Roots

AN APP TO FIGHT FOOD WASTE

Jess
Yuscavitch-Freedman
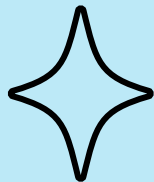
Overview

1 The problem + why it matters

2 Research strategy + design timeline

3 The process + deliverables

4 Reflections + next steps

Climate change
is not a myth

Evidence:

Global **Temperature** Rise

Warming Ocean

Shrinking **Ice Sheets**

Glacial Retreat

Sea Level Rise

Extreme **Events**

The Statistics

Gas Emissions

In 2021, the United States was responsible for 13.49% of the world's total emissions
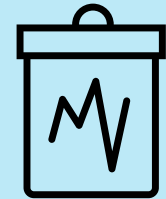
Global Temp

As of 2021, the world is 1.53°F warmer than average. 2020 was the hottest year on record

Food Industry

Our current food system generates about 35% of total global man-made greenhouse gas emissions
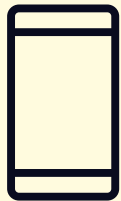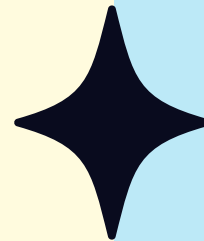
Food Waste

Consumers waste 17% of the food produced and 13% of food is lost after harvesting and before retail

Problem

People feel ashamed when they throw away food or packaging. They want to reduce their food waste, but they don't know where to start.

Develop a mobile iOS app to address the problem.

Goals

These are the KPI's and desired outcomes of the ROOTS app:

Food Waste — Decrease consumer food waste by 1% in US target regions

Recycling — Increase consumer recycling by 1% in US target regions

Awareness — Increase awareness of carbon footprint and environmental impact transparency

The Process

Research

- Food shopper survey
- Small farmer survey
- User interviews

Discover

- Ecosystem map
- User personas
- Journey map
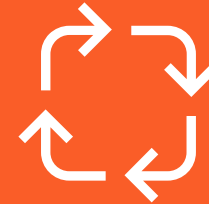
Iterate

- Sketches
- Wireframes
- Design system
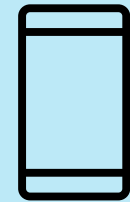
Refine

- Usability testing
- Final prototype
- Reflections

Research Strategy

Step 1: Foundational Research Surveys

Define the problem and analyze habits users form when shopping for and throwing away food.

Step 2: User Interviews

In-depth user interviews to better define customer personas, pain points and app features.

Step 3: Usability Testing

Test a mid-fidelity wireframe of mobile app that attempts to solve the problem.

Surveys

Created 2 food waste surveys: one for people who food shop and one for farmers

Analyze 35 shopper responses and 5 farmer responses to define the problem and competitors

Follow up with participants to schedule 6 user interviews to learn more about people's shopping and waste habits
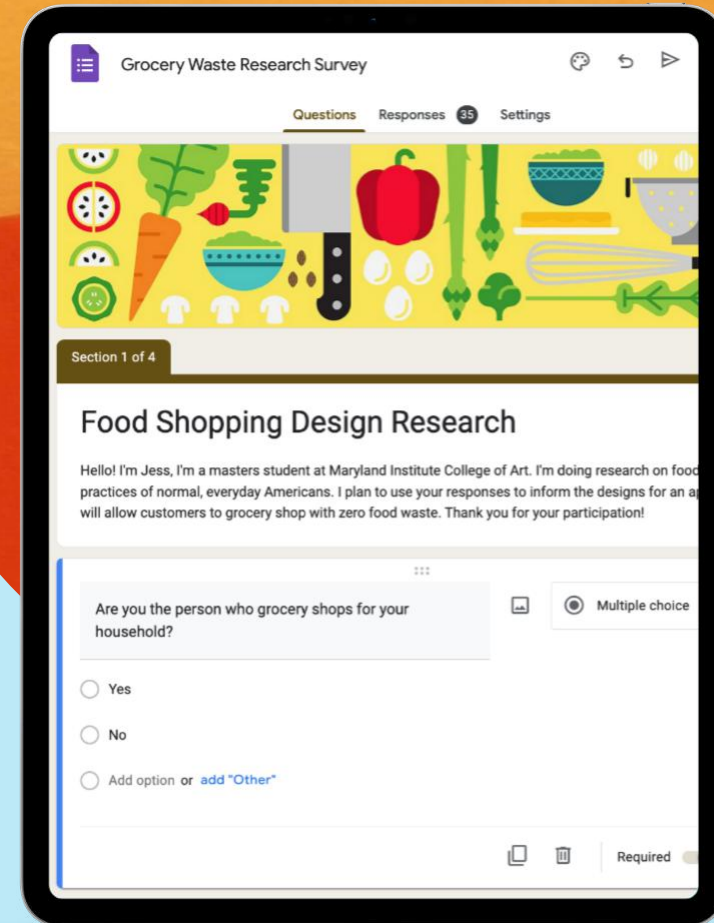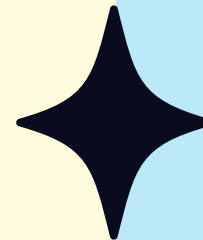
Demographics

GENDER
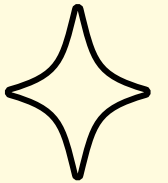
FAMILY SIZE
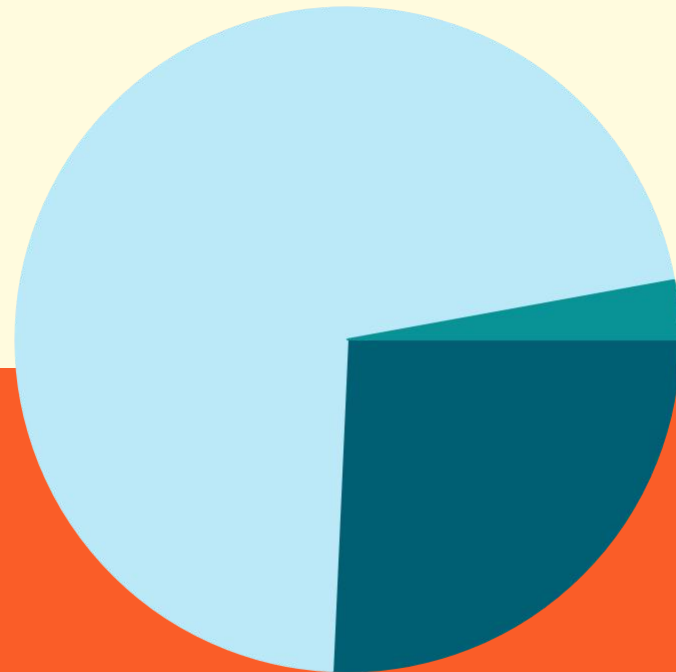
LOCATION

Male 9 Female 25 Nonbinary 1
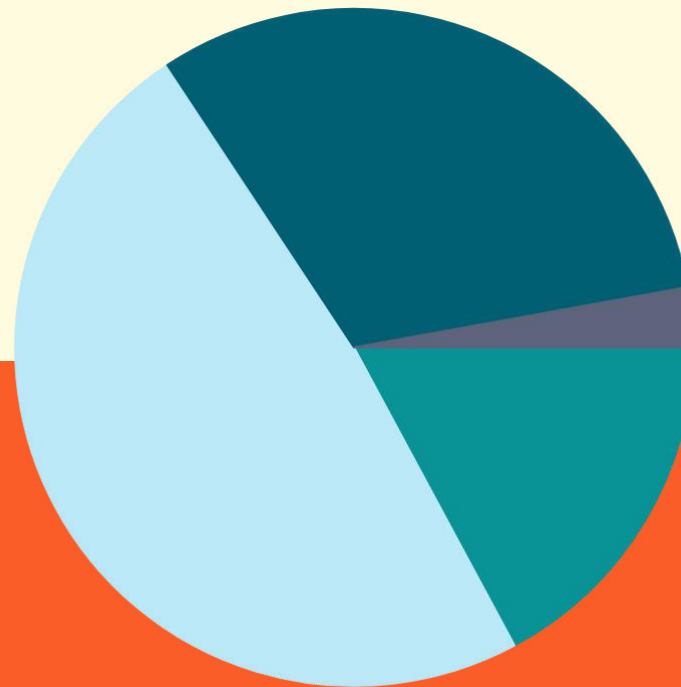
Single 6 Couple 17 Family 3-5 11

Family 6+ 1
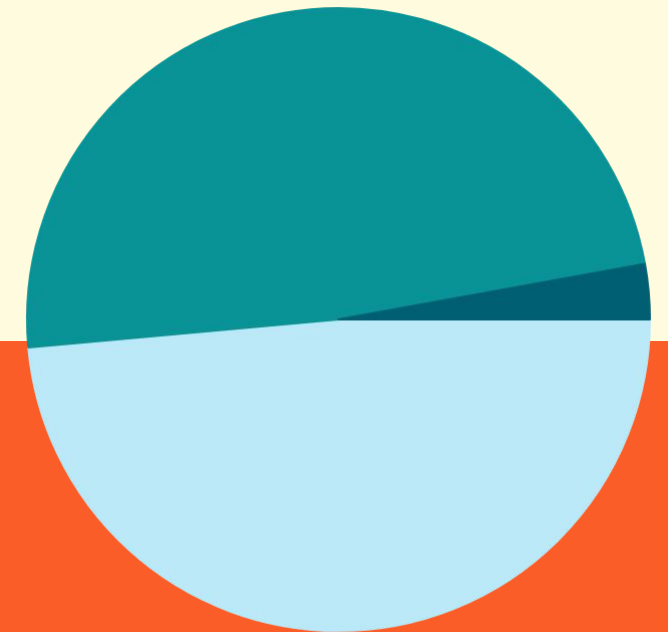
Urban 17 Suburban 17 Rural 1

