Final Report

Project Title:

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

1. Introduction

1.1 Project Overview

This project explores the eating habits of college students using data from Kaggle. After cleaning and organizing the data in Excel, we used Tableau to visualize key insights like calorie intake, food preferences, and comfort food choices. The goal is to help students make healthier dietary decisions by turning raw data into clear, interactive dashboards and strategies that promote better health and academic performance.

1.2 Purpose

- To analyze food choices and dietary habits among college students.
- To identify patterns in calorie intake, comfort food preferences, and perceived health levels.
- To use Tableau for visualizing insights in an interactive and user-friendly way.
- To provide personalized and practical dietary strategies based on data.

2. IDEATION PHASE

2.1 Problem Statement

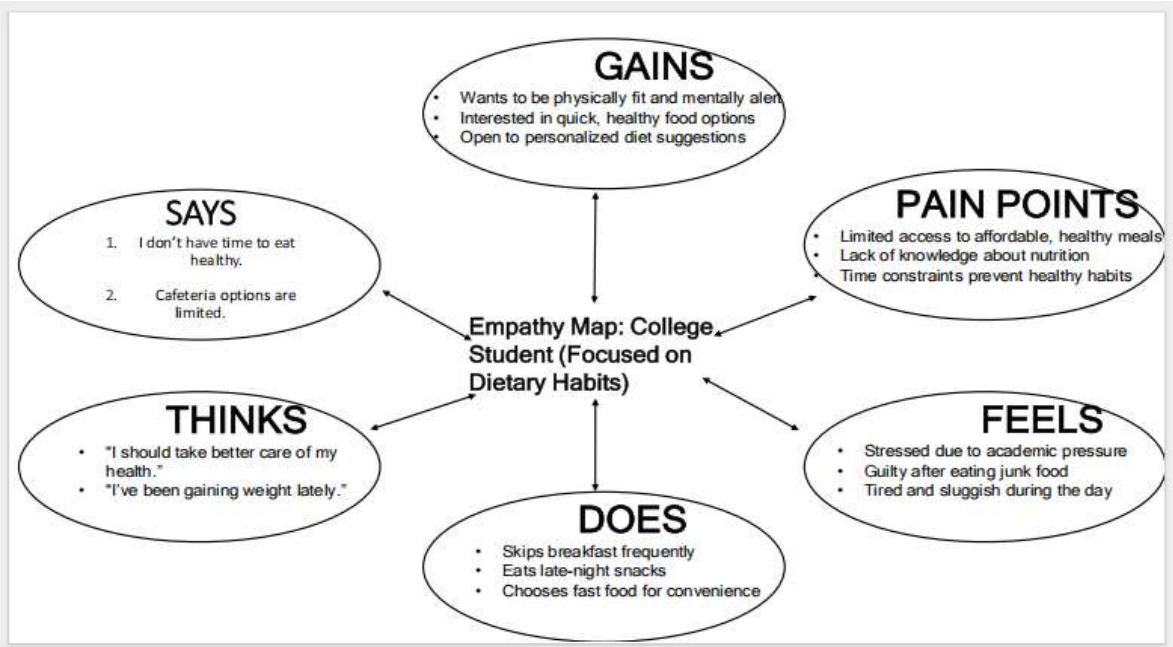
Problem Statement: Dietary Awareness and Health Among College Students

In today's fast-paced academic environment, college students often struggle to maintain a balanced and nutritious diet. Irregular schedules, academic stress, limited access to healthy food options, and a lack of awareness about proper nutrition contribute to unhealthy eating habits. These dietary patterns can negatively impact students' physical health, mental well-being, and academic performance. Despite the availability of food services on campus, many students report skipping meals, consuming excessive junk food, and having minimal intake of fruits and vegetables. Universities often lack real-time insights into students' dietary behaviors and do not have structured mechanisms to monitor and improve them.

The absence of actionable data and visualizations makes it challenging for educational institutions to design effective interventions. Without proper analysis and understanding of student eating habits, it becomes difficult to promote healthier lifestyles and provide personalized dietary guidance.

This project aims to bridge this gap by leveraging Tableau for comprehensive data visualization and analysis of college food choices. It will enable stakeholders—such as administrators, health services, and nutritionists—to understand dietary patterns, identify areas of concern, and develop strategic, data-driven solutions to enhance student health and nutrition awareness.

