



B9DA106 Data Visualization
Tableau Practical Assignment

Course Title: Master of Science in Data Analytics.

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Data Source

Source link: <https://www.kaggle.com/datasets/alphiree/cardiovascular-diseases-risk-prediction-dataset>

ANALYZING FOOD CONSUMPTION, BMI, AND DISEASE PREVALENCE: A VISUAL EXPLORATION AND INSIGHTS REPORT

INTRODUCTION:

The dataset used for this analysis focuses on the consumption of different food items and their association with general health and various diseases. It contains variables such as the percentage of total consumption of green vegetables, fruits, fried potatoes, and alcohol, as well as information on general health indicators like arthritis, diabetes, heart disease, and BMI. The objective of this analysis is to explore the relationships between food consumption and health outcomes, specifically examining how the consumption of specific food items relates to the prevalence of diseases.

VISUALIZATIONS:

- a) **Scatter Bar:** % of Total Green Vegetable & % of Total Fruits Consumption by General Health
This scatter plot visualizes the relationship between the percentage of total consumption of green vegetables and fruits and the general health of individuals. The x-axis represents the percentage of total green vegetable consumption, the y-axis represents the percentage of total fruit consumption, and the data points are shape-coded based on general health. This visualization allows us to identify any patterns or correlations between the consumption of green vegetables, fruits, and general health. It can help determine whether there is a positive association between higher consumption of these food items and better overall health.
- b) **Horizontal Bars:** % of Total Fried Potato Consumption by Arthritis. This horizontal bar chart displays the percentage of total fried potato consumption among individuals with arthritis. The y-axis represents different types of arthritis, while the x-axis represents the percentage of total consumption of fried potatoes. Each bar represents a specific type of

arthritis. This visualization allows us to compare the levels of fried potato consumption among individuals with different types of arthritis, helping us identify any potential associations between fried potato consumption and the prevalence of arthritis.

- c) **Vertical Bar:** % of Total BMI by Diabetes & Heart Disease This vertical bar chart visualizes the percentage of total Body Mass Index (BMI) within different ranges among individuals with diabetes and heart disease. The x-axis represents different BMI ranges, while the y-axis represents the percentage of individuals falling within each range. The bars are grouped by disease category (diabetes and heart disease). This visualization helps us understand the distribution of BMI within specific disease categories and can provide insights into the relationship between BMI and these diseases.
- d) **Sketched Bars:** % of Total Alcohol Consumption by Age Category The sketched bar chart displays the percentage of total alcohol consumption within different age categories. The x-axis represents different age categories, while the y-axis represents the percentage of total alcohol consumption. Each bar represents a specific age category. This visualization allows us to compare the levels of alcohol consumption across different age groups, enabling us to analyse any trends or patterns in alcohol consumption by age.
- e) **Horizontal Bars:** % of total count of CVD by Smoking History. This Horizontal bar displays the percentage of total count of CVD individually with smoking History. The y-axis represents the percentage of total count of CVD and x-axis represents.

Usage of Filters and Parameters:

a) **Quick Filters:** Quick filters provide an interactive way to filter data within the visualization. In the dashboard, we can apply quick filters to variables such as BMI and Heart disease allowing users to dynamically adjust the displayed data based on their preferences. For example, users can filter the data to focus on a specific BMI range or exclude certain heart disease categories to explore specific scenarios or patterns.

b) **Sets:** Sets allow us to create custom groups or subsets of data based on specific criteria. In this analysis, we can create a set for individuals within the Age category, enabling us to compare their consumption of different food items against the overall population. This set can be used in various visualizations to highlight the differences in food consumption patterns among individuals with high BMI.

c) **Parameters:** Parameters provide a way to input values or change settings that affect the visualization. In the dashboard, we can use parameters to set specific BMI thresholds, such as defining the cutoff for a high BMI category. This allows users to dynamically adjust the threshold and observe how the distribution of food consumption changes based on different BMI criteria.

d) **Action Filters:** Action filters enable interactivity between visualizations. For example, clicking on a specific disease category in the ": % of Total Green Vegetable & % of Total Fruits Consumption by General Health " chart can automatically filter the other visualizations in the dashboard to show data specific to that about health. This feature enhances the user experience by allowing them to explore the relationships between different variables more intuitively.

INSIGHTS:

After analyzing the visualizations and exploring the dataset, several insights can be derived:

Scatter Plot: Higher percentages of total consumption of green vegetables and fruits tend to be associated with better general health. This suggests that a diet rich in these food items may have positive effects on overall well-being.

Horizontal Bars: Individuals with arthritis tend to have varied levels of fried potato consumption. Further analysis is needed to determine whether fried potato consumption has a significant impact on arthritis prevalence.

Vertical Bar: The distribution of BMI differs between individuals with diabetes and heart disease. There appears to be a higher prevalence of individuals with high BMI in the diabetes category compared to the heart disease category.

Sketched Bars: Alcohol consumption patterns vary across different age categories. Younger individuals tend to have higher percentages of alcohol consumption compared to older age groups.

Overall, these visualizations provide valuable insights into the relationships between food consumption, health indicators, and diseases. They can help healthcare professionals, researchers, and policymakers gain a better understanding of these associations and guide efforts in promoting healthier dietary choices and disease prevention strategies.

Additionally, the usage of filters and parameters in the dashboard enhances the analytical capabilities and interactivity for users. The inclusion of a quick filter for BMI allows users to dynamically adjust the displayed data based on specific BMI ranges of interest. This functionality enables them to focus on a particular BMI category or explore the dataset without any BMI restrictions, providing flexibility in the analysis.

The sets feature is utilized to create a custom group of individuals with high BMI. By creating this set, users can compare the consumption patterns of individuals with high BMI to the overall population. This allows for a deeper understanding of how food consumption varies among individuals with different BMI levels and helps identify any specific trends or patterns.

Parameters are incorporated to define specific BMI thresholds, such as determining the cut-off for a high BMI category. By adjusting the parameter value, users can observe how the distribution of food consumption changes based on different BMI criteria. This functionality enables them to explore the impact of different BMI thresholds on the relationships between food consumption and health outcomes.

Action filters provide a seamless and interactive experience for users. For instance, in the "Vertical Bar: % of Total BMI by Diabetes & Heart Disease" chart, clicking on a specific disease category automatically filters the other visualizations in the dashboard to display data specific to that disease. This functionality facilitates a deeper exploration of the relationships between BMI, food consumption, and disease prevalence, allowing users to make more informed decisions based on the selected disease category.

In conclusion, the analysis of the given dataset using various visualizations and interactive features in Tableau has provided valuable insights into the relationships between food consumption, health indicators, and diseases. The comprehensive dashboard, consisting of the scatter plot, horizontal bars, vertical bar, and sketched bars, allows users to explore the data in a dynamic and interactive manner. By utilizing filters, sets, parameters, and action filters, users can further customize their analysis and gain deeper insights. The findings from this analysis can inform healthcare professionals, researchers, and policymakers in developing targeted interventions and strategies to promote healthier lifestyles and reduce the prevalence of diseases associated with specific food consumption patterns.