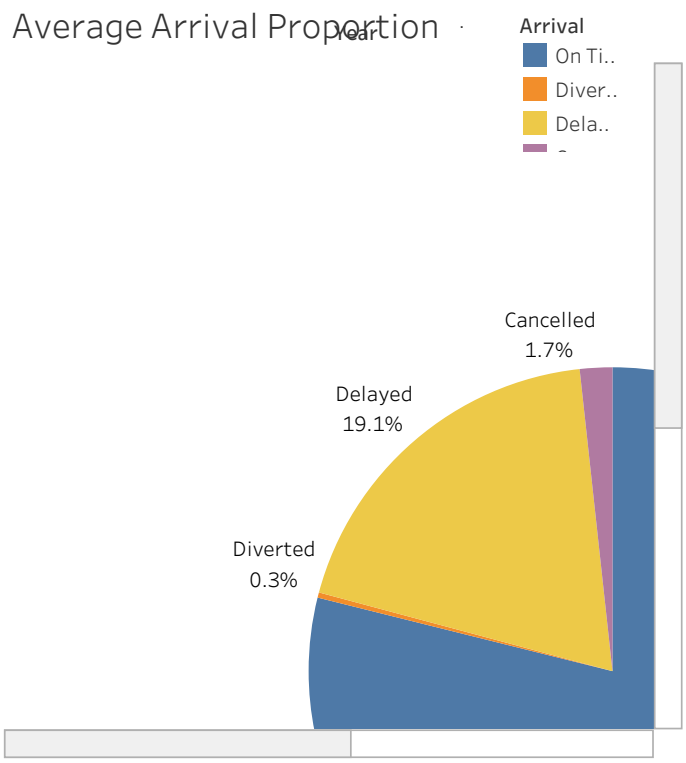
DAND_Flight_delay_story

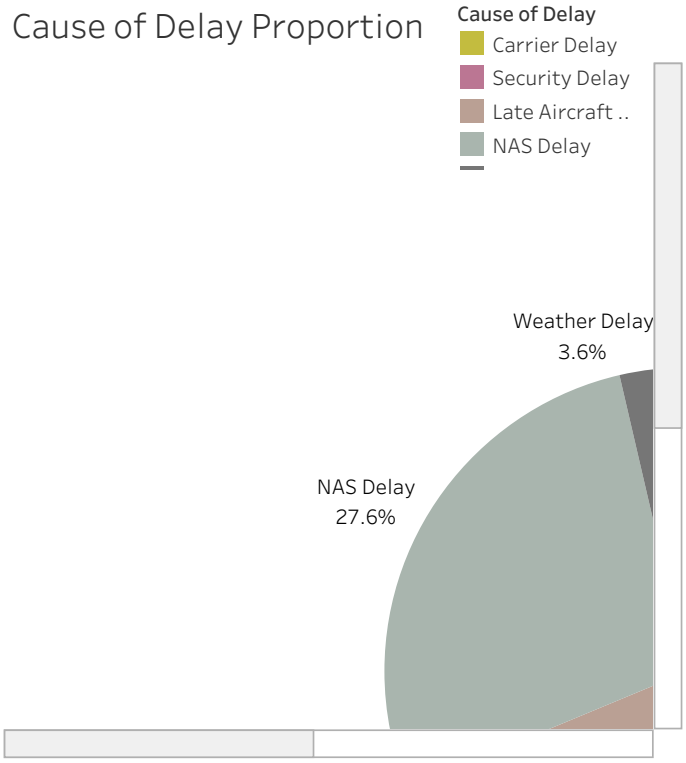
The general overview shows that around 78% of all flights are on time. The remaining flights are delayed, cancelled or diverted. The proportion of on time flights fluctuates between 75% and 81.5. Most of the delays are due to circumstances within the airline's control and the NAS. Another large proportion of flights are delayed because of a late arrival of a previous flight. Only a few delays can be explained by meteorological or security circumstances.

In the area chart, the total amount of flights as well as the arrivals are visualized over time. We might suggest that the number of flig..

