

# FooDecidr: Because everyone deserves a seat at the table.

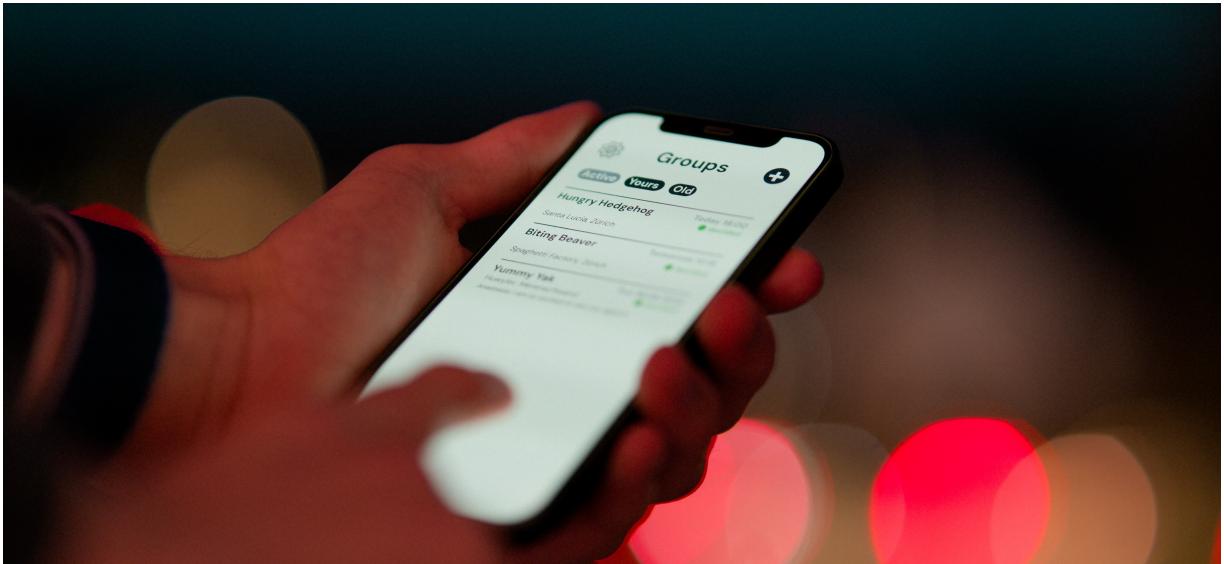


Figure 1: FooDecidr, your helper and friend in your daily life

## ABSTRACT

FooDecidr is a smart, user-friendly app designed to simplify the challenge of choosing restaurants for group events, especially when dietary restrictions and personal preferences come into play. Planning a meal with friends can often become stressful when considering allergies, dietary lifestyles, and individual likes or dislikes. FooDecidr removes the mental load by allowing users to input their preferences, dietary restrictions, and food no-goes. The app enables users to create events by specifying a time, date, and location, after which its intelligent algorithm recommends up to 10 restaurants that satisfy everyone's needs. Participants can further engage by suggesting venues and liking or disliking options. Once the deadline arrives, FooDecidr finalizes the best restaurant choice for the group, ensuring an inclusive and harmonious dining experience. Say goodbye to endless Googling and disagreements, and hello to effortless planning and happy dining!

**Index Terms:** Food—Human-centered computing—Inclusive—Mental Workload;

## 1 INTRODUCTION

FooDecidr is a smart, user-friendly app designed to address the common challenge of selecting a restaurant for group events, particularly when dietary restrictions and personal preferences must be considered. Coordinating a meal with friends often becomes a source of stress as individuals grapple with accommodating allergies, dietary lifestyles, and varying tastes. FooDecidr eliminates this mental burden by providing an intuitive platform where users can input their preferences, dietary restrictions, and food no-goes.

As part of this project, an A/B testing study was conducted to evaluate the app's performance and user satisfaction across different user interface designs.

