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STAT1221

Homework #6

MINITAB Output

**Chapter 12**

2b) (one regression equation)

Regression Analysis: PCI versus YNG, Dummy

Method

|  |  |
| --- | --- |
| Categorical predictor coding | (1, 0) |

Analysis of Variance

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | DF | Adj SS | Adj MS | F-Value | P-Value |
| Regression | 3 | 2217416 | 739139 | 906.60 | 0.000 |
| YNG | 1 | 953038 | 953038 | 1168.97 | 0.000 |
| Dummy | 1 | 252786 | 252786 | 310.06 | 0.000 |
| YNG\*Dummy | 1 | 157494 | 157494 | 193.18 | 0.000 |
| Error | 48 | 39134 | 815 |  |  |
| Lack-of-Fit | 36 | 36207 | 1006 | 4.12 | 0.006 |
| Pure Error | 12 | 2927 | 244 |  |  |
| Total | 51 | 2256550 |  |  |  |

Model Summary

|  |  |  |  |
| --- | --- | --- | --- |
| S | R-sq | R-sq(adj) | R-sq(pred) |
| 28.5532 | 98.27% | 98.16% | 97.95% |

Coefficients

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Term | Coef | SE Coef | T-Value | P-Value | VIF |
| Constant | 2166.4 | 49.7 | 43.61 | 0.000 |  |
| YNG | -41.91 | 1.23 | -34.19 | 0.000 | 1.94 |
| Dummy |  |  |  |  |  |
| 1 | -1268.9 | 72.1 | -17.61 | 0.000 | 82.80 |
| YNG\*Dummy |  |  |  |  |  |
| 1 | 24.53 | 1.76 | 13.90 | 0.000 | 84.96 |

Regression Equation

|  |  |  |  |
| --- | --- | --- | --- |
| Dummy |  |  |  |
| 0 | PCI | = | 2166.4 - 41.91 YNG |
|  |  |  |  |
| 1 | PCI | = | 897.5 - 17.39 YNG |

Fits and Diagnostics for Unusual Observations

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Obs | PCI | Fit | Resid | Std Resid |  |
| 3 | 825.00 | 741.29 | 83.71 | 3.11 | R |
| 9 | 338.00 | 397.60 | -59.60 | -2.14 | R |
| 12 | 300.00 | 364.07 | -64.07 | -2.30 | R |

*R  Large residual*

Regression Analysis: PCI versus YNG, Dummy

Method

|  |  |
| --- | --- |
| Categorical predictor coding | (1, 0) |

Analysis of Variance

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | DF | Adj SS | Adj MS | F-Value | P-Value |
| Regression | 2 | 2059922 | 1029961 | 256.67 | 0.000 |
| YNG | 1 | 948568 | 948568 | 236.38 | 0.000 |
| Dummy | 1 | 967041 | 967041 | 240.99 | 0.000 |
| Error | 49 | 196628 | 4013 |  |  |
| Lack-of-Fit | 37 | 193701 | 5235 | 21.47 | 0.000 |
| Pure Error | 12 | 2927 | 244 |  |  |
| Total | 51 | 2256550 |  |  |  |

Model Summary

|  |  |  |  |
| --- | --- | --- | --- |
| S | R-sq | R-sq(adj) | R-sq(pred) |
| 63.3468 | 91.29% | 90.93% | 89.93% |

Coefficients

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Term | Coef | SE Coef | T-Value | P-Value | VIF |
| Constant | 1689.8 | 79.7 | 21.19 | 0.000 |  |
| YNG | -30.08 | 1.96 | -15.37 | 0.000 | 1.00 |
| Dummy |  |  |  |  |  |
| 1 | -273.4 | 17.6 | -15.52 | 0.000 | 1.00 |

Regression Equation

|  |  |  |  |
| --- | --- | --- | --- |
| Dummy |  |  |  |
| 0 | PCI | = | 1689.8 - 30.08 YNG |
|  |  |  |  |
| 1 | PCI | = | 1416.4 - 30.08 YNG |

Fits and Diagnostics for Unusual Observations

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Obs | PCI | Fit | Resid | Std Resid |  |
| 3 | 825.0 | 667.2 | 157.8 | 2.59 | R |
| 41 | 300.0 | 423.8 | -123.8 | -2.06 | R |

*R  Large residual*

2c) (one regression equation)

Regression Analysis: PCI versus YNG

Analysis of Variance

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | DF | Adj SS | Adj MS | F-Value | P-Value |
| Regression | 1 | 1092881 | 1092881 | 46.96 | 0.000 |
| YNG | 1 | 1092881 | 1092881 | 46.96 | 0.000 |
| Error | 50 | 1163669 | 23273 |  |  |
| Lack-of-Fit | 27 | 406376 | 15051 | 0.46 | 0.974 |
| Pure Error | 23 | 757292 | 32926 |  |  |
| Total | 51 | 2256550 |  |  |  |

Model Summary

|  |  |  |  |
| --- | --- | --- | --- |
| S | R-sq | R-sq(adj) | R-sq(pred) |
| 152.556 | 48.43% | 47.40% | 43.60% |

Coefficients

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Term | Coef | SE Coef | T-Value | P-Value | VIF |
| Constant | 1639 | 192 | 8.54 | 0.000 |  |
| YNG | -32.20 | 4.70 | -6.85 | 0.000 | 1.00 |

Regression Equation

|  |  |  |
| --- | --- | --- |
| PCI | = | 1639 - 32.20 YNG |