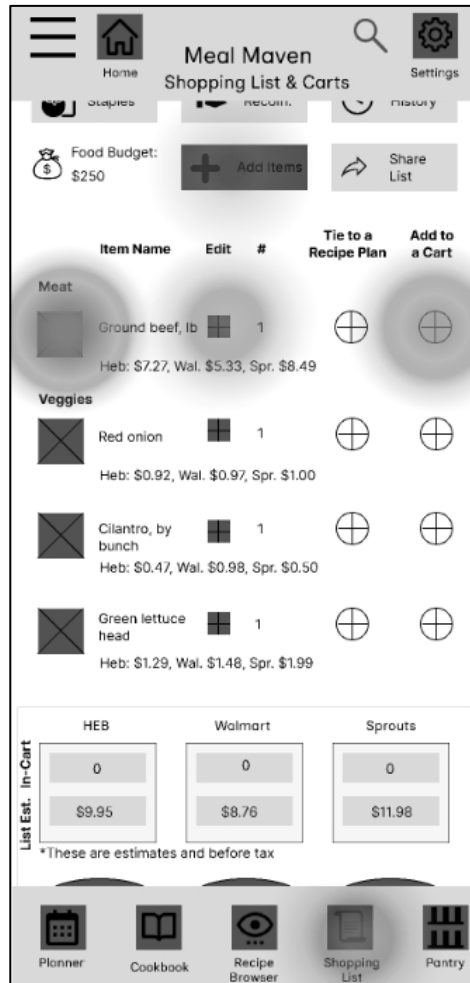


Meal Maven User Experience:

Usability Testing Report



Harris Anthropological Research

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Abstract:

This usability test report examines the Meal Maven prototype through Lo-Fi and Hi-Fi testing, uncovering critical usability gaps, interaction efficiency, and user satisfaction trends. Findings informed data-driven design refinements, prioritizing task clarity, workflow improvements, and seamless navigation. Comparative testing against Cooklist validated improvements, ensuring intuitive usability aligned with user expectations.

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Executive Summary

Introduction and Background

This research report showcases John Harris' experience in UX research while pursuing Google's UX Design certificate. The project focuses on designing "Meal Maven," an app and responsive website for inventory management and meal planning based on available ingredients. The research aims to understand the target users of Meal Maven, their needs, and challenges, and to compare competitors' users and assess their strengths and weaknesses

Research Goals

- Assess information architecture and determine the need for card sorting.
- Evaluate ease of use for key tasks and compare with Cooklist.
- Identify success metrics for user persona problem statements and prioritize observations.
- Compare user satisfaction with Meal Maven and Cooklist.
- Discover areas of confusion or incomplete functionalities.

Key Research Findings

- User satisfaction doesn't always reflect usability, ratings raised progressively despite critical usability issues in Finalizing List task (T4).
- Most of the errors preventing task completion were in T4, in contrast Browsing Recipes task (T3) and Cooking task (T5) had the lowest error rates.
- Time-based analysis revealed friction points with T4 and Updating Planner task (T2) taking 270% longer, but T5 was 40% faster.
- Paint Point Tier system allowed data-driven prioritization, ensuring critical usability blockers were first addressed.
- Users valued seamless integration & workflow efficiency, which reduced cognitive load (e.g. planner meal types & sharable dinner plans)
- Minor usability friction points impacted navigation clarity, like search functions, cart visibility, and homepage buttons

Limitations

It's possible there was either user familiarity bias or friendliness bias in this moderated testing study, due to the incongruity of T4 (Finalizing List task) had notable higher user error rates than those around it while still in the overall ~4.5 area of SUS rating and because of its anomalous higher task completion time compared to the others. One of the reasons a moderated approach was taken was due to ongoing learning about how to do complex interactions Figma.

