Project Report

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

Team Members

Team ID: LTVIP2025TMID49154

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1. Problem Statement

1.1 Background

In recent years, there has been growing concern about the **dietary habits of college students**, which directly affect their academic performance, physical health, mental well-being, and lifestyle choices. Busy academic schedules, lack of nutritional awareness, social pressures,

limited cooking facilities, and accessibility to processed foods contribute to irregular and often unhealthy eating patterns.

Despite the availability of cafeteria meals and food delivery apps, students often face challenges in maintaining a **balanced and nutritious diet**. This problem is compounded by a lack of access to **visual, personalized dietary insights** that could help them make informed decisions.

1.2 Problem Definition

"How can we leverage interactive data visualizations to analyze, monitor, and improve the dietary patterns and nutritional habits of college students?"

There is a need for a centralized, user-friendly platform that transforms raw dietary data into meaningful visual insights for students, health professionals, and university administrators. Such a platform should:

- Track key health indicators (e.g., calorie intake, food diversity, vitamin consumption)
- Identify patterns such as meal skipping, junk food dependency, or low fruit/vegetable intake
- Support real-time monitoring of trends across demographics
- Provide predictive insights for early interventions and personalized nutrition planning

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1.3 Key Challenges Identified

Challenge	Impact
Lack of personalized nutrition tracking	Students unable to make data-driven food choices
Poor visibility into eating habits over time	No way to identify unhealthy patterns early
Limited real-time monitoring tools	Universities can’t intervene proactively
No integrated visualization system for stakeholders	Administrators, students, and nutritionists lack a common analytical view

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1.4 Objective of the Solution

To address the above challenges, this project proposes the creation of a **data analytics solution using Tableau**, integrated into a web-based interface using Flask. The goal is to:

- Enable dynamic dashboards for in-depth dietary analysis
- Provide actionable insights based on real student data
- Help educational institutions make informed, health-driven decisions

- Promote long-term well-being by encouraging smart food choices through data

2. Brainstorming & Problem Identification

2.1 Context and Motivation

In modern academic environments, the dietary habits of college students have a significant influence on their physical well-being, mental health, and academic performance. With busy schedules, inconsistent meal patterns, and limited nutritional awareness, students often fall into unhealthy eating routines. This challenge presents an opportunity for data-driven intervention.

2.2 Problem Statement

"How can we leverage data visualization tools to monitor, understand, and improve the dietary choices of college students?"

2.3 Project Vision

The project aims to build a comprehensive, interactive dashboard using Tableau, integrated into a Flask-based web platform. This system will visualize complex dietary datasets and help universities:

2.4 Brainstorming Questions

During ideation, the following guiding questions shaped the analytical and technical scope of the project:

- What dietary patterns can be identified across student demographics?
- How do lifestyle habits (e.g., cooking, exercise, sleep) correlate with GPA and selfperceived health?
- Can real-time data visualization help in early identification of health issues?
- How can data be used to encourage healthier eating habits institution-wide?

2.5 Tool Selection Rationale

- **Tableau:** For its powerful data visualization, ease of data preparation, and dynamic dashboard creation.
- **Flask:** To create a lightweight yet flexible web interface for hosting the dashboards.
- **CSV Dataset:** A structured and easily readable format for dietary, behavioral, and demographic data.

3. Empathy Map

Understanding the users — *college students* — is essential to designing meaningful visual analytics. The empathy map below represents a structured understanding of their thoughts, feelings, behaviors, and pain points, which inform how the data should be visualized and interpreted.

3.1 Target Persona

Attribute	Description
User Type	Undergraduate and graduate college students
Age Group	18 – 35 years
Location	Primarily living on-campus or off-campus in urban college areas
Lifestyle Factors	Busy schedules, budget constraints, frequent exams, exposure to fast food
Health Consciousness	Moderate to low awareness of nutritional content in daily meals

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3.2 Empathy Map Table

- Unhealthy food readily available

- Peers with similar poor food habits

- Limited awareness campaigns about health and nutrition

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| **What they HEAR** | - “It’s okay to skip meals when you're busy.”
- “Junk food is cheap and convenient.”
- “Healthy food is expensive.”
- Health advice from family, friends, social media influencers |
| **What they THINK & FEEL**| - “I want to eat healthier but it’s too hard.”
- Guilt after overeating or skipping meals
- Anxiety about weight and health
- A desire for personalized and easy-to-follow nutrition guidance |
| **What they SAY & DO** | - “I don’t have time to cook.”
- Frequently order takeout or eat in campus cafes
- Rarely read food labels
- Share meal photos on social media |

3.3 Pain Points and Gains

Pain Points (Challenges)	Gains (Goals & Motivations)
Lack of time and motivation to cook or plan meals	Want to improve health and focus
Limited awareness about nutritional content	Prefer personalized nutrition plans
High cost of healthy food options	Want affordable, healthy food alternatives
Irregular eating patterns due to classes, work, and social commitments	Seek visual guidance and data-driven tips to form better habits
Poor cafeteria options and fast food dependency	Want quick insights into their diet to take corrective steps

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3.4 Empathy Insights Summary

By diving into the students' perspectives, we discovered a significant **gap between intent and behavior**. Students want to eat better and live healthier lives, but lack of information, time, and affordability become major barriers. This empathy-driven understanding allowed us to design **data visualizations in Tableau that are intuitive, personalized, and directly actionable** — not just technical, but human-centered.

4. Student Journey Map

The Customer Journey Map outlines the **end-to-end experience of a student user** engaging with the dietary analysis dashboard. This visualization helps identify key touchpoints, emotional responses, and areas for improving engagement and usability of the system.

4.1 Journey Stages Overview

Stage	Student Actions	Touchpoints	Emotions	Opportunities for Improvement
Awareness	Learns about the dashboard from campus wellness center, email, or peer sharing	Health workshops, campus emails, posters	Curious, Interested	Promote with engaging visuals, show key benefits at a glance
Engagement	Logs in to view personal or general dietary trends and insights	Dashboard web app (Flask), mobile view	Excited, Slightly Confused	Provide onboarding or tooltips to explain visuals
Exploration	Explores visualizations: calories, habits, preferences, deficiencies	Tableau charts, filters, story scenes	Surprised, Engaged	Allow filtering by gender, exercise, or cuisine for personalization
Realization	Discovers unhealthy patterns (e.g., high junk food, low veggies)	Interactive graphs, diet scorecard	Concerned, Reflective	Add personalized tips and suggestions
Action	Takes action: alters diet, joins health program, shares insights	External health links, contact forms	Motivated, Empowered	Integrate links to campus dieticians or meal plan generators
Retention	Re-visits the dashboard periodically to check progress	Browser bookmarks, mobile access	Confident, Satisfied	Set reminders or allow saving progress snapshots

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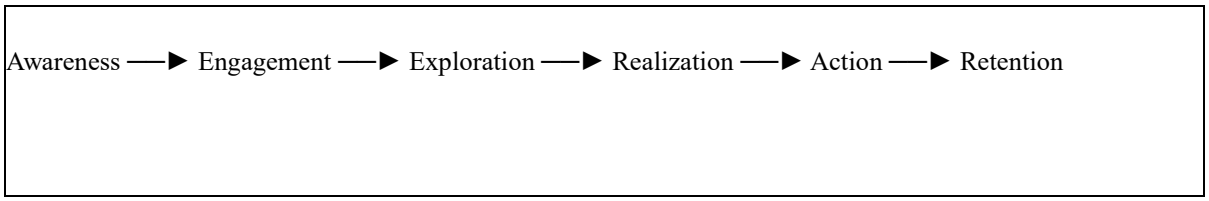
4.2 Visual Journey Summary

Here's a visual breakdown of the student's emotional journey across stages:



4.3 Key Takeaways from the Journey

- Students experience **increased emotional investment** once they start identifying real issues through visuals.
- Dashboards must be **intuitive and context-aware** to sustain engagement.
- There's a strong opportunity to use **data storytelling** for improving student health outcomes.
- **Timely guidance** (based on data insights) can convert awareness into sustainable action.

5. Data Flow Diagram (DFD)

5.1 Overview

The Data Flow Diagram (DFD) illustrates the movement of data through the different components of the *College Food Choices Visualization Project*. It captures how raw data is collected, processed, visualized, and presented to end users through an interactive web interface.

This diagram highlights the major components involved, including data sources, preprocessing tools, visualization engine (Tableau), and the web embedding system (Flask).

