**Visualization 1: Cancellation Map**

Cancellation Map



© 2025 Mapbox © OpenStreetMap
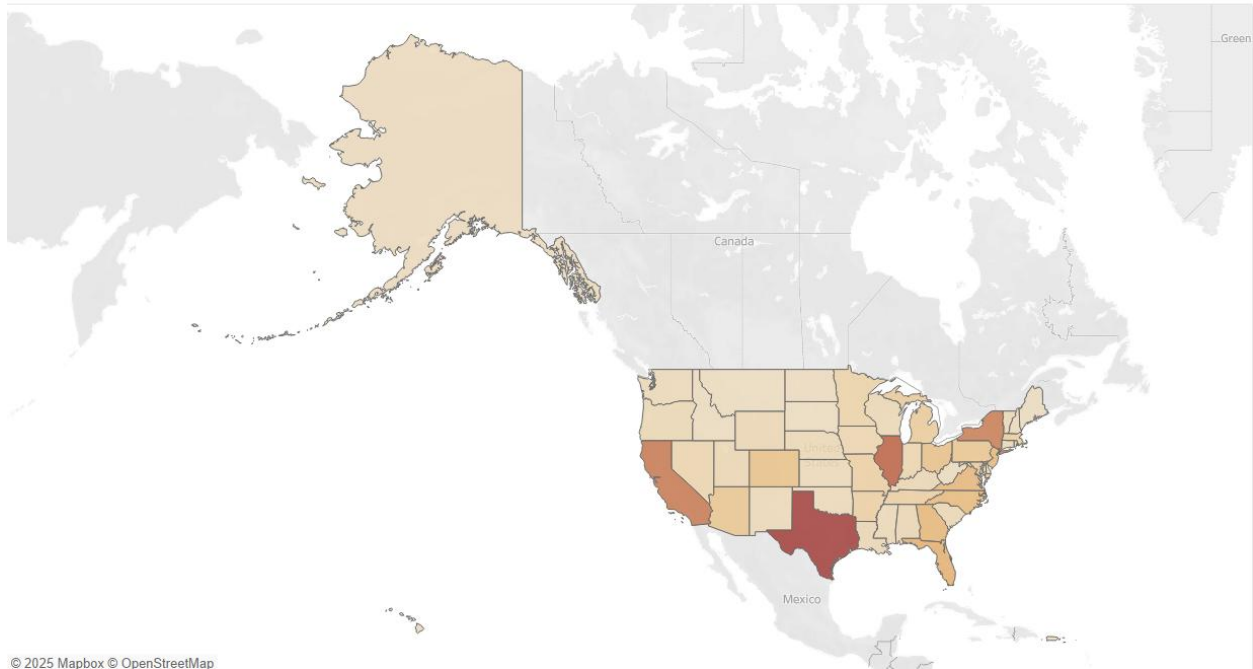
**Summary:**

