

# Airline Safety Out-Performs Automobiles

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DSC 640

Executive Summary

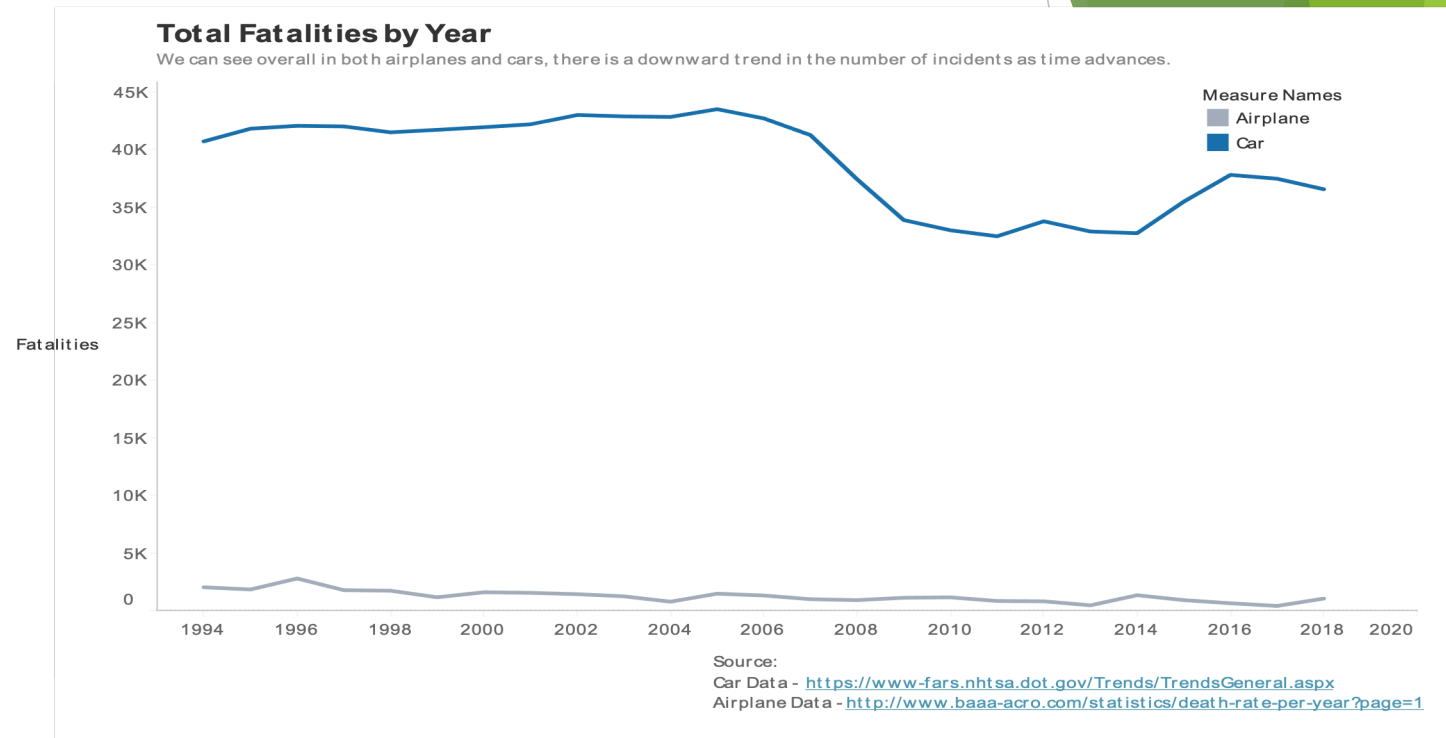
# Overview

- ▶ Comparison of fatalities to cars
- ▶ Fatal incidents by airline
- ▶ Fatalities by airline
- ▶ Fatalities by location
- ▶ Airline profits and fuel
- ▶ Summary
- ▶ Resources
- ▶ Data Sources



