

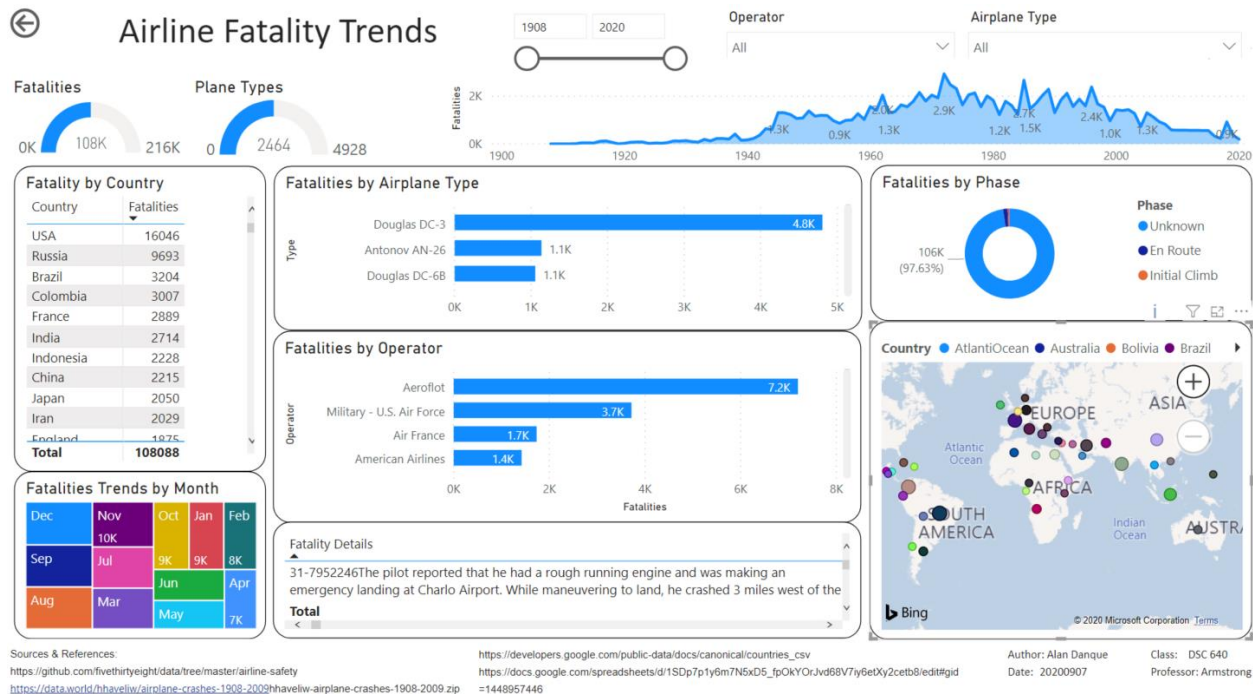
Student: Alan Danque  
Class: DSC 640  
Git Repo: My AirlineAnalysis.pbix is located in the "Task1-Dashboard"  
folder of the following address:  
<https://github.com/adanque/DSC640>

