ABOUT THIS PROJECT:

There is projected shortage of qualified pilots in the US over the coming decade. In response to this, Wright Flyers Inc. (WFI) plans to increase their number of flight schools. The goal of this project is to identify the top 15 locations to run flight school, and the 15 locations to avoid. To provide this insight, I analyzed weather patterns for potential locations across the country. Locations with better weather are preferred because a school will make more money when there are more good flight days.

CHARACTERISTICS OF THE DATA:

About 8 million rows of weather data spanning 702 Airport Locations was provided. The unstructured smart interval data was collected between March 25, 2015 and April 28, 2016 using WFI's internal weather monitoring system. I analyzed the Meteorological Aerodrome Report (METAR) output using *https://en.wikipedia.org/wiki/METAR* as a reference to understand the structure of the data. The three criteria for good weather are:

- Visibility of 10 statute miles or greater
- A cloud ceiling of 3000ft above the ground or higher (cloud ceiling only applies to BKN or OVC)
- Wind less than 15kts

APPROACH:

I analyzed each row of METAR data within Python by pulling the relevant information. To do this, three functions were applied to Pandas Dataframes. These created functions are named; *visibility(), cloud_ceiling(), and wind_speed()*. The docstrings in these functions (see code) explicitly reveal how the data was cleaned and classified.

When any criteria for good weather is satisfied, 1 point is awarded. Each record could receive up to 3 points if there is good visibility, low winds, and high cloud ceiling. The average number of points across was determined for each airport.

Since speed of completion was prioritized over insight, I assumed that all airports are in the Central Time Zone (5 hours behind Zulu time). Because the school can only function during the day, only data collected between 8AM and 5PM (CT) were employed in this study.

FINDINGS:

Generated using matplotlib, figure 1 reveals top 15 locations to run flight school (green bars), and the 15 locations to avoid (red bars):

- With scores between 2 and 1.75, the top 15 locations are KQGX, KQQY, KQRH, KSDL, KIWA, KQTZ, KPHX, KLUF, KFAT, KTRM, KBFL, KVIS, KPSP, KIPL, KMCE.
- With scores between 1.1 and 1.35, the 15 locations to avoid are KMTW, KCMX, KMCW, KBFD, KRHI, KJST, KRST, KSAW, KFMH, KBRO, KFVE, KCSM, KHYA, KRWF, KDLH.

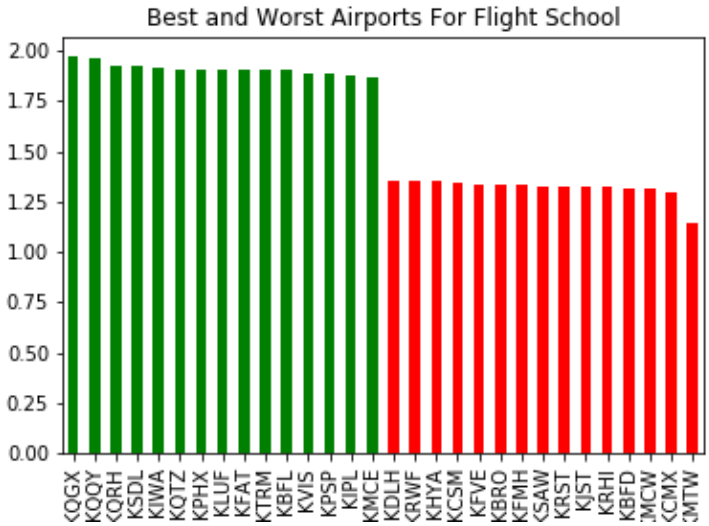

Figure 1: 15 Most Favorable and Least Favorable Locations for Flight School