

# Airlines safe to travel or not?

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## **Abstract:**

Identify if airlines are still a safe travel option, do a data-based analysis to answer this question and compare the incidents, fatal accidents and fatalities of air travel Vs Motor vehicle road travel.

## **Intro/Background:**

Due to recent unfortunate airline crashes, the media has been promoting statistics stating air is no longer a safe way to travel. The news and media outlets have been bombarding the public with reports and figures about the trends of airline safety and that things are not looking good. What was previously thought as the safest way to travel, especially when compared to automobiles, is now being presented as one of the most dangerous to the public. But are any of these claims based on facts?

## **Choosing the data:**

The data of airlines are from (fivethirtyeight, n.d.).

And supplemental dataset for motor vehicle is from (motor-vehicle-safety-data, n.d.)

## **Data Wrangling:**

### **Motor Vehicle Data:**

The motor vehicle data was available per year, so we had to sum it up into two groups, year 1985 to 1999 and year 2000 to 2014.

```
In [121]: df2['85_99'] = df2.iloc[:,7:17].sum(axis = 1)
          df2['00_14'] = df2.iloc[:,17:32].sum(axis = 1)
```

Then we had to convert the data into per one trillion kilometers

```
In [179]: df3.loc[0] = [df2['85_99'][0]/(df2['85_99'][3]*1.16/1000000),df2['85_99'][1]/(df2['85_99'][3]*1.16/1000000),df2['85_99'
In [180]: df3
Out[180]:
```

	trillion_km_Fatalities_85_99	trillion_km_Injured persons_85_99	trillion_km_Crashes_85_99	trillion_km_Fatalities_00_14	trillion_km_Injured persons_00_14	trillion_km_Crashes_00_14
0	14921.753286	1.172476e+06	2.295624e+06	11266.094267	757318.148778	1.741797e+06

## Airlines Data:

The data of the airlines were available in avail\_seat\_km\_per\_week, so we converted that to trillion available seat kilometers.

```
In [69]: df['trillion_avail_seat_km_85_99'] = (df['avail_seat_km_per_week']*datediff1.days/7)/10**12
df['trillion_avail_seat_km_00_14'] = (df['avail_seat_km_per_week']*datediff2.days/7)/10**12
```

Then we converted the incidents, fatal accidents and fatalities numbers to per trillion available seat kilometers

```
In [71]: df['trillion_avail_seat_km_incidents_85_99'] = df['incidents_85_99']/df['trillion_avail_seat_km_85_99']
df['trillion_avail_seat_km_fatal_accidents_85_99'] = df['fatal_accidents_85_99']/df['trillion_avail_seat_km_85_99']
df['trillion_avail_seat_km_fatalities_85_99'] = df['fatalities_85_99']/df['trillion_avail_seat_km_85_99']

df['trillion_avail_seat_km_incidents_00_14'] = df['incidents_00_14']/df['trillion_avail_seat_km_00_14']
df['trillion_avail_seat_km_fatal_accidents_00_14'] = df['fatal_accidents_00_14']/df['trillion_avail_seat_km_00_14']
df['trillion_avail_seat_km_fatalities_00_14'] = df['fatalities_00_14']/df['trillion_avail_seat_km_00_14']
```

For the full Jupyter notebook with all detailed data wrangling steps please refer to (GitTInto, n.d.)

## Results:

The full data viz created in tableau have been saved as pdf in (GitTInto\_Dashboard, n.d.)

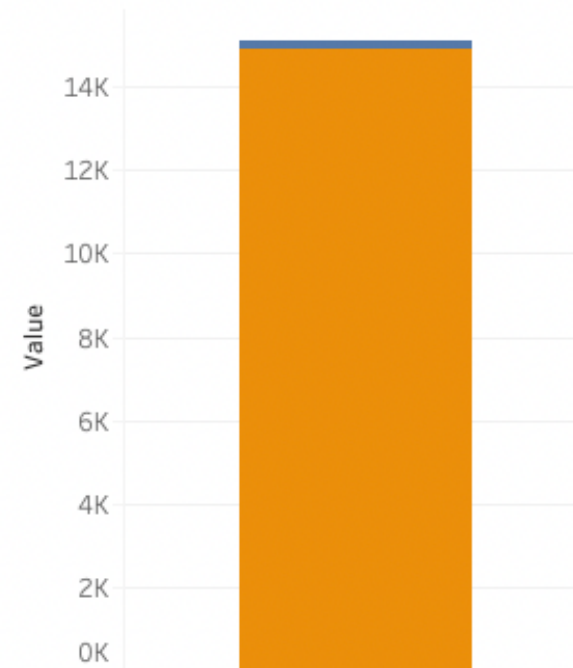
From the graphs we can see that

- **180 Airplane Fatalities VS ~15K Car Fatalities per One Trillion Kilometers - In years 1985 to 1999.**
- **306 Airplane Fatalities VS ~11K Car Fatalities per One Trillion Kilometers - In years 2000 to 2014.**
- **180 Airplane Fatal Accidents Vs ~2.2 MM Car Fatal Accidents per One Trillion Kilometers - In years 1985 to 1999**
- **62 Airplane Fatal Accidents Vs ~1.7 MM Car Fatal Accidents per One Trillion Kilometers - In years 2000 to 2014.**

