Numerical Summarization and Correlation Practice Problems

1. Presidential Inaugural Address Words

MEAN: 2338.965517
MEDIAN: 2133.5

Determine and interpret the quartiles:
Quartiles:

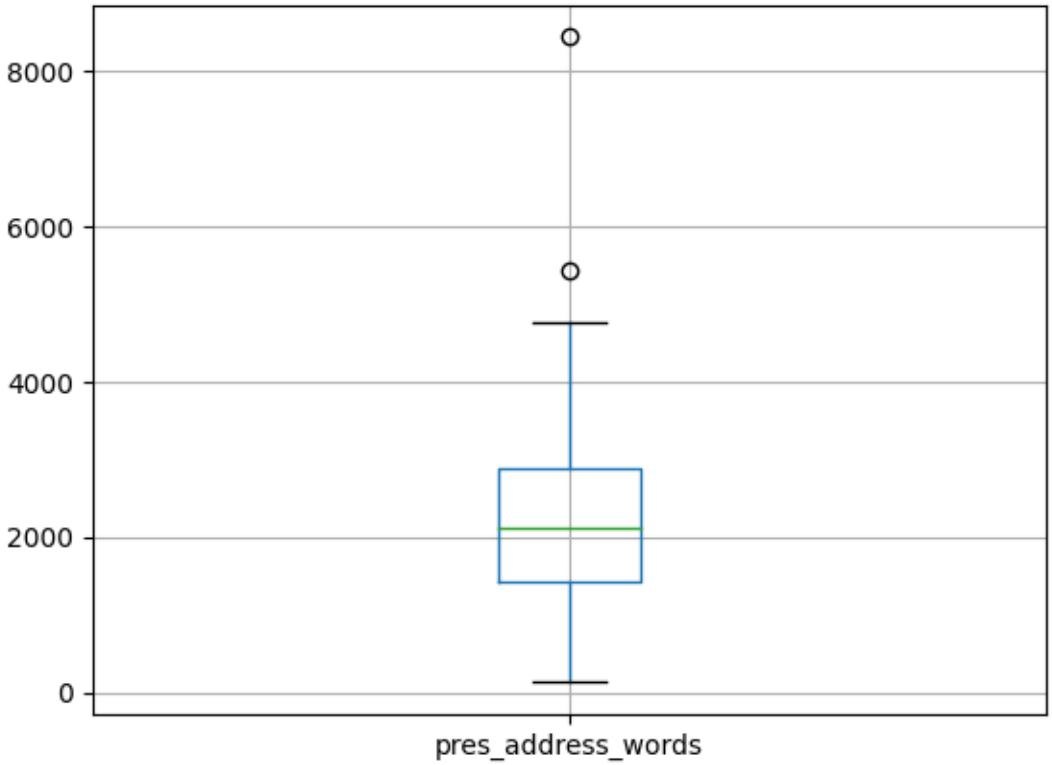
0.25	1427.00
0.50	2133.50
0.75	2884.75

25% of the addresses have 1427 words or less
50% of the addresses have 2133.50 words or less
75% of the address have 2884.75 words or less

