Project 2

Insights into Profitability and Product Performance (2015-2018)

<https://public.tableau.com/views/Project2_HandsonDataVisualisation/DachboardProfitabilityandProductPerformance2015-2018?:language=en-GB&:display_count=n&:origin=viz_share_link>

# SKETCHES

Q1. What is the most profitable City in the State of Tennessee?

A graph on a white paper

Description automatically generated

**Bar Chart (Most profitable City in the State of Tennessee)**

* Justification: The bar chart is ideal for comparing categorical data. It allows for an immediate visual comparison across cities, making it easy to spot which city is most profitable. The use of a vertical bar chart leverages our innate ability to compare lengths, making it straightforward to interpret.

Q2. What’s the average annual profit for that city across all years in that city?

A graph on a white paper

Description automatically generated

**Line Graph (Profit by City in Tennessee over Time)**

* Justification: A line graph is an excellent choice for displaying data trends over a period. It clearly shows how profits in each city have changed from year to year, providing insight into growth or decline patterns.

Q3. What’s the most profitable product category in Iowa?

A drawing of a pie chart

Description automatically generated

**Pie Chart (Most Profitable Product Category in Iowa)**

* Justification**:** Pie charts are best used to show parts of a whole, especially when there are not too many categories. It provides a quick visual indication of the dominant category (or categories) in terms of profitability.

Q4. What is the most popular product in that category in 2016?

A graph on a white paper

Description automatically generated

**Horizontal Bar Chart (Top Selling Products by Category in Iowa)**

* + Justification: Horizontal bar charts are effective for ranking categories and are particularly useful when the labels are lengthy, as they are easier to read than vertical bar chart labels. This chart type allows users to quickly discern which products are the top sellers within each category. In this case, it's used to compare the popularity (quantity sold) of different products within the most category sold in 2016.

Q5. What was the most profitable month in 2018 overall?

A graph on a white paper

Description automatically generated

**Bar Chart (Monthly Profit in 2018)**

Like the first bar chart, this one is used to compare profit values. It allows for a clear visual comparison of profit values for each month in 2018, making it easy to identify the most profitable month.

Q6. How widely did monthly profits vary in 2018?

A graph on a white paper

Description automatically generatedDraft 1

**Box Plot ( Monthly Profit Variability)**

* Justification: A box plot excels in displaying the distribution of a dataset. It succinctly encapsulates key statistical measures: median, quartiles, and outliers. For the purpose of analyzing monthly profit variability, a box plot could effectively demonstrate the range (minimum to maximum), the typical profit (median), and any months that were unusually profitable or unprofitable (outliers). This would provide a comprehensive statistical overview of the profit distribution over the year, highlighting any significant variations.

A graph on a piece of paper

Description automatically generated Draft 2

**Line Chart ( Monthly Profit Variability)**

* Justification: A line chart, on the other hand, offers a more intuitive visualization of data trends over time. By connecting monthly profit data points, it presents a clear narrative of how profits fluctuated each month. The line chart is particularly adept at illustrating the progression and pattern of change, showing the rises and falls in profits throughout the year. This makes it easier for a broader audience, including those less familiar with statistical plots like box plots, to understand the overall trends and identify specific months where profits peaked or dipped significantly.

**Q5 and Q6**

A graph drawn on a white paper

Description automatically generatedFinal Decision for both question 5 and 6

**Area Chart (Profit Overview: Monthly Highs and Trends)**

Justification: Area charts are useful for showing volume over time, as they combine elements of both line and bar charts. They can communicate the weight of the profits over the months, with the area fill providing a sense of the cumulative effect. This chart is chosen to represent both the peak profits and the variations over time, fulfilling a dual purpose with clarity.

My final decision to employ a single "Profit Overview: Monthly Highs and Trends" area chart to encapsulate the most profitable month and the variability of monthly profits in 2018 was driven by a dedication to creating a dashboard that balances analytical depth with ease of use. This was informed by an original consideration for a box plot, which, while statistically rich, could potentially alienate those unaccustomed to complex data interpretation. The pivot to a line chart format came from a desire to democratize the data, offering a universally comprehensible visualization that captures temporal trends and critical data points, such as peak profit months, without inundating the viewer with intricate statistical details.

This streamlined approach not only offers clear and immediate insight into crucial profit metrics but also enhances the dashboard’s efficiency by allowing users to correlate multiple related data points simultaneously. It serves to reduce cognitive overhead and improve the overall user experience by presenting a cohesive narrative within a single, uncluttered visual field. The aesthetically simple yet comprehensive nature of the area chart ensures that the dashboard remains engaging and accessible to a wide audience.

# WIREFRAMES

A paper with graph and chart

Description automatically generated with medium confidence

Q1.What is the most profitable City in the State of Tennessee?

**Most Profitable City in Tennessee (Bar Chart)**

* Position: **Top left.**
* Justification: The top-left position is typically the first place a viewer's eyes will go when looking at a page. Placing this bar chart here emphasizes the importance of geographic profitability, indicating that location-based analysis is a primary concern. The left-to-right reading order supports the viewer in comparing all cities before moving to trend analysis.

