Assignment – 1

Principles of Data Science

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Data Set: Frailty Data Set

index	Height (Inches)	Weight (Pounds)	Age	Grip strength	Frailty	frailty	frailty_binary
0	65.8	112	30	30	N	No	0
1	71.5	136	19	31	N	No	0
2	69.4	153	45	29	N	No	0
3	68.2	142	22	28	Y	Yes	1
4	67.8	144	29	24	Y	Yes	1
5	68.7	123	50	26	N	No	0
6	69.8	141	51	22	Y	Yes	1
7	70.1	136	23	20	Y	Yes	1
8	67.9	112	17	19	N	No	0
9	66.8	120	39	31	N	No	0

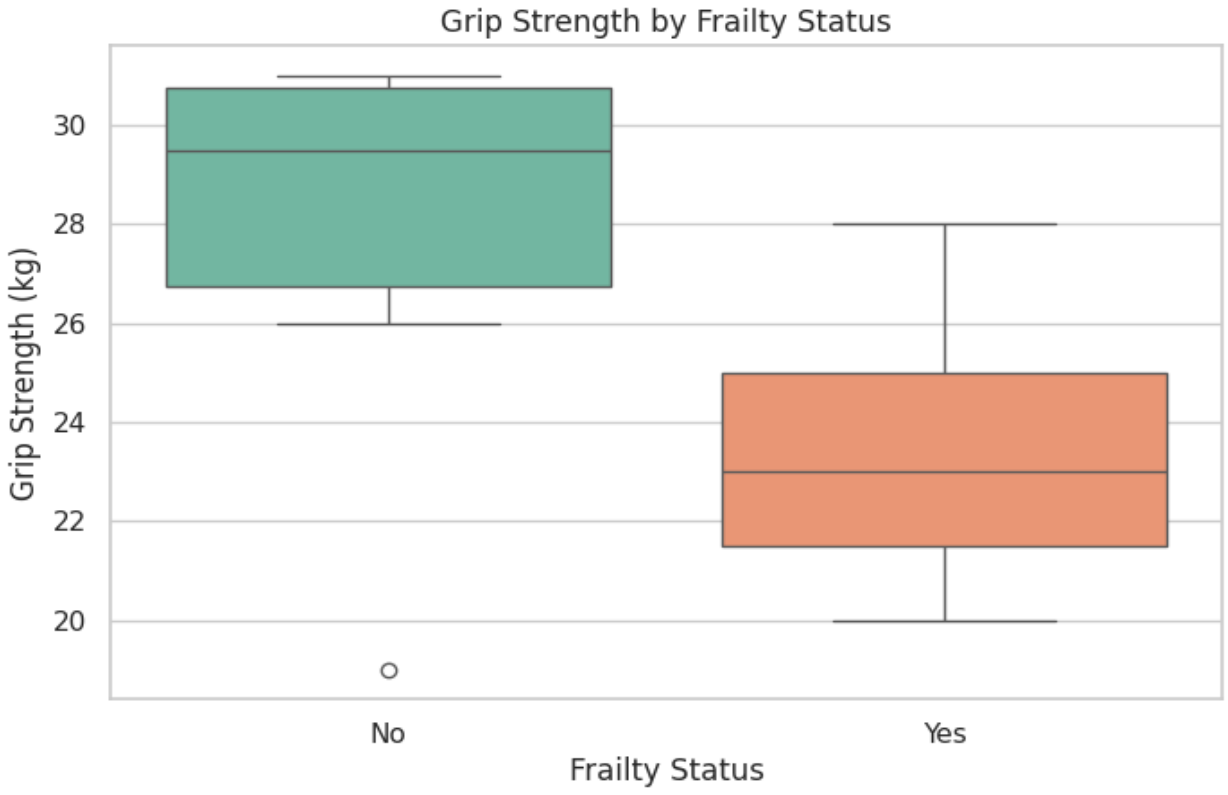
Interpretation of the generated plots

The following three types of plots were generated on the cleaned data set.