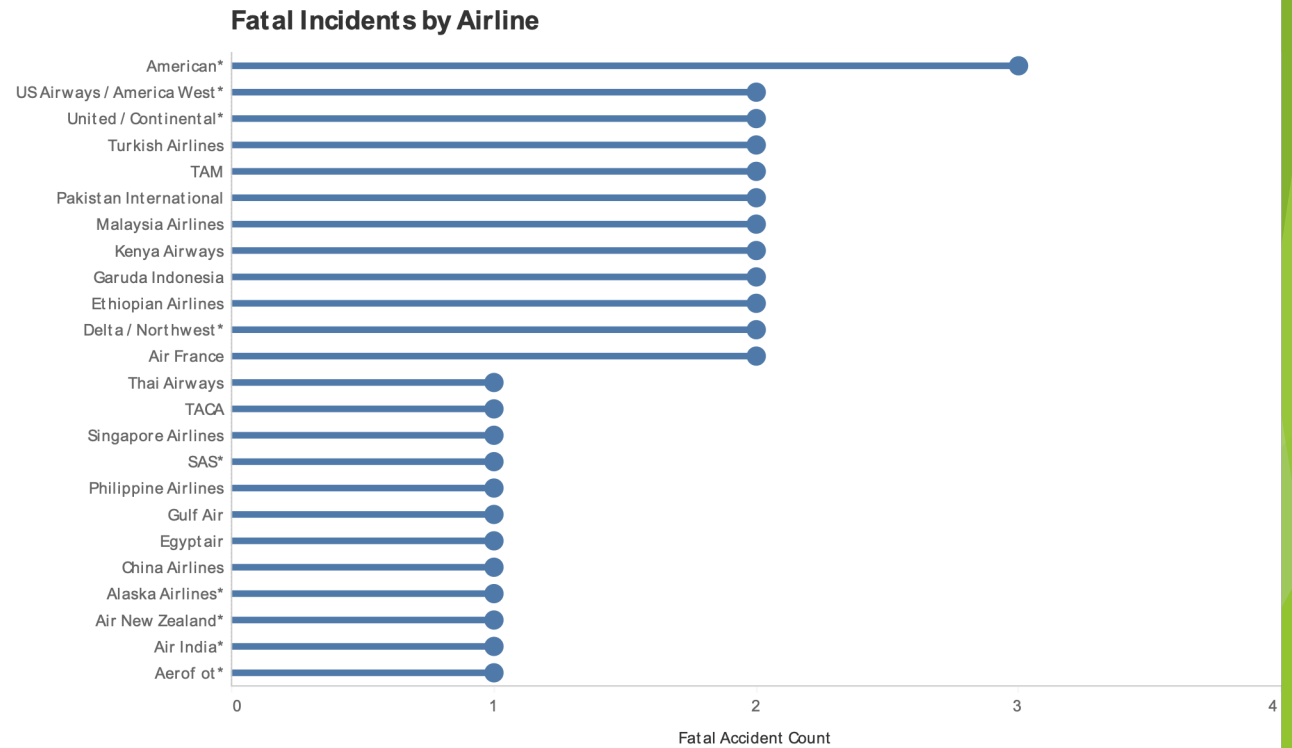
## Fatalities Per Year

- Car fatalities are those reported for the United States by National Highway Traffic Safety Administration
- Large gap between cars and airplanes
- Airplanes trend down entire span
- Cars see large decrease in 2008 but still much higher



