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Project: Build Data Dashboards

Tableau Visualization Links:

1. Flight Delays and Cancellations
2. US Census Demographic Data
3. YouTube Data US

Project Description

Design visuals to reveal insights from a data collection. Make data visualizations that convey a story or point out trends in the data. Your approach should represent data visualization theory and practice, including visual encodings, design principles, and effective communication.

Flight Delays and Cancellations

This data comes from a Kaggle dataset; it tracks the on-time performance of US domestic flights operated by large air carriers in 2015.

Dashboard 1

Some questions I am attempting to answer in this first dashboard includes those pertaining to the following areas:

- What is the reason for the flight delays?
- What is the monthly volume of delays?
- What is the average airline delay reason by month?
- What is the current trend in weekly flight volume?

The first graph depicts the many reasons of flight delays. **Departure delay is the most common cause**, occurring over two million times, followed by arrival delay, this can be found in (Figure 1). The second graph shows volume of delays; all of this is subject to change by the airlines. We can see that departure delays occurred most frequently throughout the months and were particularly high in June.

If we filter by airlines, for example, looking at **Alaska airline Inc.**, we can see that late aircraft (delay at an airport due to the late arrival of the same aircraft at a previous airport.) was the most common reason for flight delays and we can see the trend of the monthly delay, in which departure delays occurred most frequently in August (Figure 2)

The third graph illustrates the average airline delay cause by month; we can analyze the pattern of the delay reason over time to determine where it peaks and lowers. The fourth graph depicts the overall number of flights taken during that particular week.

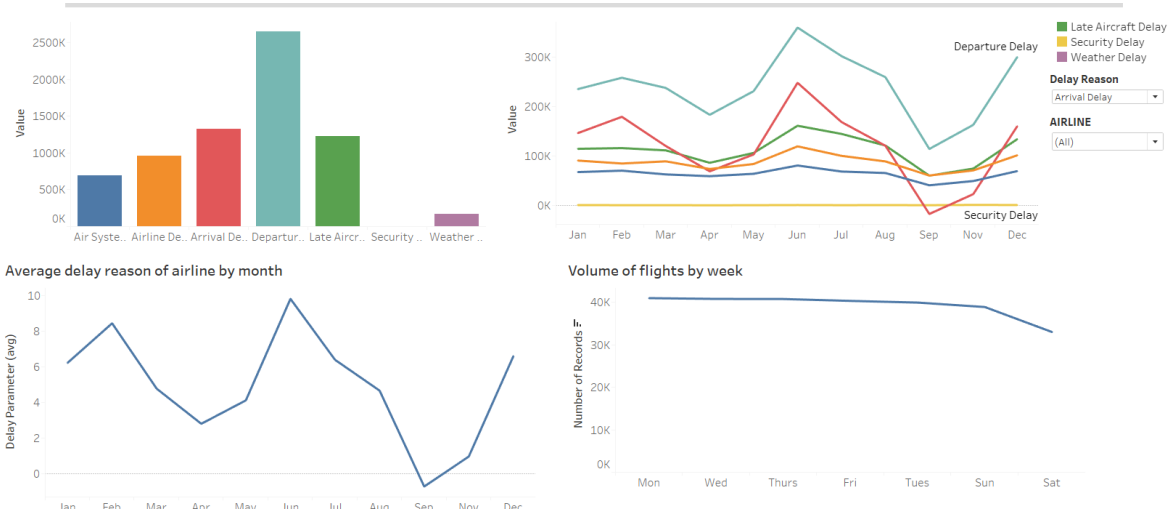


Figure 1: Dashboard showing departure delay being the most common cause for flight delays