5.2 DFD – Level 1 Description

Component	Description
1. Data Source (CSV)	Dietary and lifestyle data collected in structured CSV format
2. Data Cleaning & Prep	Preprocessing in Tableau Prep or directly in Tableau Desktop for filtering, joining, and formatting
3. Tableau Dashboard	Interactive visualizations built using Tableau Desktop
4. Tableau Server / Public	Dashboard hosted on Tableau Public or Tableau Server for embedding
5. Flask Web App	Lightweight Python-based web application to embed and serve Tableau dashboards
6. End Users	Students, nutritionists, university staff — access insights via browser

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5.3 Data Flow Description

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    A[CSV Dataset<br>Raw Student Data] --> B[Data Cleaning<br>Tableau Prep
/ Desktop]
B     --> C[Tableau Dashboard<br>Visualizations Built]
C     --> D[Tableau Public / Server<br>Hosted Dashboards]
D     --> E[Flask Web App<br>Dashboard Embedded in HTML]     E --> F[End
User<br>Views Dashboard in Browser]
```

5.4 Key Considerations

- **Security:** The data does not include sensitive personal details, ensuring privacy while still delivering insight.
- **Scalability:** The system can support additional data sources or student cohorts in future phases.
- **Flexibility:** Tableau Public allows fast updates; changes to the dataset reflect in realtime visuals.

6. Technology Stack

The following tools and technologies were carefully selected to design, develop, and deploy the *College Food Choices Case Study Visualization Platform*. The goal was to ensure an intuitive, high-performance solution for analyzing and presenting student dietary data.

6.1 Data Collection & Storage

Tool / Technology	Purpose
CSV Files	Raw data storage format used for dietary and lifestyle data
Excel / Google Sheets	Initial formatting and exploration of datasets

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6.2 Data Preparation & Transformation

Tool / Technology	Purpose
Tableau Prep (Optional)	Data cleansing, column filtering, joining multiple tables

Tableau Desktop	Importing CSV data, building calculated fields, structuring dashboards

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6.3 Data Visualization

Tool / Technology	Purpose
Tableau Desktop	Core platform for creating interactive visualizations
Tableau Public / Server	Hosting the dashboards for external access

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6.4 Web Integration

Tool / Technology	Purpose
Python	Backend scripting and logic
Flask Framework	Embedding Tableau dashboards in a minimal web UI
HTML / CSS	Styling and structuring the web interface

6.5 Deployment (Optional)

Platform	Purpose
Render / Vercel	Hosting the Flask application online
GitHub	Version control and source code repository

6.6 Supporting Tools

Tool	Purpose
VS Code / Jupyter	Code development and testing environments
Mermaid / draw.io	Visualizing system architecture and data flow diagrams
OBS / Screen Recorder	Recording project walkthroughs and demonstrations

7. Problem–Solution Fit

