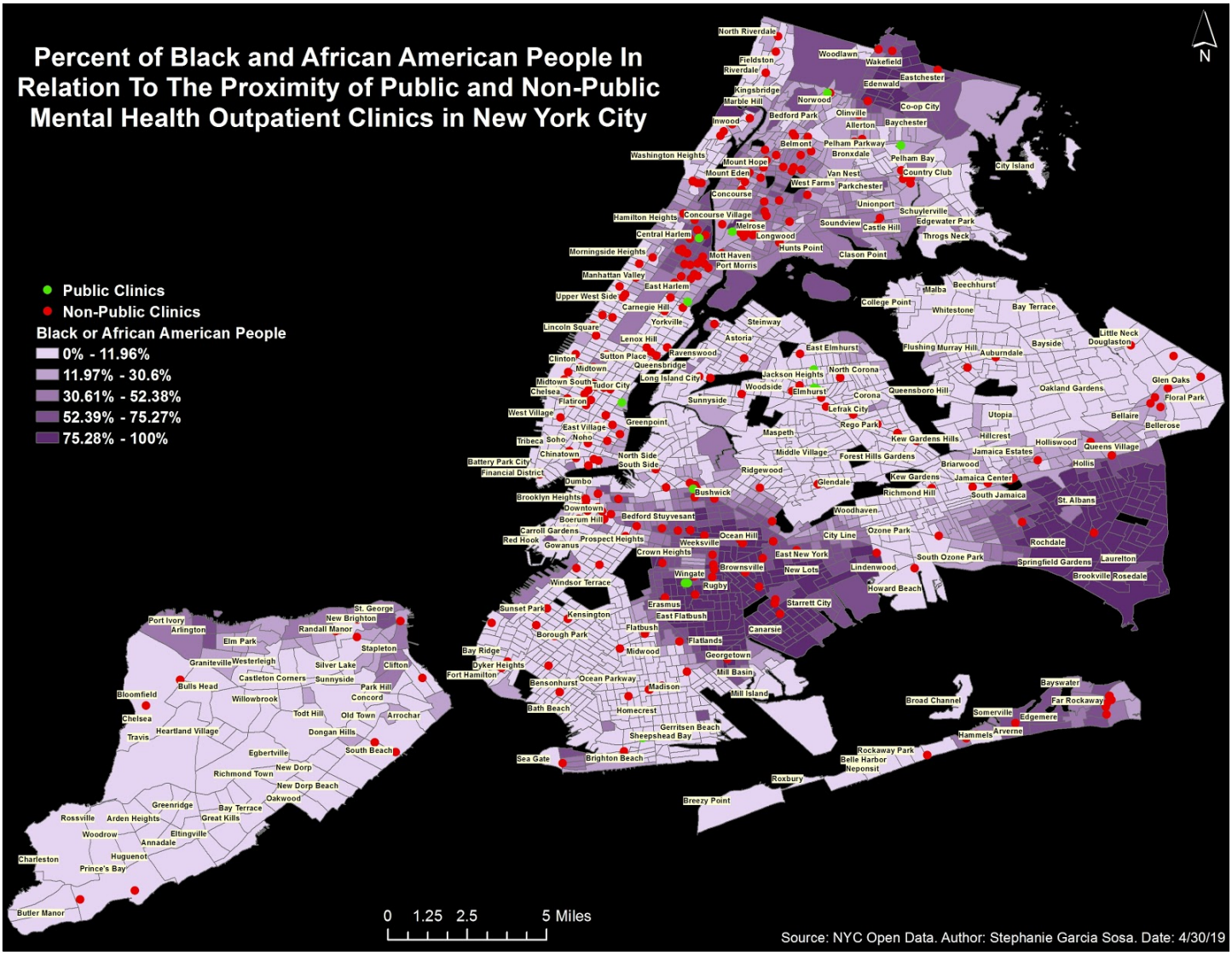
Map #3


New York City Subway Lines' Proximity To Public and Non-Public Mental Health Outpatient Clinics
Public Clinics
Non-Public Clincs
Subway Lines
N
0 1.25 2.5 5 Miles
Source: NYC Open Data. Author: Stephanie Garcia Sosa. Date: May 9, 2019

