



# TasteBuddies

Team Iron  
Fall 2024

# Today's Menu

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# Meet the Team



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# The Dish (background)



Everyone eats



In 2023, Americans spent \$1.5 Trillion dining out<sup>[15]</sup>

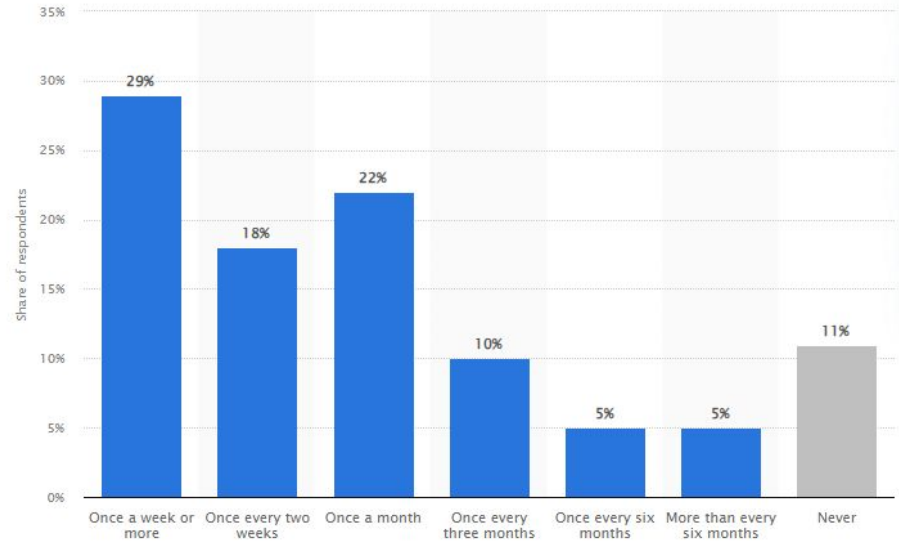


Family spending on dining out has increased year after year, passing pre-pandemic levels<sup>[19]</sup>



Travelers spend 25% of their budget dining out<sup>[16]</sup>

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



Source: Statista <sup>[18]</sup>

# The Dish



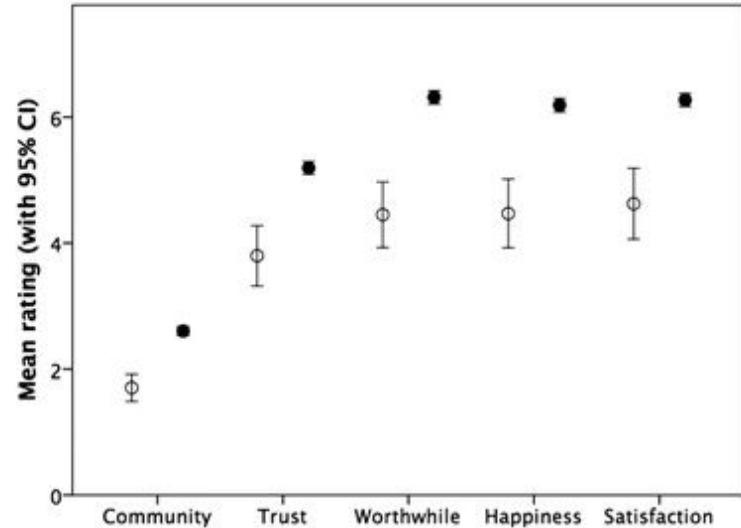
Dining out is used for several occasions, be it graduations, dates, or just promotes stronger bonding



Research suggests that communal eating increases an individual's wellbeing, social bonding, and happiness<sup>[9]</sup>



50% of American diners prefer to dine out in a group<sup>[21]</sup>



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. <sup>[11]</sup>



# 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

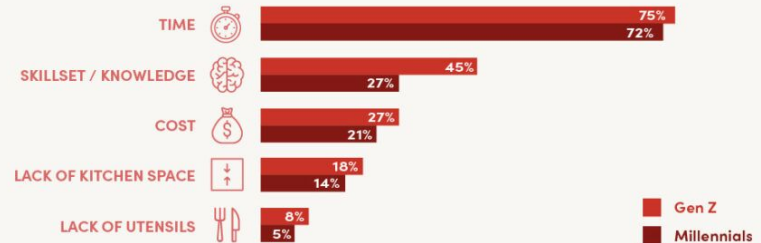


Image Source:

<https://www.homeruninpizza.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 <sup>[14]</sup>



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. <sup>[3][7]</sup>



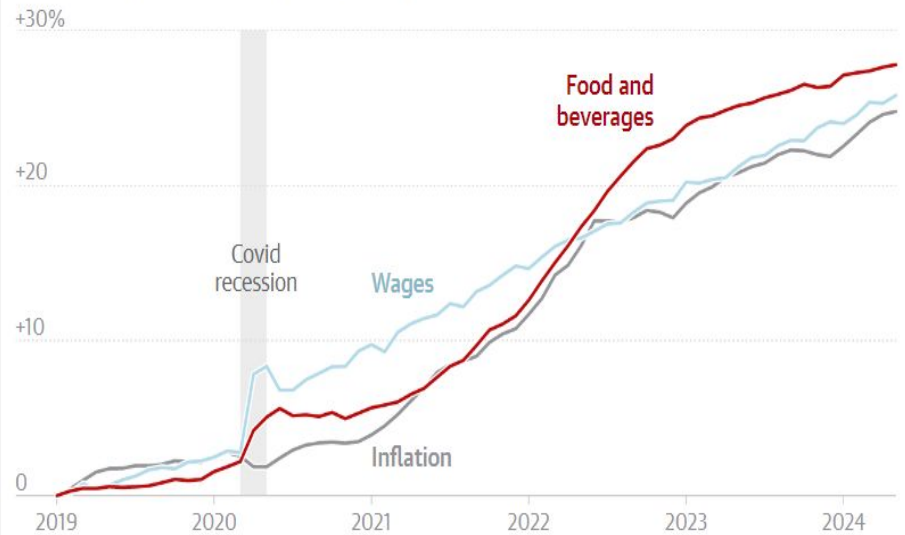
27% of diners have noticed lower-quality of service. <sup>[6]</sup>



Inability to to browse restaurants by similar taste as others causes people to avoid taking a risk on going to a restaurant.

## 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.

# 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%. While there are benefits to eating at home, people miss out on new culinary experiences and social bonding which shows strong correlation with wellbeing.<sup>[9]</sup> The difficulty of finding worthwhile restaurants best suited to an individual or group is a risk many are not willing to take.<sup>[3]</sup> There is no current assured way to dine out and enjoy the company of others without risking disappointment and financial loss.



# Problem Characteristics



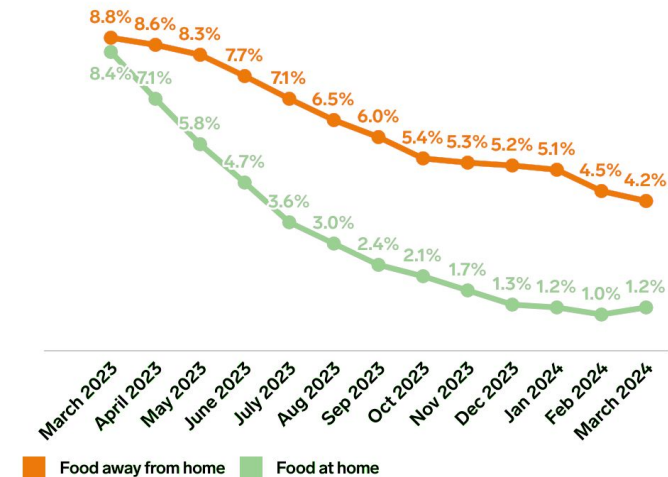
**Inflation rates** on dining out are up 4.2% while eating at home is only 1.2%, making eating out significantly more expensive than dining at home. [9]