Introduction and Background

Project Background

This project has completed its exploratory research to understand basic questions about who this meal plan app's (Meal Maven) users are and what their needs and challenges are. The project also compared competitor's users, and assessed their strengths and weaknesses. The ideation phase of Meal Maven has proposed designs to address user needs, problems, and capabilities, and design prototypes of it. Now, Meal Maven has moved on to the testing phase. The aim of this research is to evaluate the effectiveness of and intelligibility of the designs of Meal Maven to users. The first round of testing will need to discover any major design challenges to fix prior to beginning the high-fidelity prototype. Meal Maven's functionalities needing testing across select task journeys are:

- Planner
- Cookbook
- Recipe Browser
- Shopping List
- Pantry

Research Goals

The research goal are:

- Ascertain if there are information architecture with the structuring the app/website with preliminary in-person card sort to test structure.
- Discover the degree of ease of use in navigating Meal Maven to accomplish golden path tasks in meal planning and compare against Cooklist
- Determine the success metrics for measuring success in addressing user persona problem statements and see if the designs meet most of the prioritized observations by user personas via the 2x2 Matrix
- Find how Meal Maven compares to Cooklist users at the same tasks and bring user satisfaction to the approximately the same if not higher rates.
- Discover any places of confusion or incomplete functionalities during testing.

Research Questions

The following are the research questions:

- How much time will the user take to complete each of the tasks?
- How much time will the user take to complete each of the tasks when compared to Cooklist?
- What unanticipated pain points will users discover during testing?
- What unanticipated user tasks journeys are there while completing the scenario tasks?

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- How high are each of the functionalities rated by users after each usability test?
- How high are each of the functionalities rated by users of the competitor usability test?

Lo-Fi Usability Test: Key Findings

Here are seven key insights from the lo-fi usability test:

1. User Satisfaction Doesn't Always Reflect Usability

- SUS ratings increased over time, likely due to user familiarity, but did not always align with usability issues.
- Despite Finalizing List (T4) scoring high in SUS, it had severe usability problems, indicating that SUS alone isn't a reliable usability metric.

2. Critical Errors Disproportionately Impact Certain Tasks

- 27% of user errors were severe enough to prevent task completion, mainly concentrated in Finalizing List (T4).
- Browsing Recipes (T3) and Cooking (T5) had the lowest error rates (~20%), indicating better intuitive design.

3. Time-Based Usability Evaluations Help Identify Friction Points

- Cooking (T5) was completed 40% faster than expected, signaling strong efficiency.
- Finalizing List (T4) and Updating Planner (T2) took over 2.7x longer, emphasizing usability barriers.
- A structured time benchmark was applied instead of direct task comparisons, ensuring a more accurate evaluation model.

4. Prioritization Strategy Uses Data-Driven Pain Point Tiers

- Errors were categorized by frequency and severity into a three-tier matrix to prioritize redesign efforts effectively.
- Tier 1 Pain Points (requiring immediate fixes) included critical usability blockers such as missing interactions, unclear navigation, and ineffective cart mechanics.

5. Users Value Seamless Integration & Workflow Efficiency

- Users loved features that reduced cognitive load, such as planner meal types and sharable dinner plans.
- The Recipe Browser's ability to pull pantry inventory into meal planning resonated strongly with users, improving decision-making efficiency.

6. Addressing Minor Friction Points Enhances Overall UX

- Tier 2 & 3 fixes focused on clarity, search functionality, and feedback mechanisms.
- The planner icon, homepage buttons, and search bar improvements were identified as low-hanging fruit for optimization.

7. Combining Quantitative & Qualitative Data Leads to Stronger UX Decisions

- Error rates, completion times, and SUS trends were paired with user feedback to construct a holistic redesign roadmap.

- Users' qualitative insights reinforced prioritization decisions, ensuring that fixes were driven by user frustration, not just numerical errors.

8. Task Complexity Influences Perceived Success

- Users often felt satisfied with tasks, even when they took longer than expected, showing that efficiency alone isn't a measure of usability.
- Finalizing List (T4) had high satisfaction scores but also the highest error rate and completion time, highlighting a disconnect between perceived success and actual usability friction.

