**PROJECT OVERVIEW**

You’ve been hired as an analyst for a consulting company tasked with running a marketing campaign on merchandise sales for Adventure Works. Various vendors want to increase their marketing efforts, and your boss has asked you to analyze consumer purchasing data in order to make smarter decisions about upcoming campaigns.

**You’ll focus on how to allocate a marketing budget.** You could concentrate on specific types of products, or on a certain group of vendors. It will be up to you to decide if the marketing budget should be focused on growth opportunity in small or mid-sized stores or on dealing with products or distributors that already have large market shares.

**DELIVERABLES AND TIMELINE**

1. [**Draft**](#gjdgxs)
2. [**Presentation**](#30j0zll)
3. [**Workbook**](#1fob9te)

**1. Initial Draft of Findings**

* **Due**: **November 26th by 3 p.m. AST**
* **Format**: A 4–5 paragraph email to your boss summarizing your findings.
* *Paragraphs should be* ***at least*** *3 sentences long.*
* **Description**:
  + Describe the types of products in the database.
  + Describe any initial findings related to your research questions.
  + Describe what you still need to do for your presentation in order to make a sound recommendation.

**2. Five-Minute Presentation**

* **Due**: **December 3rd by 3 p.m. AST**
* **Format**: Google Slides or PDF (export any Keynote or PowerPoint files).
* **Description**:
  + This will be a final presentation to your boss and team at work. It will build on your earlier email and summarize your overall findings and recommendations.
  + Present the findings in your presentation.
    - Summarize the data, results, and recommendations to your peers.
  + **Business Questions to be answered:**
    - Review the Products table. How many total products are in the table? How about products by vendor or category?
    - Review the Sales table. Which products sell the best? Make sure to decide how “best” will be defined (i.e., total sales, total units sold, market share, etc.).
    - What areas of the country sell more than others?
    - What are the top 5 product subcategories sold based on the total amount of sales revenue? *(hint: use product.productsubcategory)*
    - Which stores sell one of the top five most expensive products?
    - How many stores have more than $2,000,000 in total annual sales?
    - Which state sold the most amount of merchandise during the holiday season (November-December)? How does this compare to the rest of the year’s sales? (Hint: You can use the date\_part function to extract the month and year from the date.)
    - What is the trend of sales by month? Break up variables such as price or size into categories (for example: cheap, medium, or expensive). Extract the data and graph out sales over time in Excel.
  + **Additionally, you are expected and required to go beyond these questions to further flesh out your analysis and marketing budget recommendation.**
  + Include your data analysis with statistics and outliers.
  + Include recommendations with predicted outcomes and identified action items.
* Present any limitations and assumptions.
* Identify follow-up problems and questions for future analysis.

**3. SQL Queries**

* **Due**: **December 3rd by 3 p.m. AST**
* **Format**: Workbook with query list
  + Include corresponding output listed in a \*.sql or \*.txt file.
* **Description**:
  + List the appropriate business questions you were trying to answer.
  + Use correct, efficient syntax for the functions and operators needed.

**DATA SET**

You’ll be provided with access to the Adventure Works dataset, as used in class.\*

***\*Note: The sales table is large and can run slowly when joining to other tables. When testing queries, remember to limit your results using the LIMIT function.***

**GETTING STARTED**

Consider the Data Analytics Workflow to guide you through each step:

* **Frame the problem:** After considering the prompt, think generally about the problem and how you may want to approach it. What type of data do you need to make a decision and produce a recommendation?
* **Prepare the data:** Your company is running its own Postgres SQL server and the engineers who designed the survey have added the data to the appropriate tables. Connect to the appropriate server using the software of your choice (e.g. PgAdmin4).
  + Your colleagues in the engineering department are very organized and have written documentation for the product managers who need to use their databases. Make sure you read it. 
    - Link to documentation
      * ***Note****: Click “Show All (24)” to view all of the variable descriptions.*
    - **Hint**: Make sure to identify which actions will be most useful to your research questions. Browse the tables and ensure you know how the data are organized and how the tables relate to each other. Answer basic questions about the data.
* **Analyze the data:** In order to settle on your recommendations and create your presentation, you’ll need to write a number of queries to prepare, structure, filter, clean, and aggregate your data.
* **Interpret the data**: In order to determine findings and create a recommendation, you will want to use statistical functions (mean, median, mode, min, max, etc.) as well as other aggregate functions (count) to summarize your data. Export your data to Excel to create any visualizations that will help you explore your data or provide evidence for your recommendation.
* **Communicate the data:** Based on your findings, create a coherent argument about how to best allocate marketing spend focused on AdventureWorks.
  + Create a PowerPoint presentation that summarizes your findings and include your recommendation.
  + Make sure to include the results of your analysis and any visualizations that help boost your argument.

**RESOURCES**

* Review specific course materials on how to use SQL and access the database.
* Refer to the data mining [framework](https://decisionstats.files.wordpress.com/2011/10/12345.png).
* Reference [General Assembly's Data Analytics Workflow](https://docs.google.com/document/d/1y7ObyXBF9tvI0O1tpavlIvChed49hIMXLsrnH4iIbzs/edit?usp=sharing).

**REQUIREMENTS & EVALUATION**

* For a complete list of all project requirements, please see the rubric provided.
* Your Excel worksheet (containing clean data) will be evaluated using the requirements above.
* Your Presentation will be reviewed by peers and graded by instructors as a pass/fail.

**RUBRIC**

* For all requirements, project deliverables will be evaluated using a simple point scale.
* In addition to numeric feedback, instructors will provide comments on many required portions.

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| **Score** | **Expectations** |
| **0** | *Incomplete.* |
| **1** | *Partial credit but does not meet expectations.* |
| **2** | *Meets expectations.* |
| **3** | *Surpasses expectations.* |

**Description:**

* A “1” means you have met some but not all of the project requirements.
* A “2” means you have satisfied all requirements.
* A “3” indicates performance above and beyond these requirements and will not apply to most items.