Mobile Phone Price v/s Battery Capacity
(Simple Linear Regression)

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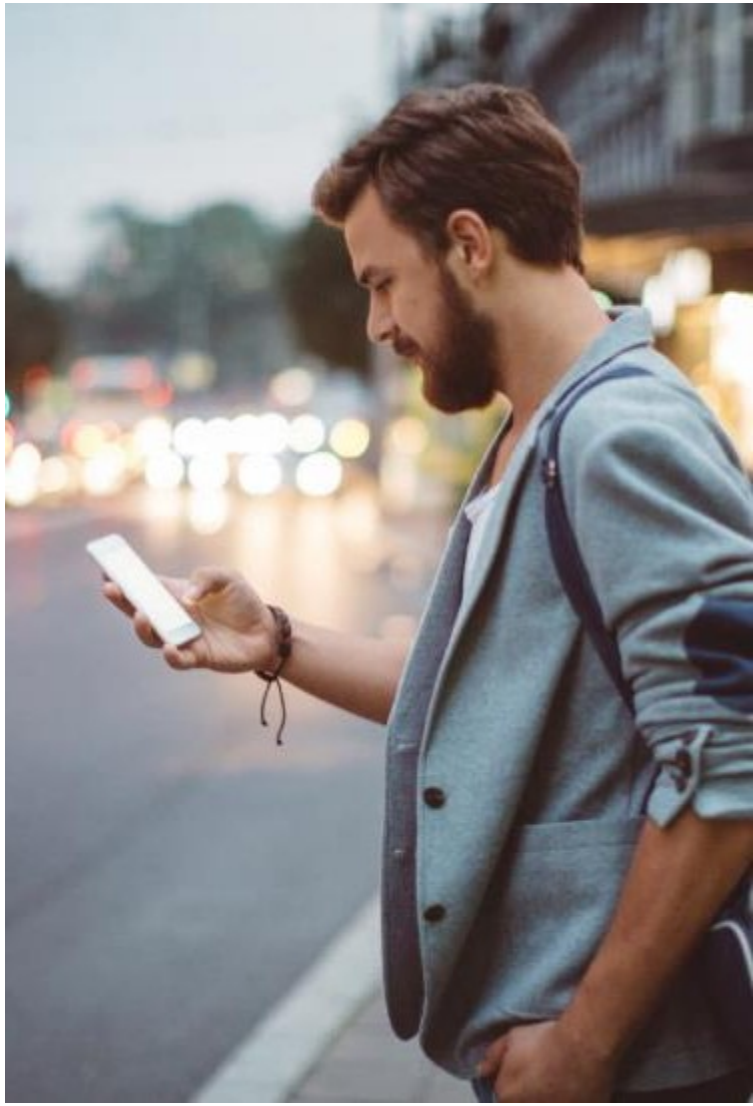
Slido Poll



Results of the Slido Poll

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What is the average screen time of your phone in a day ?

ⓘ Start presenting to display the poll results on this slide.

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What is the battery capacity of your phone ?

ⓘ Start presenting to display the poll results on this slide.

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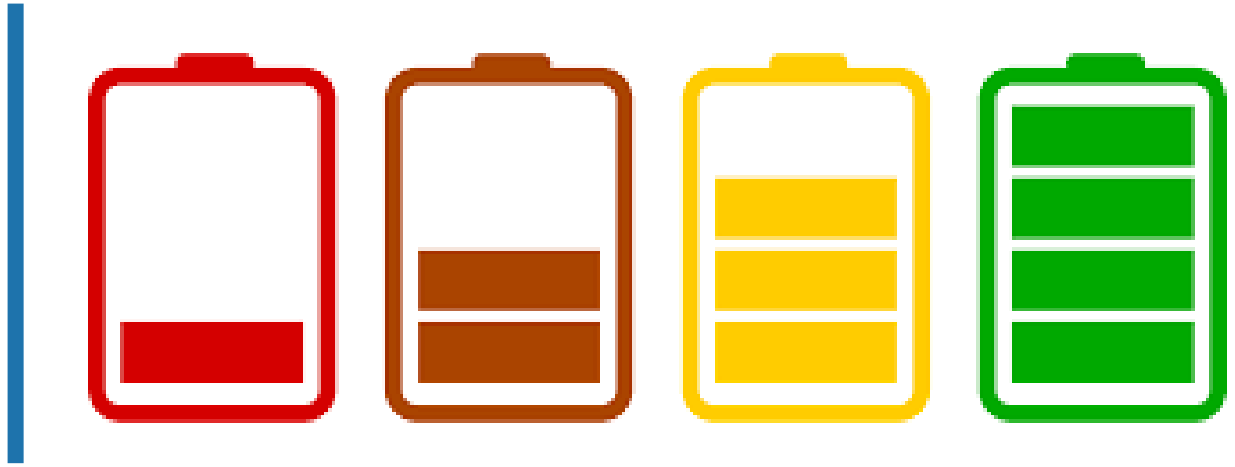
What is the cost of your mobile phone ?