Q2. What’s the average annual profit for that city across all years in that city?

**Profit by City in Tennessee (Line Graph)**

* Position: **Top right.**
* Justification: Placed adjacent to the profitability comparison, this graph offers a complementary temporal perspective. By positioning it to the right, it allows the viewer to move naturally from seeing the static comparison of cities to understanding how profitability has evolved over time. It supports a narrative progression from "where" to "how" profitability has changed.

Q3.What’s the most profitable product category in Iowa?

**Most Profitable Product Category in Iowa (Pie Chart)**

* + Position: **Middle left,** below the "Most Profitable City in Tennessee" chart.
  + Justification: By placing this below the first chart, the dashboard encourages a top-down reading flow. After establishing which city is most profitable, the viewer can then consider which product categories drive profitability. The central positioning of this pie chart highlights its importance in understanding the product mix's contribution to profits.

Q4.What is the most popular product in that category in 2016?

**Top Selling Products by Category in Iowa (Horizontal Bar Chart)**

* Position: **Middle right,** directly across from the pie chart.
* Justification: This position complements the pie chart by providing detail on the actual products contributing to the categories' profitability. It’s a logical 'next step' in the analysis, moving from category-level insights to specific product performance.

Q5.What was the most profitable month in 2018 overall?

Q6.How widely did monthly profits vary in 2018?

The bottom visualization, the "Profit Overview: Monthly Highs and Trends" area chart, addresses both questions 5 and 6:

**Profit Overview: Monthly Highs and Trends (Area Chart)**

Position**: Bottom,** spanning the entire width of the dashboard.

Justification: The chart's positioning at the bottom is deliberate, capitalizing on the natural reading flow from top to bottom. After viewers have engaged with geographic and product data above, this chart provides them with a comprehensive temporal analysis, anchoring the entire narrative of the dashboard. It draws the viewer's eye to an aggregate view of financial performance over time, offering a summarizing conclusion to the data story presented.

This strategic placement respects the viewer's cognitive process by allowing a layered approach to data digestion—from the specific (city and product category performance) to the general (overall profit trends). The wide-spanning nature of the chart is not just a design choice but a functional one, enabling a detailed yet clear depiction of monthly trends over the entire year. By concluding the dashboard with this visualization, it ensures that the user leaves with a thorough understanding of the temporal dynamics of profit within the business.

A screenshot of a computer

Description automatically generated

My dashboard is meticulously designed to answer the asked questions on profitability and product performance, while also placing a strong emphasis on user interaction and guidance. In addition to providing comprehensive data insights, the dashboard includes a dedicated section that explains how to effectively use its features. This approach is outlined as follows:

**Section on Dashboard Usage Instructions:** A key part of the dashboard is the instructional section that guides users on how to navigate and interact with the various features. This section is crucial for maximizing the utility of the dashboard, especially for users who may be less familiar with interactive data visualizations.

**Interactive Features of the Dashboard:**

1. **Interactive City Profitability Analysis in Tennessee:** By enabling users to click on any city within the "Most Profitable City in Tennessee" bar chart, the dashboard activates the "Profit by City in Tennessee" line chart. This interactivity allows users to delve into the annual profit trends of a selected city, facilitating a targeted analysis that responds directly to user input.
2. **Dynamic Product Category Performance in Iowa:**When users select a section of the "Most Profitable Product Category in Iowa" pie chart, the dashboard dynamically updates the "Top Selling Products by Category in Iowa" bar chart. This interaction reveals specific details about the top-performing products within the chosen category, offering insights tailored to the user's area of interest.
3. **Customizable Monthly Profit Analysis:**The incorporation of year and state filters makes the dashboard highly customizable. Adjusting these filters refreshes the "Monthly Profit Overview: Monthly Highs and Trends" section, allowing the visualizations to reflect the specific data pertinent to the user’s selections. This feature ensures that the analysis is relevant and focused.
4. **Enhanced Data Understanding with Tooltips:** To provide a deeper understanding of the data, tooltips appear when hovering over any data point across the visualizations. These tooltips supply expanded details and precise figures, enhancing the user’s comprehension of the metrics.

**Justification for This Approach:**

The design of this interactive dashboard is strategically tailored to enhance user engagement and simplify the analysis of complex data, making it an invaluable tool for strategic business decision-making. It features interactive elements like clickable city profitability charts and dynamic product category selections, allowing users to delve deep into specific data areas of interest. This approach not only makes the dashboard more engaging but also personalizes the data exploration experience. To ensure accessibility for all users, clear usage instructions are included, catering to varying levels of data tool proficiency and removing potential barriers to effective navigation and interaction. Additionally, the integration of tooltips provides a deeper layer of information, offering detailed insights without overloading the visual interface. This thoughtful blend of interactivity, user-friendliness, and detailed data presentation makes the dashboard not just a data repository, but a dynamic and intuitive platform for comprehensive business analysis..