PROJECT FINAL REPORT

1.Introduction

1.1 Project Overview

In today's academic environment, college students often face challenges in maintaining a balanced diet due to limited time, budget constraints, and lack of nutritional awareness. These factors can negatively impact their health, well-being, and academic performance.

This project, titled "Comprehensive Analysis and Dietary Strategies with Tableau: A College Food Choices Case Study", aims to visualize and analyze student dietary habits using Tableau. The goal is to uncover patterns, identify nutritional gaps, and support data-driven decision-making for students, campus health services, and institutions.

By transforming raw dietary data into interactive dashboards, the project enables real-time monitoring of eating patterns, highlights areas of concern such as low fruit or vitamin intake, and helps predict potential health risks. The visual insights generated from Tableau dashboards allow for better understanding and targeted interventions, promoting healthier habits and improving the overall student experience.

1.2 Purpose

The purpose of this project is to apply data visualization and analytical techniques to understand and improve the dietary habits of college students. By leveraging Tableau, the project transforms raw dietary and lifestyle data into meaningful visual insights that can drive awareness, action, and better decision-making.

This project aims to:

- Analyze student dietary patterns, preferences, and deficiencies.
- Identify correlations between diet and health-related perceptions.
- Provide intuitive dashboards for students, administrators, and health staff.
- Encourage healthier eating behaviors through data-driven feedback.
- Support institutions in designing better food programs and interventions.

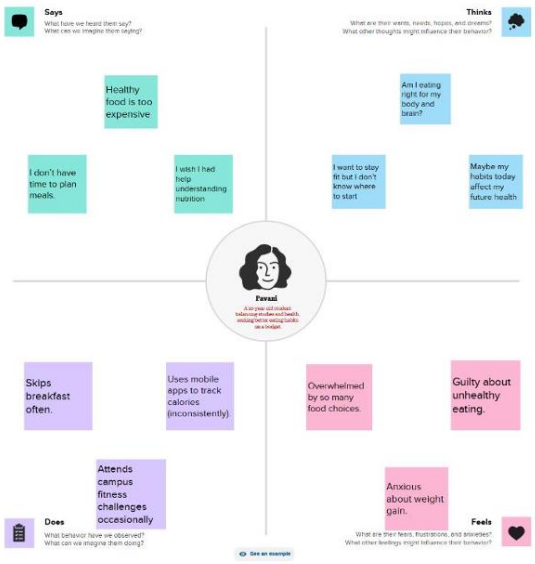
Through clear, interactive dashboards, this initiative seeks to empower students and colleges with the tools and insights necessary to promote long-term well-being and healthier campus communities.

2.Ideation Phase

2.1 Problem Statement

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	College Student living away from home	Trying to plan how to cook my own meals	I end up ordering foods	I don't know how to cook	Dependent, frustrated and financially stressed
PS-2	Iam a student wants to eat healthy on budget	Make better food choices	Falling back into unhealthy patterns	I depend on packaged food	Anxious about my eating habits

