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DSC640
3.3 Executive Summary

The approach taken with this presentation was to first set the context with the problem statement related to the negative media reports about airline safety. Background information is provided on the preliminary actions of the data science team and what they were going to present to the executive team for consideration.

In addition to the information and graphs created in the dashboard project, a pie chart, bar chart, and a table of calculated statistics was included. The information from the dashboard provides contextual and historical background. The executives may be familiar with these but are important to keep fresh and provide framing for the issue and recommendations. The injuries and fatalities emphasize the outcomes of safety incidents while the line graphs for both airline and motor vehicle travel indicate there has been an increase in use for both modes of transportation.

After providing a background on the incidents and usage, high level statistics are presented covering injuries rates both in percentages and in respective rates of measurement. By expressing the statistics quantitatively along with the visuals sharpens the message, broadens consumption, and enhances understanding of the audience. Additionally, they are quickly consumed by readers and can be used to complement future visualizations.

The search term slide provides a geographic and recency perspective to the 'airline safety' issue. These visualizations indicate various perspectives and alternative considerations were taken by the data science team and could generate additional discussion with the executive team.

Next, forecasted revenue in terms of passenger mile from the FAA is displayed. The executives are likely curious about the financial impact of what this problem may represent. The information indicates there already has been a recent drop in industry revenue and recovery will be a long slow process. While this information doesn't directly address what impact the issue at hand may have, understanding the economic climate helps the executives prioritize solutions to the problem.

The final slide summarizes the prior information and provides recommended next steps which align with our future project tasks. The summary emphasizes:

- Air travel has been safer than motor vehicle travel
- More concern with airline safety on the US East coast, but searches for 'airline safety' have declined
- The airline industry has experienced a decline in revenue with a forecasted slow recovery

The visualizations vary in color and are presented in a side-by-side manner to allow easy comparison. The green theme for the slide deck was chosen as a soft background to the more striking colors used in the visuals. Wording on the slides was kept to a minimum aside from the introduction and conclusion slides. This design is intentional to ensure the audience is focused on the speaker, the visuals, and elicits conversation from the executive team.

From an ethical perspective, the information is displayed in an objective and straightforward manner. Size, axis, and color for each of the comparison charts are the same and simple. The only concern is with

the statistics are captured by their sources as different units of measurement. The conversion between miles driven and hours driven is explicitly called out in the slide and noted in the discussion notes. The presentation approach would be to display the slide deck and use the notes for each slide to help guide the discussion. I've printed the PowerPoint in the slide / notes format to provide further insight.

Greetings, thanks for your time today. My name is Ryan Long, I'm representing the Data Science team here at ABC Airlines. As we're aware, the topic of airline travel as a concern has been making the rounds in the news cycle lately. The purpose of this discussion is to walk you through an initial review of the recent trends of airline and related modes of transportation safety.

Agenda

- Background
- Initial Findings
- Summary and Next Steps

Here is today's agenda, we'll be spending most of our time reviewing data visualizations of initial findings and getting your feedback on our proposed next steps.

Background

Problem Statement

Due to recent airline crashes, the media has been promoting statistics stating air is no longer a safe way to travel.

Preliminary Actions Taken

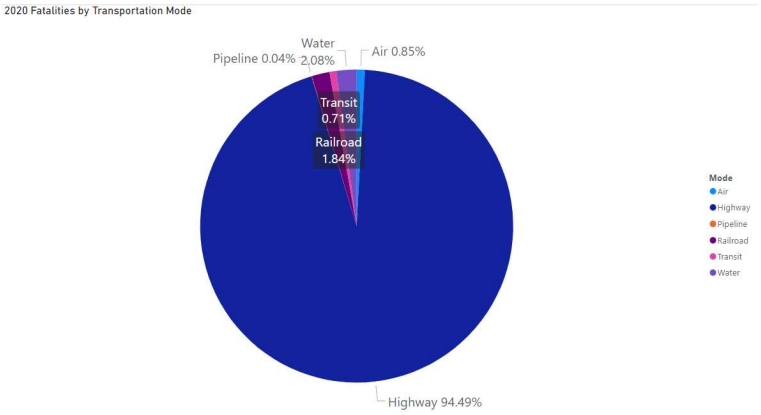
Initial efforts have centered on a data focused review of historical trends of airline and motor vehicle incidents, measurement of activities, and popularity of search terms from a geographical perspective. Supplementary metrics on the airline industry from regulatory bodies have been included for future consideration to mitigate media reports.