Competitors

Amazon Fresh   Instacart   Walmart   Shipt   Imperfect Foods   Peapod   Hello Fresh
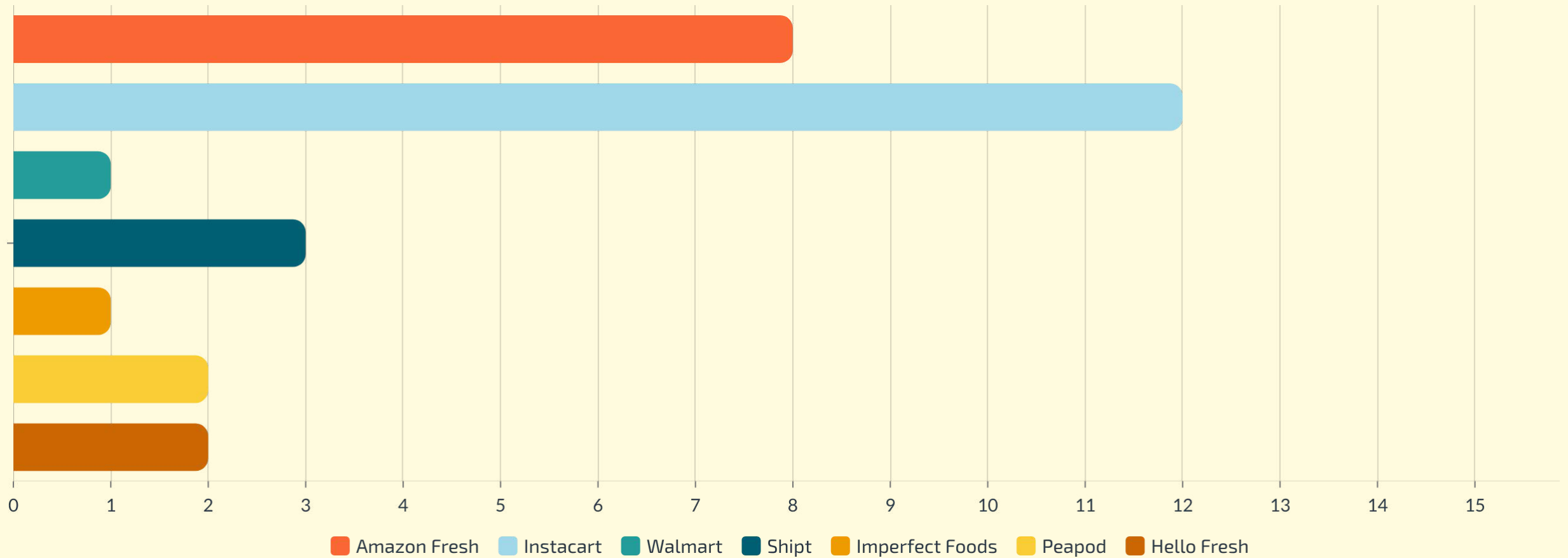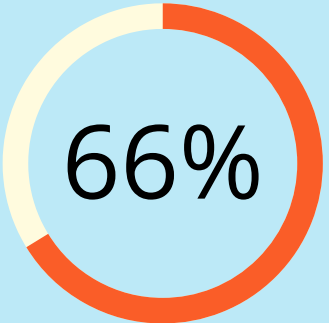
24 out of 35 participants said they used these grocery delivery apps

Key Findings

37%

people would change their food eating or shopping habits to reduce their own carbon footprint

66%

people would stop shopping at certain grocery stores if they knew they had a larger carbon footprint compared to other food shopping options

69%

people did NOT know what their yearly carbon footprint is or how to calculate it

User Interviews

Farmers — Spoke to 3 farmers with small to medium sized farms on the east and west coast

Shoppers — Spoke to 3 food shoppers about their shopping cycle and food waste habits
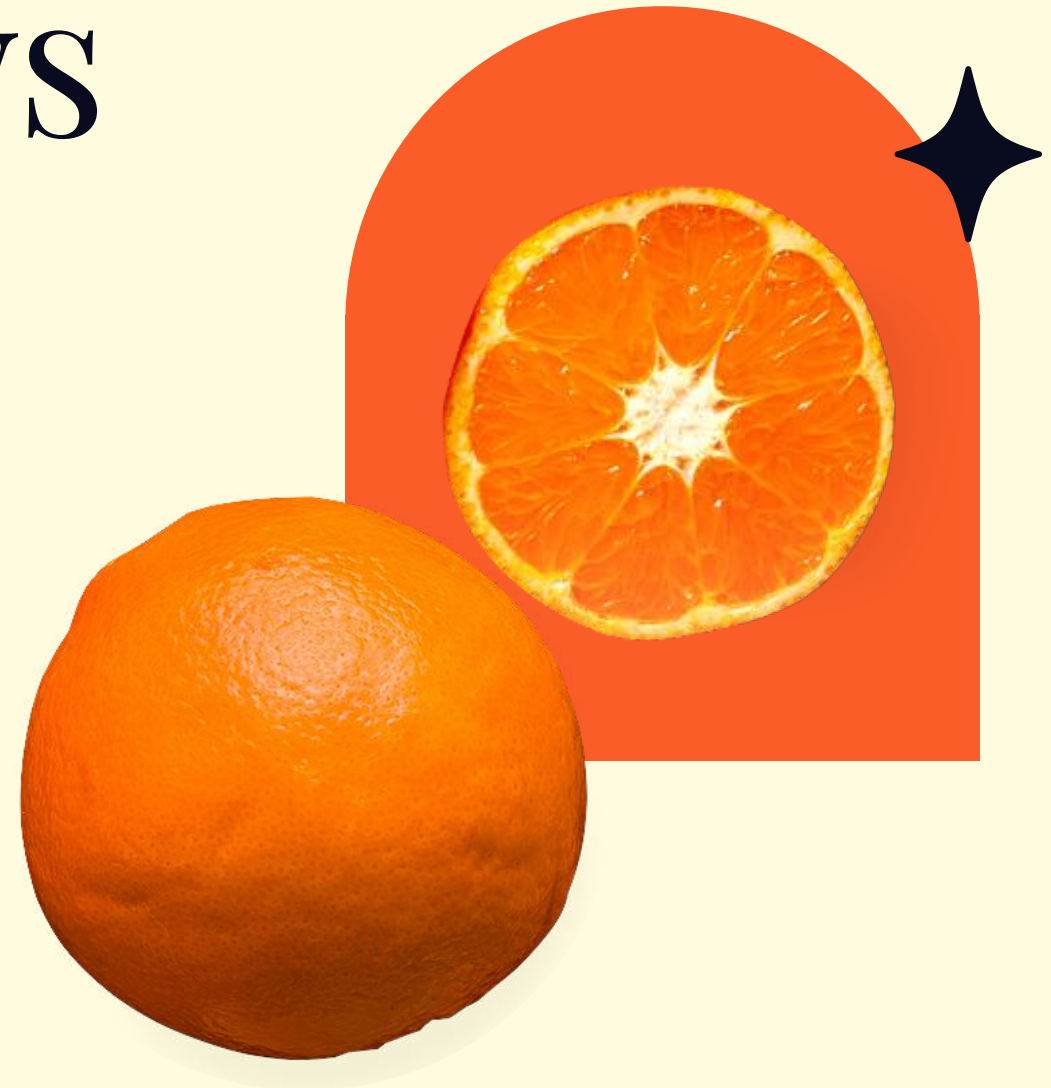
Social Media

Small farmers rely on social media as a way to update their customers on the farm's inventory. They sometimes use Venmo and the honor-system for transactions.

Food Waste

Meat | Dairy | Vegetables | Fruits | Grains | Sauces | Leftovers
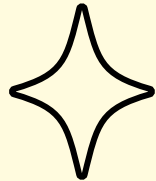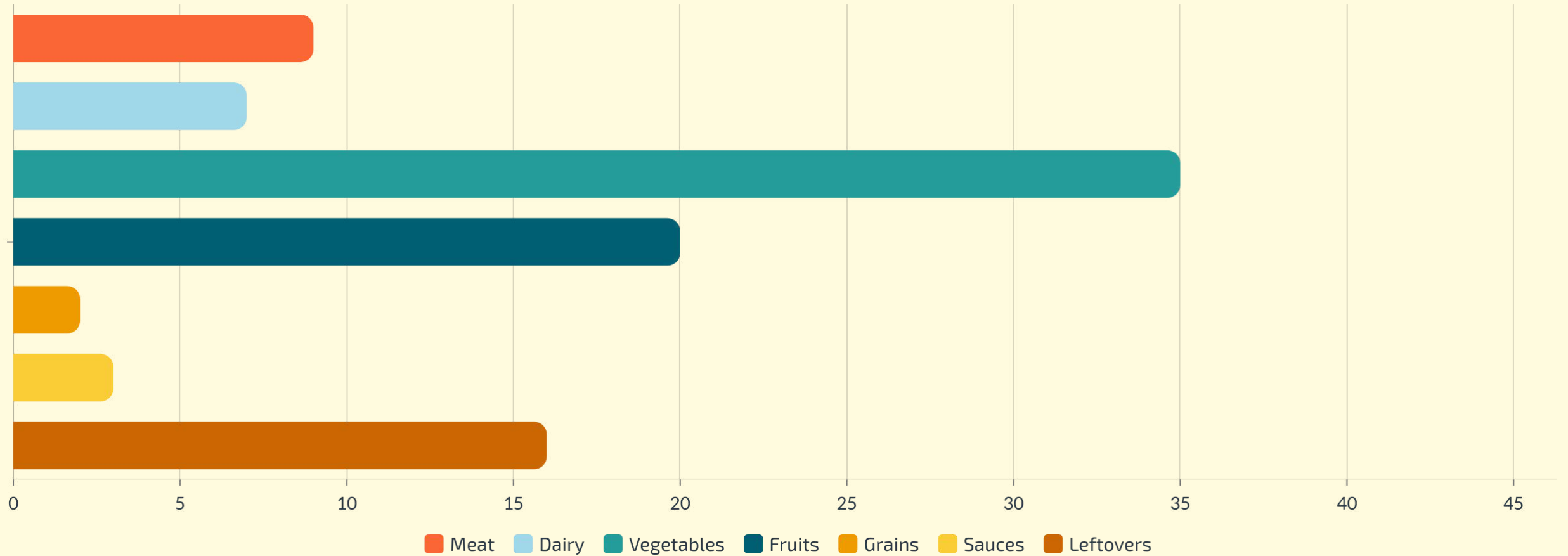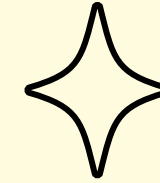
Types of foods that participants threw away each month

