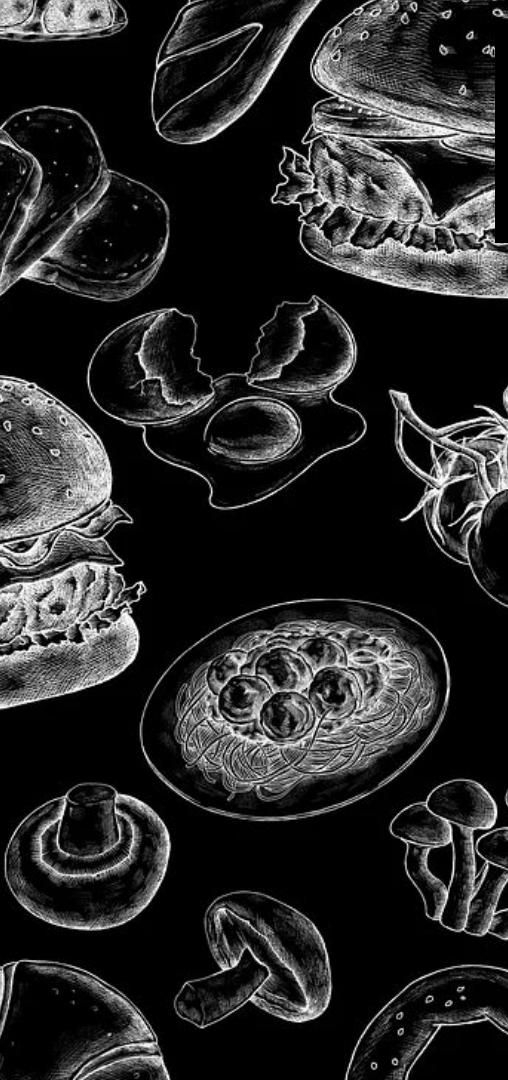




TasteBuddies

Team Iron
Fall 2024



Today's Menu

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Meet the Team



Colette Woods
Creative Director
Maître d'



Grant Fitch
Project Lead
Iron Chef



Ben Nissley
Webmaster / Frontend Developer
Sommelier / Cicerone



Oronde' Brown
Backend Developer
Saucier



Ashley Barasebwa
Database Developer
Grillardin



Nate Donald
Backend Developer
Rôtisseur

The Dish (background)



Everyone eats



In 2023, Americans spent \$1.5 Trillion dining out^[1]

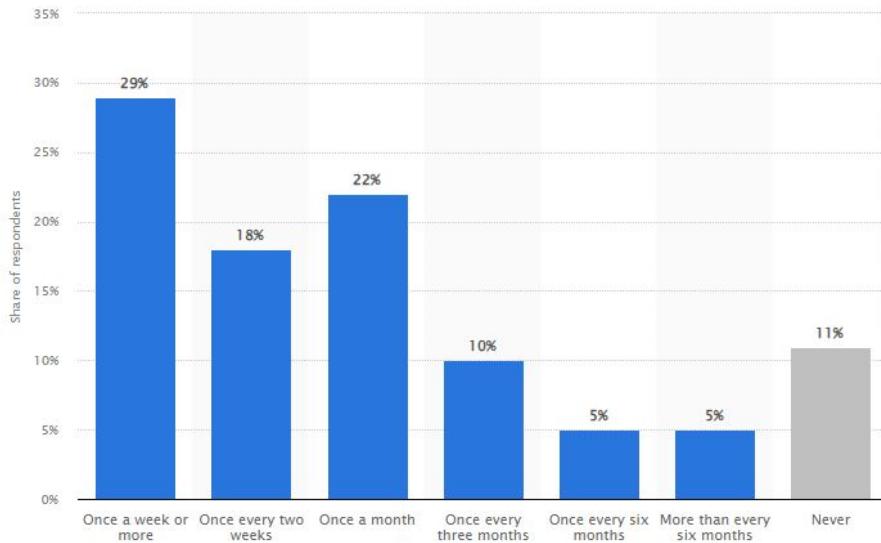


Family spending on dining out has increased year after year, passing pre-pandemic levels^[2]



Travelers spend 25% of their budget dining out^[3]

Frequency of eating out at a restaurant in the United States as of January 2022



Source: Statistica ^[4]

