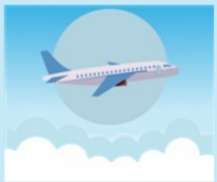
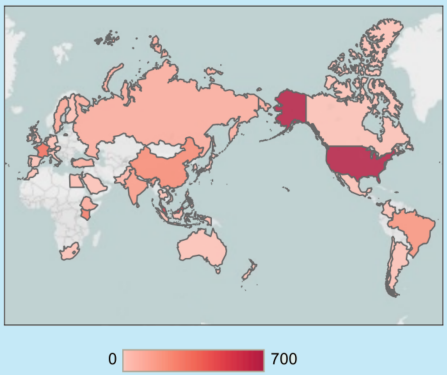
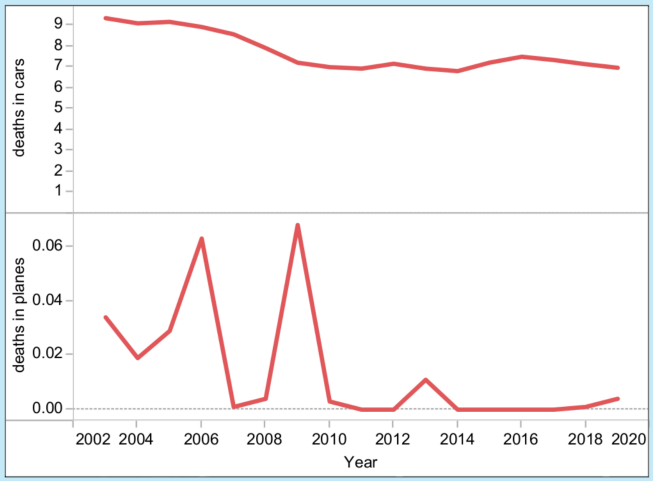
U.S. Airline Carriers
Safety and Industry Financial Status



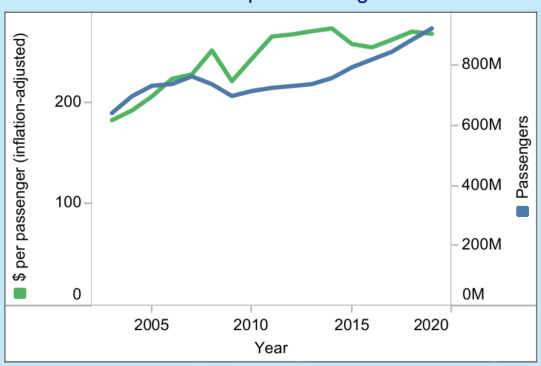
Airline Fatalities 2000-2014



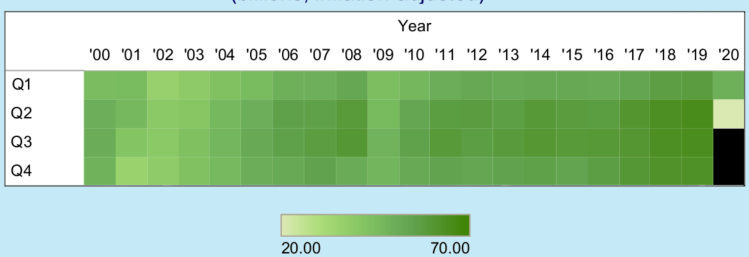
Car vs Airline Deaths per Billion Passenger Miles



U.S. Carriers - Passengers and Revenue per Passenger



U.S. Carrier Quarterly Revenue (billions, inflation-adjusted)



Data Sources

https://www.transtats.bts.gov
https://www.bts.gov/content/transportation-fatalities-mode
https://en.wikipedia.org/wiki/Motor_vehicle_fatality_rate_in_U.S._by_year

Design justification

The graphic is intended for internal consumption by technical staff, yet I believe it is easy to err on the side of overcomplication. I have therefore chosen simplicity and minimality where possible: in font, text, decoration, and layout. The charts convey basic information to answer the questions: is air travel safe compared to car travel, and how is the airline industry doing? For colors I chose a blue theme for the dashboard: a light, unimposing background designed to be less seen than felt, and dark blue title text for unity and visibility. I used green for money and red for death. The remaining line shows the number of passengers. I chose a neutral blue, keeping also with the theme of the poster.

Technical Analysis

The global map is self-explanatory when the user hovers over a country: it shows the number of deaths from that region. The graphic title lets us know these deaths are cumulative 2000-2014.

Continuing clockwise, the graphic showing rates of death per mile in cars vs planes cannot be usefully combined. Dual y-axes here would invite unwarranted comparisons in magnitude. Instead, the user is left to realize from the individual y-axes that very different scales apply here.

Revenue is nonuniform across quarters (being highest in Q2 and Q3), so the revenue heatmap is designed to optimize quarter comparisons year-over-year. The dramatic plunge in revenue Q2 2020 due to Covid-19 is evident here, as is the sharp decline in 2009 due to the global financial crisis.

In the final chart, revenue is decomposed into its components: number of passengers and revenue per passenger. I chose line charts on one axis to best display movements of one component relative to the other. It is revealed here, for example, that the recovery in revenues immediately following 2009 was due almost entirely to sharp revenue increases per passenger. The recovery picked up further steam in the second half of the decade as prices per passenger stagnated but the number of passengers saw steady 4% gains per year.

Data sources

Wikipedia

- *Car miles and deaths*:
  https://en.wikipedia.org/wiki/Motor_vehicle_fatality_rate_in_U.S._by_year

Bureau of Transportation Statistics

- *Number of air passengers*
  https://www.transtats.bts.gov/Data_Elements.aspx?Data=3
- *Airline passenger miles*
  https://www.transtats.bts.gov/Data_Elements.aspx?Data=3
- *Revenue per quarter*
  https://www.transtats.bts.gov/Data_Elements_Financial.aspx?Data=7
- *Airline fatalities*
  https://www.bts.gov/content/transportation-fatalities-mode

Worldbank

- *passengers carried by country and year*
  https://data.worldbank.org/indicator/IS.AIR.PSGR?end=2019&start=1970

Other

- *Incidents by region*
  https://github.com/fivethirtyeight/data/blob/master/airline-safety/airline-safety.csv
- *country latitude and longitude coordinates*
  https://www.jasom.net/list-of-capital-cities-with-latitude-and-longitude/

Github

https://github.com/cabriggs/DSC640