ⓘ Start presenting to display the poll results on this slide.

Description of Data

- This dataset contains information on the prices of several mobile phones from different brands
- The data has been sourced from various business channels, including stores, e-commerce websites, showrooms, and more.
- Simple Random Sampling was used to collect data about the prices of various brands of mobile phones.
- The variables collected for mobile price classification include Brand, Model, Storage, RAM, Screen Size, Camera (MP), Battery Capacity, and Price. These variables constitute key attributes utilized to categorize and define the pricing structure of mobile phones in the dataset.

Does the capacity of the battery affect the price of the smartphone??

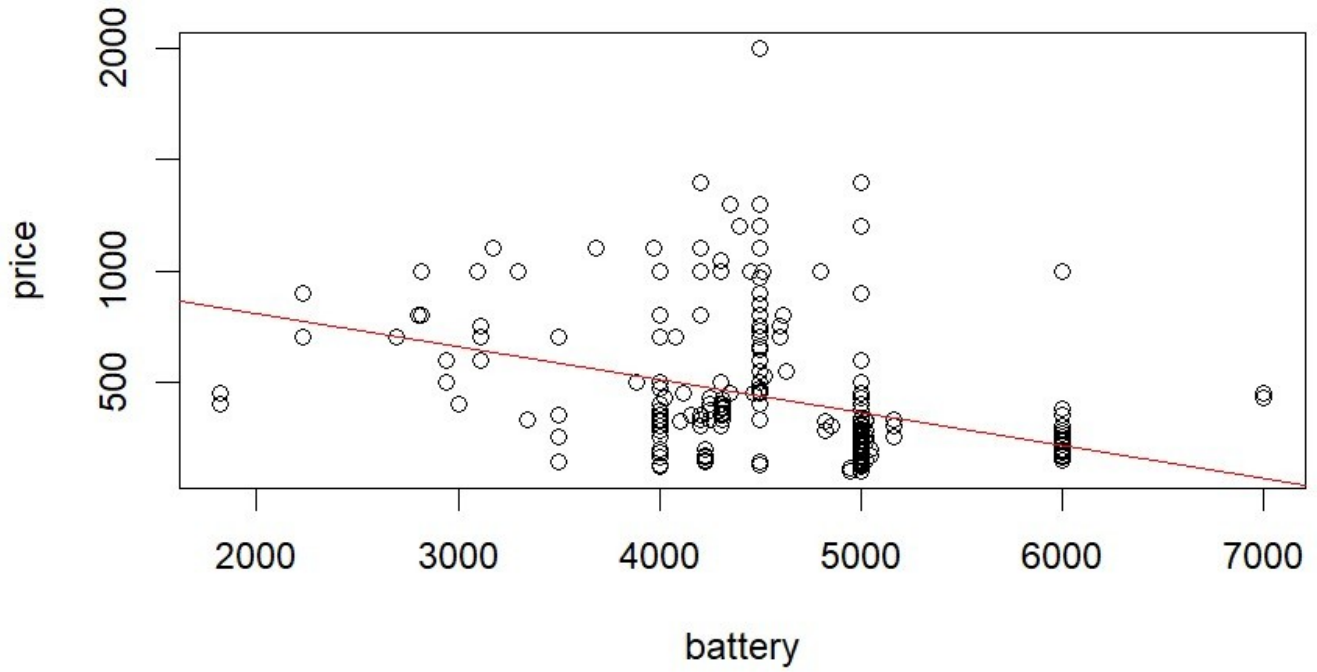


Hypothesis

- **Null Hypothesis (H0) :**
  - The battery capacity and price of the mobile phone are independent variables.
  - $\rho = 0$
- **Alternative Hypothesis(Ha):**
  - The battery capacity and price of the mobile phone are the dependent variables.
  - **ρ != 0**