The Dish



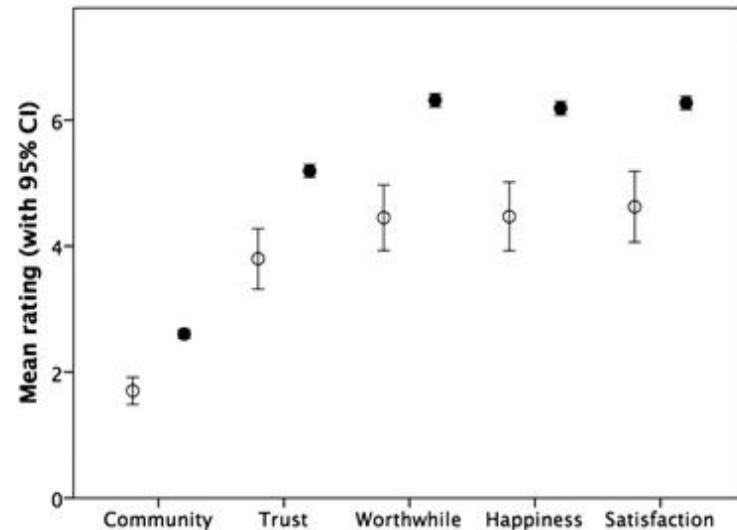
Dining out is used for several occasions, be it graduations, dates, or just promotes stronger bonding



Research suggests that communal eating increases an individual's wellbeing, social bonding, and happiness^[5]



50% of American diners prefer to dine out in a group^[6]



Mean rating (with 95% confidence interval)

Open symbols represent those who always eat evening meals alone.
Close symbols are those who at least sometimes ate with others.^[7]

The Deep Dish

So why not just eat at home with family and friends?



Time

- 🍴 It takes time to cook, and people have busy schedules.



Space

- 🍴 Not everyone can accommodate all their friends and family



Tastes

- 🍴 Who's cooking? Vegan Val might not find any suitable dishes at Carnivore Carl's house.



Skill

- 🍴 Not everyone is capable of cooking at home.

Top 5 Reasons Gen Z & Millennials Don't Cook More at Home

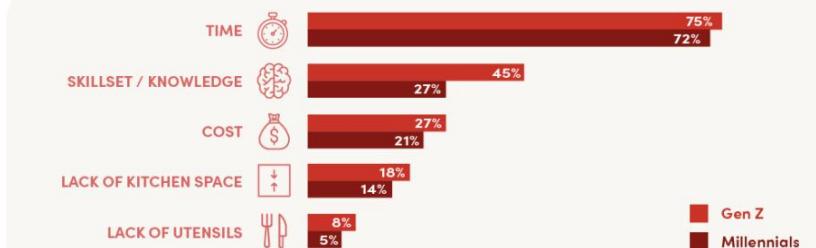


Image Source: [8]

<https://www.homeruninnpizza.com/news-blog/fun-facts/cooking-habits-gen-z-millennials/>

The Deep Dish

Working/studying from home?
How will you see others? Invite
them to your house? No! Meet at a
restaurant.

They provide:

-  Social engagement
-  Safe space
- An opportunity to bond over food without the hassle.



But wait...

Which restaurant will you go to?

- 🍔 You can look at online reviews, but they can be unreliable, resulting in inefficient decision making [9]
- 🍔 Besides, what does your buddy want to eat? How can you find a place that suits both of you?
- 🍔 By the time you decide on a place, you may as well have cooked something. What can help you?



The Deeper Dish



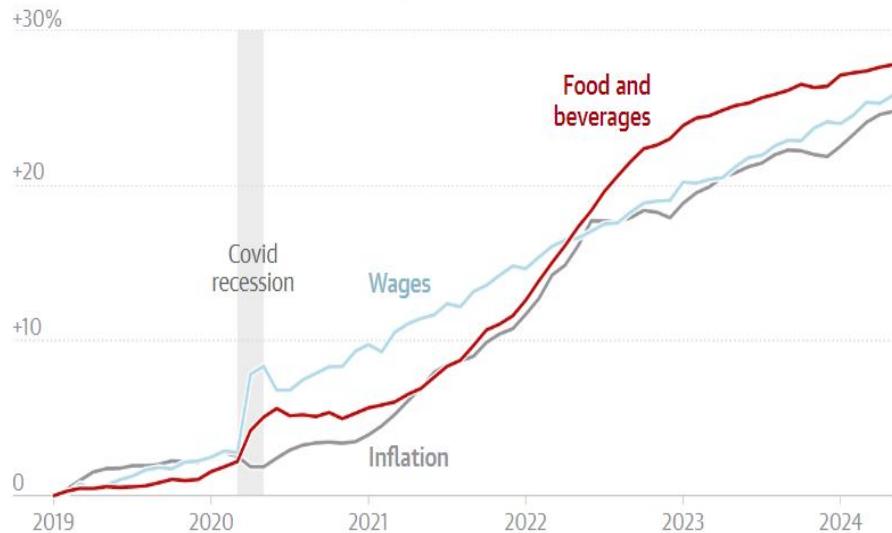
Inflation is up 2.53% over the year with restaurants up 4.1%, affecting the price of dining out and wages not keeping up with these increases.^{[10][11]}



The financial risk may cause people to avoid going to a restaurant for a possibly disappointing experience.

