

Data 230 - Final Assignment Report

Objectives:

The objective of the dashboard is to analyze and visualize the Behavioral Risk Factor Surveillance System (BRFSS) data to gain insights into health-related behaviors and conditions in the United States. The dashboard consists of various charts that display trends and patterns in health behaviors based on different variables such as state, age group, and year.

Steps to develop:

Dataset: The dataset used for this analysis is the BRFSS data downloaded from the CDC website. It contains 2.2 million records and 27 columns, capturing information on health-related behaviors, chronic conditions, and demographic characteristics across multiple years and locations in the United States.

Dataset Link: <https://chronicdata.cdc.gov/Behavioral-Risk-Factors/Behavioral-Risk-Factor-Surveillance-System-BRFSS-P/dttw-5yxu>

Data Import:

Connect Tableau to the BRFSS dataset source, such as the downloaded CSV file. Import the dataset into Tableau, ensuring the data is correctly recognized and loaded.
Data Preparation:

Clean the dataset by handling missing values, filtering irrelevant columns, and transforming data types if necessary.
Perform any required data transformations or calculations needed for analysis and visualization.

Define Objectives and Key Metrics:

Determine the objectives of the dashboard, such as analyzing health behaviors or identifying trends.
Identify key metrics and KPIs that align with the objectives, such as prevalence rates, demographic breakdowns, or geographic patterns.

Visualization Design:

Plan the layout and structure of the dashboard, considering the placement of visualizations, filters, and interactive elements.

Select appropriate visualizations (e.g., bar charts, line graphs, maps) that effectively represent the data and highlight key insights.

Apply consistent formatting, color schemes, and labeling conventions to create a visually appealing design.

Create Visualizations:

Build individual visualizations in Tableau by dragging and dropping relevant variables onto the canvas.

Configure each visualization by selecting appropriate chart types, adjusting properties (e.g., colors, labels, axes), and applying filters or hierarchies.

Ensure that each visualization provides meaningful insights and effectively communicates the desired information.

Chart 1: Geospatial map of health behaviors by state

Displays health behaviors (e.g., alcohol consumption, tobacco use) on a map of the United States.

Utilizes a orange color gradient to represent the prevalence of the behavior in each state. States with higher prevalence are displayed in darker colors, while states with lower prevalence are shown in lighter colors. Includes interactive filters to explore specific behaviors or years.

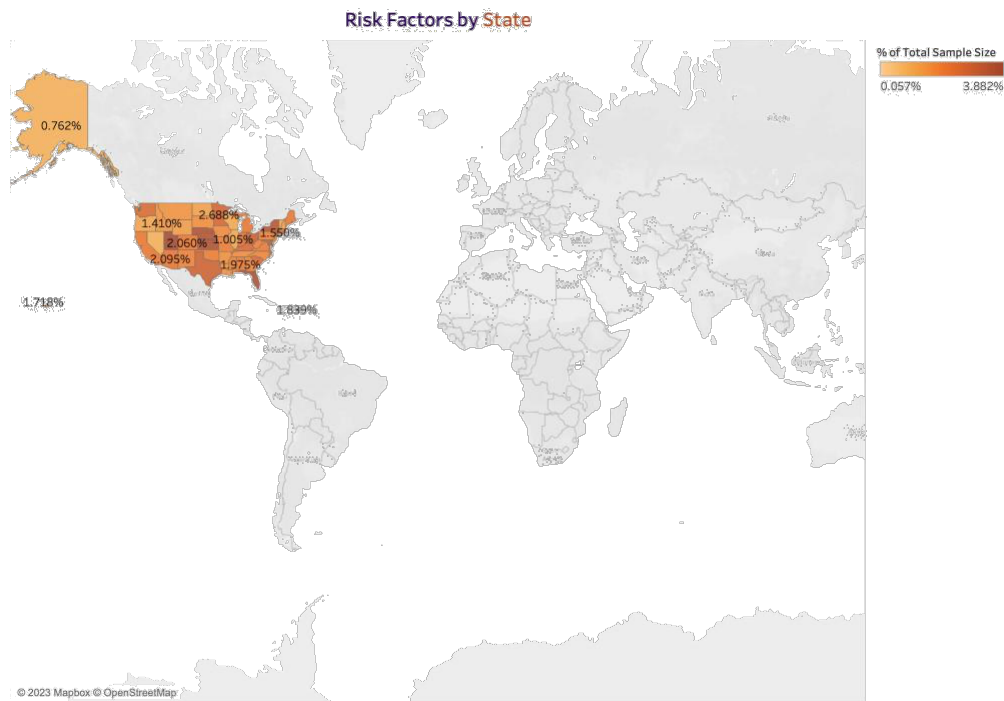


Chart 2: Bar graph of health behaviors by age group

Presents the percentage of health behaviors (e.g., alcohol consumption) based on different age groups.