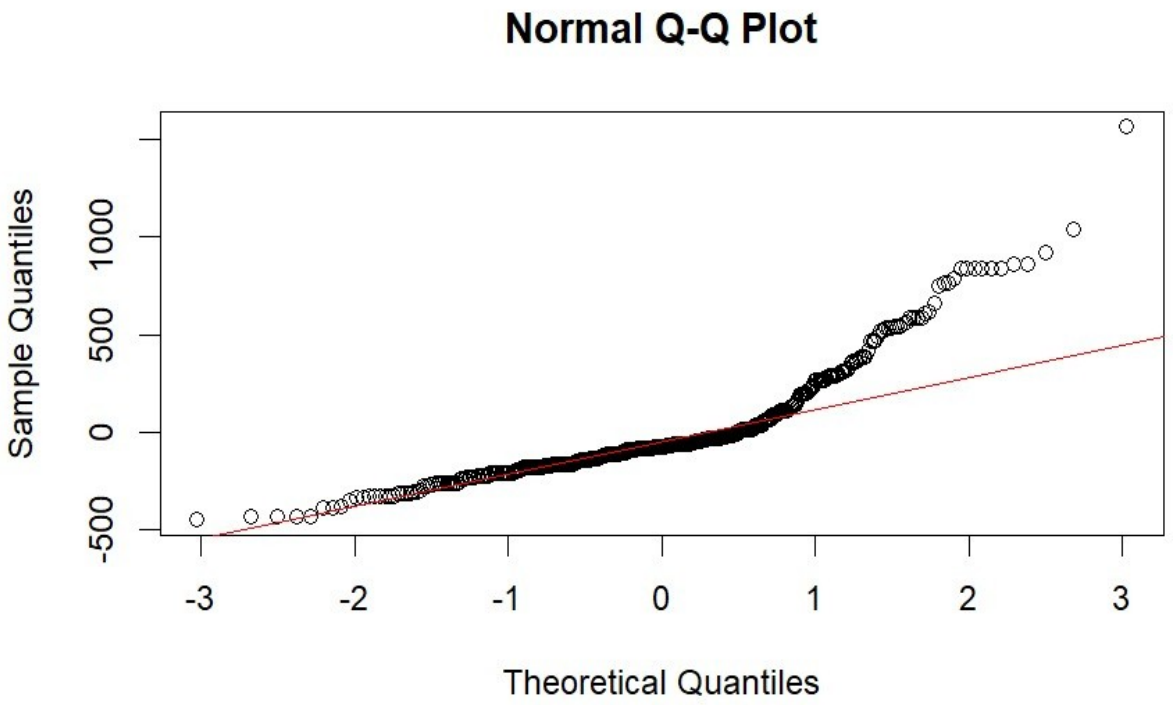
Testing Conditions

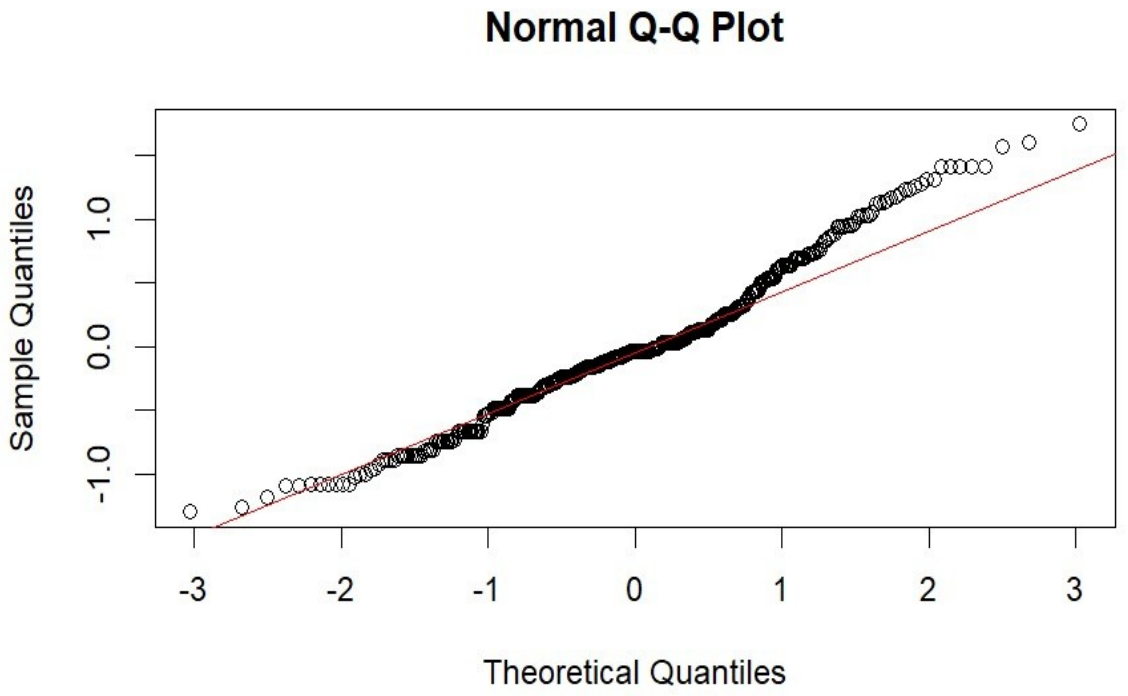
- **Linearity of the data:**
  - The relationship between the predictor (X) and outcome(Y) is assumed to