Local Shopping

▲ Never 11 △ Once in a while 17
△ 1-2x month 6 ▲ As often as possible 1

farmers market attendance

▲ Rodents 5 △ Disease 1
▲ Transit 1 ▲ Weather 2
▲ Imperfections 1

farmer food waste causes

▲ Never 3 △ Rarely 7 △ Sometimes 4
△ Often 11 ▲ Always 10

reusable bag frequency
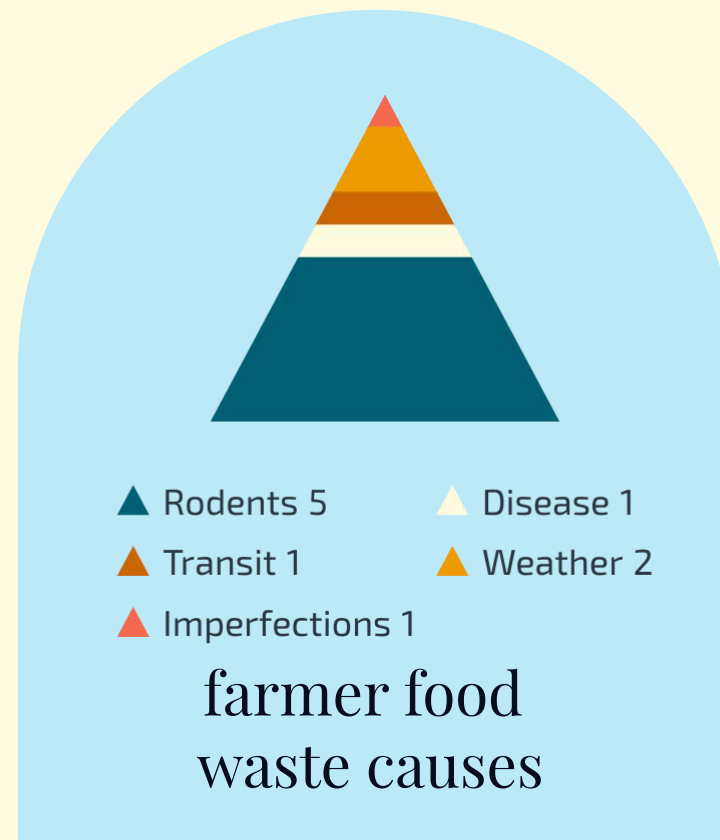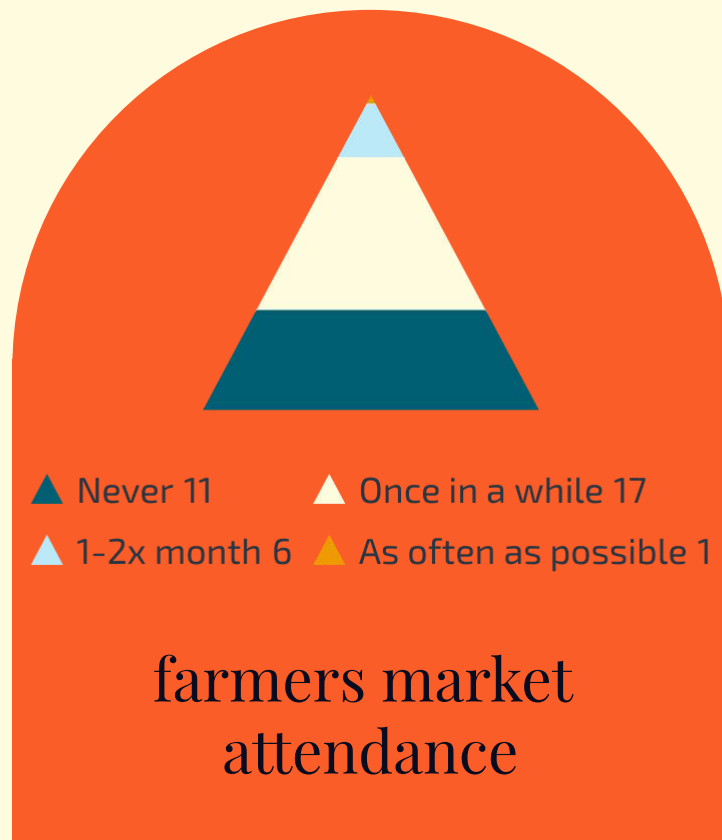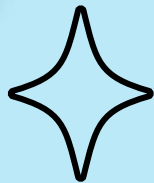
Solutions

1 Allow shoppers to calculate thier carbon footprint to establish an understanding of their impact

2 Provide transparency around supermarket carbon practices so shoppers can make ethical choices

3 Create a competitive shopping experience that encourages people to shop local

4 Provide farmers with a means to share their daily inventory so they don't rely on social media

Design Timeline

1 — Create customer personas and user journeys.

Sketch solutions with crazy 8's method. — **2**

3 — Wireframe 2+ user flows for education and motivation features.

Conduct usability study of wireframe prototype. — **4**

5 — Apply research feedback to prototype.

Finalize design system and branding in prototype. — **6**
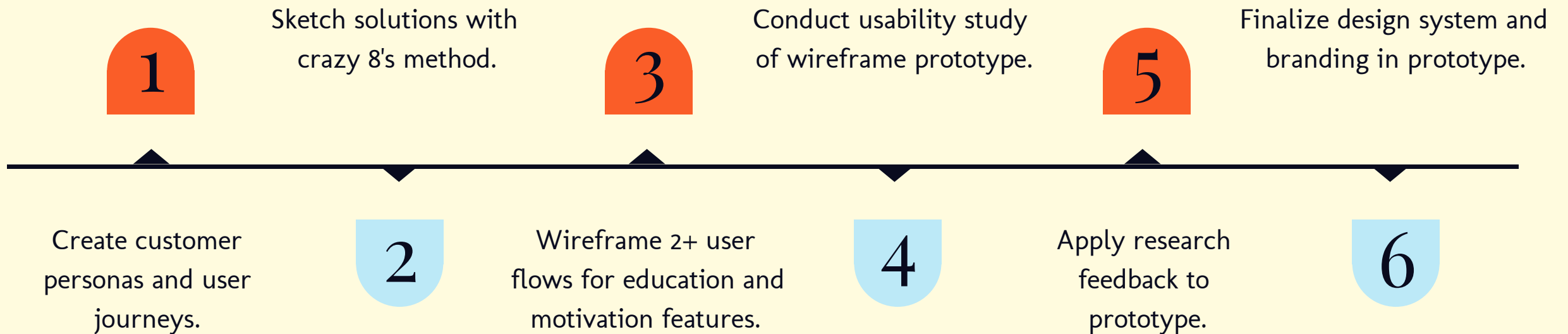
Persona: The Zero-Waste Warrior

Kira

Goals
- buy food that fits her paleo and sometimes vegan diet
- adopt a zero-waste lifestyle
- vote for politicians who care about climate change
- fight climate change because these boomers don't care

Age || 28
Occupation || Therapist
Location || Urban
Relationship Status || Single

Pain Points
- doesn't know where to get accurate info on companies climate policies
- has trouble finding farm-fresh foods in the city
- finding vegan foods that taste good and are easy to make

Tasks
- scheduling her food deliveries for the week
- searches for tips for adopting zero-waste habits
- making her shopping list
- browsing social media for inspo and new recipes

Persona: The Climate Conscious Mom

✦ Rosie

Goals

- buy enough food to feed the family without breaking the budget
- finding food that her family loves to eat
- make the world a better place for her children

Pain Points

- finding the time to go grocery shopping with her busy schedule
- staying in the budget when inflation complicates things
- keeping an accurate inventory of the foods she needs

Tasks

- planning recipes for the week
- asking family members what they want from the grocery store
- making her shopping list
- deciding where she's going to get her food

Age || 37
Occupation || Teacher
Location || Suburbs
Relationship Status || Married with 2 kids

Persona: The Small Farmer

✦ Frank

Goals

- feed thier local community with farm-fresh produce
- maintaining the quality and integrity of thier small business or non-profit farm
- fosting relationships with local farmers to share struggles

Pain Points

- fighting off pests like rodents from eating produce
- selling enough produce at farmers markets
- wasting food in transit to and from farmers markets
- dealing with extreme weather

Tasks

- update farm stand inventory daily using Facebook
- restocking the farm stand each day with fresh produce
- composting food that's bad
- pricing food at fair but competitive prices

Age || 42
Occupation || Retired
Location || Rural
Relationship Status || Married with grand children

STEPS

| MAKE A LIST | TRAVEL TO STORE | PURCHASE ITEMS | BRING ITEMS HOME | UNPACK ITEMS | THROWING ITEMS OUT | PLAN TO EAT FOOD |

EMOTIONS & THOUGHTS

- "If I'm using a recipe, I'll check the book to add the ingredients."
- "I like to add [food] lists to the notes in my phone."
- "I won't go further than 20 miles to go to the store."
- "Sometimes I use the app Yuka to see if the product is good for the environment."
- "I forgot my reusable bags again."
- "I think about how much I spent, and adjust the budget for the week"
- "If I shop from a local farm, I feel good when I drive home."
- "I have to take some items out of the packages to make it all fit."
- "It's shame, it's questioning the moment, do I have to throw it out?"
- "I usually throw out leftovers and bad fruit. I wish I could compost."
- "I don't feel good because I know what it does to the environment. It's not good for the atmosphere..."
- "I'm going to make a plan to use all my food this week."

ACTIONS

MAKE A LIST	TRAVEL TO STORE	PURCHASE ITEMS	BRING ITEMS HOME	UNPACK ITEMS	THROWING ITEMS OUT	PLAN TO EAT FOOD
• Ask family members what they want from the store • Write down all the recipes and foods for the week • Browse the internet for new recipes	• Take the shortest route with least amount of time needed • Find out if the or farm stand is store is open • Look for parking spot if going to farmers market	• Find all items on the list while avoiding highly priced items • Stock up on items that are on sale • Check nutritional info on products to fit dietary needs	• Pack up car or bicycle • Remember where the cold items are so that you can unpack those first when you get home • Reflect on your budget	• Unpack the cold items and put them in the fridge first • Store some items in glass containers • Freeze items for long-term storage	• Remove items that went bad in the fridge • Empty out food or liquid • Check the receipt for prices • Compost food scraps if possibe	• Make a plan to eat the food you have for the week and beyond • Figure out how to eat the food that will go bad the quickest

PAIN POINTS

MAKE A LIST	TRAVEL TO STORE	PURCHASE ITEMS	BRING ITEMS HOME	UNPACK ITEMS	THROWING ITEMS OUT	PLAN TO EAT FOOD
• If you made physical notes, leaving the list at home after you already left the house • Can't find the recipe that you saw online while browsing social media • Writing down quantity and weight for items are challenging	• Finding time to go to the store when schedule is usually busy and hectic when you have a family and work full time • The hours for the farm stand vary or only on weekends • If you go to stores like Whole Foods during peek hours there's too many people • Covid restrictions and fears	• No matter how many times user reminds themselves, they forget thier reusable bags • Stores use plastic bags and they use so many if they're packing the bags for you, then those bags aren't recyclable • Eating organic food is super expensive in stores • Inflation increases costs	• Remembering the items you forgot or couldn't find on your drive home • The items written down in the notes are not generally ordered to optimally pick up items around the store • Sometimes, the store staffs are too busy, unfriendly or are not able to answer questions well	• Making room for all the items in your fridge, closet and cabinets • Not having enough containers for the items you want to store • Put reusable bags somewhere you'll remember them for next time	• Throwing out plastic bags and packaging • Throwing out food that's bad in the trash • Throwing out receipt if you don't need it anymore	• Getting too lazy during the week and ordering out, which has more waste • Finding recipes for all the items you have left

MAKE A LIST **TRAVEL TO STORE** **PURCHASE ITEMS** **BRING ITEMS HOME** **UNPACK ITEMS** **THROWING ITEMS OUT** **PLAN TO EAT FOOD**

"If I'm using a recipe, I'll check the book to add the ingredients."

"I like to add [food] lists to the notes in my phone."

"I won't go further than 20 miles to go to the store."

"Sometimes I use the app Yuka to see if the product is good for the environment."

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"I don't feel good because I know what it does to the environment. It's not good for the atmosphere..."