## Incidents Per Airline

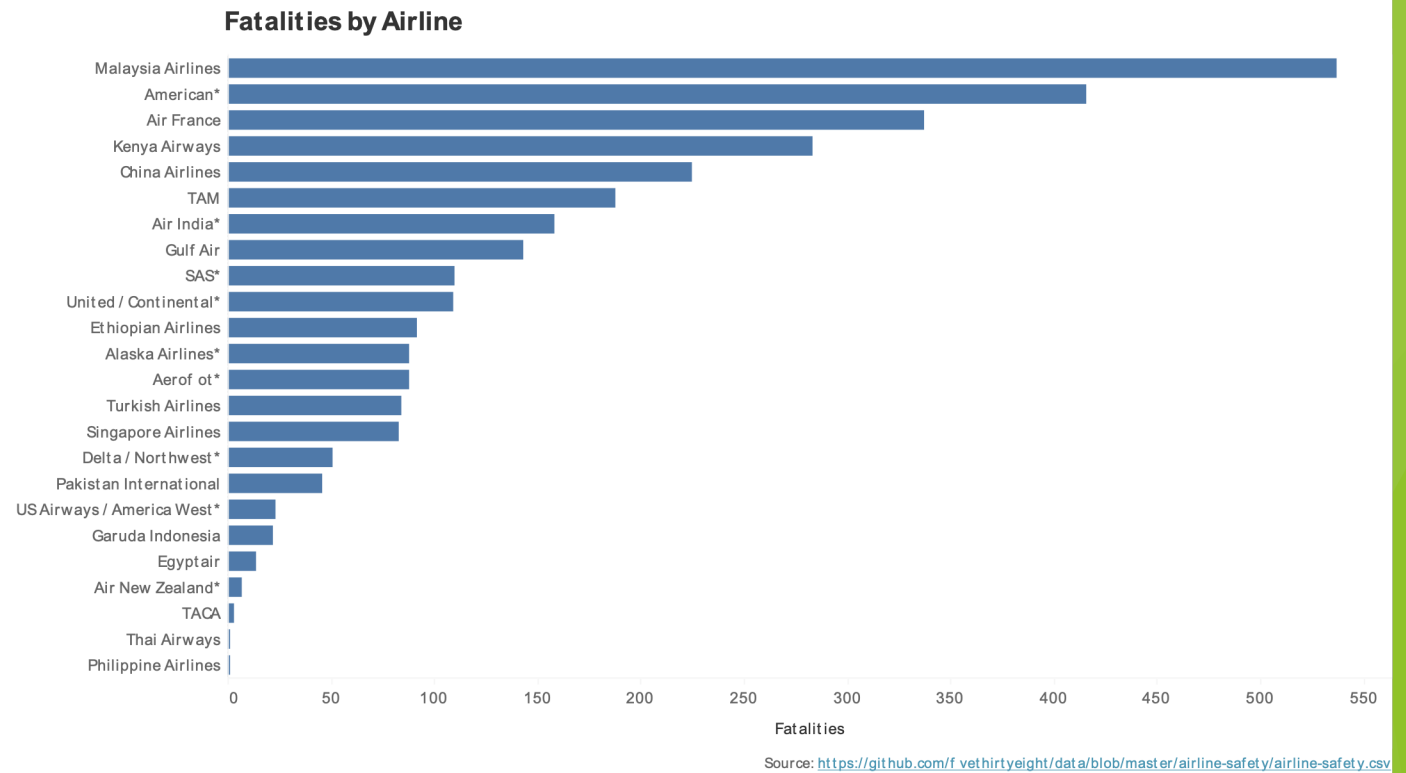
- 1994 thru 2018
- Most incidents per airline is 3
- Not very high considering number of airplanes seen in skies daily
- Airlines with 0 reported incidents filtered out



Source: [https://github.com/f\\_vethirtyeight/data/blob/master/airline-safety/airline-safety.csv](https://github.com/f_vethirtyeight/data/blob/master/airline-safety/airline-safety.csv)

## Fatalities Per Airline

- Malaysia airlines had 2 planes crash
- 2 American and 1 United plane involved in 2001 attacks

