

Fitness tracking

In this project, Python's data analysis and visualisation libraries—Pandas, Matplotlib, and Seaborn are used to explore the relationships between key exercise metrics: Duration, Pulse, Maxpulse, and Calories burned.

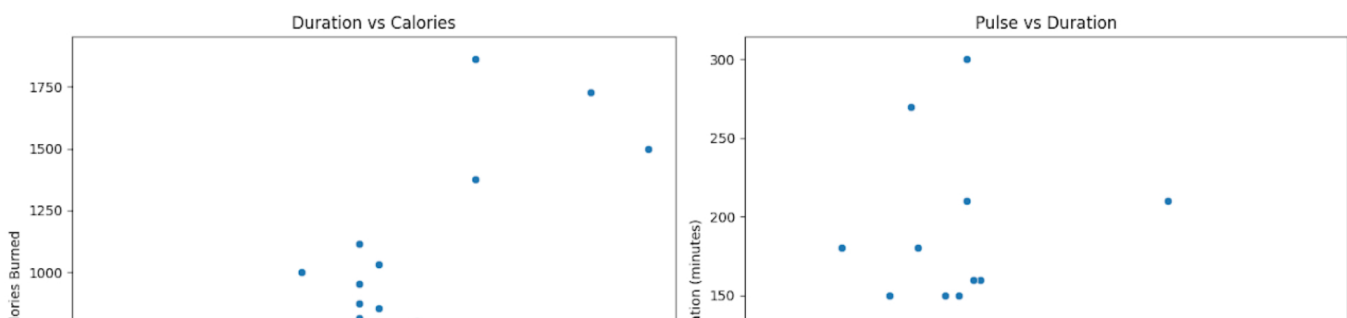
Pandas library was used for data manipulation, while Matplotlib and Seaborn were employed to create various plots including scatter plots, histograms, box plots, pair plots, correlation heatmaps, bar plots, and regression plots. These visualisations uncover patterns and provide a comprehensive understanding of how exercise duration and heart rate impact calorie expenditure. From these visualisations, individuals decide to extend the duration of workouts to maximise calorie burn.

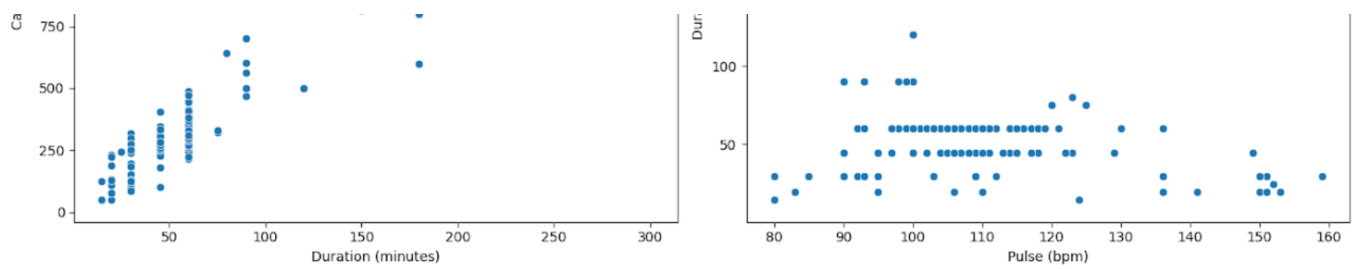
	Duration	Pulse	Maxpulse	Calories
count	169.000000	169.000000	169.000000	164.000000
mean	63.846154	107.461538	134.047337	375.790244
std	42.299949	14.510259	16.450434	266.379919
min	15.000000	80.000000	100.000000	50.300000
25%	45.000000	100.000000	124.000000	250.925000
50%	60.000000	105.000000	131.000000	318.600000
75%	60.000000	111.000000	141.000000	387.600000
max	300.000000	159.000000	184.000000	1860.400000

The data shows that workout durations, heart rates, and calories burned vary widely, with workouts averaging 64 minutes, heart rates around 107 bpm, and calories burned averaging 376 but ranging from 50 to over 1800 calories. The variability reflects differences in exercise intensity, duration, and individual factors like fitness levels and metabolism.