**Food prices** have risen more than the average worker's salary in the U.S. [5]

## 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

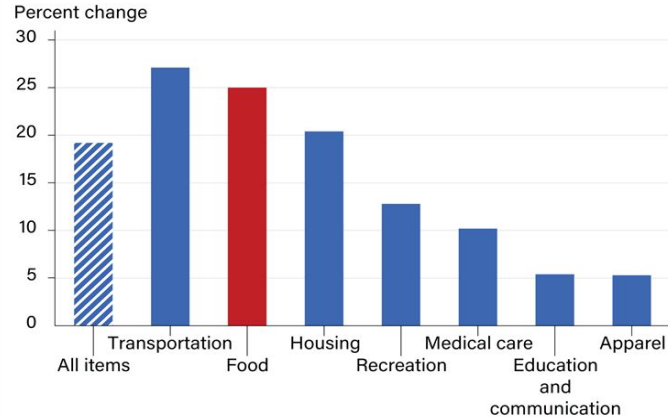


# Problem Characteristics (continued)



**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%. [4]

Price change for major Consumer Price Index (CPI) categories, 2019-23



Source: USDA, Economic Research Service using U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index data.

# 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. <sup>[7]</sup> 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.



*Above: a fake review generated by AI<sup>[17]</sup>*



# Problem Characteristics (continued)



**Group Indecision:** Studies show that group decisions regarding where to eat is heavily influenced by social environment.<sup>[20]</sup> Can lead to individuals eating at places they don't enjoy just to fit in with the group and avoid conflict.

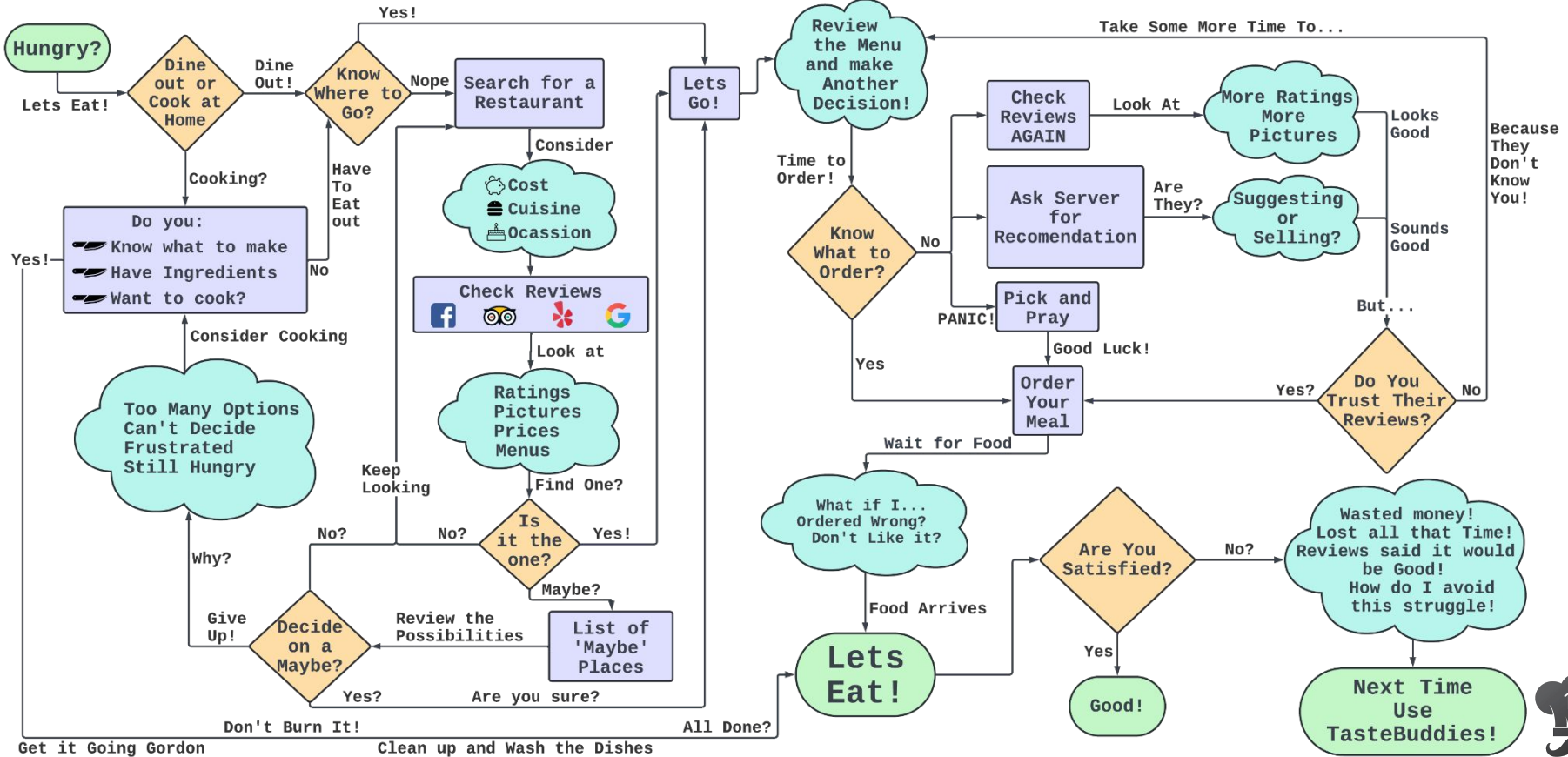
- Sarah hates spicy foods, but Jerry lives for spice. Meanwhile, Ted wants vegan options. They need something that can combine their needs and tastes so they can enjoy a meal together again.



