DSA 210 PROJECT REPORT

Steps Data Analysis: Comparing Physical Activity with Academic Periods

About My Project

- The motivation for this project stems from a curiosity to better understand how my physical activity patterns fluctuate during school-related activities. Specifically:
- Do I walk less during exam periods due to stress and time constraints?
- Are vacations associated with higher physical activity due to more free time?
- Do my physical activity in free time is enough or not? for a person to live a healthy life according to averages?
- This project serves as a reflection on my lifestyle habits and encourages better health and time management during intense academic periods.

Data Source

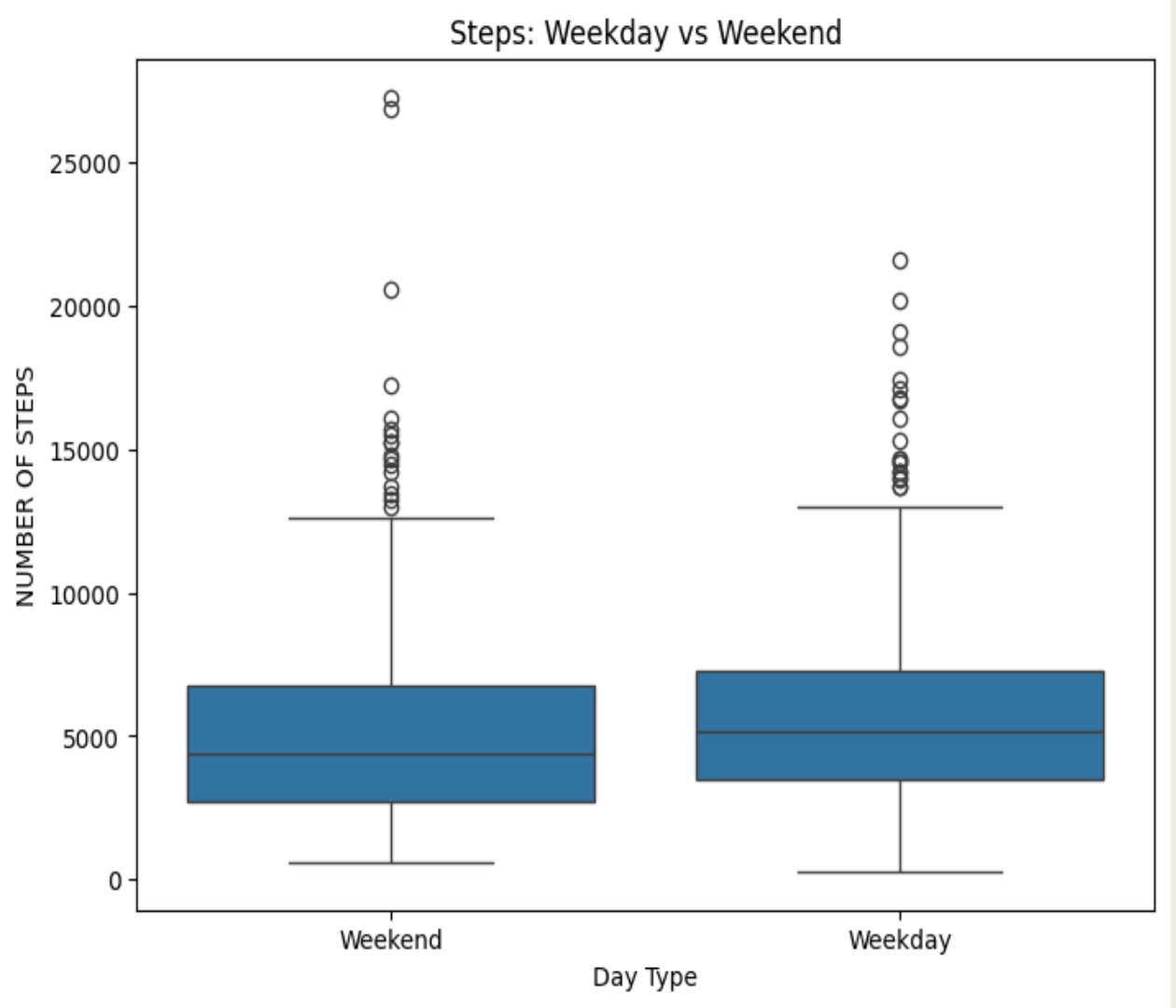
- **Step Data**: Collected from Apple Health, which automatically tracks daily step counts via my iPhone.
- **School Calendar**: The dataset was manually created based on official school term dates, exam schedules, and vacation periods.

Findings

- **1) Exam Periods**
  During exam weeks, step counts decreased significantly. This trend is likely caused by time constraints and reduced physical activity due to studying.
  Graph Type: Box Plot
  Observation: Median step counts during exam periods are visibly lower than the overall median step counts.