Uses bars to visualize the distribution of behaviors across age groups.

Provides insights into which age groups have higher or lower prevalence of specific behaviors.

Allows for interactive filtering to focus on specific behaviors or age groups.

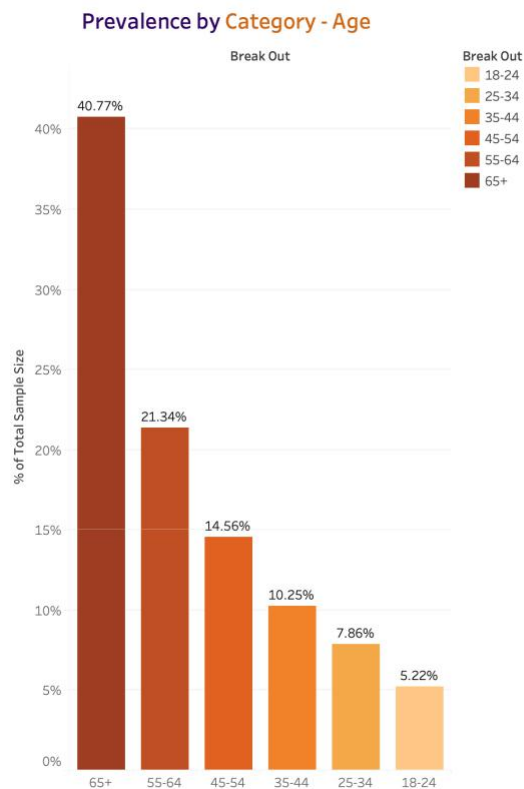


Chart 3: Line graph of health behaviors over time

Shows the trends of health behaviors (e.g., alcohol consumption, tobacco use) over multiple years.

Uses a line graph to display the changes in behavior prevalence over time.

Allows users to observe the overall trend and identify any significant shifts.

Interactive filtering enables the selection of specific behaviors or years.