Food prices have risen more than wages and overall inflation

Percent change from January 2019 to May 2024



Guardian graphic. Source: Company profit growth is calculated using a recent quarterly SEC filing compared to the same quarter two years prior. Companies' quarterly calendars differ, their most recent profits range from late 2023 to early 2024. US workers' wage growth from BLS is the change in the inflation adjusted median weekly earnings of private employees. Food and beverage and inflation figures from BLS. Source: T. Perkins^[13]

Problem Statement

68% of Americans are eating at home instead of going to restaurants due to general inflation and the 4.1% price increase of restaurants compared to eating at home that has dropped by 0.2%.^[10] While there are benefits to eating at home, people miss out on new culinary experiences and social bonding which shows strong correlation with wellbeing.^[5] The difficulty of finding worthwhile restaurants best suited to an individual or group is a risk many are not willing to take. There is no current assured way to dine out and enjoy the company of others without risking disappointment and financial loss.

Problem Characteristics

 **Inflation rates** on dining out are up 4.2% while eating at home is only 1.2%, making eating out significantly more expensive than dining at home. ^[5]

 **Food prices have risen** more than the average worker's salary in the U.S. ^[13]

The Cost of Eating Out Continues to Rise Faster Than the Cost of Food at Home

% change in US consumer price index, March 2023-March 2024

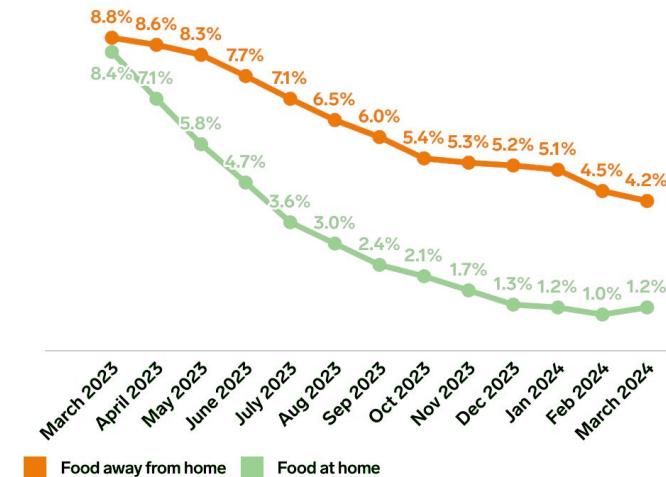
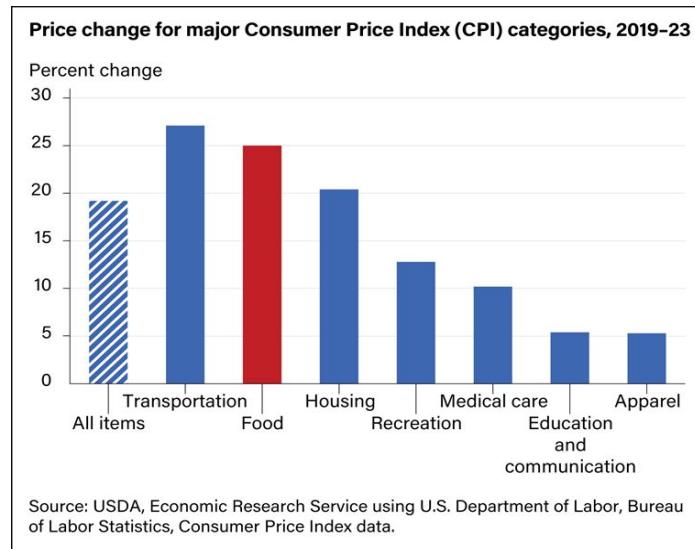


Image Source: [14]

Problem Characteristics (continued)



High Financial risk: With restaurant prices outpacing inflation, dining out has become a more expensive and risky decision for the average consumer. In recent years, United States food prices rose by 25%. [15]



Problem Characteristics (Continued)



Mismatched Expectations: Online reviews may not accurately reflect the customer's personal taste, leading to dissatisfaction in the dining experience. About 30% of online reviews are fabricated.^[11] How do you know which reviews to believe?



Difficulty in Dish Selections: Customers experience indecision when selecting dishes, making it difficult to confidently choose meals they will enjoy based on taste.



Mike K.

Victorville, Victorville, CA

0 friends

1 review



9/13/2018

Great place for the locals. The food is great and cheap! We had a party of 6 and everyone loved everything we ordered, especially the steak special which I would recommend if you are in Vegas.

Adam C. voted for this review



Above: a fake review generated by AI^[16]

Problem Characteristics (continued)



Group Indecision: Studies show that group decisions regarding where to eat is heavily influenced by social environment.^[17] Can lead to individuals eating at places they don't enjoy just to fit in with the group and avoid conflict.

