We compared data between air quality sensors in Indiana and Florida. Both sensors measured the outdoor air quality. We decided that these two sensors would be the best to compare because comparing two that were both outside limited the number of variables to be controlled such as the presence of an electric or gas stove. We could not use our own sensor data due to technological difficulties. Our main goal when comparing the data sets was to determine the difference in air quality between central Indiana versus Florida.

As for methods, because we could not use our own data, we used the data from last year’s class in the spring semester of 2020. All of the graphs had already been made, but had we used our own data we would have deployed the sensors in our desired location, uploaded the data, and created the graphs ourselves. So, our methods simply consisted of analyzing the data in the graphs already made. We compared the following variables: AQ sensor raw, LPO, temperature, humidity, dust ratio, and pressure.

After analyzing the data, we were able to compare the differences between each item tested in Howard County, Indiana and Gainesville, Florida. However, it should be noted that data collection in Indiana did not start until approximately 20 days after the data collection started in Florida. The AQ sensor raw, which measures the amount of volatile organic compounds (VOCs), showed a steady increase in the amount of VOCs present as time progressed from April to May in Florida. VOC levels in Indiana stayed relatively the same throughout the end of April and early May. Some causes of increasing VOC levels could include flowering plants, increases in traffic due to warmer weather or people travelling more after lockdown last year. Temperatures in Florida are higher than Indiana and reached above 30 degrees Celsius. Temperatures in Indiana were often close to Florida’s, but never got quite as high. The temperature drops much lower in Indiana, reaching below 5 degrees Celsius whereas Florida never reached very far below 10 degrees Celsius. The LPO sensor, which is a measure of how long particulate matter is sensed was relatively the same between Indiana and Florida and stayed at a very short amount of time. However, there are a few data points from Indiana where particulate matter was sensed for a long period of time, which corresponds with data from the dust ratio sensor that was high.

From the data on the dust ratio sensor, we observed that the dust ratio was constantly higher in Florida, which could be due to the urban location the sensor was placed in compared to rural location in Indiana. However, there are multiple very high dust ratios in late April and early May in Indiana, which could be due to high winds or plowing/tilling of farm fields. The humidity sensor data varied drastically between the two states, but Florida has some much more humid days than Indiana, and Indiana has a few days with lower humidity than Florida. We also observed that pressure in Florida was higher in every data point than Indiana. We also noticed that the rises and falls in the pressure in Florida match the rises and falls in the pressure in Indiana.

To conclude, Florida had higher humidity, temperatures, dust, pressure, and lower LPO. Indiana had a higher LPO, and both states were similar in the amount of VOCs present. It was surprising to see how similar some of the data were such as humidity and VOCs. We expected to see a larger difference in humidity since Florida is much closer to the ocean than Indiana. We also expected to see much higher VOC levels in Florida in an urban environment than in rural Indiana. However, because we don’t know where these sensors were positioned exactly, it’s impossible to tell what all variables were influencing the results.