9. Visual Hierarchy & Interaction Affordance Matter

- Hidden actions, low-visibility buttons, and missing affordance cues led to user errors, showing that interface clarity directly impacts usability.
- The "Add to Cart" button lacked visibility, leading to confusion on how to manage items in the shopping list and cart navigation issues.

3. Familiar Workflows Reduce Error Tolerance Issues

- Users struggled more with new interactions, while intuitive, familiar workflows led to lower error rates and frustration levels.
- Cooking (T5) had the lowest error rate (~20%) because users naturally understood the task flow, whereas Finalizing List (T4) saw confusion due to unfamiliar steps.

Lo-Fi Usability Test: Detailed Findings

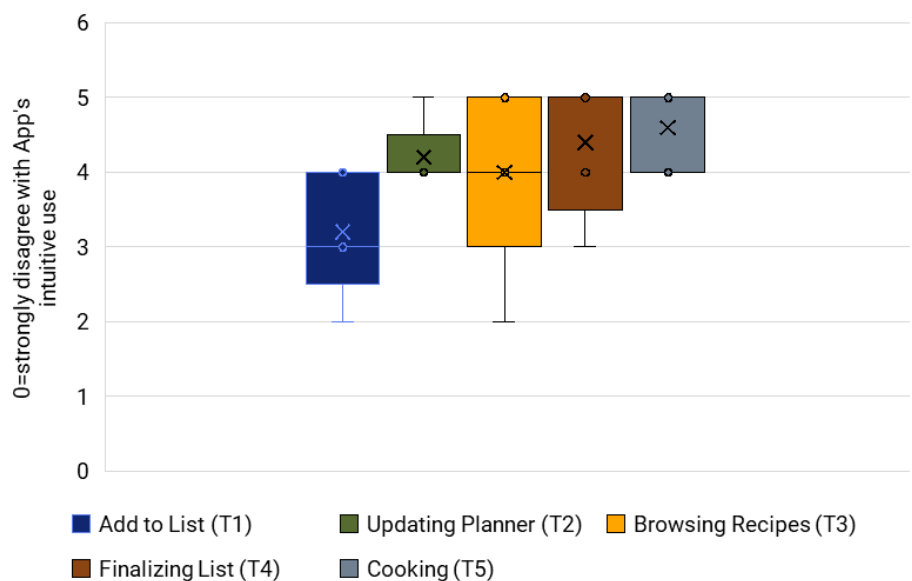
After doing data entry from Maze and notes into spreadsheet, both quantitative and qualitative data, data was then arranged into a table to calculate user error rates, SUS rating, task completion time, and severity of error types. Then box plots were created from this data and remarks were made about where the problems seemed to stand out by each of the five task journeys. The combination of number of participants experiencing a certain error and severity of that particular error in a Paint Point Tier assignment (Tier 1 being the greatest need for redesign, and Tier 3 being the least need for redesign) matrix helped prioritize the order of fixes to be made. Then the qualitative data was turned in order of this priority list in order to redesign each shared problem then by remaining problems. This first section presents the findings as answers to research questions. The next section organizes the findings by pages for ideation redesign purposes.

Findings By Research Questions

SUS Findings

Overall the SUS rating trended higher as the test went on, which may be because participants became more familiar as they used it, though friendliness is a possible contributor given personal relationship with participants and it was remotely moderated. User test familiarity is the cause for this incongruity because the anomalous T4 (Finalizing List) had notable higher user error rates than those around it and yet fit in the overall ~4.5 area of SUS rating and because of its anomalous higher task completion time compared to the others. T4 also showed the highest severity of errors (preventing task completion). The mean average SUS ratings for all tasks were 3.2 to 4.6 on a 5 point scale, most of which were in the 4 point area. The lowest SUS rating mean average was the Add to List (T1) task. The high SUS rating was for the Cooking (T45) task.

