

NOVEMBER 2019

# UDACITY

BUSINESS ANALYTICS  
NANODEGREE

## PROJECT: BUILD DATA DASHBOARDS

In this project, built interactive dashboards with Tableau and used them to discover and communicate insights from data. Used a data-set of flight delays in the US to visualize the quality of airlines and airports, find the best times to fly, and more.

### PROJECT DESCRIPTION:

Create visualizations to reveal insights from a data set. Create data visualizations that tell a story or highlight patterns in the data set. Work should be a reflection of the theory and practice of data visualization, such as visual encodings, design principles, and effective communication. There are 3 different data sets you can choose from:

- Flight Delays and Cancellations
- US Census Demographic Data
- Youtube Data from the US

# FLIGHT DELAYS AND CANCELLATIONS

This data comes from a Kaggle dataset, it tracks the on-time performance of US domestic flights operated by large air carriers in 2015.

The base file used in creating the data visualizations is the 'flights.csv' file. The other two provided files are used in conjunction with the 'flights.csv' file.



**SCHEDULED\_DEPARTURE**  
planned departure time

**DEPARTURE\_TIME**  
WHEEL\_OFF - TAXI\_OUT

**DEPARTURE\_DELAY**  
total delay on departure



**TAXI\_OUT**  
airport gate to WHEELS\_OFF

**WHEELS\_OFF**  
wheels leave the ground



**SCHEDULED\_TIME**  
time needed for trip

**AIR\_TIME**  
b/w WHEELS\_ON and WHEELS\_OFF

**ELAPSED\_TIME**  
TAXI\_OUT + AIR\_TIME + TAXI\_IN



**WHEELS\_ON**  
wheels touch the ground

**TAXI\_IN**  
WHEELS\_ON to airport gate



**SCHEDULED\_ARRIVAL**  
planned arrival time

**ARRIVAL\_TIME**  
WHEEL\_ON - TAXI\_IN

**ARRIVAL\_DELAY**  
ARRIVAL\_TIME - SCHEDULE\_ARRIVAL

## DELAYS!

AIR_SYSTEM_DELAY	: delay caused by air system	: SCHEDULE_TIME - AIR_TIME (flight duration delay)
SECURITY_DELAY	: delay caused by security	:
AIRLINE_DELAY	: delay caused by the airline	: Part 1 of ARRIVAL_DELAY
LATE_AIRCRAFT_DELAY	: delay caused by the aircraft	: Part 2 of ARRIVAL_DELAY
WEATHER_DELAY	: delay caused by weather	:

## INSIGHT 1:

### What is the best month to travel in the flight?

Weather played a prominent role in flight cancellations. This can be observed in the dashboard in a more granular level. However weather was most stable in October month/say has no flight cancellations during this month. Hence October is the best choice to travel in flights. A simple bar chart is used for easy comparison between monthly cancellation of flights.



## INSIGHT 2:

### How to tackle the flight cancellations?

As weather cannot be controlled, it was excluded. Since airline cancellations portray a similar graph to total cancellations, which denotes a direct proportion relationship to total cancellations. Hence priority is given to reduce the airline cancellations by understanding the underlying reasons for the airline cancellations.

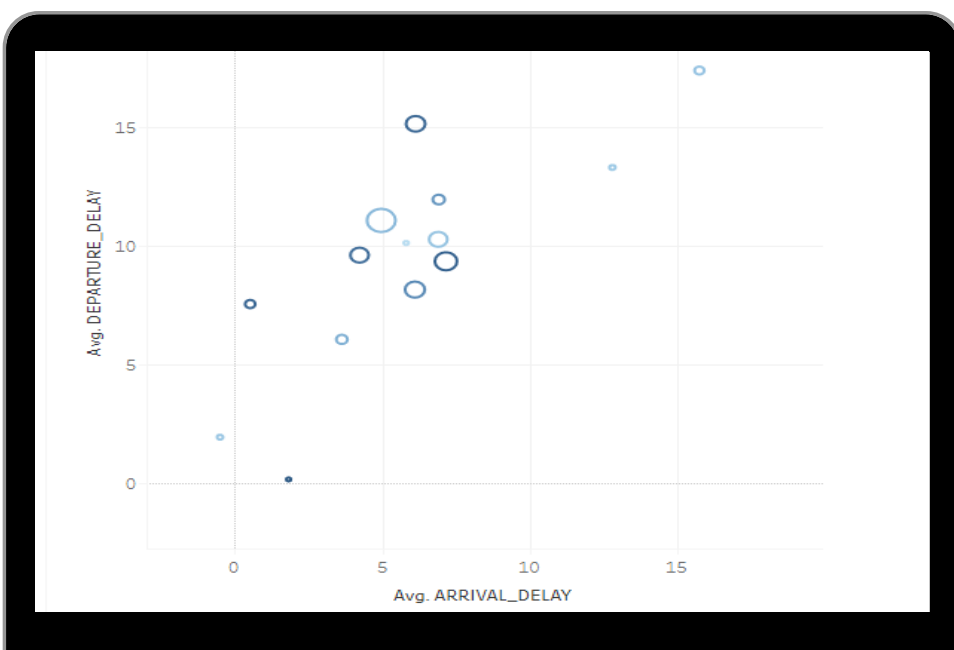
Hence Airlines with are analyzed based on arrival delays and departure delays which affect the airline cancellations. However a peculiar behavior is observed in relation to airline cancellations which proved another factor is at play in conjunction with the above delays, which is the airline delay.