Testing Conditions

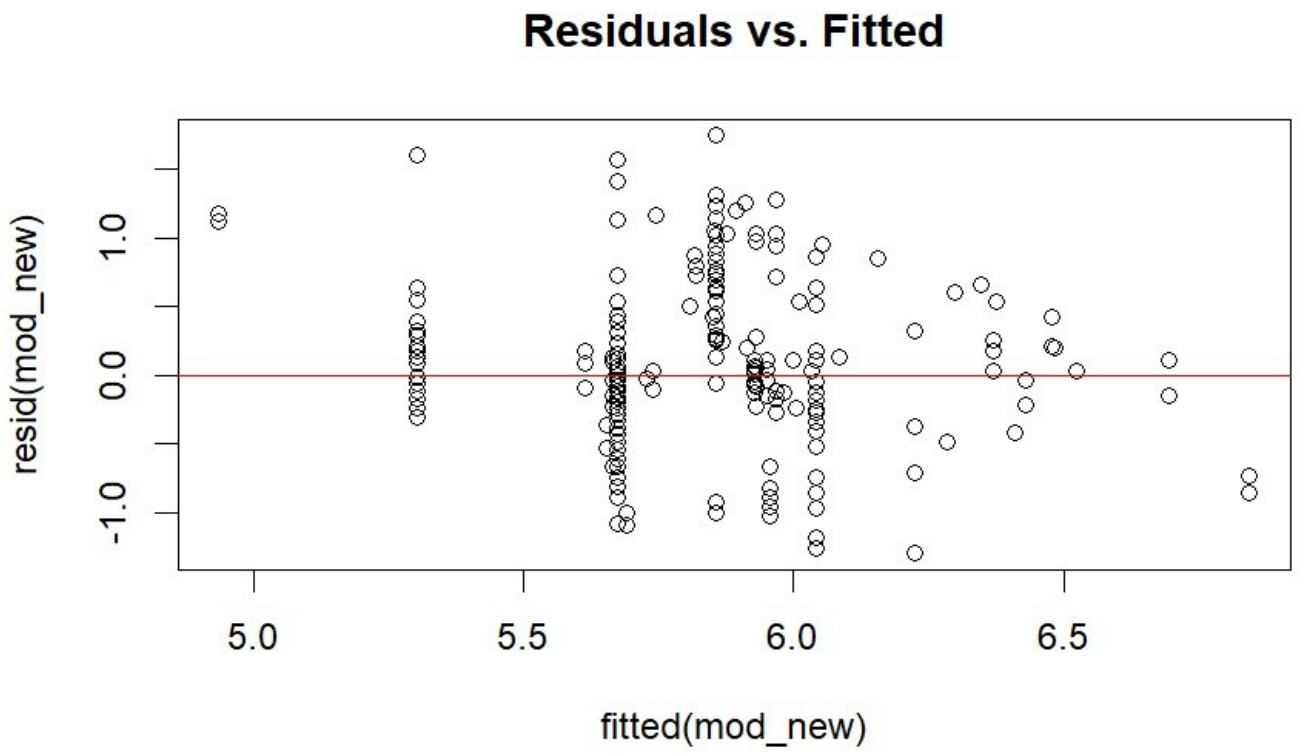
- **Normality of residuals:**
  - The residual errors are assumed to be normally distributed.