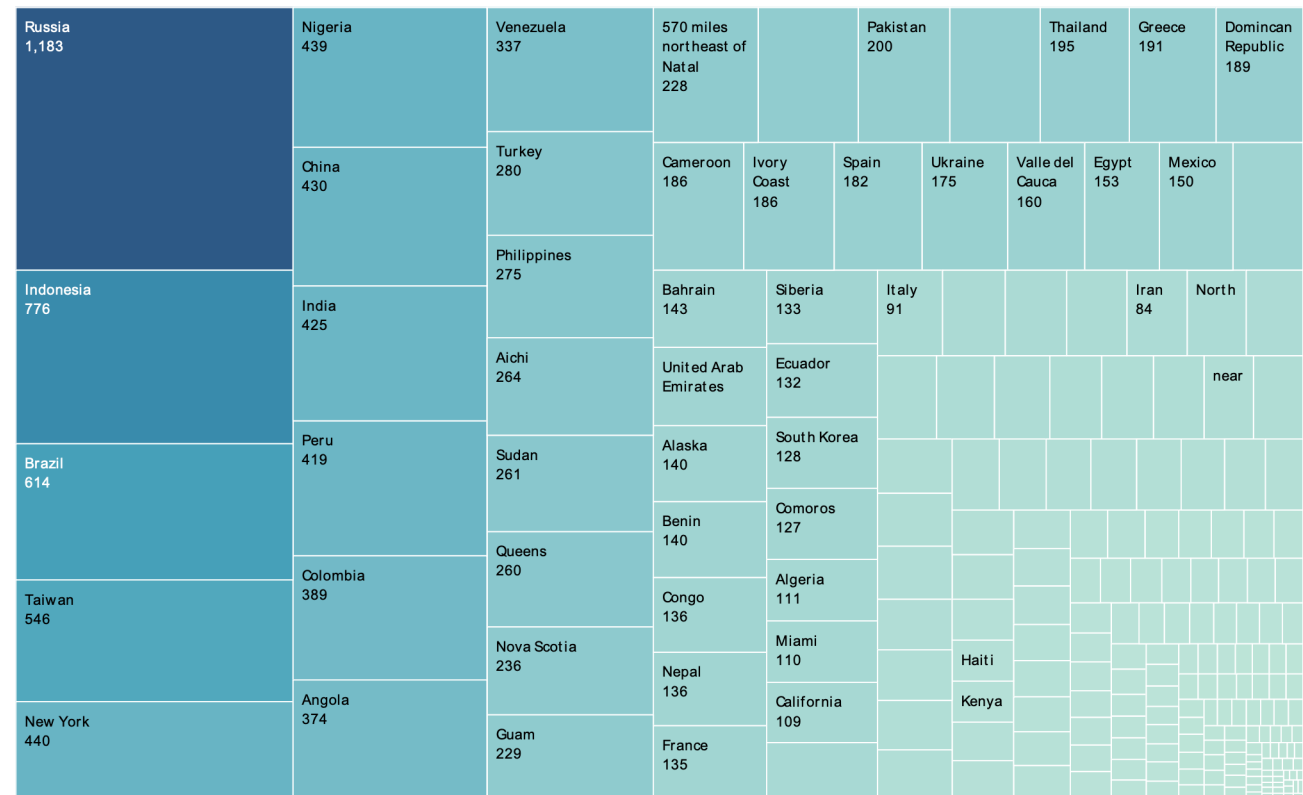


## Fatalities By Location

- Russia has almost double that of any other location
- Removed carrier, military, helicopter and private aircraft

