Business Statistics

Answer all Questions.

CAT ONE

Suppose prior elections in a certain state indicated it is necessary for a candidate for governor to receive at least 80% of the vote in the northern part of the state to be elected. The incumbent governor is interested in assessing his chances of returning to office and plans to conduct a survey of 2,000 registered voters in the northern section of the state.
Using the hypothesis-testing procedure, assess the governor's chances of re-election.

Step 1: State the null hypothesis and the alternate hypothesis.

[redacted]

[redacted]

(Note: keyword in the problem "*at least*")

Step 2: Select the level of significance.

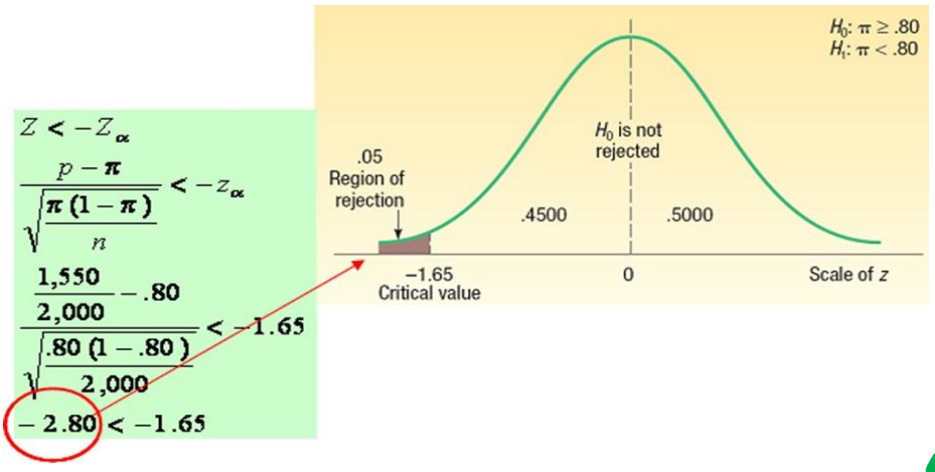
[redacted]

Step 3: Select the test statistic.

[redacted]

Step 4: Formulate the decision rule.

[redacted]



Step 5: Make a decision and interpret the result.

The computed [redacted] incumbent governor will return to the governor's mansion for another four years.

CAT TWO

Clean cab co. offer services from Nairobi CBD to JKIA airport. The president of the company is considering two routes. One is through Jogoo road and the other through Mombasa road. He wants to study the time it takes to drive to the airport using each route and then compare the results. He collected the following sample data, which is reported in minutes in the table below.

Jogoo road	52	67	56	45	70	54	64	
Mombasa road	59	60	61	51	56	63	57	65

Using the 0.10 significance level, is there a difference in variation in the driving time for the two routes

Solution:

The hypotheses are:

[illegible]

[illegible]

[illegible]

[illegible] (or in the case of a two tailed test)

Critical Values of the F Distribution, $\alpha = .05$

Degrees of Freedom for Denominator	Degrees of Freedom for Numerator			
	5	6	7	8
1	230	234	237	239
2	19.3	19.3	19.4	19.4
3	9.01	8.94	8.89	8.85
4	6.26	6.16	6.09	6.04
5	5.05	4.95	4.88	4.82
6	4.39	4.28	4.21	4.15
7	3.97	3.87	3.79	3.73
8	3.69	3.58	3.50	3.44
9	3.48	3.37	3.29	3.23
10	3.33	3.22	3.14	3.07

Jogoo Road

$$\bar{X} = \frac{\Sigma X}{n} = \frac{408}{7} = 58.29 \qquad s = \sqrt{\frac{\Sigma(X - \bar{X})^2}{n - 1}} = \sqrt{\frac{485.43}{7 - 1}} = 8.9947$$

Mombasa Road

$$\bar{X} = \frac{\Sigma X}{n} = \frac{472}{8} = 59.00 \qquad s = \sqrt{\frac{\Sigma(X - \bar{X})^2}{n - 1}} = \sqrt{\frac{134}{8 - 1}} = 4.3753$$

[illegible]

[illegible]

[illegible]

[illegible]