U.S. Public Transit & Unemployment

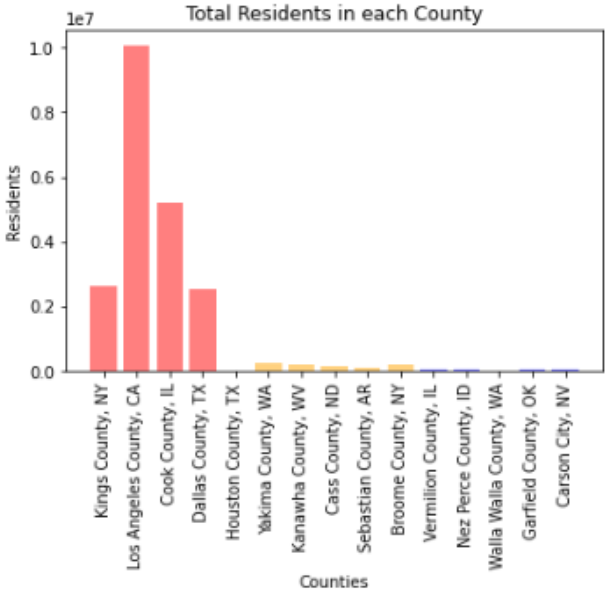
Project 1 Analysis and Conclusion

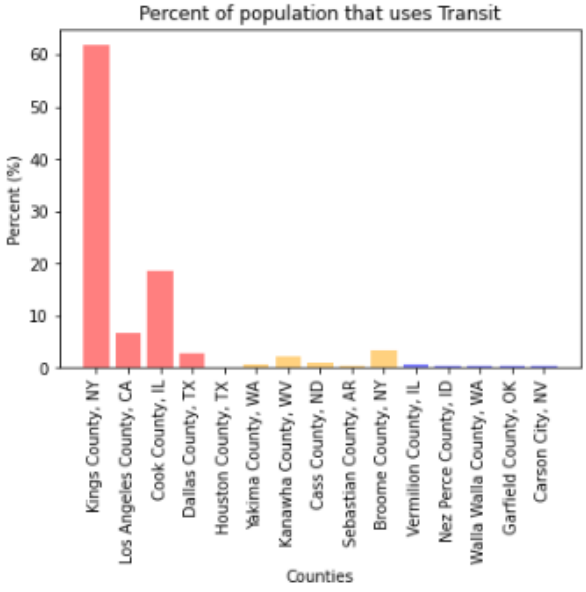
By: Jeremiah Eugenio, Leon Moraes, Oliver Panopio, Cesar Sepulveda, Evelyn Votran

Public transportation holds a high level of importance to many lives in the U.S. Public transits allow individuals to travel affordably while gaining access to resources that might otherwise have been out of reach. Based on this understanding, we believe that there are valid means to look deeper into how public transit can potentially affect unemployment rates.

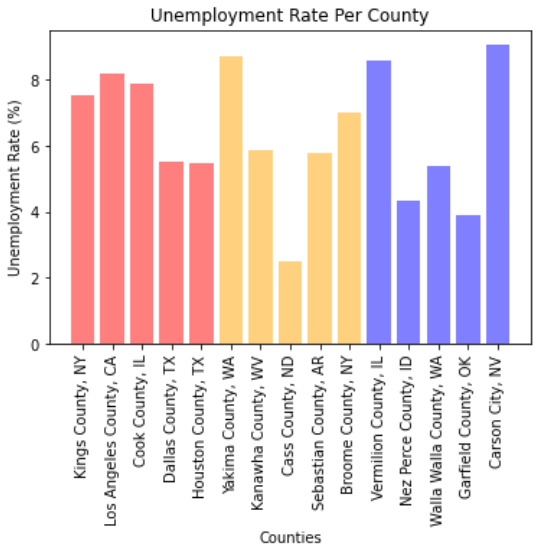
In order to investigate the relationship between accessibility of public transits and unemployment in the United States, an analysis will be conducted on fifteen U.S. counties between the years of 2012 to 2016. A list of metropolitan cities ranking highest to lowest was acquired by the United States Census Bureau. The fifteen counties were designated by choosing 5 counties that held the max metropolitan cities, 5 counties that held the median metropolitan cities, and 5 counties with the min of metropolitan cities. The counties highlighted in this analysis includes: Kings County, NY, Los Angeles County, CA, Cook County, IL, Dallas County, TX, Houston County, TX, Yakima County, WA, Kanawha County, WV, Cass County, ND, Sebastian County, AR, Broome County, NY, Vermilion County, IL, Nez Perce County, ID, Walla Walla County, WA, Garfield County, OK, Carson City, NV.