MIN: 135
25%: 1427
MEDIAN: 2133.5
75%: 2884.75
MAX: 8445

Standard Deviation: 1386.495822
IQR: 1457.75

Outliers Are: 8445 and 5433

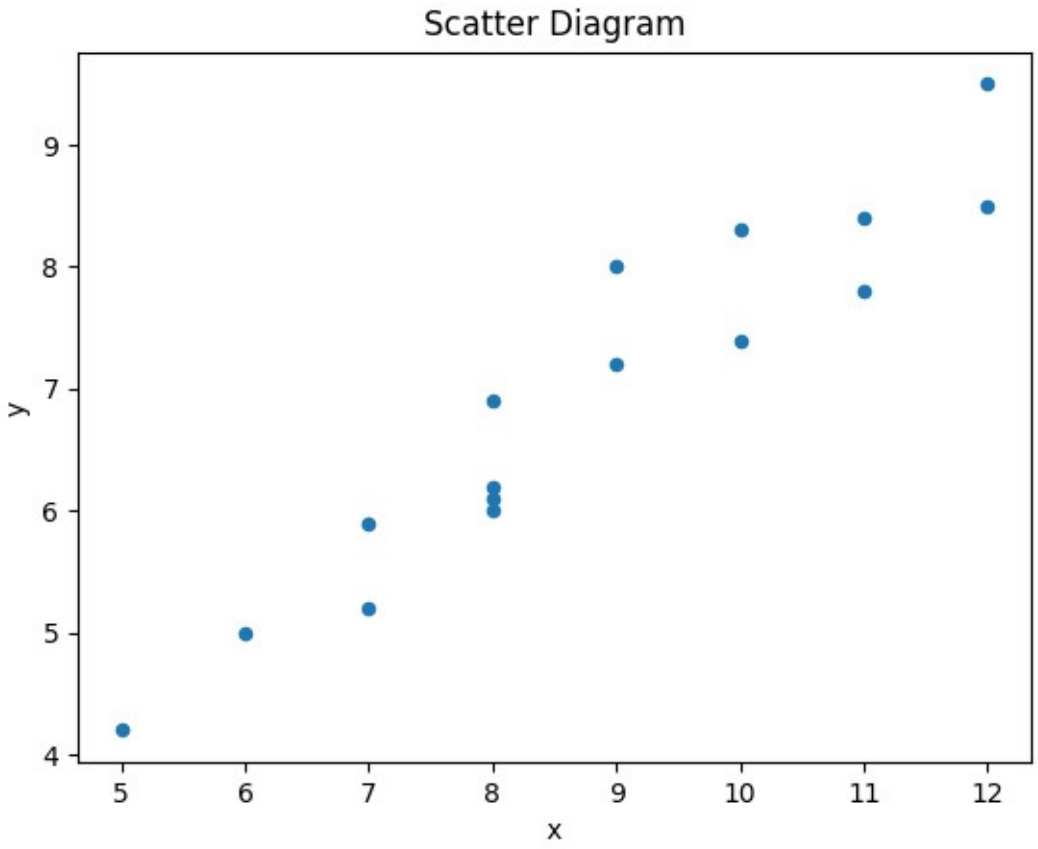


The data looks quite evenly distributed between a few hundred words and a few thousand. The 25th quartile is around 1400, the median is around 2000, and the 75th is around 3000. The majority of the data seems bunched up around 2000 words.

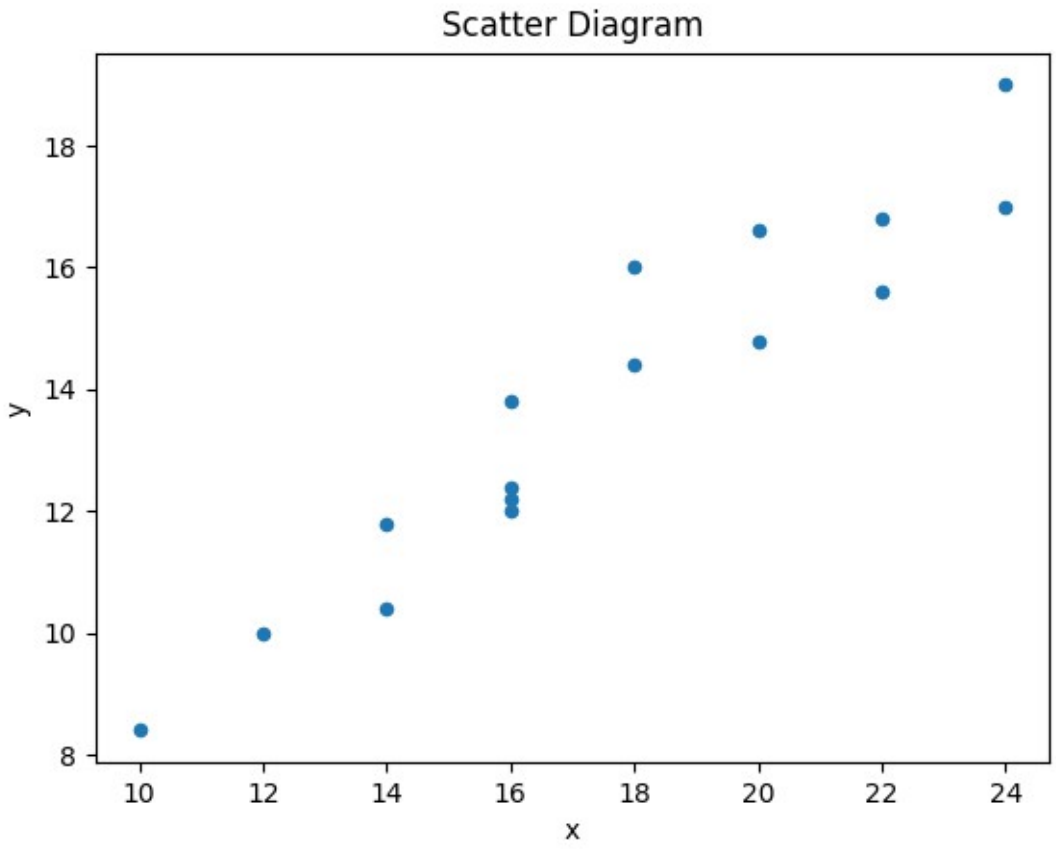
I think the mean and median are both good at describing the data as they are both very close together. They are only a few hundred words off from each other so they both describe this data quite nicely.

