Current Vs. Proposed Fleet MPG Comparison and Analysis

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***Abstract*— This paper presents a brief comparison and analysis of the fuel consumption of the current and proposed fleet vehicles.**

I. INTRODUCTION

We aim to replace the current fleet with a more efficient fleet to save money and reduce out emissions. The MPG figures for new current and proposed fleets have been provided for statistical analysis.

II. SUMMARY STATISTICS

Summary statistic were obtained from the MPG data for both the current and proposed fleets:

A. Current Fleet

TABLE I
CURRENT FLEET

Mean	20.144578
Median	19.000000
Var	40.983113
std	6.401805
MAD	4.000000

B. Proposed Fleet

TABLE II
PROPOSED FLEET

Mean	30.481013
Median	32.000000
Var	36.831918
std	6.068931
MAD	4.000000

III. SCATTER PLOT AND HISTOGRAMS

Graphs are presented to visualize the data.

A. Scatter Plot

A scatter plot was created from the current and proposed fleet MPG data found in `vehicles.csv`. It visually presents the change in MPG obtained by upgrading the current fleet.

B. Histograms

A histogram was created for each of the current and proposed fleets to illustrate the deviation in MPG amongst the vehicles.

Fig. 1. MPG of Vehicles in the Proposed Fleet Against MPG of Vehicles in the Current Fleet

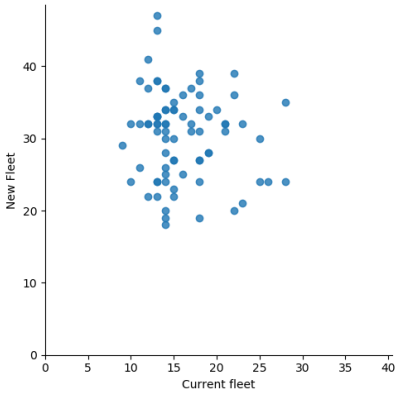
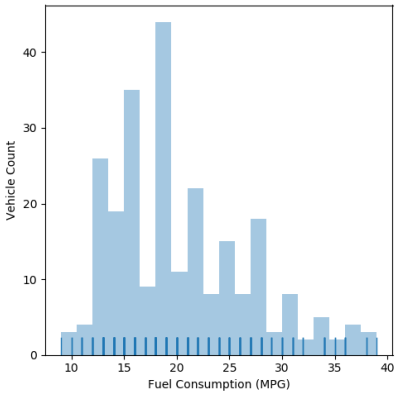


Fig. 2. MPG Deviation for Vehicles in the Current Fleet



IV. STANDARD DEVIATION COMPARISON VIA THE BOOTSTRAP

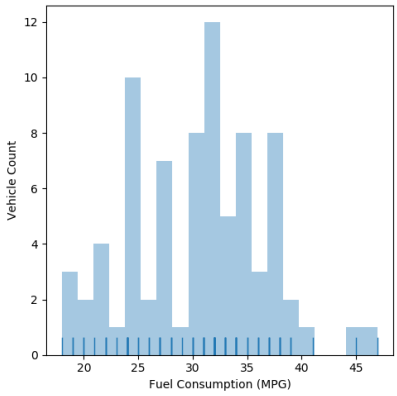
Upper and lower bounds and the mean was calculated for the standard deviation of both the current fleet MPG data and the proposed fleet MPG data using bootstrapping over 100,000 samples. The current fleet shows greater standard deviation but with bounds tending towards higher MPG values.

A. Current Fleet

TABLE III
PROPOSED FLEET

STD Mean	6.383275
STD Lower Bound	5.806590
STD Upper Bound	6.950165

Fig. 3. MPG Deviation for Vehicles in the Proposed Fleet



B. *Proposed Fleet*

TABLE IV
PROPOSED FLEET

STD Mean	6.011853
STD Lower Bound	5.143167
STD Upper Bound	6.910813