1. Does access to public transportation have an effect on unemployment rates in a county?





When comparing three county groups on the two bar charts; the left displaying total residents in each county; the right showing transit usage in those counties. According to our figures here, we can see that there is a clear correlation between the two. The high metropolitan counties with the higher number of residents in the ten millions have a much higher percentage of transit users, up to 70%. In contrast, lower metropolitan counties have the lowest number of residents of which less than 10% use public transit.

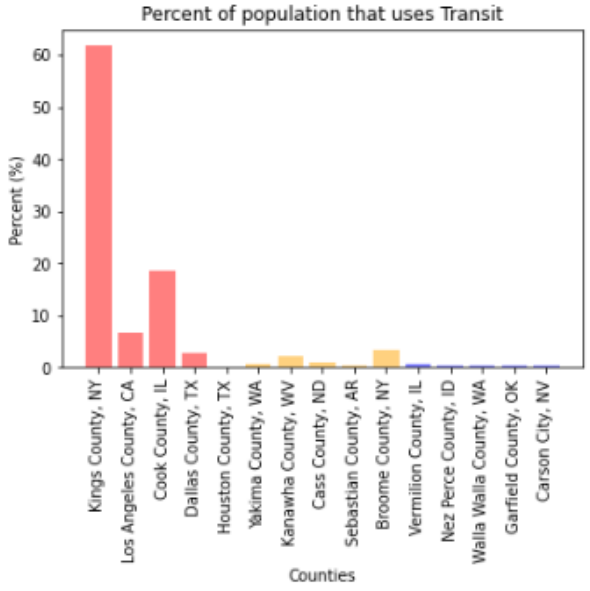


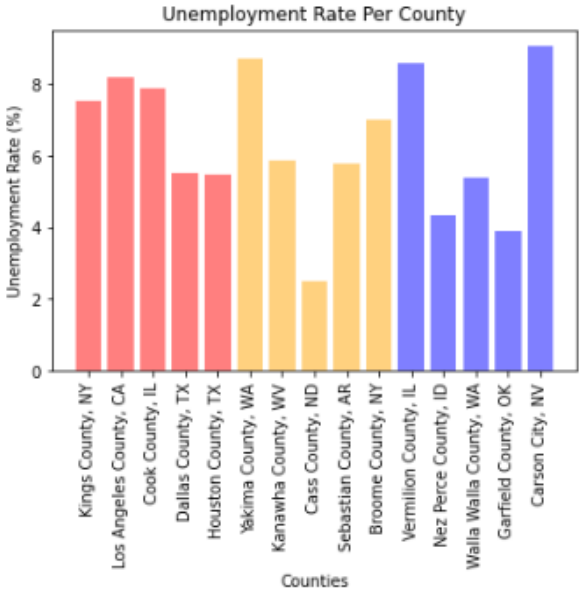
However, when we look at unemployment rates within our counties, we can see that there is not a clear pattern at first glance. In contrast to the larger counties, the mid and small sized counties have very low transit use but comparable unemployment rates. Due to this discrepancy, we took a deeper dive into our data and we created a boxplot to spot any potential outliers by performing a boxplot test. No outliers were found. With that, we came to a number of conclusions; a few that may warrant further research:

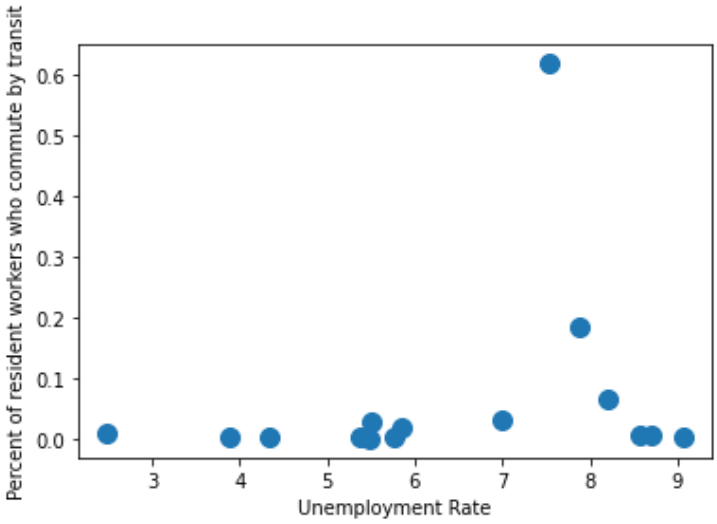
- In these mid and small counties, public transportation is less established, limiting the access to opportunities that public transit does not reach, therefore, contributing to the unemployment rate.

- Since the unemployment rates are comparable to the large counties; all have very similar downward trends, which makes us think that public transportation has no effect because, perhaps, the area is more of a commuter town.
- Perhaps these counties have very few employment opportunities or are seasonal areas; i.e. a ski town.

2. How important is public transportation in higher metropolitan counties compared to lesser metropolitan counties?







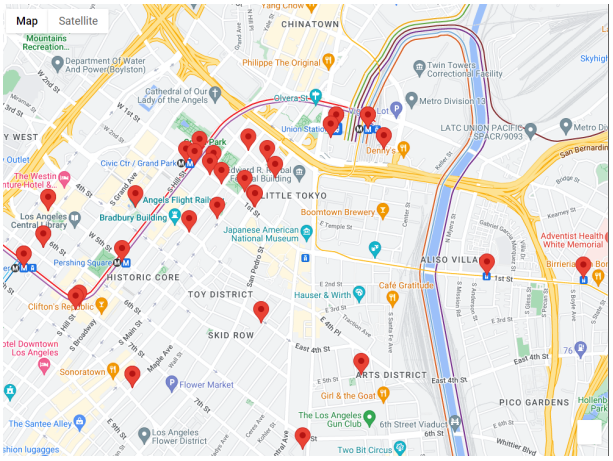
From our findings, we can concur that public transportation has allowed the county to not only have a higher population or residents, it has also acted as a catalyst for growth

Transportation in larger counties has acted as a catalyst for growth. Structural changes in the economy, movement and relocation of industries, and population growth are driving forces behind the rate of employment in most areas. However, to connect people to employment opportunities throughout large landmasses, the biggest factor is transportation. This -among others, although to a lesser extent- is one of the main reasons why larger counties such as Kings, Los Angeles, Cook, Dallas, and Houston can support a large population while also holding on to unemployment rates comparable to the rest of the country and smaller counties. To wit, exposure to more opportunities by using transit for commuting throughout larger areas, produces equilibrium in unemployment rates. This is further supported by our Pearson correlation analysis of unemployment rate versus percent of resident workers who commute by transit which showed a significant linear relationship (p:.37)