"I'm going to make a plan to use all my food this week."

opportunity to save food lists or frequently bought items

opportunity to show local farms where shoppers can buy the same items

opportunity to provide zero-waste alternatives

opportunity to show ways to store food to keep them fresher longer

opportunity to offer options for composting

opportunity to preserve leftovers or extra food items

Sketches
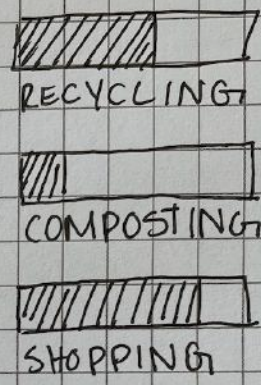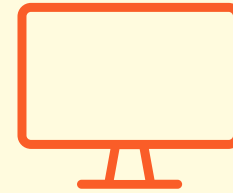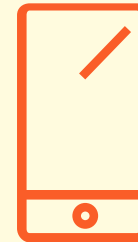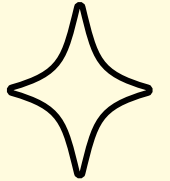
Onboarding

Users calculate their carbon footprint by answering questions after downloading the app.
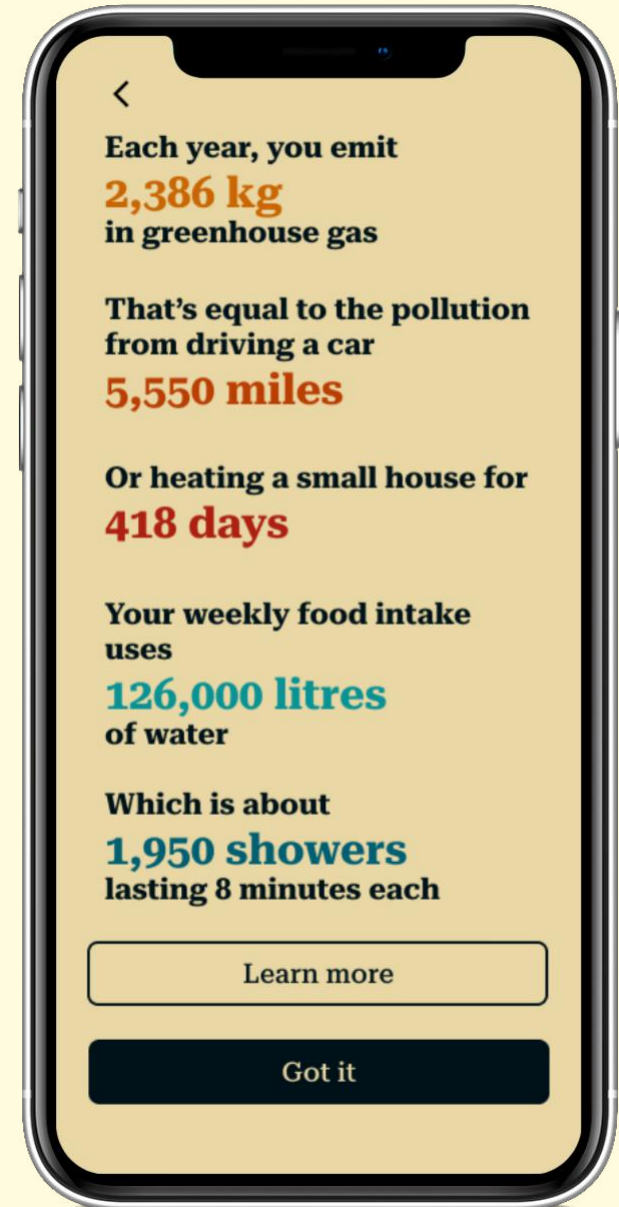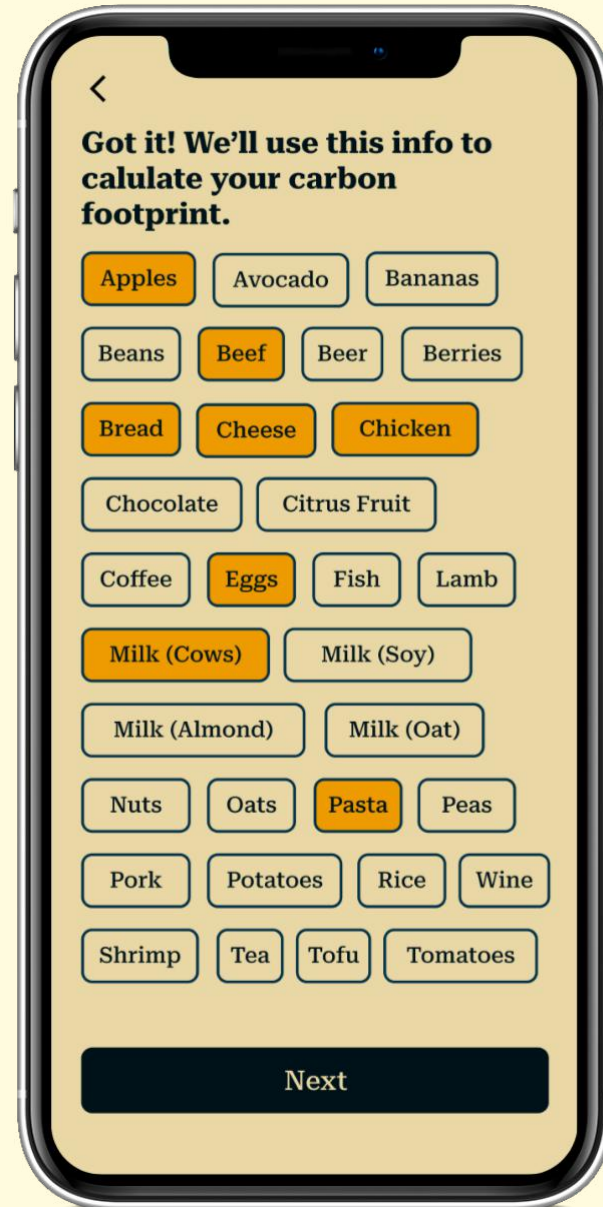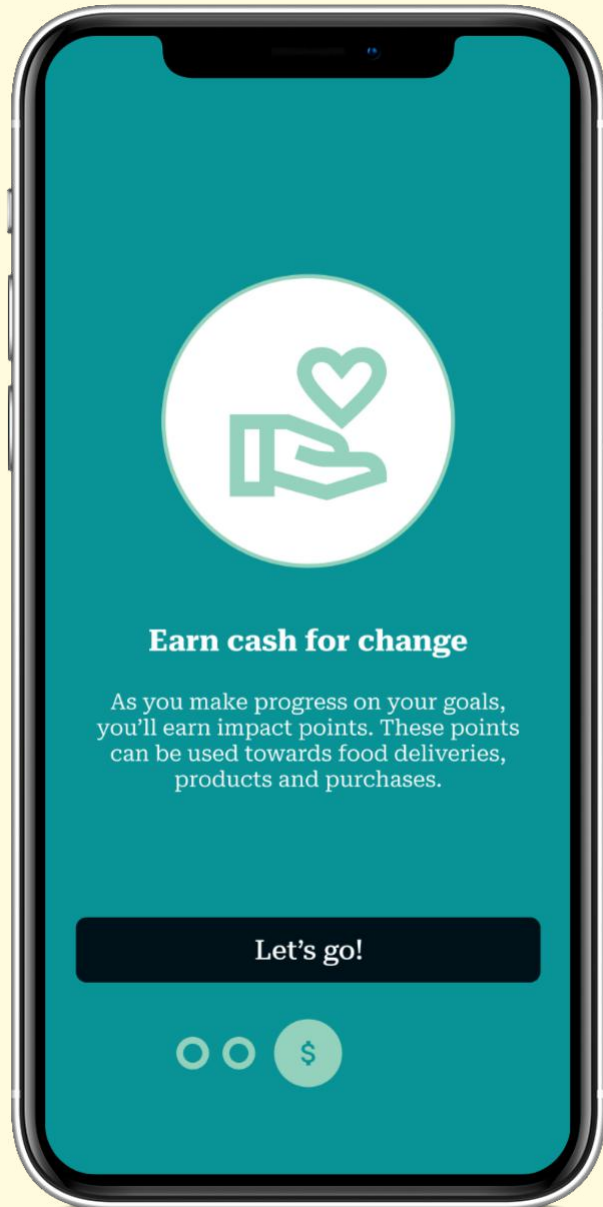
Goal Setting

User sets their goals and recycle bottles in exchange for coupons.

Shopping Local

User makes a shopping list and app offers options based on carbon emissions.

Earn cash for change

As you make progress on your goals, you'll earn impact points. These points can be used towards food deliveries, products and purchases.

Let's go!

<

Who do you food shop for?

I shop for my family of 3-5 ⌄

How often do you throw away food that spoils before you can cook it?

Every other week ⌄

What types of foods do you throw away most often?

Fruits ✕

Leftovers ✕

Meats ✕

Vegetables ✕

Great! We'll keep this in mind when we suggest food options and recipes.

Next

<

Got it! We'll use this info to calulate your carbon footprint.

Apples Avocado Bananas

Beans Beef Beer Berries

Bread Cheese Chicken

Chocolate Citrus Fruit

Coffee Eggs Fish Lamb

Milk (Cows) Milk (Soy)

Milk (Almond) Milk (Oat)

Nuts Oats Pasta Peas

Pork Potatoes Rice Wine

Shrimp Tea Tofu Tomatoes

Next

<

Each year, you emit
2,386 kg
in greenhouse gas

That's equal to the pollution from driving a car
5,550 miles

Or heating a small house for
418 days

Your weekly food intake uses
126,000 litres
of water

Which is about
1,950 showers
lasting 8 minutes each

Learn more

Got it

CARBON FOOTPRINT

FEEDBACK

Measurement

Users struggled to understand kg and litres.

Calculation

Users wanted details about how it's calculated.

Education

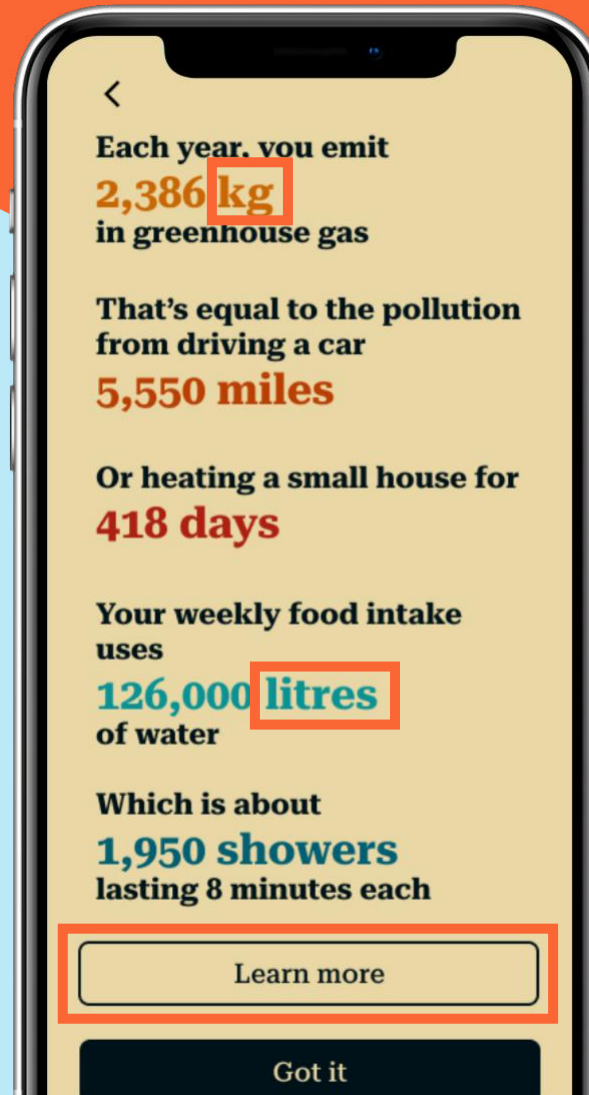The numbers were so big that they weren't impactful.

