

Airplanes Against the Wind

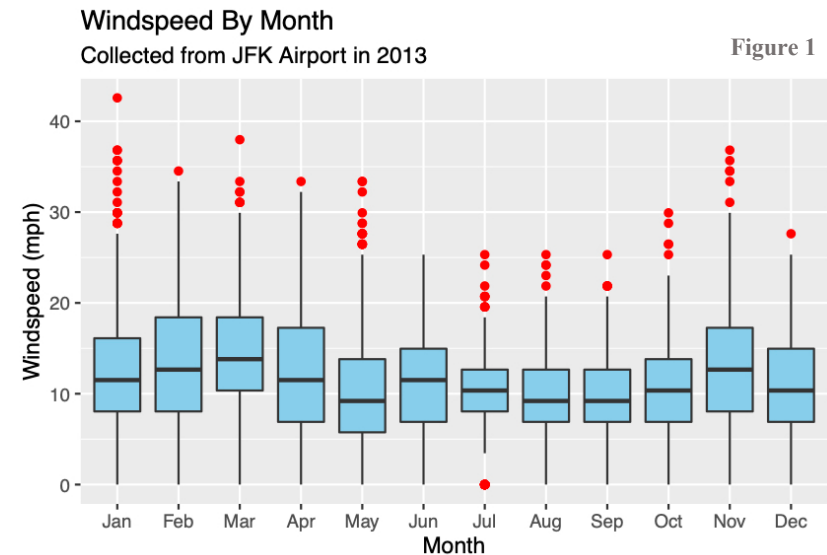
An “nycflights13” Analysis



“Nycflights13” is a set of data collected from various airports in New York City in the year 2013. The large dataset is split into two smaller frames; one containing values related to flights, and the other containing values related to the weather in NYC. This poster showcases and analyzes the flight and weather data collected from the JFK airport, specifically departure delays and wind speed.

Figure 1 shows the recorded wind speed in NYC for flights originating from the JFK airport during every month of 2013. The boxplot displays the distribution of the wind speed; overall, the data shows a **positive skew**, meaning that the majority of the recorded wind speed was relatively low. The **median** of the speed for each of the months is quite similar, falling in the range of 9.21 to 12.66 miles per hour.

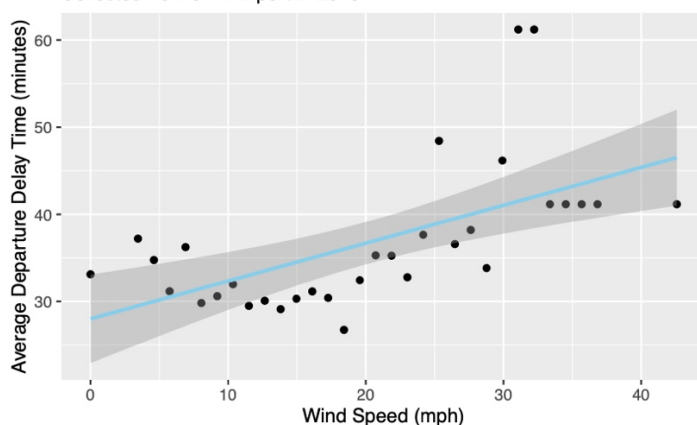
Out of all the months in 2013, January had the greatest range and **highest** recorded wind speed of 42.57 mph, and June had the **lowest** recorded windspeed, 0 mph – both of which were outliers.



The dispersion in the wind speed differs for every month. For instance, February and April have the greatest variance of wind speed and **IQR** of 10.35, which is why the boxes are longer. On the other hand, July, August, and September's shorter boxes indicate that the majority of the wind speed recorded was in a smaller range, with the **IQR** being 4.60 and 5.75, respectively.

Figure 2:

Average Departure Delay vs. Wind Speed in January
Collected from JFK Airport in 2013



Looking at the plot, we can see there are cases where the average departure delay was **greater** when the wind's speed was relatively **low** – and the opposite is true. Furthermore, the greatest average departure delays didn't occur when the wind speed was also the greatest. This proves that the departure delays are affected by outside factors.

Figure 2 shows the relationship between the wind speed and the average departure delay in minutes in January of 2013. The average departure delay was calculated, and the data was grouped **by day** for every day January. A line was plotted with the least sum of squares to fit the points, showing the relationship between the wind speed and delayed departures. The line of best fit shows that, as the speed of the wind **increases**, the average departure delay **increases**.

It's clear that the wind's speed has an effect on the departure delay, however, stating that the relationship is linear or that it will always be true wouldn't be accurate. As there are plenty of **other factors** that could affect the departure of the plane, one cannot accurately predict that the departure would be delayed by solely looking at the wind's speed.