- Sarah hates spicy foods, but Jerry lives for spice. Meanwhile, Ted wants vegan options. They need something that can combine their needs and tastes so they can enjoy a meal together again.



Current Process Flow

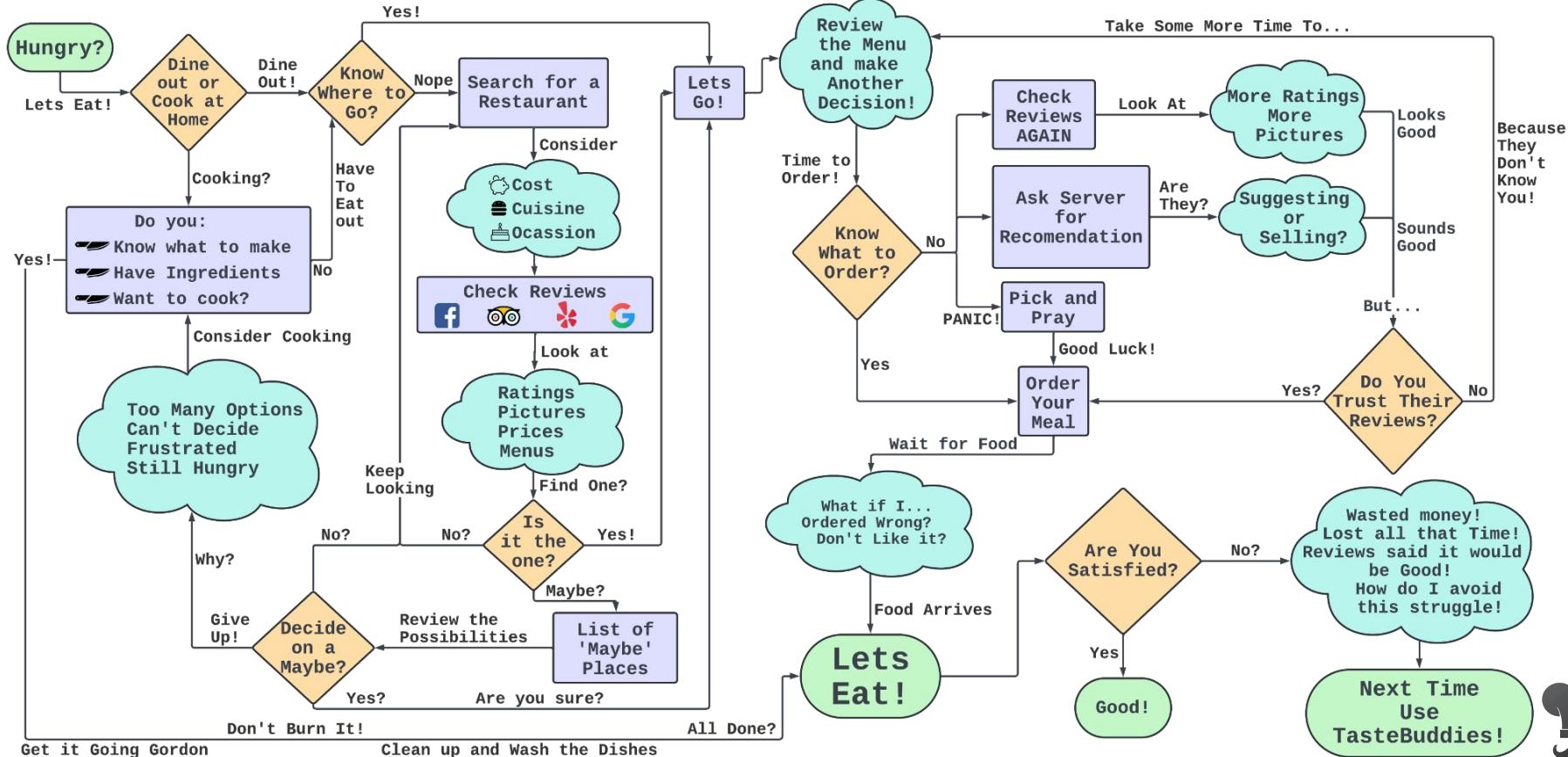
Diagram Key

Start / End

Decision

Consider

Action



Solution: Dine with confidence

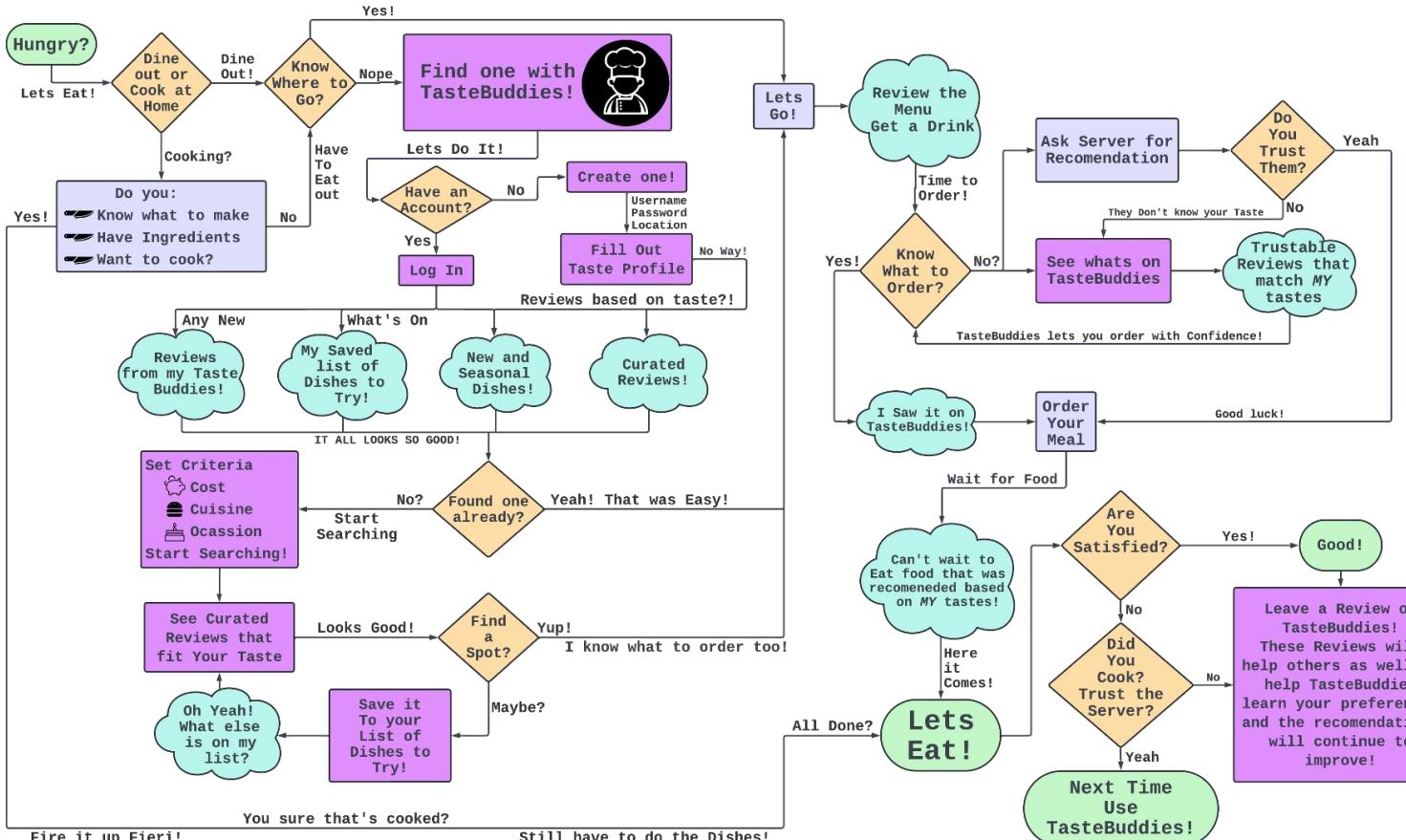
TasteBuddies is a smartphone app that will provide tailored restaurant and dish recommendations based on taste profiles. TasteBuddies will use data clustering to connect users with others who share similar preferences, offering relevant suggestions rather than generic reviews. Instead of guessing if a review is relevant, TasteBuddies users can rely on aggregated data that is catered to their taste.

By using TasteBuddies diners will get the most out of their dining experience, reducing dissatisfaction, while restaurants benefit from fewer complaints, less food waste, and happier customers who are more likely to return, give positive reviews, and tip well.

Solution Characteristics

- 🍔 **Personalization:** Our revolutionary app will provide tailor-made dish and restaurant recommendations tailored to individual tastes rather than offering a one-size fits all approach
- 🍔 **Tailored Recommendations:** Instead of relying on broad, generic reviews, the app connects users with others who have aligned taste profiles, offering a more accurate and customized dining experience
- 🍔 **Customer Satisfaction:** By offering recommendations based on individual preferences, the app helps customers get a better value for their money, enhancing the dining experience.
- 🍔 **Reduced Waste:** With more accurate recommendations, fewer dishes are sent back due to dissatisfaction, reducing food waste and lost revenue for restaurants.
- 🍔 **Increased Tips:** Happier customers lead to increased tips for working staff and more positive reviews, benefiting restaurant owners and workers

Solution Process Flow





Steakholders



Local Economy Feasts on Diners

Respondents of the OnePoll study say that restaurants help boost their local economies by:



Source: OpenTable Restaurant Impact Report [18]

Stakeholders



Restaurants attract more visitors.



Increased foot traffic supports surrounding businesses, creating a positive effect in the local economy.