Summary of areas reviewed

- Recent and historical airline and motor vehicle fatalities and injuries
- Airline and motor vehicle usage
- Search trends for airline safety by region
- Recent sales airline sales

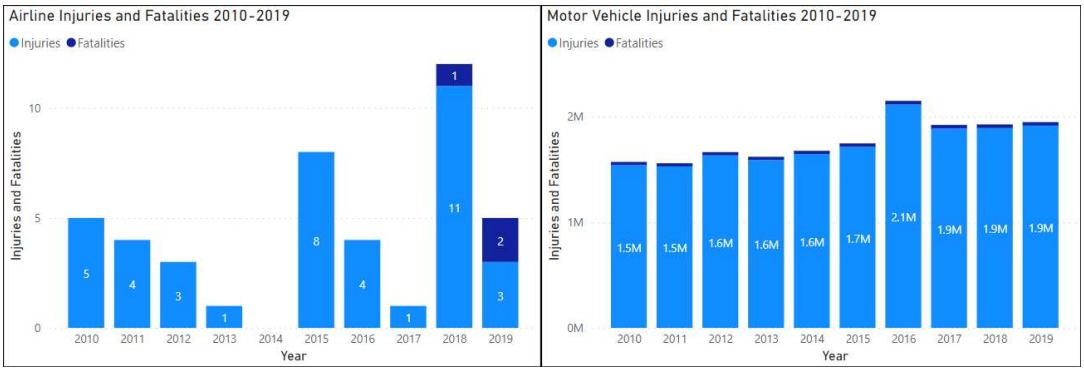
[Speak to the slide – read/paraphrase]

Initial Findings: 2020 Travel Fatalities



This data comes to us from the Bureau of Transportation Statistics and summarizes fatalities by major mode of transportation in 2020. As can be seen, highway transportation contributes most of the deaths, while airline and other categories are immaterial. We'll use motor vehicle travel as a comparison to airline travel in the following slides.

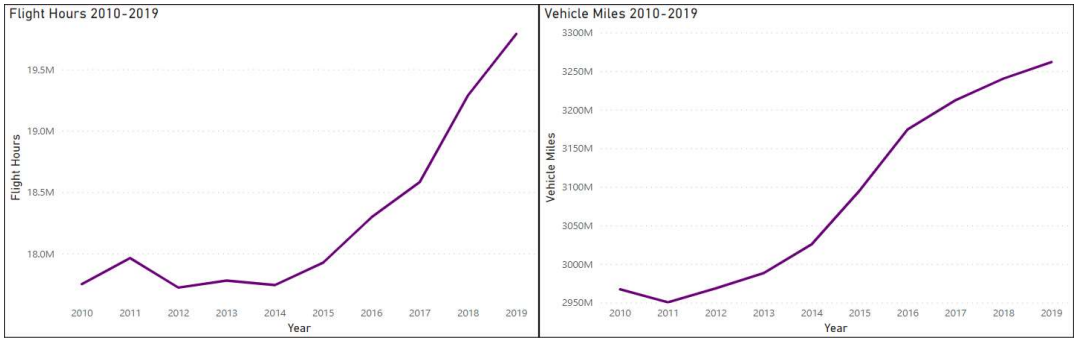
Initial Findings Continued: Injuries and Fatalities



First up is our research on the injuries and fatalities of both Airline and Motor Vehicle transportation.

From a historical perspective it is clear, airline travel has had far fewer injuries and fatalities per year compared to motor vehicle travel. While the phrase, 'past performance is not an indicator of future returns' in the investing world rings out, we should not shy away from presenting this stellar record of a relatively non-existent safety threat. The strategy should help us re-frame the current media blitz with stakeholders and how it should not be a material concern moving forward if we can show has changed.

Initial Findings Continued: Flight Hours and Miles



This second set of graphs display the volume of flight hours and vehicle miles over the 10-year period 2010-2019. This is the same period displayed on the prior slide. The trends indicate an upward increase in both methods of transportation. The challenge here is the comparison between the two as the units of measurement are materially different. The data team had significant debate between converting either measure hours or miles to one or the other, however subjective assumptions would need to be made, such as average miles in a flight hour.

The purpose here is to gain a baseline understanding of how much of each mode of transportation is being used. We can see there is a significant increase in airline travel starting in 2014 through 2019, while referring to the previous slide, there is not a corresponding rise in injuries or fatalities. Vehicle miles also increases in the time period, but from 2011 through 2019, but not as sharply. Referring again to the prior slide, there is a general rise in injuries and fatalities.

Initial Findings Continued: Simple Stats

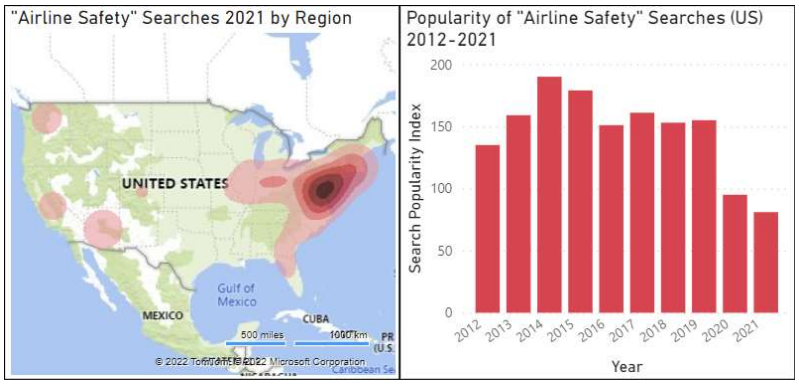
2019			
Airline Travel		Motor Travel	
Fatality Rate	Injury Rate	Fatality Rate	Injury Rate
0.00001%	0.00002%	0.00102%	0.05875%
Fatality per	Injury per	Fatality per	Injury per
9,894,206	6,596,137	98,116	1,702
hours flown	hours flown	miles driven	miles driven

