Report Name: Airline Safety

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- Report Publish Date: 10/7/2021
- Report Period: 1985 – 2014

Data Source:

airline-safety - Downloaded from: Aviation Safety Network

Supplemental Data Sources:

1. Motor Crashes - Downloaded from: https://www.iihs.org/topics/fatality-statistics
2. U.S. Air Carrier Safety Data - Downloaded from: https://www.bts.gov/content/us-air-carrier-safety-data
3. Passenger Revenue -- Total System Operations - Downloaded from: MIT
4. Crashes Per Year/Fatalities Per Year - Downloaded from: Statistics, Bureau of Aircraft Accident Archives

GitHub Repository:

5. https://github.com/RachelONelson/airline-safety

Purpose:

Executive summary summarizing findings on airline safety to present to senior leaders.

Visualizations:

Because the data has to do with airline safety, I used a powerpoint template that aligned with the theme. I kept the colors to mostly orange and blue (which matched the template used for the powerpoint, to give it a polished look) for those who are colorblind can distinguish between orange and blue, which are contrasting colors. I used a combination of both PowerBI and Tableau for the data visualizations. **I like Tableau's trending and forecasting capability which helped me tell my data story.**

The visualizations I used to perform the analysis were:

- Crashes and Fatalities Scatter graph
- Crashes and Fatalities Correlation Matrix
- Accidents since 1985
- Fatalities since 1985
- Accident Rates Per Year
- Fatality Rates per year
- Passenger Revenue (Total Industry)
- Passenger Revenue by Airline
- Original Dashboard Metrics
    a. Air accidents donut chart – show overall fatalities by incidents
    b. Air accidents by time period stacked bar chart – compare two time periods
    c. Air accident by available seat km flown weekly scatter chart – to understand how the frequency of accidents are impacted by available seat km flown

d. Fatalities by airline clustered bar chart – to organize data clearly showing which airlines have the most fatalities
e. Fatalities per 100,000 flight hours line chart – to show year over year trend
f. Air vs motor Transportation fatalities bar chart – to compare the # of auto accidents to airplane

Analysis:

To analyze airline safety, I reviewed the airline safety data set from Aviation Safety Network, which includes fatalities, incidents, and fatal accidents from 1985-2014. The years are grouped into two segment, 1985-1999 and 2000-2014. The data is broken out by airline.

Executive Summary at a glance:

- Accident and Fatality rates show a decrease trend year over year.
- Fatalities are highly correlated to the # of accidents.
- Passenger Revenue are showing an upward trend year over year and are forecasted to continue to show a positive increase (executives always care about revenue forecasts)
- Additional Information on Safety
    - There were 9404 total fatalities from 1985-2014
    - The number of fatalities had a large decrease from 1985-1999 to 2000-2014. This number of total fatalities decreased by half between the two time periods.
    - The top three airlines with the most fatalities include China, Malaysia and Japan airlines.
    - The number of airline fatalities is a fraction of Motor fatalities.
    - Looking at the fatalities trending by year, we can see a decrease of fatalities per 100,000 flight hours
    - We do not see a spike of fatalities or incidents based on the available seat km per week.

Because airplane accidents are rare, media coverage of such occasions are high. Everyone's eyes are on the television when these events happen, which may lead to a misperception that airplane travel is less safe. However, data shows that airplane fatalities are less common than motor fatalities.

Conclusion:

Airline safety fatalities have decreased over time. Passenger Revenue is forecasted to continue to increase.