



HOUSING SOLUTIONS FOR NORTHEASTERN STUDENTS



• Finding Ideal Accommodation

Based on the characteristics



MOST
REASONABLE
RENT

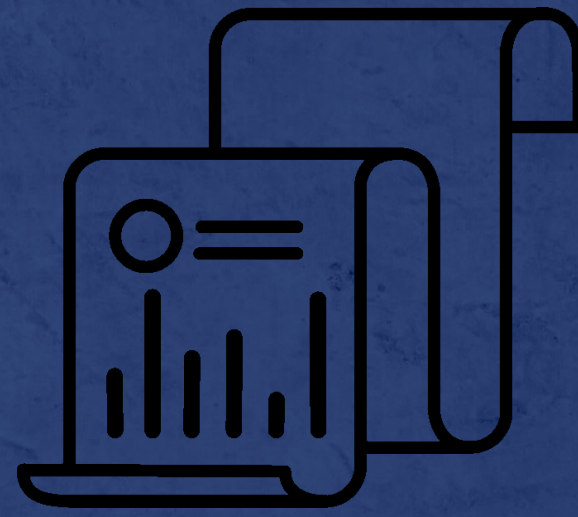


MOST
ACCESSIBLE
LOCATION



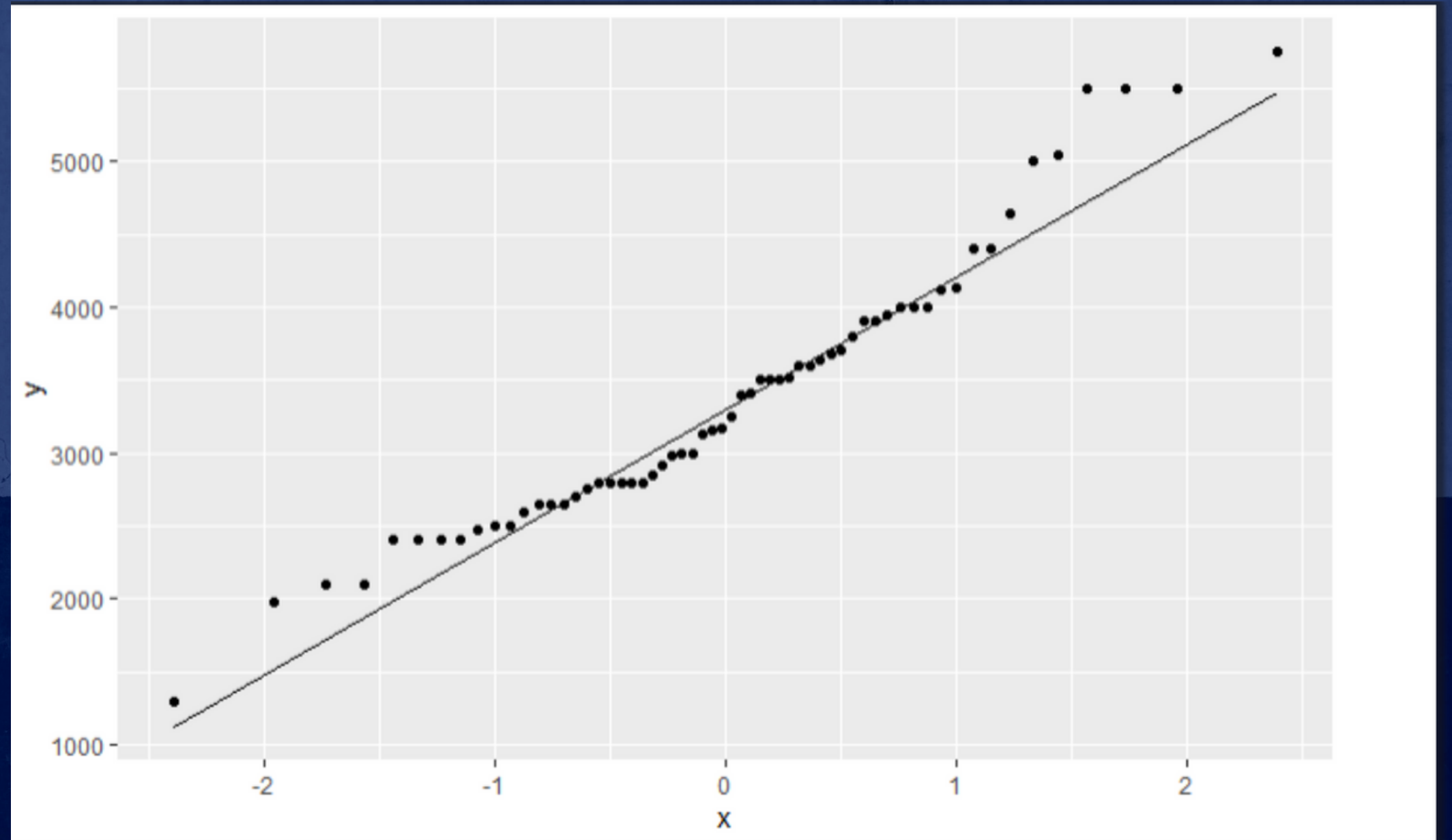
MOST
AFFORDABLE
TRANSPORT

• Data Visualization

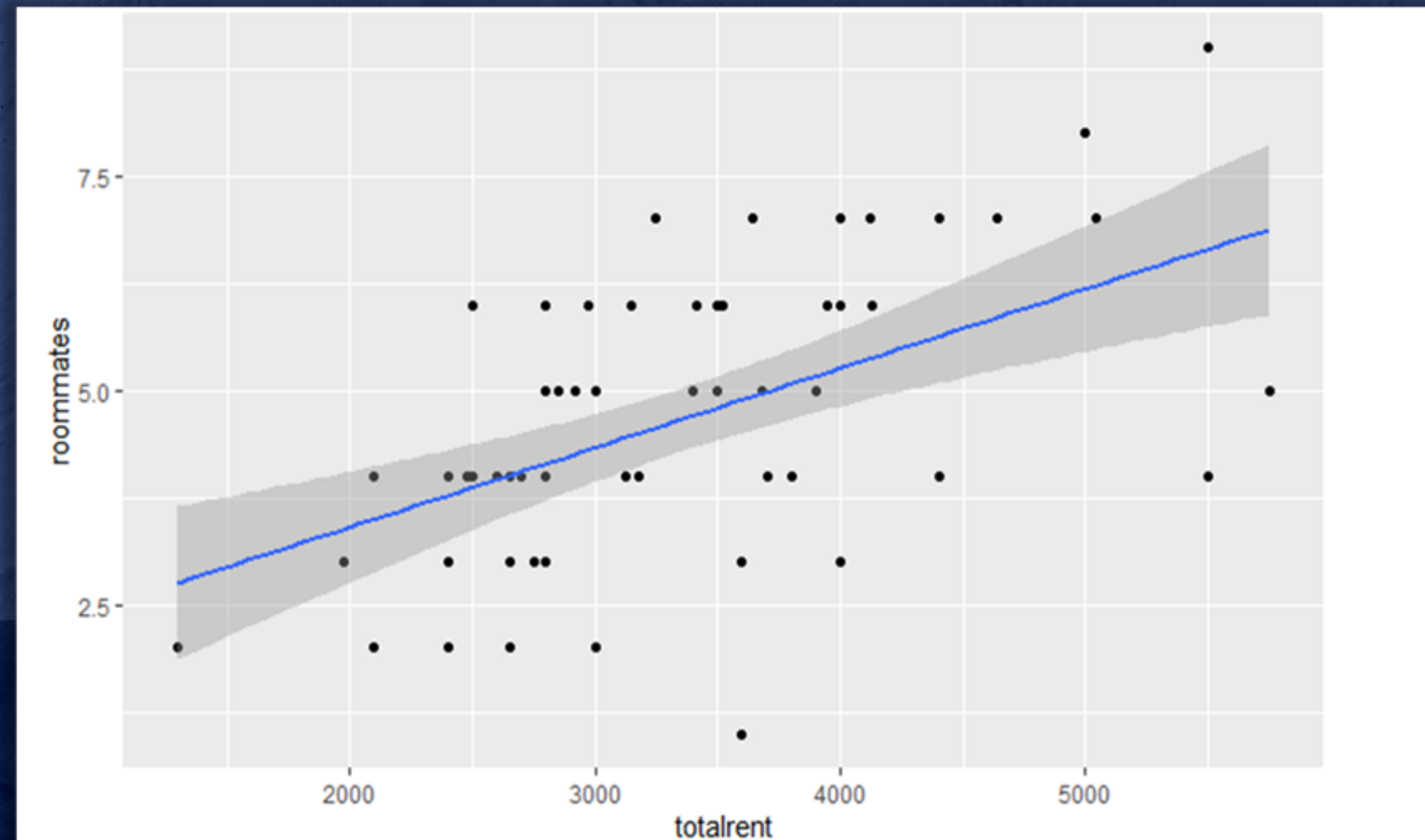


Q-Q Plot

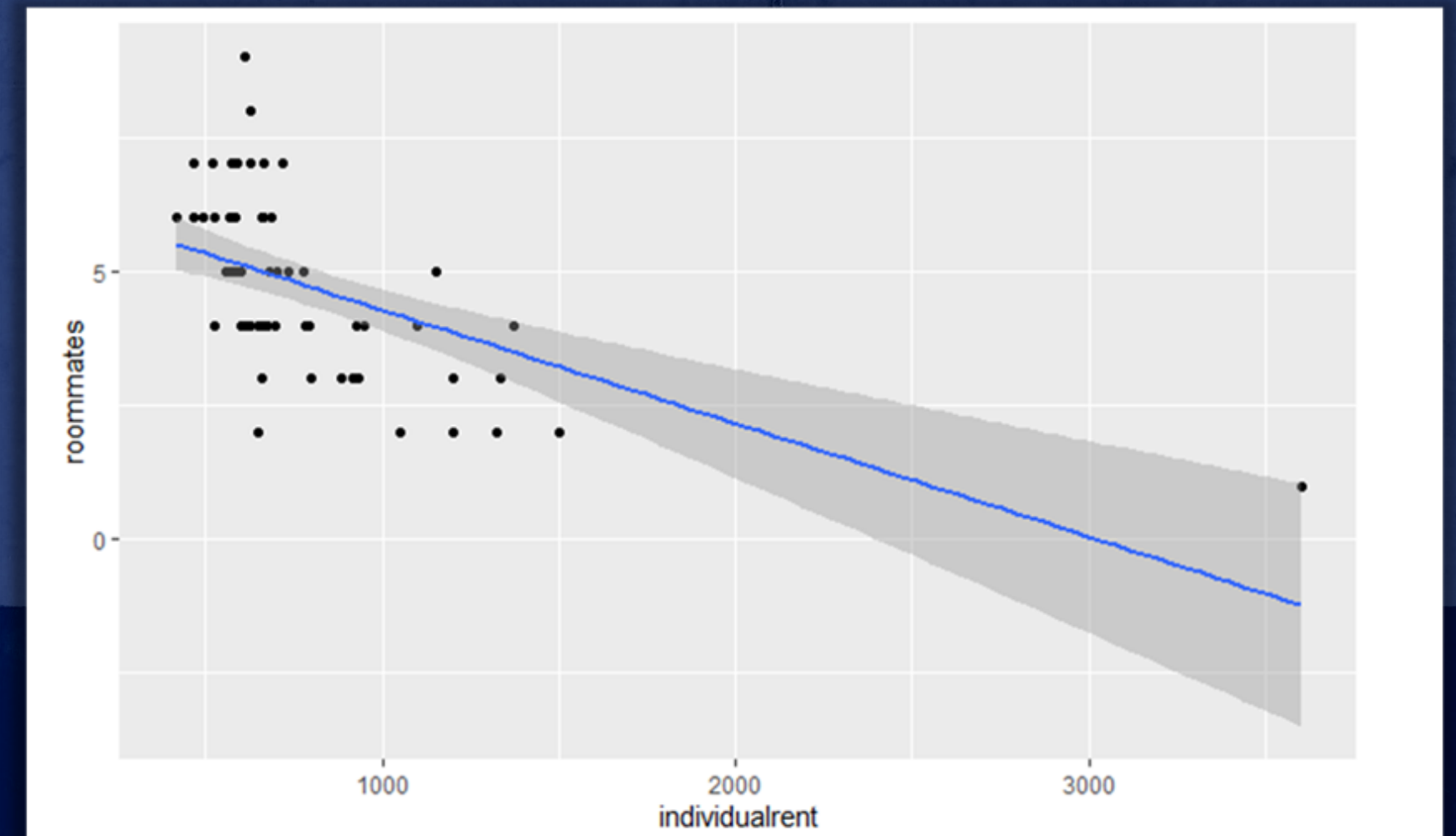
- Distribution of Total rent
- Normality Plot