3. How does public transportation options and location change based on the county?

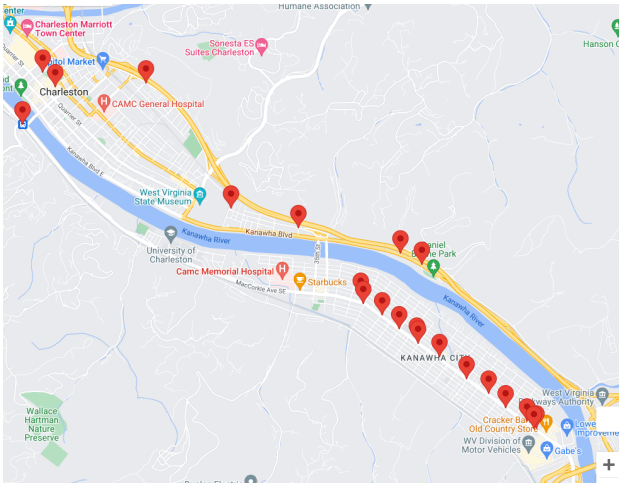
3 GMAPS were created using Places API detailing the available transit options and locations for Los Angeles County, Kanawha County, and Carson City. They are representative of the three groups of counties that we choose.

Los Angeles County GMAP



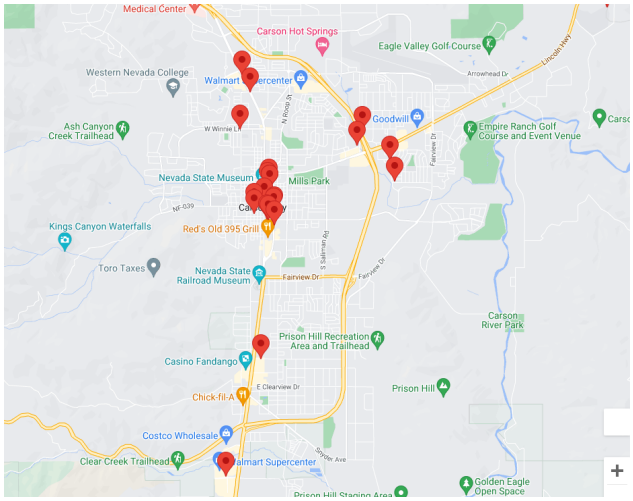
Just looking at a small portion of Los Angeles County, there are a lot of different transit options. This shows only a small section of Los Angeles County but it already has a high density of transit especially when we start comparing it to Kanawha and Carson Counties in the next couple slides.

Kanawha County GMAP



Kanawha County has less transit options and it focuses its transit options on Kanawha City and Charleston. We can see a line of transit all along one street of Kanawha. There are less options once you get out of the main cities.

Carson City GMAP



Carson City (County) is also like Kanawha County where the transit locations/options are focused in specific areas such as the downtown area of Carson City and there are very few options outside of it.

Los Angeles County varies greatly compared to Kanawha and Carson. Overall, less populous counties/areas have less options of public transit and their public transit is focused on specific areas such as the main downtown areas of the counties. This is because the population is more spread out in these counties so it is less efficient to place transit options all over the county. Los Angeles County can have more transit options everywhere because most areas of Los Angeles County have a high population density in comparison.There are some limitations when we used the google places api where not all transit options are depicted but we believe that this is still a valuable tool that allows us to see the density and location of the transit options. Public transit seems to be a tool higher populous areas use to facilitate growth and maintain unemployment levels within range of lower populous areas.

4. What are possible public transportation conclusions we can arrive at that could improve unemployment rates?

Having performed our analysis on the data, we identified that the counties with the higher populations tended to have the most public transportation usage amongst their population whereas the lower population counties tended to have the least amount of public transportation usage. Seeing that high populated areas tend to have similar unemployment rates to smaller areas, the role of public transit may have allowed the higher populated areas to have lower unemployment rates, whereas lower population areas experienced higher unemployment rates due to a lack of availability to public transit.

For further research we would analyze the use of public transportation over a greater period of time. As cities add more public transportation and increase access to a higher amount of their residents, more people will be able to access resources such as jobs, stores and recreational areas. More people gaining access to new resources would stimulate the local economy as well, as people will exchange goods that they otherwise wouldn't in an area with less public transportation.