**SAS Homework 3**

**Group assignment**

1. Use the data in vacation.dat and run a regression with Miles (miles travelled) as the dependent variable and income, age (average age of adult members), and kids as the independent variables.
2. Run a regression model and interpret the coefficients. Comment on the model fit.
3. Check whether there is heteroscedasticity in the model using White test.

b. Run a weighted Least squares (WLS) regression. Discuss your results in a paragraph. (Comment on model fit, significance of coefficients, and the effect of doing WLS.)

2. I have provided the Sales of a durable good.

1. Using SAS and regression, estimate the Bass model. Save the regression parameters using option OUTEST. Find p, q, and M and compute peak sales and the time when that peak will occur.
2. Predict sales in each period using only the model parameters p, q, and M and the fact that sales at time period 0=0 .
3. Plot a graph of actual versus predicted sales. (SAS code given to you in the slides)

|  |  |
| --- | --- |
| Week | Sales |
| 1 | 160 |
| 2 | 390 |
| 3 | 800 |
| 4 | 995 |
| 5 | 1250 |
| 6 | 1630 |
| 7 | 1750 |
| 8 | 2000 |
| 9 | 2250 |
| 10 | 2500 |

3. A conjoint study was undertaken by a detergent manufacturer. The attributes that were considered were

Brand (Complete, Smile, Wave)

Scent (fresh, lemon, Unscented)

Whether there was a softener or not (Y, N)

Size of packet (32, 48, 64)

Price (2.99, 3.99, 4.99)

The preferences of five respondents s1, s2, s3, s4, s5 were obtained for some combination of attributes on a 1-9 point scale with 9 indicating a higher preference.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| brand | scent | soft | oz | pr | s1 | s2 | s3 | s4 | s5 |
|  |  |  |  |  |  |  |  |  |  |
| complete | fresh | n | 48 | 4.99 | 1 | 3 | 3 | 2 | 2 |
| complete | fresh | y | 32 | 2.99 | 1 | 3 | 3 | 5 | 5 |
| complete | lemon | n | 32 | 2.99 | 1 | 2 | 7 | 5 | 1 |
| complete | lemon | y | 64 | 3.99 | 1 | 9 | 5 | 8 | 1 |
| complete | U | n | 64 | 3.99 | 1 | 9 | 7 | 8 | 7 |
| complete | U | y | 48 | 4.99 | 1 | 3 | 3 | 2 | 3 |
| Smile | fresh | n | 64 | 2.99 | 1 | 9 | 9 | 9 | 6 |
| Smile | fresh | y | 48 | 3.99 | 1 | 7 | 7 | 6 | 5 |
| Smile | lemon | n | 48 | 3.99 | 1 | 7 | 7 | 6 | 1 |
| Smile | lemon | y | 32 | 4.99 | 1 | 1 | 1 | 1 | 1 |
| Smile | U | n | 32 | 4.99 | 1 | 1 | 3 | 1 | 2 |
| Smile | U | y | 64 | 2.99 | 1 | 9 | 3 | 9 | 9 |
| Wave | fresh | n | 32 | 3.99 | 7 | 1 | 7 | 4 | 5 |
| Wave | fresh | y | 64 | 4.99 | 5 | 5 | 3 | 3 | 2 |
| Wave | lemon | n | 64 | 4.99 | 5 | 5 | 5 | 3 | 1 |
| Wave | lemon | y | 48 | 2.99 | 9 | 9 | 5 | 7 | 1 |
| Wave | U | n | 48 | 2.99 | 9 | 9 | 5 | 7 | 7 |
| Wave | U | y | 32 | 3.99 | 7 | 1 | 5 | 4 | 5 |
| Wave | lemon | n | 64 | 2.99 | 8 | 9 | 6 | 9 | 3 |
| Smile | lemon | n | 32 | 4.99 | 2 | 1 | 3 | 2 | 1 |
| Smile | fresh | y | 48 | 2.99 | 2 | 8 | 4 | 5 | 5 |
| complete | U | y | 32 | 2.99 | 2 | 4 | 2 | 5 | 6 |
| complete | lemon | y | 48 | 3.99 | 2 | 6 | 6 | 6 | 1 |

1. Find the importance weights and part-worths for each respondent using PROC TRANSREG.
2. Predict the choice (using logit rule) for each respondent (s1-s5) for each of the following combinations using your estimates in question 1 above.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| complete | lemon | y | 64 | 2.99 |  |  |  |  |  |
| Smile | fresh | y | 48 | 2.99 |  |  |  |  |  |
| Smile | u | y | 48 | 3.99 |  |  |  |  |  |
| Wave | u | y | 48 | 2.99 |  |  |  |  |  |
| Smile | u | n | 48 | 2.99 |  |  |  |  |  |

**Deliverable:**

1. Electronic copy of SAS code
2. Word document with answers to the above questions.