# Current Process Flow

Diagram Key

- Start / End (Green rounded rectangle)
- Decision (Yellow diamond)
- Consider (Light blue cloud)
- Action (Light purple rounded rectangle)




# 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





# Steakholders





# Local Economy Feasts on Diners

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



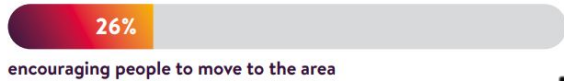
providing jobs locally



encouraging spending in the local area



increasing footfall in the area



encouraging people to move to the area

Source: OpenTable Restaurant Impact Report [\[12\]](#)



## 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.<sup>[8]</sup>

# 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 <sup>[9]</sup> <sup>[13]</sup>










**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



## Stakeholders and 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.

## Stakeholders and 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

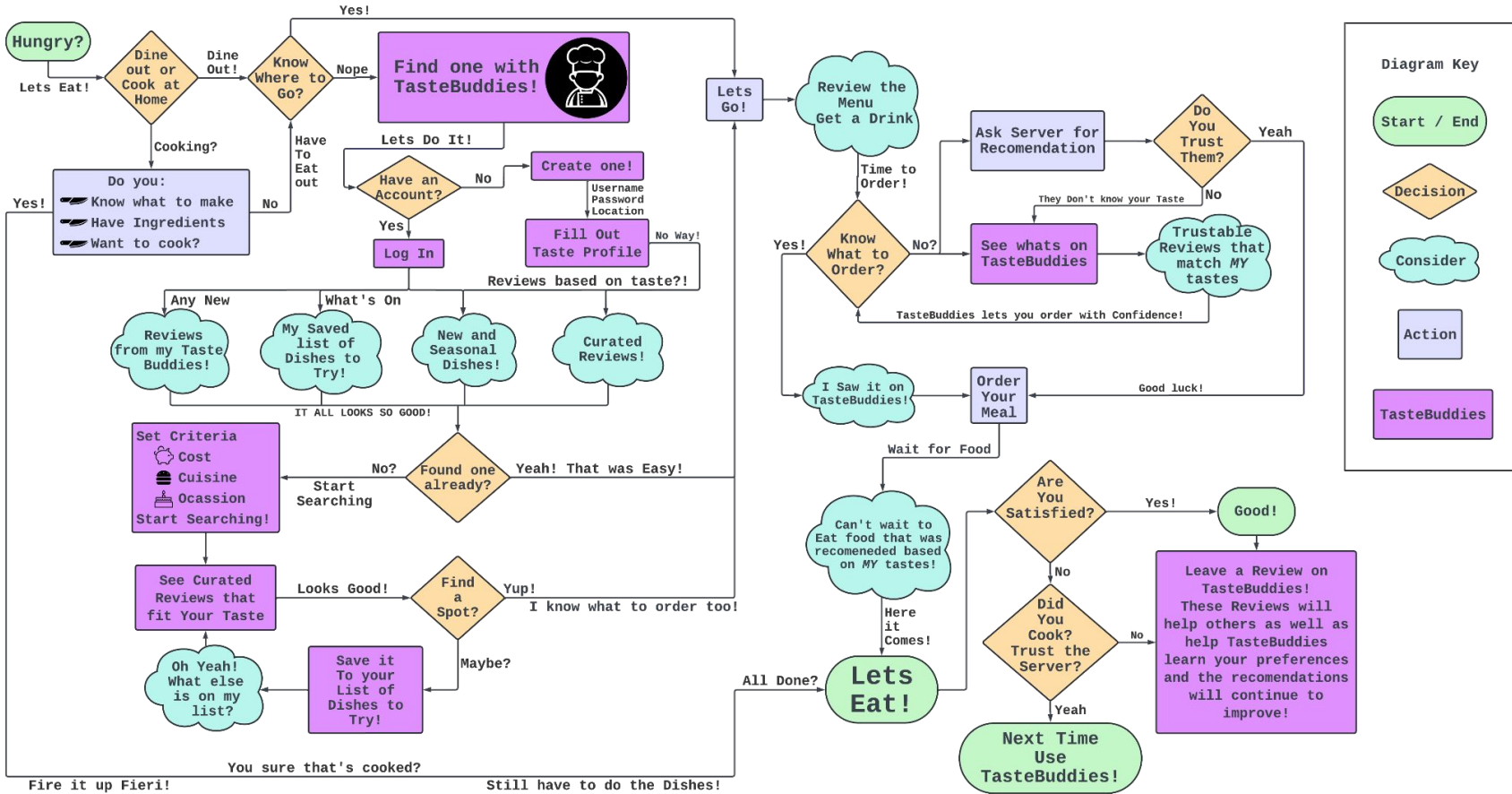


Whether looking for a new place to review, post on your blog, or just please your buds, TasteBuddies has you covered.





# Solution Process Flow






# TasteBuddies Will Provide..



Social  
Engagement



Taste  
Profiles




Intelligent  
Systems

# ...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 to 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
Taste Profiles					
Personalized Dish Recommendations					
Lifestyle Personalization					
Restaurant Reviews					
Dish Review					
Followers					
Restaurant Notifications					
Group Restaurant Matching					



# 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) - Most likely Java for the app and python for any ML. Wouldn't worry about mixing java with python. Mixing python, ML, and a database? WHO KNOWS?