2.2 Empathy Map Canvas



2.3 Brainstorming

Project Overview

Comprehensive Analysis and Dietary Strategies with Tableau: A College Food Choices Case Study is an innovative project aimed at revolutionizing how dietary data among college students is visualized and utilized to drive informed decision-making and enhance student health and academic performance. This project uses Tableau to create a dynamic platform with interactive visualizations of student diet, exercise, and health data.

Brainstorming Process

Step 1: Team Gathering and Collaboration

- Form a multidisciplinary team.
- Select a focused problem statement.

Step 2: Brainstorming Idea Listing and Grouping

- Encourage idea generation from all team members.
- Cluster similar ideas into logical groups.

Step 3: Idea Prioritization

- Rank ideas based on impact and feasibility.
- Select top ideas to implement in the project.

Scenario 1: Monitoring Nutritional Intake

Receive real-time alerts about decreasing fruit and vegetable intake among students. Use Tableau visualizations to assess trends and causes, then respond with awareness campaigns, improved cafeteria options, or dietary advice.

Scenario 2: Addressing Dietary Deficiencies

Identify widespread deficiencies like low vitamin intake or high junk food consumption. Analyze affected demographics, prevalence, and potential impacts to design effective health campaigns and resource allocations.

Scenario 3: Predictive Analysis and Personalized Nutrition Plans

Use predictive analytics to prevent health issues by identifying risky dietary habits early. Provide personalized nutrition plans and monitor progress through real-time data.

3. REQUIREMENT ANALYSIS

3.1 Solution Requirement

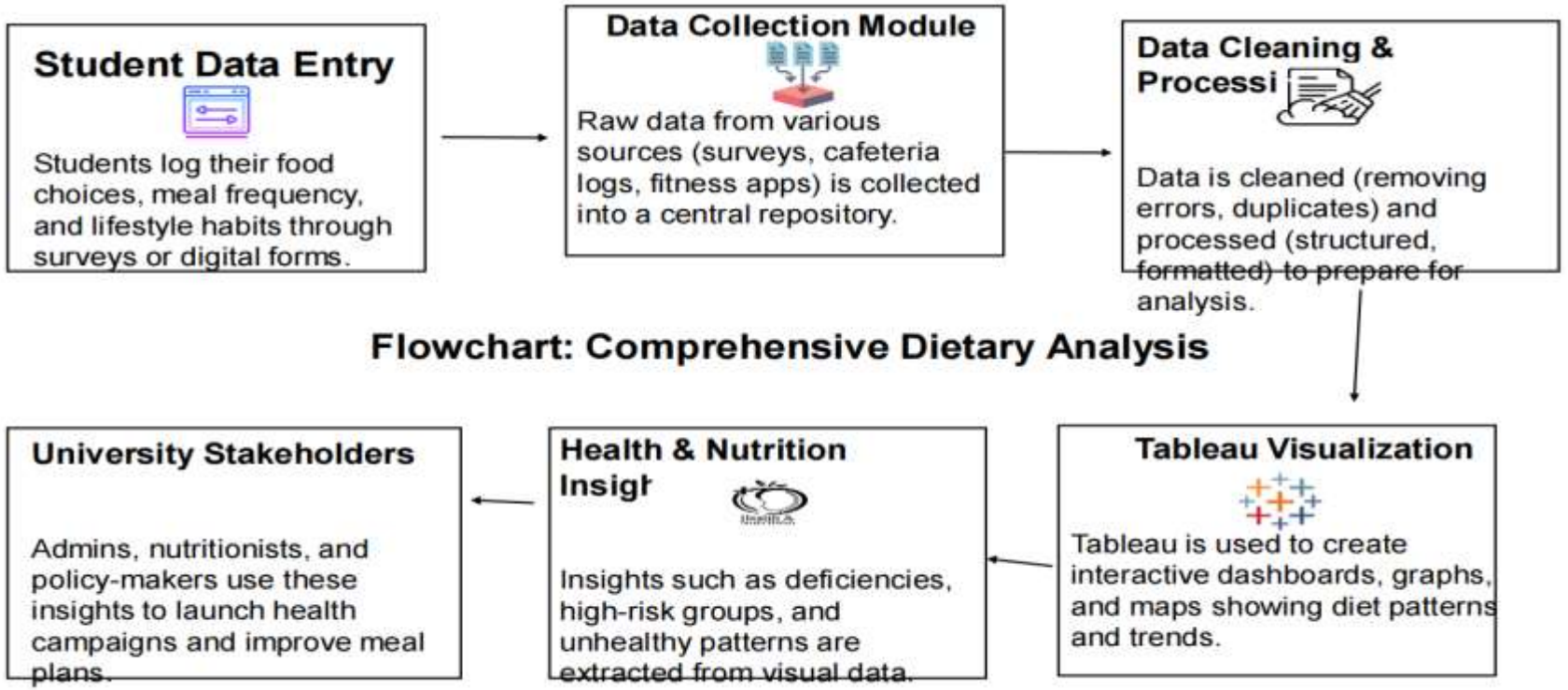
Functional Requirement :