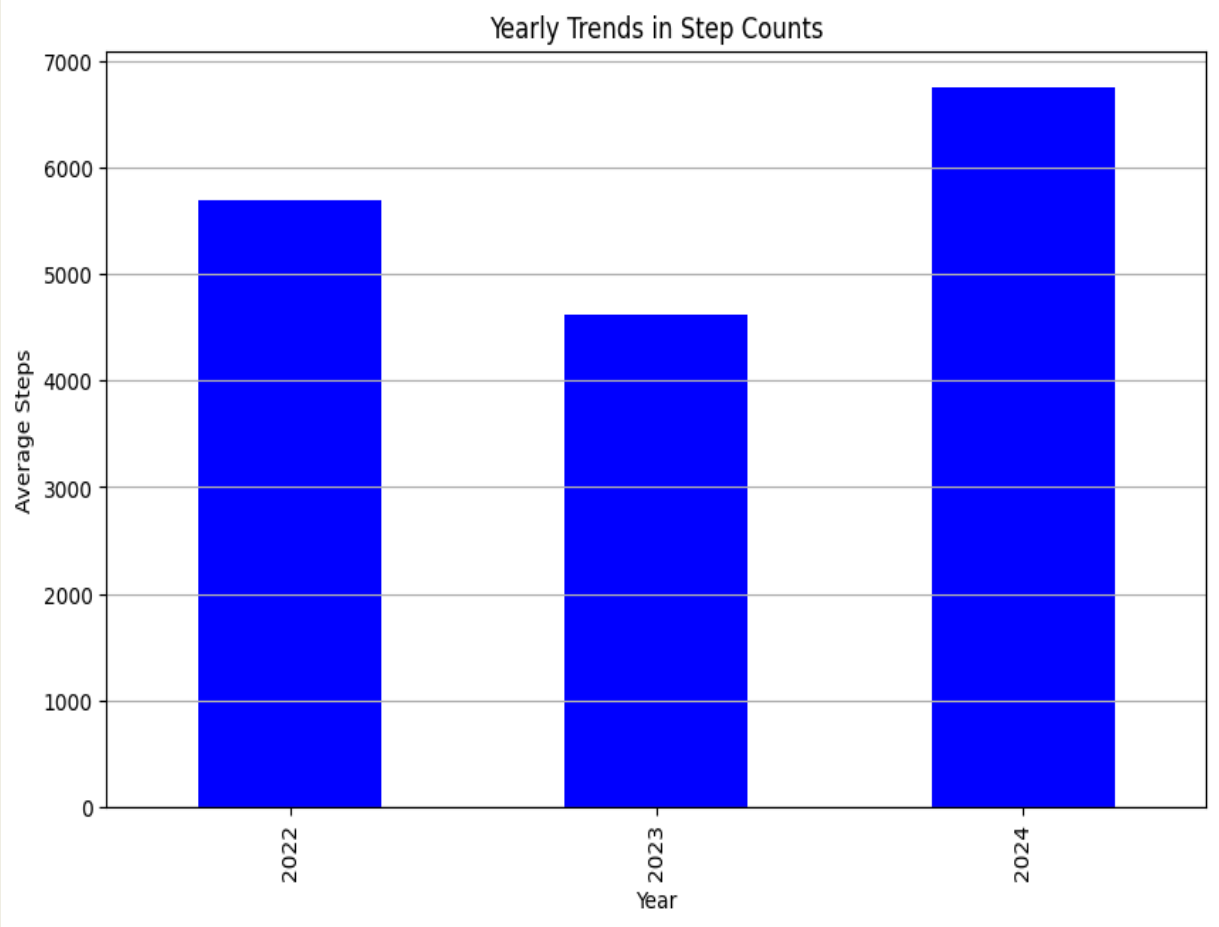
Findings

- **2) Vacation Periods**
  Step counts were highest during vacation periods, reflecting more leisure time and increased opportunities for outdoor activities.
  Graph Type: Scatter Plot
  Observation: Vacation periods consistently show higher step counts compared to exam periods over time.