1 Fatality per	1 Injury per
1,635	28
hours driven*	hours drive*

* Assumes avg speed of 60mph

Using the latest complete year we have detailed information for, this table shows a comparison between the both the percentage of fatalities and injuries for both modes of travel. While the percentages are extremely low, generally understanding is enhanced when expressed in the units of measurement. Given their unique measurements, airline travel can still be shown to be a safer mode of transportation. If we were to publish this information a recommendation would be to normalize the two units of measurement. We would likely convert miles driven to hours, using 60mph. If disclosed through a footnote the data team would feel comfortable. This proposed conversion can be seen in the floating lower blue table.

Initial Findings Continued: Search Term Review

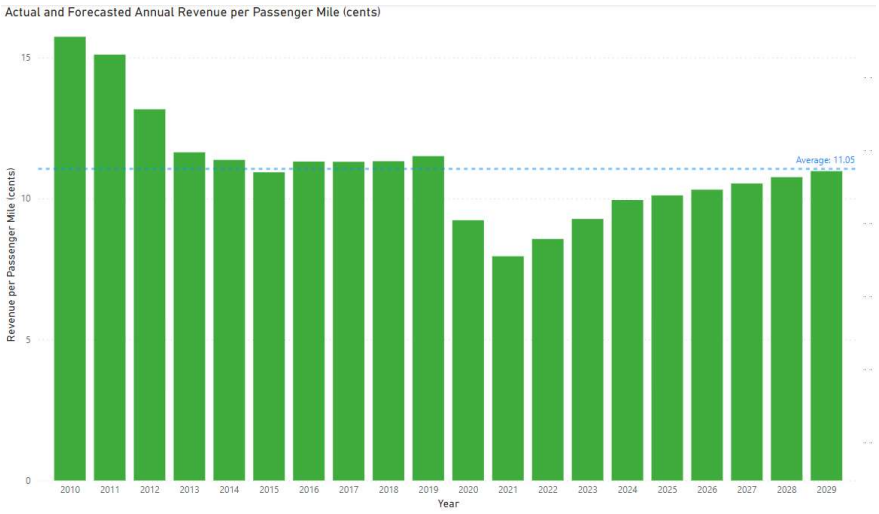


This next set of visualizations takes a more recent perspective as the data is taken directly from Google's search terms.

The purpose of the regional heatmap is to understand whether the concern related to airline safety has a regional basis and whether any of our hubs could be impacted. As we can see, there is a predominantly east coast origin for the search term. The West coast is not as materially relevant, but there are concerned searchers in Washington, California, and Arizona. Colorado is barely a blip.

Next is the summation of Google's popularity index for the search term. This graph shows a decline in the search term, so makes one question the media's effort towards spotlighting airline safety.

Initial Findings Continued: Revenue Forecast



This information comes to us from the FAA's forecast and depicts actual and forecasted revenue per passenger mile for the period 2010 through 2029. As can be see, the industry has been impacted significantly in 2020 and will slowly recover but not until 2029. That is why it is important for ABC airlines to differentiate itself from the safety concerns expressed in the recent media cycle. More on that in our next steps proposal.

Summary and Next Steps

Summary

- Air travel has been safer than motor vehicle travel
- More concern with airline safety on the US East coast, but searches for 'airline safety' have declined
- The airline industry has experienced a decline in revenue with a forecasted slow recovery

Next Steps: Initiate a Multimedia Campaign emphasizing:

- Historical track record of safety
- The current statistics and rarity of incidents
- Differentiate Airline travel from Motor vehicle

We have discussed how safe airline travel is, how rate or unlikely fatalities and injuries are to occur. Additionally, when compared to the other primary mode of transportation it is much safer. We know of the significant decline and slow recovery on revenue per passenger mile. What we propose is initiating a multimedia campaign with a facts and data-based approach. This campaign would utilize various media channels emphasizing the safety of airline travel using various visualizations which are easy for stakeholder to digest yet provide the positive impact we desire.

Thank you for your time today and we look forward to your feedback.

Appendix – Data Sources

Slide 4

https://www.bts.gov/content/transportation-fatalities-mode

Slide 5 & 6

https://www.ntsb.gov/safety/Pages/research.aspx

https://www.ntsb.gov/safety/data/Pages/AviationDataStats2019.aspx

https://www-fars.nhtsa.dot.gov/Main/index.aspx

https://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm?CFID=210588508&CFTOKEN=738ef6d3a5c44efd-E63E30CD-BD2A-5E9A-7A89791FCE1CE6FB

Slide 7

Calculations utilizing slide 4 & 5 sources

Slide 8

https://trends.google.com/trends/explore?date=2005-01-01%202022-01-01&geo=US&q=airline%20safety

Slide 9

https://www.faa.gov/data_research/aviation/aerospace_forecasts/