2.2 empthy map canvas



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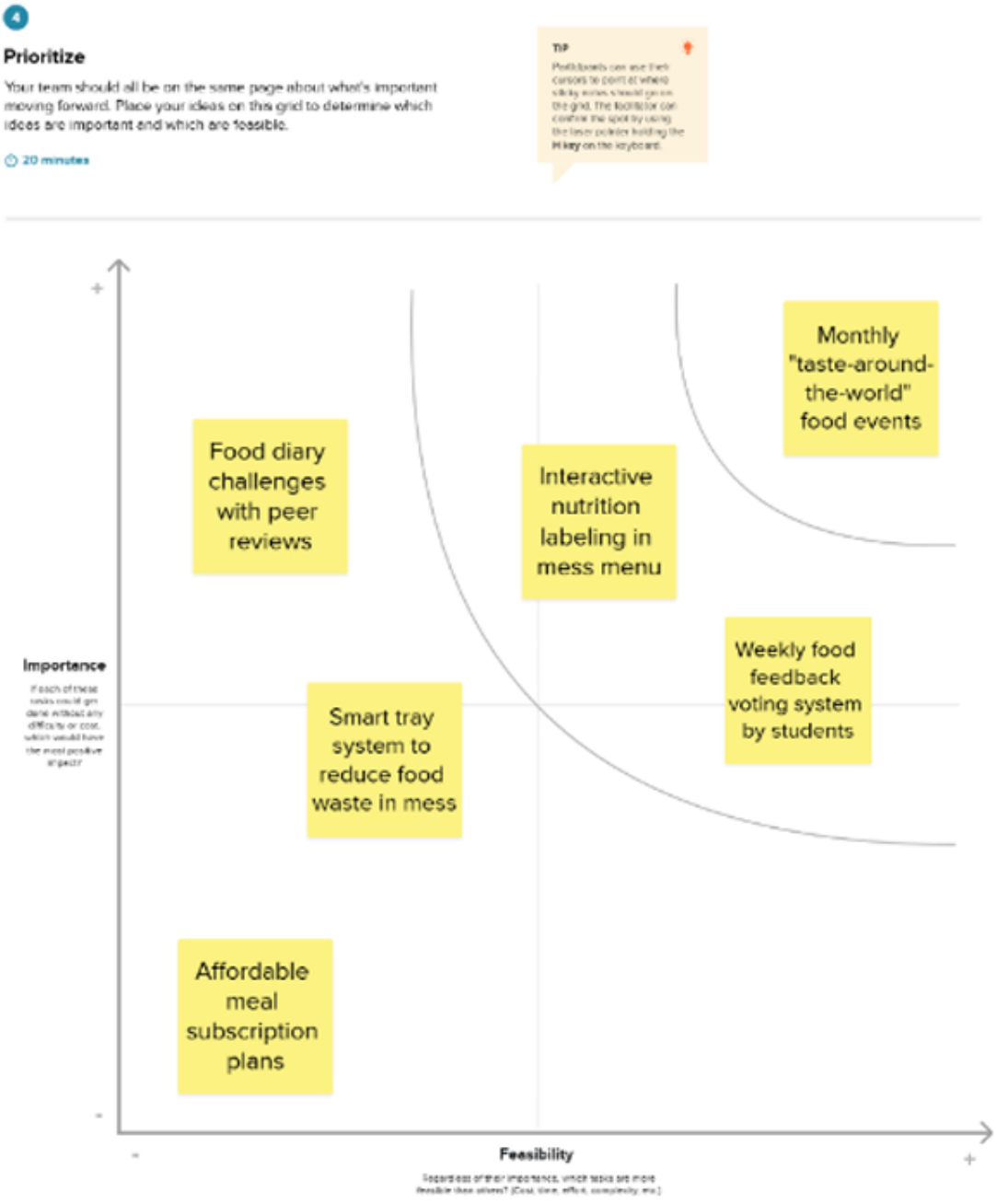


3.Requirement Analysis

3.1 Couster Journey Map

3.2 Solution Requirement

Functional Requirements:

Following are the functional requirements of the proposed solution.

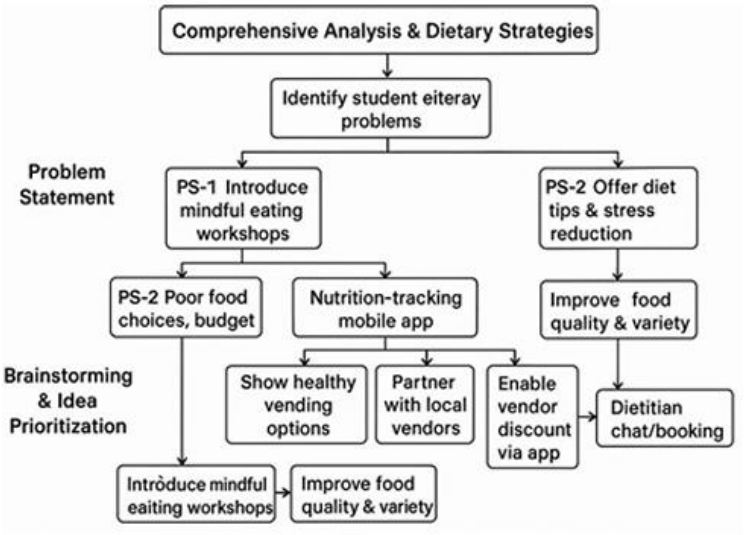
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Mindful Eating Programs	Conduct workshops and awareness sessions on mindful eating Provide guided stress-reduction tips in-app
FR-2	Nutrition-Tracking Mobile App	Enable users to log meals Track calories and nutrients Generate daily/weekly summaries
FR-3	Healthy Snacks Vending Machines	Machines Allow students to view availability and locations via app Track snack purchases for nutritional info
FR-4	Mess Food Feedback	Provide feedback form for mess food quality
FR-5	Discounted Healthy Food Access	Partner with local vendors to offer discounts
FR-6	Dietitian Collaboration	Schedule appointments or chat with dietitians