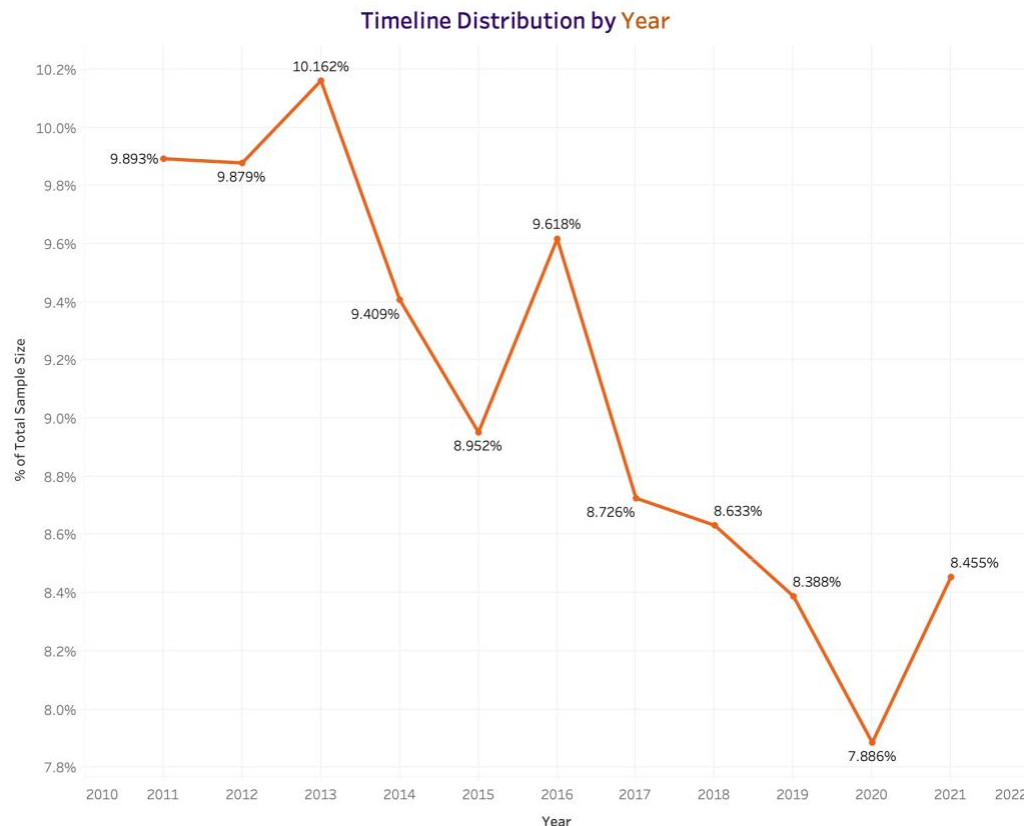


Chart 4: Heatmap of health behaviors by state and year

Illustrates the prevalence of health behaviors (e.g., tobacco use) across different states and years.

Utilizes color intensity and size to represent the prevalence of the behavior in each state and year.

Provides labels with state names and sales count for better understanding.

Offers interactive filtering to focus on specific behaviors or states.

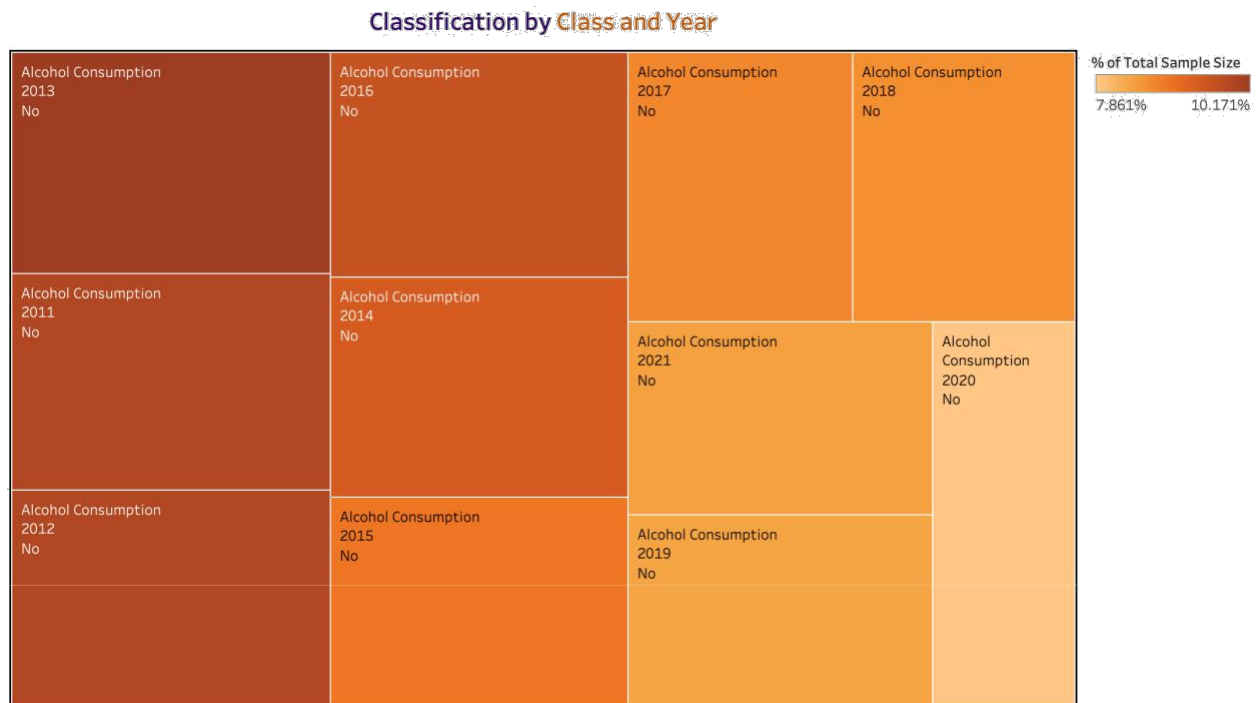


Chart 5: Bar graph of health behaviors by Gender group

Presents the percentage of health behaviors (e.g., alcohol consumption) based on different Gender groups.