To start using FooDecidr, users are required to create an account, during which they provide information about their preferences, dietary restrictions, and food no-goes. Two design approaches were implemented to simplify this process, each with unique benefits and potential drawbacks. These approaches form the basis of our A/B testing to determine which provides the most efficient and user-friendly experience. After creating the account, users can create events to specify who will join the meeting. If the user wants to give personal input, a liking mechanism takes the preferences of the recommended restaurants into account. This was the second base for our A/B testing, to see if users prefer the classic swiping mechanism to the like and dislike option or if it is better to use a traditional list with like and dislike buttons.

To identify which design better aligns with user expectations and supports the app's goals, an A/B testing study was conducted. Key metrics such as time taken for account creation, user satisfaction scores, the quality of preference data, and the number of likes and dislikes were collected and evaluated.

## 2 A/B TESTING

To evaluate the usability and effectiveness of the two design approaches, two A/B tests were conducted, each targeting specific metrics to measure user interaction and satisfaction.

### 2.1 Metrics Used

The user had several tasks to perform which were:

1. Create an account
2. Log out
3. Create an account again
4. Create an event
5. Like restaurants
6. Go to the Home screen
7. Create an event
8. Like restaurants
9. Go to the Home screen

Afterward, the tester needed to fill out a Google Form with question regarding the Ease of Use, Clarity, Overwhelmedness, and Satisfaction.

During the whole process, the users were screen-recorded and every single click was logged so accurate data could be gathered.

#### 2.1.1 Preference Input

To evaluate the account creation process, the metrics included:

- **Time to Complete Account Creation:** Total time taken by users to complete the process.
- **Number of Miss clicks:** How many times did users miss-clicked while creating an account?

Participants also completed a survey to provide feedback.

#### 2.1.2 Liking

The second test compared swiping and button-based mechanisms for engagement, focusing on:

- **Interaction Frequency:** Number of likes each design accumulated.
- **Time to Complete Task:** Time required to like 10 restaurants.

Participants provided additional feedback through a survey with a focus on clarity, ease of use, overwhelming feeling and satisfaction.

### 2.2 A testing - Single-Page Preference Input

The first design combines all preference-related questions into a single, comprehensive page. This layout has the advantage of giving users a clear overview of the whole process, allowing them to see in advance how much time and effort the account creation process will take. By seeing all the questions at once, users may feel more in control and be able to quickly identify the fields they find most relevant. However, the potential downside of this approach is that users may feel overwhelmed by the amount of information presented at once, especially if the list of preferences and restrictions is extensive. This could lead to rushed or incomplete responses, which could reduce the overall quality of the input data.

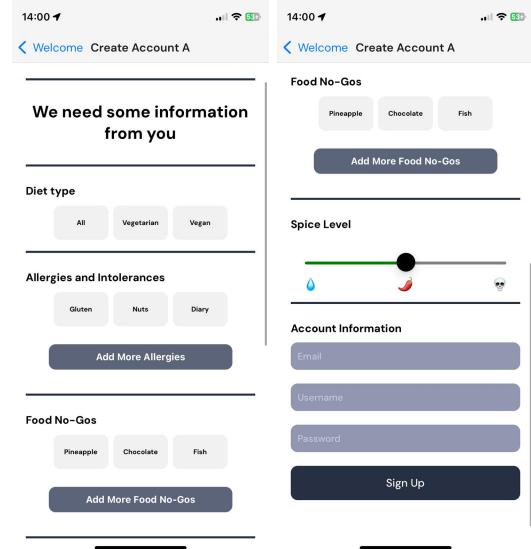


Figure 2: Single screen A testing

### 2.3 B Testing - Multi-Step Preference Input

The second design takes a sequential, step-by-step approach to creating an account. The questions are broken down into smaller, more manageable chunks and presented one at a time across multiple screens. This design aims to reduce overload, allowing users to focus on answering each question thoroughly. Without an upfront overview, some users may not anticipate how long the process will take, which can cause frustration.