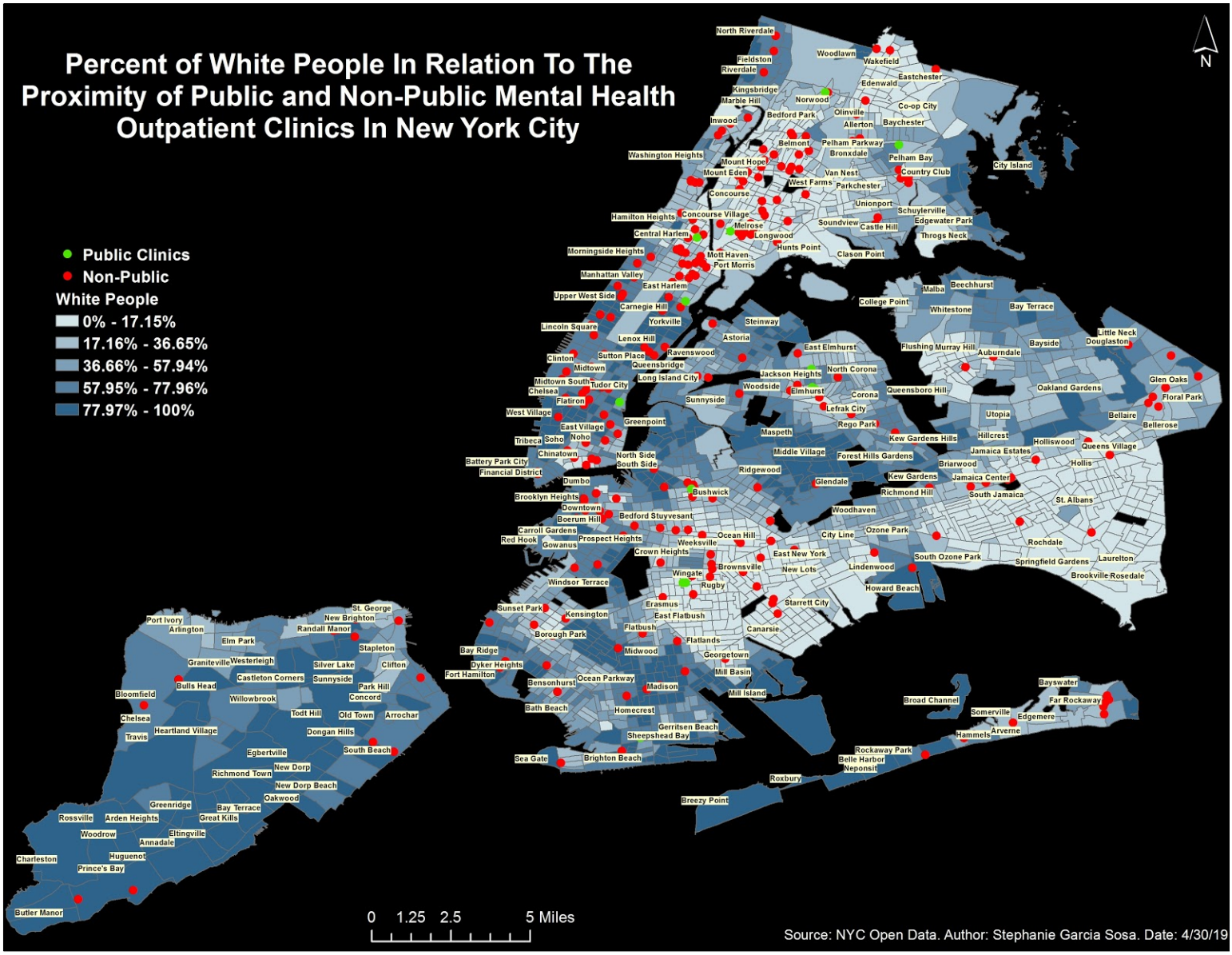
Map #4


Median Household Income In RelationTo
The Proximity of Public and Non-Public Mental
Health Outpatient Clinics In New York City
Public Clinics
Non-Public Clinics
Median Income
$0.00 - $33,586.00
$33,586.01 - $56,979.00
$56,979.01 - $81,324.00
$81,324.01 - $119,301.00
$119,301.01 - $233,646.00
N
0 1.25 2.5 5 Miles
Source: NYC Open Data. Author:Stephanie Garcia Sosa Date:4/30/19