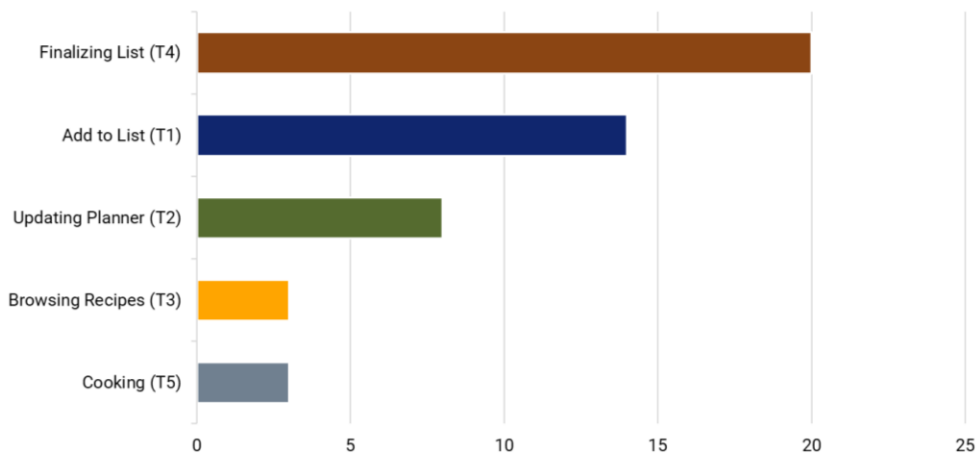
Figure 1. SUS Rating



Total Errors

Most errors were made in the Finalizing the List (T4) task, while the least were among the Cooking (T5) task and Browsing Recipes (T3) task. Though, for this to be fully appreciated, we have to consider the user error rate that accounts for the number of opportunities to make errors.

Figure 2. Total Errors By Task



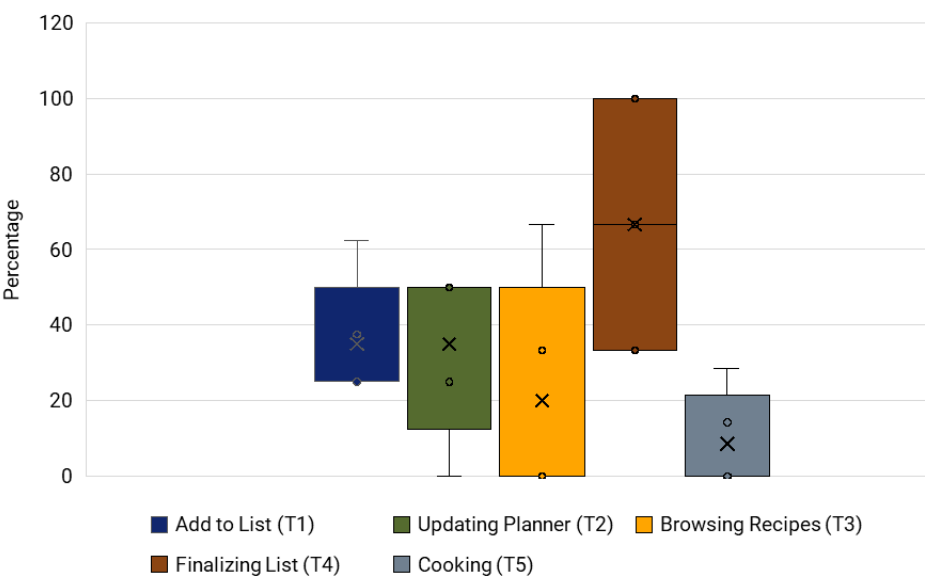
User Error Rates Findings

The Browsing Recipes (T3 task and Cooking (T5) task mean average error rates skewed at or below the 20% level of user error ratings, with Browsing Recipes (T5) having the lowest error rate, which suggests that these tasks were objectively clearer to use. While the Finalizing List (T4) task was notably highest in user error rates.