7.1 Recap of the Problem

College students face multiple challenges that hinder their ability to maintain a healthy diet, such as:

- **Irregular meal patterns** due to hectic academic schedules
- **Lack of awareness** regarding nutritional values of food
- **Easy access to fast food** and limited affordable healthy alternatives
- **Minimal data-driven support** from institutions to encourage healthier behavior

These issues are not just isolated to individual health but can contribute to reduced academic focus, long-term health problems, and increased pressure on campus health services.

7.2 The Proposed Solution

The solution developed in this project addresses these concerns through an interactive, datadriven platform powered by Tableau and integrated via Flask.

Problem Area	Solution Feature
Unawareness of diet impact	Tableau dashboards visualizing diet vs GPA, exercise, and health perception
Lack of real-time insight	Live and interactive dashboards with filtering by demographics and food habits
No personalized guidance	Visualization of ideal vs actual dietary behavior, enabling selfassessment
Hard to track food trends	Time-based visualizations showing fruit/veggie intake, junk food consumption
No intervention tools for institutions	Admin-level overviews to support awareness campaigns and strategic meal planning

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7.3 How the Solution Delivers Fit

Fit Dimension	Explanation
Target User Match	Designed specifically for students, university staff, and campus nutritionists

Insight Accessibility	Visual storytelling converts complex datasets into digestible insights
No Learning Curve	User-friendly dashboards with no login or training required

Fit Dimension	Explanation
Actionability	Enables both self-improvement for students and strategic actions for staff
Scalability	Can be extended with more data, filters, or even personalized student views

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7.4 Strategic Value

This solution does more than visualize data — it **empowers decision-making**:

- **Students** learn more about their own health habits
- **Institutions** gain insights for policy, menus, and campus wellness programs
- **Data Analysts / Researchers** gain access to structured insights for ongoing study

In essence, the system builds a bridge between data and well-being — making health awareness **visual, personal, and actionable**.

8. Proposed Solution

8.1 Solution Overview

To address the lack of dietary awareness and nutritional insight among college students, this project proposes a **data-driven dietary analysis platform** built using Tableau for visual analytics and Flask for web-based dashboard embedding.

The proposed solution transforms raw CSV data about students' food habits, health perceptions, and lifestyle behaviors into **meaningful visualizations**, making the data actionable and insightful for both individuals and institutional decision-makers.

8.2 Key Solution Components

Component	Description

Tableau Dashboards	Used to build interactive and real-time visuals representing dietary patterns