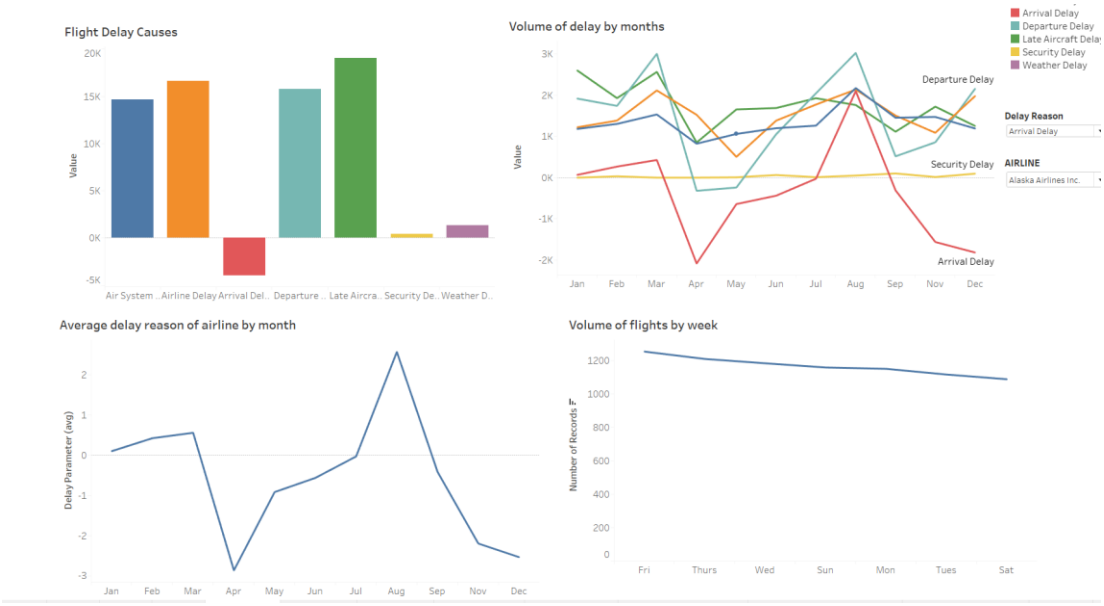


Figure 2: Dashboard for Alaska airline Inc

Dashboard 2

In this second dashboard, I'm aiming to address some additional questions related to the following issues:

- Which state has the most flights that are canceled?
- How reliable are the airlines?

The map depicts the number of cancelled flights per state, with Texas having the highest number indicated by the deep blue color on the map. This map can be used to filter airlines based on their on-time performance to see which ones are the best in each state. An airline arrival that is deemed on time is one that happens within 15 minutes of the planned arrival time. The schedule is the basis of the airline's consumer proposition.

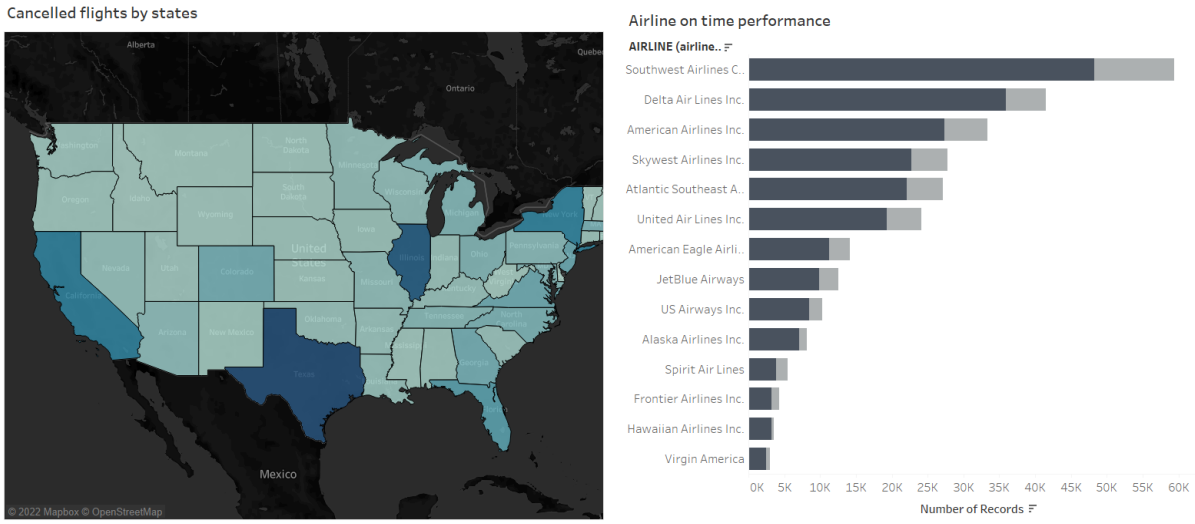


Figure 3: Dashboard showing the cancelled flights per states with the airline on time performances

Clicking on **"Colorado"** to reveal the airline on time performance, we can see that Skywest airline Inc. has the best on time record in that state having **2391 flights to be on time** and **606 flight to be delayed**