## Airline Fatality Trends

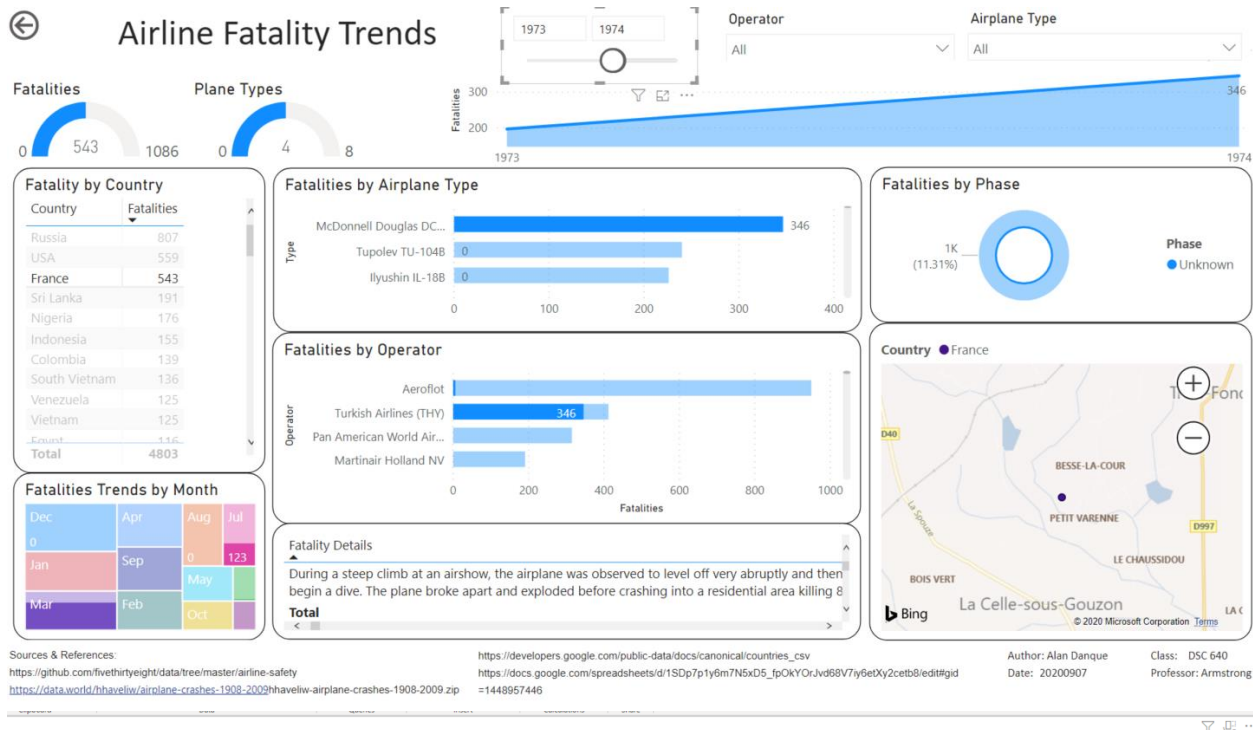
For my dashboard story, I chose to use Power Bi to present an interactive conversation about airline fatality trends using a combination of design strategies. My intention was to drive my audience to compare and contrast airline fatality factors using the filterable factors regarding the timing trends of the fatality counts per our competing airline operators and the type of plane involved. By using this dashboard, my hope is to highlight which type of planes may be mostly involved and therefore assist with identifying the next action steps toward either considering to decommission the use of the type of plane or corrections to the plane.

For the design of my dashboard, I incorporated the top left to right and zig zag down user experience design theory per natural eye movement patterns. Using this design, I started with a header that included my title, a total count of fatalities and count of plane types gauge chart on the top left. Then a sliding filter for the years with an area chart to the right of the filter to display the fatality results per years chosen and selectors for the airline operator and or airplane type. For the body, I chose to break into 3 columnar sections divided by a space. To establish that each chart was part of a section, I added borders for each chart and placed the proximity of each next to each other. In the first column, I chose to include a filterable table that lists country and its number of fatalities. Below that I chose to tell the story of how many total fatalities broken down by month. In the middle section, I chose to add 2 filterable horizontal bar charts sorting the fatalities in descending order so to make the highest counts per its category easily accessible and a table that lists the detail available in the category field of my dataset. The 2 filterable horizontal charts include: fatalities by airplane type and fatalities by operator. In the third section, I chose to use a donut chart to employ a compare contrast technique to tell the story between phases at the time of the airline fatality. To display the magnitude of effect by location, I added a map that displayed a bubble size relative to the number of fatalities in that country. Under the body of my dashboard, I added one row to include my sources and my student information.

The following are a few screen shots of my dashboard.