This visualization uses a geographic map to display the distribution of flight cancellations across the United States. The color gradient indicates the number of cancellations, with darker shades representing higher cancellation frequencies. From the map, it is evident that Texas, Illinois, and New York experience the highest number of cancellations.
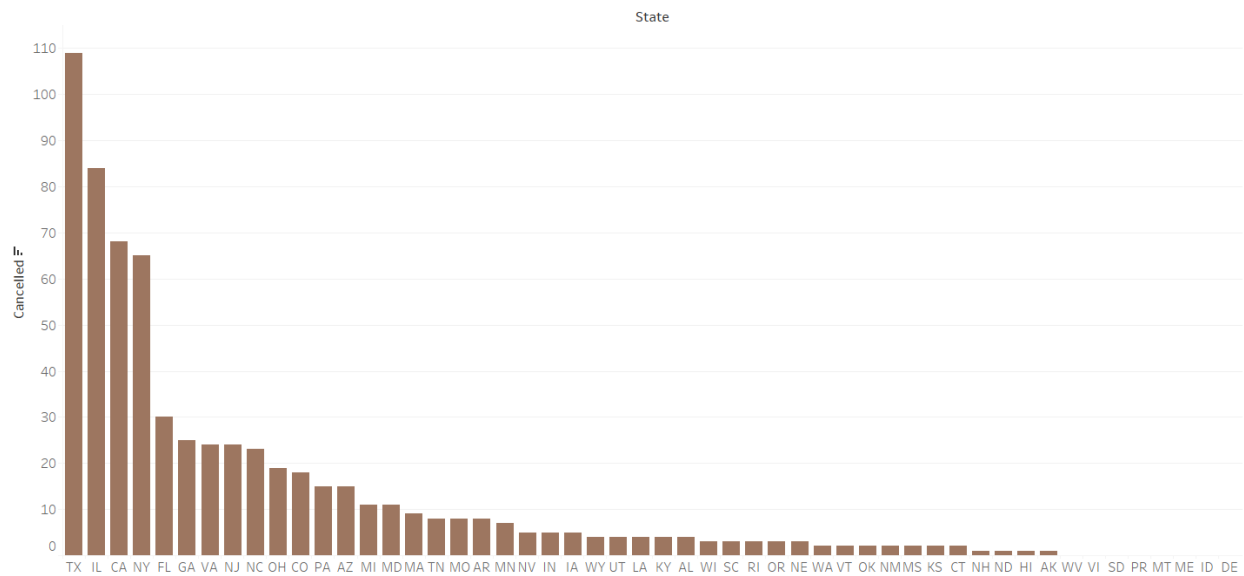
**Design:**

- **Map Chart Selection:** A geographic map was chosen to highlight state-level patterns and provide an intuitive spatial view of cancellations.

- **Color Gradient:** A sequential color palette (light to dark brown) was used to indicate the severity of cancellations. This choice avoids confusion and ensures accessibility.

- **Filter for Day of Week:** An interactive filter allows users to explore cancellations by specific days of the week, enhancing user interaction and insight discovery.

**Visualization 2: Cancellation Bar Chart**

## Cancellation BarChart

State



Cancelled F

110
100
90
80
70
60
50
40
30
20
10
0

TX IL CA NY FL GA VA NJ NC OH CO PA AZ MI MD MA TN MO AR MN NV IN IA WY UT LA KY AL WI SC RI OR NE WA VT OK NM MS KS CT NH ND HI AK WV VI SD PR MT ME ID DE
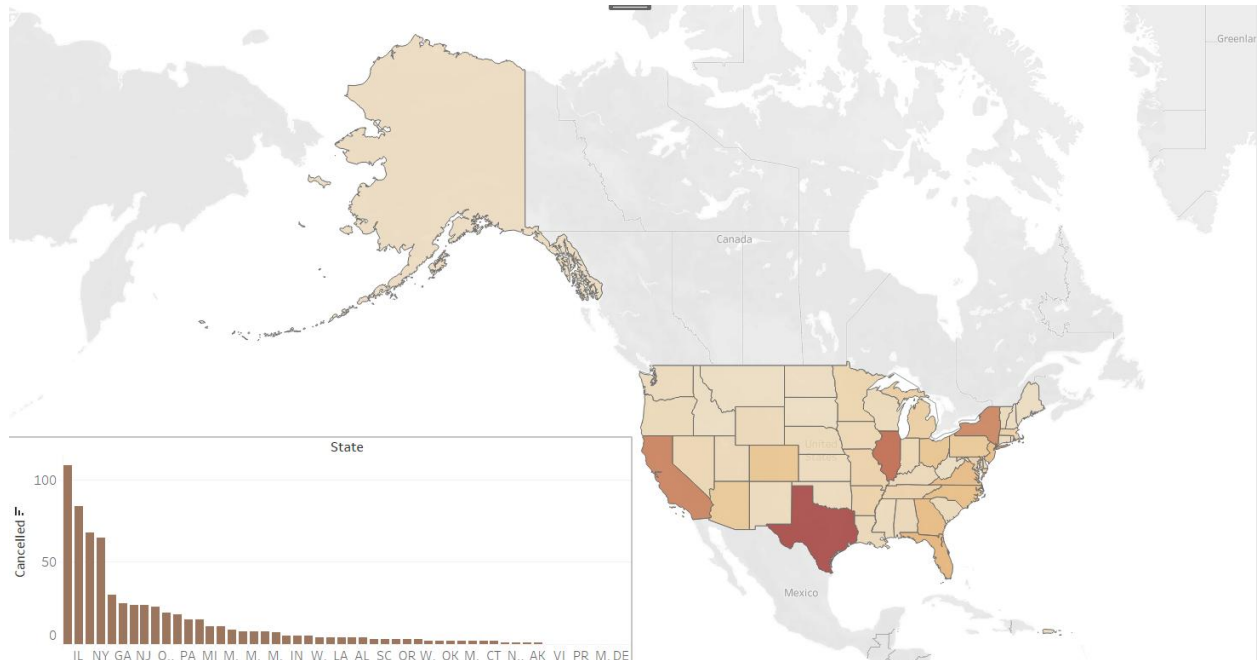
**Summary:**

