Analysis of Vehicles MPG from Current Fleet against New Fleet

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1 Introduction

To aid in the decision on whether or not it is viable to change the provider of vehicle fleet, an analysis will be done comparing the miles-per-gallon of fuel used by each fleet. Various graphs and statistics will be produced to allow an informed choice.

2 Method

Data from both new and current fleets will be analyzed in the following sequence.

1. The Standard Deviation of both datasets is calculated
2. Scattergraphs of both datasets will be produced
3. Histograms of both datasets will be produced
4. Confidence graphs of both datasets will be produced

We will use Python libraries to compute and create the graphs.

2.1 Sample Preparation

Sample data from both fleets will be collected and provided. This data will show the MPG usage per day. The data will be in a raw format and we will prepare it by:

1. Remove any non-number values which may be present
2. Derive any data which may be missing from other provided data
3. Equalise the lengths of the datasets for proper comparison
4. Add day number data columns

2.2 Data Collection

Data will be provided by the company and will be presented in a comma separated list (csv) file.

3 Results

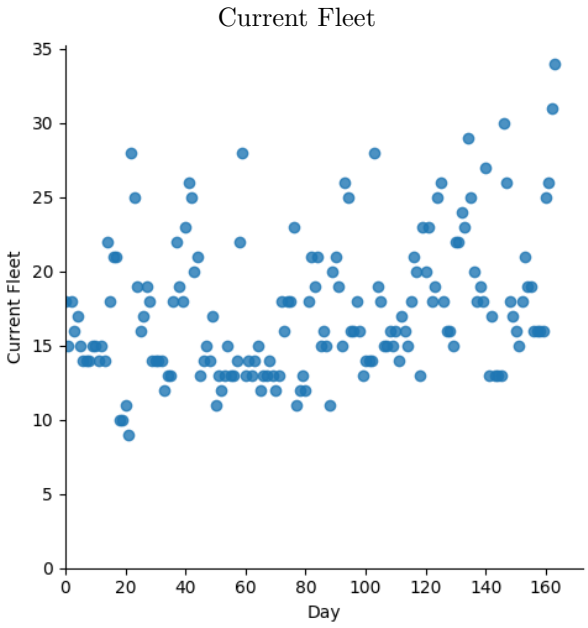
3.1 Standard deviation

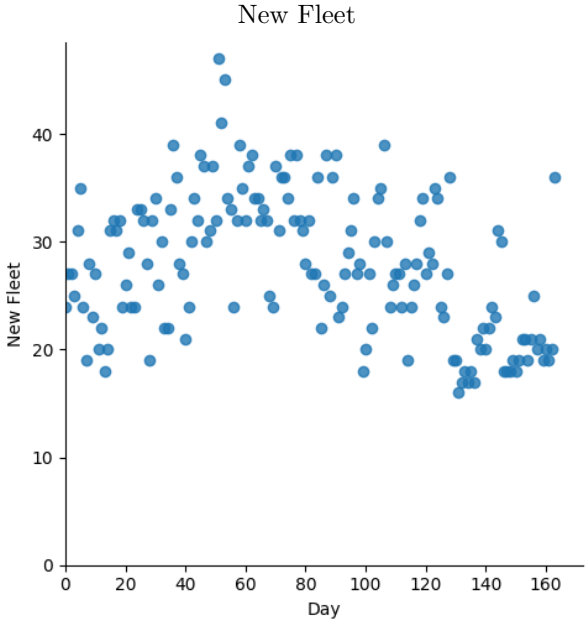
Standard deviation will be calculated by: $S = \sqrt{\frac{\sum(X-\bar{X})^2}{N}}$

We will use the Python Numpy.std() to give us the result.

3.2 Scattergraphs

The scattergraphs are produced using the Seaborn lmplot() function.