CSV Dataset	Source of raw data with over 30 columns on food habits, health, and lifestyle
Data Cleaning Module	Optional use of Tableau Prep or Excel to ensure clean, formatted data
Component	**Description**
Story Boards	Tableau "Story" feature used to create narrative flow across multiple visuals
Flask Integration	Lightweight web application to host and embed the dashboard for browser access

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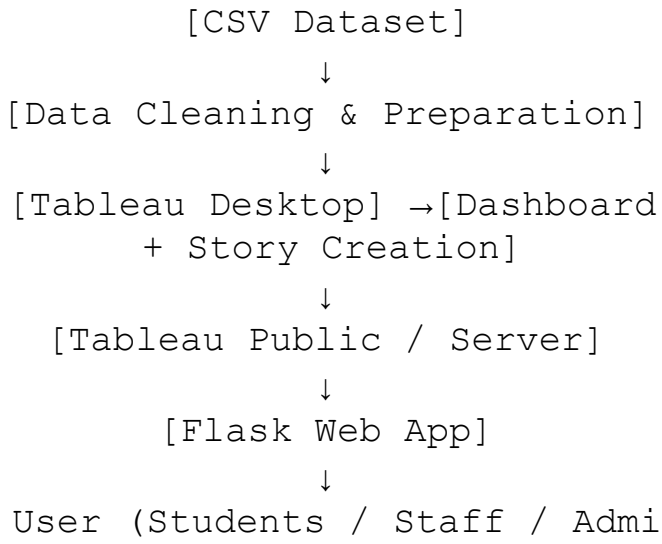
8.3 Functional Architecture



You can optionally convert the above text diagram into a visual one using tools like Lucidchart, Canva, or draw.io.

8.4 Features of the Proposed Solution

Feature	Purpose
Interactive Filtering	View trends by gender, GPA, diet type, exercise frequency
Nutritional Trends Analysis	Analyze intake of fruits, vegetables, vitamins, and fast foods

Diet vs. Academic Correlation	Study how diet affects GPA, healthy feelings, and selfperception
Storytelling Scenes	Visual narratives showing evolving trends or comparisons
Web Embedding	Dashboard embedded into a Flask web interface for seamless access

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8.5 Benefits of the Proposed Solution

- **Data-Driven Awareness**: Encourages students to reflect on their food habits
- **Institutional Planning**: Helps universities deploy targeted wellness initiatives
- **Scalability**: The system can be extended with more data fields or updated datasets
- **Accessibility**: No login or complex setup; dashboards are public and responsive

This solution transforms raw dietary data into a **personalized, visual experience** — providing stakeholders with the tools needed to promote better nutrition, healthier habits, and improved student outcomes.

9. Solution Architecture

9.1 Overview

The *College Food Choices Visualization System* follows a **modular and scalable architecture**, designed to ingest raw data, process it into insightful dashboards using Tableau, and present it through a Flask-based web application for user access.

This architecture supports **ease of data preparation, visual storytelling, and seamless user interaction** — with minimal backend complexity and high usability.

9.2 Architecture Layers

Layer	Description
Data Layer	Stores structured CSV files containing dietary, lifestyle, and health metrics
Preparation Layer	Cleans and transforms data using Tableau Prep or Excel
Visualization Layer	Creates interactive dashboards and storyboards in Tableau Desktop
Hosting Layer	Publishes dashboards on Tableau Public or Tableau Server

Web Interface Layer	Uses Python Flask to embed the dashboard inside a clean web UI
User Access Layer	Students, researchers, and faculty access the dashboards via browsers

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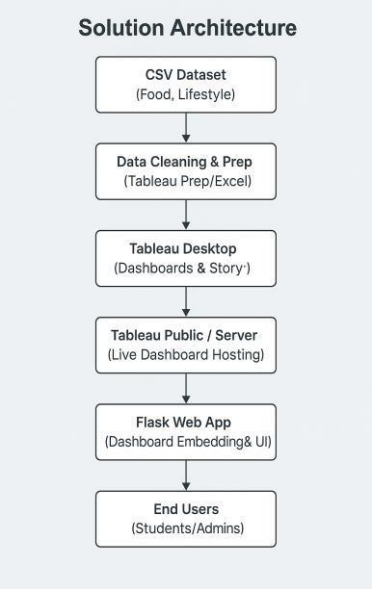
9.3 Architecture Diagram

You can visualize the architecture as follows:



You can create a **visual diagram** from this using draw.io, Canva, or Lucidchart for your final report/PPT.

9.4 Key Characteristics