The more guests enjoy their dining experience, the more likely they will spend impulsively.^[19]



Community Wellbeing



Stakeholders

- 🍔 **People** will be encouraged to eat out more, increasing socialization and wellbeing, promoting a sense of wellbeing when connected to the community whilst reducing social isolation [5] [20]
- 🍔 **Local event organizers** may have options of where to hold their event or eat thereafter, increasing community bonds while bolstering the local economy.



Restaurants win



Customers



Increased Customer Satisfaction

Less Food Waste

Increased Revenue

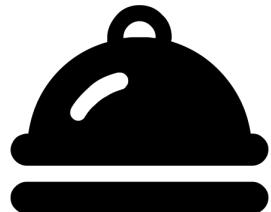
Potential for regular clientele

New Dishes land

Targeted Client Outreach



Subscription allows notifications about featured dishes and other updates



Everyone Eats, and Everyone Wants to Eat Well.

Users

-  **Adventurous Eaters**
🍴 People looking to try new things and explore different cuisines.
-  **Conservative Eaters**
🍴 Users who prefer familiar foods but may be in a new location and want reliable recommendations.
-  **Travelers**
🍴 People from out-of-town are always looking for a dining spot
-  **Foodies**
🍴 Whether looking for a new place to review, post on your blog, or just please your buds, TasteBuddies has you covered.

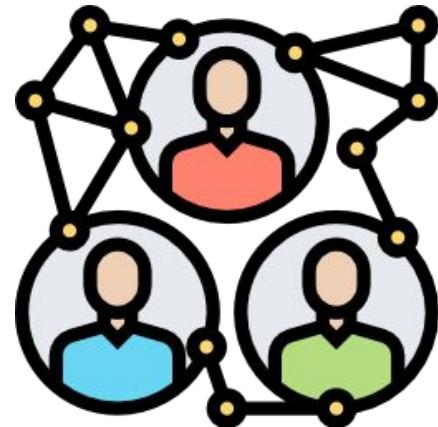


TasteBuddies Will Provide..



...Social Engagement

- 🍔 **Tastebuddies:** Connect with users who share highly similar taste profiles for accurate suggestions.
- 🍔 **Super Tastebuddies:** Follow taste influencers for expert recommendations in specific cuisines or dishes.
- 🍔 **Opt-in notifications** for seasonal dishes or specials that users loved previously.



...Taste Profiles

- Users can select their favorite restaurants and dishes, as well as input their preferences for core taste components, including spicy, salty, sweet, sour, and savory. These preferences will be used to create a personalized taste profile.
- Uses machine learning to continuously refine taste profiles and improve recommendation accuracy.
- Recommendations are based on the collective data of users with similar profiles.
- Filters for allergies, dietary restrictions, and preferred dining experience.

Intelligent Systems

-  **Prioritizes reviews and ratings from users with similar taste profiles and preferences, ensuring relevant feedback.**
-  **Match restaurants to fit the preferences of a group, perfect for company dinners or family outings.**
-  **Recommends dishes based on the user's current mood.**

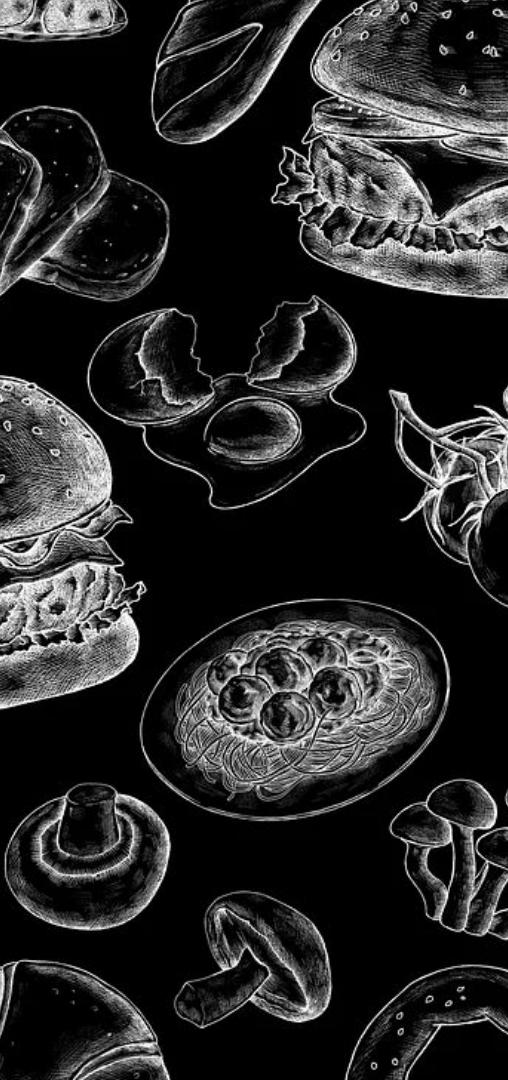
TasteBuddies Will Not

-  Provide recommendations for non-restaurant establishments or experiences
-  Offer health advice or weight loss recommendations
-  Prioritize generic reviews from all users
-  Offer food delivery or pick up
-  Offer budgeting tools