Uses bars to visualize the distribution of behaviors across gender.

Provides insights into which gender have higher or lower prevalence of specific behaviors.

Allows for interactive filtering to focus on specific behaviors or gender.

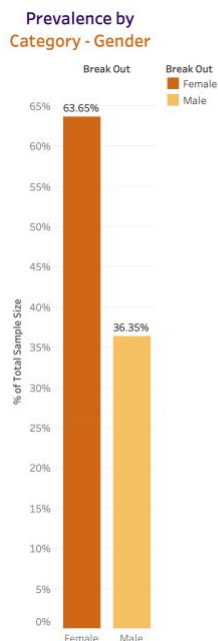


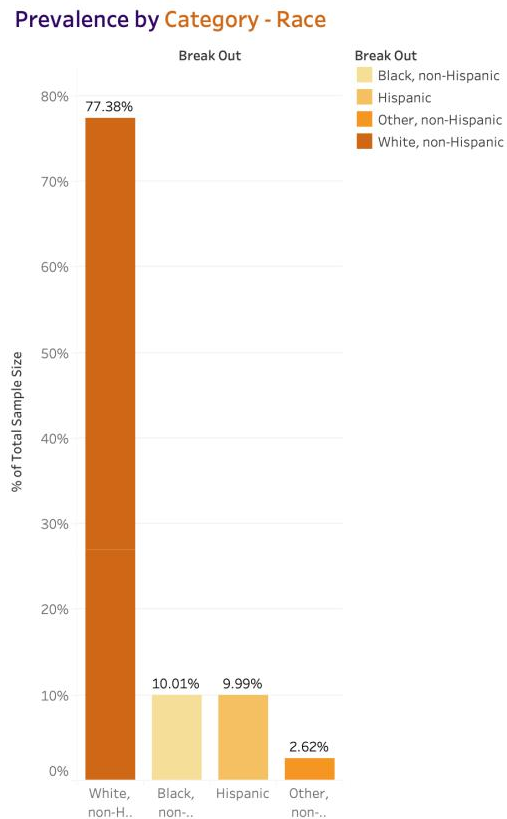
Chart 6: Bar graph of health behaviors by Race group

Presents the percentage of health behaviors (e.g., alcohol consumption) based on different age groups.

Uses bars to visualize the distribution of behaviors across race groups.

Provides insights into which race groups have higher or lower prevalence of specific behaviors.

Allows for interactive filtering to focus on specific behaviors or race groups.



Dashboard:



Key principles employed:

Cognitive models: The project incorporates cognitive models by organizing the information in a logical and intuitive manner. The charts and visuals are designed to align with the users' mental models, making it easier for them to understand and interpret the data.

Gestalt principles:

Gestalt principles of visual perception are applied to enhance the clarity and organization of the dashboard. Principles such as **proximity, similarity, and closure** are employed to group related elements, highlight patterns, and create a cohesive visual structure.

Good User Interface (UI) Practices:

Clear and concise labels: The project ensures that labels for data points, axes, and legends are clear, concise, and easily understandable. This helps users quickly interpret the charts and understand the displayed information.

Interactive filters: Interactive filters are implemented to allow users to explore the data in a more personalized way. Users can select specific states, age groups, or years to focus on and dynamically update the charts accordingly. This enhances user engagement and enables more targeted data analysis.

Consistent design elements: The project maintains consistency in design elements such as colors, fonts, and layout across different charts and visualizations. This consistency creates a cohesive visual identity and helps users navigate the dashboard seamlessly.

Visual hierarchy: The project employs visual hierarchy to prioritize important information and guide users' attention. Elements such as titles, headings, and emphasized data points are strategically positioned and styled to ensure clarity and readability.

Effective use of colors: Colors are used thoughtfully to convey meaning and enhance data visualization. Appropriate color palettes are selected to represent different variables or categories consistently throughout the charts. This aids users in understanding patterns, comparisons, and trends in the data.

Adequate white space: Sufficient white space is incorporated in the design to create a balanced and uncluttered layout. This allows users to focus on the data and prevents visual overload, making the information more digestible.