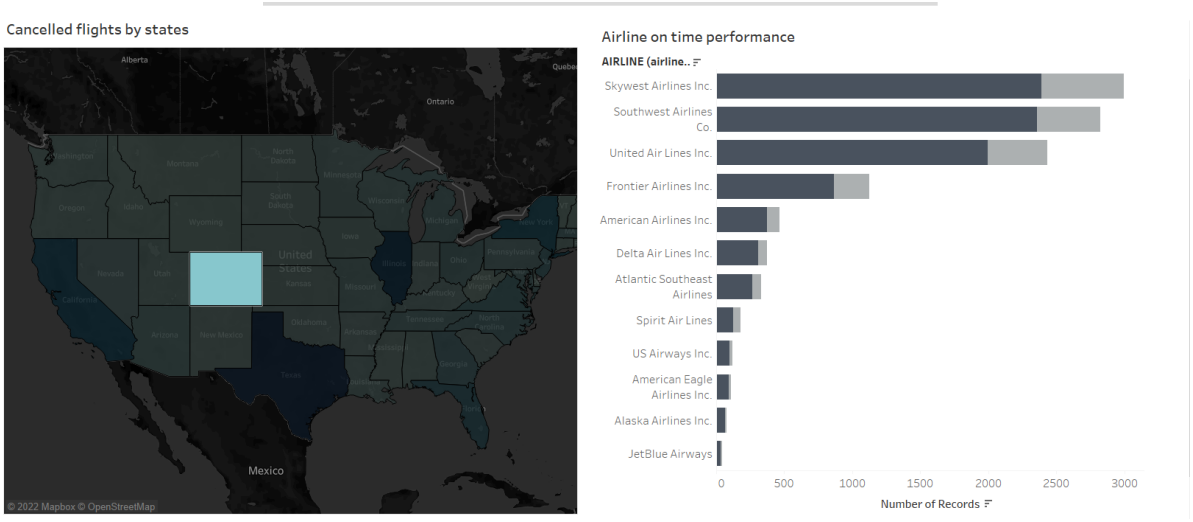


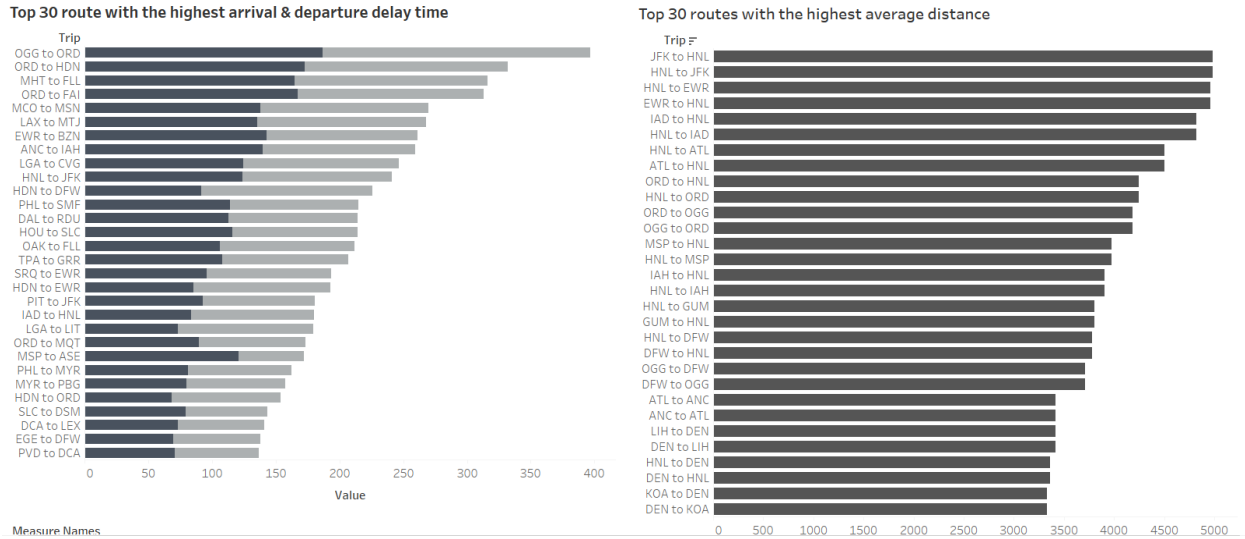
Figure 4: Dashboard depicting Colorado airline on time performances

Dashboard 3

In this third dashboard, I'd want to answer a few more questions on the following topics:

- Which routes have the highest arrival and departure delays?
- Which routes have the longest average distance?

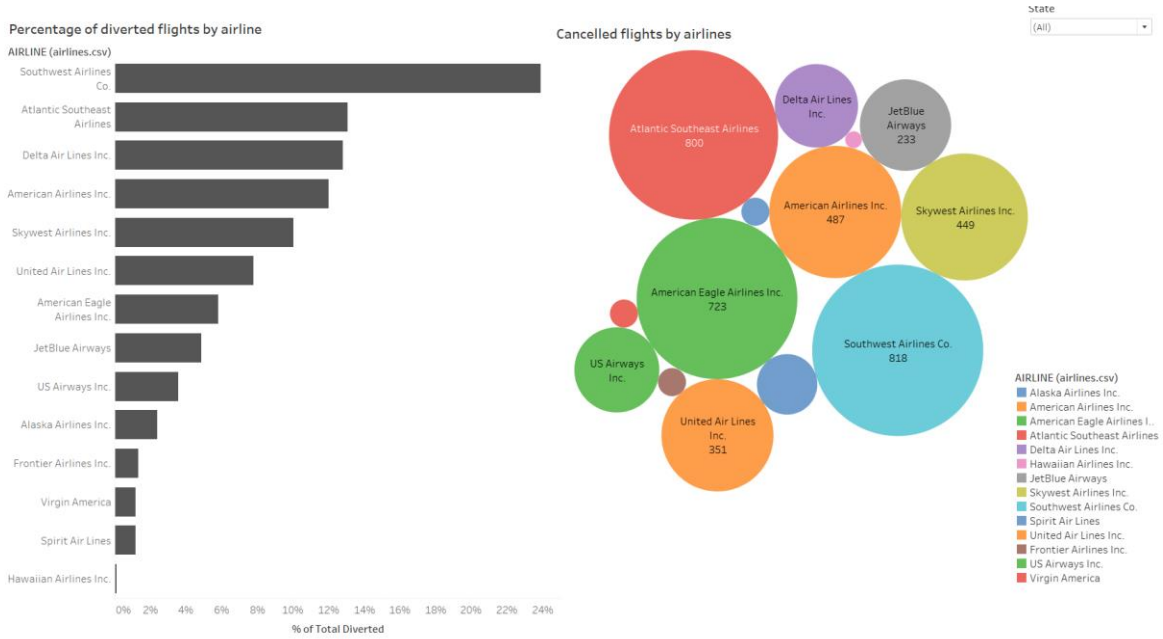
The first graph shows the top 30 routes with the highest arrival and delay periods with **"OGG to ORD"** having the highest arrival and delay time, while the second graph shows the average distance traveled by each route, with **"JFK to HNL"** covering an average distance of4983m which was the highest. The route was created by combining the origin to the destination airports.