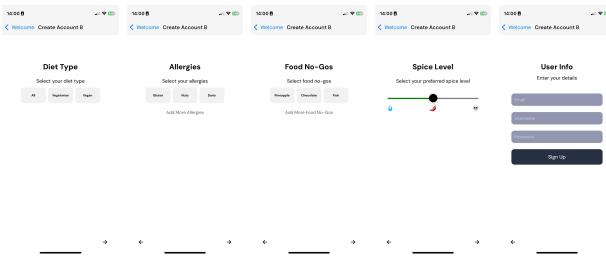


Figure 3: Multistep screens for selecting preferences

### 2.4 A Testing - Swiping Mechanism

The first design uses a swipe mechanism in which users are presented with one restaurant suggestion at a time. Users swipe right to 'like' or left to 'dislike' a restaurant and receive instant haptic feedback for a better user experience. This design takes advantage of the intuitive and familiar action of swiping, commonly associated with dating and entertainment apps, to create a dynamic and engaging experience. The one-by-one presentation focuses the user's attention on each option individually, potentially leading to more deliberate decision-making. However, this approach can be time-consuming for users who prefer to quickly evaluate multiple options or need to compare suggestions side-by-side.

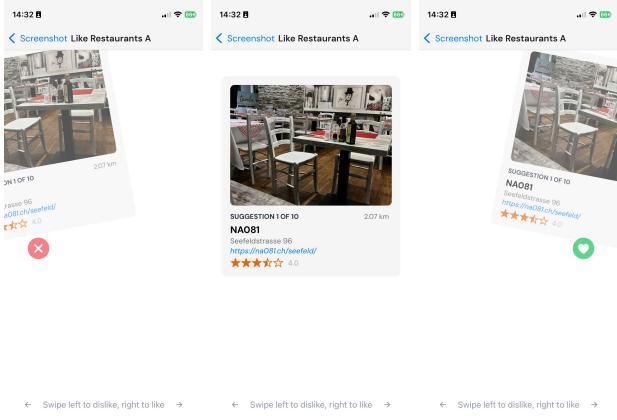


Figure 4: Swiping for liking and disliking restaurants

## 2.5 B Testing - Full List with Like/Dislike Buttons

The second design offers a more straightforward approach by displaying all ten restaurant suggestions on a single page. Each restaurant is accompanied by clear 'like' and 'dislike' buttons, allowing users to review all options at once. This design provides a convenient overview, allowing users to quickly identify and select their favorite restaurants. It suits users who prioritize efficiency and want to skip unnecessary interactions. On the downside, presenting all options simultaneously could lead to less thoughtful decision-making, as users may rush through the list without fully considering each suggestion.

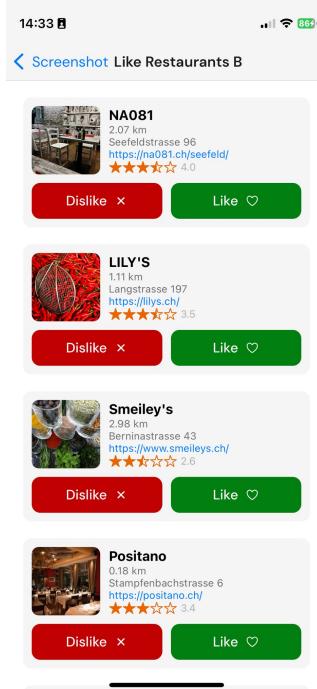


Figure 5: Single screen to like and dislike restaurants

## 3 EVALUATION

In most cases, we used a two-sided t-test to determine statistical significance over real numbers. For the comparison of the Like/Dislike ratio we used the Wilcoxon test as the data is binary (Like or Dislike) and can not be assumed as normally distributed. We also visualized the data to get a better understanding.

The evaluation is structured into two parts, the evaluation process of the behavior of the people tracked by logging, and the other one with the feedback form from the testers.

### 3.1 Account Creation

#### 3.1.1 Tester performance

During the whole test, there were a total of 72 missclicks detected and logged. Out of these 72 missclicks, only 4 happened during the account creation process using the scroll layout, indicating a relatively smooth and user-friendly interface for this particular process. During the account creation with the multipage layout, a total of 33 missed clicks were recorded, suggesting usability issues in certain areas of the design.

A heatmap was generated to show where the most misclicks occurred, as seen in Fig. 6. For this, overlapping Gaussian distributions were placed around each missclick location.

