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CAPRI - Correlation of Air Pollution and Respiratory Illness

What have been done?

1. **Defined Workflow and Scope:**

   Have a meeting with the team leader to establish the technical scope of the project and to clarify roles, with focus on the correlation between respiratory hospital admissions and air pollution.

   So what? To make sures the is a team alignment and allows targeted research and development efforts, preventing scope creep early in the project lifecycle.
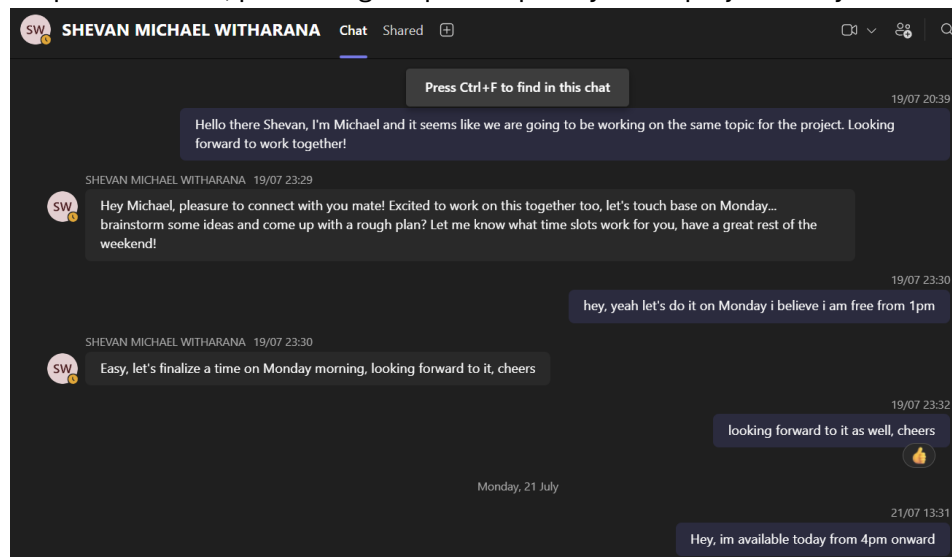
2. **Use Agile Methodology:**

   Decided to use an Agile process with weekly sprints and progress management task boards (like Trello).

   So what? This allows constant feedback integration and iterative development by increasing transparency and flexibility.
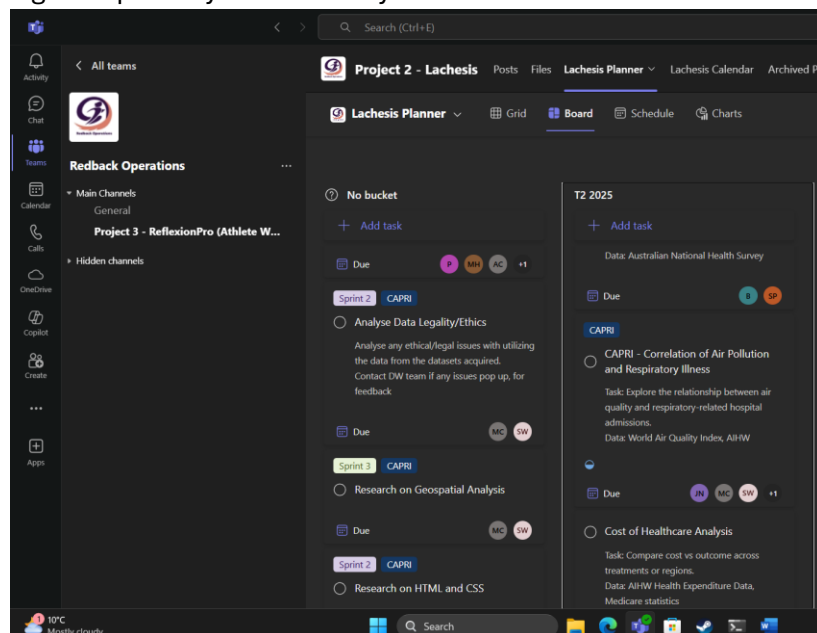

   (We changed to Teams planner instead as recommended by the project mentor)

3. **Started the Ethical and Legal Review:**

Review the conditions of use for AIHW and WAQI data and evaluating the sensitivity of the data, particularly regarding health records.