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



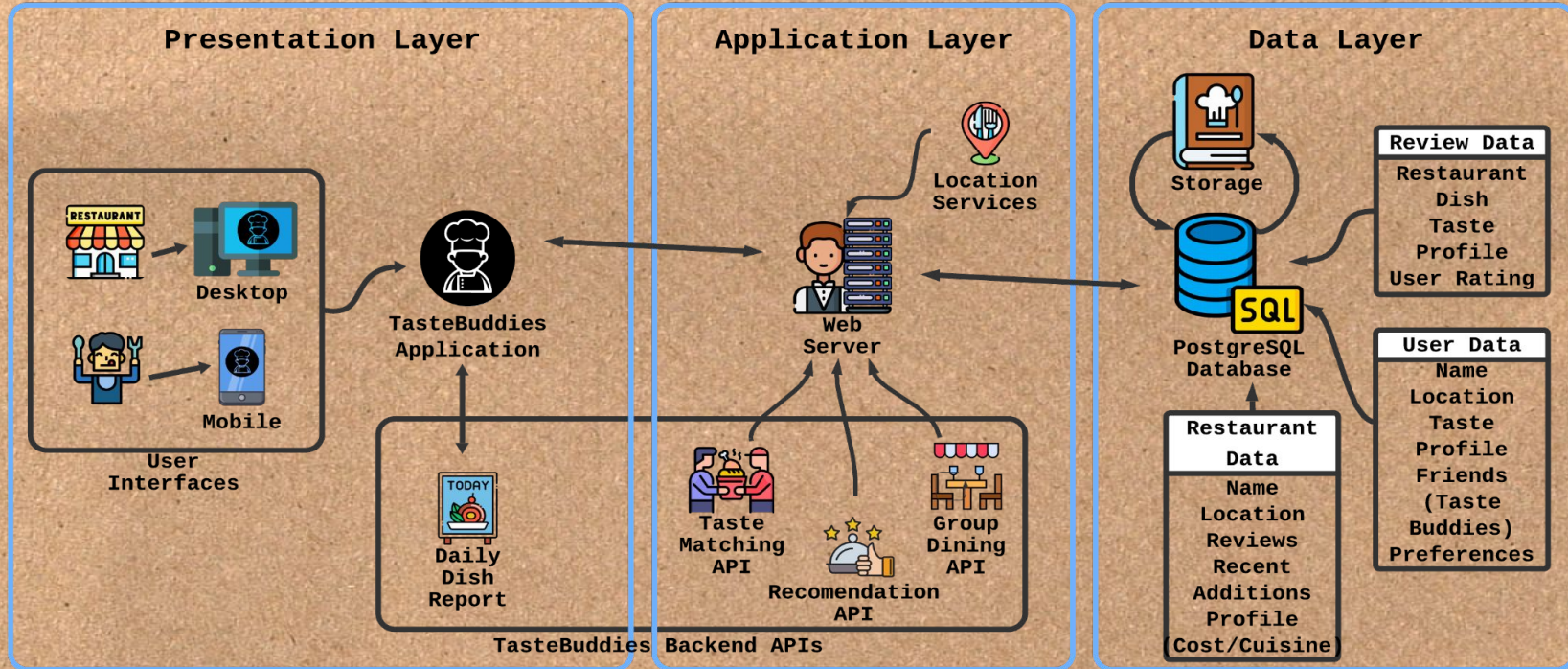
### Other External API



Google Location  
for connecting to  
local reviews



# Major Functional Components Diagram



# References

1. T. Perkins, "Your food is more expensive - are US corporate profits to blame?," *The Guardian*, Jul. 26, 2024. [Online]. Available: <https://www.theguardian.com/environment/article/2024/jul/26/food-price-inflation-corporate-profit>.
2. M. McCaron, "Have High Prices Killed the Joy of Trying New Restaurants?," *Bon Appétit*. Feb. 1, 2024. [Online]. Available: <https://www.bonappetit.com/story/restaurant-prices-diner-behavior>
3. P. Grieve, "Why Eating at Restaurants Is So Expensive Right Now," *Money*, May 20, 2024. [Online]. Available: <https://money.com/restaurant-prices-increase-inflation/>
4. U.S. Department of Agriculture, "Retail food price inflation remains high for food-at-home categories in 2023," Economic Research Service, Aug. 2023. [Online]. Available: <https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=58350>. [Accessed: 26-Sep-2024].
5. B. Rushe, "Corporate profit behind high food price inflation, report finds," *The Guardian*, Jul. 26, 2024. [Online]. Available: <https://www.theguardian.com/environment/article/2024/jul/26/food-price-inflation-corporate-profit>. [Accessed: 26-Sep-2024].
6. "Restaurants' Declining Service Threatens Diner Loyalty." PYMNTS.Com, PYMNTS, 31 May 2023, [www.pymnts.com/restaurant-innovation/2023/restaurants-declining-service-threatens-diner-loyalty/](http://www.pymnts.com/restaurant-innovation/2023/restaurants-declining-service-threatens-diner-loyalty/)
7. WiserNotify, "Fake review stats: Combating fake reviews - strategies and tools," *WiserNotify*, Sep. 2023. [Online]. Available: <https://wisernotify.com/blog/fake-review-stats/#combating-fake-reviews-strategies-and-tools>. [Accessed: 26-Sep-2024].