Scatter Plot

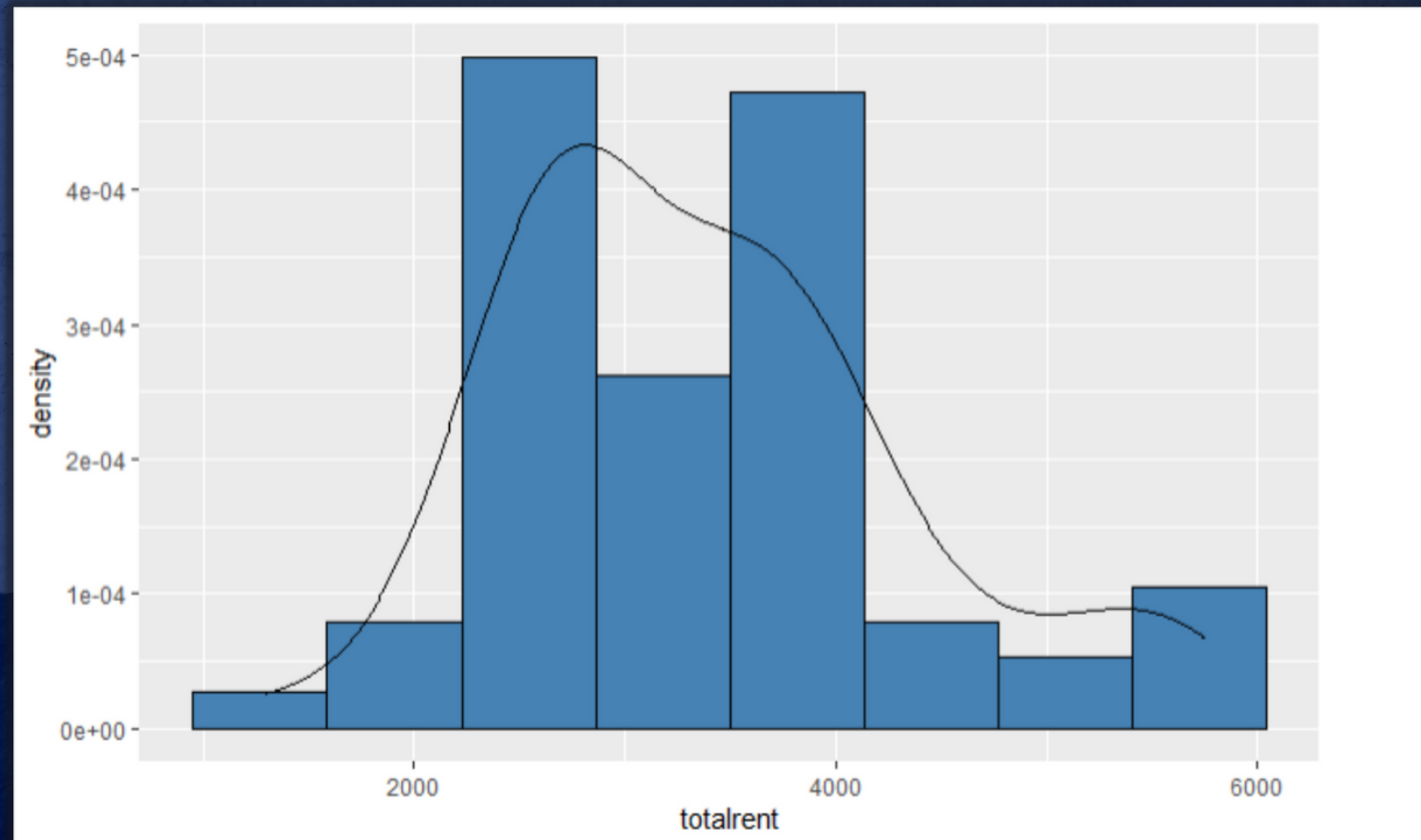


- Total rent vs roommates