QUOTES

Measurement

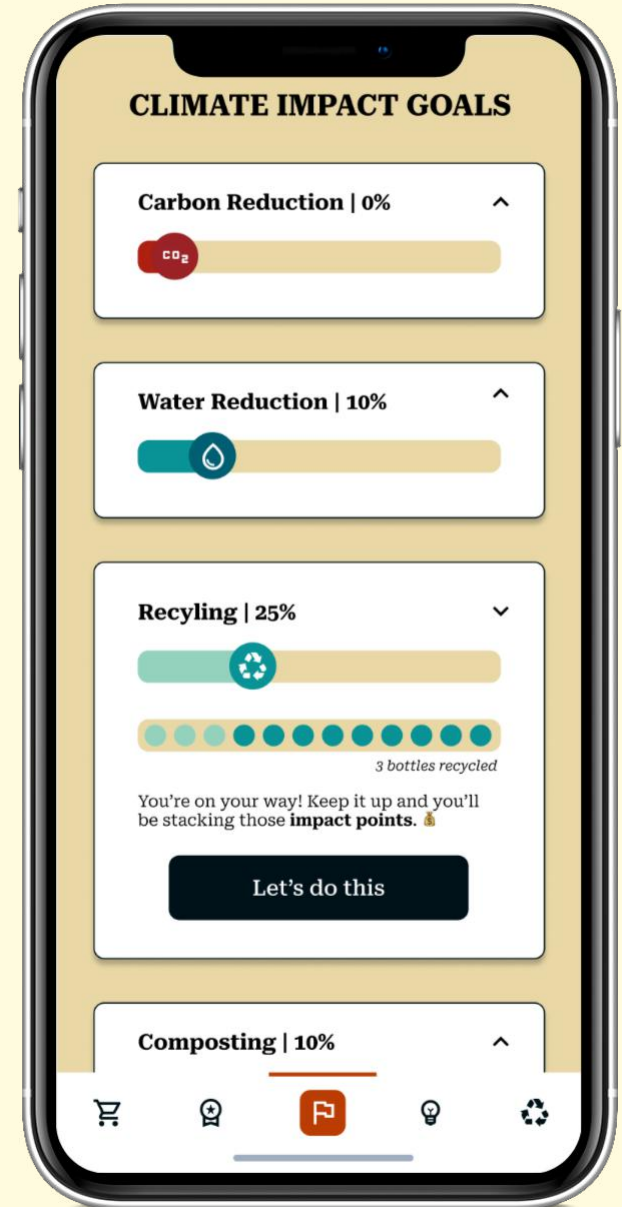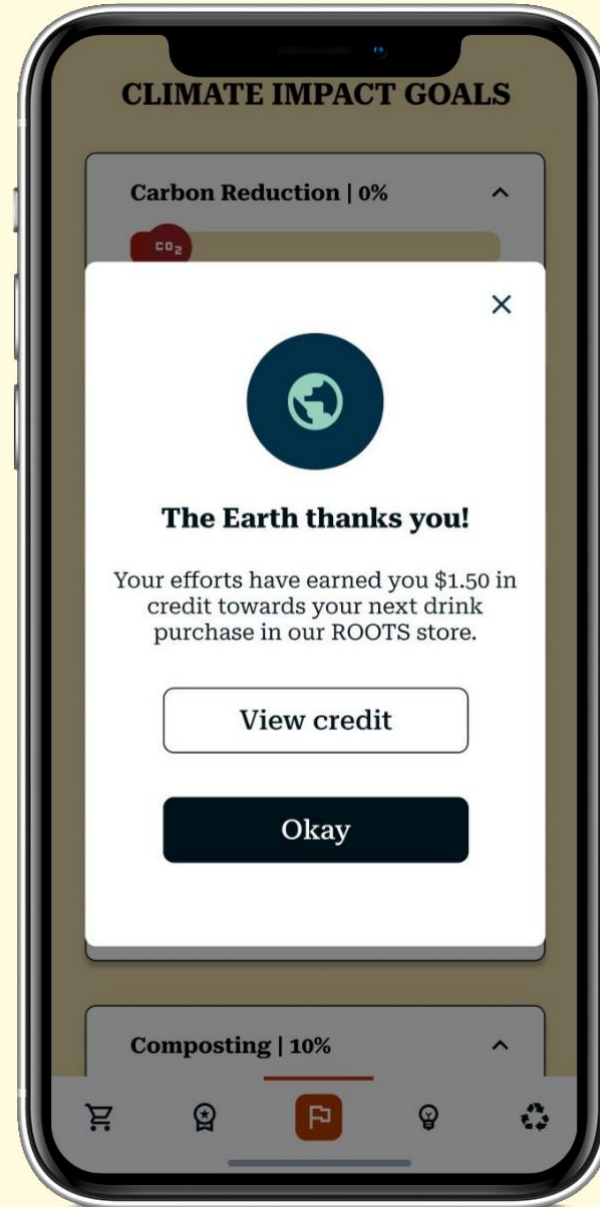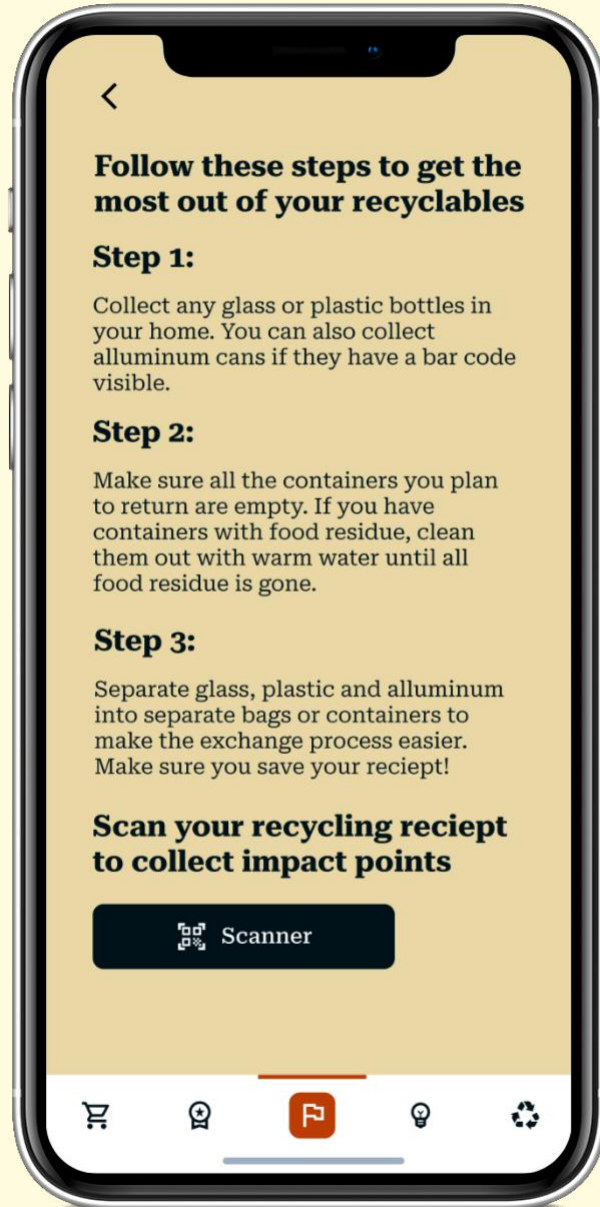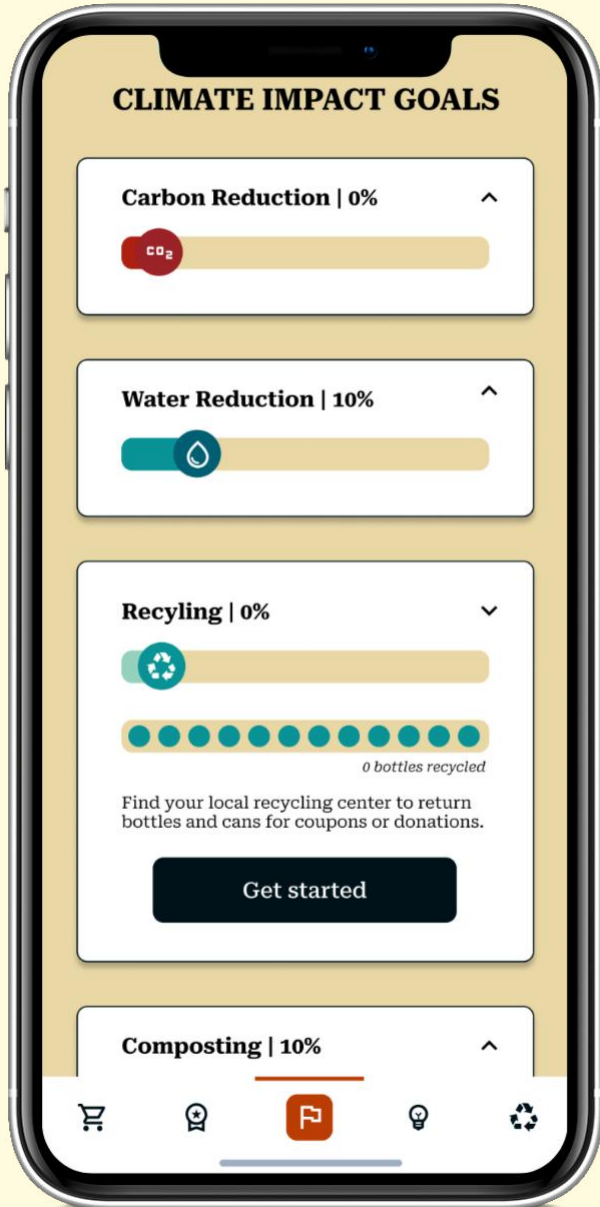*"Litres I kinda understand, but gallons would be easier for me."*

Calculation

"You've got to make sure you're not preaching to the choir-let people know what went into that piece of steak"

Education

""In order to get this amount of food to you... people don't understand how that # is calculated... make the numbers more attainable."

Each year. you emit
2,386 kg
in greenhouse gas

That's equal to the pollution from driving a car
5,550 miles

Or heating a small house for
418 days

Your weekly food intake uses
126,000 litres
of water

Which is about
1,950 showers
lasting 8 minutes each

Learn more

Got it

Screen 1: CLIMATE IMPACT GOALS

Carbon Reduction | 0%

Water Reduction | 10%

Recyling | 0%

0 bottles recycled

Find your local recycling center to return bottles and cans for coupons or donations.

Get started

Composting | 10%

Screen 2

Follow these steps to get the most out of your recyclables

Step 1:

Collect any glass or plastic bottles in your home. You can also collect alluminum cans if they have a bar code visible.

Step 2:

Make sure all the containers you plan to return are empty. If you have containers with food residue, clean them out with warm water until all food residue is gone.

Step 3:

Separate glass, plastic and alluminum into separate bags or containers to make the exchange process easier. Make sure you save your reciept!

Scan your recycling reciept to collect impact points

Scanner

Screen 3: CLIMATE IMPACT GOALS

Carbon Reduction | 0%

The Earth thanks you!

Your efforts have earned you $1.50 in credit towards your next drink purchase in our ROOTS store.

