## Designing to Reduce Household Food Waste

**Discovering Solutions to Reduce Consumer Carbon Emissions** 



Stefanie Viktoria Wolcott | UX Design MPS Thesis | MICA

### **The Problem**

American households are largest global contributor to household food waste.

Consumers are unaware of how much food they waste.

37%

Of carbon emissions along the food supply chain comes from household food waste

## 32%

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Of total American household food is wasted annually

\$1,866

The average value of food wasted per US household a year 55%

How much more food US consumers throw away than they realize

#### **Proto-Persona & Assumptions**



#### Motivations

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Interested in reducing household food waste to reduce their negative environmental impact.

Prefers eating food in their fridge/pantry before making new food at home.



#### Frustrations

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Frustrated when they find food in their fridge that they intended to eat but **forgot** about.

Feels **guilty** when throwing away food that they could have eaten.



#### Assumptions

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American consumers are interested in reducing their carbon footprint.

Consumers are interested in **knowing the environmental impact** of their food waste.





#### Academic Research: Design Psychology

Sustainable change will come from triggering a user's rational thinking during their daily routine

#### **Cue Rational Thinking**

Users are reward-driven, but intrinsic rewards are more effective for long-term change

#### Rewards

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Personality and delight produces positive feelings and increases the likelihood of repeat behavior

#### Personality & Delight

Visual pop out is an effective way to redirect a user's attention during autopilot routines

#### **Visual Pop Out**

#### **Sources Included:**

Designing for Behavior Change by Stephen Wendel, Ph.D.

Design for How People Think by John Whalen, Ph.D.

*Designing for Emotion* by Aarron Walter

100 Things Every Designer Needs to Know About People by Dr. Susan M. Weinschenk, Ph.D.



#### **Competitive Analysis**

Most mobile apps with environmental messaging were focused on **business** to consumer food waste.

Many top apps were restricted to specific countries or regions. Many apps had **small** user bases or were no longer supported.

Inventory management apps required a lot of **manual effort** to maintain. Product solutions that provided more seamless experiences were very **expensive** for average consumers.

#### **37 Competitors Analyzed Including:**



#### **Exploratory Research**



#### Key Findings:

- People were more interested in reducing food waste but were more motivated by reducing financial loss.
- Most waste occurs when **users forget** what food they had and found it after it expired.
- Some participants were not sure **how to judge if food expired**, which results in additional waste.
- Users **struggled with managing fresh food**, like produce, since it would go bad quickly.
- Users have busy schedules and value their time, so they **do not want to make large lifestyle changes**.

Survey Participants: 110

**Interview Participants:** 6

## Concept Testing

6 participants. Moderated card sorting. Rank & discuss concepts.

#### Track Current Inventory

Most popular concept as long as manual effort remains low.

#### Get Recipes for Expiring Foods

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Helps users manage expiring food when they feel uninspired and need help.

#### Reminders to Help Decisions

High interest in reminders that help users make less wasteful decisions.

How to buy what you need	▼ <u>food sustainability</u> X	Share what you have	× Incentives ×
Recipe/meal planning suggestions based on what you have at home Recipe/meal planning suggestions based on what you have expiring soon	Scan products for sustainability and ethical ratings Guide on seafood sustainability	Trading food with your community that would otherwise be wasted Donate food to local charities	Purchase discount food from restaurants that might be thrown out if not sold Purchase discount food close to expiration from grocess stores
Personalized reminders for how to adjust your grocery list based on	2 Items	2 Items	Discount delivery of food close to expiration
produce)			Farm to door food delivery
Tracking your food at home			4 items
Use your camera to help analyze freshness of produce to help plan			
5 items			





#### **Solution Direction**

#### Focus on Inventory

Food inventory management was the most common frustration point and cause of food waste.

**Delightful App** 

A smart mobile app with personality should create a

fun experience to keep

bringing users back.

#### **Reduce Manual Effort**

The solution should be automatized as much as possible to maintain user retention.

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#### **Helpful Reminders**

Personalized reminders aligned with the user's unique schedule will help change waste behaviors.



#### **Maintain Visibility**

Inventory visibility at key food decisions points will help encourage user behavior change.

#### **Expiration Tracking**

Emphasizing soon-expiring items will help users make decisions about what to plan to eat next.



## Design Concept **Proposed Solution**

Manage your home food inventory by turning your fridge into a smart fridge.

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A simple tablet mounted onto the fridge door provides visibility of current inventory and days until expiration, sorted by next expiring item.

Users can easily add items to their inventory list via a smart home assistant, which simplifies tracking effort.



The mobile app provides an enhanced experience, which allows users to manage inventory details, receive reminders of expiring food, and provides recipe suggestions.

### Wireframes

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Expiring Soon	<u>/:::::::::::</u>			
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food item	2 DAYS			
food item	5 DAYS	:::::::		
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Your tantry				<u></u> .
food item	7 DAYS			
food item	FDAUS			
food item	8 DAYS		• • • • • • • • •	· · · ·
fooditern	10 DAYS		· · · · · · ·	
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### **Core Features**

- Visibility of food inventory
- Prioritization of food expiring soon
- Recipes based on food available
- Personalized reminders
- Shopping list

APP NAME X REMINDER: Today's your grocery day! Check your panty before you shop!

APP NAME X Need a dinner idea? Try this recipe with the fresh ingredients you have!

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Hello, Em	ily!	· · · · · · · · · · · · · · · · · · ·
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Ø food i	ten	2 DAYS
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We think a	you'll love	e these:
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uses: item 1 item 2	Uses	2
item 3	item	3
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#### **Next Steps**



#### Refine User Flows • • •

Outline user flows across the tablet, mobile app, and home assistant to define cross-platform interactions.

#### Create MVP Prototype •••

Create a mid-fidelity interactive prototype in Adobe XD focused on core features of the tablet and mobile app.

#### Conduct User Testing • • •

Test features and interactions to gather user feedback and iterate upon the prototype.

# Thank You

### **Stefanie Viktoria Wolcott**

reach me at hello@stefanieviktoria.com