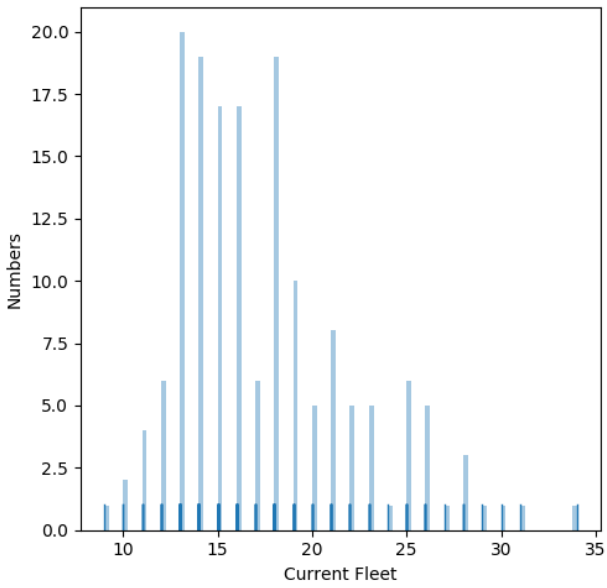




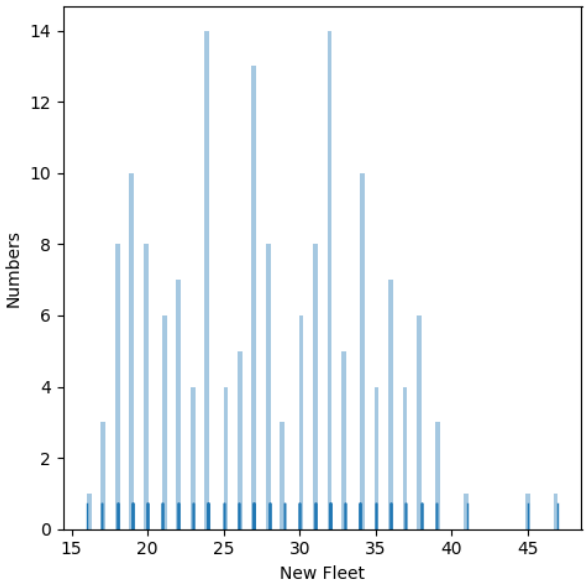
3.3 Histograms

The Histrograms are produced using the Seaborn distplot() function.

Current Fleet

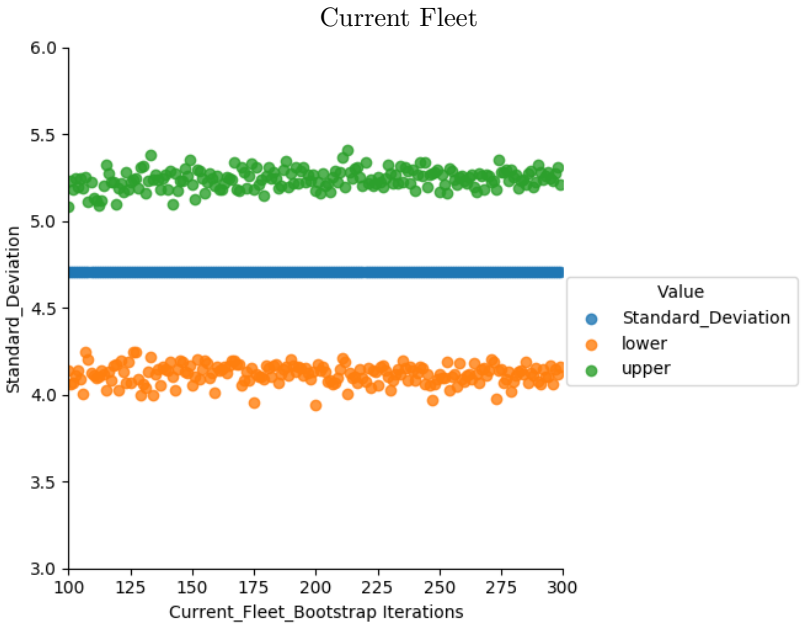


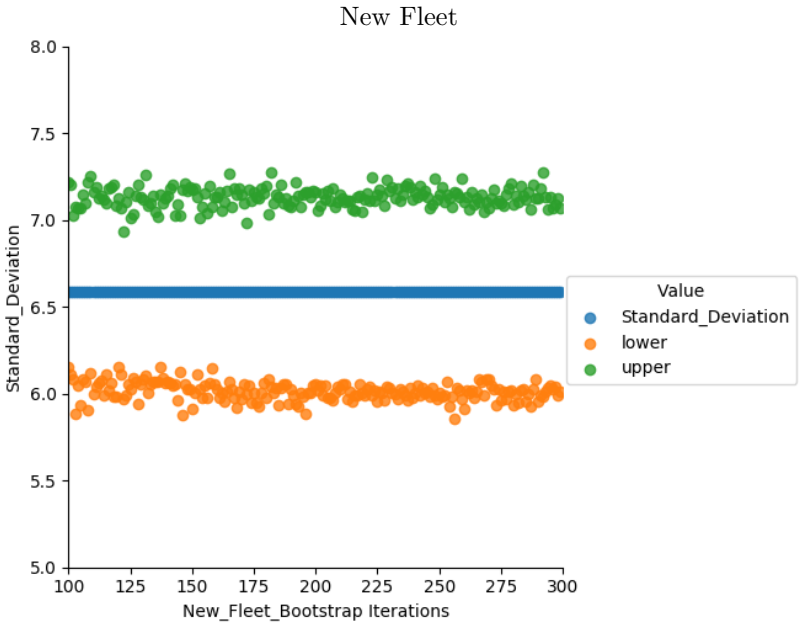
New Fleet



3.4 Confidence

The confidence graphs are produced using the Seaborn lmplot() function.





4 Conclusion

It is clear from the graphs that the Current Fleet is performing better the the New Fleet, the Standard Deviation shows the the standard deviation of the Current Fleet is less ≈ 1.9 MPG then the New Fleet.