Average Arrival Proportion



Cause of Delay Proportion



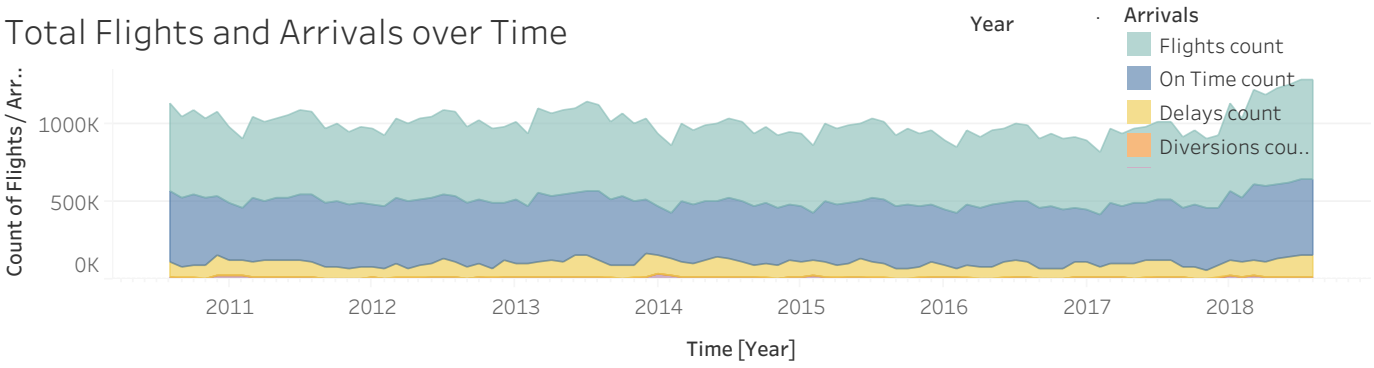
DAND_Flight_delay_story

The general overview shows that around ..

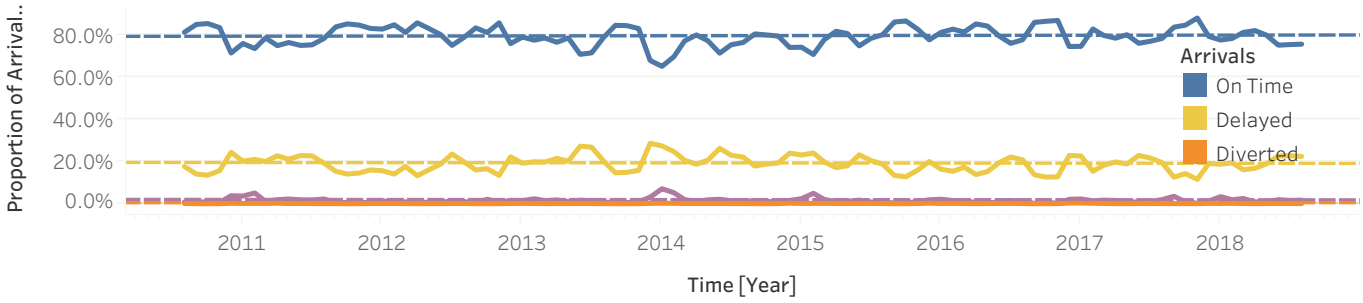
In the area chart, the total amount of flights as well as the arrivals are visualized over time. We might suggest that the number of flights periodically changes since there are minima for each February and maxima in summer months. The total number of flights has increased since 2017. The arrivals follow this trend. The proportions of arrivals visualized in the line plot below. are nearly fixed and not affected by this increase. However, seasonal flutuations can be identified.

Seasonal changes can be visualized by using discrete ti..

Total Flights and Arrivals over Time



Proportion of Arrivals over Time



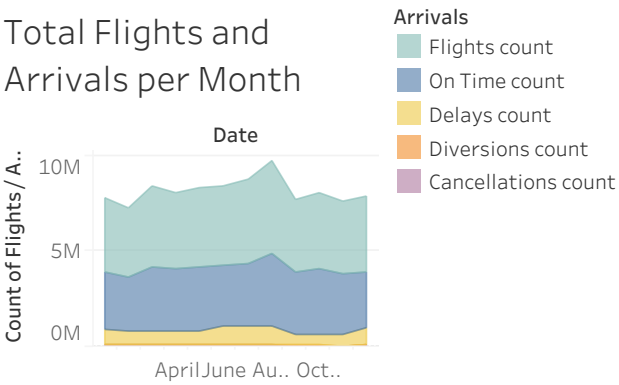
DAND_Flight_delay_story

In the area chart, the total amount of flight..

