

## Analytics Case description: Consumer Debt Payments

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A recent study found that American consumers are making average monthly debt payments of around \$1,000 (Source: Experian.com, November 11, 2010). However, the study of 26 metropolitan areas reveals quite a bit of variation in debt payments, depending on where the consumer lives. For instance, in Washington DC, residents pay the most (\$1,285 per month), while Pittsburgh residents pay the least (\$763 per month).

Madelyn Davis, an economist in a large bank, believes that income differences between cities are the primary reason for the disparate debt payments. For example, Washington DC's high incomes have likely contributed to its placement on the list. She is also unsure about the likely effect of unemployment rate on consumer debt payments. In order to analyze the relationship between income, unemployment rate, and consumer debt payments, Madelyn collected data from the same 26 metropolitan cities used in the earlier debt payment study. Specifically, she gathered each area's 2010 – 2011 median household income as well as the monthly unemployment rate and average consumer debt for August 2010.

The Excel file **GEProjectDatafall2019** has the data.

Madelyn would like to use this sample data to understand the relationships between (1) debt payments and income, and (2) debt payments and unemployment rate.

**Phase 1 (Proposal):** Please complete the following tasks for this phase:

- a) Describe the problem background and purpose of the study
- b) Describe the variables included in the case
- c) Use appropriate descriptive statistics to explore and summarize the data, both numerical and graphical. Remember to interpret the findings accurately and present them in a clear and coherent way.

**Phase 2 (Final report):** Please complete the following tasks for this phase:

- a) Describe the problem background and purpose of the study
- b) Describe the variables included in the case
- c) Outline the statistical methods required to answer the research questions
- d) Apply the statistical methods to answer both research questions
  - a. Follow all steps required to conduct a complete analysis and validation of methods, including assumption checks
- e) Presentation of the results and their interpretations
  - a. If using multiple models, perform a comparison to select the best one. Justify your choice.
- f) Final conclusions, decision-making and recommendations based on the results to the economist

Important note: Please follow the grading rubric carefully while preparing your proposal and your final report. Remember to focus on the writing as well – grammar, typos, flow and organization are key components.