Total Task Completion Time

The quickest completed tasks were the Cooking (T5) task and the Browsing Recipes (T3) task. Because some task journeys are longer or more complicated, they are not cross comparable against other task journeys to assess a baseline for a normal amount of task completion time by task. So, in the absence of a competitor test to compare these results at this juncture, we instead used a minimum expected 5 second and maximum expected 15

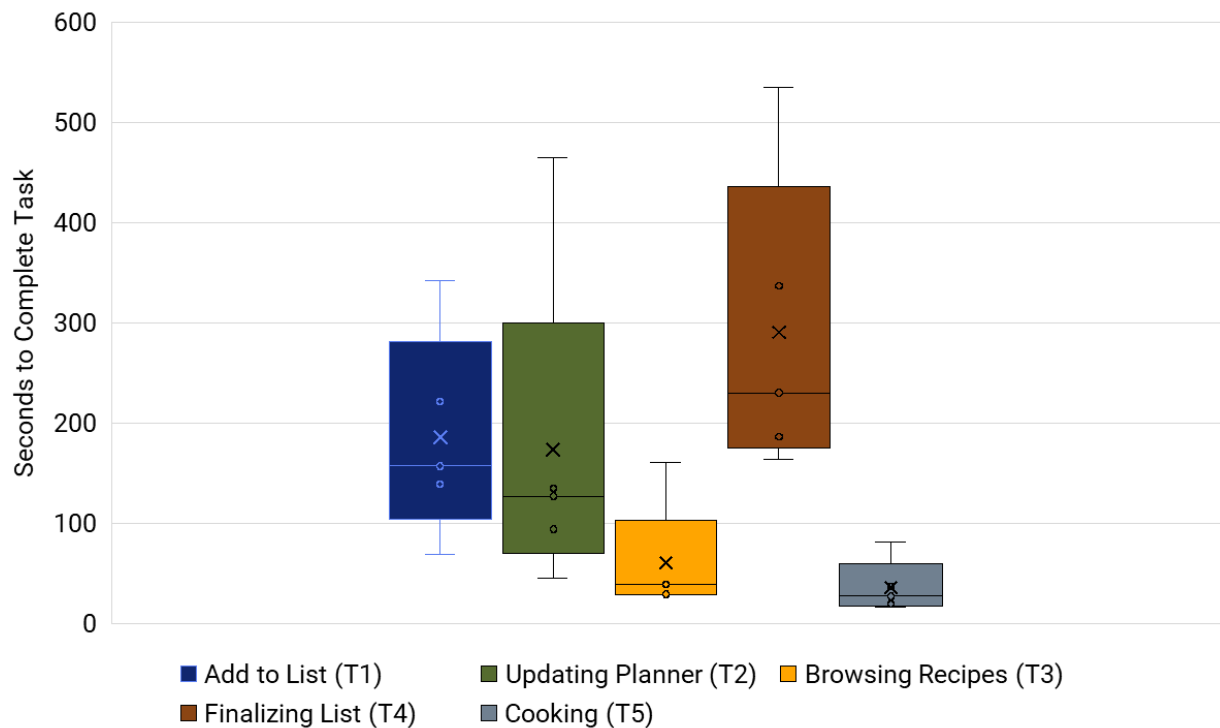
Figure 3. User Error Rates By Task



second time for each click or choice where a user error could occur (“error opportunity”), allowing for simple clicks or making simple selections, multiplied by error opportunities for each task journey to assess whether something was higher or lower than expected to complete. We didn’t want to assume that just because something is lower than the others that it was already well-designed.

Only the Cooking (T5) task was below the expected completion time, in fact, it was 40% faster than expected. In contrast though, the Browsing Recipes (T3) took 1.3x longer, the Add to List (T1) task took 1.5x longer, the Finalizing List (T4) task took 2.7x longer, and the Updating Planner (T2) took 2.8x longer than expected.

Figure 4. Total Task Completion Times



Error Severity

On the whole, 73%, of the errors made by users were due to designs that posed minimal (Tier 2-3) to moderate pain points. The 27% remaining errors were severe errors preventing users from completing tasks. Almost all of these errors were in the Finalizing List (T4) task. Errors posing only some difficulty to users were split between T1, T2, and T4, with more tending towards the Add to List (T1) task and least among the three in Finalizing the List (T4). When thematically group qualitative notes about the nature of these errors, which we begin with the Tier 1 issues.