## INSIGHT 2:

### CONTINUATION

Hence in order to decrease the airline cancellations, airline delay has to maintained minimal while keeping arrival delay and departure delay in check.

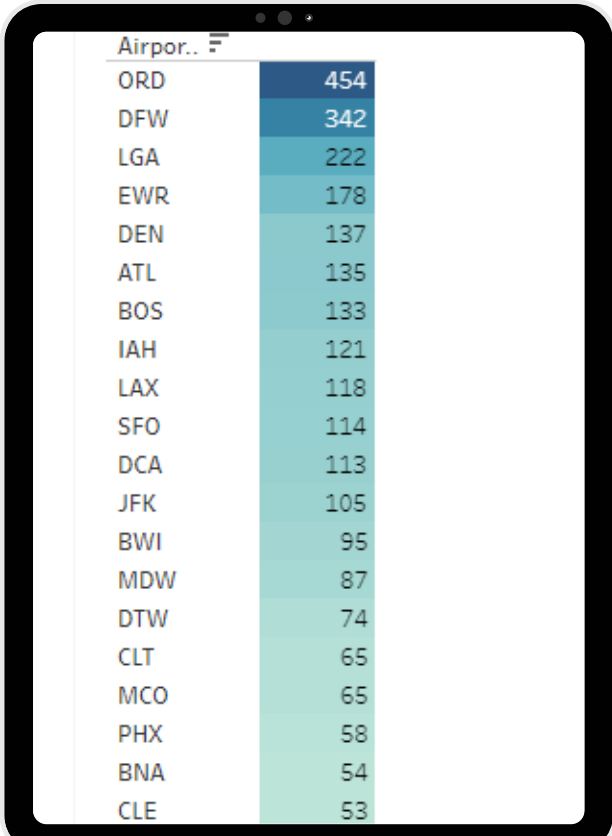
The below graph indicates the relation between more than one quantitative fields while leveraging the size and color mark fields.



## INSIGHT 3:

### What are the bad airports to avoid flight cancellations?

Airports with more than 50 flight cancellations has been categorized in to a data set. This set contains more than 50% of cancellations. The list of respective airports has a bad track record of cancellations and it is adviced to avoid them. Instead of visual charts, priority is given to display the list of airports for easy sharing and print out.



Airpor..	
ORD	454
DFW	342
LGA	222
EWR	178
DEN	137
ATL	135
BOS	133
IAH	121
LAX	118
SFO	114
DCA	113
JFK	105
BWI	95
MDW	87
DTW	74
CLT	65
MCO	65
PHX	58
BNA	54
CLE	53



**<https://public.tableau.com/profile/vamshi.krishna.prime#!/>**

## LINKS:

**INSIGHT 1:** <https://public.tableau.com/profile/vamshi.krishna.prime#!/vizhome/Insight-1-best-month-to-travel-in-flight/Story1?publish=yes>

**INSIGHT 2:** <https://public.tableau.com/profile/vamshi.krishna.prime#!/vizhome/Insight-2-how-to-tackle-the-flight-cancellations/Story1?publish=yes>

**INSIGHT 3:** <https://public.tableau.com/profile/vamshi.krishna.prime#!/vizhome/Insight-3-bad-airports-to-avoid/Story1?publish=yes>