There were some interesting insights noted after creating this dashboard. One was the story told when filtering for France in 1974 where it experienced the most airline fatalities in a year at 346. There it noted that most of the fatalities regarded an airline operator named, "Turkish Airlines" using a plane of type McDonnell Douglas DC 10 only in the months of March and Jul. The fatality details included, "Crash on Takeoff after engine failure in the No 2 engine."



Back to report		FATALITIES BY CATEGORY	
Fatality Details		Fatalities	
Crashed on takeoff after engine failure in the No. 2 engine.		8	
During a steep climb at an airshow, the airplane was observed to level off very abruptly and then begin a dive. The plane broke apart and exploded before crashing into a residential area killing 8 people and seriously injuring 60 others. The pilot, possibly startled by a close encounter with a Mirage jet photographing the TU-144, overreacted causing a compressor stall. The aircraft then went into a dive and broke apart after the aircraft's design capacity was exceeded. Fire aboard the aircraft in the aft right toilet was reported and an emergency descent made. The plane was heavily damaged by fire before fire fighters could rescue passengers. Most fatalities were due to CO before rescuers could reach passengers. The fire started in the aft right toilet either from an electrical short or discarded cigarette.		6	
Midair collision. Convair crew improperly assessed collision-course situation. Contributing factor was poor quality of radio transmissions. All sixty-eight aboard the DC-9 were killed while the Convair landed safely.		123	
The aircraft crashed shortly after takeoff from Orly Airport in Paris, France. Climbing through FL110 the aircraft lost the rear cargo door, resulting in explosive decompression and damage to the cabin floor and control cables. The aircraft lost control and crashed in a forest at a high rate of speed. The service subcontractor and the flight engineer neglected to check the locking mechanism through a recently installed viewport to verify the door was latched properly. In		68	
Total		551	

Fatality Details	
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The aircraft crashed shortly after takeoff from Orly Airport in Paris, France. Climbing through FL110 the aircraft lost the rear cargo door, resulting in explosive decompression and damage to the cabin floor and control cables. The aircraft lost control and crashed in a forest at a high rate of speed. The service subcontractor and the flight engineer neglected to check the locking mechanism through a recently installed viewport to verify the door was latched properly. In addition, although a service bulletin stipulated that the locking pin should be extended, it was mistakenly shortened causing the latch to release after the cabin was pressurized. On June 12, 1972, an American Airlines DC-10 lost its cargo door shortly after taking off from Detroit Michigan. Using mainly engine thrust the crew was able to land safely. The cause was a defect in the latching mechanism on the door.	
Total	

To prepare the data used for this dashboard, I created two python scripts. One for the data wrangling to clean up the data and to unify the two historical airline fatality data sets. And a second to perform the exploratory data analytics to understand the distribution and relationships of the contained fields. After pulling the dataset, I found that I needed latitudes and longitudes per country to enable a map presentation of the data. I then imported a country lat-long data file and used the Power Bi DAX language to create a formula for the country name to allowed me to join on the country name fields.

Data sources:

- [Accidents and Fatalities Pery Year](https://docs.google.com/spreadsheets/d/1SDp7p1y6m7N5xD5_fpOkYOrJvd68V7iy6etXy2cetb8/edit#gid=1448957446)  
[https://docs.google.com/spreadsheets/d/1SDp7p1y6m7N5xD5\\_fpOkYOrJvd68V7iy6etXy2cetb8/edit#gid=1448957446](https://docs.google.com/spreadsheets/d/1SDp7p1y6m7N5xD5_fpOkYOrJvd68V7iy6etXy2cetb8/edit#gid=1448957446)