1.	**Data Collection Interface**	• Survey forms or app for students to input dietary data. • Integration with cafeteria systems or meal logs.
2.	**Data Storage & Management**	• Centralized database to store raw food choice data securely. • Capability to update records in real time.
3.	**Data Cleaning & Preprocessing**	• Tools or scripts to remove duplicates, handle missing values. • Categorization (e.g., food types, calorie groups, meal timing).
4.	**Interactive Visualization (Tableau)**	• Dashboards showing calorie intake, diet types, nutrition etc. • Filters for gender, age, course, food preference, etc. • Trend analysis,
5.	**Analytics & Insights**	• Pattern recognition (e.g., high snack consumption at night). • Group-wise comparison (hostel vs day scholar, active vs inactive student.

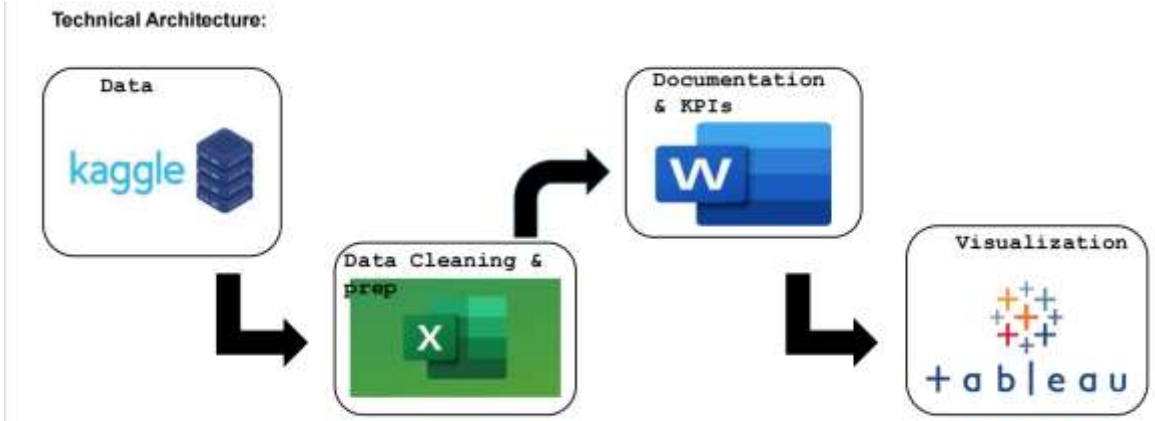
Non Functional Requirement :

1.	**Scalability**	Should handle data from hundreds or thousands of students.
2.	**User-Friendliness**	Easy for students, admins, and nutritionists to use dashboards.
3.	**Performance**	Fast data processing and dashboard loading, even for large datasets.
4.	**Data Privacy & Security**	• Comply with data protection standards (like anonymizing health data). • Secure student login and role-based access control
5.	**Compatibility**	Should work on various devices (laptops, mobiles) and support data export (PDF, Excel).

3.3 Data Flow Diagram



3.3 Technology Stack



Stage	Tool/Platform	Purpose
1.Data Source	Kaggle	Source of raw data on student diet, preferences, and health behavior
2.Data cleaning & Prep	Microsoft Excel	- Removed duplicates & nulls - Categorized food types, scores - Created calculated fields and pivot tables
3.Documentation & KPIs	Ms Word/ Google Docs	- Removed duplicates & nulls - Categorized food types, scores - Created calculated fields and pivot tables
4.Visualization	Tableau	- Created dashboards & charts - Built Tableau Stories for insights - Used filters and drill-down for deeper analysis
5.Stroy Telling	Tableau Story	- Presented key findings in narrative format - Used story points for step-by-step flow
6.Output Sharing	Tableau Public / Exported PDF	- Shared dashboards with faculty or team - Accessible reports and summaries

