# **Comprehensive Analysis and Dietary Strategies with Tableau**

**Project Title** : Comprehensive Analysis and Dietary Strategies with Tableau: A College Food Choices Case Study

**Branch** :Electronics and communication Engineering

**Domain** : Data Analytics With Tableau

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**Abstract** :

This study presents a comprehensive analysis of college students' food choices using data visualization tools, specifically Tableau. With increasing concerns about student health, nutrition, and academic performance, understanding dietary patterns has become essential. The project involves collecting and cleaning data related to food preferences, nutritional intake, gender, GPA, and other lifestyle factors of college students. Using Tableau, interactive dashboards are created to uncover insights such as popular food categories, unhealthy eating habits, and their potential impact on academic outcomes.

The visualizations enable stakeholders—students, campus nutritionists, and administrators—to identify trends and correlations, such as the link between diet quality and GPA or gender-based food preferences. Based on these insights, tailored dietary strategies and recommendations are proposed to promote healthier eating habits on campus. This case study demonstrates the power of data analytics in driving evidence-based nutritional decisions, highlighting Tableau as an effective tool for transforming raw data into actionable strategies.

**Introduction** :

In today’s fast-paced academic environment, college students often face challenges in maintaining a healthy and balanced diet. Irregular meal patterns, increased consumption of fast food, and limited awareness about nutrition can significantly impact students' physical health, mental well-being, and academic performance. Understanding these dietary habits is crucial to developing strategies that encourage healthier food choices on campus.

This case study, titled "Comprehensive Analysis and Dietary Strategies with Tableau: A College Food Choices Case Study," focuses on analyzing the food preferences and nutritional patterns of college students using Tableau, a powerful data visualization tool. By leveraging real-world data, the study aims to uncover meaningful insights about students’ eating behaviors, preferences across different demographics, and the potential link between dietary habits and academic performance indicators such as GPA.

Through interactive dashboards and visual reports, the project identifies key trends, unhealthy patterns, and opportunities for improvement. Based on the findings, evidence-based dietary strategies are proposed to guide students towards better nutritional choices, ultimately contributing to a healthier and more productive college environment.

**Problem Statement** : Lack of data-driven insights into college students' dietary habits leads to unhealthy food choices and missed opportunities for targeted nutritional interventions.

**Pre Requisites :** A College Food Choices Case Study," several prerequisites are essential. Firstly, a basic understanding of Tableau is required to create visualizations, dashboards, and perform data analysis tasks. Familiarity with data analysis concepts, such as data cleaning, filtering, and summarizing, is important to draw meaningful insights from raw datasets. Additionally, knowledge of nutrition and dietary guidelines is crucial for assessing the healthiness of food choices and developing appropriate strategies. Proficiency in handling spreadsheets (Excel or CSV files) is also necessary, as the data is likely to be organized in such formats. Moreover, a good understanding of student food preferences and lifestyle patterns helps in contextualizing the analysis. Finally, strong analytical thinking and communication skills are important to interpret results and present findings effectively using Tableau visualizations**.**

**Prior Knowledge :** A College Food Choices Case Study" includes a foundational understanding of data visualization concepts and tools, particularly Tableau, to effectively create charts, dashboards, and interpret data patterns. Additionally, familiarity with basic data handling in tools like Excel or CSV formats is essential for organizing and preparing data for analysis

**Project Objectives** :

* Analyze student food choices using collected data to understand eating habits in a college setting.
* Identify patterns and trends in dietary preferences based on factors like gender, age, academic performance, and meal timing.
* Visualize data using Tableau to present insights through interactive dashboards and clear visual representations.
* Evaluate nutritional balance and highlight areas where students may lack essential nutrients or consume excessive unhealthy foods.
* Suggest personalized dietary strategies to promote healthier eating habits among college students.
* Support decision-making for campus dining services to improve menu planning and nutritional offerings.
* Raise awareness about the impact of food choices on academic performance and overall well-being.

**Project Flow :**

**Problem Identification**

* Understand the issues related to unhealthy eating habits among college students.

**Data Collection**

* Gather food consumption data from surveys, college canteens, or nutrition tracking apps.
* Include attributes like food type, calories, student demographics, frequency, and timing.

**Data Preprocessing**

* Clean the data by removing nulls, correcting values, and standardizing formats.
* Categorize foods (e.g., fruits, junk food, balanced diet).
* Convert gender codes (e.g., 1 = Female, 2 = Male).