Competition Matrix

Feature	TasteBuddies	yelp*	Tripadvisor	Google	facebook	Foodaholix
Taste Profiles	chef hat					
Personalized Dish Recommendations	chef hat					
Lifestyle Personalization	chef hat	chef hat				
Restaurant Reviews	chef hat	chef hat	chef hat	chef hat	chef hat	
Dish Review	chef hat					chef hat
Followers	chef hat	chef hat			chef hat	chef hat *
Restaurant Notifications	chef hat				chef hat	chef hat
Group Restaurant Matching	chef hat					



Kitchen Aids / Chef Knives? (Development Tools)

Integrated Development Environment (IDE) - VSCode

Version Control - Git through GitHub.

Continuous Integration (CI) and Continuous Deployment (CD) - GitHub Actions & Workflows

Selected Language (Backend) - Java for the app and python for any ML.

Selected Language (Frontend) - HTML,CSS, JS for the site. JavaFX or Swing for an application but I should look into mobile app languages that work on android and IOS like react native. Could just do it in android studio and ignore ios for sanity reasons and just never address it. In my mind the mobile app is just a UI for communicating with the back end so it shouldn't be too difficult.

Testing Framework(s) - PyTest for Python, Jest for JavaScript, and Junit for Java.

Documentation Tool - pydoc for Python, JSDoc for JavaScript, and Javadoc for Java.

Major Functional Components

Presentation Layer



User Interface

- Smartphone app
- Web applications



Social Features

- TasteBuddies
- SuperTasteBuddies
- DailyDish Feed
contains new Dishes
and Curated Reviews



Dining Filters

- Location
- Cuisine
- Occasion

Application Layer



Web Server



User Profile Manager

- User registration,
login and preferences



Restaurant and Dish Database



Taste Matching Engine Recommendation Engine



Group Dining

- Pair with other users
for recommendations



Location Services

- Required for local
recommendations

Data Layer



PostgreSQL Database

- Review Data
- User Data
- Restaurant Data



Storage Container

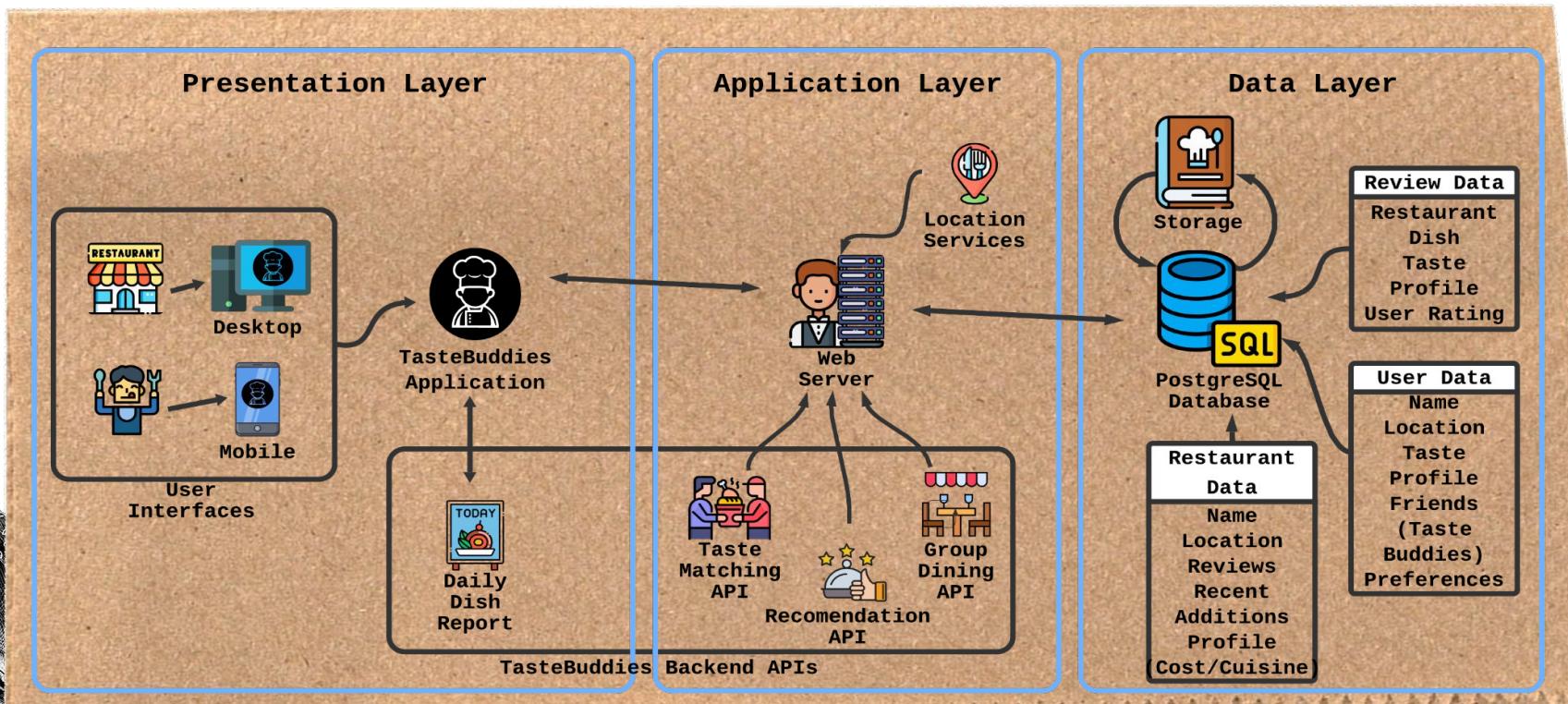
- Cloud Storage
- Other data such as
images