Supplemental data

- [Crash Datasets](#), Data.World

## Airplane Crashes 1908-2009

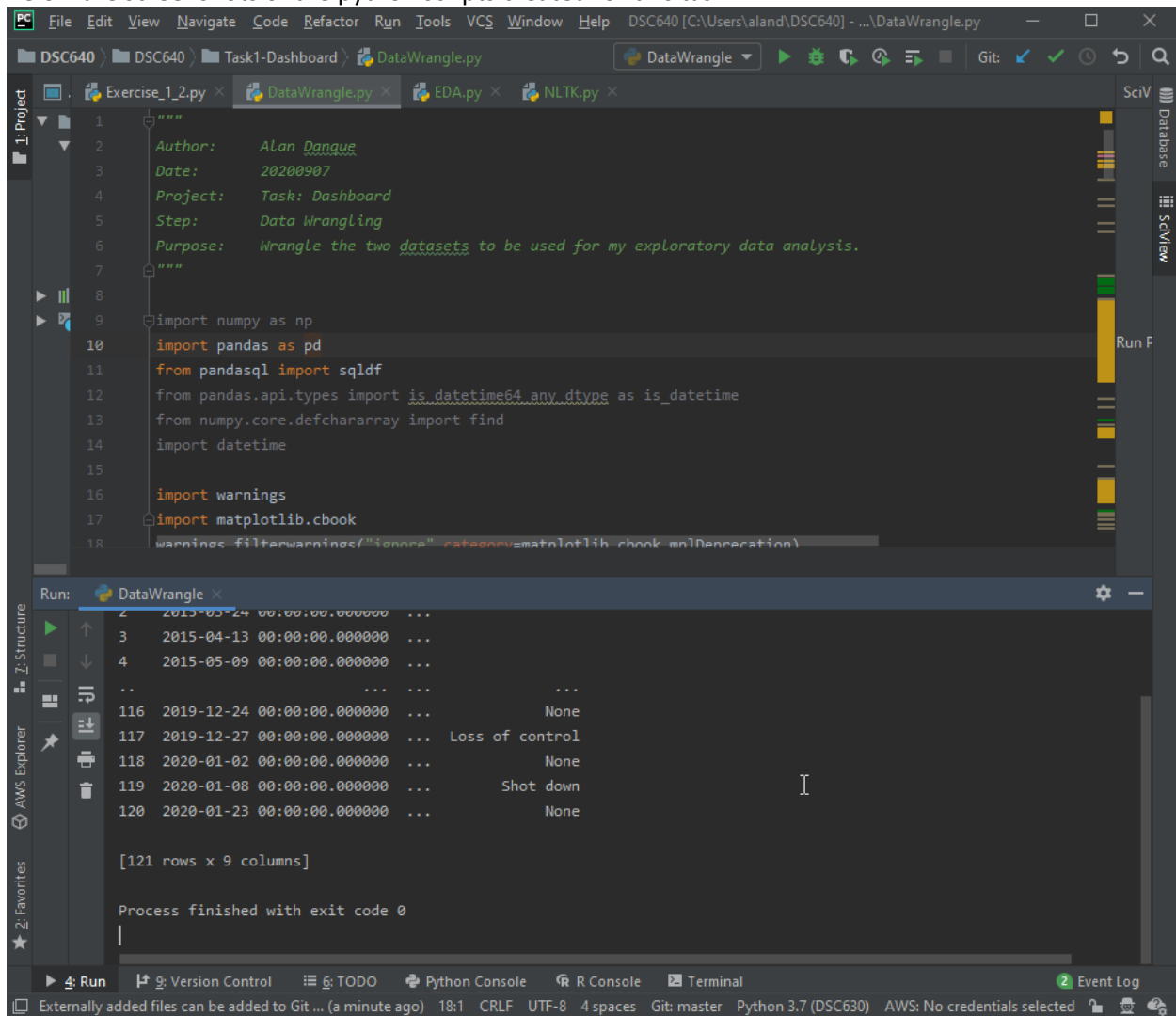
DATASET BY [HOZEFA HAVELIWALA](#)

<https://data.world/hhaveliw/airplane-crashes-1908-2009>

To get country lat and long addresses, I also used: countries.csv.

[https://developers.google.com/public-data/docs/canonical/countries\\_csv](https://developers.google.com/public-data/docs/canonical/countries_csv)

Below are screenshots of the python scripts created for this task.



