

## Springboard: Data Science Career Track

### Business Insights Specialization

#### Problem Statement:

- ❑ **Summary:** The marketing department for Walmart is interested in determining the optimal allocation of marketing resources for future growth and to manage cash flow. Sales forecasting will help Walmart set benchmarks for future trends and allow Walmart to course correct and optimize early wins.
- 1. **Context:** With increase in competition from other retailer giants such as Costco, Amazon, Home Depot, Target and others, Walmart wants to conduct forecasting analysis on its weekly sales. The main objective is to find the impact of holidays, weather, fuel price, CPI and unemployment rate on the sales of products and to predict the sales for the week based on these factors. This will be a pilot project.
- 2. Important concepts identified so far include the following:
  - a. For this pilot project, optimality is measured through the department and store that generates the maximum revenue for Walmart. Therefore, the goal is to determine the factors associated with the maximum number of units sold.
- 3. **Criteria for Success:** The data science approach to be developed will be deemed successful in this project if predicted combinations of factors predict the sales in a given week, month and year.
- 4. **Scope of the Solution Space:**
  - a. This project will be applied to each Walmart store to forecast future sales.
  - b. Results of the analyses will be presented through a Tableau and Matplotlib dashboard, which will be used by Walmart to study the results associated with each combination of factors that yield maximum sales.
- 5. **Constraints within the Solution Space:**
  - a. The models to be developed in this pilot project will only consider cases for which there are historical data for at least one entire year.
  - b. The optimization will be conducted over a set of parameter combinations to be provided to us (the data science team), by Walmart..

6. **Stakeholders to Provide Key Insights:** Mrs. Sarah Paulson will act as the liaison between Walmart and the data science team.
7. **Required Data Sources:**
  - a. The data science team already has access to historical and on-going weekly sales for each department and store..
  - b. The data science team will request the following information from Mrs. Sarah Paulson:
    - i. Historical weekly sales of all stores and departments for the past three years.
  - c. For each parameter to be explored, Walmart should provide the combination of parameters to be explored, so the optimal feature can be identified.
8. **Anticipated Data Science Approaches to be Used:**
  - a. We are anticipating that this business problem will be modeled as a time series problem, for which the target is the prediction of yearly sales, and the predictors are the variables that define the weekly sales such as temperature, fuel price, holidays etc.,
  - b. The results of the analyses will be presented through a Tableau dashboard.