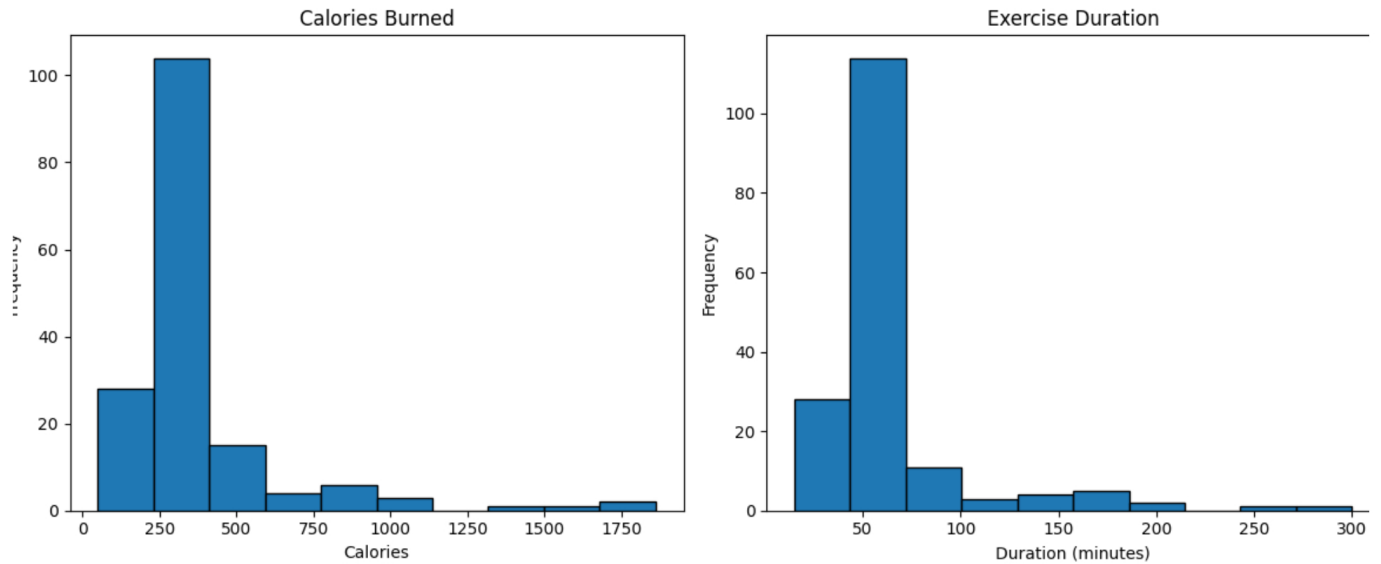
This scatterplot visualises the relationship between Duration and Calories and Pulse and Calories

- Duration vs. Calories shows how the duration of exercise affects calories burned.
- Pulse vs. Calories shows the effect of heart rate on calories burned.