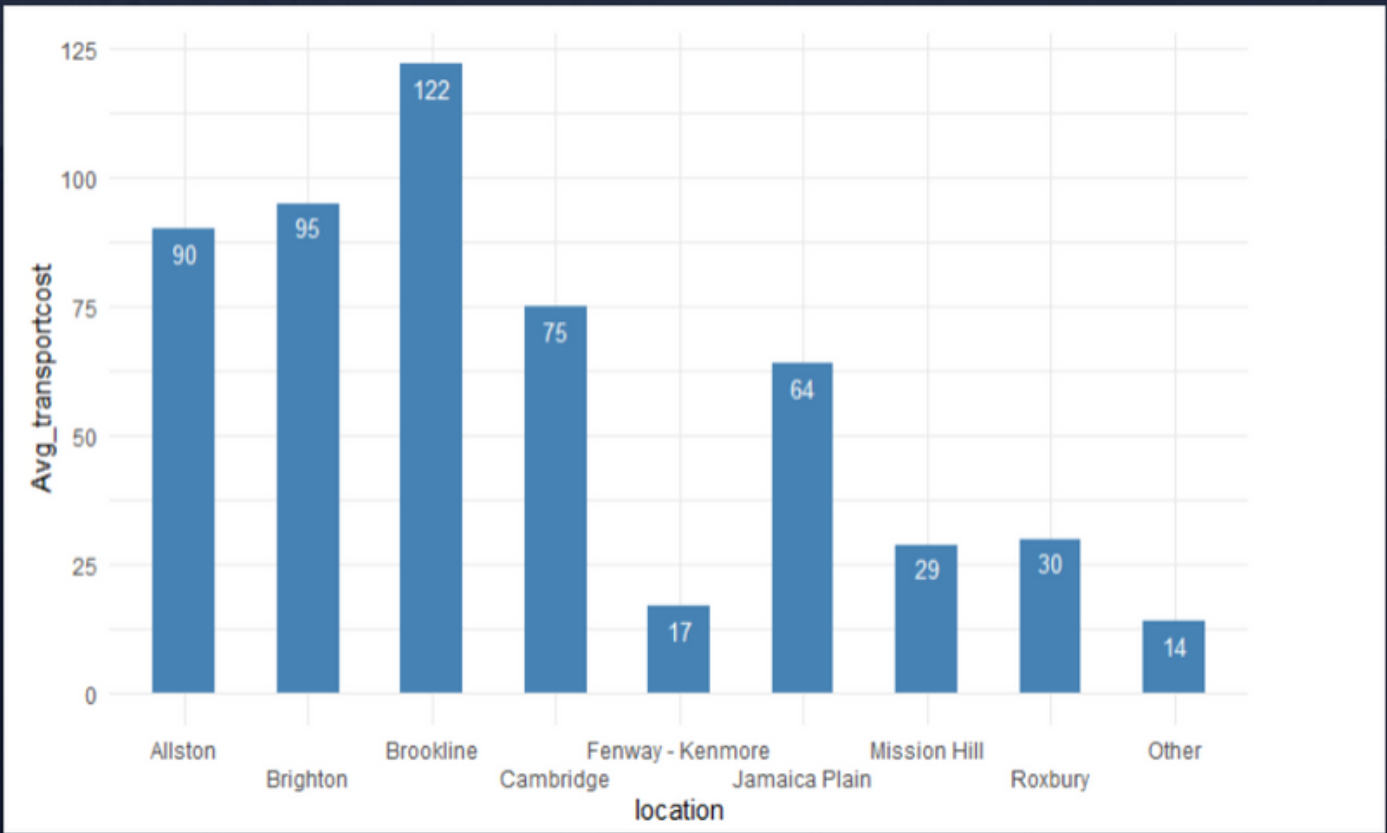
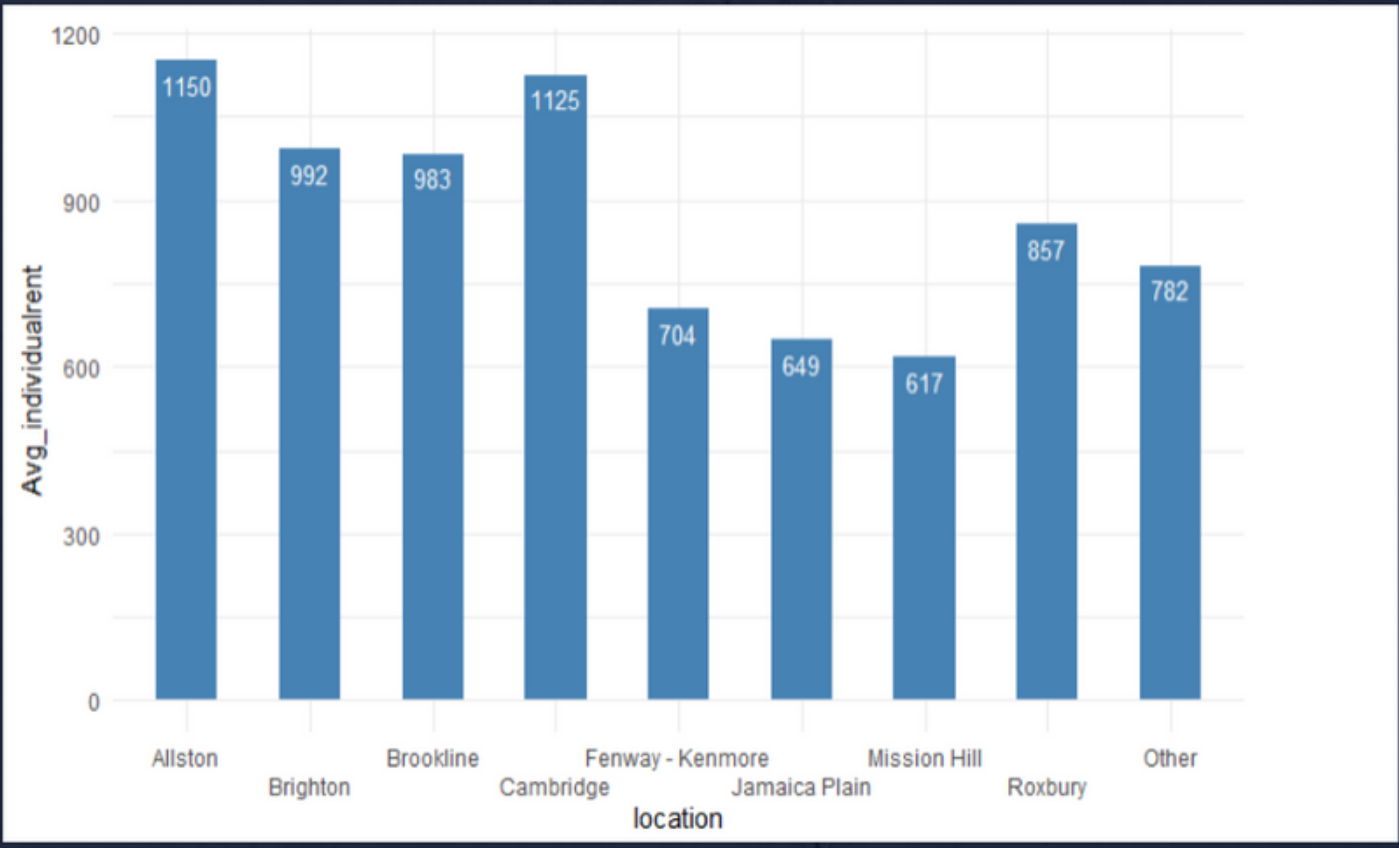