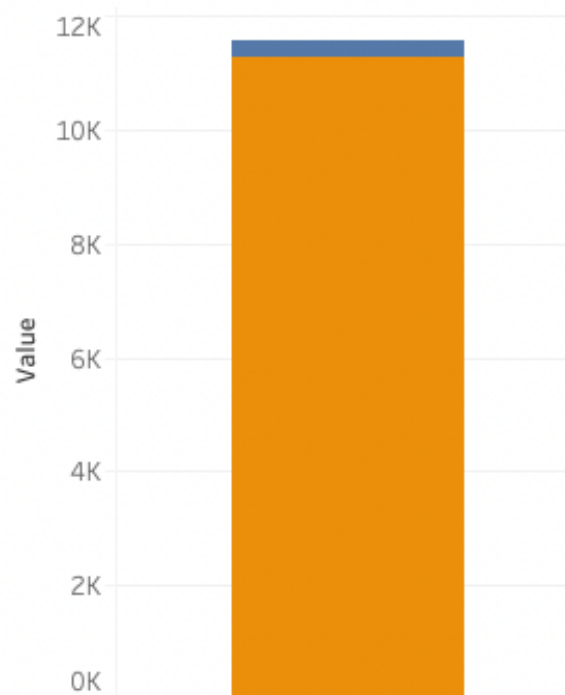
Measure Names

- AroplaneSumOfFatalAccidents 85 99
- trillion km Fatalities 85 99

Number of Fatalities Airplane Vs Car per One Trillion Kilometers -1985 to 1999

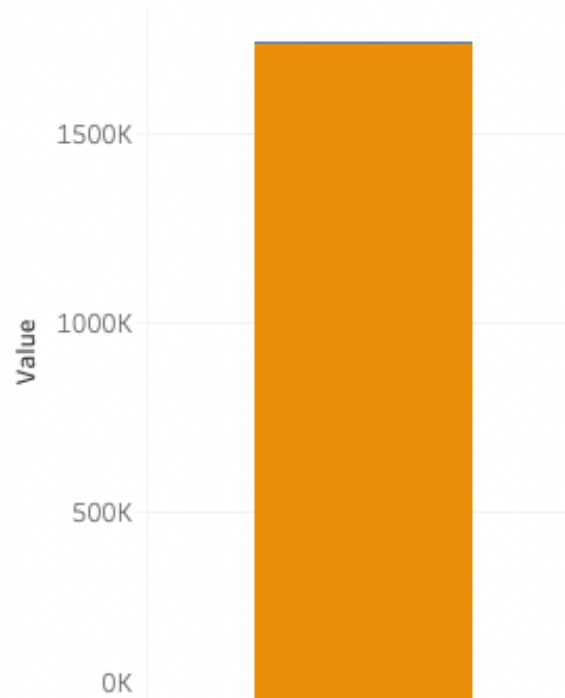
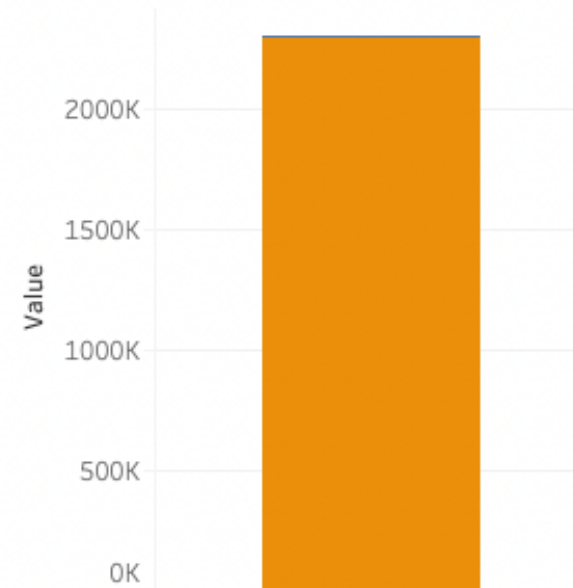