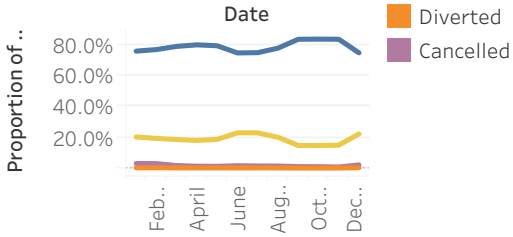
Seasonal changes can be visualized by using discrete time plots. In this case, an area and time plot is applied to count all flights and arrivals and calculate the average of the arrival proportions for each month of the year. We can see that there is an increase of flights and delays during the summer months due to the holiday season. Additionally, the on time rate drops at the end of the year and delayed / cancelled flights increase.

These line charts illustrate the distribution of occurren..

Total Flights and Arrivals per Month



Average Proportion of Arrivals per Month



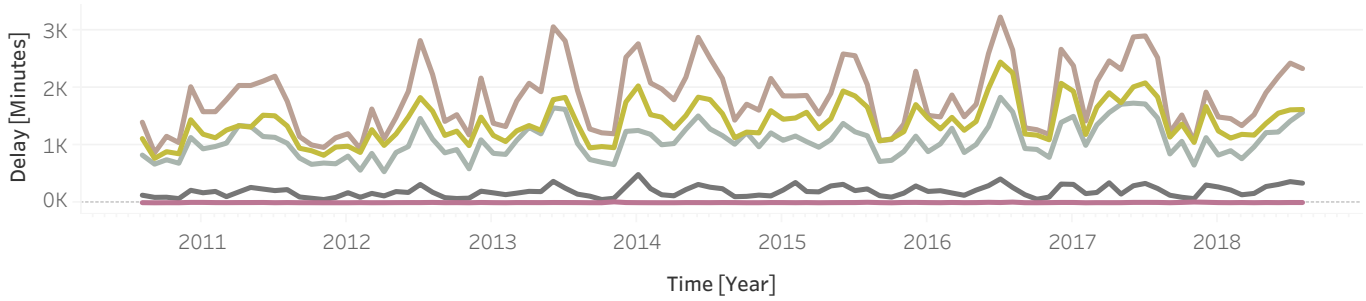
DAND_Flight_delay_story

Seasonal changes can be visualize. .

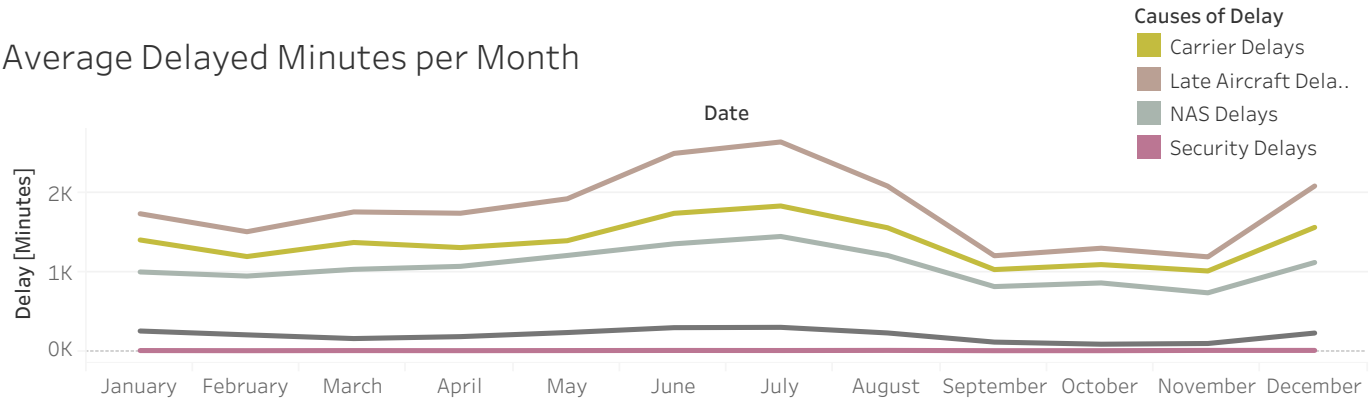
These line charts illustrate the distribution of occurrences of the several delay causes measured in delayed minutes over time and per month. It is obvious that every delay cause follows the same overall trend. The increase of each delay cause in the summer months might be a result of the increase of the number of flights in the holiday season. In winter months, the increase of delays is due to bad weather conditions in conjunction with Chistmas time.