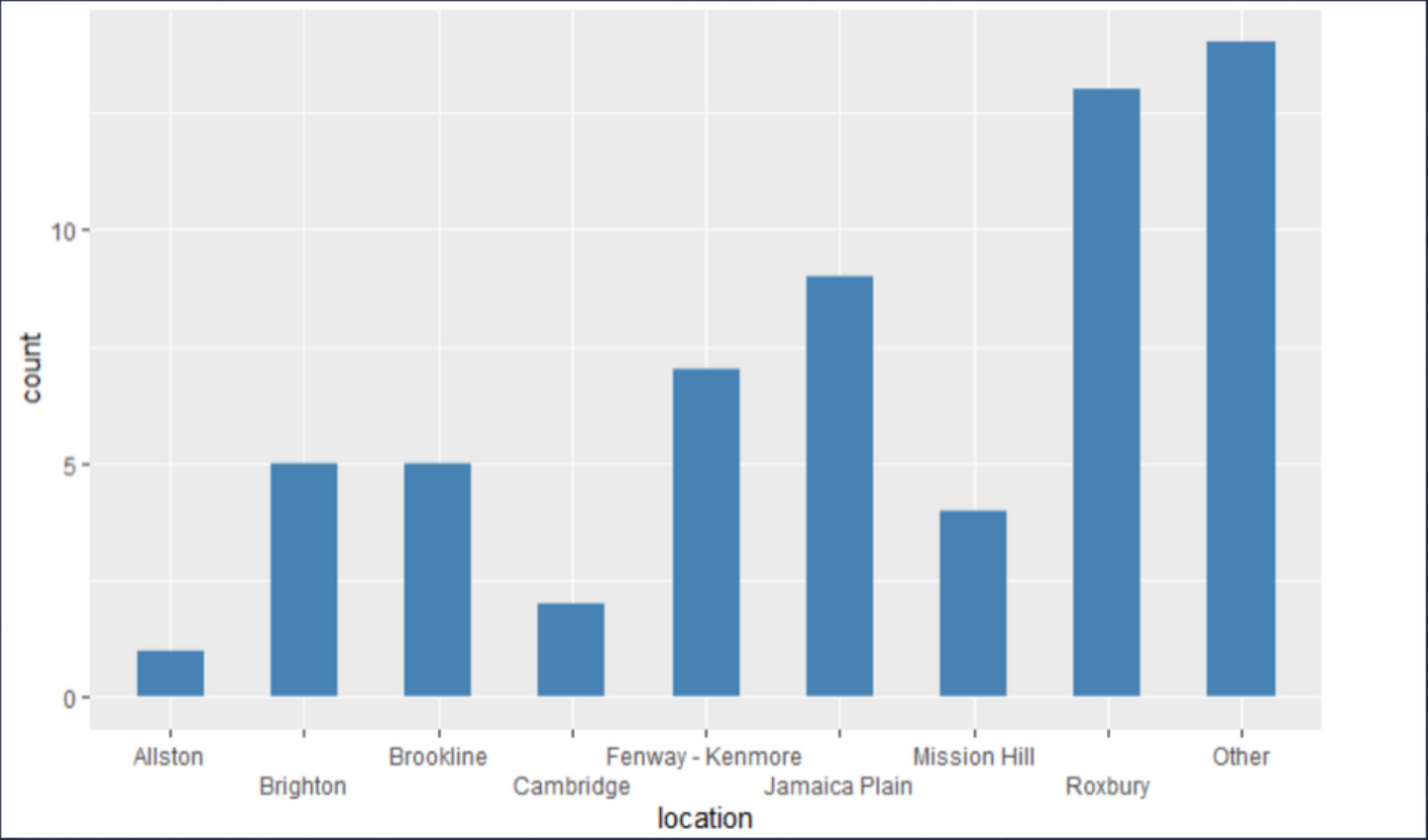
- Individual rent vs roommates

