

WRITTEN SUMMARY

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CIVE 202

Introduction/background information explaining the project, scope of work and objectives of the work completed

The goal of this project is to complete an analysis of air quality data collected from various locations across Nebraska for UNMC to help them understand how air pollution can affect human health. The client has requested four key analyses: (1) identification of the 5 locations in Nebraska with the highest mean and median measurements for components VOC, PM_{2.5}, and PM_{10.0}, (2) dates when these 5 maximums occurred and their potential causes, (3) analysis of whether humidity and temperature have an effect on air quality, (4) a determination of where and when there have been any Air Quality Index (AQI) health risks, with regard to measurements of PM_{2.5} and PM_{10.0}, and assessment of potential causes, and (5) whether the sensor altitude has an impact on the air quality values.

Methods section detailing how data analysis was completed. Methods should be replicable (another analyst can complete the same analysis and get the same results) and detailed.

The data was completed with first finding the five locations in Nebraska with the highest mean and median concentrations of VOC, PM_{2.5}, and PM_{10.0}. After we did that we had to figure out what days did the maximum values occur and where did this maximums occur. We also had to find some potential reasons these maximums occurred on these days in these locations based on initial research. Then, we had to find how humidity and temperature have a noticeable effect on air quality. Finally, we had to find if there have been any Air Quality Index (AQI) health risks (unhealthy for sensitive populations) at any of the locations in the dataset for PM_{2.5} and PM₁₀ based on the EPA's AQI ratings.

Results and discussion section that presents the results of the data analysis and explains observations and possible reasons for observations where applicable.

The data shows that for task one that areas that are in more rural areas typically have a higher "pm". The VOC tends to be higher in city areas. For task two, we noticed that around July 4th there were more pollutants. This could be because of the increased use of fireworks around this time. For task 3, We noticed that the temperature does not have a large impact on the the pollutants in the air but the humidity does. For task 4, We noticed again, the fourth of July date with more pollutants.

A reference list and in-text citations for all resources used in the report, including references to documentation provided by the client.

API. PurpleAir Community. (n.d.). <https://community.purpleair.com/c/data/api/18>

Get Air Quality Data where you live. AirNow.gov. (n.d.).
<https://www.airnow.gov/?city=false&country=false>

U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. (n.d.).

Technical assistance document for the reporting of Daily Air Quality. AirNow.gov.
<https://www.airnow.gov/publications/air-quality-index/technical-assistance-document-for-reporting-the-daily-aqi/>

US EPA PM2.5 Air Quality Standards Interactive map by PurpleAir. PurpleAir. (n.d.).

<https://map.purpleair.com/air-quality-standards-us-epa-aqi?opt=%2F1%2Ffp%2Fa10%2Fp604800%2Fc0#5.21/40.002/-97.008>