View credit

Okay

Composting | 10%

Screen 4: CLIMATE IMPACT GOALS

Carbon Reduction | 0%

Water Reduction | 10%

Recyling | 25%

3 bottles recycled

You're on your way! Keep it up and you'll be stacking those **impact points.**

Let's do this
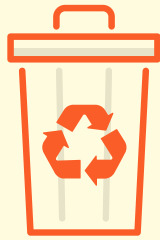
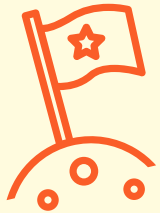**Composting | 10%**

IMPACT GOALS

FEEDBACK

Recycling Norms

Users wouldn't interact with this goal if they can recycle from their home.

Goal Setting

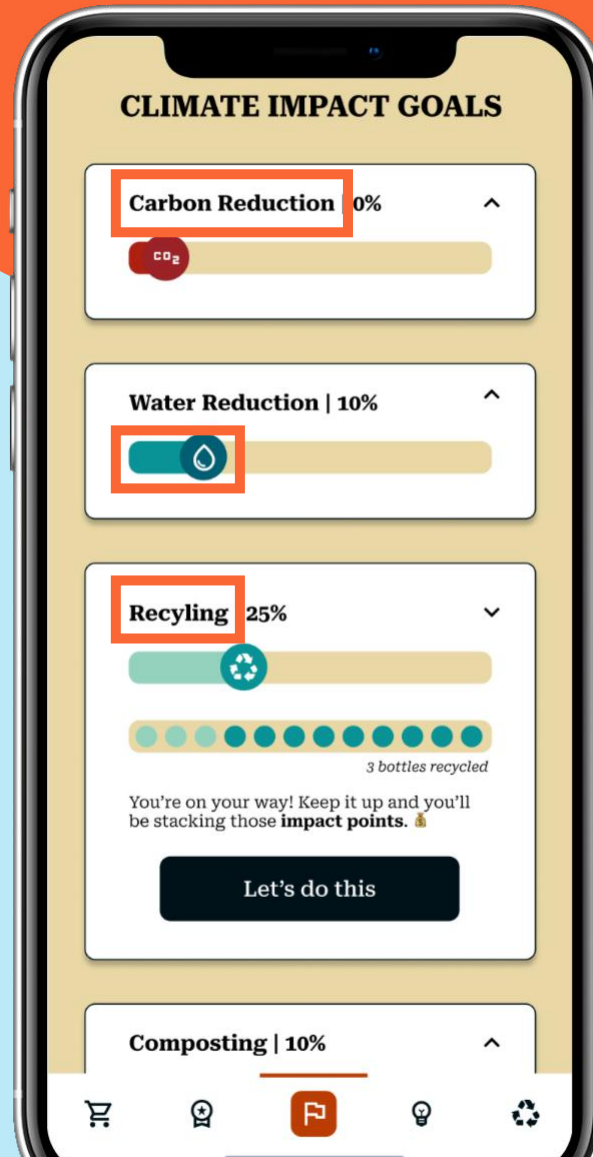The concept of goal setting wasn't clear to users.

UI Interaction

The progress bar designs look like sliders, and secondary bar was confusing.

QUOTES

Recycling Norms

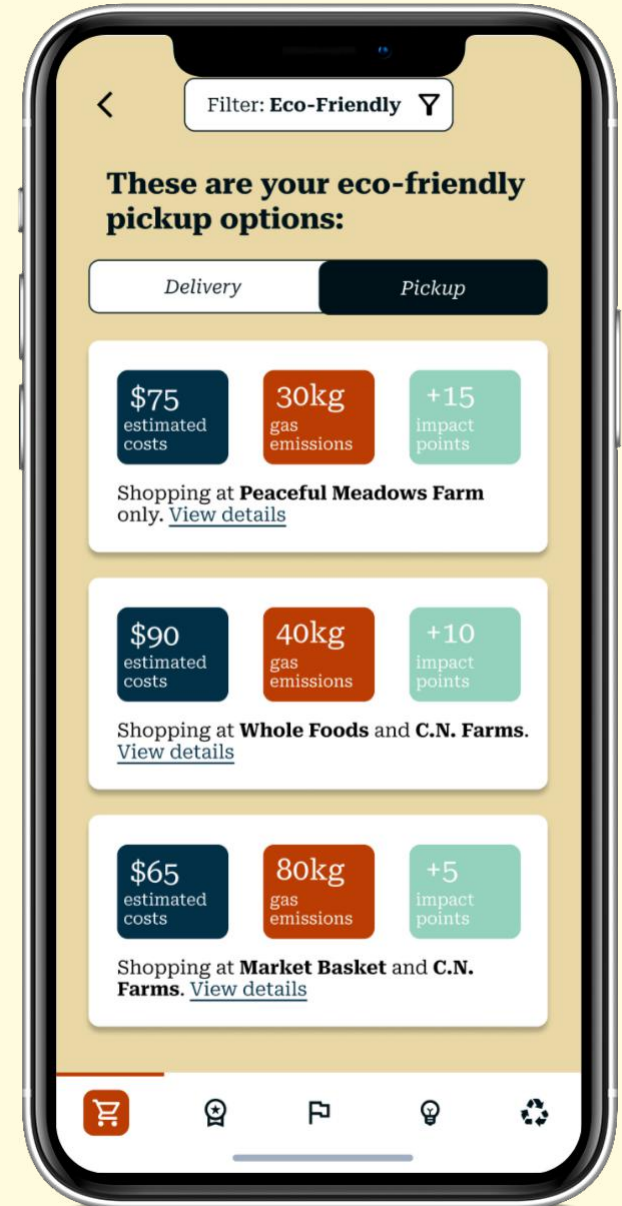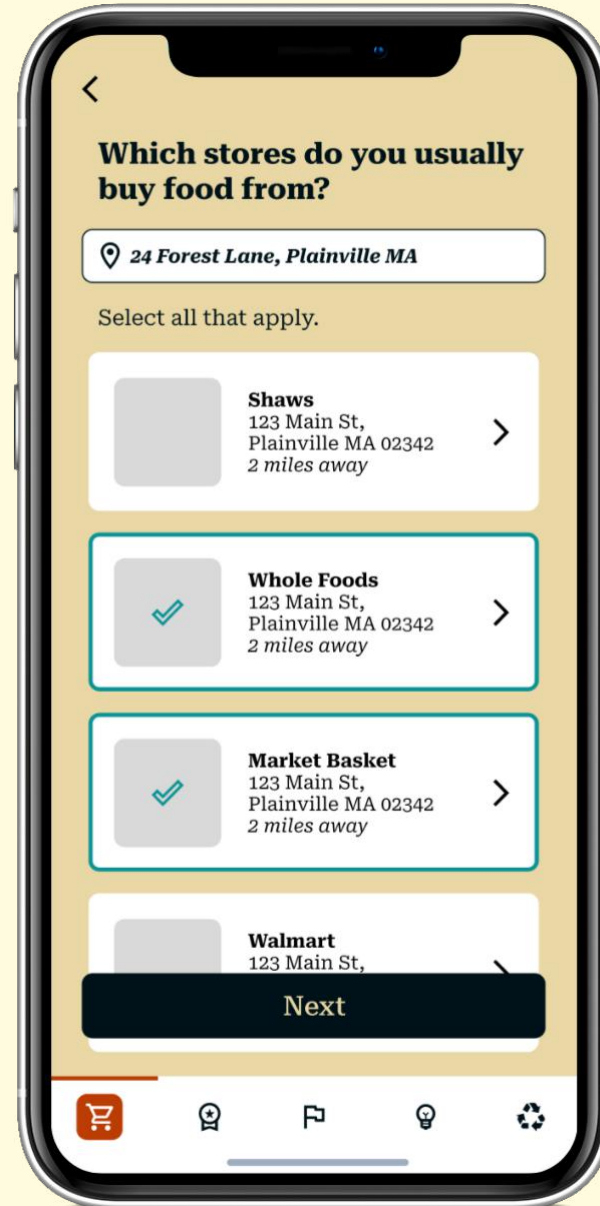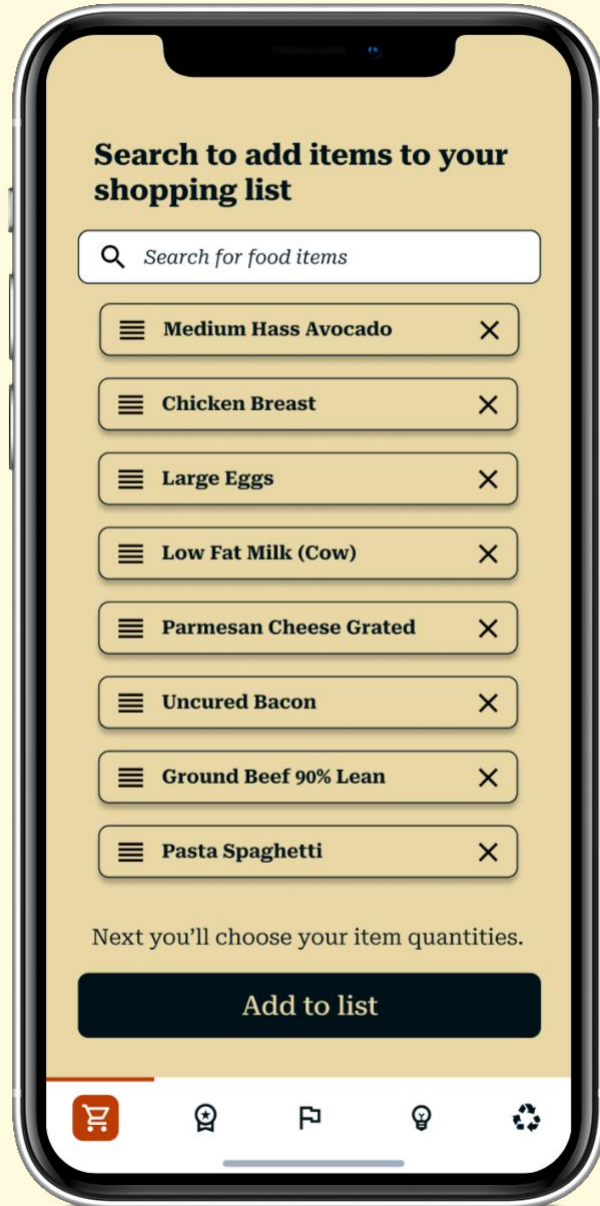"I don't know why I'd go to a recycling center vs using my recycling bin."

Goal Setting

"I don't think I would have noticed or understood... this is no longer a goal, just the result of my action. The goals are different from the actual impact."

"The progress bar is moving up like 25% of the whole bar... I'm having trouble understanding. I'm going to recycle 50 bottles next... so this bar would run through like 20 times."

UI Interaction

"I don't know if I'm sliding it over? These are my goals but what does it mean?"

CLIMATE IMPACT GOALS

Carbon Reduction | 0%

Water Reduction | 10%

Recyling | 25%

3 bottles recycled

You're on your way! Keep it up and you'll be stacking those **impact points.**

Let's do this

Composting | 10%

Screen 1:

Plainville MA

Start making more eco-friendly food shopping choices here.

☑ Create shopping list

Farm stands

Peaceful Meadow Farm | Strawberry Fields | C&N A... Tree Fa...