Each carrier operates a different number of flights as shown in t..

Average Delayed Minutes over Time



Average Delayed Minutes per Month



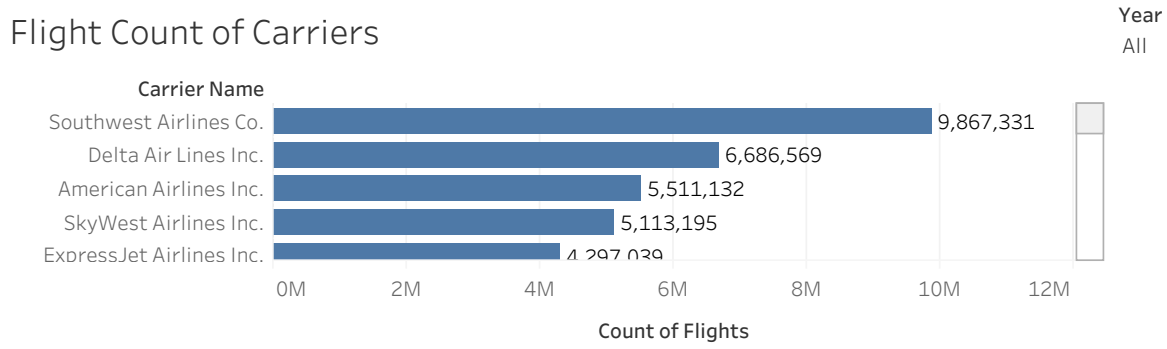
DAND_Flight_delay_story

These line charts illustrate the distribu..

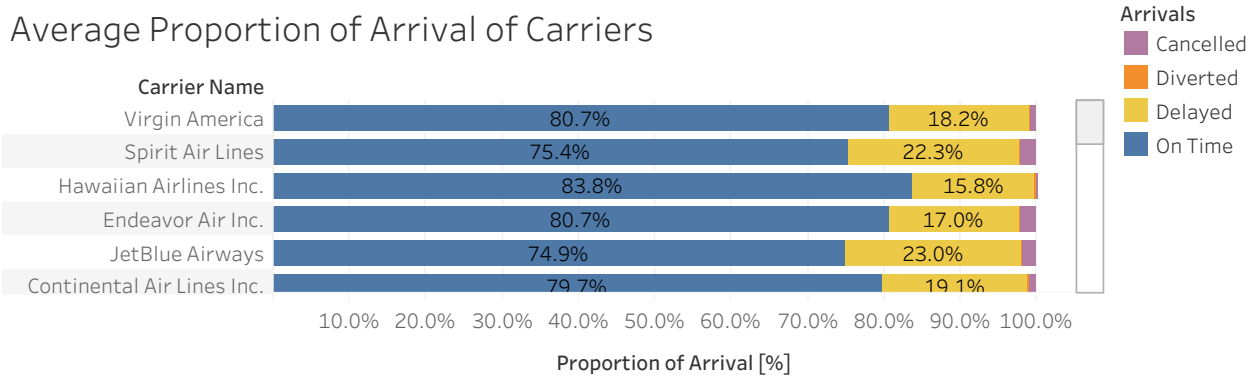
Each carrier operates a different number of flights as shown in the top bar plot. Thus, we visualize the proportion of on-time arrivals in combination with delays, cancellations and diversions. In the proportional bar chart below, the highest overall rate of on-time arrivals is achieved by Alaska Airlines Inc. Carriers with a high number of flights have a moderate delay rate of around 77%.The lowest overall on-time percentage is achieved by PSA Airlines Inc.

To visualize a temporal developme..