### Airline Fatalities by Country (1994 - 2009)

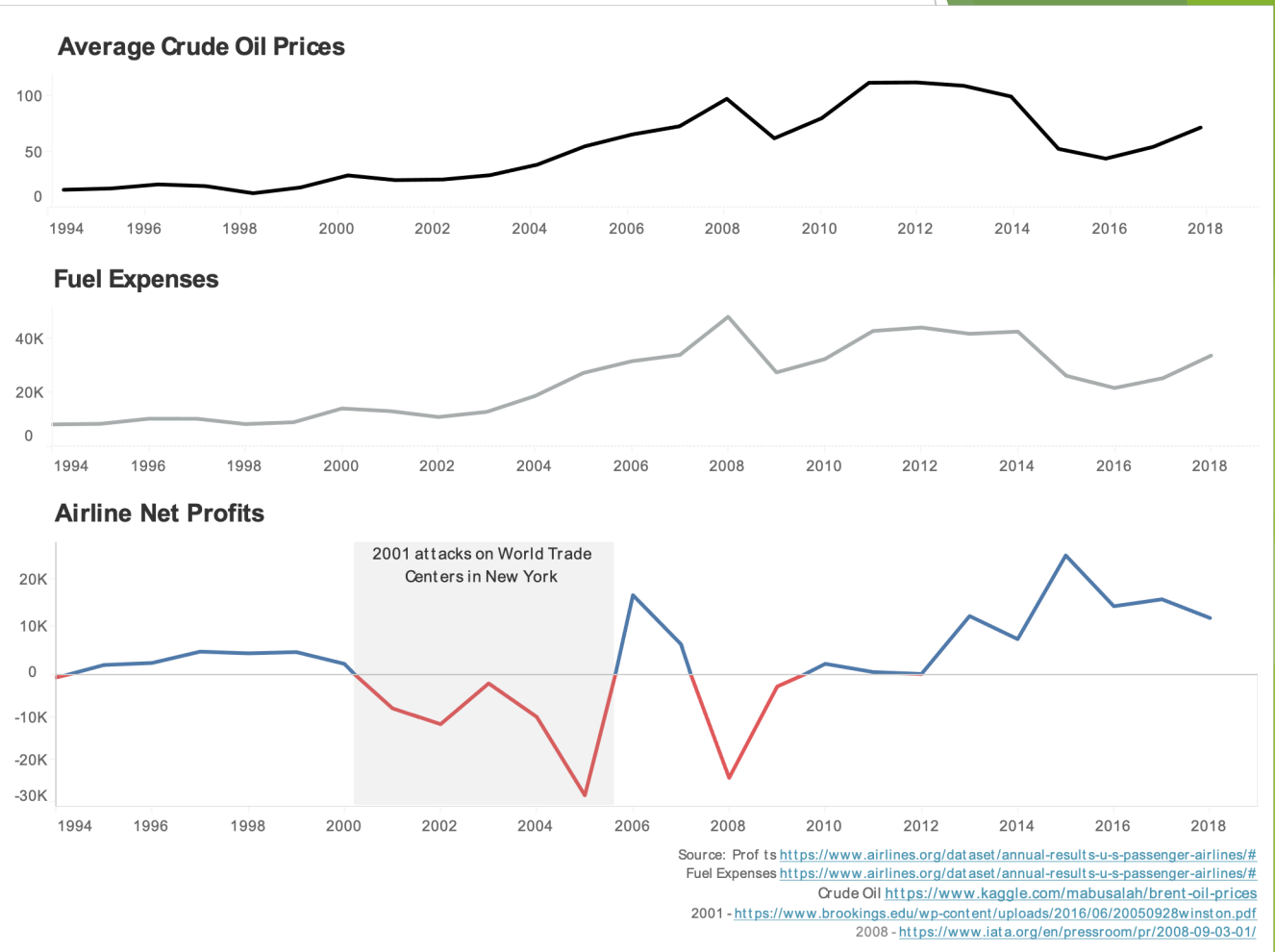
Anything labeled charter, private, cargo, helicopter, military or government were removed as we are only focusing on commercial airlines.



