D211 Performance Assessment Report

Advanced Data Acquisition

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**1. Alignment of Dashboard Purpose and Stakeholder Needs**

The “Customer Density Dashboard” was created to provide stakeholders with a clear and interactive visualization of customer density across different states and regions. The primary stakeholders, including business analysts, marketing teams, and management, need to understand customer distribution to make informed decisions on marketing strategies, resource allocation, and customer retention efforts. By focusing on loyal customers, the dashboard helps stakeholders identify high-density areas that may benefit from targeted campaigns or additional resources, aligning directly with their need for actionable insights.

**2. Justification for Selecting Tableau as the Business Intelligence Tool**

Tableau was selected as the business intelligence tool due to its powerful data visualization capabilities, user-friendly interface, and ability to handle complex data blending and calculations seamlessly. Tableau allows for the creation of interactive and dynamic dashboards, enabling stakeholders to explore data in real-time and derive insights quickly. Its drag-and-drop functionality, extensive library of visualization types, and integration with various data sources make it an ideal choice for this project.

**3. Data Cleaning and Preparation Steps**

The data cleaning and preparation involved several key steps to ensure the dataset was accurate and ready for analysis:

* **Data Extraction**: Extracted data from the telecommunications churn dataset and the US Census Bureau dataset.
* **Data Cleaning**: Removed duplicates, handled missing values, and ensured consistency in the data formats.

sql

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UPDATE d211

SET state = TRIM(state),

region = TRIM(region)

WHERE

state IS NOT NULL AND region IS NOT NULL;

* **Data Blending**: Used Tableau’s data blending feature to combine churn data with census data on the state field.
* **Calculated Fields**: Created calculated fields in Tableau for metrics such as customer density, which is defined as the ratio of loyal customers to the state population.

**4. Steps to Create the Dashboard**

The process of creating the dashboard involved the following steps:

1. **Prepare Data**:
   * Import and blend datasets in Tableau.
   * Create necessary calculated fields for analysis.
2. **Create Worksheets**:
   * **Density Map**:
     + Drag “Region, State” to the main visualization area and set the mark type to “Map.”
     + Add “Customer Density” to colors and resolve blending errors.
     + Filter for loyal customers by setting churn to “No.”
     + Add relevant details and labels to the map.
   * **Density Summary**:
     + Drag “Region” to columns and add “Customer Density” to the view.
     + Add population and customer count to labels and format them.
     + Change mark type to “Square” and apply relevant filters.
3. **Build Dashboard**:
   * Create a new dashboard and arrange the “density map” and “density summary” sheets.
   * Set up action filters to enable interactive filtering based on region selection.
   * Finalize the layout, titles, fonts, and alignments.

**5. Data Analysis Results**

The data analysis revealed key insights into customer density distribution across different states and regions. The dashboard effectively highlighted areas with high concentrations of loyal customers, providing stakeholders with a visual representation of where loyal customer bases are strongest. This information supports the purpose of the dashboard by enabling stakeholders to focus their efforts on high-density areas, potentially increasing customer engagement and optimizing marketing strategies.

**6. Limitations of Data Analysis**

While the analysis provided valuable insights, it is important to acknowledge certain limitations:

* **Data Completeness**: The analysis is limited by the completeness and accuracy of the input data. Any missing or inaccurate data could impact the results.
* **Scope of Data**: The analysis focused on loyal customers (churn = “No”). Other customer segments and additional factors influencing customer behavior were not considered.
* **Static Data**: The data used was static and did not account for temporal changes or trends. A dynamic dataset with time-series analysis could provide deeper insights.

**Conclusion**

In conclusion, the “Customer Density Dashboard” successfully aligns with stakeholder needs by providing a clear visualization of customer density and supporting strategic decision-making. Tableau proved to be an effective tool for this project, offering robust visualization and data manipulation capabilities. The data cleaning, preparation, and analysis steps ensured accurate and actionable insights, although certain limitations should be considered when interpreting the results.

Data Source:

NST\_EST2023\_POP Annual Estimates of the Resident Population for the United States, Regions, States, District of Columbia, and Puerto Rico: April 1, 2020 to July 1, 2023 (US Census Bureau, 2023)