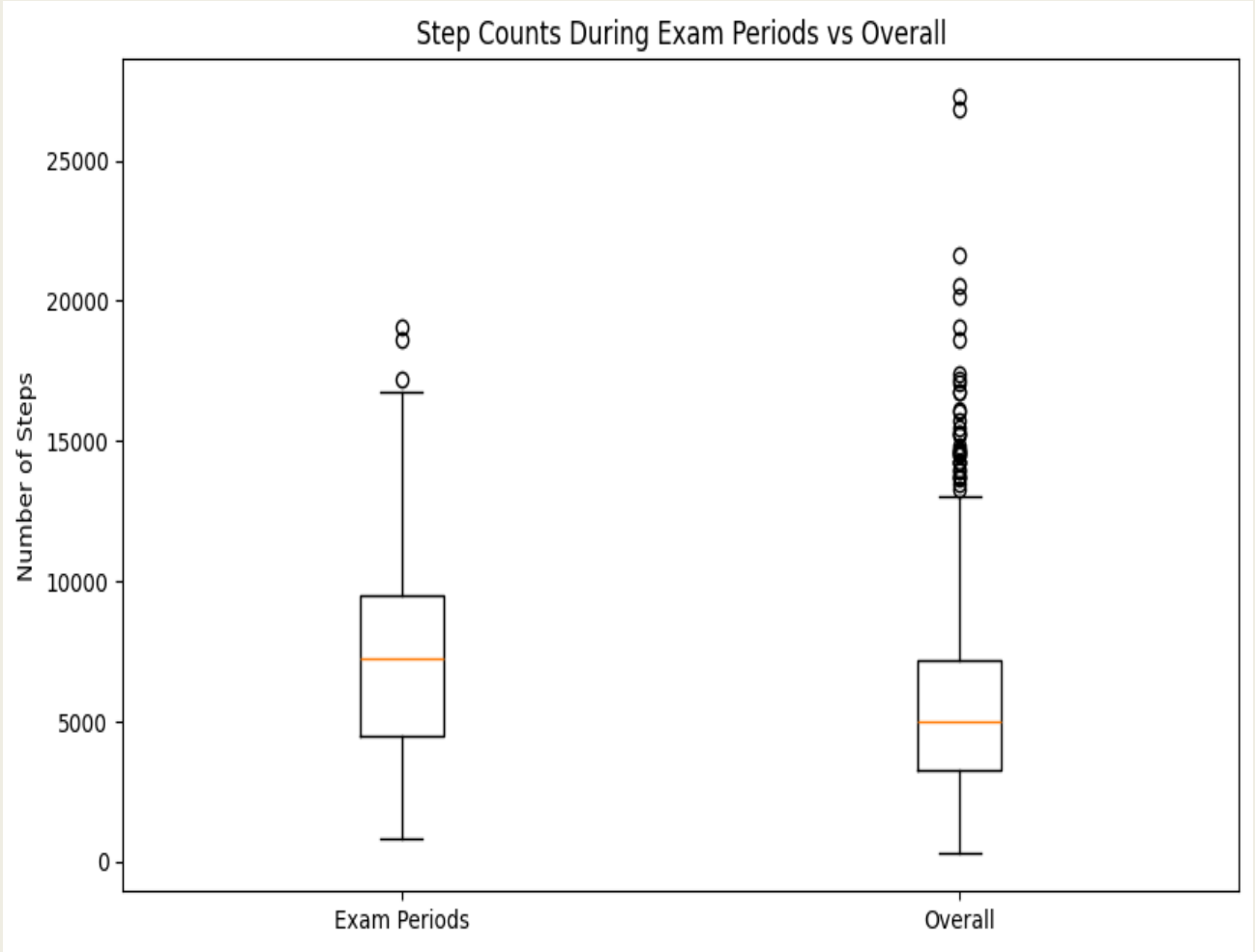
Findings

- 3) **Weekday vs. Weekend**
  Step counts were consistently higher on weekends compared to weekdays, even during academic terms, indicating increased free time and relaxation.
  Graph Type: Box Plot
  Observation: Weekends display higher median step counts and greater variability than weekdays.



Findings

- 4) **Yearly Trends**
  Over three years, the overall step count increased steadily, showing a growing awareness of staying active.
  Graph Type: Bar Chart
  Observation: The yearly average step counts show an upward trend, with 2024 reaching the highest average.



Limitations

- **Limitations:**

1. **Data Gaps**: Some times in a day had missing step data due to technical issues or not carrying my phone for example while actively playing sports, since I can not carry my phone with me in those times I do not have the data of the times in which I do sports actively. In addition to that I have been in military for one month during this summer and since I can not have my smartphone with me in those times I do not have the data for the time I have been in military.
2. **Bias**: Step data may not fully represent physical activity levels, as other activities (e.g., cycling or gym workouts) are not tracked.
3. **Generalizability**: Findings are personal and may not apply to others. For example I have been in erasmus in previous spring semester so my data in erasmus is completely different to my data in Istanbul.

Future Work

1. **Incorporate Additional Data**:
    1. Track other health metrics like heart rate, sleep data, and stress levels to gain a more comprehensive view of my well-being.
2. **Automation**:
    1. Use Python to automate data cleaning, analysis, and visualization for more efficient updates.
3. **Comparison with Peers**:
    1. Collect similar data from friends or family to see if trends are consistent.
4. **Behavioral Changes**:
    1. Use the insights gained to create healthier habits, such as planning regular walks during exam weeks or playing active sporgts during exam weeks or school periods.