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Simple, clean UI with minimal steps for booking and canceling meals; designed for quick access during busy hours
NFR-2	**Security**	Secure login using student credentials; QR codes expire after use; data protected via HTTPS
NFR-3	**Reliability**	System should sync across all hostels and messes with real-time updates and minimal downtime
NFR-4	**Performance**	Meal bookings and QR generation must respond under 1.5 seconds; backend optimized for 2,000+ students

3.3 Data Flow Diagram

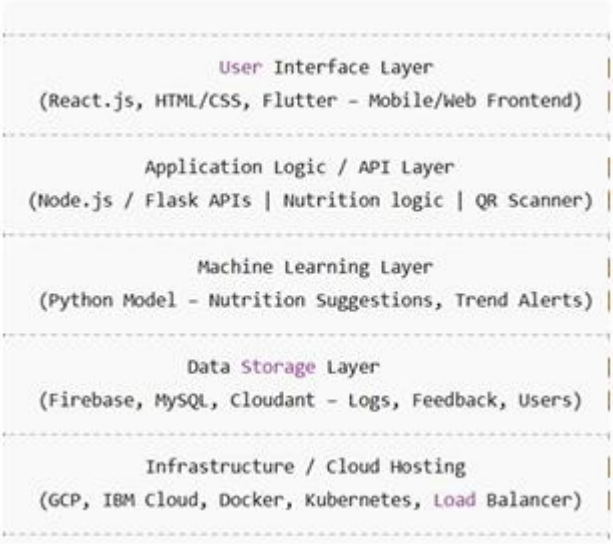


User Stories

Use the below template to list all the user stories for the product.

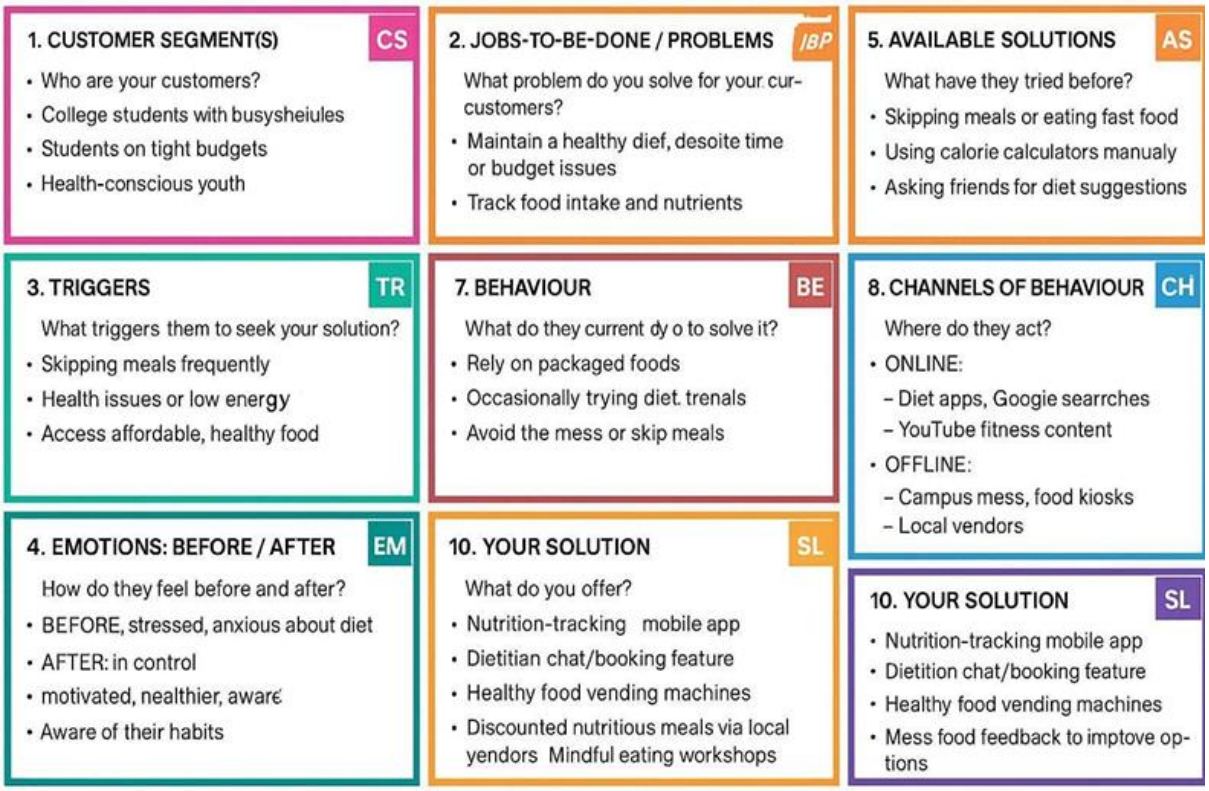
User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard	USN-6	As a user, I can view my dietary dashboard with charts showing my food intake trends	I can see charts and summaries of my meals and nutrition	High	Sprint-2
Customer (Web user)	Dashboard	USN-7	As a web user, I can view my weekly nutrition summary and alerts	I can see trends, alerts, and recommendations	Medium	Sprint-2
Customer Care Executive	Reports	USN-8	As a care executive, I can access student health trend reports	I can download or view detailed reports	Medium	Sprint-3
Administrator	User Management	USN-9	As an admin, I can manage users and assign roles	I can add, remove or update user roles	High	Sprint-1
Administrator	System Monitoring	USN-10	As an admin, I can monitor system usage and logs	I can see usage stats and logs on admin dashboard	Medium	Sprint-2
	Feedback Submission	USN-11	As a user, I can give feedback on mess food quality	My feedback is submitted and stored in the system	Medium	Sprint-3