Farmers markets

MAY 20 ABC Farmers Market | MAY 20 ABC Farmers Market | MAY 20 ABC Far... Market

Eco-friendly grocers

Homestead Market | Quincy Organics | Whole Market

Zero-waste shopping products

Screen 2:

Search to add items to your shopping list

🔍 Search for food items

☰ Medium Hass Avocado ✕
☰ Chicken Breast ✕
☰ Large Eggs ✕
☰ Low Fat Milk (Cow) ✕
☰ Parmesan Cheese Grated ✕
☰ Uncured Bacon ✕
☰ Ground Beef 90% Lean ✕
☰ Pasta Spaghetti ✕

Next you'll choose your item quantities.

Add to list

Screen 3:

Which stores do you usually buy food from?

📍 24 Forest Lane, Plainville MA

Select all that apply.

Shaws
123 Main St,
Plainville MA 02342
2 miles away ❯

✓ Whole Foods
123 Main St,
Plainville MA 02342
2 miles away ❯

✓ Market Basket
123 Main St,
Plainville MA 02342
2 miles away ❯

Walmart
123 Main St, ❯

Next

Screen 4:

Filter: Eco-Friendly ▼

These are your eco-friendly pickup options:

Delivery | Pickup

$75 estimated costs | 30kg gas emissions | +15 impact points

Shopping at **Peaceful Meadows Farm** only. View details

$90 estimated costs | 40kg gas emissions | +10 impact points

Shopping at **Whole Foods** and **C.N. Farms**. View details

$65 estimated costs | 80kg gas emissions | +5 impact points

Shopping at **Market Basket** and **C.N. Farms**. View details

GROCERY OPTIONS

FEEDBACK

Points System

Users were unsure about the impact points system, but assumed it was good.
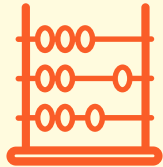
Local Details

Users expected to learn more about the farms mentioned behind "view details"

Filtering

Users wanted options to filter the page by local businesses, points and cost.

QUOTES

Points System
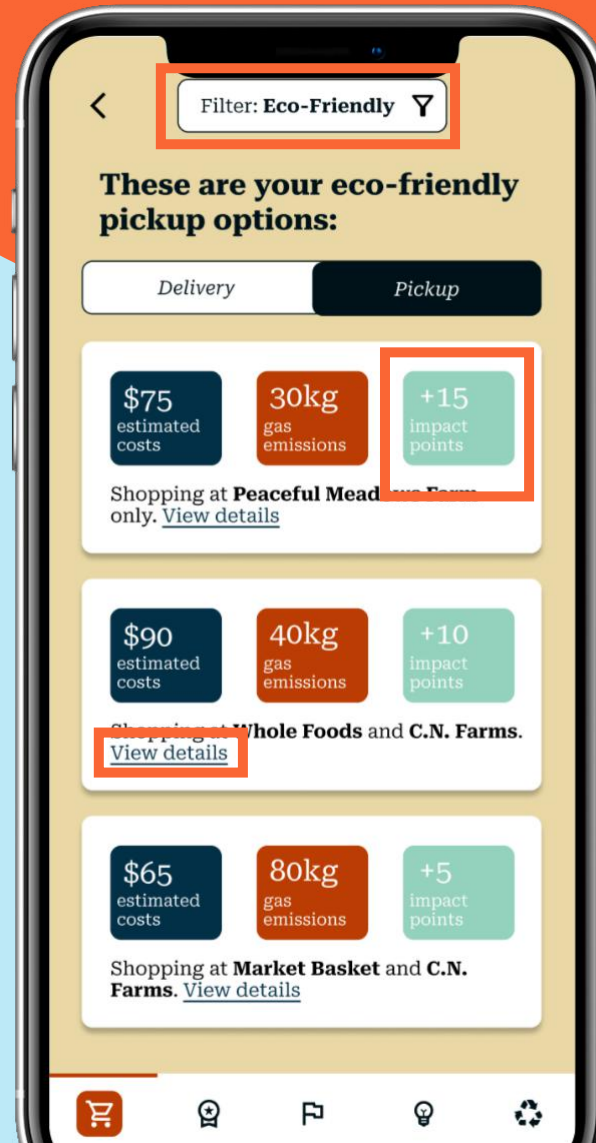
"Impact points I'm not sure if they're good or bad."

Local Details

"I would expect to see the prices and why you'd want to buy there."

"I want to see details about Peaceful Meadow Farms, their efforts towards sustainable shopping, and their hours."

Filtering

"It would be cool to have eco-friendly, local, small business, convenience, highest points."
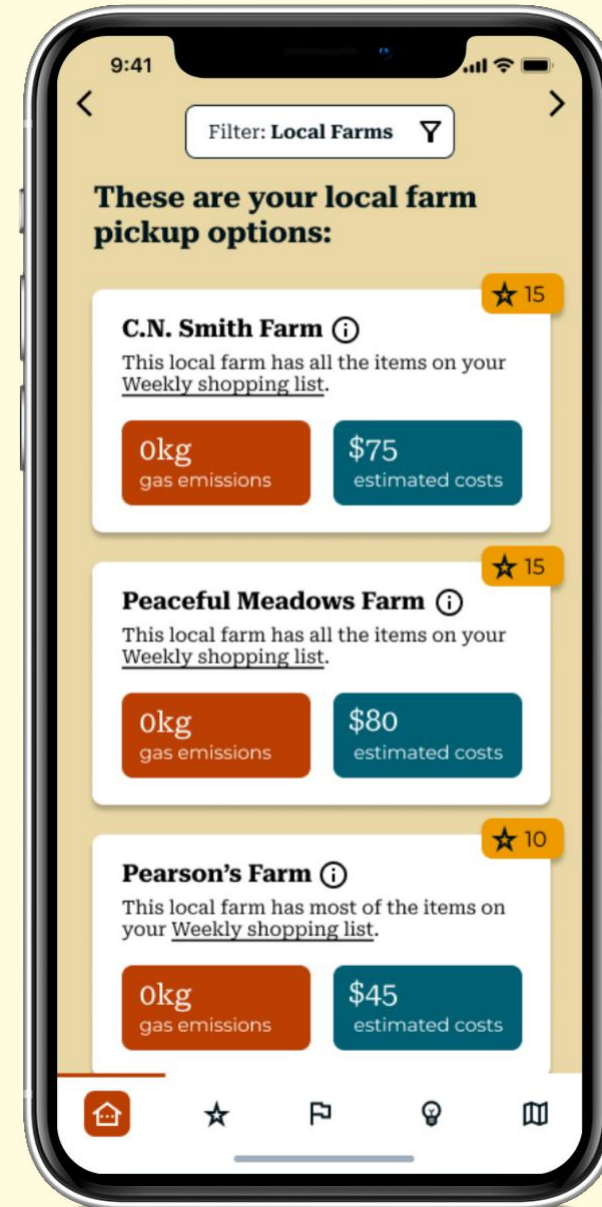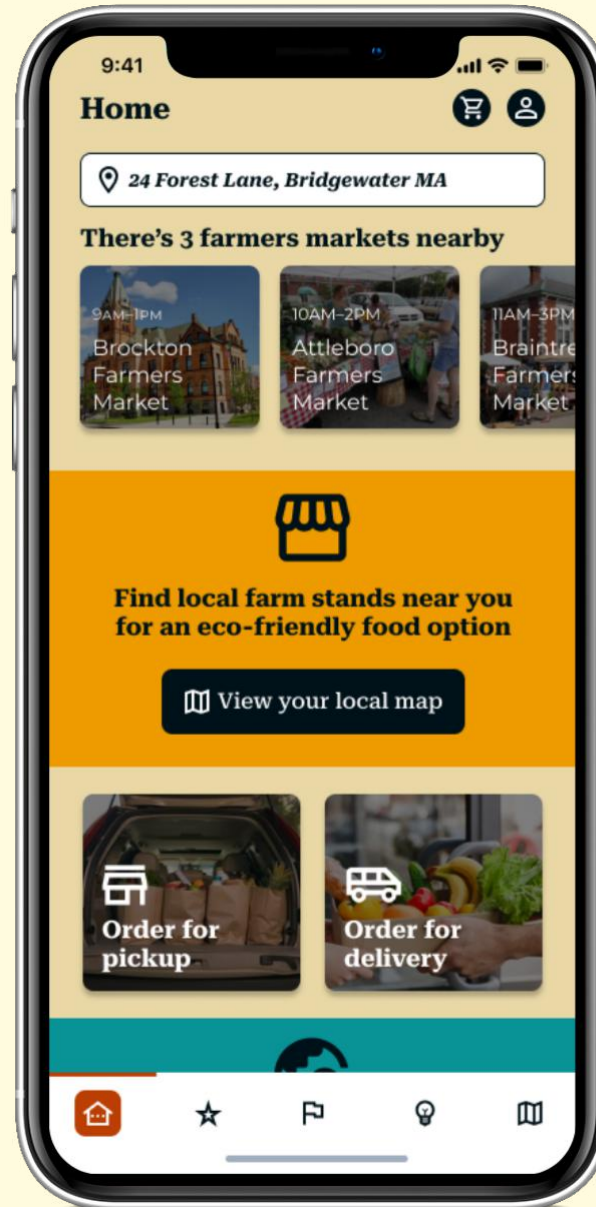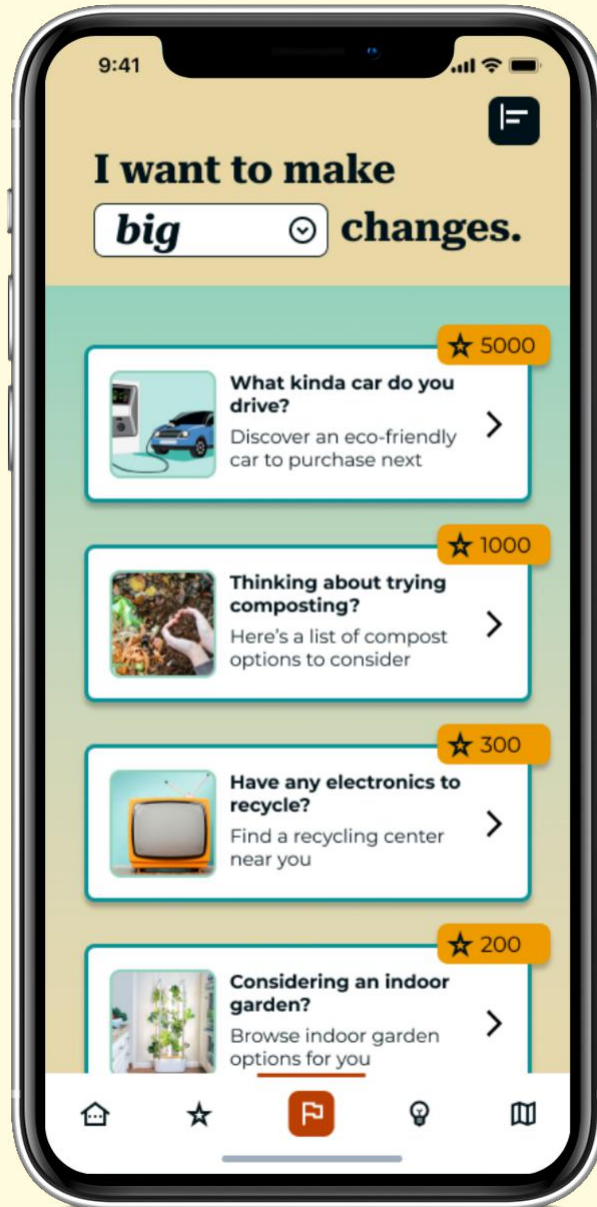
Reflections