Histogram & Density Curve



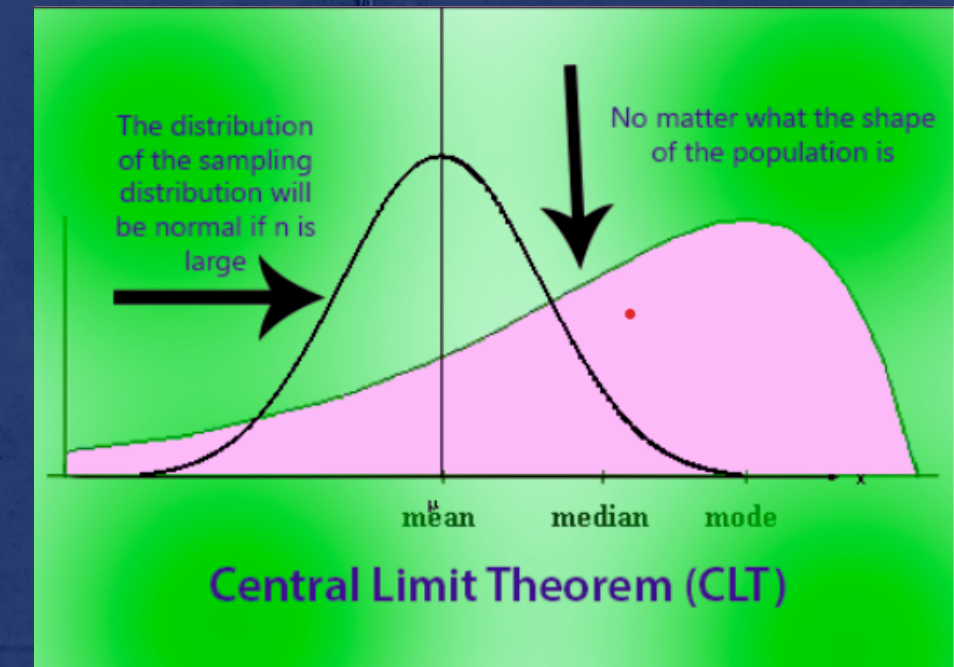
- Total rent vs frequency

Bar Graph

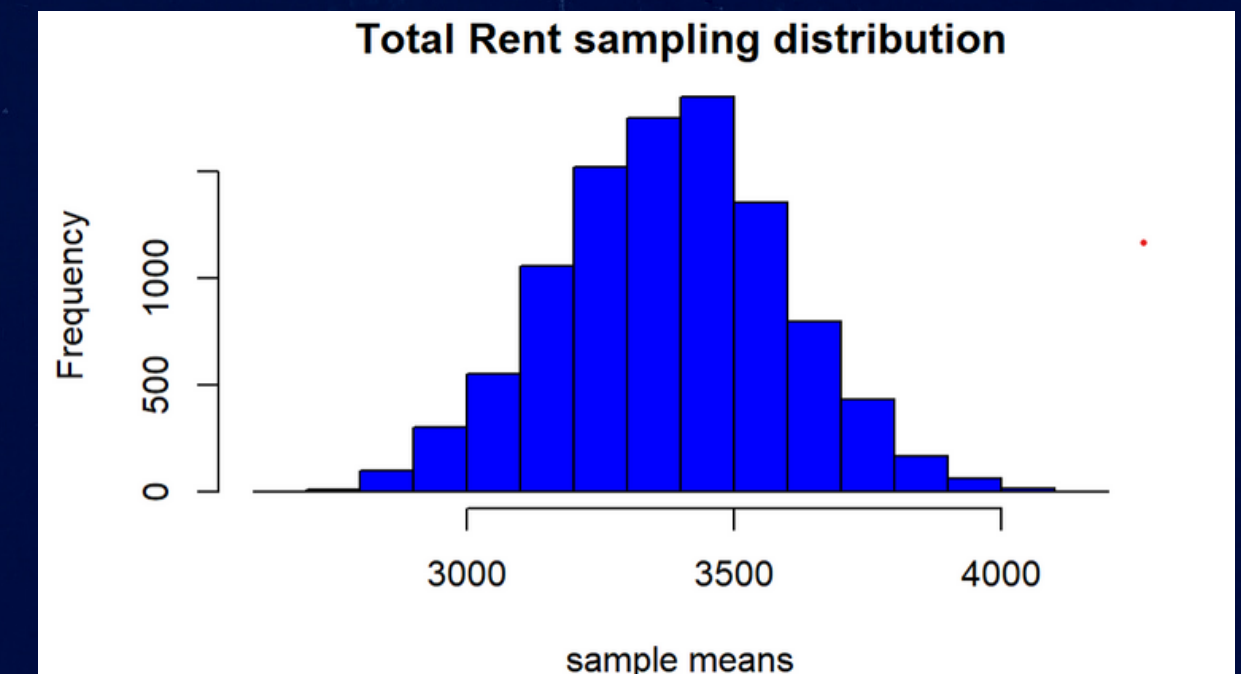


• Sampling Distribution of Mean and Standard Deviation

- Generating a Sampling Distribution



- Visualizing the Sampling Distribution



• Probability of Sampling Distribution

A) Total Rent

$$P(X \leq 3500) = 0.7159$$

B) Individual Rent

$$P(X \leq 800) = 0.4912$$

C) Distance from University

$$P(X \leq 2) = 0.984$$

Parameters	Theoretical Mean	Actual Sampling Mean
Total Rent	3376	3379.11
Individual Rent	809.8374	811.2988
Distance from University	1.456	1.46