4. PROJECT DESIGN

4.1 Problem Solution Fit

Problem	Solution
1. Students have **unhealthy eating habits** due to lack of awareness and busy academic schedules.	lack of awareness and busy academic schedules. Create visual dashboards that **highlight eating patterns** and help educate students
Universities lack **real-time insights** into student nutrition data	Use **Tableau dashboards** to visualize current trends, meal choices, and health indicators.
Lack of **personalized dietary strategies** based on student groups (gender, lifestyle, etc.).	Use filtered Tableau views and KPIs to **tailor nutrition strategies** for different demographics.
Limited cafeteria planning due to missing	Provide clear visualizations on preferred

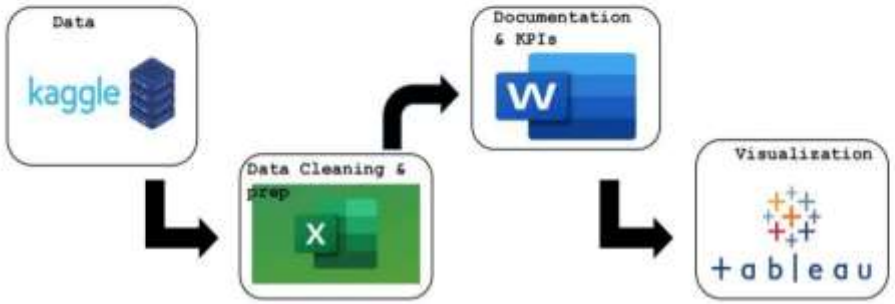
4.2 Solution Architecture

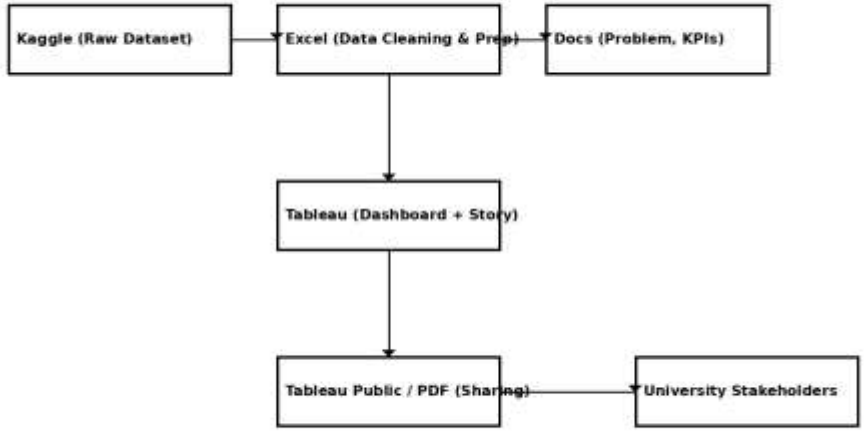
Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

Technical Architecture:





5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Product Backlog, Sprint Schedule, and Estimation

Sprint	Functional Requirement	User Story Number	User story / Task	Story point	Priority	Team Member
Sprint-1	Registratation	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	high	
Sprint-1	Login	USN-2	As a user, I can log into the application by entering email & password	1	high	
Sprint-2	Dashboard	USN-3	As a user, I can visualize easily	2	High	
Sprint-1	Public	USN-4				
Sprint-1		USN-5				

Project Tracker, Velocity & Burndown Chart:

Sprint	Total Story Point	Duration	Sprint Start Date	Sprint End Date	Story Point Completed	Sprint Realease Date
Sprint-1	20	5 Days	20 June 2025	25 June 2025	20	25 June 2025
Sprint-2	20	5 Days	20 June 2025	25 June 2025	15	25 June 2025
Sprint-3	20	5 Days	20 June 2025	25 June 2025	15	25 June 2025
Sprint-4	20	5 Days	20 June 2025	25 June 2025	20	25 June 2025

Velocity:

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

Burndown Chart:

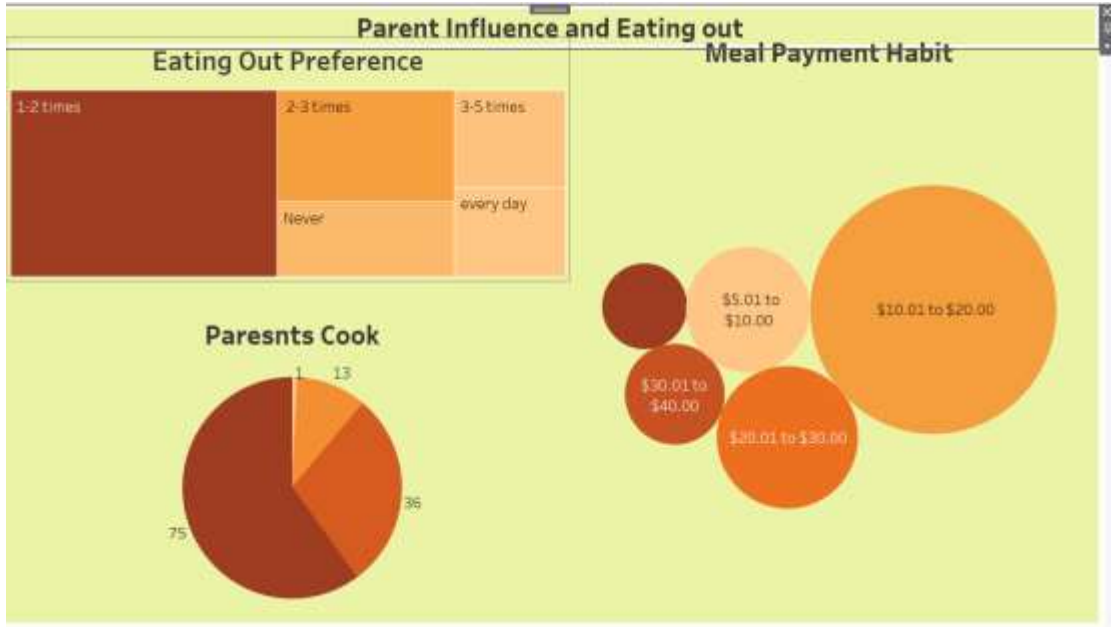
A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.

6. FUNCTIONAL AND PERFORMANCE TESTING

S.NO	Parameter	Screenshot / Values
1.	Data Rendered	18
2.	Data Preprocessing	54
3.	Utilization of Filter	14
4.	Calculation fields Used	10
5.	Dashboard design	• No of Visualization / Graphs - GPA Distribution • Gender Distribution, Breakfast distribution, Calorie Consumption per day, Fav Comfort Foods, Comfort Food Reasons, Cooking Frequency per week, Cuisine Preferences, Diet Status, Exercise Frequency, Employee_Status, Healthy_Feeling, Life_RewardingRating, Marital Status, Nutritional Check, Parental__PaymentHabits, WeightSelfPerception, SportsParticipation, VitaminIntake, WeightDistribution, Eatingout, Coffee Consumption
6.	Story Design	food Analysis | Tableau Public

7. RESULTS

7.1 Output Screenshots



8. ADVANTAGES & DISADVANTAGE

Advantages:

- Provides clear visual insights into student dietary habits.
- Helps identify unhealthy eating patterns quickly.
- Enables data-driven, personalized dietary recommendations.
- Supports awareness and improvement of student health.

Disadvantages:

- Limited to the accuracy and scope of the dataset.
- May not reflect real-time or regional food habits.
- Personal food choices can be subjective and hard to generalize.
- Requires basic knowledge of Tableau to explore visuals fully.

9. CONCLUSION

This project highlights how data visualization can reveal important insights into college students' dietary habits. By analyzing food preferences, calorie intake, and health perceptions, we can promote healthier choices through easy-to-understand Tableau dashboards. Ultimately, data-driven strategies can play a key role in improving student wellness and academic performance.

10. FUTURE SCOPE

- Integrate real-time food tracking through mobile apps or wearables.
- Expand the dataset to include students from different regions or age groups.
- Use machine learning to predict health risks based on eating patterns.
- Include physical activity data for more personalized recommendations.
- Collaborate with campus canteens for menu planning based on insights.

11. APPENDIX

Dataset Link: https://www.kaggle.com/datasets/borapajo/food-choices?select=food_coded.csv

Github Link: https://github.com/Riteshroy007/Dietary-Analysis

Video Demo Link : Tableau Demo - Google Drive