This bar chart ranks states by the number of flight cancellations. The chart clearly identifies Illinois, New York, and Georgia as the top three states with the most cancellations, enabling a straightforward comparison across all states.

**Design:**

- **Bar Chart Selection:** A horizontal bar chart was selected to rank and compare cancellations across states effectively.

- **Sorting:** The bars were sorted in descending order to emphasize states with the highest cancellations.

- **Color Consistency:** A single color was used to maintain focus on the magnitude of cancellations without introducing unnecessary visual distractions.

- **Day of Week Filter:** A filter was incorporated to explore variations in cancellations by the day of the week, allowing dynamic data exploration.

**Dashboard: Combined Map and Bar Chart**
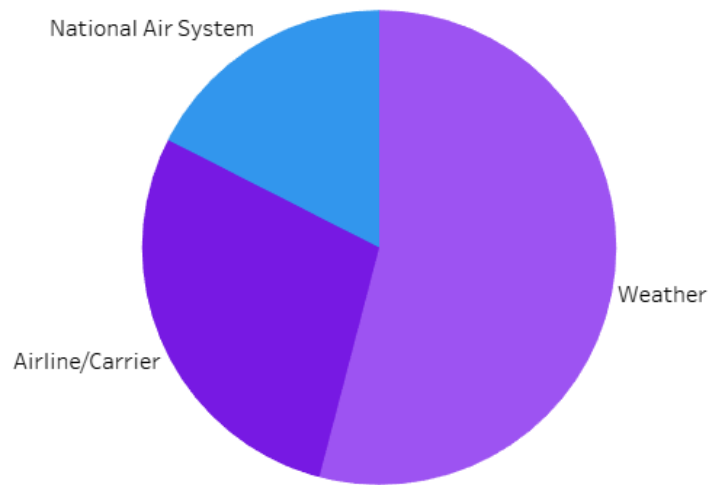


**Summary:**

The dashboard integrates the Cancellation Map and Cancellation Bar Chart, allowing users to analyze the spatial and numerical distribution of flight cancellations simultaneously. The interactive filter for the day of the week provides flexibility in identifying patterns.

**Design:**

- **Layout:** The map was positioned at the top for a broad overview, with the bar chart below for detailed rankings. This hierarchical design ensures ease of interpretation.

- **Interactivity:** A single filter applies to both visualizations, improving usability and encouraging exploration.

- **Alignment:** The dashboard was organized with clear margins and proportional sizing, ensuring a clean and professional appearance.

**Visualization 3: Reasons for Cancellations (Pie Chart)**



**Summary:**

This pie chart shows the distribution of flight cancellations based on the primary reasons: Weather, Airline/Carrier, and National Air System issues. The chart reveals that weather-related cancellations are the most frequent, followed by issues caused by the airline/carrier and the national air system.

**Design:**

- **Chart Type Selection:**
  - A pie chart was chosen to emphasize the proportional contribution of each cancellation reason to the overall cancellations. It visually communicates the comparison between categories effectively.

- **Color Coding:**
  - Distinct colors were assigned to each reason to make the categories easily distinguishable. Shades of purple and blue were chosen for accessibility and to maintain consistency across the visualizations.