Characteristic	Details
Modularity	Each layer functions independently, allowing easy updates and scaling
Lightweight Backend	Flask used solely for front-end embedding; no heavy backend logic involved
Platform Independent	Dashboards are web-based and work on all major browsers and devices
Security Compliant	No PII involved; dashboards are shared securely via Tableau Public/Server
Extensibility	Future datasets can be integrated with minimal changes to the architecture

9.5 Advantages of the Architecture

- **Quick Development Cycle** – Rapid prototyping using Tableau
- **Seamless Deployment** – Minimal setup using Flask and Tableau Public
- **User-Centric Interface** – Designed for students, staff, and health professionals
- **Maintainable & Scalable** – Easily update data, visuals, or embed logic

10. Project Planning

This section outlines the timeline, team structure, and key deliverables planned for the successful execution of the *Comprehensive Analysis and Dietary Strategies with Tableau: A College Food Choices Case Study*.

10.1 Team Details

Attribute	Information
Team ID	LTVIP2025TMID49154
Team Size	4 Members
Team Leader	Valluri Mounika
Team Members	Swarna Lakshmi Venkata Naga Yesaswini Seshu Babu Satyam Sriram Charan

10.2 Project Duration

Start Date	End Date	Total Duration
13 June 2025	26 June 2025	14 Days

10.3 Weekly Timeline

Date Range	Planned Activities
June 13 – June 15	Understanding dataset, defining problem statement, team role assignment
June 16 – June 18	Data cleaning and preparation in Tableau / Excel; start dashboard design
June 19 – June 21	Building Tableau dashboards and stories; integrate into Flask web app
June 22 – June 24	Performance testing, user feedback, web embedding refinement
June 25 – June 26	Final review, documentation, recording video demo, and report submission

10.4 Milestones and Deliverables

Milestone	Expected Output	Due Date
Problem Definition & Planning	Clear articulation of problem and architecture diagram	15 June 2025
Data Cleaning & Structure Final	Cleaned dataset + visual-ready fields	18 June 2025
Milestone	**Expected Output**	**Due Date**
Tableau Dashboard Completion	Fully functional dashboards and story scenes	21 June 2025
Flask Web Integration	Embedded dashboard in Flask UI	24 June 2025
Documentation & Video Demo	PDF Report, Empathy Maps, Diagrams, and Screencast	26 June 2025

10.5 Tools and Platforms

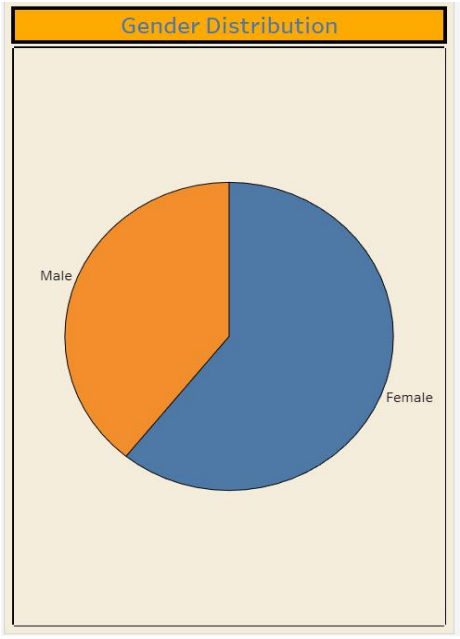
Category	Tools Used
Data Analysis	Tableau Desktop, Tableau Prep (optional)
Web Interface	Python Flask, HTML/CSS
Documentation & Planning	Google Docs, Canva, VS Code
Communication	WhatsApp / Google Meet

11. Project Executable

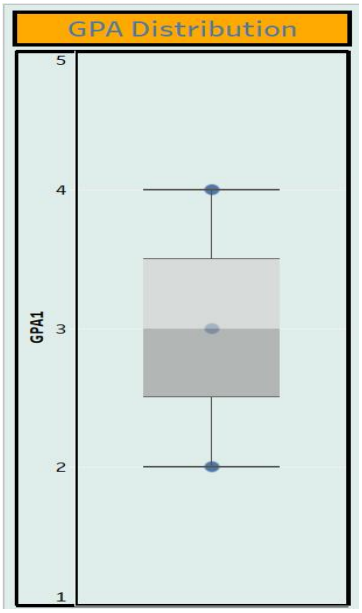
The **Project Executable** is the functional output of the entire workflow developed for analyzing college students' food choices. *It includes the core implementation that transforms raw data into meaningful insights through preprocessing, visualization, and interaction.*

11.1 Creating the data visualizations

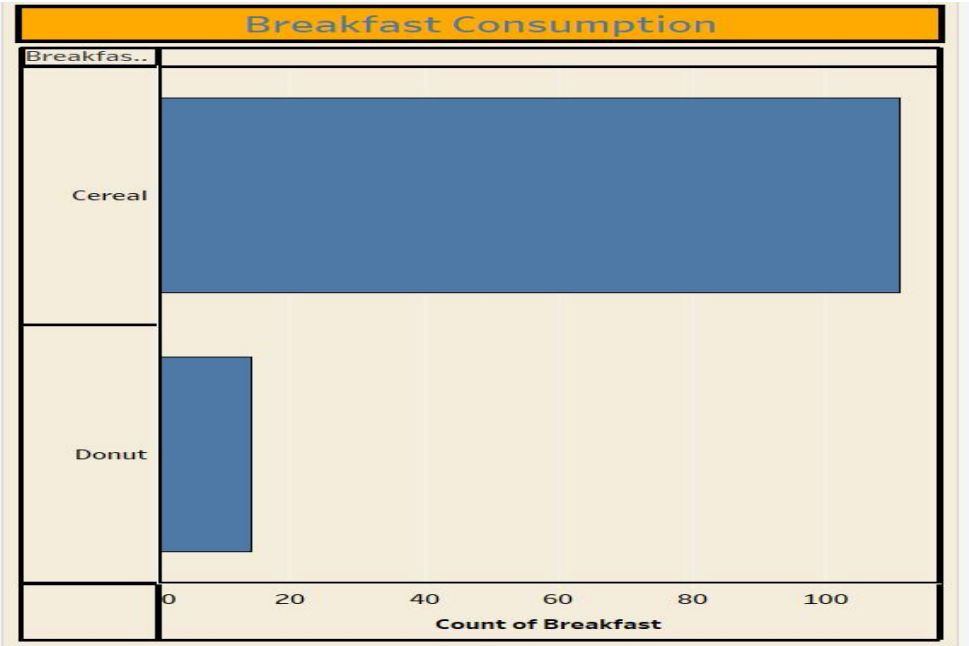
Activity 1.1: Gender Distribution:



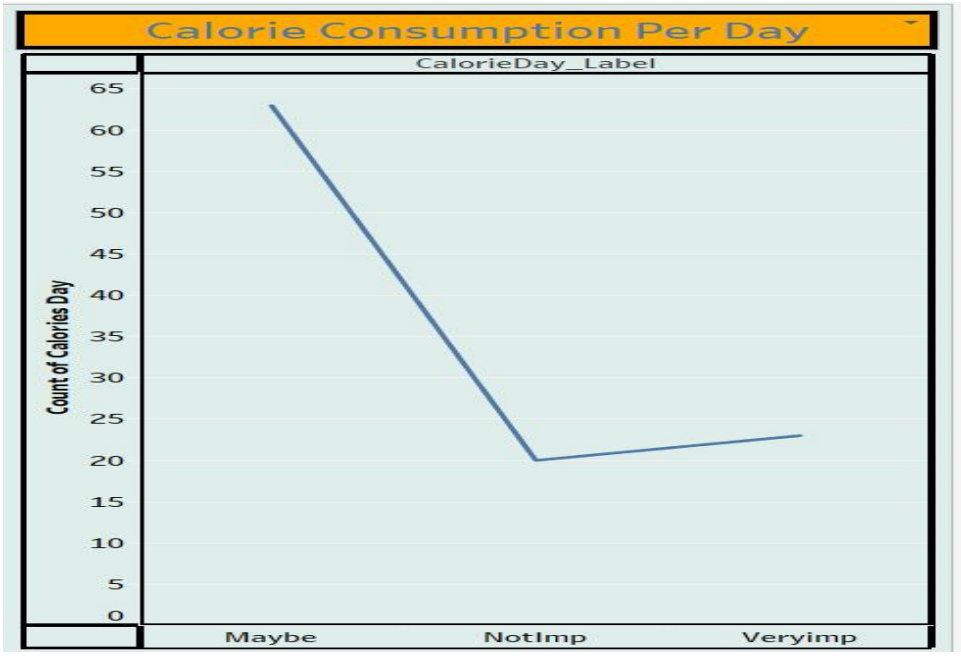
Activity 1.2: GPA Distribution



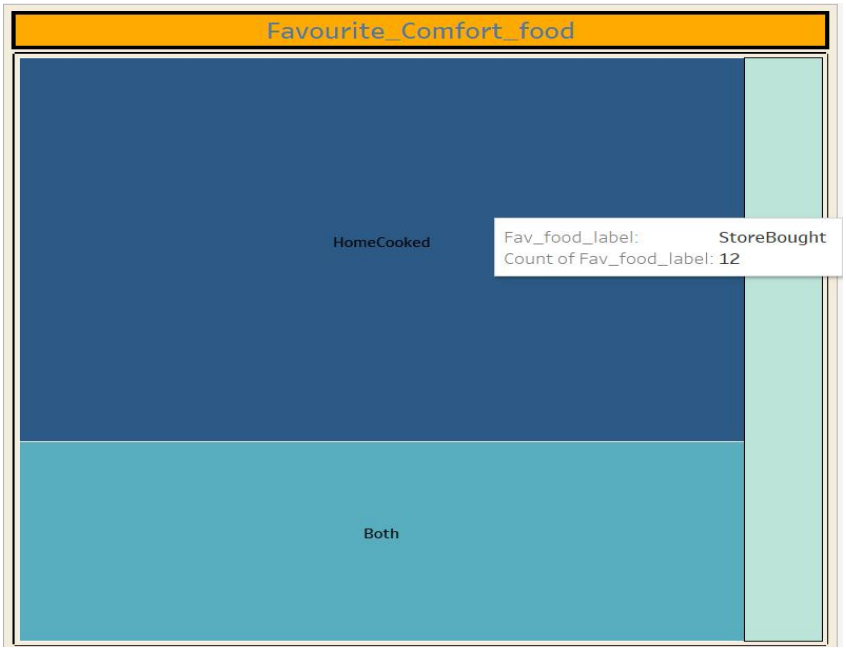
Activity 1.3: Breakfast Consumption



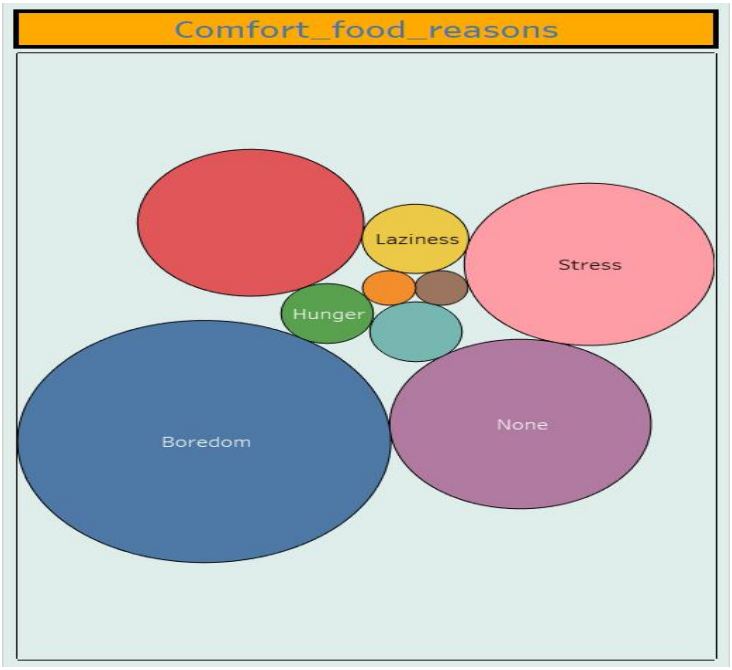
Activity 1.4 : Calorie Consumption per day



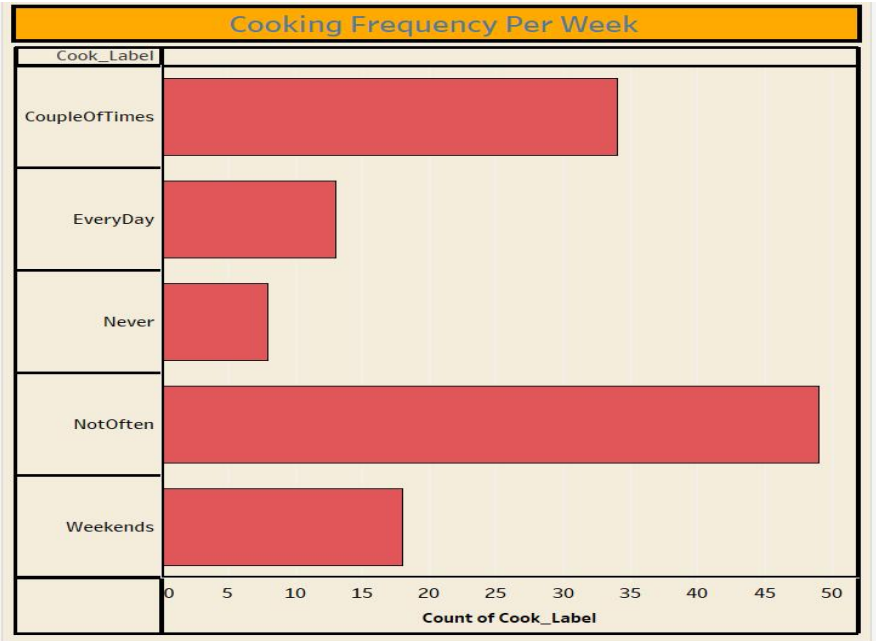
Activity 1.5 : Favorite comfort foods



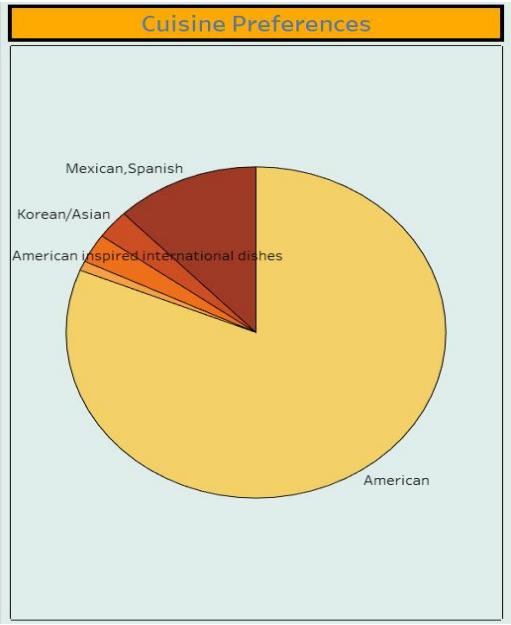
Activity 1.6 : Comfort food reasons



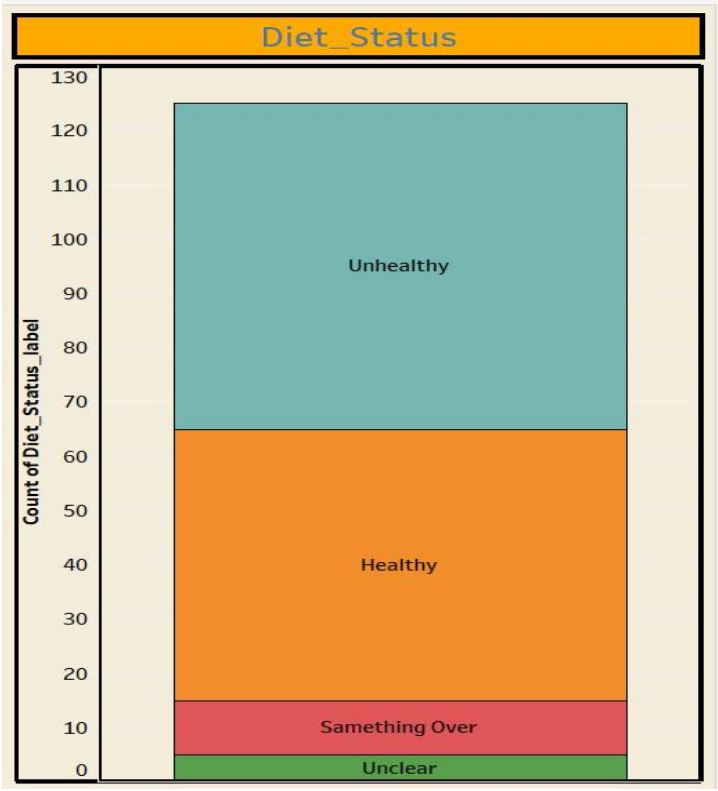
Activity 1.7 : Cooking frequency per week



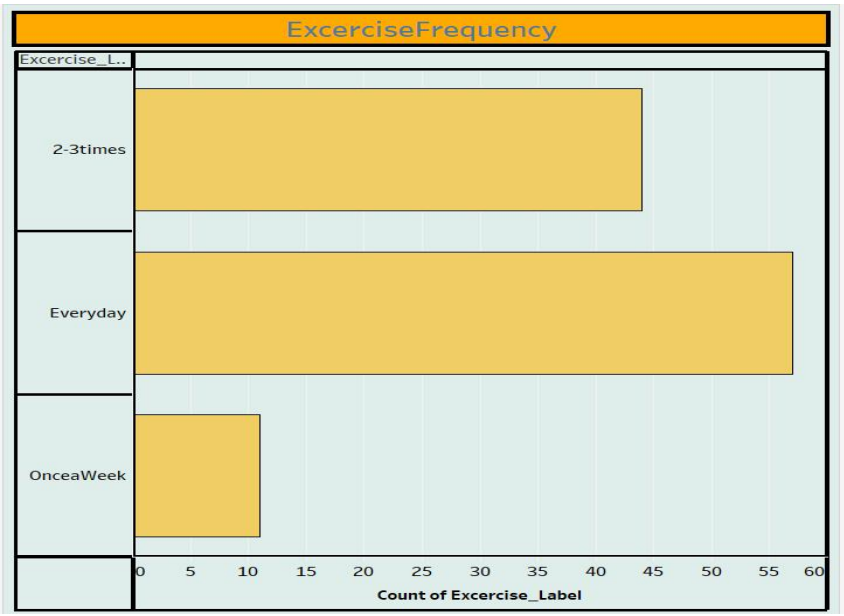
Activity 1.8 : Cuisine preferences



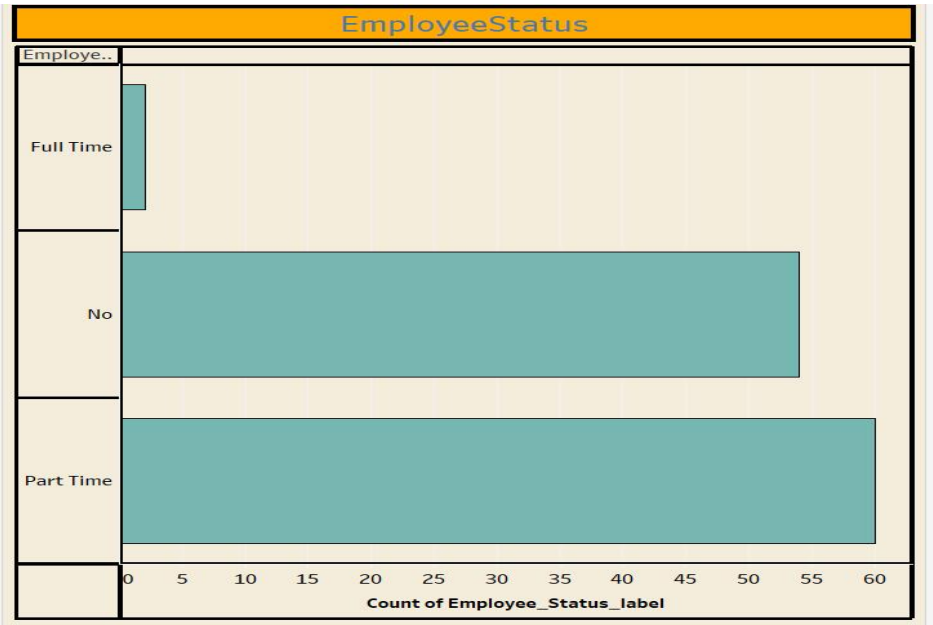
Activity 1.9 : Diet Status



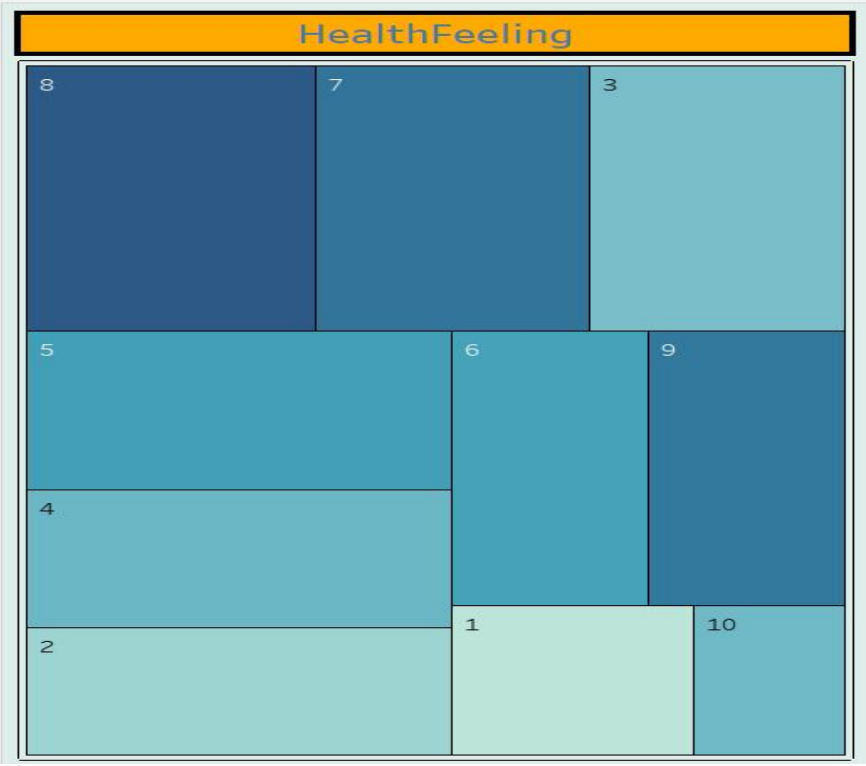
Activity 1.10 : Exercise Frequency



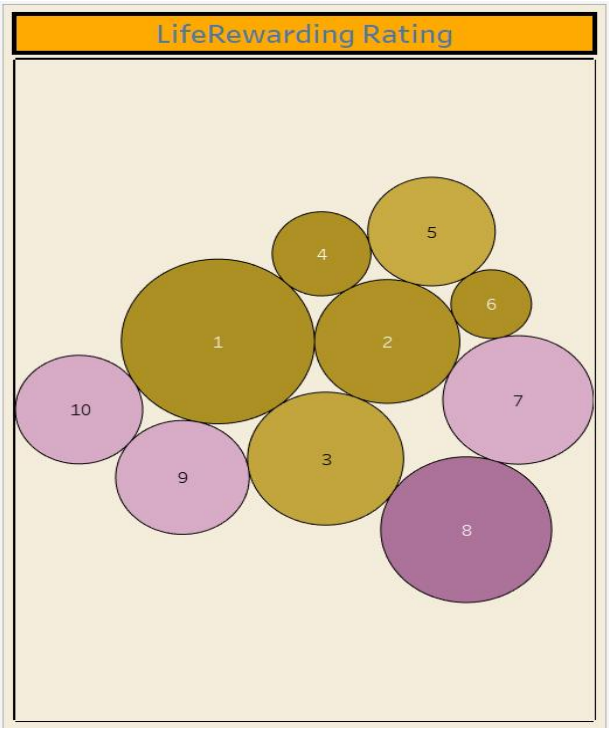
Activity 1.11 : Employee status



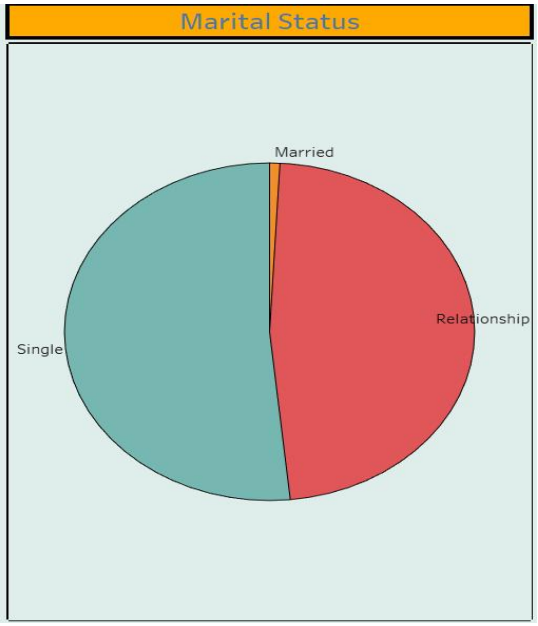
Activity 1.12 : Healthy Feeling



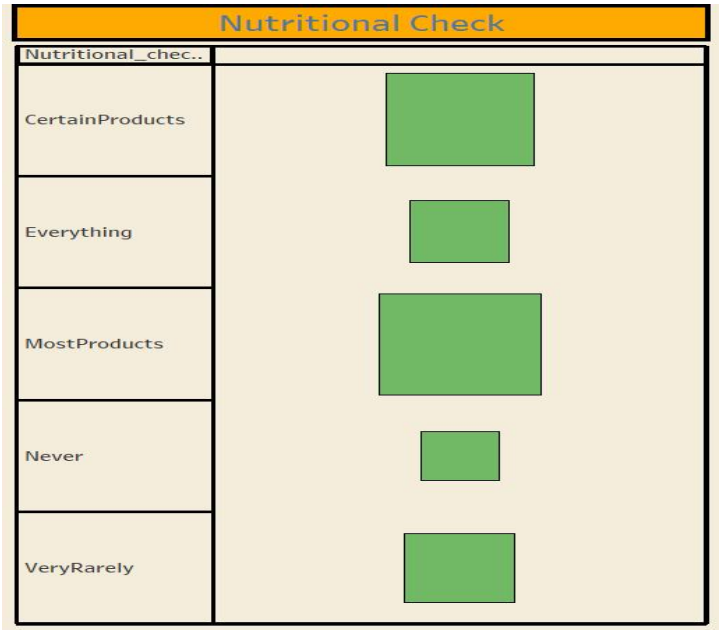
Activity 1.13 : Life Rewarding rating



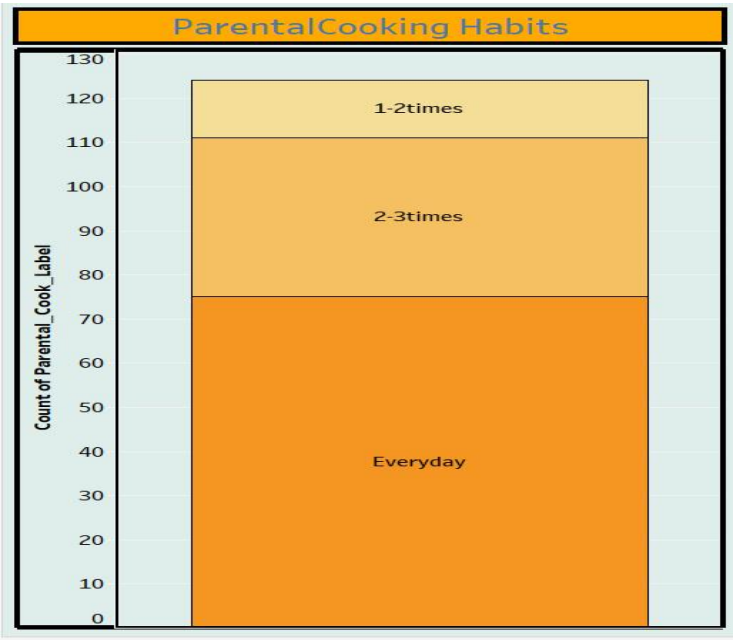
Activity 1.14 : Marital status



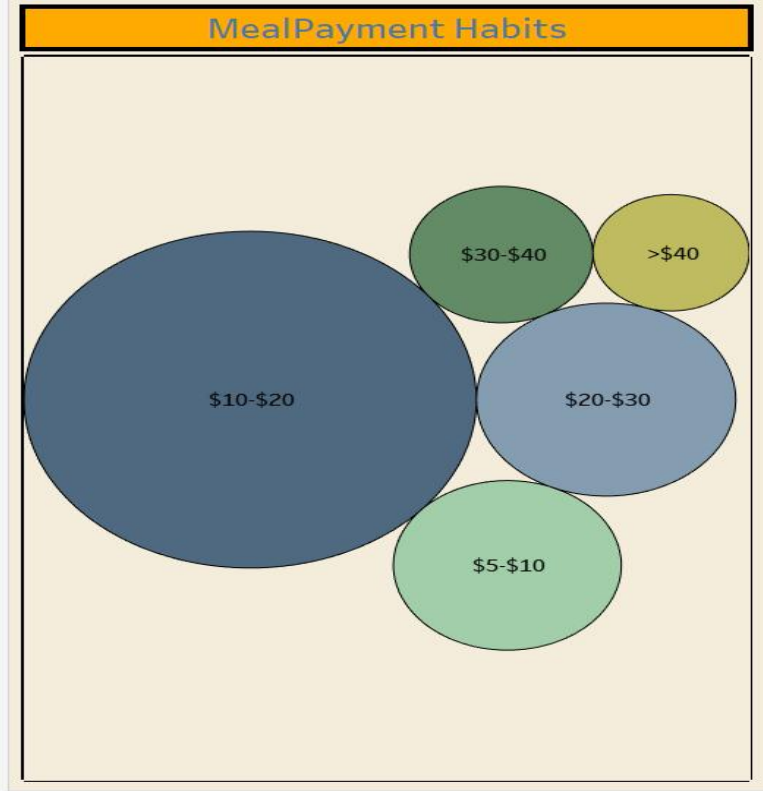
Activity 1.15 : Nutritional Check



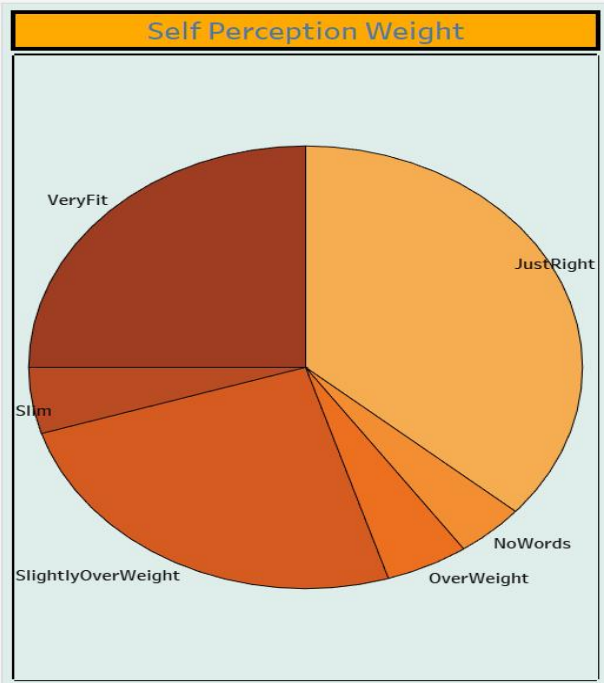
Activity 1.16 : Parental Cooking Habits



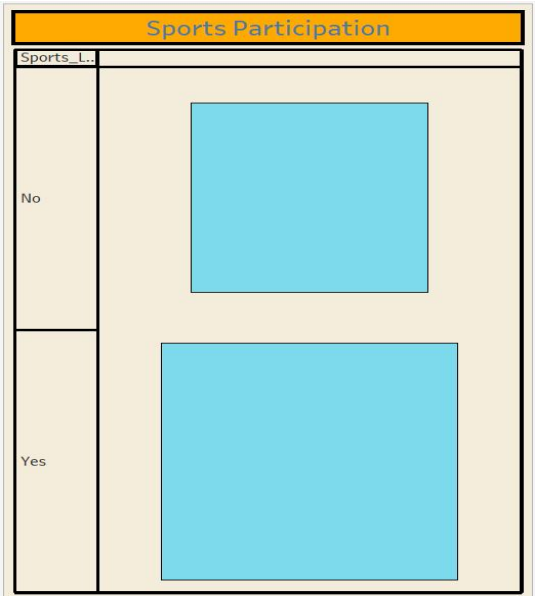
Activity 1.17 : MealPaymentHabits



Activity 1.18 : Weight Self Perception

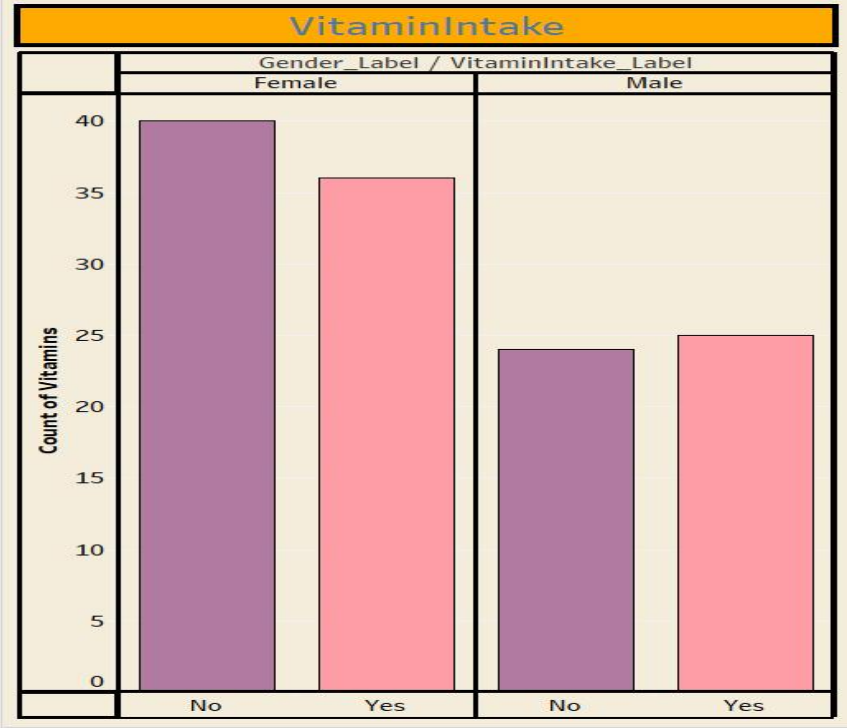


Activity 1.19 : Sports participation

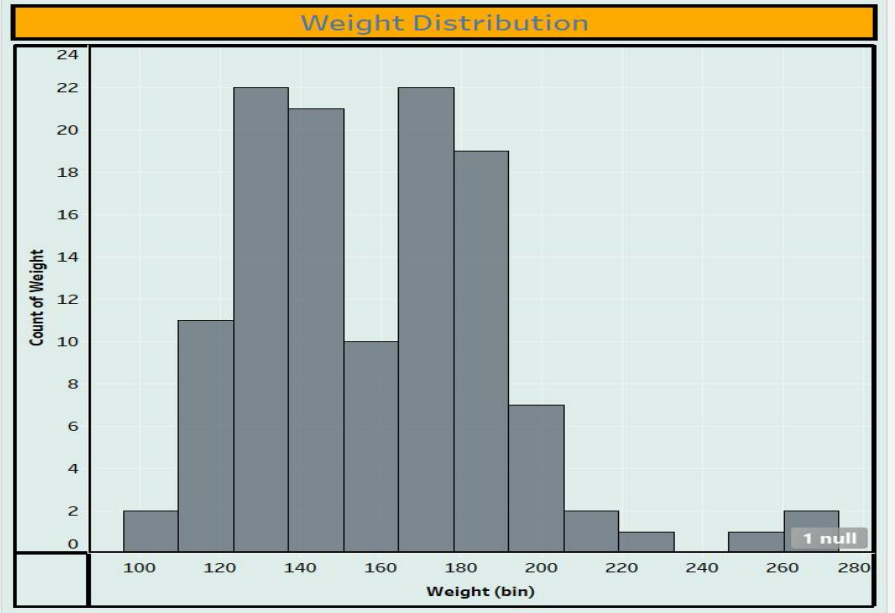


Activity 1.20 : Veggieandfruit_Consumption

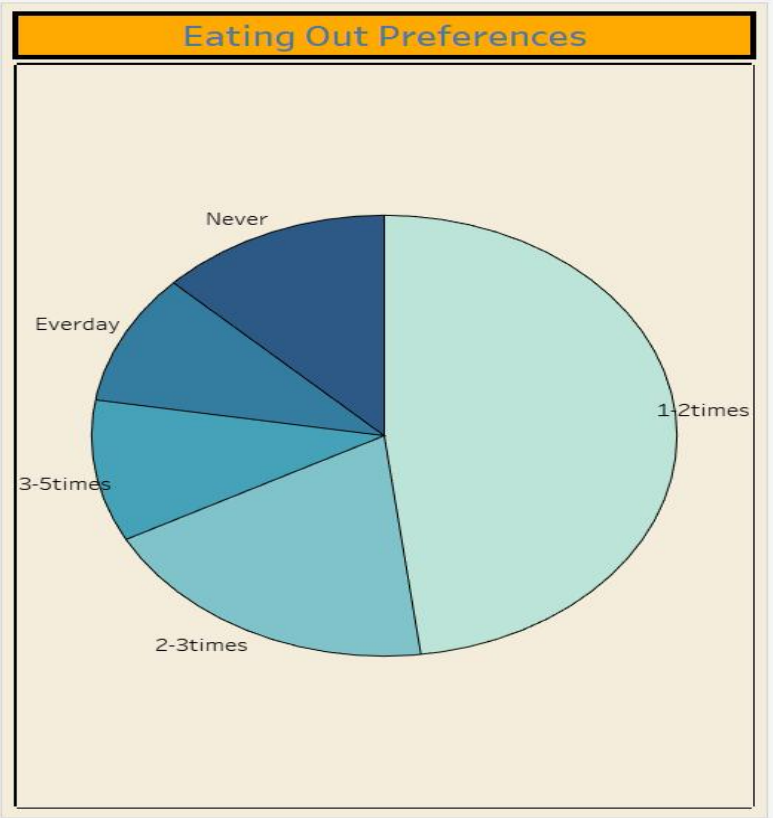
Activity 1.21 : Vitamin Intake



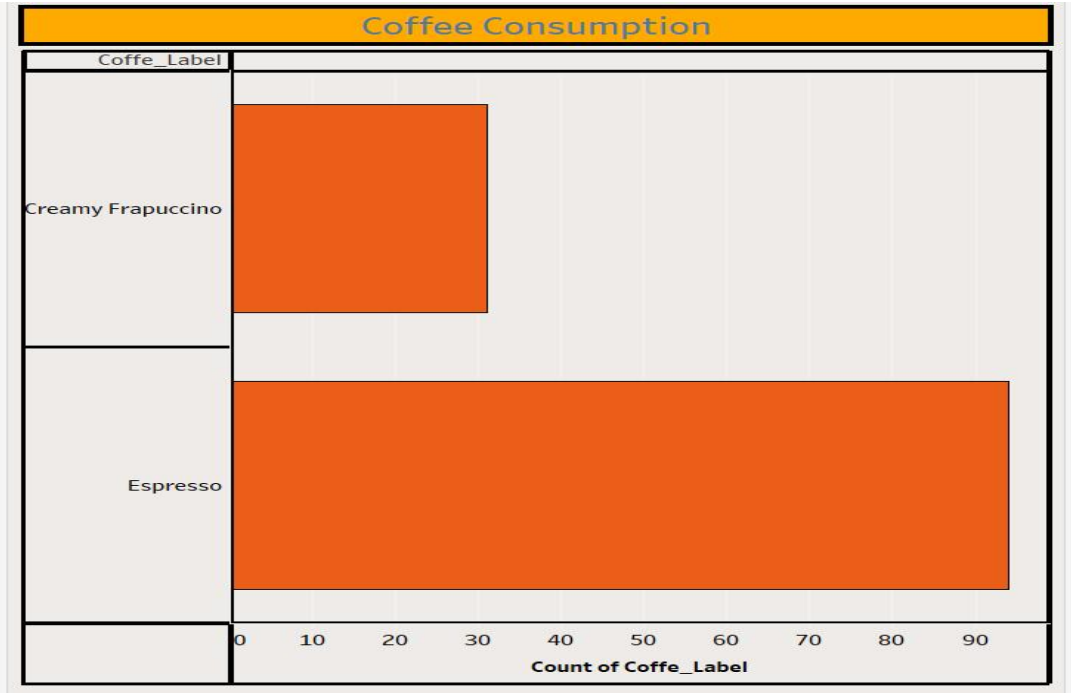
Activity 1.22 : Weight Distribution



Activity 1.23 : Eating out Preferences

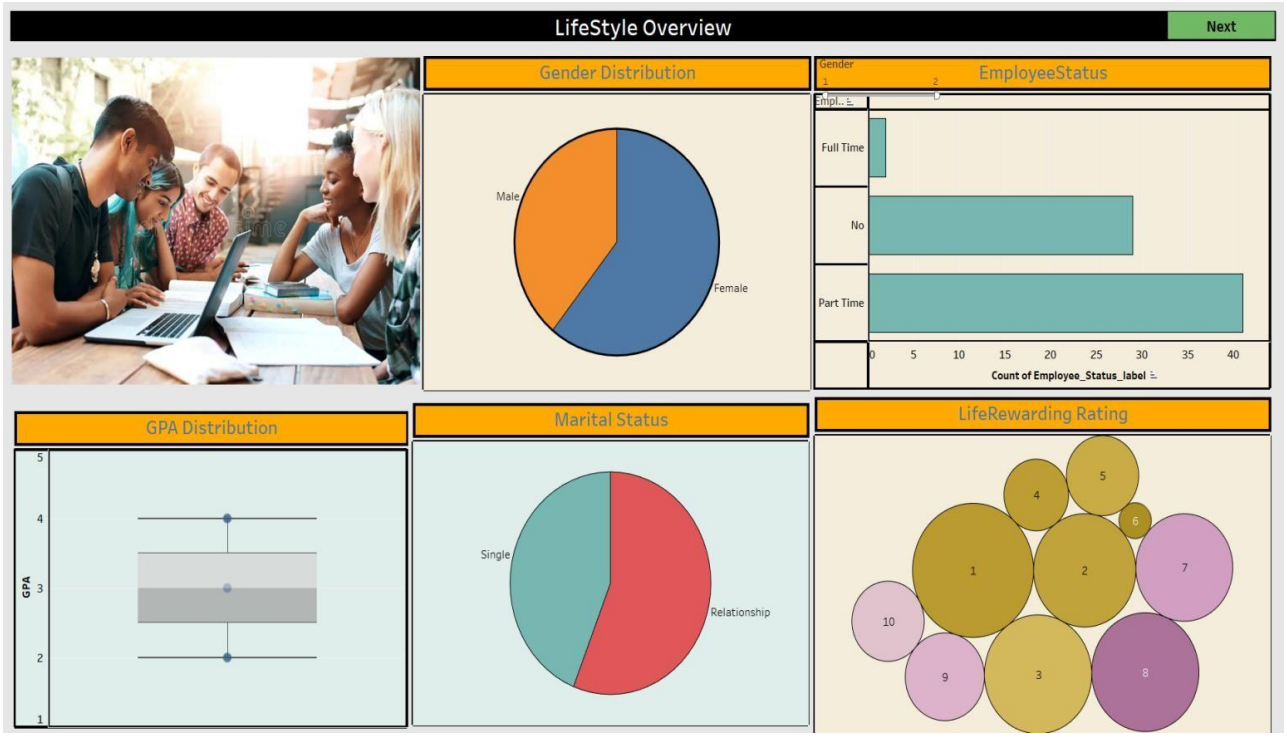


Activity 1.24: Coffee Consumption

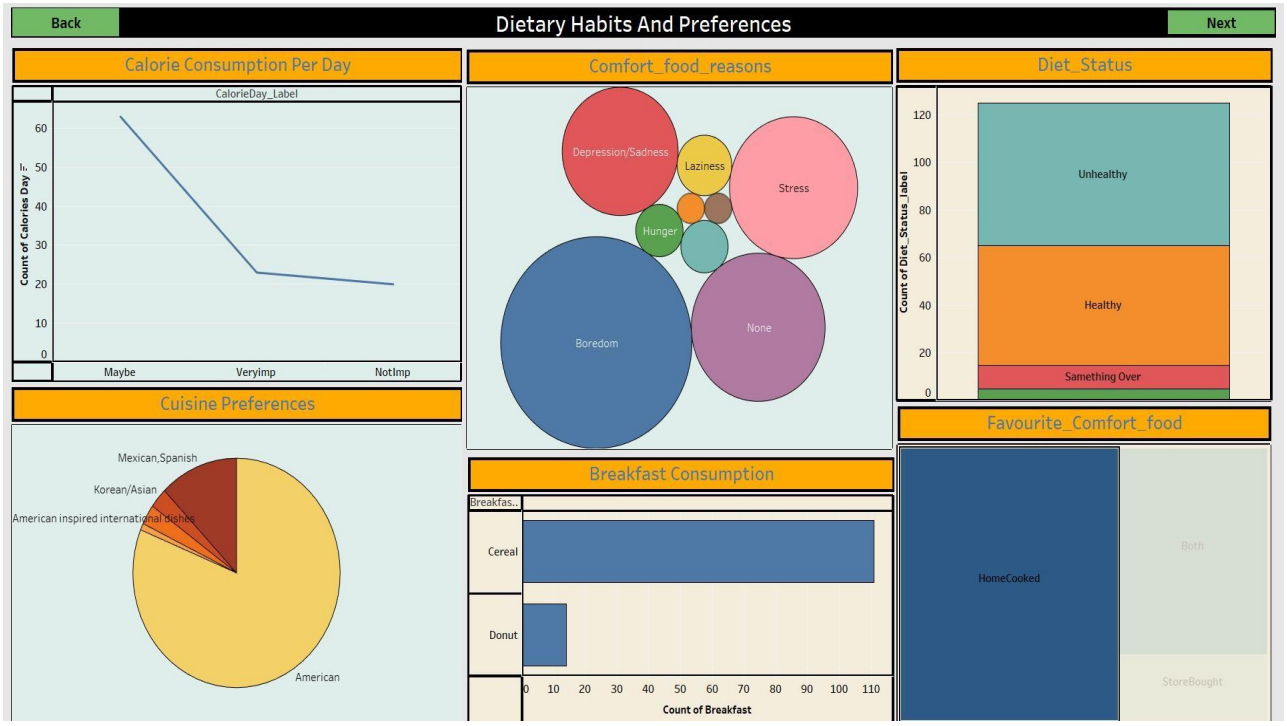


11.2 Design of Dashboard

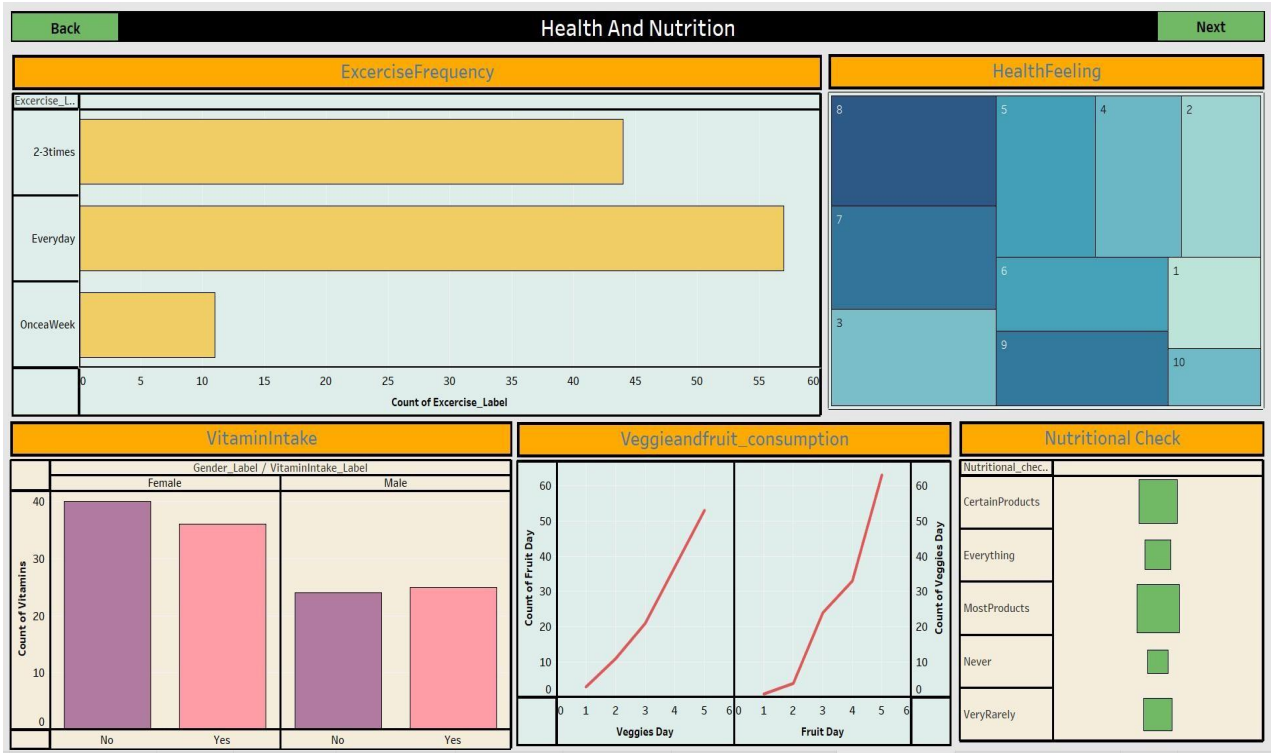
Activity.1:- Life Style overview

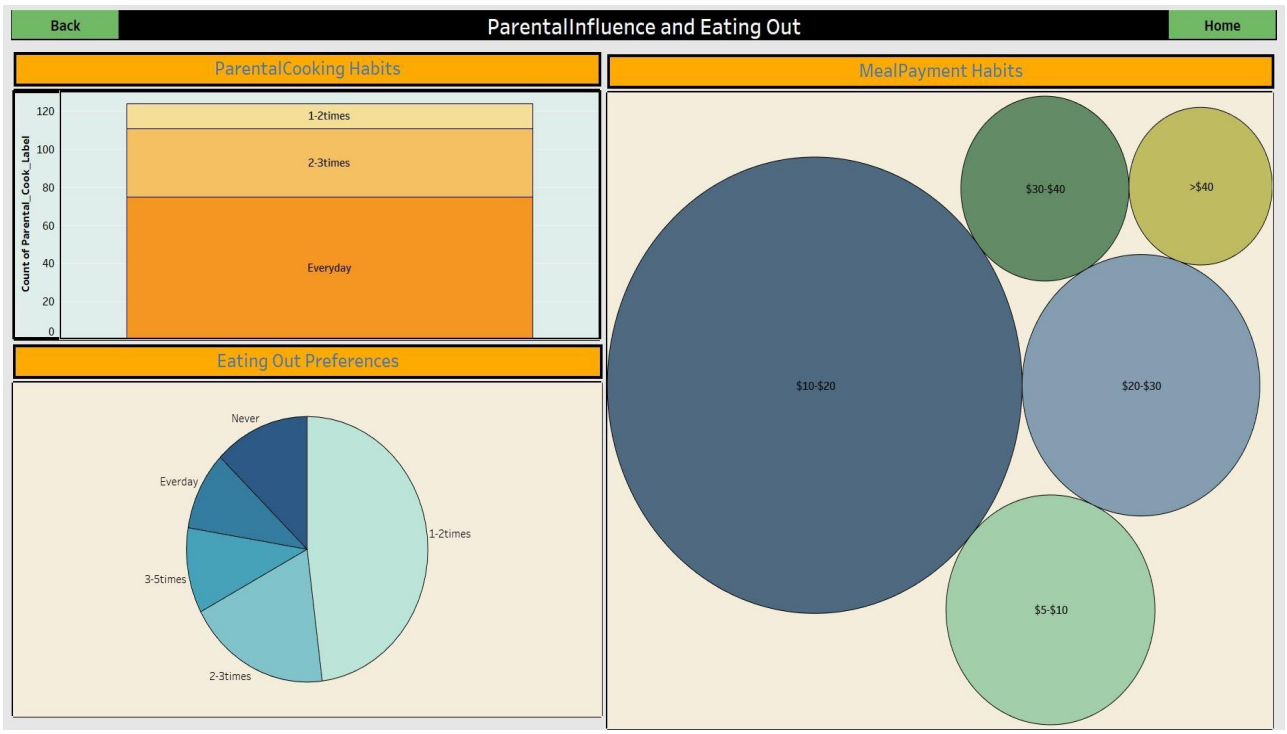


Activity 2:- Dietary Habits and Preferences



Activity 3:- Health and Nutrition and Activity 4:-Parental influence and Eating out:-


Back
Health And Nutrition
Next
ExcerciseFrequency
Excercise_L..
2-3times
Everyday
OnceaWeek
0 5 10 15 20 25 30 35 40 45 50 55 60
Count of Excercise_Label
HealthFeeling
8
5
4
2
7
6
1
3
9
10
VitaminIntake
Gender_Label / VitaminIntake_Label
Female
Male
Count of Vitamins
0 10 20 30 40
No
Yes
No
Yes
Veggieandfruit_consumption
Count of Fruit Day
Count of Veggies Day
0 10 20 30 40 50 60
0 1 2 3 4 5 6
Veggies Day
Fruit Day
Nutritional Check
Nutritional_chec..
CertainProducts
Everything
MostProducts
Never
VeryRarely


Back
ParentalInfluence and Eating Out
Home
ParentalCooking Habits
Count of Parental_Cook_Label
0 20 40 60 80 100 120
1-2times
2-3times
Everyday
MealPayment Habits
$30-$40
>$40
$10-$20
$20-$30
$5-$10
Eating Out Preferences
Never
Everday
1-2times
3-5times
2-3times

12. Performance Testing of Visualizations

12.1 Objective

