

- The company relies on the following cross sectional sample data (note that the observations are independent and identically distributed)

Performance index	Salary
8100.1	95000
7500.9	85000
9800.7	125000
4500.2	47000
6500.2	65000

Table 1: Sample Data

3. What is the sample correlation between performance and salary? Compute it and show all your work.
4. Estimate the unknown population parameters (γ_0, γ_1) in equation (1) by relying on the ordinary least squares (OLS) approach.
5. Use a scatterplot to plot the data points with the estimated regression line (Performance index on the y-axis and salary on the x-axis).

6. Compute the R^2 of the regression model and explain it.

7. Rely on the sampling distribution of the OLS estimator of the slope to compute the standard error for $\hat{\gamma}_1$.

8. Use a 1 percent-level of significance to test the following hypothesis (do not forget to compute your test statistic and critical test statistic in discussing whether to reject the null hypothesis or not):

$$H_0: \gamma_1 = 0$$

$$H_a: \gamma_1 \neq 0$$

9. Construct a 99 % confidence level for γ_1 .

10. Based on your hypothesis test results, can you infer that salary is statistically significant in explaining employee performance at the 1 % level? If so, interpret the OLS estimate of γ_1 .