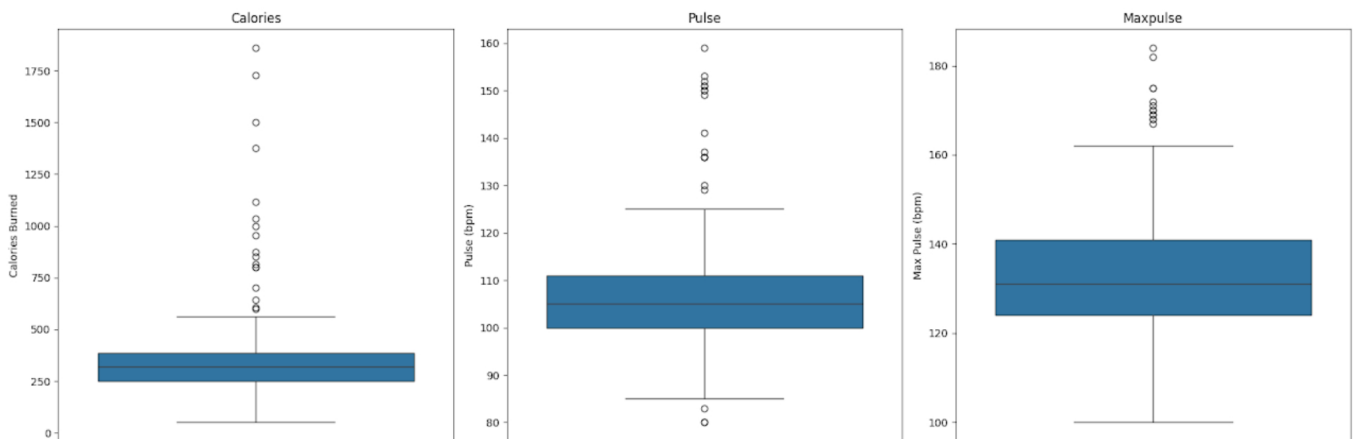




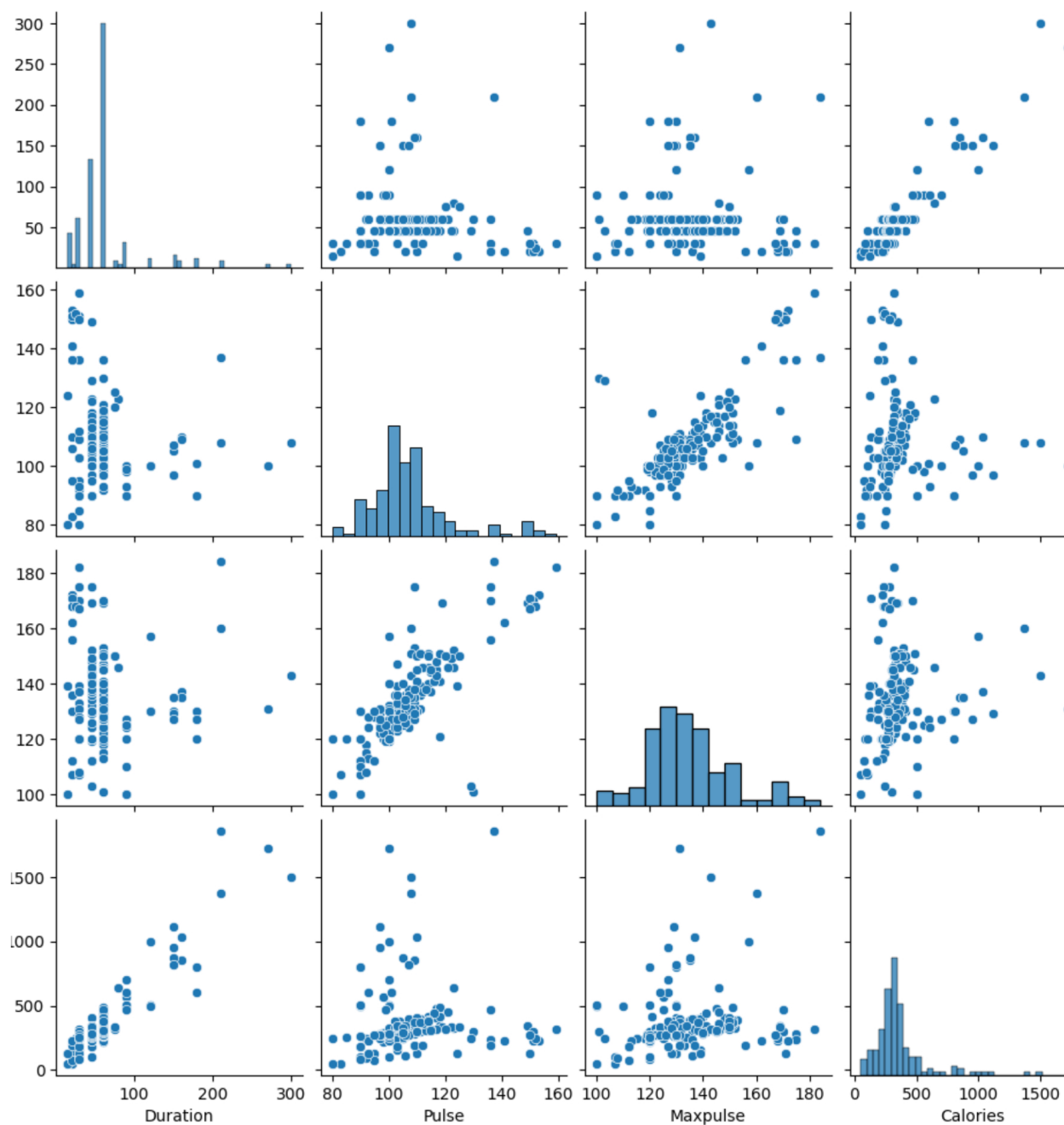
This histogram displays the distribution (frequency) of calories burned during and pulse rates