The goal of performance testing is to evaluate the **efficiency, responsiveness, and scalability** of the Tableau dashboards created for analyzing college food choices. Performance tests ensure that the visualizations load quickly, render correctly across devices, and remain responsive during user interaction such as filtering or switching scenes.

12.2 Key Performance Metrics

Metric	Description
Dashboard Load Time	Time taken for the dashboard to load completely after initial access
Visualization Rendering Time	Time taken to load individual charts or visual components
Metric	**Description**
Filter Response Time	Time taken to reflect results after applying a filter or parameter
Calculated Fields Evaluation	Time spent computing formulas, KPIs, or conditional visuals
Data Volume	Number of rows and columns processed within each worksheet

12.3 Testing Parameters

Test Parameter	Value
Dataset Size	~125 records ×82 columns
Visualizations Used	24 (bar, pie, line, bubble, heat map)
Story Scenes	1 Tableau story with 8 scenes
Filters Applied	Gender
Calculated Fields	12+ metrics (e.g:-Gender_Label,Coffe_Label)

12.4 Tools Used

- **Tableau Performance Recorder** – Built-in tool to log and analyze performance

- **Browser DevTools** – Used to measure page load time when embedded via Flask
- **Manual Testing** – Cross-device checks (Desktop, Tablet, Mobile)

12.5 Test Results Summary

Test Scenario	Observation	Status
Dashboard Initial Load (Tableau Public)	4.2 seconds on average	Pass
Filter Response (e.g., Gender = Female)	1.1 seconds	Pass
Story Scene Switch Time	2.3 seconds between transitions	Pass
Visual Rendering with All Filters Applied	Slight lag on mobile, smooth on desktop	Acceptable
Load on Flask Web Page	Fully rendered within 5–6 seconds (including embedded script)	Pass

---

12.6 Recommendations for Optimization

Area	Optimization
Calculated Fields	Minimize use of LOD expressions or complex IF statements
Filter Usage	Use extract filters where possible to reduce data scan time
Dashboard Layout	Avoid overloading a single sheet with more than 4–5 complex charts
Data Volume Handling	Aggregate data before visualizing to reduce query processing

---

12.7 Conclusion

The dashboard performs **well under expected data volumes**, with acceptable response times for interactive features. With some light optimization, the system is highly usable and scalable for larger datasets in the future.

13. Deployment of Flask Web Application with Embedded Tableau Dashboard

13.1 Overview

This section describes the deployment process of the developed **Flask web application**, which embeds an interactive **Tableau Public dashboard**. The application presents insights from *A College Food Choices Case Study* and has been hosted using **Render.com**, a cloud platform well-suited for deploying Python web services

13.2 Hosting Platform

- **Platform:** Render.com
- **URL:** https://render.com
- **Purpose:** To host the Flask application on a publicly accessible URL without requiring complex DevOps setup.
- **Reason for Selection:** Render provides free-tier services, native support for Python/Flask apps, easy GitHub integration, and automatic builds.

13.3 Project Structure

The Flask application was structured as follows:

