

## **Course Project**

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**DSC 640**

### **The scenario/Business Problem:**

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?

You work for an airline on the data science team as a data analyst and are a resident data visualization expert. You have been tasked with helping multiple groups in the organization combat this negative publicity and help tell the airline's side of the story. There is a fear internally about what this type of media coverage will do to airline sales and how it could impact the future of the company. Not only do they need you to help create some internal communications, but you will also be tasked with what is published to the public and the media.

### **Project Task 2: Executive Summary**

Your dashboard was well received by the internal team and while some of the information was news to everyone, the entire consensus was that it is ready to be prepped for an executive review, so the external communications can be started. Your next task is to prepare an executive summary summarizing your findings and telling the story of what you found. This can be done either in PowerPoint, Prezi, Spark, etc.

Remember your audience – these will be senior leaders that care about the portrayal of the industry and their airline specifically. They also want to make sure they are being ethical and sharing information that isn't misleading. This presentation will set the tone and recommendation for how the media is addressed going forward with the information and facts that need to be shared. Also remember that this audience regularly speaks with shareholders – so any information you can find to help predict future risks and the position of the company will be beneficial to the conversation. For example, if you found information that indicates where future sales will be impacted or where there are safety risks – this is important information to raise to this group. This audience is internal - they would be considered industry experts, so make sure your presentation caters to an audience that is familiar with the topic.

Since the issue has escalated to the executive committee, after analyzing and setting up the dashboard on airline crashes, a presentation to show the committee where United Airlines stand and what impacts

will the media will cause. In addition, what actions need to be taken in order to solidify the argument of flying is the safest form of transportation.

### **Slide 1: United Airlines**

### **Slide 2: Global – Fatalities By Continent**

I wanted to start the presentation to show the global fatalities and therefore, this slide shows a packed bubble chart by continent. North America has the highest which United falls under it. The reason it is the highest due to North America having the highest air traffic so when we look at it from a count perspective and not a ratio perspective it would show being the highest. Whereas Africa and Asia come in next, however their air traffic is much less than North America and therefore it is more a concern on their end.

Ethical Considerations: The data provided shows fatalities from 2017 – 2021 and doesn't go back further. In addition, the chart is meant to show where we stand and some could argue that the visualization of choice could emphasize a worse result than what it actually is.

### **Slide 3: US – Aircraft vs Motor Vehicle**

This slide does a deep dive into the US specifically. There are two bar charts the top one shows aircraft fatalities, and the bottom chart shows motor vehicle fatality. This chart on its own should prove the media wrong with what they have been saying about flying not being safe or not the safest form of travel. The average fatalities from aircraft crashes per year is 482 while motor vehicles fatalities are about 35K. A significant difference between both.

Ethical Considerations: I chose Fatalities including suicide, sabotage, and hijackings instead of having them excluded to avoid the discussion on whether including them could change the results in a significant way.

### **Slide 4: US – Fatalities by Phase**

The focus is still the US in total and shows a tree map in what phase the incidents that caused the fatalities occurred. En Route is the highest followed by Approach and Landing. The assumption is due to weather conditions where the aircraft is positioned.

Ethical Considerations: Data provided only presented from 2017 – 2021 and doesn't go back further.

### **Slide 5: US – Fatalities Including vs Excluding (Suicide, Sabotage, Hijackings)**

Showing the executive committee, the differences of fatalities while including suicide, sabotage, hijackings versus excluding them is highly important. It shows the act of intentionally causing crashes and fatalities while excluding it would be due to an unintended error (which is the part that media is arguing about).

Ethical Considerations: I do not see any ethical considerations here as the entire dataset is presented as it is with nothing hidden from the audience.

### **Slide 6: US – Fatalities Per Million Flights**

Fatalities per million flights is a very important metric and shows how safe flying is. This is concrete proof that the US flight incidents causing fatalities is declining significantly. 2011 was slightly over 1 fatality. From 2014 onwards, the rate has dropped below the average.

Ethical Considerations: I do not see any ethical considerations here as the entire dataset is presented as it is with nothing hidden from the audience.

### **Slide 7: United – Top 10 Airline Incident & Fatality Count**

Here is where United Airlines stand in comparison to others. Unfortunately, United makes the top 10 list of incident & fatality counts. It is the second US airlines for incidents after American Airlines. I believe this is due to the frequency of flights in comparison to the rest of airlines across the globe. United is below the average for fatalities where American Airlines is above it.

Ethical Considerations: An ethical consideration would be in the choice of the top 10. Since the subject is focused on fatalities, it made sense to filter fatality counts for the top 10 airlines.

### **Slide 8: United - Fatality Ratio Per Km(in millions) Distance/ Week**

This is the take it home slide. Using the same data in the previous slide, United Airlines well performs all the other ones who made it to the list. This ratio is dividing the total fatalities by the distance per week the airline covers. This shows how significantly different the distance covered by United in comparison to the other airlines which gives it the lowest ratio of 5.99. With United Airlines frequency of flights, the margin of error is lower than other airlines and shows why we are safe to travel with.

### **Summary:**

In conclusion, having the lowest fatality ratio per distance covered proves why United Airlines safety measures are well above in comparison to airlines around the world. This doesn't mean we cannot improve. More checks in maintenance is recommended, aircraft lifespan and turnover could be checked as well.