1 I've learned that foundational research is so important for problem definition

2 I learned that breaking down a problem into smaller chunks yield better solutions

3 Trying not to fall down the prototype rabbit hole-the devil is in the details

4 Finding a unique color pallete for an app about food shopping and combating climate change

Next Steps

Things I'd like to do after graduation to keep the app moving forward

Research
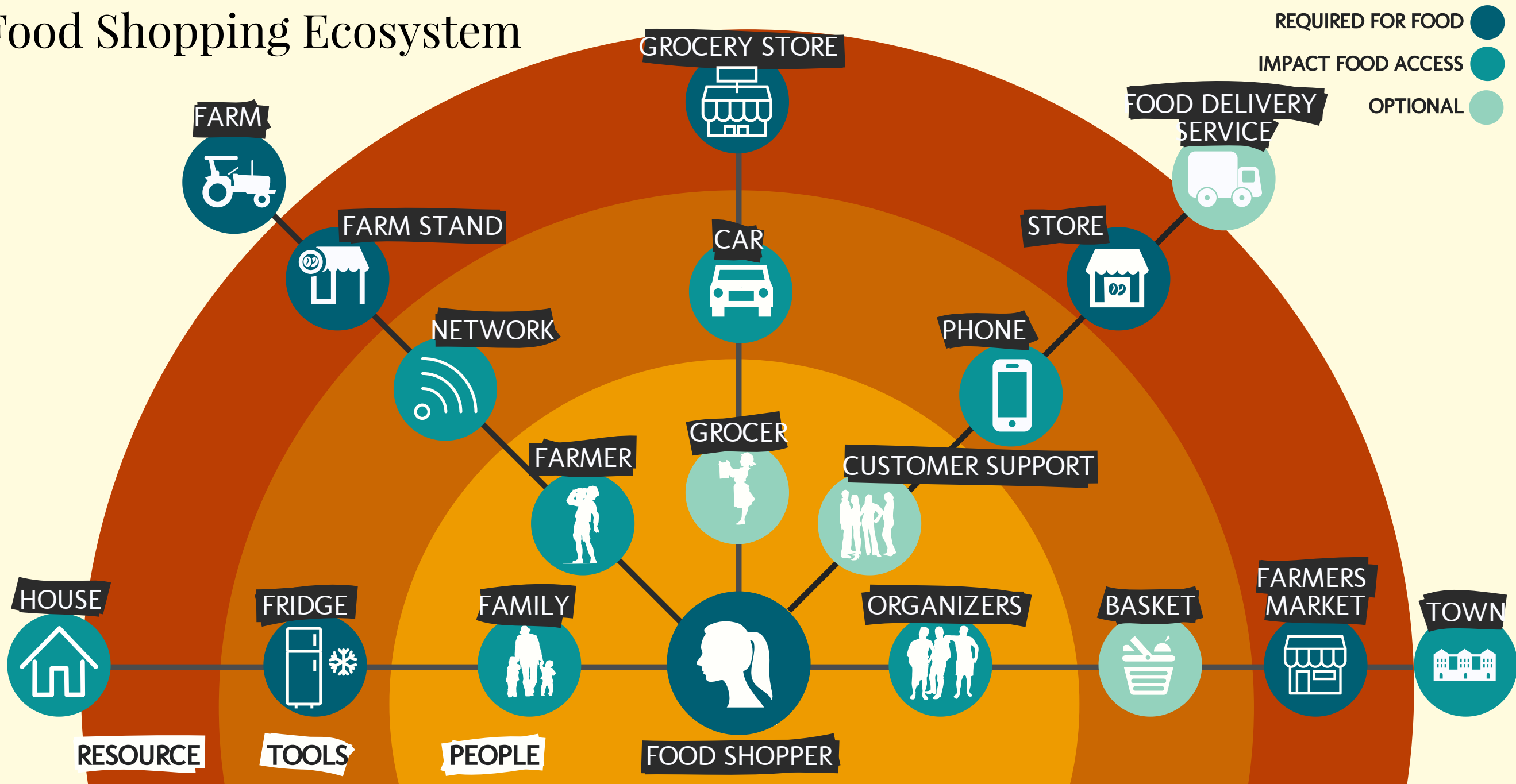Interview more farmers to design their side of the app

Development
I'd like to get funding for this project and save the world!

APPENDIX

Food Shopping Ecosystem

REQUIRED FOR FOOD
IMPACT FOOD ACCESS
OPTIONAL

GROCERY STORE

FARM

FOOD DELIVERY SERVICE

FARM STAND

CAR

STORE

NETWORK

PHONE

FARMER

GROCER

CUSTOMER SUPPORT

HOUSE

FRIDGE

FAMILY

ORGANIZERS

BASKET

FARMERS MARKET

TOWN

FOOD SHOPPER

RESOURCE

TOOLS

PEOPLE

SWOT

STRENGTHS

- Allowing customers to buy by the pound or ounce
- Providing education along with food access
- Using electric vehicles to deliver produce

WEAKNESSES

- No deliveries for MVP1
- Infrastructure that Amazon provides
- Same-day delivery access
- Reliance on farmers market locations

OPPORTUNITIES

- Zero-waste influencer partnerships
- A mobile app that allows customers to reserve farm-fresh foods from farmers inventory
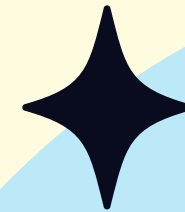- Coupons for recycling

THREATS

- World-wide access that big companies like Amazon have
- Amazon being carbon neutral by 2040
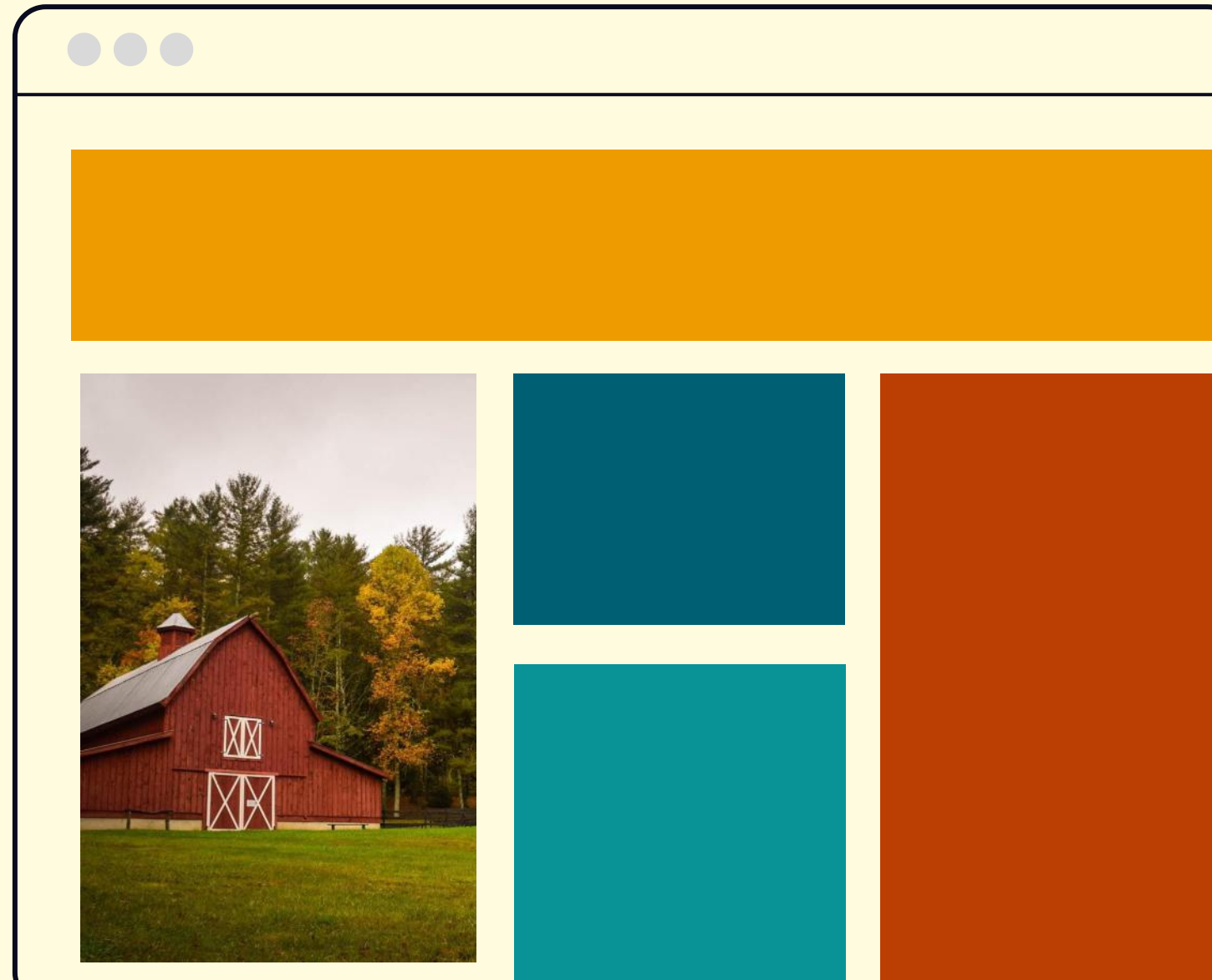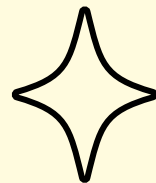- Large companies using compostable packing
- Social media education

Branding

Modern, down-to-earth and educational

Design System

An earth-tone color palette that doesn't incorporate green will stand out from other competitors design systems. This palette also makes photos of fresh produce and eco-friendly products stand out more.

Sources

Capstone Documents

1. Capstone Proposal:
https://docs.google.com/document/d/1ifd-bPLG7QNQkcPiNaOtsQQtJpEkUpkc_BrIQf84SQY/edit?usp=sharing

2. Capstone Project Brief:
https://docs.google.com/document/d/1W0jOfxFzBjQh2M8d3JP979S2RrYhFDusaAUGZTO_JGE/edit?usp=sharing

Problem Statistic Citations

1. https://ourworldindata.org/co2-emissions#co2-emissions-by-region
2. https://climate.nasa.gov/vital-signs/global-temperature/
3. https://sdgs.un.org/goals/goal12

Research Artifacts

1. Research + Strategy Deck:
https://my.visme.co/v/vdvrygn3-z3wgkv

2. User Research Test Plan:
https://docs.google.com/document/d/1y_gUBPLQTXLmrIQfP1sJTQ7-3CsPQojwD4OLMuXQAZs/edit?usp=sharing

3. Usability Test Notes:
https://docs.google.com/spreadsheets/d/1OJnW4p91mdyYh5P-b1ut2rda73YzIrmXsSxGZSQ9AYA/edit?usp=sharing

4. Usability Screener:
https://forms.gle/9goYseFdLooh3Gbv9