Dashboard 4

- What is the percentage of flights diverted by airline?
- Which airline has the most flight cancellations?

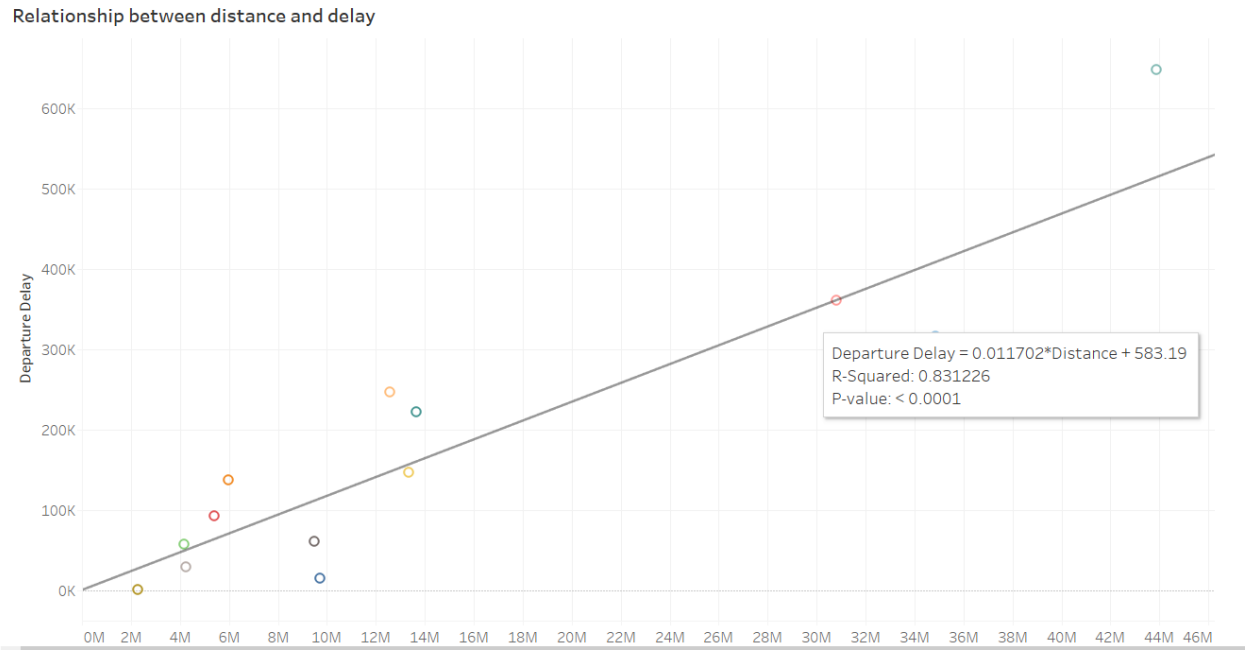
Southwest Airlines had the largest percentage of diverted flights (23.88 percent) and the highest number of cancelled flights (23.88 %) in the first graph and second graph; all of these circumstances may be filtered state by state to view the percent and number of diverted and cancelled flights, respectively.



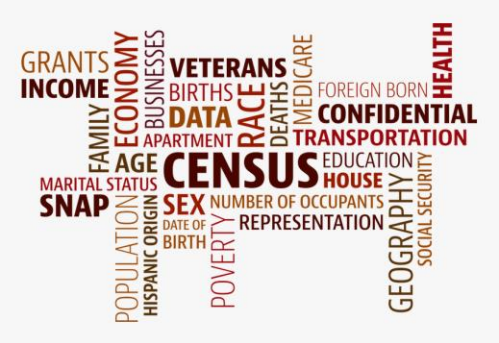
Dashboard 5

- What is the relationship between distance and delay, is there any correlation?

A p-value of 0.05 indicates that there is only a 5% probability that the data from your sample occurred by chance, indicating that there is a significant correlation between x and y. If the P-value is less than the level of significance (0.05). The correlation is statistically significant, we conclude. or, to put it another way, "we infer that there is a linear relationship between x and y at the level." The relationship between cancelled flights and airline delays is strong and linear, as evidenced by r-squared and p-value values less than 0.0001.



