

# Business Analytics – Regression Analysis

## Assignment 02 – Total Marks 50

### Case Study: Consumer Research, Inc.

Consumer Research, Inc., is an independent agency that conducts research on consumer attitudes and behaviors for a variety of firms. In one study, a client asked for an investigation of consumer characteristics that can be used to predict the amount charged by credit card users. Data was collected on annual income, household size, and annual credit card charges for a sample of 50 consumers. The following data are contained in the file *consumer\_researchs.xlsx*.

Income (\$1000s)	Household Size	Amount Charged (\$)	Income (\$1000s)	Household Size	Amount Charged (\$)
54	3	4,016	54	6	5,573
30	2	3,159	30	1	2,583
32	4	5,100	48	2	3,866
50	5	4,742	34	5	3,586
31	2	1,864	67	4	5,037
55	2	4,070	50	2	3,605
37	1	2,731	67	5	5,345
40	2	3,348	55	6	5,370
66	4	4,764	52	2	3,890
51	3	4,110	62	3	4,705
25	3	4,208	64	2	4,157
48	4	4,219	22	3	3,579
27	1	2,477	29	4	3,890
33	2	2,514	39	2	2,972
65	3	4,214	35	1	3,121
63	4	4,965	39	4	4,183
42	6	4,412	54	3	3,730
21	2	2,448	23	6	4,127
44	1	2,995	27	2	2,921
37	5	4,171	26	7	4,603
62	6	5,678	61	2	4,273
21	3	3,623	30	2	3,067
55	7	5,301	22	4	3,074
42	2	3,020	46	5	4,820
41	7	4,828	66	4	5,149

Source: Consumer Research, Inc. (<https://www.bbb.org/us/ny/rochester/profile/secret-shopper/consumer-research-inc-0041-45625697>)

## Managerial Report

1. Use methods of descriptive statistics to summarize the data. Comment on the findings.
2. Develop estimated linear regression equations, first using annual income as the independent variable and then using household size as the independent variable. Which variable is the better predictor of annual credit card charges? Discuss your findings.
3. Develop an estimated linear regression equation with annual income and household size as the independent variables. Discuss your findings.
4. What is the predicted annual credit card charge for a three-person household with an annual income of \$40,000?
5. Discuss the need for other independent variables that could be added to the model. What additional variables might be helpful?