So what? Guarantees adherence to ethical computing guidelines and gets us ready for any necessary institutional approval requirements.
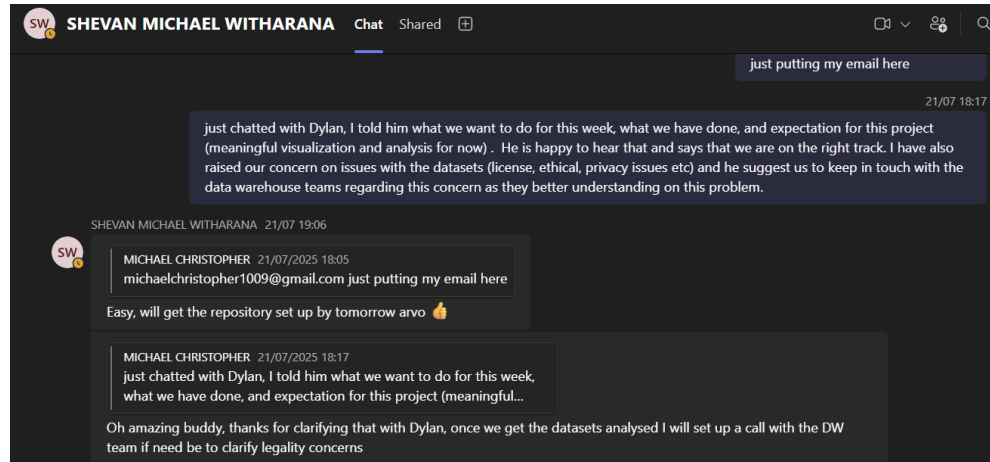
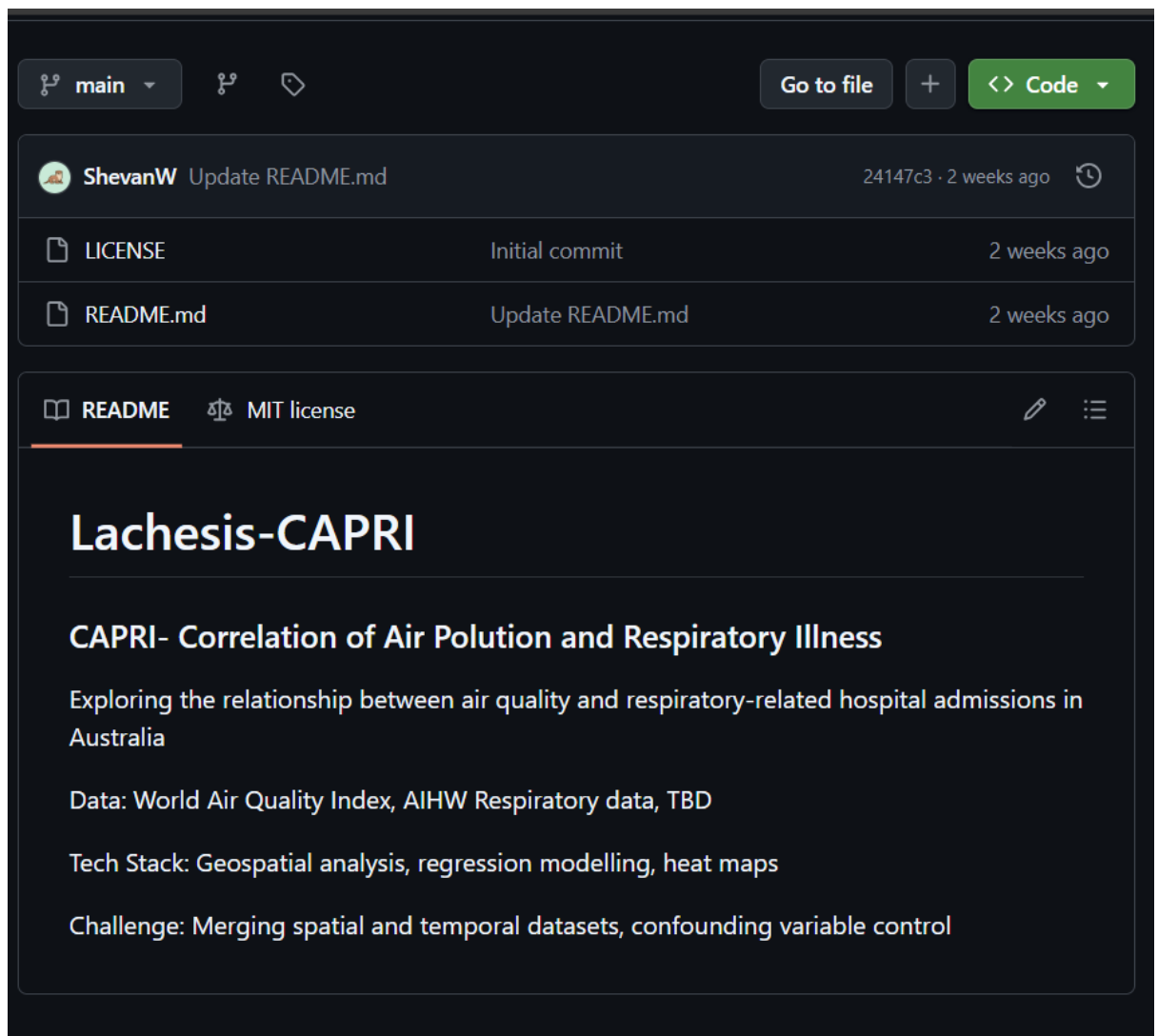4. **Research on Geospatial Analysis Tool:**