The most significant cluster of missed clicks was observed on the forward and backward navigation buttons, strongly suggesting that these buttons were too small. It is not clear why so many missclicks occurred to the right of the preference selection buttons in the multi-page layout.

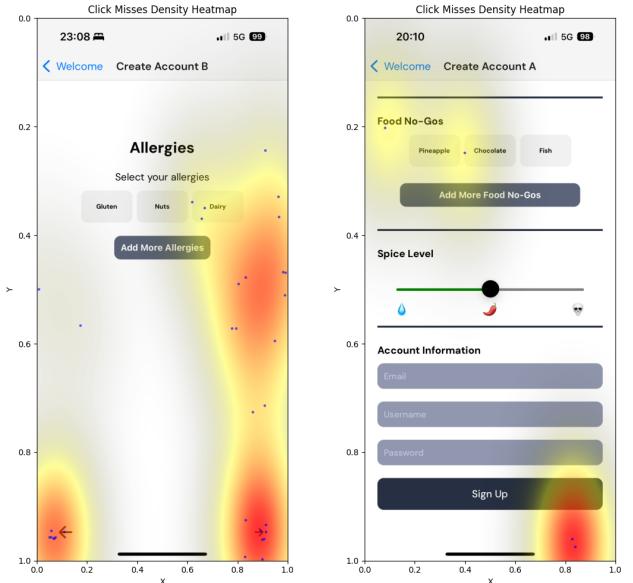


Figure 6: Missclicks during the process of account creation (left: multi-page, right: scroll)

When comparing the time it takes to create an account, the multi-page approach takes longer on average than the single-page approach. This could be due to combining the multi-page layout and clicking through all the options.

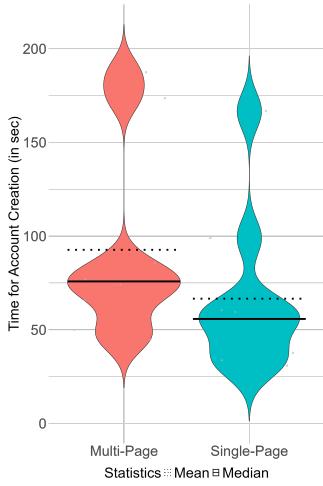


Figure 7: Comparison Time ( $p = 0.26$ )

### 3.1.2 User Survey

The account creation process showed that users generally did not show a strong preference between the one-page and multi-step designs. This lack of strong preference suggests that both approaches were perceived as relatively comparable in terms of overall usability.

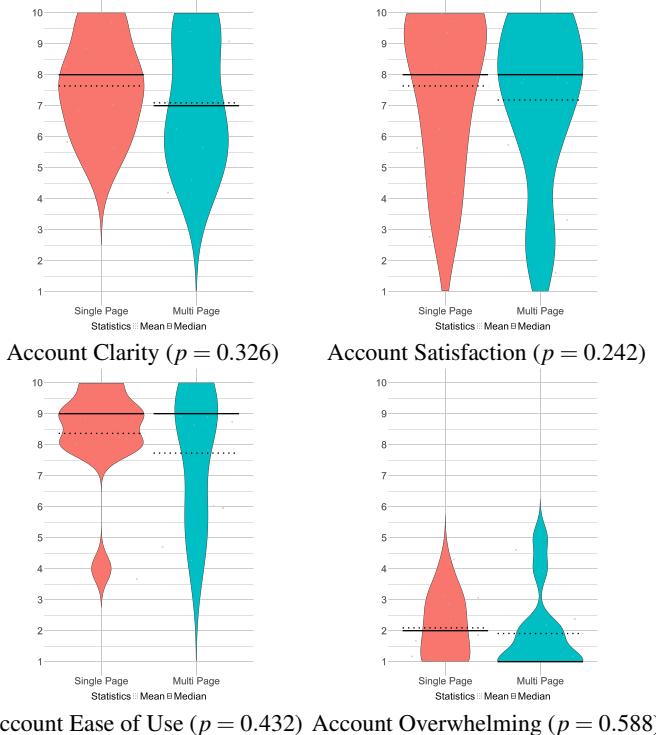


Figure 8: Comparison of Single and multiple page view

When analyzing user responses and performance metrics, the data showed that the median and average clarity scores were quite similar for both designs, indicating consistency in user experience across the sample. However, a subtle trend emerged: users tended to find the single-page design slightly more intuitive or clearer than the multi-step approach.

