Final Project Report

SUBMITTED BY : P.SAI SHRISTI

M.THARUN

M.PREM KUMAR NAIDU

N. POORNA PRAKASH

Comprehensive Analysis and Dietary Strategies with Tableau

A College Food Choices Case Study

---

1. Introduction

This project explores the dietary habits of college students and uses data analytics to uncover patterns, inefficiencies, and areas of improvement. The primary goal is to guide students toward healthier food choices through data-driven insights, visualized using Tableau dashboards and optionally embedded in a Flask web application.

---

2. Problem Statement

College students frequently struggle with maintaining a healthy diet due to tight schedules, limited budgets, and a lack of nutritional awareness. These issues lead to unhealthy habits like skipped meals, high junk food consumption, and nutrient deficiencies. The aim of this project is to analyze such behaviors and provide actionable insights to improve dietary habits on campus.

---

3. Methodology

- **Data Collection**: Surveys and daily food logs were collected from 300 college students for a period of 30 days.
- **Data Processing**: Cleaning and transformation were carried out using Excel and Python. Nutrient information was standardized using the USDA food database.
- **Visualization**: Tableau was used to build dashboards for better understanding of the data.

- **Web Integration (Optional)**: Dashboards were embedded using Flask for interactive access via a web interface.

---

4. Data Preparation

Data fields included:

- Student ID (anonymous)
- Meal type and frequency
- Food items consumed
- Calorie, protein, fat, and carbohydrate content
- Budget per meal
- Lifestyle data: exercise duration and sleep

Cleaning Tasks:

- Removed null and duplicate values
- Standardized food entries (e.g., "rice" vs. "boiled rice")
- Created derived metrics (e.g., daily calorie count, nutrient ratios)

---

5. Dashboards and Visualizations

Key dashboards created in Tableau:

1. **Meal Frequency Dashboard** – Displays skipped meals per week.
2. **Nutrient Intake vs Guidelines** – Compares actual intake to recommended daily values.
3. **Budget Analysis** – Visualizes spending on healthy vs. junk food.
4. **Demographic Filters** – Allows filtering by gender, year, athlete status.
5. **Health Correlation Dashboard** – Links sleep and exercise data to food quality.

Each dashboard was built with interactivity and user filtering for deep insight discovery.

---

6. Key Findings

- **Breakfast skipping** was highly prevalent among first-year students.
- **Late-night junk food consumption** increased around exams.
- **Male students** had higher calorie intake but lower nutrient diversity.
- **Students with consistent exercise and better sleep patterns** showed healthier food profiles.
- **Common deficiencies** included Vitamin D, Fiber, and Iron.

7. Recommendations

- **Launch subsidized breakfast programs** in campus canteens.
- **Introduce healthy snack stations** in residence halls and libraries.
- **Gamify food logging** with incentives for balanced diet entries.
- **Host awareness campaigns** on micronutrient importance.
- **Provide personalized dashboards** to students showing their nutrition score.

---

8. Technologies Used

Component	Tool/Technology
Data Collection	Google Forms, Excel
Data Cleaning	Excel, Python (pandas)
Visualization	Tableau Desktop/Public
Web Embedding	Flask
Optional Hosting	PythonAnywhere/Heroku

---

9. Conclusion

This case study successfully demonstrates the use of data analytics and visualization to enhance student dietary habits. Tableau proved to be an effective tool for generating intuitive dashboards, while the optional Flask web interface made insights easily accessible. With continued data collection and strategic planning, colleges can significantly improve student health and productivity.

---

10. Appendices

- **Sample Dashboard Snapshots**
  - Meal Frequency Heatmap
  - Nutrient Deficiency Table
  - Budget vs Food Type Graphs
- **Flask Integration Code Snippet**
  - HTML template with embedded Tableau dashboard