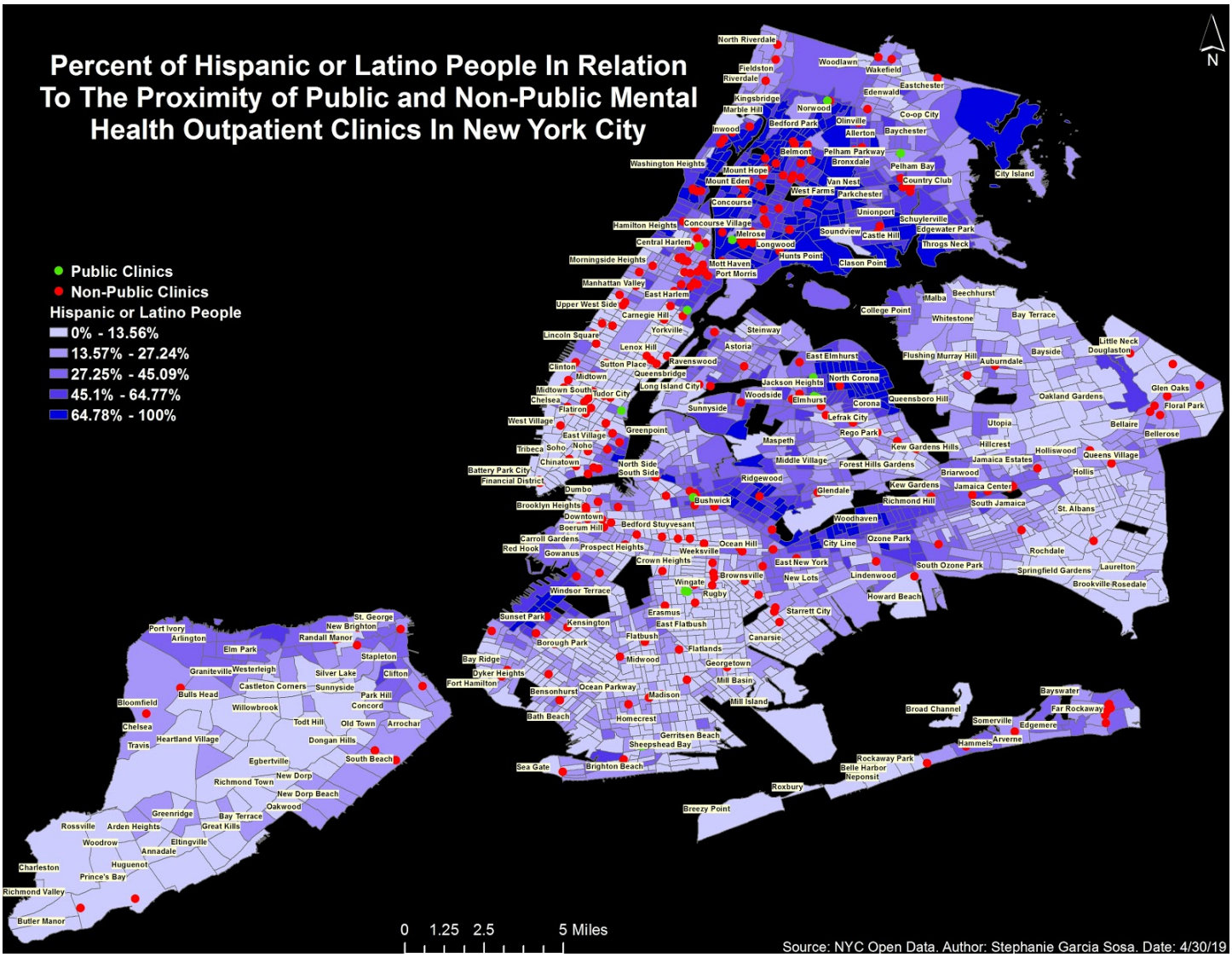
Map #5


Percent of Black and African American People In Relation To The Proximity of Public and Non-Public Mental Health Outpatient Clinics in New York City
Public Clinics
Non-Public Clinics
Black or African American People
0% - 11.96%
11.97% - 30.6%
30.61% - 52.38%
52.39% - 75.27%
75.28% - 100%
N
0 1.25 2.5 5 Miles
Source: NYC Open Data. Author: Stephanie Garcia Sosa. Date: 4/30/19

Map #6


Percent of White People In Relation To The Proximity of Public and Non-Public Mental Health Outpatient Clinics In New York City
Public Clinics
Non-Public
White People
0% - 17.15%
17.16% - 36.65%
36.66% - 57.94%
57.95% - 77.96%
77.97% - 100%
N
0 1.25 2.5 5 Miles
Source: NYC Open Data. Author: Stephanie Garcia Sosa. Date: 4/30/19

Map #7


Percent of Hispanic or Latino People In Relation To The Proximity of Public and Non-Public Mental Health Outpatient Clinics In New York City
Public Clinics
Non-Public Clinics
Hispanic or Latino People
0% - 13.56%
13.57% - 27.24%
27.25% - 45.09%
45.1% - 64.77%
64.78% - 100%
N
0 1.25 2.5 5 Miles
Source: NYC Open Data. Author: Stephanie Garcia Sosa. Date: 4/30/19

We can see that states located on the far Western side of the United States such as Washington, Oregon, Idaho, Montana, Wyoming, Utah, Nevada and California have a range of 12% to 18% of individuals that reported having a mental illness. However, the amount of individuals that reported a mental illness was higher than the amount of individuals that received treatment, 8% to 14%, in those same states. There are other states in the Southeast of the United States such as, Louisiana, Arkansas, Mississippi, Alabama, that reflect the same thing. We can also see that states in the Northeast coast such as Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Pennsylvania and New York had 10% to 14% of individuals that reported having a mental illness, and all of the states, expect for New York, had higher amounts, 11% to 17%, of individuals that received treatment. New York had 10% to 11% of mental illnesses reported and the same 10% to 11% of treatment received, which suggests that most of the people that reported received treatment. However, when we look at New York City, we see that there are limited public outpatient clinics available.