3.4 Technology Stack



4.Project Design

4.1 Problem Solution Fit

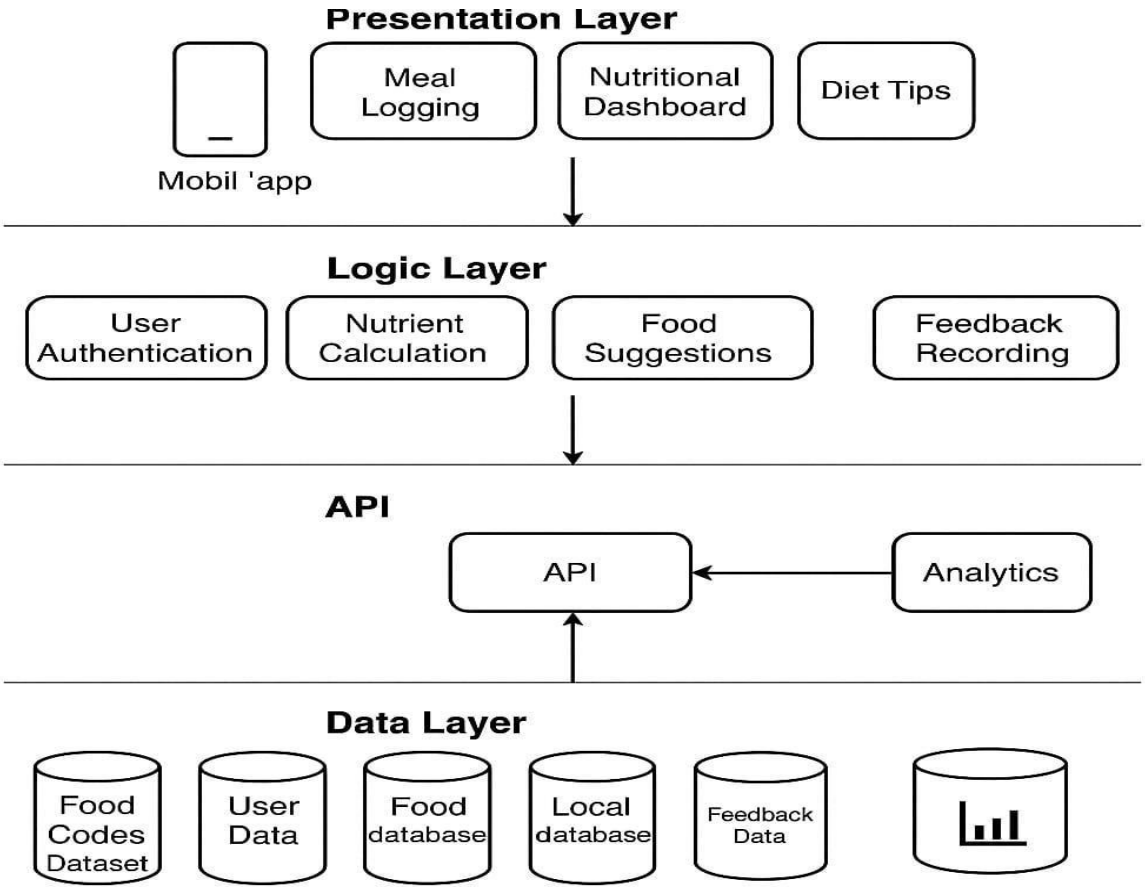


4.2 Proposed Solution Template

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Many college students have poor eating habits, low awareness of nutrition, and limited tools to monitor their dietary behavior. There is a lack of real-time systems to visualize and analyze dietary trends and health impacts.
2.	Idea / Solution description	The project uses Tableau to build an interactive dashboard that analyzes students' dietary intake, exercise habits, and nutritional gaps. It provides real-time visualizations and insights to help universities monitor trends and promote healthier habits.
3.	Novelty / Uniqueness	The integration of real dietary behavior data with Tableau's predictive analytics provides an innovative way to create data-

		driven, personalized nutrition plans for students.
4.	Social Impact / Customer Satisfaction	The project enhances student health and academic performance through improved dietary decisions. It helps administrators intervene early in case of health risks, increasing student well-being and satisfaction.
5.	Business Model (Revenue Model)	The dashboard can be licensed to colleges/universities as a SaaS platform. Additional revenue can come from partnerships with health/nutrition companies and optional student subscriptions for personalized plans.

4.3 Solution Architecture



5.Project Planning& Scheduling

5.1 Project Planning

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Stor