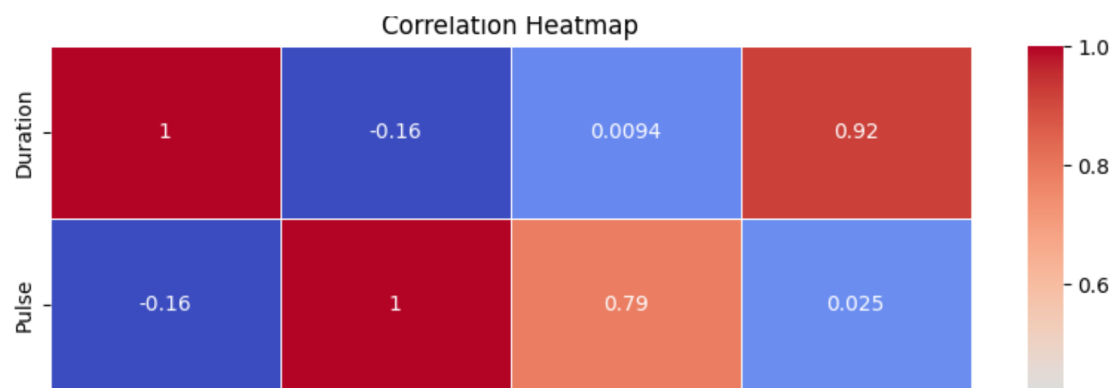
This box plot summarises the distribution of Calories Maxpulse and Pulse showing their median, quartiles, and outliers.

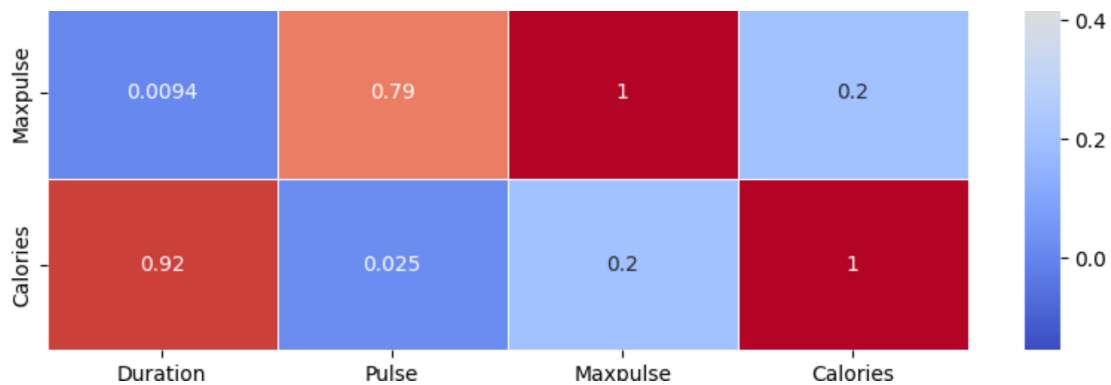


The pair plot creates scatter plots to visualise relationships between Duration, Pulse, Maxpulse, and Calories. It helps to visualise the relationship between all variables.

