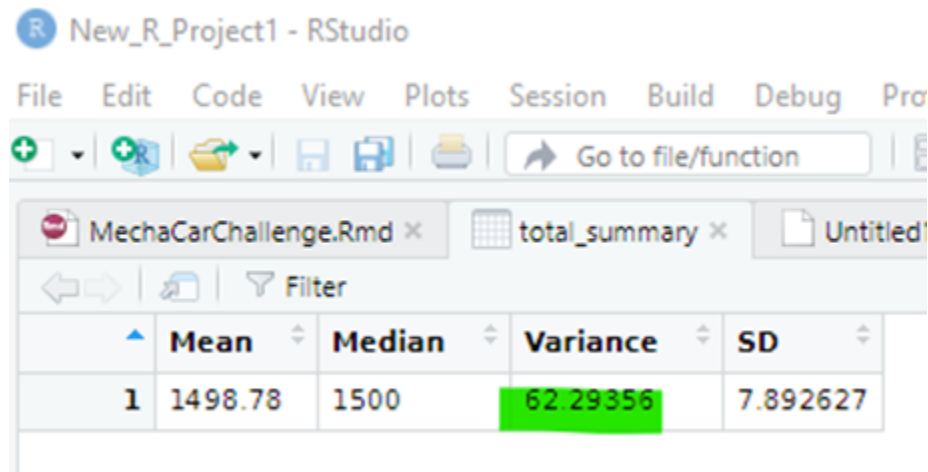


Summary Statistics on Suspension Coils

The manufacturing data for all lots (Figure 1 below) shows that the suspension coil variance is 62.29356, below the limit of 100 pounds per square inch.

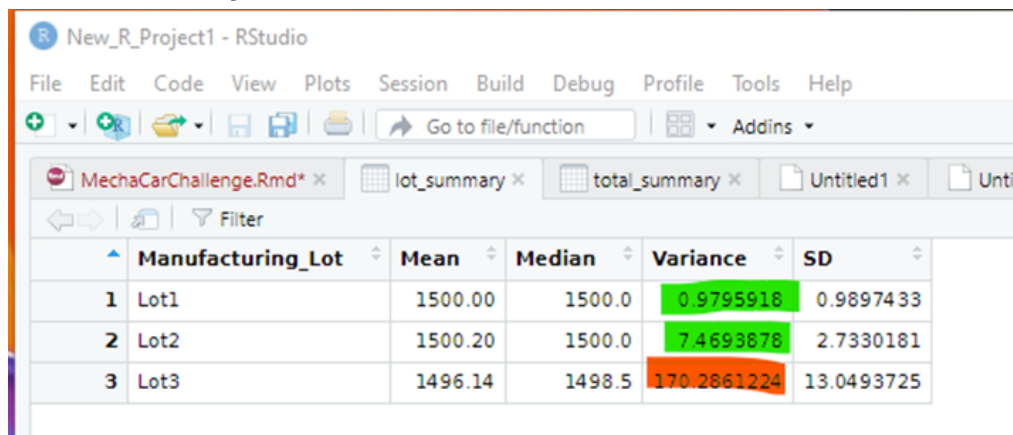


The screenshot shows the RStudio interface with a table of summary statistics. The table has five columns: an index, Mean, Median, Variance, and SD. The Variance value 62.29356 is highlighted in green.

	Mean	Median	Variance	SD
1	1498.78	1500	62.29356	7.892627

However, the per-lot breakdown of the data shows Lot3 has a suspension coil variance of 170.2861224, which is above the limit of 100 pounds per square inch. Lot 1 (0.9897433) and Lot 2 (7.4693878) are within the variance limit.

T-Tests on Suspension Coi



The screenshot shows the RStudio interface with a table of per-lot statistics. The table has five columns: Manufacturing_Lot, Mean, Median, Variance, and SD. The Variance values for Lot1 (0.9795918) and Lot2 (7.4693878) are highlighted in green, while the Variance for Lot3 (170.2861224) is highlighted in orange.

	Manufacturing_Lot	Mean	Median	Variance	SD
1	Lot1	1500.00	1500.0	0.9795918	0.9897433
2	Lot2	1500.20	1500.0	7.4693878	2.7330181
3	Lot3	1496.14	1498.5	170.2861224	13.0493725

Is

I performed t-tests to determine if all manufacturing lots and each lot individually are statistically different from the population mean of 1,500 pounds per square inch

T-test for lot 1 vs. pop. mean of 1500 PSI - *no statistical difference*.

```
> all_lots_psi = coils['PSI']
> t.test(all_lots_psi[['PSI']], mu=1500)

One Sample t-test

data: all_lots_psi[["PSI"]]
t = -1.8931, df = 149, p-value = 0.06028
alternative hypothesis: true mean is not equal to 1500
95 percent confidence interval:
 1497.507 1500.053
sample estimates:
mean of x
 1498.78
```

T-test for lot 2 vs. pop. mean of 1500 PSI - *no statistical difference*.

```
> lot1_psi = subset(coils, Manufacturing_Lot == "Lot1")
> t.test(lot1_psi[['PSI']], mu=1500)

One Sample t-test

data: lot1_psi[["PSI"]]
t = 0, df = 49, p-value = 1
alternative hypothesis: true mean is not equal to 1500
95 percent confidence interval:
 1499.719 1500.281
sample estimates:
mean of x
 1500
```

T-test for lot 3 vs. pop. mean of 1500 PSI - **Yes, a statistical difference**.

```
> lot3_psi = subset(coils, Manufacturing_Lot == "Lot3")
> t.test(lot3_psi[['PSI']], mu=1500)

One Sample t-test

data: lot3_psi[["PSI"]]
t = -2.0916, df = 49, p-value = 0.04168
alternative hypothesis: true mean is not equal to 1500
95 percent confidence interval:
 1492.431 1499.849
sample estimates:
mean of x
 1496.14
```