qYet Another FINAL – BUAN 227 – Spring 2019

## A problem

Here is data for the ungarbled price (Rs./Kg), garbled price (Rs./Kg) and quantity supplied of Cochin peppercorns.

ungarbled price (Rs./Kg) garbled price (Rs./Kg) quantity supplied

336.7 350.5 119.43 343.8 362.4 134.33

354.1 345.6 132.56

339.6 374.3 103.71

354.5 348.7 54.37

362.7 360.4 88.89

[Malabar pepper](https://en.wikipedia.org/wiki/Malabar_pepper) is classified under two grades known as garbled and un-garbled. The garbled variety (higher grade) is black in color with a wrinkled surface. The ungarbled variety has a wrinkled surface and the colour varies from dark brown to black.

Here are calculations for the garbled price (Rs./Kg) and quantity supplied data:

estimate standard deviation

intercept 354.87877 19.217

slope 0.02002 0.176

, , , , , , , , , , , with for appropriate degrees of freedom.

For the ungarbled price (Rs./Kg) data here are additional calculations where ungarbled price (Rs./Kg):

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For complete credit you must draw pictures, show formulas, show all calculations needed, interpret process and results.

## Question 1: Should we use two prices?

We are going to try to forecast prices. There are two prices at Cochin. Do they act as if one world price?

1. Formulate a hypothesis to test a claim that there is one world price.
2. Test the hypothesis and interpret the results.

## Question 2: What is the model?

Assume a linear relationship between the independent variable quantity supplied and dependent variable garbled price (Rs./Kg). Include in this description the following with interpretations:

1. A scatterplot that depicts the relationship between dependent and independent variables. A straight line through the data, consistent with the calculations, that depicts deviations of scatter points from the line.
2. Validate the calculations of the sample mean and standard deviation of the intercept parameter as well as the percentage of variation in the dependent variable explained by the model.

## Question 3: How confident are we about the estimates?

Given a level of significance of 5%,

1. Draw an appropriate probability distribution to construct an estimate of the confidence interval for and . Be sure to include the upper and lower bounds on the distribution in terms of the number of standard deviations from the mean zero of this distribution.
2. Calculate the upper and lower bounds for the confidence interval of . Interpret the results.

## Question 4: How meaningful are the estimates?

1. Formulate testable hypotheses of the meaningfulness of the mean sampled slope of our model. Interpret.
2. Test the hypotheses and interpret.