CONFIDENCE INTERVAL OF MEANS

A) Most accessible location from University

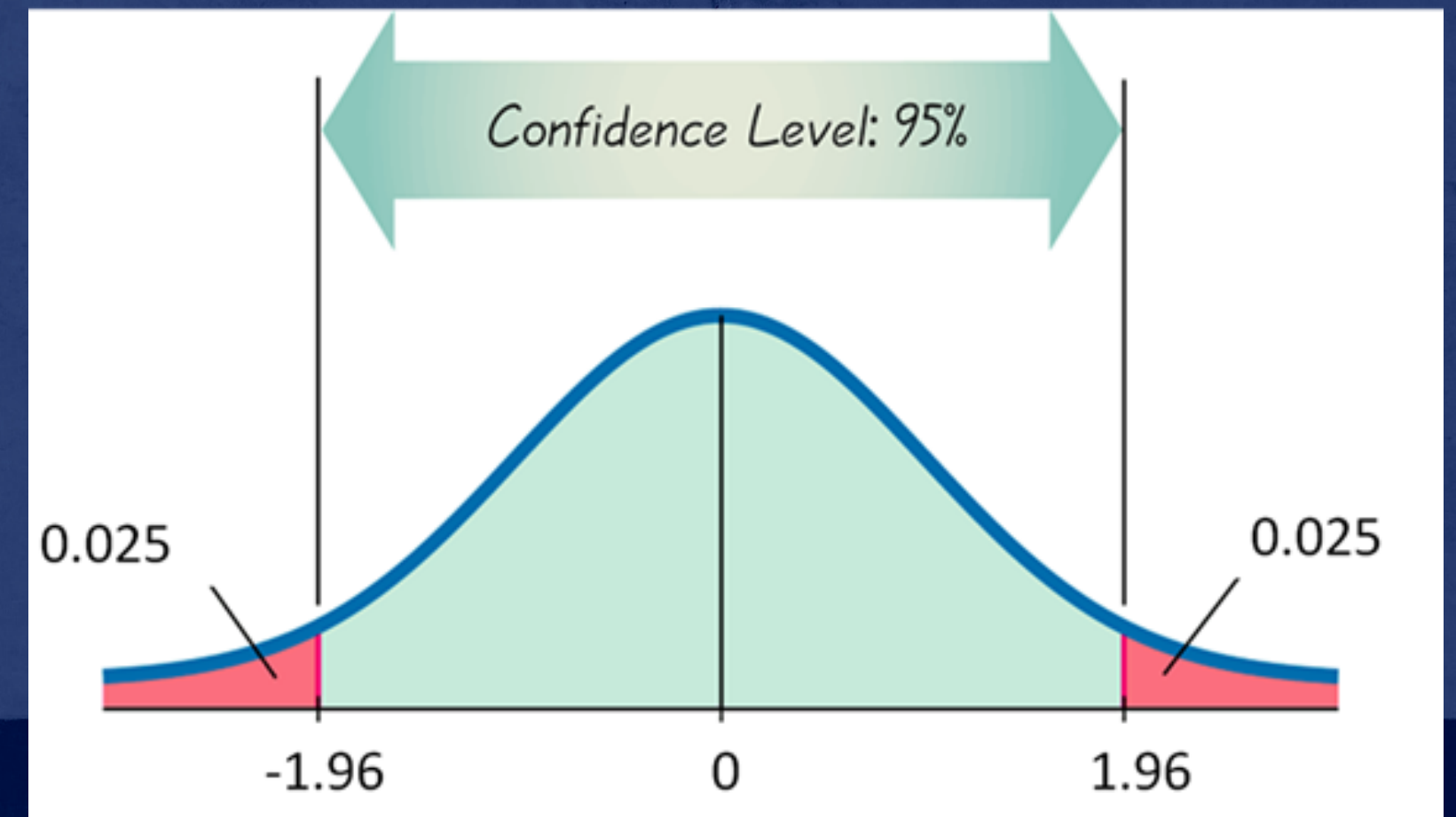
- Lower level = 1.615 miles
- Upper level = 2.009 miles

B) Most reasonable rent

- Lower level = 697 USD
- Upper level = 923 USD

C) Most affordable public transport

- Lower level = 44 USD
- Upper level = 69 USD



$$CI = \bar{x} \pm z \cdot \frac{s}{\sqrt{n}}$$

Mean value

Lower/Upper limit

z-value for the confidence level

Standard deviation

Sample size

CONFIDENCE INTERVAL OF POPULATION PROPORTION

A) Most accessible location from University

- Lower level = 25.7%
- Upper level = 50.3%

B) Most reasonable rent

- Lower level = 11.5%
- Upper level = 32.5%

C) Most affordable public transport

- Lower level = 8.3%
- Upper level = 27.7%

$p = \text{population proportion}$

$\hat{p} = \text{sample proportion}$

$$\hat{q} = 1 - \hat{p}$$

$$\hat{p} = \frac{x}{n}$$

$$\hat{p} \pm z_{\alpha/2} \left(\sqrt{\frac{\hat{p}\hat{q}}{n}} \right)$$

where, x = number of
successes

HYPOTHESIS TESTING



- Number of Students = 60
- Average Budget = 809.83 USD
- Standard Deviation of Budget = 447.69
- Significance level = 5%



