Southern Methodist University

Data Science Bootcamp (09/2023)

Project 3: A Global look of Air Quality Indexes (AQI)

Team 2 Members: Misha Borunda, Damarje Brown, Kimberly Childers, Jason Cisneros, and Raheem Yusuff

Executive Summary

Project 3 encompasses a data visualization and data engineering track for students to showcase their skills. Team 2 has found an open-source dataset to manipulate and answer Project 3 requirements. A story will be revealed by using visualizations and implementing ETL skills to design a robust database.

Background

Climate change has been on the forefront of news broadcasts and in the public spotlight as extreme events are becoming more commonplace. One factor contributing to this has been the increase of pollution. Mass pollution is thought to be the main cause of this and has led countries to take on green initiatives. Initiatives that pertain to air quality are specifically observed to determine the amount of pollution in an area. The study of Air Quality Indexes (AQI) benefits countries by determining if green initiatives are cleaning up the air and can be used by the general population should they have certain health issues. This project will explore AQI ratings globally as well as Carbon Monoxide (CO), ozone, Nitrogen Dioxide (NO2), and fine particle pollution (PM2.5) datapoints.

Research Questions

1. What are the top 10 countries with the best Air Quality Index (AQI)?
2. What are the top 10 cities with the best AQI?
3. Average AQI value per country?

Dashboard Design

A graph of different air quality

Description automatically generated

Roles and Responsibilities

Develop database and visualizations (Python/SQLite): Raheem Yusuff, Jason Cisneros, Misha Borunda

Develop user-driven interaction dashboard (JavaScript): Raheem Yusuff, Jason Cisneros, Misha Borunda, Kimberly Childers

Administrative (stand-up/proposal/PP/report/meeting invites/QC of deliverables): Kimberly Childers, Damarje Brown

Conclusion/Future Work

This research can assist countries with determining whether their green initiatives are working. Future work could include assisting potential residents of where to move due to personal health issues or allow individuals to move to a green initiative city they want to promote for a healthy environment. The data will also assist with global studies to determine trends with the Earth’s air quality and forecast what to expect, environment wise, in the future.

References

**World Air Quality Index by City and Coordinates**

Ramachandran, Aditya

<https://www.kaggle.com/datasets/adityaramachandran27/world-air-quality-index-by-city-and-coordinates/data> ([CC BY-NC-SA 4.0](https://creativecommons.org/licenses/by-nc-sa/4.0/))