First checked for null variables and removed them

After I try to find outliers using iqr where I cant able to find any outliers. Represents the range between the 25th and 75th percentiles of the data. It is less sensitive to outliers compared to the standard deviation and gives a robust measure of spread. In my opinion thats why it did not find any outliners when we find using this method.

After I try to find using Z score then I found around 257 rows , after finding them I removed the variables from the dataset named the df as df\_clean

Then I try to find null values again then I found 19 varibales I removed using dropna() and names the df as df\_cleaned .

After I found mean median std and iqr for the values , I found that the mean and median values are nearly similar which indicates that the dataset is well balanced .

After that I plot the values in histogram which is used to summarize continuous data that are measured on an interval scale. It is often used to show the major features of the distribution of the data in a convenient form

For LB starts from 60 and ends at 210 but has high frequency at range of 130-140.

For AC the max values lie on 0.00 as range is from (-0.02 to 0.04)

For FM we can find a very little frequency graph which is so negligible that very hard to find and the max frequency lies at 0 .

For UC we can find the fluctuation in graph .

For there is max frequency at 0.0 but we can find decrease in frequency pattern from 0.00 to 0.04

For DC and DP max frequency lies at 0.00

For ASTV and MSTV there are many values which has a very good frequency so that we can find a slight variations in their graph .

For tendency it lies between -1 0 and 1

For NSP we can see frequency in 1, 2, 3.

For **Violin Plot** the white dot in black box represent the median of the values and the black box type thing represent interquartile range violin graph represent the distribution of numeric graph using density curve , where the graph is wide it contain more data points it is opposite for narrow side .

**Co-relation :**

Key Correlations and Their Implications:

UC and DL: 0.280 (moderate correlation)

UC and DP: 0.178 (moderate correlation)

DL and DP: 0.312 (moderate correlation)

LB and AC: -0.087 (moderate correlation)

DL and ASTV: -0.112 (moderate correlation)

ASTV and Width: -0.226 (moderate correlation)

DL and MSTV: 0.563 (moderate correlation)

UC and MSTV: 0.281 (moderate correlation)

Width and MSTV: 0.646 (moderate correlation)

for relation between there is moderate co- relation indicates that there is relation between those two variables but not the perfect relation ship but increase in one can cause increase in other but not in strong manner.

Comparing between them DL and MSTV , Width and MSTV has more moderate positive co- relation between then it indicates that increase in one can  may increase in other but cannot say it as for sure that it will increase

between LB and AC there is very slight negative co relation between two variables decrease in one may decrease in other but has very less chance while comparing Width and MSTV there is more chance of increase if one of the variable increases.

**Temporal Data :**

There was a general upward trend in LB over time, indicating increasing long-term variability , there is more density in begining compared to last indicates many suffered during 2020 -2060

In AC we can find fluctuations but remained low throught the time with some fluctuations during end time the value of AC increased during the graph the maximum values are stayed low but during 2140 and 2160 the values increased

FM displayed an increasing trend, especially notable towards start of the period, indicating more frequent fetal movements during in middle it became low and at the end we can find there is a slight increase in its value

The trends of UC shows a increase overtime there is a constant increase in values of UC the range of value of UC increased iver time form (0.02,0.04) the range increases over time .