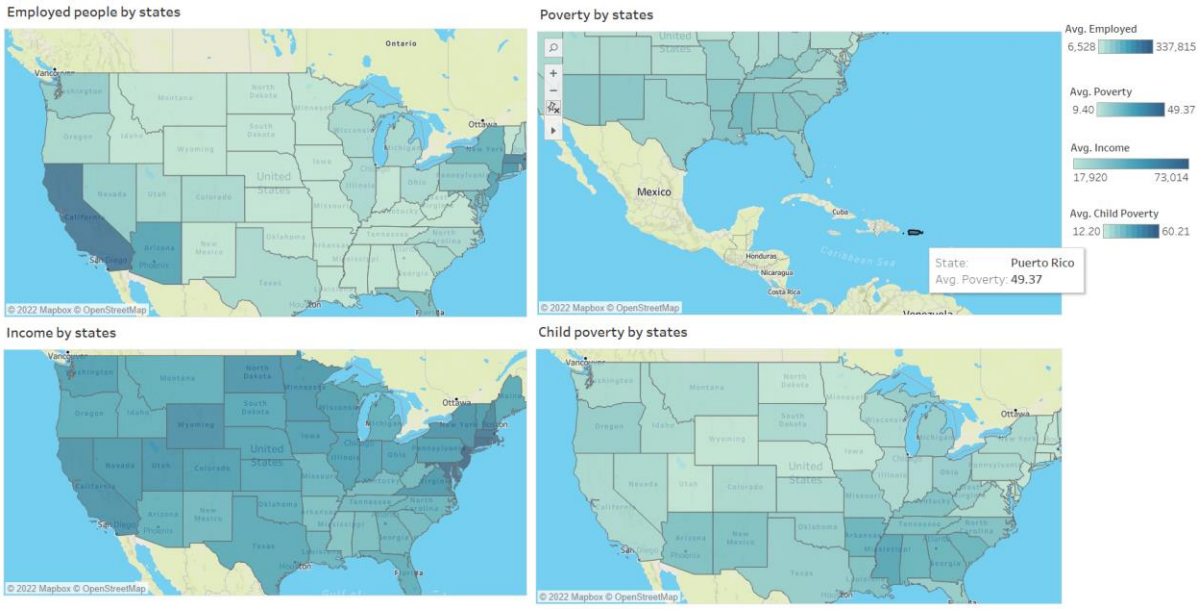
US Census Demographic Data:



Dashboard 1

- Which state has the most people employed?
- Which state has the highest rate of poverty?
- What is each state's income?
- In which state is child poverty most prevalent?

California has the most employed individuals per state, whereas Puerto Rico has the greatest average number of poverty per state, New Jersey has the most income per state, and Mississippi has the worst child poverty per state.

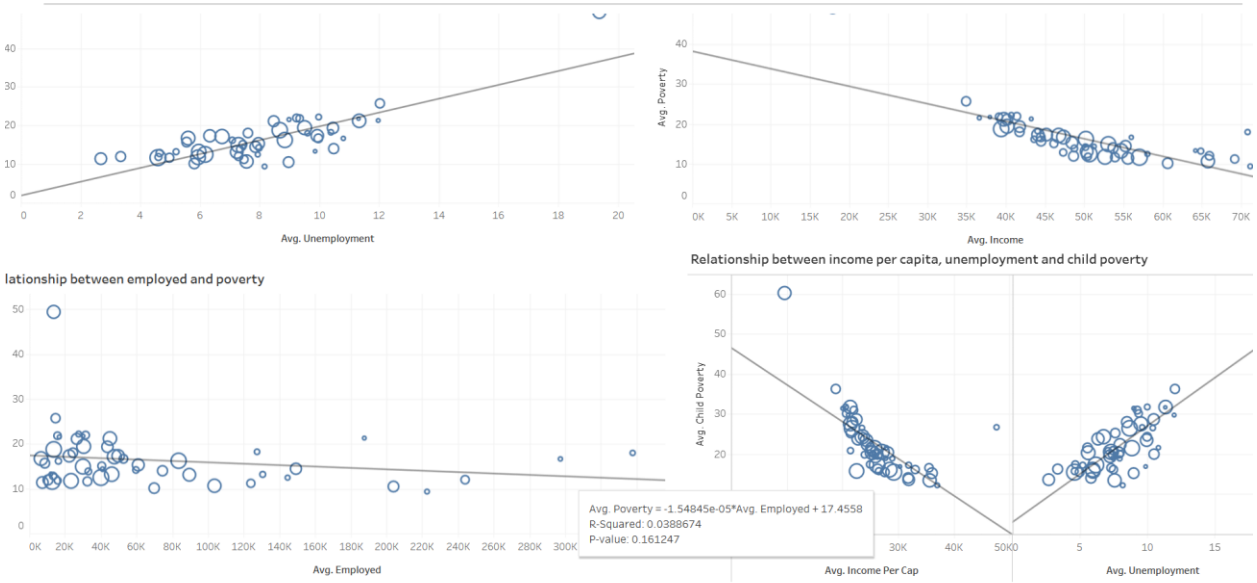


Dashboard 2

- Is there a statistically significant relationship between the variables?