Looked at mapping libraries for regional overlay and heatmap creation for the data visualization.

So what? Early tool selection allows the effective creation of accurate, interactive visualizations that are important in presenting results.

5. **GitHub Repository Setup:**

Create a well-organized GitHub repository to store raw data, cleaned, data, analytical script and notebooks, as well as documentation folders.

So what? This creates a centralized, version-controlled platform for efficient code and research collaboration and progress tracking.

Lachesis-CAPRI

CAPRI- Correlation of Air Polution and Respiratory Illness

Exploring the relationship between air quality and respiratory-related hospital admissions in Australia

Data: World Air Quality Index, AIHW Respiratory data, TBD

Tech Stack: Geospatial analysis, regression modelling, heat maps

Challenge: Merging spatial and temporal datasets, confounding variable control

6. **Initial Exploratory Research Assignment:**

Assigned roles and responsibilities for exploring the relationship between air quality trends and hospital admissions as well as respiratory illnesses, including identifying time-lag patterns.

So what? This research can inform the selection of regression models and guide data transformation steps for temporal alignment.

Air Quality Prediction <- Found this Kaggle notebook for initial inspiration.

Next Actions?

1. **Full Review of Ethics and Privacy Compliance:**

Complete the documentation of ethical concerns to make sure we handle health-related datasets according to best standards.

2. **Data Cleaning and Alignment:**

Include standardizing time formats, managing missing data, and coordinating the geographic granularity between hospital admission zones and air quality monitoring sites.

3. **Find Trends or Outliers:**

Charting hospital admissions and pollutant levels by time and geography using exploratory data analysis (EDA).

4. **Research on Confounding Variables:**

   Examine outside variables (such as the climate and socioeconomic indicators) that regression analysis can account for.

5. **Model Selection Strategy:**

   Based on the characteristics of the data distributions, create a shortlist of possible regression models (such as Poisson, random forest, and linear regression).