

## CGT 270 DATA VISUALIZATION

### Geographic and Demographic Analysis of Claims Serving Mental Health Patients in Indiana

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Mental health issues, such as depression and schizophrenia, have displayed pervasive and increasing patterns in the United States, leading to the negative results of rising emotional and psychological destruction and decreasing level of social well-being. According to the report *Behavioral Health Barometer: Indiana, 2015*, 12.2% of adolescents had a depressive episode and 4.8% of adults had serious mental illness. With concerns about negative impacts of mental health problems on Indiana communities, my research conducts geographic visualization of mental health care providers in Indiana, aiming to provide insights about health care accessibility. Additionally, demographic analysis, with respect to gender, race, and age groups, is provided to educate the public and enhance awareness.

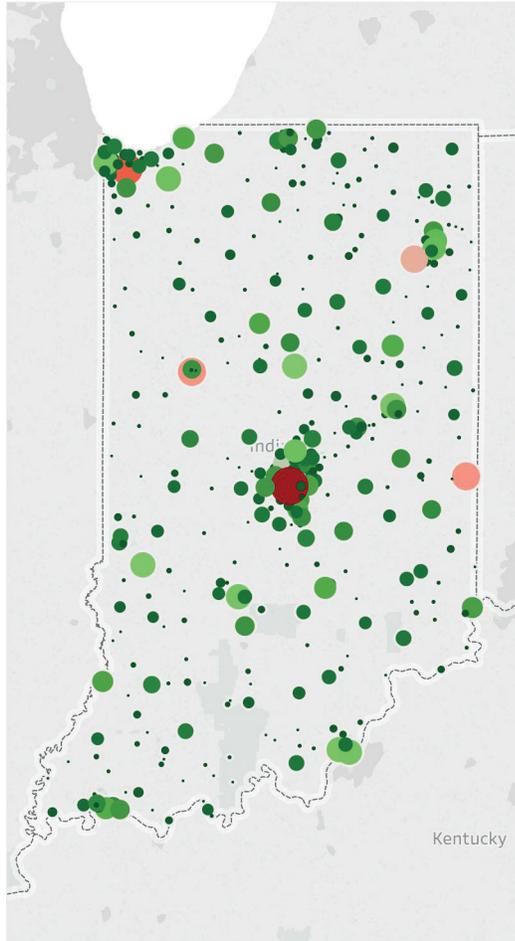
I collected three data sets from Indiana Management Performance Hub (MPH). For the demographic analysis, six tables were created in Excel to summarize the number of patients and claims for ethnicity, gender, and age groups. Since population affects the values of these two variables, I used the U.S. Census Bureau's record of Indiana's population in 2016 to calculate the percentage of mental health patients and then compared between groups.

For the geographic visualization, I depicted the values of the same two variables in Tableau, with magnitude indicated by the size and color. Clusters, outliers, and missing areas were investigated, combined with the supplementary information about counties' population in Indiana. Additionally, I created a butterfly graph to specifically scrutinize the demand and supply of different types of providers.

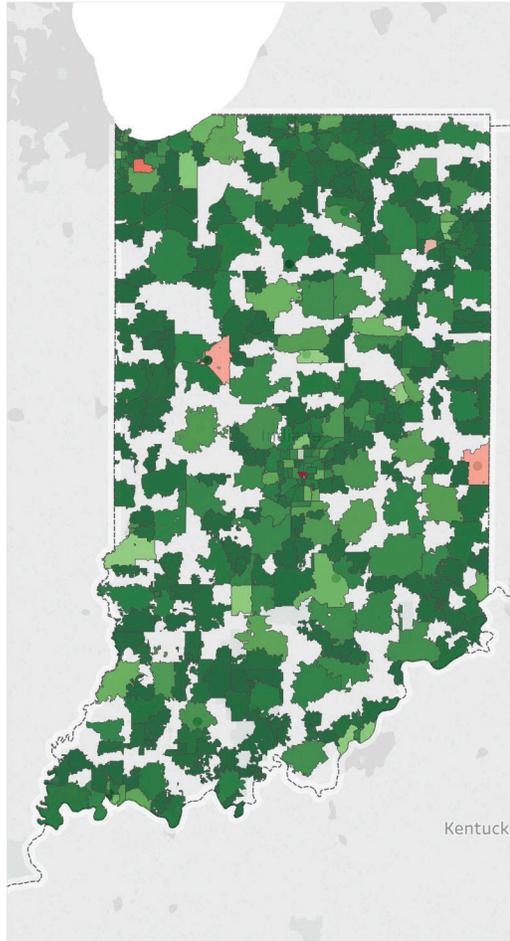
Several conclusions were drawn based on the analysis. First, the Black group has the highest proportion of mental health patients and the Non-Hispanic White group has the highest average number of claims per patient. The female group has higher average claims than the male group. Moreover, the youth group has higher proportion of mental health patients, but smaller average claims. Second, areas with condensed population have both more mental health patients and service providers, while some areas lack the accessibility of mental health care services. Third, there is higher demand for professional mental health care providers. However, its supply is disproportionately small. Further study about reasons behind the geospatial distribution of mental health care providers could be conducted. Several prospective factors, such as local economy, crime rate, and unemployment, could be considered.

*Byrd writes: "There is a growing demand for mental health care services across the nation and on college campuses. Bin's work is timely and relevant. I am impressed with his interest in the topic and his application of visualization concepts to gain more insight into this current topic and its impact in Indiana."*

Distribution of Mental Healthcare Providers -- Clusters



Distribution of Mental Healthcare Providers -- Counties



Number of Records  
1 183

Number of Records  
• 1  
○ 50  
○ 100  
○ 150  
○ 183

Left: There are several clusters centered around large counties, such as Lake County at northwestern corner, Hamilton County at the central region, and St. Joseph County at the top boarder. Right: Blank areas represent that there are no mental health care providers in such cities, or too few to be recorded in the data sets.