Flight Count of Carriers



Average Proportion of Arrival of Carriers



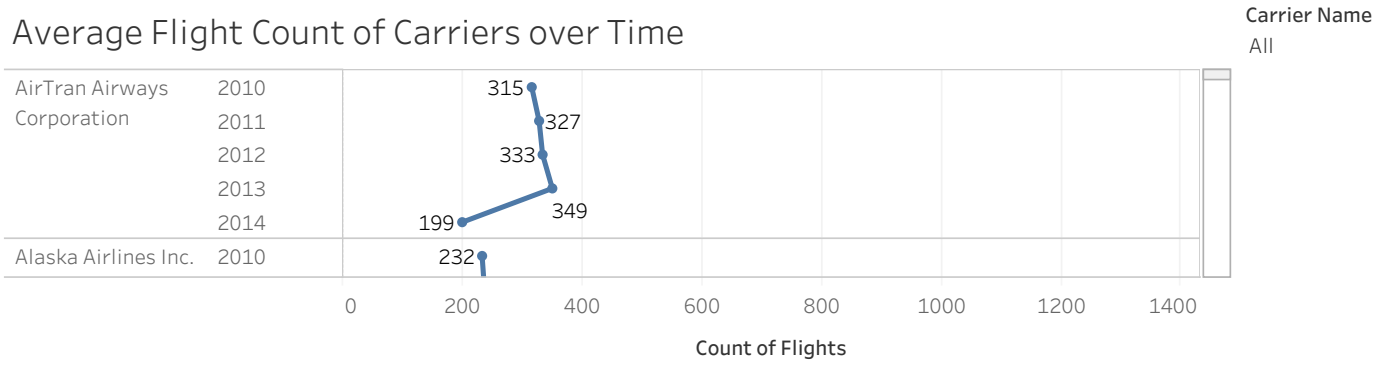
DAND_Flight_delay_story

Each carrier operates a different number ..

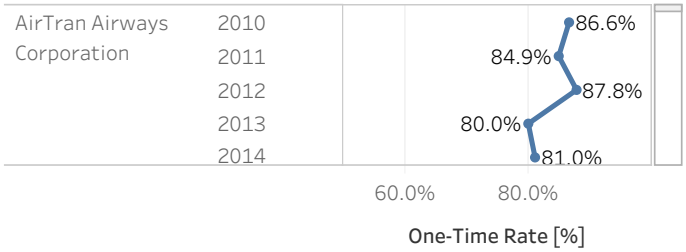
To visualize a temporal development of each carrier, we plot the monthly average flight count over time as well as the proportion of on-time arrivals per discrete year and month in line charts. The flight count chart gives information about the success of the carrier. The on-time rate over time plot visualizes changes of reliability over time of certain carriers. In the monthly overview of on-time rate, the described seasonal trend can be observed for almost every carrier.

A spatial overview of the the airport's flight count in combina..

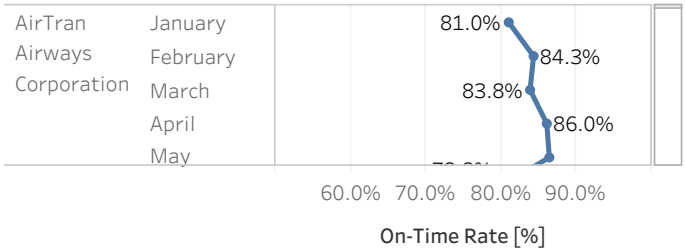
Average Flight Count of Carriers over Time