8. M Mohanty. "Impulsive Buying in the F&B Industry: A new opportunity for restaurants?". IDNext, Jul 6, 2023. <https://idsnext.com/blogs/impulsive-buying-in-the-fb-industry-a-new-opportunity-for-restaurants/#:~:text=The%20more%20guests%20enjoy%20their.will%20be%20to%20purchase%20impulsively>.
9. University of Oxford. "Social eating connects communities." University of Oxford. Mar 16, 2017. [Online] Available: <https://www.ox.ac.uk/news/2017-03-16-social-eating-connects-communities#:~:text=The%20results%20suggest%20that%20communal.and%20embedding%20within%20the%20community>
10. Home Run Inn. "Cooking Habits of Gen Z & Millennials," *Home Run Inn Pizza*, Aug 16, 2023. [Online] Available: <https://www.homeruninnpizza.com/news-blog/fun-facts/cooking-habits-gen-z-millennials/>
11. R. I. M. Dunbar, "Breaking Bread: The Functions of Social Eating," *Adaptive Human Behavior and Physiology*, vol. 3, no. 1, pp. 198–211, Mar. 2017. [Online]. Available: <https://doi.org/10.1007/s40750-017-0061-4>
12. OpenTable. "Restaurant Impact Report", OpenTable. Oct 2023. [Online] Available: [https://www.opentable.co.uk/c/wp-content/uploads/sites/342/2023/10/opentable\\_uk-restaurant-impact-report-2023.pdf](https://www.opentable.co.uk/c/wp-content/uploads/sites/342/2023/10/opentable_uk-restaurant-impact-report-2023.pdf)
13. T Thurnell-Read. "Open arms: the role of pubs in tackling loneliness", Loughborough University. [Online]. Available: [https://repository.lboro.ac.uk/articles/report/Open\\_arms\\_the\\_role\\_of\\_pubs\\_in\\_tackling\\_loneliness/13663715?file=26224472](https://repository.lboro.ac.uk/articles/report/Open_arms_the_role_of_pubs_in_tackling_loneliness/13663715?file=26224472)
14. C Beaton. "Why You Can't Really Trust Smarter Online Reviews.," *New York Times*. Jun. 13, 2023. [Online]. Available: <https://www.nytimes.com/2018/06/13/smarter-living/trust-negative-product-reviews.html#>