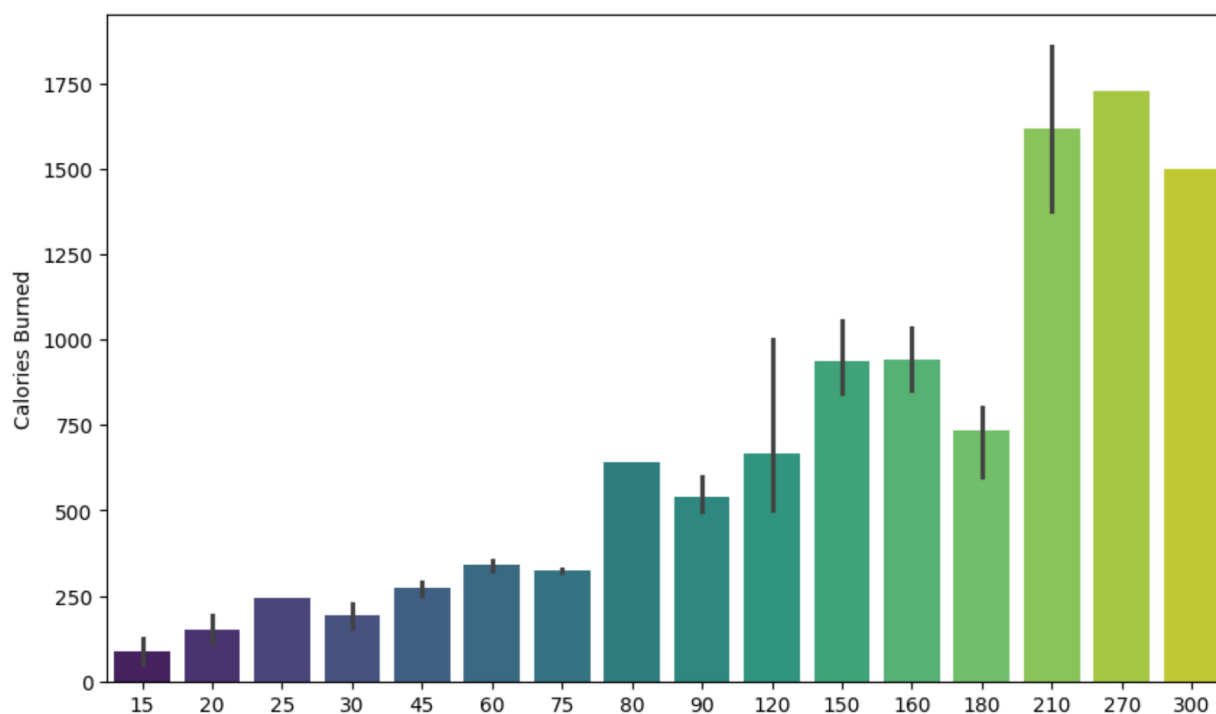


This heatmap reveals the strength and direction of the relationship among Duration, Pulse, Maxpulse, and Calories. It confirms a strong positive relationship between Calories and Duration, a weak positive relationship between Calories and Pulse, and a weak negative relationship between Pulse and Duration. Overall, duration is the most important factor in determining calorie burn, with heart rate playing a smaller role.





This bar plot compares average calories burned across different ranges of exercise duration. It emphasizes how longer workouts generally lead to more calories burned.



The regression plot shows the relationship between Duration vs. Calories to examine the linear relationship between exercise duration and calories burned. It confirms that longer exercise durations are associated with higher calorie burn.



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