1. Box plot
2. Count plot
3. Scatter plot

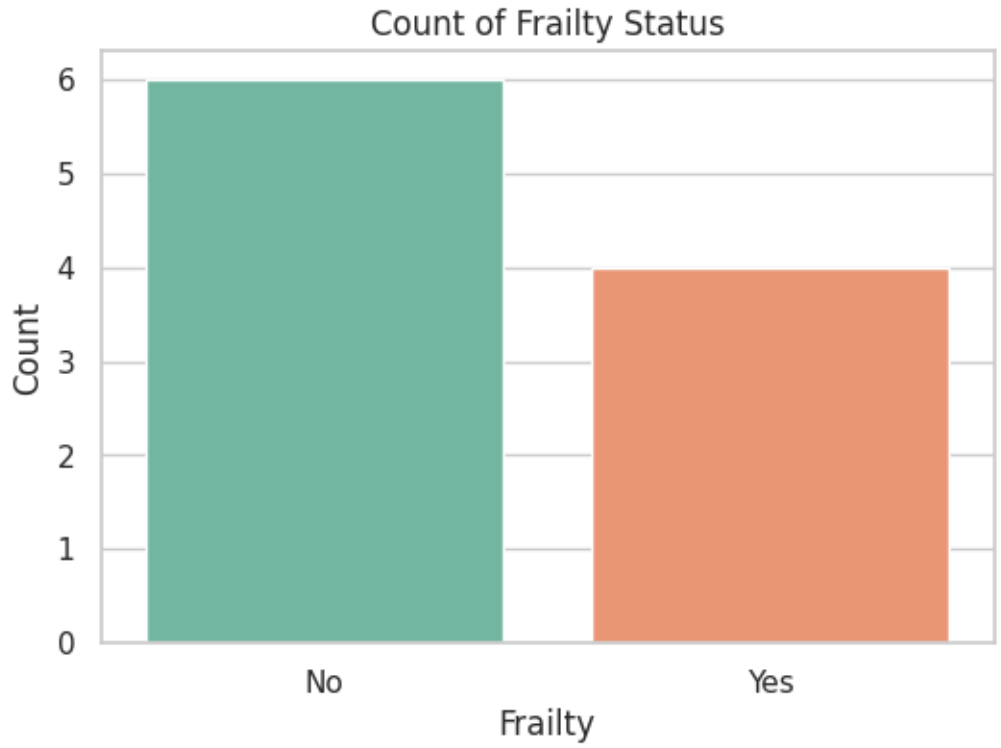
1. Boxplot of Grip Strength by Frailty Status

The boxplot shows that non-frail individuals have a higher median grip strength compared to frail individuals. The interquartile range (IQR) is broader for non-frail individuals, indicating more variability in grip strength. Frail individuals have lower and more consistent grip strength values. A clear separation between the two groups suggests grip strength is a good indicator of frailty. This visualization supports the association between lower grip strength and increased frailty. If the boxplot shows a significant difference in the median grip strength between frail and non-frail individuals, it suggests that grip strength is a useful indicator of frailty.



2. Count plot of Frailty Status

The count plot reveals that there are more non-frail individuals than frail individuals in the dataset. This distribution indicates frailty is less common in the sample population. The higher count of non-frail individuals shows the dataset is skewed toward healthier participants. Understanding this distribution helps in contextualizing further analysis and intervention planning. This will indicate how many participants are frail versus non-frail, providing context for the distribution of your dataset



3. Scatter Plot of Age vs. Grip Strength

The scatter plot shows a negative correlation between age and grip strength, with grip strength decreasing as age increases. Frail individuals generally have lower grip strength compared to non-frail individuals across all ages. The visual separation between frail and non-frail groups highlights how both age and frailty status influence physical strength. This plot effectively demonstrates the combined impact of aging and frailty on grip strength. By examining the scatter plot, you can observe if there's any correlation between age and grip strength, and whether frailty status impacts this relationship.