Sprint-1	Registration	USN-1	As a student, I want to register using my student ID for quick onboarding	
Sprint-1	Registration	USN-2	As a user, I want an OTP verification step for added security	
Sprint-2	Registration	USN-3	As a user, I want to set dietary preferences (Veg/Non-Veg) during registration	
Sprint-1	Registration	USN-4	As a user, I want to view terms and privacy policy before submitting registration	
Sprint-1	Login	USN-5	As a user, I want to stay logged in for 7 days so I don't have to re-enter info	
Sprint-2	Dashboard	USN-6	As a user, I want to see my calorie intake trend over the past week	
Sprint-2	Dashboard	USN-7	As a user, I want to see my hydration levels if I track water consumption	
Sprint-3	Dashboard	USN-8	As a user, I want to compare my diet with recommended guidelines	

6.Function & Performance Testing

6.1 Performance Testing

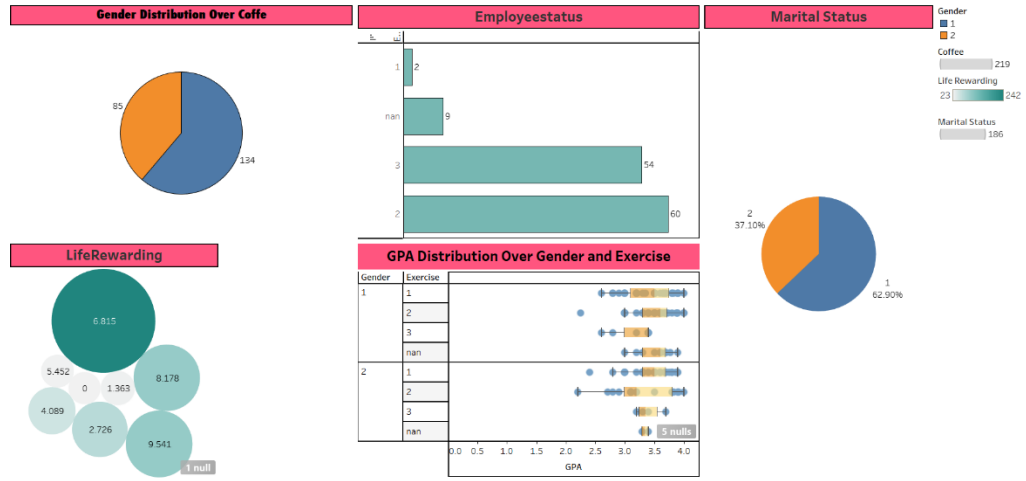
S.No.	Parameter	Screenshot / Values
1.	Data Rendered	CSV data from college food preference survey (food_coded.csv) was rendered into Tableau. Dataset Size: 6MB No. of Rows :125 No. of Columns:61
2.	Data Preprocessing	1)Removed null values 2)Standardized categories (e.g., comfort food types). 3)Converted numeric fields (e.g., calorie intake, GPA).
3.	Utilization of Filters	Used : • Gender • Diet Type / Status • Cooking Frequency • Cuisine Preference • Comfort Food Types • Meal Payment Method • Parental Cooking Habits • Weight Self-Perception • Exercise Frequency • Vitamin Intake • Healthy Feeling • Life Rewarding Rating • Marital Status • Student GPA (using ranges)