- **Labels and Tooltips:**

- o Labels were added to highlight each category, ensuring the viewer can quickly identify the most and least significant causes of cancellations. Tooltips could include details like the exact percentage or number of cancellations for each category to provide more depth.

- **Feedback-Driven Changes:**
  - o After initial feedback, category labels were adjusted to make the reasons clearer (e.g., "Airline" changed to "Airline/Carrier").
  - o The chart's proportions were recalculated to ensure accurate reflection of the dataset.

The most significant cause of cancellations is **weather-related issues**, indicating that environmental factors are a critical challenge for the airline industry. This insight suggests that airlines and airport authorities could benefit from improving weather forecasting and preparation to reduce disruptions.

https://public.tableau.com/app/profile/mayaramein/viz/CancellationAirline_17367872306550/CancellationAirline

## Visualization 4: Airline Cancellations (Bar Chart)

Cancellation Airline



AIRLINE (airlines.csv)
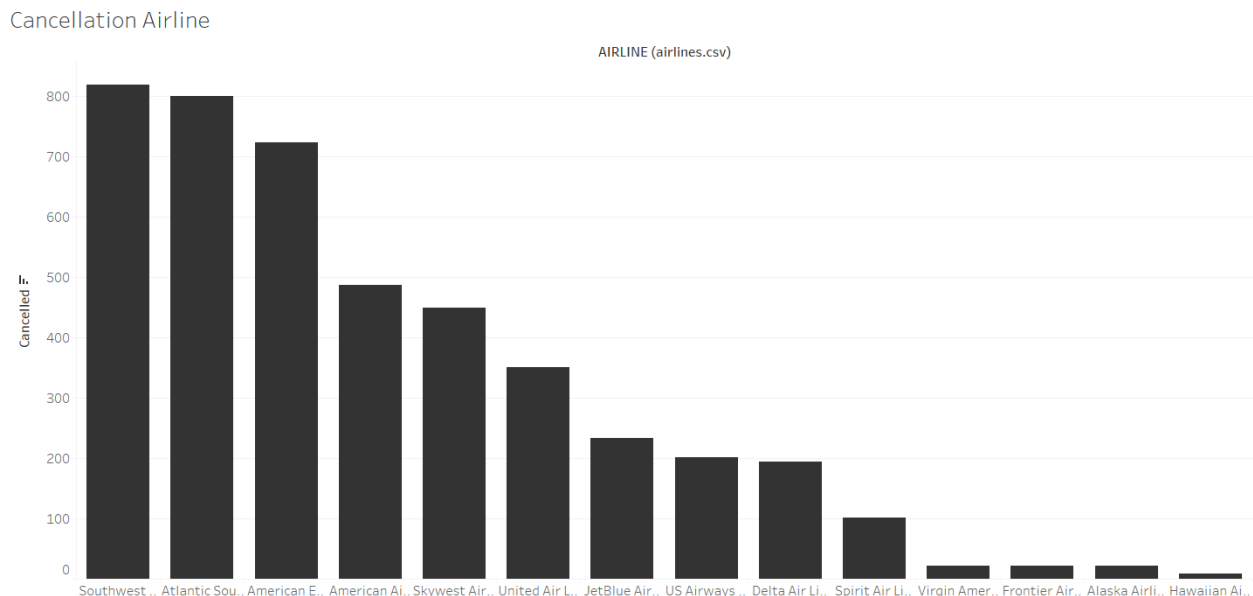
**Summary:**

This bar chart ranks airlines by the total number of flight cancellations. Southwest Airlines has the highest number of cancellations, followed closely by Atlantic Southeast Airlines and American Eagle Airlines. The chart highlights which carriers may require further investigation into their operational challenges.

**Design:**

- **Bar Chart Selection:**

  o A bar chart was chosen for its ability to rank and compare the total number of cancellations by airline effectively.

- **Sorting:**

  o Bars were sorted in descending order to draw attention to the airlines with the most cancellations.

- **Color and Labeling:**

  o A neutral dark color palette was used for clarity, with axis labels and a title to guide interpretation.

