



Start-Tech Academy

Multiple Linear Regression

Categorical Variables

| airportYES | waterbodyLake | waterbodyLake and River | waterbodyRiver |
|------------|---------------|----------------------------|----------------|
| 1 | 0 | 0 | 1 |
| 0 | 1 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 0 | 0 |
| 0 | 1 | 0 | 0 |
| 1 | 0 | 0 | 0 |
| 1 | 0 | 0 | 1 |
| 0 | 1 | 0 | 0 |
| 1 | 0 | 0 | 0 |

$$y_i = \beta_0 + \beta_1 x_i + \epsilon_i = \begin{cases} \beta_0 + \beta_1 + \epsilon_i & \text{If Airport is present} \\ \beta_0 + \epsilon_i & \text{If Airport is not present} \end{cases}$$

Coefficients:

| | Estimate | Std. Error | t value | Pr(> t) |
|------------|----------|------------|---------|----------|
| airportYES | 1.131516 | 0.454266 | 2.491 | 0.0131 * |

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Categorical Variables

| airportYES | waterbodyLake | waterbodyLake and River | waterbodyRiver |
|------------|---------------|----------------------------|----------------|
| 1 | 0 | 0 | 1 |
| 0 | 1 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 0 | 0 |
| 0 | 1 | 0 | 0 |
| 1 | 0 | 0 | 0 |
| 1 | 0 | 0 | 1 |
| 0 | 1 | 0 | 0 |
| 1 | 0 | 0 | 0 |

Coefficients:

| | Estimate | Std. Error | t value | Pr(> t) |
|---------------------------|-----------|------------|---------|----------|
| waterbodyLake | 0.264086 | 0.641963 | 0.411 | 0.6810 |
| `waterbodyLake and River` | -0.687556 | 0.714023 | -0.963 | 0.3361 |
| waterbodyRiver | -0.291319 | 0.546656 | -0.533 | 0.5943 |