I think standard deviation is a good measure of dispersion to describe the data, but I think interquartile range could also work really well because the values are also really close.

2. Synthetic Data



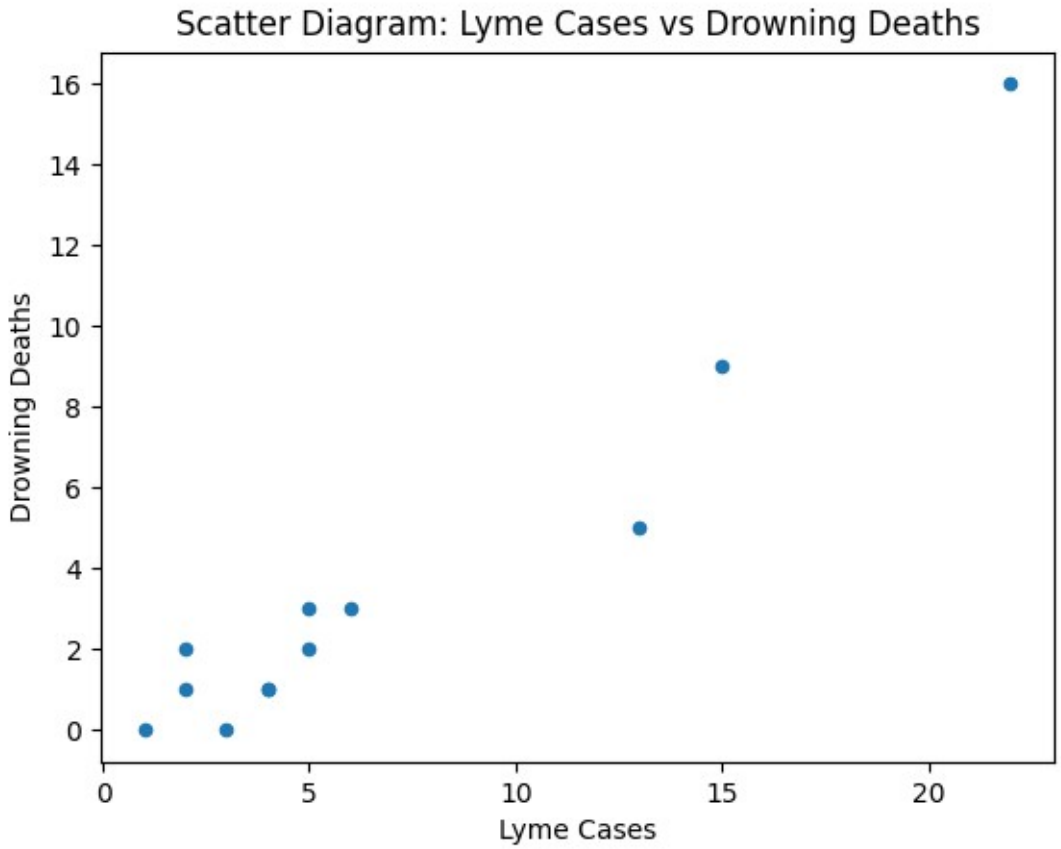
Linear Correlation Coefficient: 0.951842703235362



Linear Correlation Coefficient Times 2: **0.951842703235362**

The correlation does not change because all of the values increase the same in relation to each other. As long as both axes are changed at the same rate the plots will look the same.