Figure 5. Total Errors By Severity

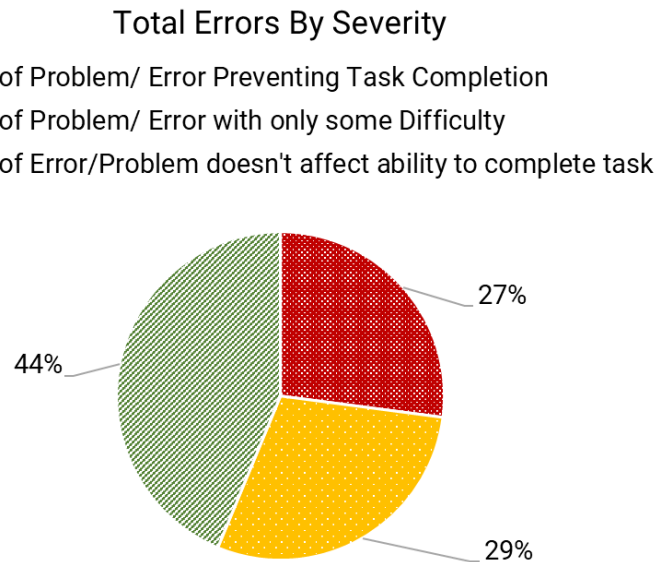
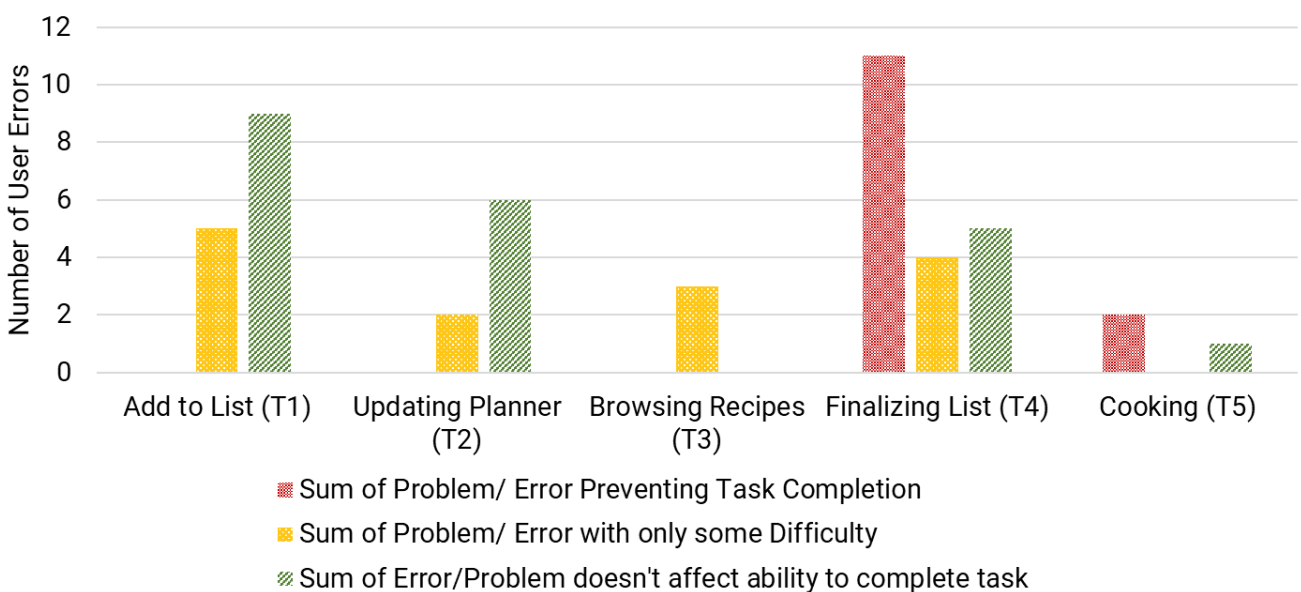


Figure 6. Total Number of Errors By Severity



Pain Points Identified

Tier 1 Pain Points:

Shopping List screen

- Add auto-add missing ingredients" slider to List
- Need ability to drag item into cart (and add drop down interaction when clicking add to cart button)
- Make add to cart button more noticeable

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- Needs a new cart page for each store before checking out, to see if things are already in cart

Recipe screen:

- Needs an auto-add slides missing ingredients to recipe page.