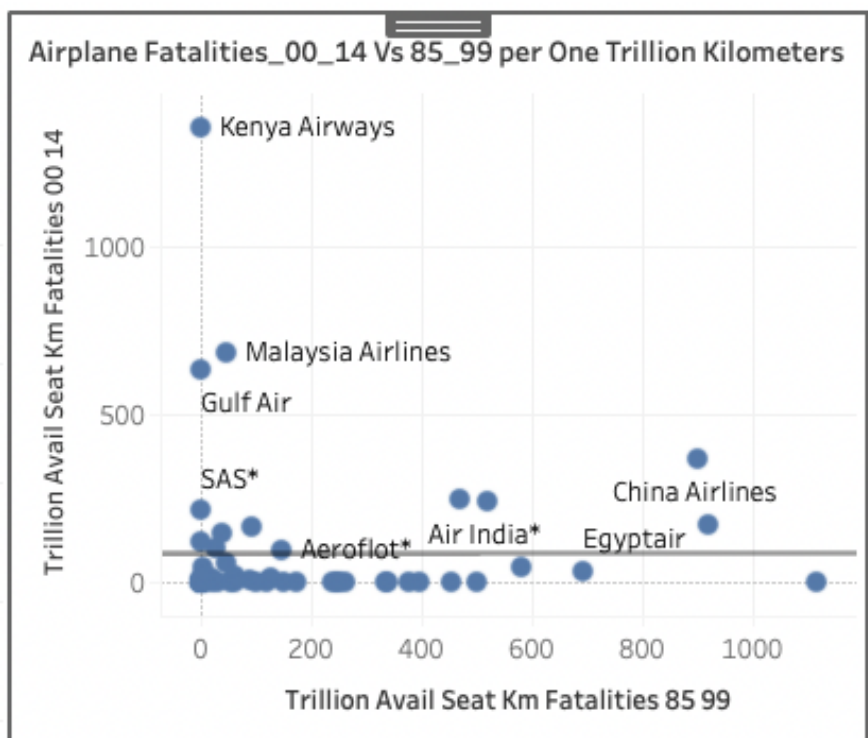
Number of Fatalities Airplane Vs Car per One Trillion Kilometers - 2000 to 2014



Number of Fatal Accidents Airplane Vs Car per One Trillion Kilometers - 2000 to 2014

Number of Fatal Accidents Airplane Vs Car per One Trillion Kilometers - 1985 to 1999

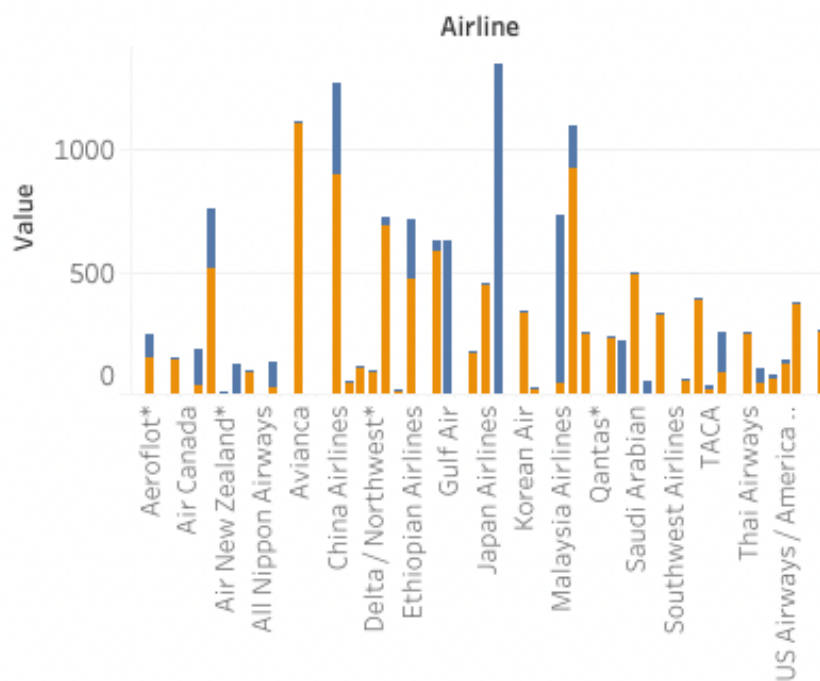




#### Measure Names

- Trillion Avail Seat Km Fatalities 00 14
- Trillion Avail Seat Km Fatalities 85 99

Airplane Fatalities\_00\_14 Vs 85\_99 per One Trillion Kilometers for each airlines



## **Conclusion:**

From the above analysis we can conclude that airlines are still very much safer than road travel. Both the data of air travel vs motor travel from periods 1985 to 1999 and 2000 to 2014 confirms this fact.

## **Acknowledgements:**

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## **References:**

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- GitTInto*. (n.d.). Retrieved from [https://github.com/GiTTInto/DataPresentationAndVisulization/blob/main/week3\\_4/fivethirtyeight/airline-safety/data\\_wrangling\\_cleaning.ipynb](https://github.com/GiTTInto/DataPresentationAndVisulization/blob/main/week3_4/fivethirtyeight/airline-safety/data_wrangling_cleaning.ipynb)
- GitTInto\_Dashboard*. (n.d.). Retrieved from [https://github.com/GiTTInto/DataPresentationAndVisulization/blob/main/week3\\_4/fivethirtyeight/airline-safety/2.3%20Project%20Task%20-%20DashBoard%20Airline%20Saftey.pdf](https://github.com/GiTTInto/DataPresentationAndVisulization/blob/main/week3_4/fivethirtyeight/airline-safety/2.3%20Project%20Task%20-%20DashBoard%20Airline%20Saftey.pdf)
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