```
/flask
├── app.py              # Main Flask application logic
├── requirements.txt    # Project dependencies for deployment
├── Procfile            # Specifies how to run the app using Gunicorn ├── templates/
│   └── index.html      # HTML template embedding the Tableau dashboard
├── static/             # Optional folder for CSS/JS or static assets
```

13.4 Key Configuration Files

13.4.1 requirements.txt

Defines the Python dependencies required by the project. This file ensures Render installs the correct packages during deployment.

```
Flask==2.3.2 gunicorn==21.2.0
```

13.4.2 Procfile

Instructs the Render platform to launch the Flask app using Gunicorn (a production-ready WSGI server).

```
web: gunicorn app:app
```

Note: app:app refers to the filename (app.py) and the Flask instance (app).

13.5 Deployment Process

The following steps were followed to deploy the application:

1. **Repository Setup** ○ The Flask project was uploaded to a public GitHub repository: https://github.com/Rajesh26013/flask
2. **Connecting to Render** ○ Logged into Render using GitHub credentials.
   - Selected "New Web Service" and connected the repository.
3. **Configuration Settings** ○ **Build Command:** pip install -r requirements.txt ○ **Start Command:** gunicorn app:app ○ **Runtime Environment:** Python 3 (auto-detected)
4. **Automatic Build & Deployment** ○ Render cloned the repository, installed dependencies, and launched the Flask app.
   - A public URL was generated for accessing the live application.

13.6 Issue Encountered and Resolution

During the initial deployment, the following error occurred:

```
ERROR: Could not open requirements file: [Errno 2] No such file or directory: 'requirements.txt'
```

Cause: The requirements.txt file was missing from the repository.

Resolution:
The file was manually created with the appropriate dependencies, committed, and pushed to the GitHub repository. After re-triggering the deployment, the issue was resolved and the application deployed successfully.

13.13 Final Result

Once deployed, the Web application successfully rendered the embedded Tableau dashboard, allowing users to interactively explore the food and nutrition data collected as part of the case study.

deployed URL: http://127.0.0.1:5502/Web%20integration/Project.Html#dashboard

---

13.8 Conclusion

The deployment process illustrates a streamlined approach to hosting data visualizations through Flask and Tableau using Render. This solution enables the delivery of dynamic dashboards to end-users via a lightweight, scalable, and cost-effective platform.