**EXECUTIVE SUMMARY**

**Problem:** Data for a random sample of (bonus) income measurements on 18 individuals. Our object is to characterize the dependent variable INCOME (I) (in $100). Along with the value of Income for 18 individuals, we have been provided with the value of two independent variables: age of the individual AGE (yrs), and the order that the data was collected over one week and is listed in ORDER. Besides characterizing the relationship between these three variables, we wish to predict INCOME for an individual with AGE=35 or AGE=50, and give a 95% confidence interval for these predictions.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Mean | Std. Dev. | Minimum | Maximum | Shape of Distribution |
| *income($100)* | 197.3555556 | 9.936635851 | 176.7 | 211.3 | unimodal, skewed to the left |
| *age(yrs)* | 40 | 13.28422328 | 20 | 60 | uniform |
| *order* | 9.5 | 5.338539126 | 1 | 18 | uniform |

Recommended Model: INCOME= -41.25+ 19.50\*AGE -0.5043\* AGE2+ 0.004163\* AGE3

Income (I) in units of $100; Age (A) in years. SI,A=$6, R2= 0.70.

Using this third order model, for individuals who are 35 years old, we would predict an income of 203.07 ($100) with 95% confidence interval for this prediction given by the interval (189.85,216.29)(in $100).

Using this third order model, for individuals who are 50 years old, we would predict an income of 193.38 ($100) with 95% confidence interval for this prediction given by the interval (180.16,206.60)(in $100).