The relationship between unemployment and poverty is strong because the p-value is less than 0.05; the same is true for the relationship between income and poverty and income per capita, unemployment and

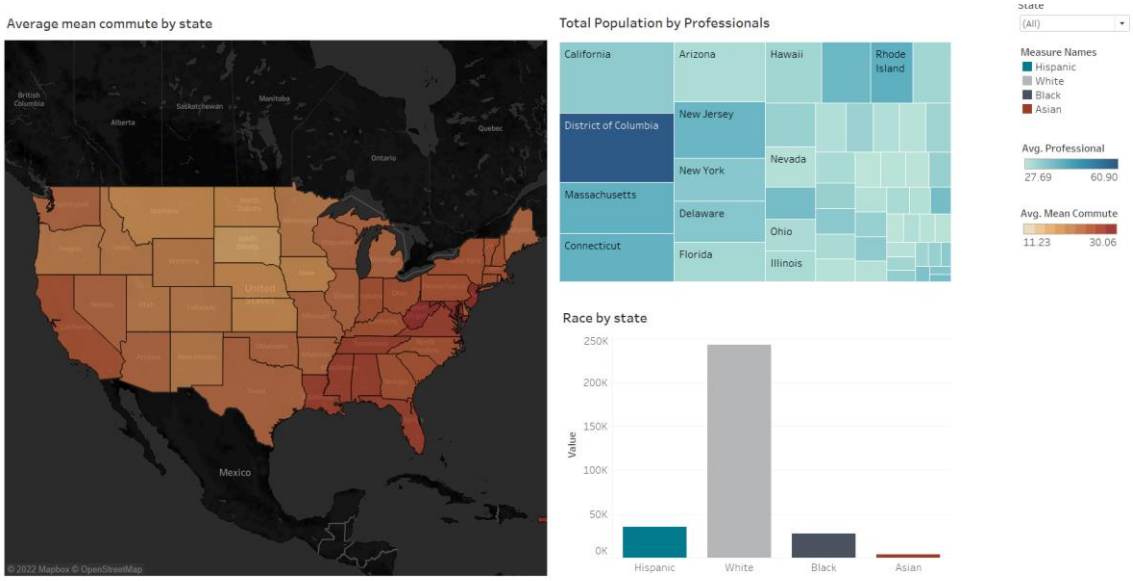
child poverty; the exception is the relationship between employed and poverty, which is weak because the p-value is greater than 0.05.



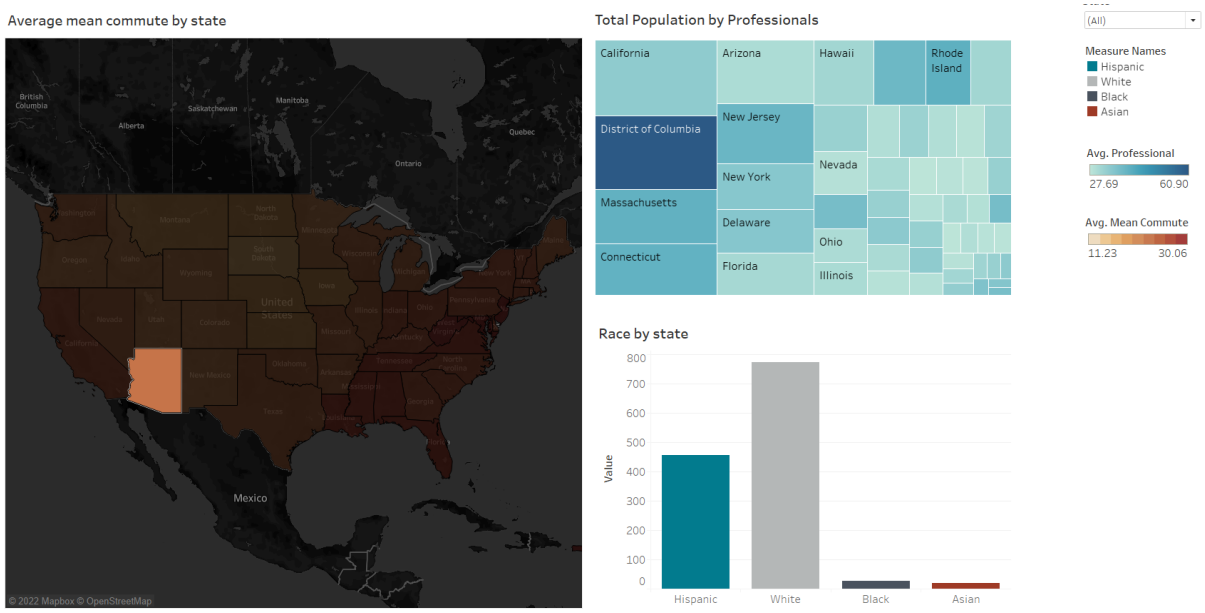
Dashboard 3

- What is the average commuting time in each state?
- Which state has the greatest number of professionals?
- How diverse is the racial makeup of each state?

West Virginia has the greatest average mean commute, while District of Columbia has the highest average professional by population. California has the most population, and it is a white denominated country, as seen in graph 3. Clicking on the map will indicate the degree of each possible race in the state.



