Profiling:

We have not encountered any significant issues with the runtime of our code. The plots are generated within a reasonable time frame. However, we believe there is room for improvement in terms of performance.

In addition to optimizing the runtime, we have made improvements in other areas of the project as well. One of our main goals was to make the code easily controllable and modifiable. To achieve this, we have implemented a user interface that allows users to make choices. Initially, we added each button individually in the user interface. However, we realized that every time we introduced a new choice (such as a new view based on city or time), we had to manually update the corresponding button. This process was prone to errors. To address this, we established a registry.py file to record all available choices and dynamically generate the buttons based on the dictionaries in the registry.py. Each dictionary in the registry.py represents a button, with keys representing the selections within that button.

Furthermore, our project requires users to input the data before performing any operations. If the data itself contains errors, missing values, or other issues, it can lead to errors in the code. To mitigate this, we implemented a data preprocessing step to select the necessary columns and clean the data. We are actively working on handling problematic data and improving overall performance.

Additionally, there are some remaining hard-coded aspects that we are addressing. For instance, the results returned from the user interface are in the form of a tuple, requiring us to manually track the positions of each result within the tuple. To improve this, we are planning to refactor the result format from a tuple to a dictionary. This will allow us to easily access the required variables without the need for hard-coding.

Overall, our focus is not only on optimizing runtime but also on enhancing code control, modifiability, and error handling. We are continuously working to refine these aspects and deliver a more robust and user-friendly project.