Other External API

- Google Location
for connecting to
local reviews

Major Functional Components Diagram



User Risk Matrix

		Likelihood				
		Very Low	Low	Medium	High	Very High
Impact	Very High			R2		
	High			R4	R3	
	Medium		R2 R3 R4		R5	
	Low		R5			R1
	Very Low		R1			

Legend

Low Risk Medium Risk High Risk

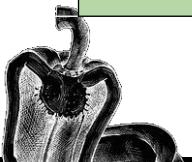
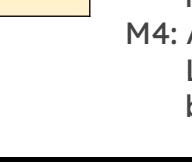
Risks

- R1: Fake Profiles and Reviews
- R2: User satisfaction with their recommendations
- R3: User Participation and Retention
- R4: Users evolving taste preferences
- R5: Users not wanting to share data

Mitigations

- M1: Require users to tie accounts to phone numbers and ban phone numbers from websites that provide temporary phone numbers
- M2: Allow user feedback on recommendations
- M3: Implement milestone-based Badges and rewards system for leaving reviews, and send reminder notifications to encourage participation
- M4: Allow users to update preferences and periodically prompt users for updates, “Do you still like...”
- M5: Allow users to opt in or out of data collection for specific features

Customer Risk Matrix

		Likelihood					Risks
		Very Low	Low	Medium	High	Very High	
Impact	Very High			R1			R1: Restaurants wont upgrade to premium accounts R2: Matching with closed restaurants R3: Matching with outdated dishes R4: Users may feel overwhelmed by excessive notifications
	High		M1	R2	R3		
	Medium			R4			
	Low						
	Very Low	M4	M2	M3			
Legend							
Low Risk		Medium Risk			High Risk		
							

Technical Risk Matrix

		Likelihood					Risks
		Very Low	Low	Medium	High	Very High	
Impact	Very High		R5	R2 R6 R7			R1: Inaccurate recommendations due to error in algorithm R2: Not enough users to create a reliable database R3: Credentials / Data Compromisation R4: App performance issues R5: Server downtime R6: User refuses location services R7: Loss of Cell/Internet Connection
	High		R1	R4	R3		
	Medium	M7		M3			
	Low	M1 M4 M5	M2				
	Very Low	M6					

Legend

	Low Risk
	Medium Risk
	High Risk

Mitigations

- M1: User feedback forwarded to development team to improve algorithm
- M2: Conduct an initial survey among foodies/employees to populate data
- M3: Use Best Practices for Cybersecurity
- M4: Optimize codebase for speed and efficiency
- M5: Use reliable hosting services with automatic failover and scaling capabilities. Implement backup and recovery plan
- M6: Allow user to search by Zip Code or City
- M7: Notify user, store recent suggestions in cache

Legal & Security Risk Matrix

		Likelihood				
		Very Low	Low	Medium	High	Very High
Impact	Very High			R2 R3		
	High			R1		
	Medium	M3 M3				
	Low	M1				
	Very Low					

Legend

Low Risk Medium Risk High Risk

Risks

- R1: Civil lawsuits against the app including potential user disputes or trademark violations
- R2: Data privacy regulations and potential mishandling of user data
- R3: Allergens not listed in dish description

Mitigations

- M1: Detailed terms and conditions for both users and restaurant that must be agreed to before use.
- M2: Obtain explicit user consent in the initial terms and conditions before collecting any personal information to ensure compliance with data privacy laws, including GDPR, CDPA, and the Privacy Act of 1974
- M3: Require restaurant provided dishes to be tagged with any allergens. User submitted dishes will be tagged as 'Unverified Allergens' until the restaurant provides appropriate tags

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