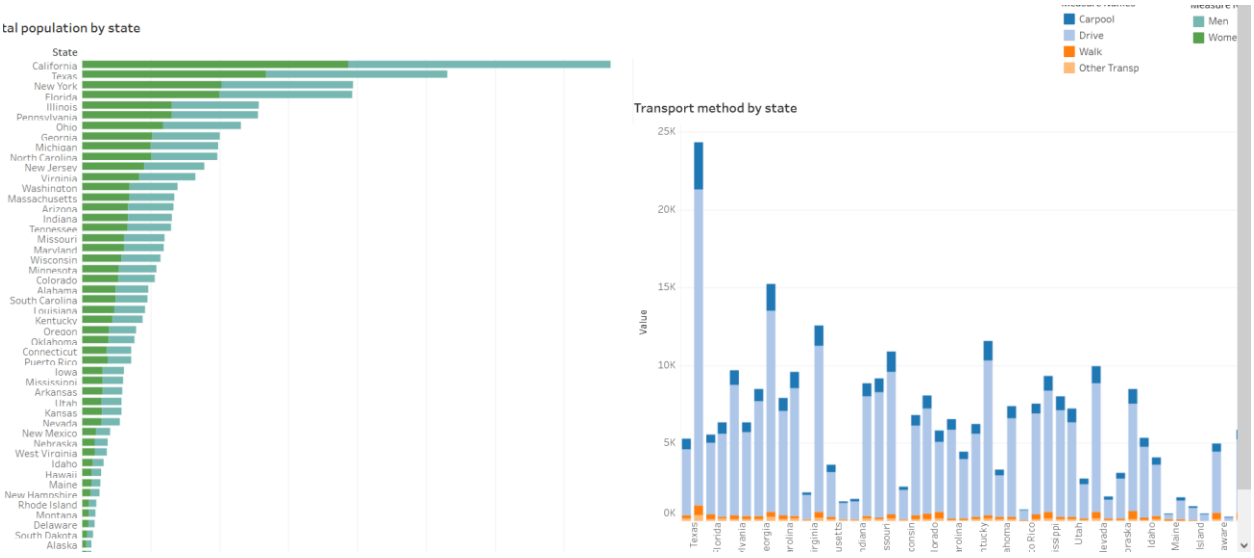
Clicking on "Arizona" will display the interactivity of the state's different races.



Dashboard 4

- What is the gender representation in each state?
- How are the various modes of transportation represented?

The first graph depicts the number of men and women in each state, with California having the highest number, while the second graph depicts various modes of transportation, with driving being the most common in most states.

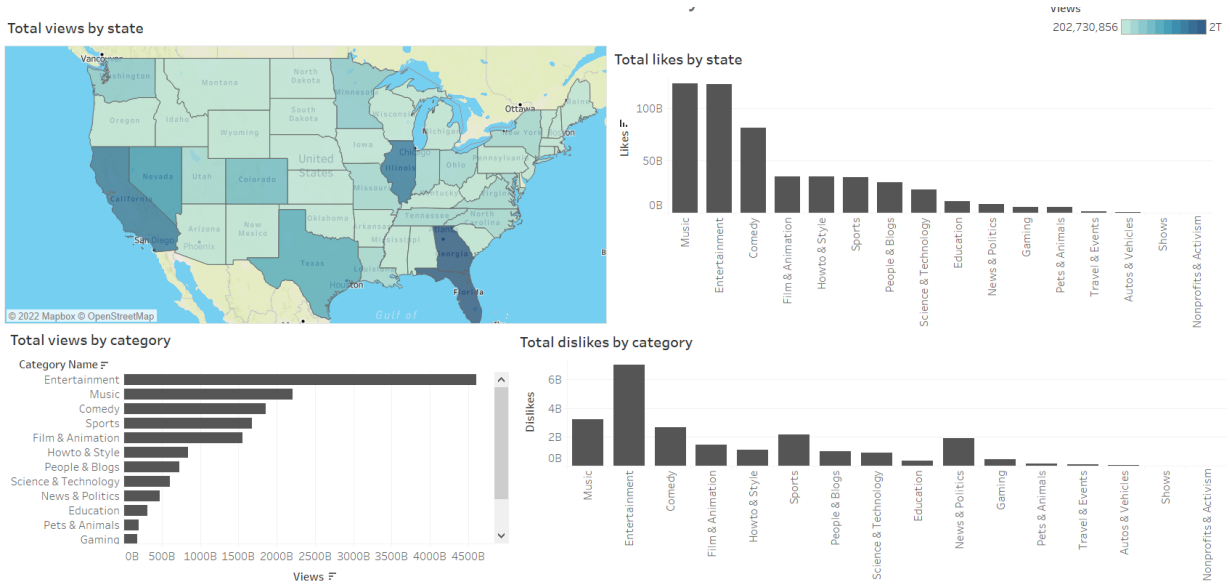


YouTube Data US:

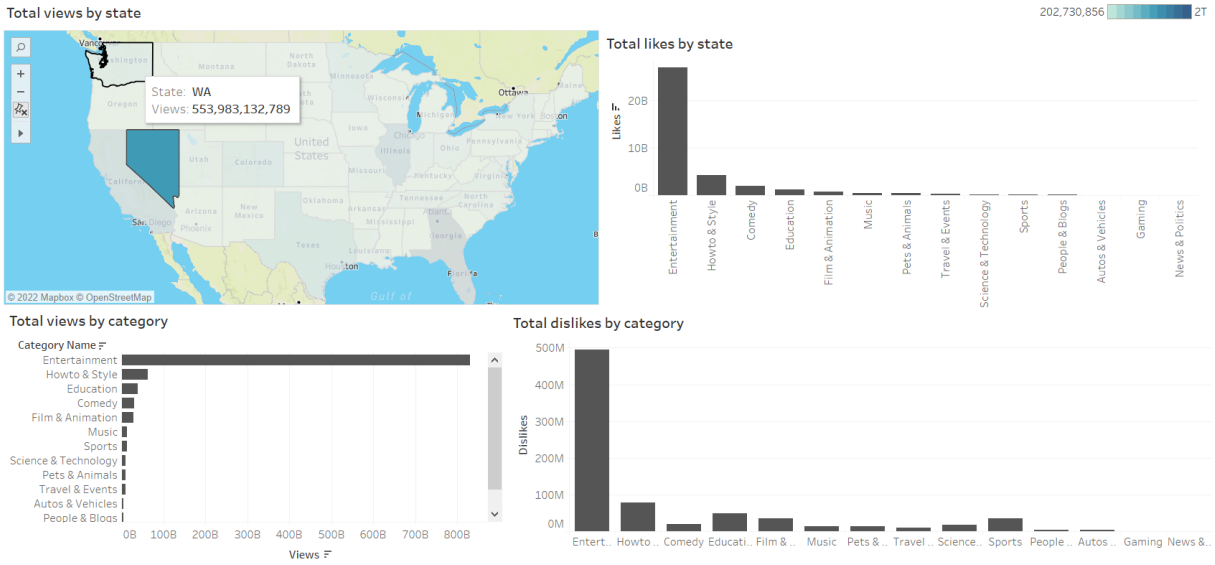
Dashboard 1

- Which state has the most views?
- How do the views change in relation to the amount of likes, dislikes, and views per category?

Florida has the most views per state; you can check the total likes, category views, and total dislikes for each state by clicking on the map, we can see that the most viewed category is the entertainment category which is also the most disliked category, while the music category has the most likes



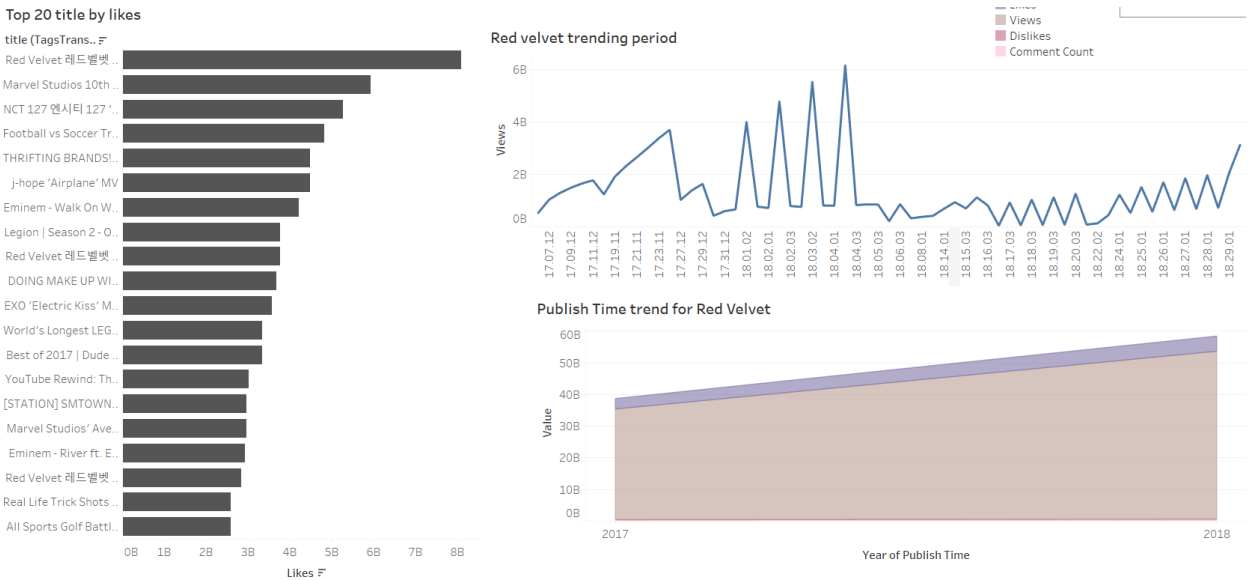
You may see the interactivity of the amount of likes, dislikes, and views if you pick Nevada. This can assist in determining what to show in specific states, resulting in increased revenues.



Dashboard 2

- What are the most popular liked YouTube videos?
- What is the top title's general trend, and when does it peak?

I looked at the top 20 most popular titles by likes and saw that Red Velvet had the most, then I looked at its trending period and discovered that it peaked on April 18, 2002, and I also looked at the publish time trends to see that it was improving.



Dashboard 3

- What's the trends of the views by publish time?
- What's the most viewed YouTube tags?
- Which city has the most channels?

The total views published by time began to rise in 2016, with the most popular tags being marvels entertainment and Atlanta having the most tags per city.