Recipe Browser screen

- Needs clarifications of a history button on recipe browser.

Cookbook screen

- Needs an added pantry-ready slides to cookbook and planner

History screen

- Simply needs to be fleshed out further.

Pantry screen

- Needs a top frame section which is missing
- Needs clarification and includes how it is different from kitchen pantry
- Add pantry-ready sliders in preppers stockpile and kitchen pantry

Tier 2 Pain Points:

Shopping List screen:

- Need to make check out more obvious
- Add drop down search in cart and List
- Show number of items already in-stock in list
- Add header notifying user of being in the shopping list, or saying these are currently on the list
- Cut "tie to plan" button

Recipe screen:

- Show fraction of ingredients of recipe on hand in recipe image and recipe browser

Figure 7. Shopping List Screen With Mouse Heat Map



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Add Items screen:

- Add search function to field in "add items" screen
- Add back button to "add items" screen

Browse Recipes screen:

- Show fraction of ingredients on-hand in pantry in recipe image and browser
- Recipe browser needs a search bar

Pantry screen:

- Stockpile needs relabel

Planner screen:

- Consolidate different buttons

Homepage screen:

- De-color/action button "getting started"
- Planner/planned recipes should be on homepage a "cook now" button
- Add browse recipes button to homepage's top

"I absolutely despise this [homepage news]. It's a distraction. Because having news like this upfront prioritizes the app content not prioritizing my needs. If it's just app updates, it should live in settings. If it's just news must be kept somewhere it should be out of the way and include food safety recalls or be food quality related." -Jessica

Tier 3 Pain Points:

Shopping List screen

- Need a check mark of item row if added to a cart already (feedback)
- Move and better signify edit buttons for item's rows and all immediate click to edit too
- Move store cart header above cart from inside cart. Also, make a store cart a cart.

Recipe screen:

- A tab button on recipe/cooking page to see a cooking demo of recipe

Top Global Bar:

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- Expandable search bar in global bar

Planner screen:

- Add "weekly" on button labels for plans (prev., current, next)
- Consider changing planner icon from a calendar to __? Too monthly view and not planner-y

Homepage screen

- Make icons and call to action buttons high contrast

Non-error Helpful User Feedback

Cookbook screen

- Need a search bar within cookbook's "collections" frame
- Add a "previous go-tos" button to help find popular or previously cooked recipes, and add to collective reuse
- Add top section's missing <> to signal scrolling / carousel collections

Homepage screen

- Make a shopping list button on homepage
- Cut/move "news" reel (to settings or about us page)

Pantry screen

- Pantry needs away too see pantry-ready meals from within pantry
- Needs import or scan receipts options or update from store records buttons

Planner screen

- Add hover tables with explanation
- Move long filter options of even types before enter button
- Add back buttons throughout planner pages
- Make current/remaining days of the weeks plans appear below calendar
- Collapse filters subjects for apt. types/meal types and avoid assumptions (e.g., mid-age)

Positive Feedback

Planner screen:

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- Users loved the easy way to add appointments to their calendar.
- Users enjoyed the meal types to plan around with, with one user saying, “I wished a planner like this existed to help my mental load.”
- Users loved having a sharable dinner plan with friends and family, “so you don’t have 15 people bring chips to dinner.”