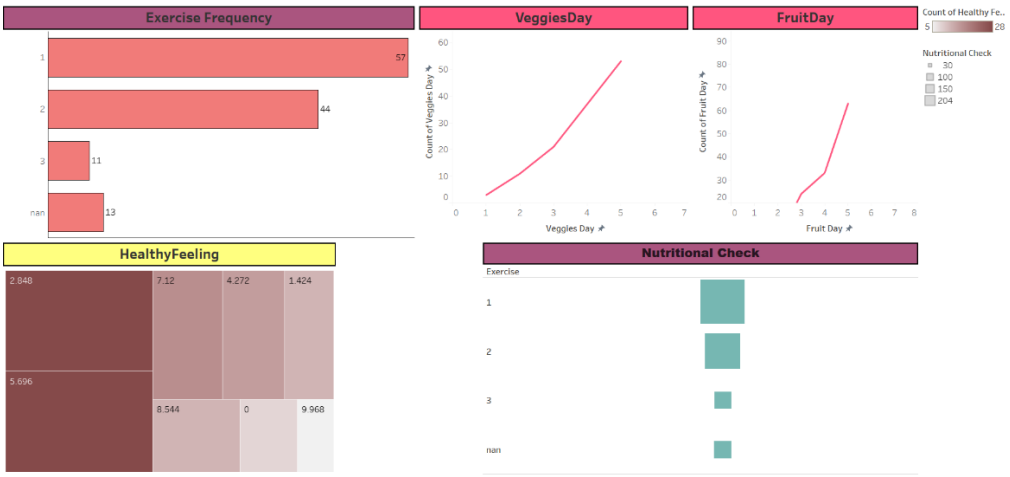
4.	Calculation fields Used	Created calculated fields: BMI Category Comfort Food Count Healthy Eating Index.
5.	Dashboard design	**No of Visualizations / Graphs –** 1. GPA Distribution 2. Gender Distribution 3. Breakfast distribution 4. Calorie Consumption per day 5. Favorite Comfort Foods 6. Comfort Food Reasons 7. Cooking Frequency per week 8. Cuisine Preferences 9. Diet Status 10. Exercise Frequency 11. Employee Status 12. Healthy Feeling 13. Life Rewarding Rating 14. Marital Status 15. Nutritional Check 16. Parental Cooking Habits 17. Meal Payment Habits 18. Weight Self Perception 19. Sports Participation 20. Vitamin Intake 21. Weight Distribution 22. Eating out 23. Coffee Consumption **No of Dash Boards-** 1. Responsive and Design of Dash Board: 6 visualizations 2. Dietary Habits and Preferences: 6 Visualizations 3. Health and Nutrition: 5 Visualizations 4. Parental Influence and Eating Out: 3 Visualizations