This slight advantage in clarity for the one-page design could be

attributed to the simplicity of having all the necessary information and actions presented upfront. In contrast, the multi-step process, while potentially less overwhelming, may have introduced some friction as users navigated between steps, potentially requiring them to reorient themselves or re-validate information at each stage.

## 3.2 Liking

### 3.2.1 Tester Performance

To determine which design performed better, the total time taken for the entire liking process was recorded, along with the time taken for each individual like. As shown in Fig. 10, the button-based liking mechanism consistently outperformed the swiping mechanism in terms of speed. We had to limit the analyzed values to the 95th percentile, as some users clicked the links to the restaurants website during the liking process. This does represent genuine user behaviour, but as we believe this is not part of the actual app flow we thought better to ignore those times multiples higher than the otherwise recorded times.

The median total time to complete the task was almost 10 seconds faster when using the button mechanism compared to the swipe mechanism. The median time for the button-based approach was 26.3845 seconds, compared to 34.584 seconds for the swipe mechanism. When evaluating the individual time taken for a Like/Dislike decision, we see that the list based approach takes on average 1.97 seconds, and with the swiping approach 2.47 seconds, this is a significantly ( $p = 0.0414$ ) faster decision time. These results show that the button mechanism allows for faster interactions, which may indicate greater efficiency and ease of use, especially for tasks that involve repetitive actions such as liking or disliking.

When analysing whether the amount of time spent interacting with each mechanism had an impact on user preferences, the ratio between likes and dislikes was compared, this can be seen in Fig. 9.

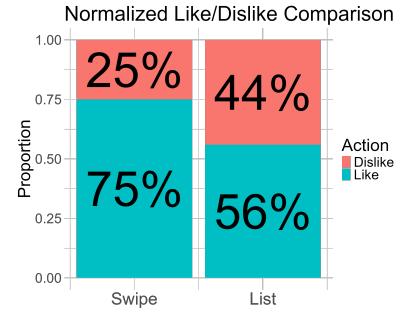


Figure 9: Comparison Like Dislikes in Swipe and Button Liking Mechanism ( $p = 0.042$ )

For the swiping mechanism, 75% of all likes were positive, as in the list design only 56% of the likes were positive. This indicates that users expressed more positive reactions (Likes) than negative reactions (Dislikes) when interacting with the swiping interface. This suggests that the swiping mechanism responds well to users, possibly due to its intuitive, engaging and tactile nature, which is in line with common mobile interaction patterns.

In contrast, the list interface resulted in a much lower ratio of 0.513, meaning that users provided more dislikes than likes when using this method. This discrepancy suggests that the list mechanism, which presumably involves pressing buttons to indicate preferences, was less appealing to users. This could be due to several factors, such as lack of participation, perceived complexity, or the time required to navigate and make choices in a list format.

The large difference between the two metrics suggests that the swipe mechanism was far more effective in eliciting positive re-

sponses. This finding highlights the importance of choosing interaction designs that feel natural and comfortable to users.

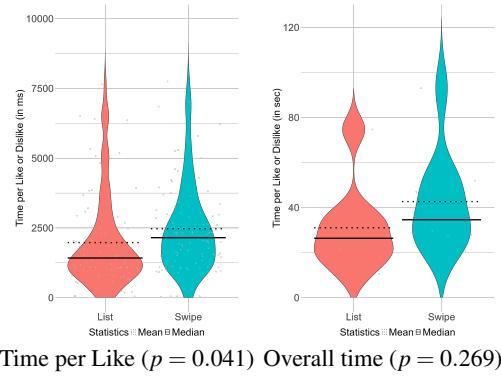


Figure 10: Comparison of List and Swiping Liking Mechanism

### 3.2.2 User Survey

The comparison between swiping and list-liking revealed only minor differences in most usability metrics, suggesting that both approaches provide a comparable experience in terms of functionality and ease of use. However, a notable and interesting difference emerged when analysing user satisfaction which can be seen in Fig. 11.