15. Escoffier Team, "2024 Consumer Dining Trends: How Americans are Spending on Restaurants and Takeout," *Auguste Escoffier School of Culinary Arts*, Sept. 25 2024. [Online]. Available: <https://www.escoffier.edu/blog/world-food-drink/consumer-dining-trend-statistics/#:~:text=Based%20on%20a%20review%20of%20time%20high%20of%2055.70%25>
16. US Travel Association, "U.S. Travel and Tourism Overview (2019)," *US Travel Association*, March 2020. [Online]. Available: [https://www.ustravel.org/system/files/media\\_root/document/Research\\_Fact\\_Sheet\\_US-Travel-and-Tourism-Overview.pdf](https://www.ustravel.org/system/files/media_root/document/Research_Fact_Sheet_US-Travel-and-Tourism-Overview.pdf)
17. "You can't tell whether an online restaurant review is fake -- but this AI can," *EurekaAlert!*, September 17, 2018. Available: <https://www.eurekaalert.org/news-releases/751481>
18. Frequency of eating out at restaurants in the U.S. 2022," *Statista*. <https://www.statista.com/statistics/1324709/frequency-of-eating-out-at-restaurant-in-the-us/> (accessed Oct. 2, 2024).
19. N. Wunsch. "Average annual food away from home expenditures." *Statista* Feb 12, 2024 [Online]. <https://www.statista.com/statistics/237215/average-away-from-home-food-expenditures-of-united-states-households/>
20. Higgins, Suzan, and Jason Thomas. "Social Influences on Eating." *Current Opinion in Behavioral Sciences*, Elsevier, 31 Oct. 2015.[Online]. Available: [www.sciencedirect.com/science/article/pii/S235215461500131X](http://www.sciencedirect.com/science/article/pii/S235215461500131X). [Accessed:02-Oct-2024]
21. Research and Markets: Housing Market in U.S. - Growth, Trends, COVID-19 Impact, and Forecast (2023-2028)," *Google Drive*, <https://drive.google.com/file/d/1HVq3SzbYq6AsSoSGVFPz8052rW2TY6UW/view> (accessed Oct. 2, 2024).