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**Project Task 1: Flight Crash Insights**

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The datasets used for the dashboard visualization are of my personal interest and I have provided the references at the end of this document.

**Source Dataset:** The source dataset is taken from Airline Safety in which it contains data of 56 airlines along with the count of accidents with respective of categories during the years 1985-1999 and 2000-2014.

Codebook:

|  |  |
| --- | --- |
| **Header** | **Definition** |
| airline | Airline (asterisk indicates that regional subsidiaries are included) |
| avail\_seat\_km\_per\_week | Available seat kilometers flown every week |
| incidents\_85\_99 | Total number of incidents, 1985–1999 |
| fatal\_accidents\_85\_99 | Total number of fatal accidents, 1985–1999 |
| fatalities\_85\_99 | Total number of fatalities, 1985–1999 |
| incidents\_00\_14 | Total number of incidents, 2000–2014 |
| fatal\_accidents\_00\_14 | Total number of fatal accidents, 2000–2014 |
| fatalities\_00\_14 | Total number of fatalities, 2000–2014 |

**Supplement Dataset:** I chose Auto Fatalities as my supplement data that represents number of deaths and injuries due to fatal collisions.

Codebook:

|  |  |
| --- | --- |
| **Header** | **Definition** |
| Year | Year of incident |
| Deaths | Number of fatalities |
| VMT\_Vehicle\_Miles\_Travelled\_bn | Vehicle travelled miles in billion |
| Fatalities\_Per\_100\_Million\_VMT | Number of fatalities per 100 million Vehicle Miles Travelled |
| Population | US population |
| Fatalities\_Per\_100000\_population | Fatalities per 100k population |

**Dataset for Power BI to create a dashboard:**

To create the dashboard, I have used the below transformed datasets as shown:

According to "available seat km per week," the weighted incident, fatal accident, and fatality rates for airlines are determined. Wide format is used for the table. For easier reporting, airline safety data has been converted to a long format using Safety.

AutoStats - A summary of fatal auto accidents for the specified time period.

Fatalities - Airline and automobile fatalities over the same time period. This is for the visual's comparison.

**Dashboard**

The dashboard's goal is to use historical data and numbers to reveal the truth behind the current hype about how bad flying is. To preserve clarity from a design standpoint, a colorblind-safe palette and straightforward, high-impact chart types have been employed.

1. **Fatal accidents by airlines:** This scatter plot displays fatal accidents involving airlines for the two time periods in a color-coded manner (1985-1999, 2000-2014). The goal is to establish a connection between the fatal incidents that occurred throughout the two time periods. The number of events for the airlines between the two times periods is unpredictable. In the years 1985 to 1999, as well as the years 2000 to 2014, Air Canada had no fatal accidents. Contrarily, Aeroflot experienced an average number of fatal accidents from 1985 to 1999, which decreased in the second half. I can state that there isn't a clear trend.
2. **Incidents by airlines:** The goal is to establish a connection between the happenings that occurred throughout the two time periods. The two periods appear to have a slight association, as can be seen. The two main outliers in the graph are Ethiopian Airlines and Pakistan International Airlines, both of which have a consistently high incidence rate. In the years 1985 to 1999, Russia's Aeroflot was a third outlier with a remarkably high number of recorded incidents. However, many of these occurrences occurred around the time the Soviet Union disintegrated and involved hijacking attempts. In contrast, from 2000 to 2014, the number was comparatively low. Even if we take these outliers into account, the connection is still in favor. This graph's statistical conclusion is that some airlines are marginally safer to fly with than others.
3. **Vehicle Deaths vs. Airline Deaths:** For the same two time periods ('85-'99, '00-'14), these visuals use additional data on auto fatalities in the USA. The airline fatalities are filtered to include just US airlines, and the auto figures are contrasted. Despite a general downward trend in events for both types of travel, road fatalities regularly outnumber aviation fatalities. If the data's facts are to be believed, then this image amply demonstrates that traveling by road is significantly riskier than traveling by air merely based on the number of fatalities.
4. **Fatalities- USA vs Rest:** The number of fatalities in USA and the rest of the world are contrasted in this clustered graph throughout the two time periods. Although the total number decreased in both situations between 2000 and 2014 compared to 1985 to 1999, USA numbers are still much lower than the rest of the world in both circumstances. This graph confirmed the notion that there are significant regional differences in the quality of air travel. For certain nations, flying is completely safe.
5. **Incidents- USA vs Rest:** This graph and the one before it are nearly identical. The conclusion also makes a lot of sense. The only interesting fact is that incidences in the USA did not significantly decrease. The high number of mishaps in the USA may be due to the heavy air travel. The numbers are still somewhat modest, though, in relation to the rest.
6. **Bottom 5 Airlines by Total Incidents:** The bottom 5 airlines in terms of overall incidents are displayed in this horizontal bar graph. Safety precautions and technical shortcomings may therefore be to blame for the events. This graph shows that it is not possible to generalize that flying is risky. There may be a connection between airlines and their country of operations.

**References**

Fivethirtyeight. (n.d.). *Data/airline-safety at master · fivethirtyeight/data*. GitHub. Retrieved September 25, 2022, from <https://github.com/fivethirtyeight/data/tree/master/airline-safety>

Wikimedia Foundation. (2022, August 22). *Motor vehicle fatality rate in U.S. by year*. Wikipedia. Retrieved September 25, 2022, from <https://en.wikipedia.org/wiki/Motor_vehicle_fatality_rate_in_U.S._by_year>