Average On-Time Rate of Carriers over Time



Average On-Time Rate of Carriers per Month



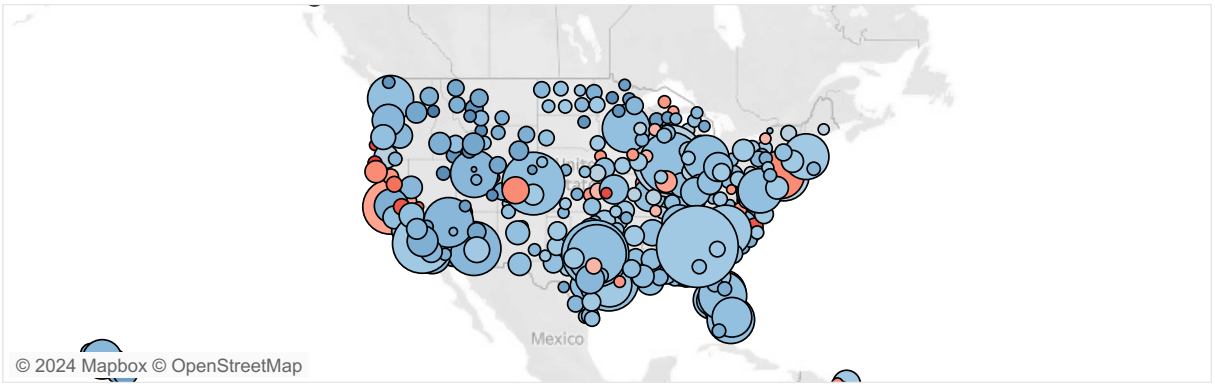
DAND_Flight_delay_story

To visualize a temporal develop..

A spatial overview of the the airport's flight count in combination with it's on-time arrival proportion gives us information about the correlation of the airport's size and the amount of delayed or cancelled flights. Surprisingly, most of the larger airports (with a few exceptions) achieved a mediocre or even very good rate of on-time arrivals. In the bar chart below, the proportions of delay causes for each carrier are visualized.

Let's take a look at the top 10 largest airports and carriers, w..

Flight Count and On-Time Rate of Airports



Carrier Na.. A.

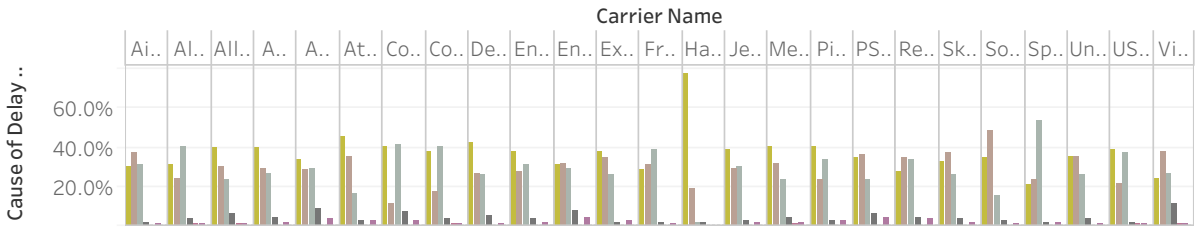
Airport Na.. A.

Year A.

Avg. Flights C..
1
1,000

On-Time Rate
50.0% 1

Causes of Delay of Carriers



Cause of Delay
Carrier De..
Late Aircr..
NAS Delay
Weather ..
Security D..
Cancelled
Diverted

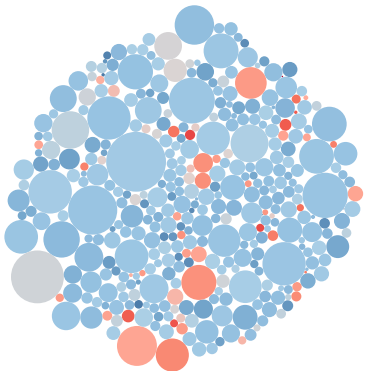
DAND_Flight_delay_story

A spatial overview of the the airport's flight count in..

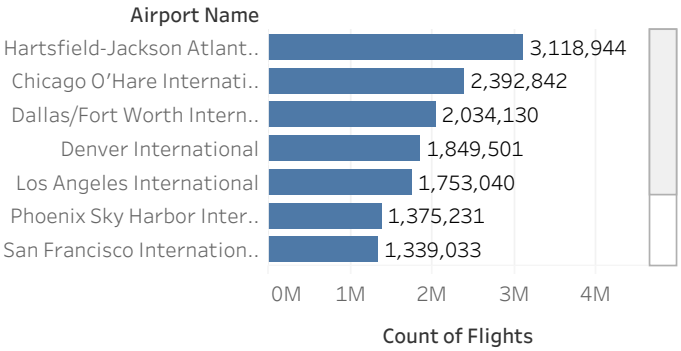
Let's take a look at the top 10 largest airports and carriers, which can be identified by the total number of flights. We can see that most of the large airports have an average rate of delays respectively mediocre proportion of on-time arrivals. A similar trend can be observed for the carriers. Airlines with a large number of flights have a high proportion of on-time arrivals. The top 10 airlines and carriers can be found on the right.