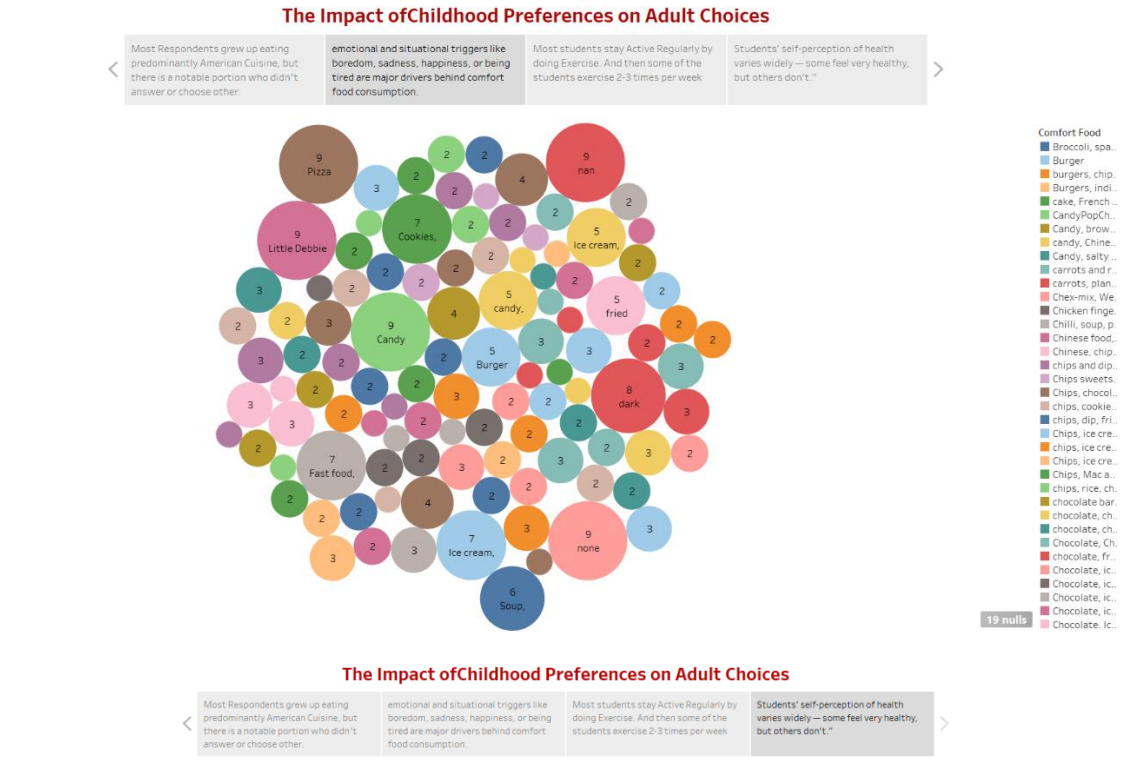
6	Story Design	No of Stories: **1) A day in a life of Student: 5 Visualizations** • Gender Distribution • Breakfast Consumption • Coffee Consumption • Exercise • Employment Status **2)The Impact of Childhood Food Preferences on Adult Choices: 4 Visualizations** • Cusinie Students Grew • Comfort Food • Nutritional Check • Healthy Feeding

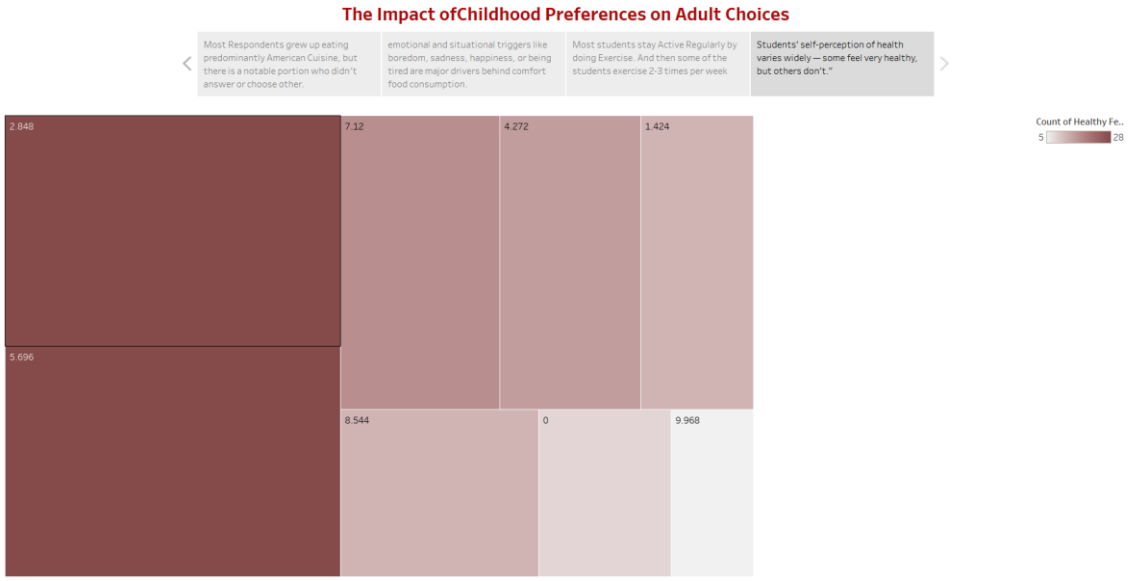
7.Results

7.1 Output Screenshots









8. Advantages and Disadvantages

8.1 Advantages

1. Interactive Insights
   Tableau dashboards provide interactive and real-time visual analysis, helping users explore data efficiently.

2. User-Friendly Interface
   The drag-and-drop functionality of Tableau makes it easy for non-technical users to navigate and build custom views.

3. Data-Driven Decision Making
   The system helps colleges identify dietary gaps and take timely action based on visual evidence.

4. Custom Filtering and Drill-downs
   Users can filter by branch, food category, gender, or date to get personalized insights.