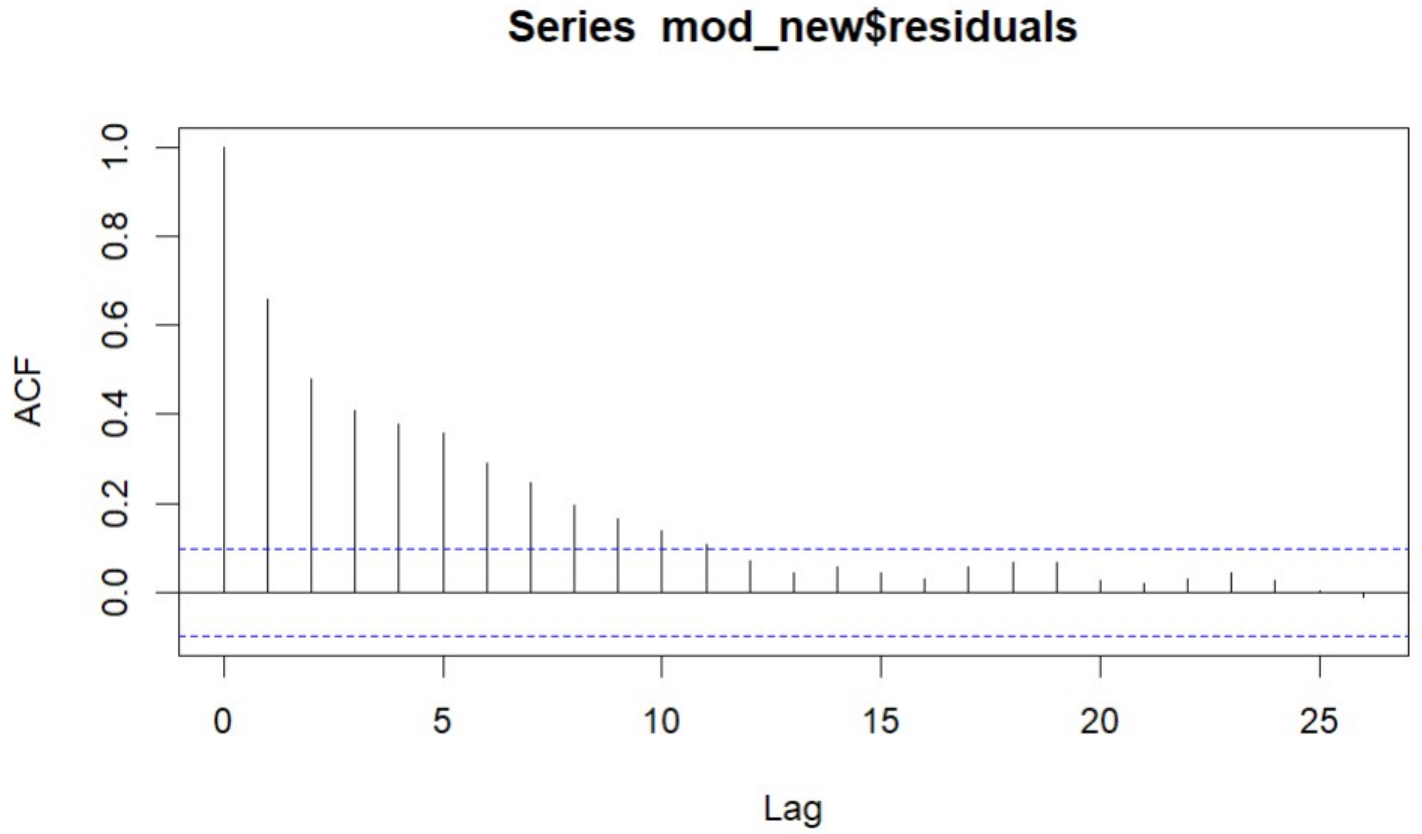
Testing Conditions

- **Homoscedasticity:**
  - The residuals are assumed to have a constant variance.



Testing Conditions

- **Independence of residual error terms**



Summary Statistics

```
Call:
lm(formula = log_price ~ battery, data = Mobile_price)

Residuals:
     Min       1Q   Median       3Q      Max
-1.29091 -0.36587 -0.04193  0.27679  1.74318

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  7.514e+00  1.694e-01   44.36   <2e-16 ***
battery     -3.682e-04  3.571e-05  -10.31   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.5736 on 405 degrees of freedom
Multiple R-squared:  0.2079,    Adjusted R-squared:  0.2059
F-statistic: 106.3 on 1 and 405 DF,  p-value: < 2.2e-16
```

Decision and Conclusion

➢ Decision :

- We reject the null hypothesis as the p-value is less than 0.05.

➢ Conclusion :

- Now we have enough evidence to state that there is a relationship between price and battery capacity of a mobile phone.