Source: [https://data.world/youngb1801/air01/workspace/f le?agentid=hhaveliw&datasetid=airplane-crashes-1908-2009&f lename=Airplane\\_Crashes\\_and\\_Fatalities\\_Since\\_1908.csv](https://data.world/youngb1801/air01/workspace/f le?agentid=hhaveliw&datasetid=airplane-crashes-1908-2009&f lename=Airplane_Crashes_and_Fatalities_Since_1908.csv)

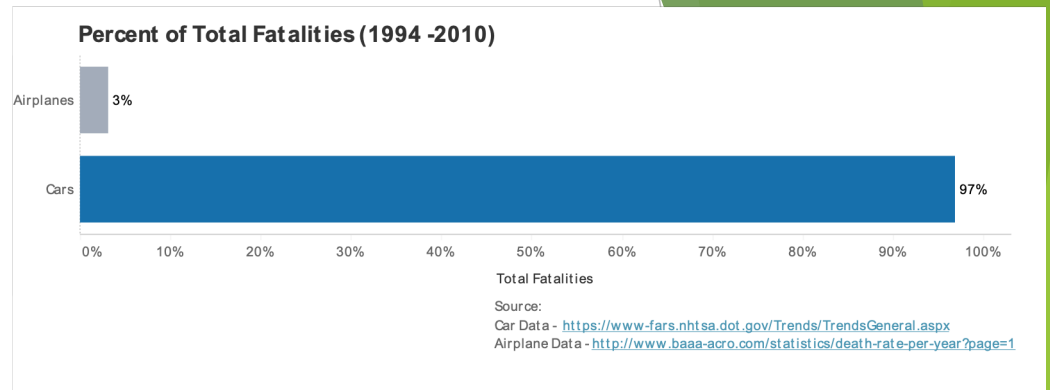
## Profits

- Profits decline significantly after large events like 2001 attacks
- Profits decrease with unexpected oil price increases
- Fuel expenses and oil prices follow same basic trend



# Summary

- ▶ Airline incidents are much less than automobiles, only 3%
- ▶ Airline incidents tend to have more fatalities per incident due to more passengers
- ▶ Malaysia has highest number of fatalities for airlines
- ▶ American has most incidents with 3
- ▶ Russia has highest fatalities compared to other locations



- ▶ Profits are lower when crude oil price is higher
- ▶ Large incidents involving airplanes cause less travel, e.g. 2001 attacks on Trade Centers
- ▶ Number of fatalities per year is decreasing for industry

Thank you!



# Resources

- ▶ International Air Transport Association. (2008, September 3). *Airlines to lose US\$5.2 billion in 2008 - Slowing Demand and High Oil to Blame*. Retrieved September 21, 2020, from iata.org: <https://www.iata.org/en/pressroom/pr/2008-09-03-01/>
- ▶ Morrison, S. W. (2005, September 28). *What's Wrong with the Airline Industry? Diagnosis and Possible Cures*. Retrieved September 21, 2020, from Brookings.org: <https://www.brookings.edu/wp-content/uploads/2016/06/20050928winston.pdf>

# Data Sources

- ▶ airline-safety.csv - <https://github.com/fivethirtyeight/data/tree/master/airline-safety>
- ▶ Airplane Fatalities by Year 1918-2019.csv - <http://www.baaa-acro.com/statistics/death-rate-per-year>
- ▶ Airplane\_Crashes\_and\_Fatalities\_Since\_1908.csv - [https://data.world/youngb1801/air01/workspace/file?agentid=hhaveliw&datasetid=airplane-crashes-1908-2009&filename=Airplane\\_Crashes\\_and\\_Fatalities\\_Since\\_1908.csv](https://data.world/youngb1801/air01/workspace/file?agentid=hhaveliw&datasetid=airplane-crashes-1908-2009&filename=Airplane_Crashes_and_Fatalities_Since_1908.csv)
- ▶ Cars\_94-18.csv - <https://www-fars.nhtsa.dot.gov/Trends/TrendsGeneral.aspx>
- ▶ Financials.pdf - <https://www.airlines.org/dataset/annual-results-u-s-passenger-airlines/#>
- ▶ Crude Oil Prices - <https://www.kaggle.com/mabusalah/brent-oil-prices>