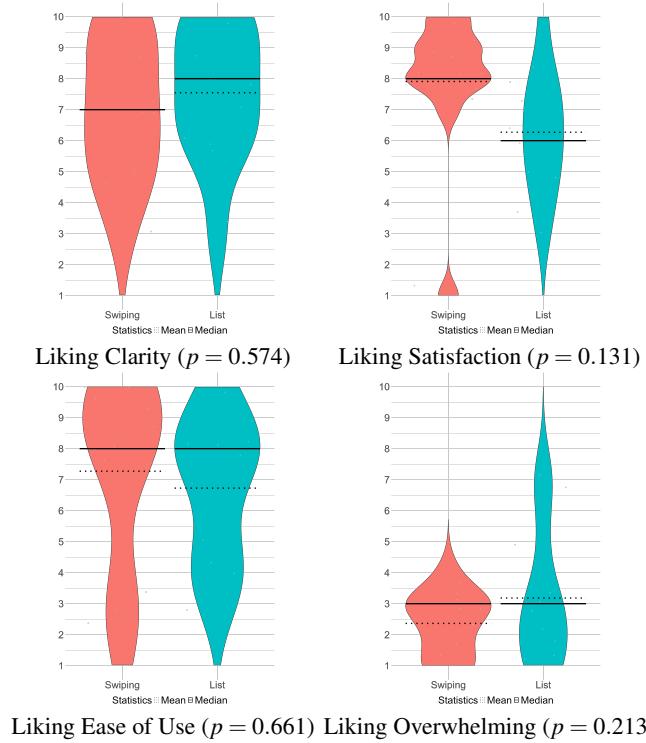


Figure 11: Comparison of swiping and button list view

Users showed a clear preference for the swiping mechanism, with a strong trend towards higher levels of engagement and satisfaction compared to the list-based approach as this can be seen in Fig. 11. We see a not statically significant trend ( $p = 0.131$ ) towards swiping. This trend suggests that the swiping process resonates more strongly with users on an emotional or experiential level. The interactive and

dynamic nature of swiping is likely to contribute to its appeal, as it feels intuitive, and engaging and mirrors familiar interactions found in popular apps and platforms.

Ease of use was rated similarly for both liking and swiping. However, there is a large variance in the responses for both scenarios ( $p = 0.661$ ). We can therefore not draw any statistically significant conclusions about the ease of use for these two cases. However, we see that the average lies around 8 out of 10 in both which suggests that both cases are easy to use.

## 4 CONCLUSION

Overall, all design prototypes performed well and met the basic requirements of the tasks.

However, certain trends showed up, highlighting the strengths and weaknesses of certain approaches:

- Account creation: Single-page vs. multi-page design** When comparing the scrolling design with the multi-page design for account creation, the scrolling option proved to be the better solution. Users experienced fewer accidental clicks (missclicks) and reported higher levels of clarity and ease of use with the scrolling design. Also, users were faster in creating an account with the single-page layout. These factors suggest that scrolling provides a more seamless and intuitive user experience, particularly in contexts where continuous interaction is preferred.
- Listing Mechanism: List vs. Swiping Mechanism** For the liking mechanism, the evaluation showed mixed results, indicating trade-offs between the two designs. The list approach was superior in terms of time efficiency, allowing users to complete the task more quickly. However, the swiping mechanism was favoured in other critical aspects, including the number of likes given and the overall satisfaction users reported with the liking process. This suggests that while the list mechanism may optimize speed, the swiping mechanism provides a more engaging and satisfying user experience.

Based on these findings, the one-page scrolling design for account creation and the swiping mechanism for liking tasks show more promising results compared to their counterparts. The scrolling design provides better clarity and fewer errors, while the swipe mechanism, although slightly slower, increases user satisfaction and engagement. This suggests that prioritizing user satisfaction and interaction quality can lead to a more positive overall experience, although in some cases at a slight cost to efficiency.

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