5. Scalability
   The model can be extended to more campuses, or expanded to include fitness, mental health, and sleep tracking.

8.2 Disadvantages

1. Data Dependency
   The insights are only as accurate as the data entered—missing or inaccurate entries can lead to misleading results.

2. Limited Offline Access
   Tableau dashboards require software or server access; not suitable for offline use.

9. Conclusion

The project **"Comprehensive Analysis and Dietary Strategies with Tableau: A College Food Choices Case Study"** demonstrates the power of data visualization in addressing real-world health challenges among college students. By leveraging Tableau's capabilities, the project transforms complex dietary and lifestyle data into interactive dashboards that provide clear, actionable insights.

Through real-time monitoring of nutritional patterns, identification of deficiencies, and predictive analysis, the solution empowers universities, health professionals, and students to make informed decisions. It bridges the gap between raw data and strategic health interventions, encouraging healthier habits and improving student well-being.

This initiative not only enhances data-driven decision-making but also opens doors for integrating similar tools in other aspects of student life—ultimately contributing to a smarter, healthier campus environment.

10.Future Scope

Expansion to Larger and Diverse Populations

The current system can be scaled to include students from multiple colleges or universities across different regions. This would provide a more comprehensive understanding of dietary patterns across varied demographics and enable broader comparisons.

◈ Integration with Real-Time Data Sources

The solution can be enhanced by integrating real-time data from food tracking apps, cafeteria point-of-sale systems, or wearable fitness devices. This will make the analysis more dynamic and accurate.

◈ Predictive Modeling and Machine Learning

Future implementations can incorporate AI and machine learning algorithms to forecast potential health risks or recommend personalized diet plans. These models can be trained on historical data to predict deficiencies or unhealthy patterns.

◈ Personalized Dietary Recommendations

With more student-specific data—like allergies, health conditions, and activity levels—the dashboard can be adapted to suggest custom diet strategies tailored to each user.

◈ Mobile and Web Dashboard Access

Making the dashboard available through mobile-friendly interfaces or apps can improve accessibility and allow students to interact with insights on the go.

◈ Collaboration with Campus Health Services

Institutions can use the insights to design targeted wellness programs, modify cafeteria menus, or conduct awareness campaigns on campus.

◈ Gamification and Engagement Tools

Interactive elements such as meal tracking streaks, leaderboard rankings, or achievement badges could improve user participation and promote healthy competition among students.

11.Appendix

Tablue public link

https://public.tableau.com/views/twbxfile_twbx/Dashboard1?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link

Tablue public link (or)Shareable URL Code

<noscript></noscript><object class='tableauViz' style='display:none;'><param name='host_url' value='https%3A%2F%2Fpublic.tableau.com%2F' /> <param name='embed_code_version' value='3' /> <param name='site_root' value='' /><param name='name' value='twbxfile_twbx/Dashboard1' /><param name='tabs' value='yes' /><param name='toolbar' value='yes' /><param name='static_image' value='https://public.tableau.com/static/images/tw/twbxfile_twbx/Dashboard1/1.png' /> <param name='animate_transition' value='yes' /><param name='display_static_image' value='yes' /><param name='display_spinner' value='yes' /><param

name='display_overlay' value='yes' /><param name='display_count' value='yes' /><param name='language' value='en-US' /></object> <script type='text/javascript'> var divElement = document.getElementById('viz1751307708585'); var vizElement = divElement.getElementsByTagName('object')[0]; if (divElement.offsetWidth > 800) { vizElement.style.minWidth='1657px';vizElement.style.maxWidth='100%';vizElement.style.minHeight='851px';vizElement.style.maxHeight=(divElement.offsetWidth*0.75)+'px';} else if (divElement.offsetWidth > 500) { vizElement.style.minWidth='1657px';vizElement.style.maxWidth='100%';vizElement.style.minHeight='851px';vizElement.style.maxHeight=(divElement.offsetWidth*0.75)+'px';} else { vizElement.style.minWidth='1657px';vizElement.style.maxWidth='100%';vizElement.style.minHeight='2150px';vizElement.style.maxHeight=(divElement.offsetWidth*1.77)+'px';} var scriptElement = document.createElement('script'); scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js'; vizElement.parentNode.insertBefore(scriptElement, vizElement); </script>

Data set link

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

Project demo link

https://drive.google.com/file/d/144fd04FVvfr0rLJhH1zsQIn_c20v0tzH/view?usp=drivesdk

Github link

https://github.com/Poojitha1375/Comprehensive-Analysis-Dietary-Strategies