Shopping List screen:

- Users liked seeing and comparing multiple store’s prices for items, one saying “This is really cool to compare stores’ prices”.
- Users liked being able to add to the list in multiple ways
- Users liked being able to keep the shopping list with them without it having to be online with it in a grocery store app
- Users liked the ability to connect the shopping list straight to different store carts

“It’s really cool to be able to compare ordering things with different store’s prices.” - Robert

Recipe Browser screen:

- Users liked the vibe recipes for meal types filtering
- Users loved the Recipe Browser and Cookbook’s ability to use a slider to pull in what they already have in-stock in their pantry into ways to filters meal ideas by, with one saying “I’d use this all the time if I had this app showing me both what was in the pantry and recipes to build around them.”
- Users liked not having to jump between apps to find recipe ideas or having to tolerate all the ad spamming in meal planning, one saying “I’m willing to pay extra for not having to scroll through all the ads and someone’s life story to find what I need to cook.”

“I’m willing to pay extra for not having to scroll through all the ads and someone’s life story to find what I need to cook.” - Lisa

Findings By App Page

This section organizes the findings for redesign purposes, screen by screen.

Shopping List Screen

- Add auto-add missing ingredients" slider to List
- Need ability to drag item into cart (and add drop-down interaction when clicking add to cart button)
- Make add-to-cart button more noticeable
- Needs a new cart page for each store before checkout to see if items are already in the cart
- Need to make checkout more obvious
- Add dropdown search in cart and list
- Show the number of items already in stock in the list
- Add header notifying the user of being in the shopping list or saying these are currently on the list
- Cut "tie to plan" button
- Need a checkmark for item row if added to a cart already (feedback)
- Move and better signify edit buttons for item rows and ensure immediate click-to-edit functionality
- Move store cart header above the cart from inside the cart. Also, make a store cart a cart

Recipe Screen

- Needs an auto-add slider for missing ingredients to recipe page
- Show the fraction of ingredients for the recipe on hand in recipe image and recipe browser
- Add a tab button on recipe/cooking page to see a cooking demo of the recipe

Recipe Browser Screen

- Needs clarification of a history button on recipe browser
- Show the fraction of ingredients on hand in the pantry in recipe image and browser
- Recipe browser needs a search bar

Cookbook Screen

- Needs added pantry-ready sliders to cookbook and planner
- Need a search bar within cookbook's "collections" frame
- Add a "previous go-tos" button to help find popular or previously cooked recipes and add to collective reuse
- Add top section's missing <> to signal scrolling/carousel collections

History Screen

- Simply needs to be fleshed out further

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Pantry Screen

- Needs a top frame section which is missing
- Needs clarification on how it differs from the kitchen pantry
- Add pantry-ready sliders in preppers' stockpile and kitchen pantry
- Stockpile needs relabeling
- Pantry needs a way to see pantry-ready meals from within the pantry
- Needs an import or scan receipts option or an update from store records buttons

Add Items Screen

- Add search function to the field in "add items" screen
- Add back button to "add items" screen

Planner Screen

- Consolidate different buttons
- Add "weekly" on button labels for plans (prev., current, next)
- Consider changing planner icon from a calendar to something more "planner-y"
- Add hover tables with explanations
- Move long filter options of event types before enter button
- Add back buttons throughout planner pages
- Make current/remaining days of the week's plans appear below the calendar
- Collapse filter subjects for apt. types/meal types and avoid assumptions (e.g., mid-age)

Homepage Screen

- De-color/action button "getting started"
- Planner/planned recipes should be on homepage with a "cook now" button
- Add browse recipes button to homepage's top
- Make icons and call-to-action buttons high contrast
- Make a shopping list button on homepage
- Cut/move "news" reel to settings or about us page

Top Global Bar

- Expandable search bar in global bar

At its core, usability isn't just about eliminating friction—it's about designing clarity that allows users to move with intuitive precision rather than hesitation. Through rigorous testing, we uncovered critical patterns: some tasks excelled in efficiency but masked deep usability flaws, while others thrived on intuitive workflows that set the gold standard for seamless interaction. By intertwining quantitative structure with human insight, we not only diagnosed the pain points but crafted a strategic blueprint for UX elevation—one that prioritizes effortless navigation, reduced cognitive load, and user delight.

Hi-Fi Usability Test: Key Findings

[to be continued]

Hi-Fi Usability Test: Detailed Findings

[to be continued]