The box plot on the left shows the top 10 airports and their on-ti..

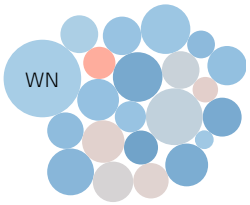
Airports



Top 10 Airports (Flight Counts)

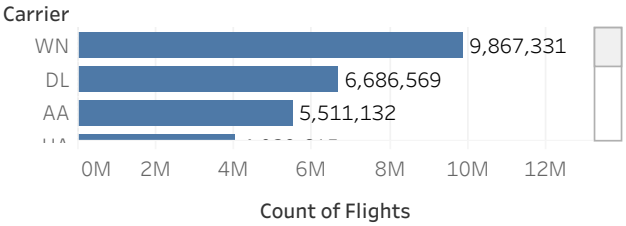


Carriers



Year of D.. All

Top 10 Carriers (Flight Counts)

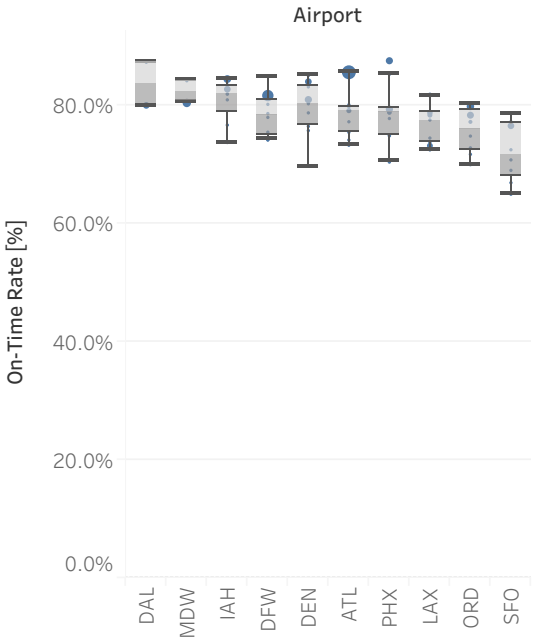


DAND_Flight_delay_story

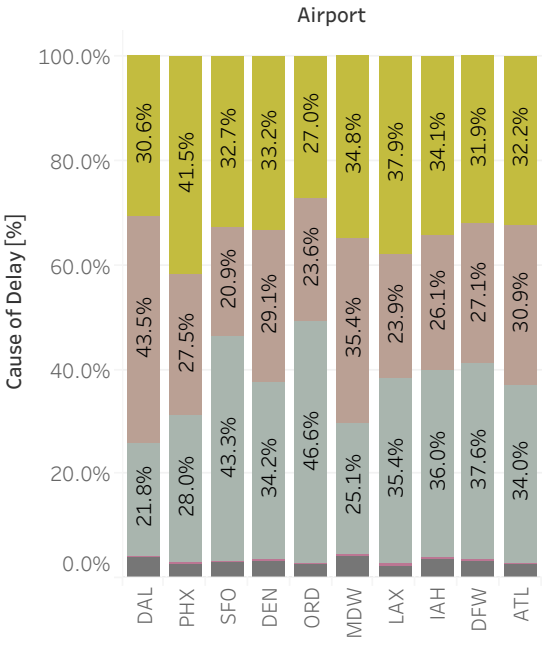
Let's take a look at the top 10 largest airports and carriers, which can be identified by the total number of flights. We can see that most o..

The box plot on the left shows the top 10 airports and their on-time arrival proportion, when we consider the top 10 carriers. Thereby the size of the bubble indicates the number of flights operated by a certain carrier. It is noticable that the carriers that operate most of the flights for certain airports seem to achieve a higher on-time rate. The causes of delay differ for each airport, but as shown before, the top 3 are late aircraft delays, carrier delays and NAS delays.

On-Time Proportion of Top 10 Airports



Proportion of Delay Causes of Top 10 Airports



Year
All

Avg. Flights count
30
5,000
10,000
15,000
18,607

Cause of Delay
Carrier Delay
Late Aircraft Delay
NAS Delay
Security Delay
Weather Delay