True population mean budget = 700 USD

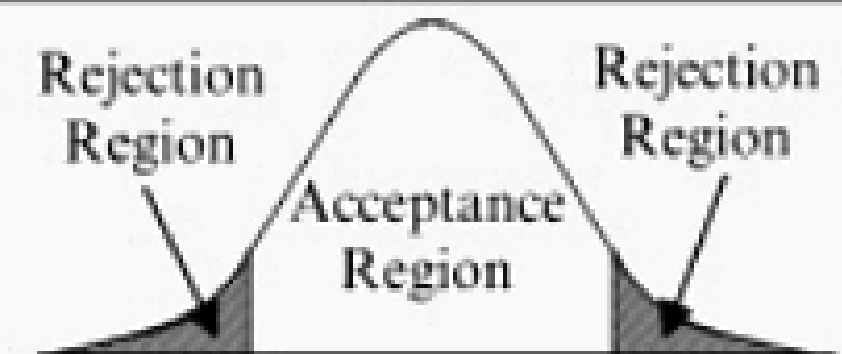
Determine Null & Alternative Hypothesis

- Null Hypothesis = 700 USD
- Alternative Hypothesis \neq 700 USD

Two-Tailed Test

$$H_0 : \mu_X = \mu_0$$

$$H_1 : \mu_X \neq \mu_0$$



HYPOTHESIS TESTING

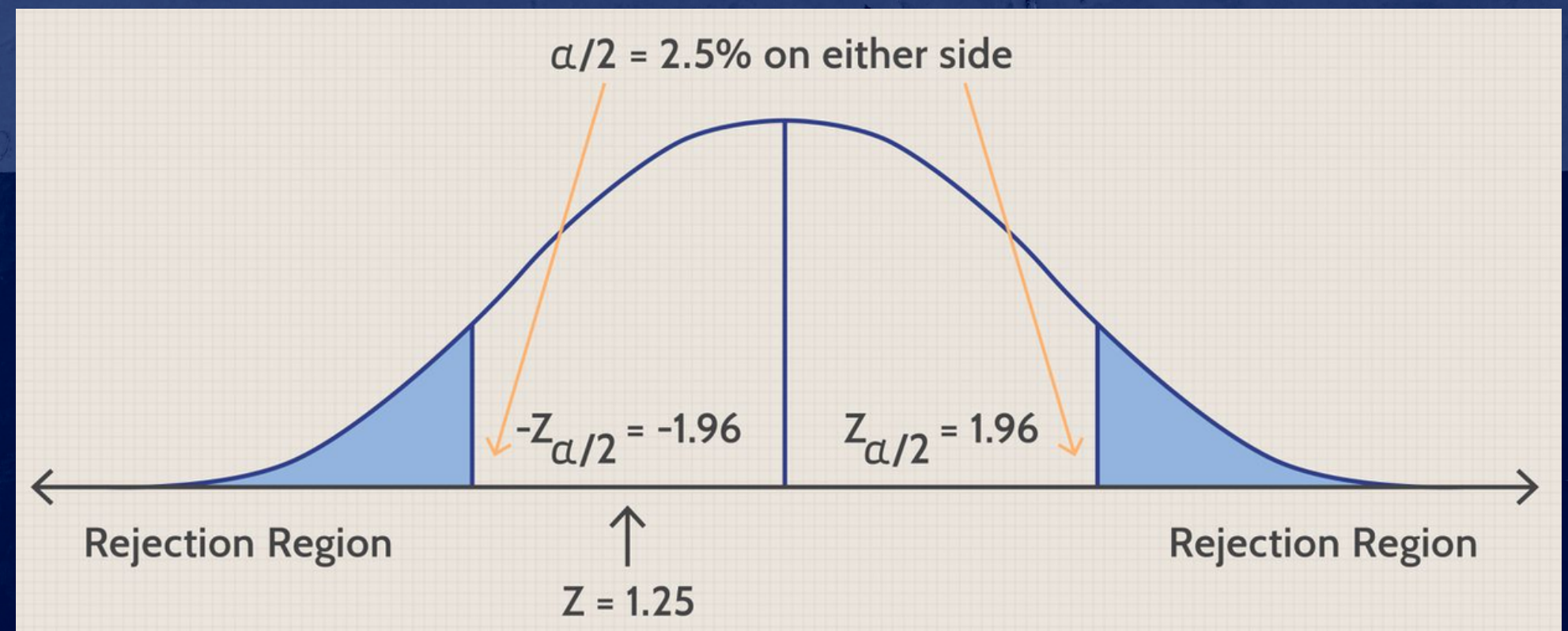


Calculate Z

- $Z = (\bar{X} - \mu) / (\sigma / \sqrt{n})$

Compare Z value

- Z value (5% significance) = 1.96
- Z hyp. = 1.90
- Z value > Z hyp.
- Null Hypothesis not rejected



CONCLUSION

Characteristics:



Best Location:
Mission Main



Affordable Rent:
700 USD



Best Public Transport:
Bus