- **Feedback-Driven Changes:**

  o After initial feedback, the chart was adjusted to include full airline names where space permitted. Tooltips were added to provide specific cancellation numbers for each airline.

Southwest Airlines leads in cancellations, suggesting they may face higher operational challenges. Investigating specific reasons for cancellations for top airlines could help address these issues.

https://public.tableau.com/app/profile/mayaramein/viz/CancellationAirport_17367866802570/CancellationAirport

### Visualization 5: Airport Cancellations (Bar Chart)

Cancellation Airport
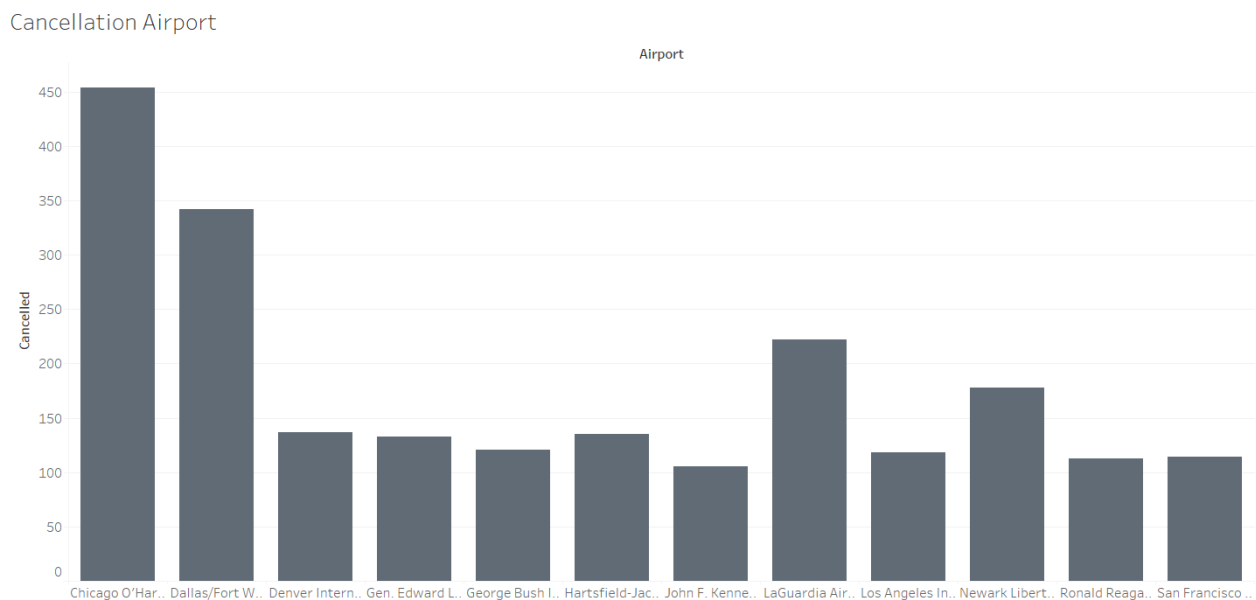


**Summary:**

This bar chart displays the total number of cancellations at major airports. Chicago O'Hare International Airport and Dallas/Fort Worth International Airport account for the highest number of cancellations, indicating potential weather or logistical challenges in these regions.

**Design:**

- **Bar Chart Selection:**

  - A bar chart was chosen to effectively rank and display airport cancellation data, allowing for easy identification of high-impact locations.

- **Sorting:**

  - Airports were sorted by total cancellations in descending order to highlight the most problematic airports.

- **Color and Labeling:**

  - A consistent gray-blue color palette was used to maintain focus, and axis titles and labels were included for clarity.

- **Feedback-Driven Changes:**

  - Airport names were abbreviated to fit the chart better while maintaining clarity. Tooltips were added to provide additional details about cancellation counts.

Chicago O'Hare and Dallas/Fort Worth airports stand out as hotspots for cancellations, likely due to their size and operational complexity. Addressing challenges at these airports could significantly reduce overall cancellations.

**Resources:**

- N/A (No external resources were used in this submission).