

Adam's Pizza operates in six cities in Texas and Oklahoma. The owner, Mr. Jenkins, wants to have an empirical estimation of the demand for his pizza. He plans to formulate pricing and promotion decisions for the next year, and he wants to know how price and advertising expenditure affect sales and use the results of the estimation to make a forecast for the next year (2016-1). He hired an economist to do a regression analysis. The economist collected data for 2014-1-2015-4 (quarterly) for sales, price, competitor's price, income, and population. This data is available in Table 1 (link provided below).

The following regression model was fit to the collected data:

$$Q = \beta_0 + \beta_1 P_x + \beta_2 P_y + \beta_3 A + \beta_4 Y + \beta_5 Pop + \beta_6 T + \eta$$

where P_x is the price of pizza, P_y is the competitor's price, A is advertising expenditure, Y is income, Pop is population, T is trend, and η is a residual or error term. Least square regression results based on the data are provided in Table 2 (link provided below).

Write a report on the findings of the regression. Include the following elements in your report:

- Describe the economic meaning and statistical significance of each independent variable.
 - Interpret the coefficient of determination (R^2).
 - Use a regression model and 2015-1 data to estimate 2015-1 sales. (should be 2014-4 data to estimate 2015-1 sales)
 - Derive 95% and 99% confidence intervals for the 2015-1 estimate. (2015-1) estimate sales.
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