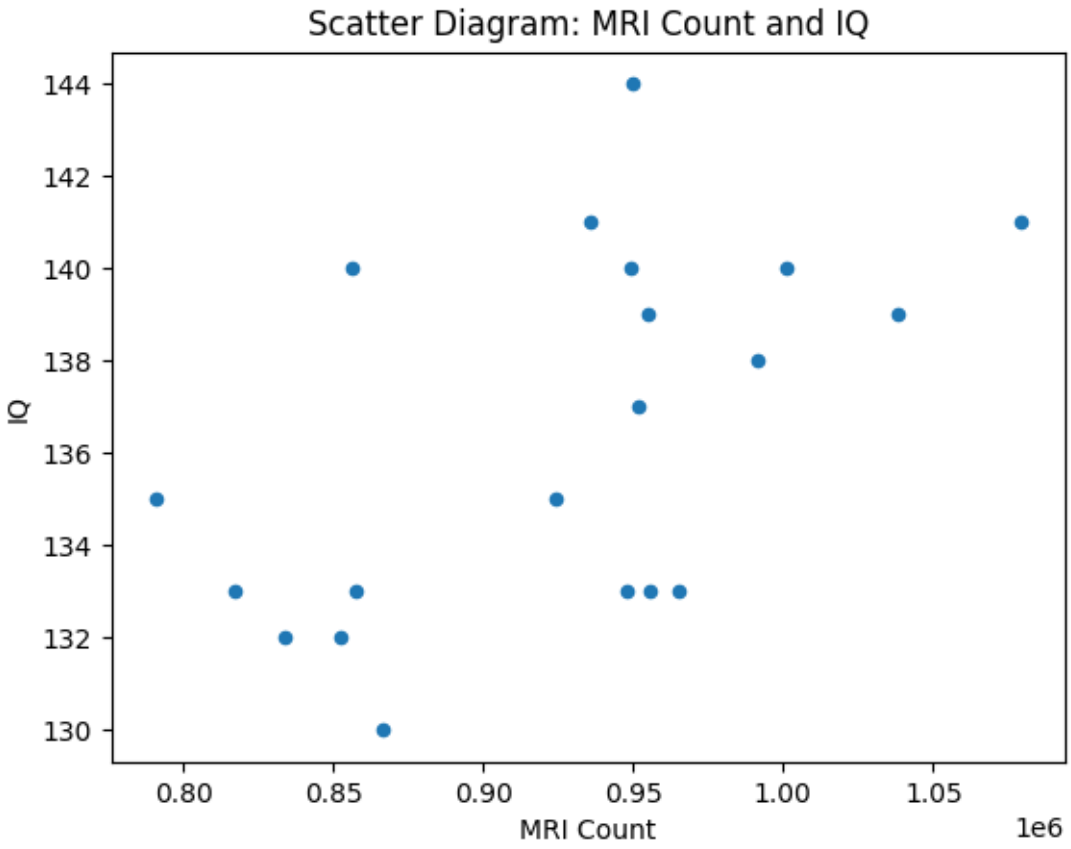
3. Lyme Disease



Correlation coefficient: 0.9613334109635328

According to the data lyme disease cases and drowning deaths appear to be correlated. As lyme cases increases so do the amount of drowning deaths. However this doesn't necessarily mean that one causes the other. The most cases for lyme and drowning happen in summer months, which is generally when people are outside in nature more, and swimming in the water. So while they do appear to be correlated, I don't believe that one is directly related to the other.

4. MRI Count and IQ



Correlation between MRI count and IQ: 0.5482853155116174

MRI count and IQ do seem to be a little correlated as there does appear a slight upward trend on the scatter plot.

Male MRI count and IQ correlation: 0.2360995702129398
Female MRI count and IQ correlation: 0.35909793619010294

When looking at the correlation coefficient separately for males and females the correlation appears to actually be in fact quite weak. Thus there doesn't seem to be a very strong correlation between MRI count and IQ.