The screenshot displays a Jupyter Notebook environment with a dark theme. The top pane shows the code for 'DataWrangle.py', which includes a docstring, imports for numpy, pandas, pandasql, and matplotlib, and a warning filter. The bottom pane shows the execution output, which is a preview of a dataset with 121 rows and 9 columns. The output includes a table of dates and times, followed by a description of the crash type for each row.

```
"""
1
2 Author: Alan Dangue
3 Date: 20200907
4 Project: Task: Dashboard
5 Step: Data Wrangling
6 Purpose: Wrangle the two datasets to be used for my exploratory data analysis.
7
8
9 import numpy as np
10 import pandas as pd
11 from pandasql import sqldf
12 from pandas.api.types import is_datetime64_any_dtype as is_datetime
13 from numpy.core.defchararray import find
14 import datetime
15
16 import warnings
17 import matplotlib.cbook
18 warnings.filterwarnings("ignore", category=matplotlib.cbook.mplDeprecation)
```

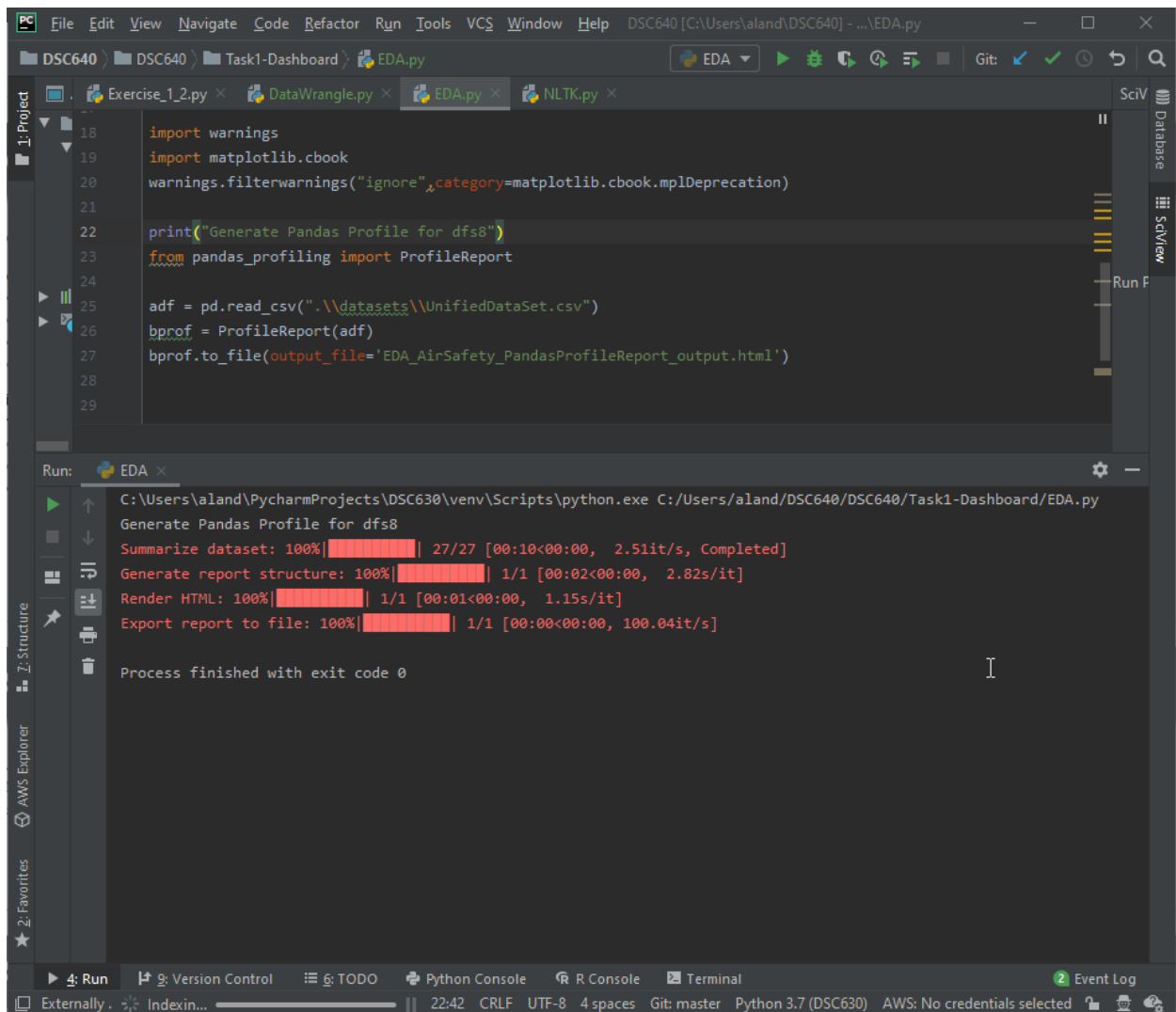
Run: DataWrangle ×

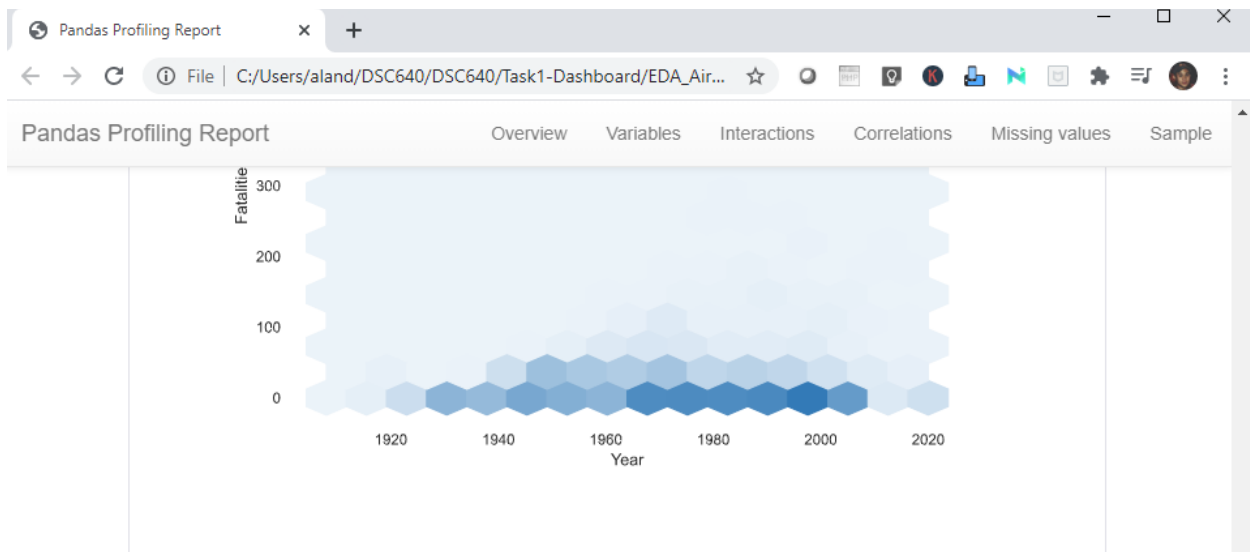
2	2015-03-24 00:00:00.000000	...	
3	2015-04-13 00:00:00.000000	...	
4	2015-05-09 00:00:00.000000	...	
..	...	...	...
116	2019-12-24 00:00:00.000000	...	None
117	2019-12-27 00:00:00.000000	...	Loss of control
118	2020-01-02 00:00:00.000000	...	None
119	2020-01-08 00:00:00.000000	...	Shot down
120	2020-01-23 00:00:00.000000	...	None

[121 rows x 9 columns]

Process finished with exit code 0

Externally added files can be added to Git ... (a minute ago) 18:1 CRLF UTF-8 4 spaces Git: master Python 3.7 (DSC630) AWS: No credentials selected





## Correlations