**Data Analysis**

* Use statistical tools to find mean, median, and mode of food intake, calorie consumption, etc.
* Identify trends based on gender, academic year, or time of day.

**Visualization in Tableau**

* Create dashboards showing:
* Most consumed food items
* Nutritional gaps
* Diet vs. academic performance
* Gender-based food preferences

**Dietary Strategy Development**

* Based on insights, propose strategies like:
* Balanced meal planning
* Healthier canteen options
* Awareness programs for students

**Evaluation & Conclusion**

* Evaluate the effectiveness of the proposed dietary strategies.
* Conclude with findings and recommendations for future improvements.

**Visualization of Flow :**

Problem Identification

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Data Collection

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Data Preprocessing

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Data Analysis

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Data Visualization using Tableau

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Dietary Strategy Formulation

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Conclusion & Recommendations

**Data Collection :**

**Sources of Data**

* **Student Surveys and Questionnaires**
* Collected data on students’ daily meals, preferred food items, meal timings, and frequency of eating out.
* **College Canteen Records**
* Accessed transactional data showing most purchased items, meal sales by time slots, and popular food combinations**.**
* **Nutritional Databases**
* Used standard nutrition charts or databases (like USDA) to map food items with calorie, protein, fat, and carbohydrate values**.**
* **Academic Records (Optional & Confidential)**
* GPA or performance data, if available, to analyze the relation between diet and academics.

**Data Attributes Collected**

* Student ID (anonymous or coded)
* Gender
* Age / Year of study
* Meal type (breakfast, lunch, dinner, snacks)
* Food item name
* Food category (e.g., junk food, healthy, protein-rich)
* Quantity consumed
* Time of consumption
* Calorie and nutrient values
* Frequency of meals per day
* GPA/Academic performance (if analyzed)

**Tools Used for Collection**

* Google Forms or physical survey sheets
* Excel/CSV export from canteen POS system
* Online nutrition databases for food values

**Purpose**

* To build a comprehensive dataset that reflects real food habits.
* To enable accurate visual analysis in Tableau**.**

**Tools and Technologies Used :**

**Tableau**

* Used for data visualization and dashboard creation.
* Helped in identifying trends, patterns, and comparisons across food choices, nutrition, and academic performance.

**Microsoft Excel / Google Sheets**

* Used for data entry, cleaning, and preprocessing.
* Calculated basic statistics like mean, median, and mode before importing into Tableau.

**Google Forms / MS Forms**

* Used for survey creation and data collection from students regarding their food preferences and habits.

**Online Nutrition Databases**

* (e.g., USDA FoodData Central, Nutritionix)
* Used to fetch nutritional values like calories, protein, fats, and carbs for each food item.

**Data Cleaning Tools (optional)**

* Python (Pandas) or Power Query in Excel — for advanced data preprocessing if required**.**

**Reference Materials**

* Research papers, dietary guidelines (e.g., WHO recommendations) for building accurate dietary strategies.

**Conclusion**

The project successfully demonstrates how data analysis and visualization can be leveraged to understand and improve the dietary habits of college students. By collecting real-world food consumption data and using Tableau for insightful visualizations, key patterns in food preferences, nutritional gaps, and consumption trends were identified.

The analysis revealed that many students tend to favor fast food and irregular meal timings, which may negatively impact their health and academic performance. Through interactive dashboards, stakeholders can easily interpret the data, make informed decisions, and develop targeted dietary strategies.

Overall, this case study highlights the importance of integrating data analytics into health-related initiatives on campus. The proposed dietary strategies based on data-driven insights can help promote healthier eating habits, improve student well-being, and support better academic outcomes. Future work can involve automating data collection and integrating real-time health tracking systems for deeper analysis.

**Results :**

The project revealed that a significant number of college students follow unhealthy eating patterns, with a preference for fast food and irregular meal timings. Nutritional analysis showed an imbalance in their diet, with excessive intake of carbohydrates and fats and insufficient consumption of fruits, vegetables, and fiber. Gender-based analysis indicated different food preferences, and a positive correlation was observed between healthy eating habits and higher academic performance. Using Tableau, the data was effectively visualized, making it easier to identify key trends and gaps. These insights helped in forming targeted dietary strategies to promote healthier food choices among students**.**