It is evident that there are non-public outpatient clinics in the Upper West Side, Midtown and Tribeca. Those are neighborhoods that report at the higher end of income earnings, $119,301.01 to $233,646.00. The fact that there are non-public clinics in those neighborhoods makes sense because those individuals can afford private care. Yet, we also see many non-public clinics and very few or close to no public outpatient clinics in neighborhoods like Huntspoint, Mott Haven and Castle Hill, which are located in the Bronx, areas that are also very low-income with a median household income ranging from $0.00 to $33,586.00. When we look at race and compare it to income and the location of non-public and public outpatient clinics, it is evident that there are high concentrations of White people where income is relatively higher, and high concentrations of Hispanic or Latino and Black or African American people, where income is relatively lower. Meaning that since Hispanic or Latino and Black or African American people are located in low-income areas of the city, they are less financially able to access mental health facilities, especially since there are very limited public clinics.

Limitations

Even though I mapped any mental health illness in the United States I am sure that many individuals that are living with a mental illness did not report, therefore the information displayed is not truly complete. There are many things that factor into that, such as the stigma of mental health, family relationships and culture that inhibit individuals from reporting or even seeking out help. Also, I was limited from knowing whether the non-public outpatient clinics accept insurance, if they do what type of insurance. Since there are so many non-public outpatient clinics I suspect that some of them may accept some type of insurance.

Recommendations/Conclusion

Receipt of mental health treatment has been found to be lower for African American and Latinos people compared to White people. There needs to be a clear understanding of the prevalence of mental illness in a given population (Vega, 1991). New York State and New York city should partner with providers to gather information and data about how accessible, impactful and effective is the outreach and treatment that is being provided.

Bibliography

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