

Maine Home Food Waste Challenge 2023 Analysis

Executive Summary

- The majority of participants were primarily motivated to end food waste to help fight climate change (50%)
- The majority of participants were in the age group of 60 and older, which suggests that people with more time are more likely to participate (61.9%)
- Produce was cited as the most often wasted food item all four weeks of the Challenge, which could suggest either poor quality product or poor storage practices
- No participant had a perfectly linear relationship with food waste reduction throughout the Challenge – everyone had highs and lows, which is expected as this study was short and done for research purposes

Maine Home Food Waste Challenge

The Maine Home Food Waste Challenge was a four week Challenge that started on January 9th, 2023. Residents from all around Maine registered, with a total of 84 sign-ups and 21 participants who tracked their food waste for all four weeks of the proposed Challenge. Our main goal for this study was to create awareness about food waste among participants. Because of the small household sample size ($n = 21$), as well as the length of the Challenge (4 weeks), we knew it would be difficult to capture any true outcomes for food waste based off of this intervention alone. Because of the length of the Challenge, we expected a high chance of irregular high food waste events that could skew the data. A longer study with a larger sample size would be able to achieve this, but our study alone was data collection as a test for another project. The specific project that we used the Maine Home Food Waste Challenge as research for was the “Waste Watchers” app that is currently being created by a University of Maine computer science capstone team (Kayak). The information gathered from our Challenge was the groundwork for this application, and it is not meant to be taken as a standalone project.

Methods

The Maine Home Food Waste Challenge reached participants through several channels: a website, a Facebook group, library-sponsored groups, and several weekly emails. To participate, individuals first had to register online using a web-form. The web-form asked general demographic questions, as well as surface-level questions about personal food waste and typical food patterns (see Appendix A). After participants had signed up themselves and/or the remainder of their household, they were then put on a MailChimp mailing list where they received emails typically three times per week. On Mondays, we sent a general email that included the theme of the week and a note to

check the leaderboard on Wednesday. Wednesday emails contained the weekly leaderboard, and Friday emails reminded participants to submit their food waste by Sunday evening. Examples of these emails can be seen in Appendix C.

Participants were to record their weekly food waste and send in this numerical data on Sunday nights after their final meal of the week. Participants sent in this data through weekly Google Forms (see Appendix B). After this data was collected, researchers went through the numbers and created a weekly leaderboard of participants. This weekly leaderboard recorded food waste weight overall, food waste weight per person, food waste reduction rate following week 1, weeks participated, and meals away from home per week. Participants were then given weekly awards corresponding to these categories. Food waste weight overall was found using the raw data from participants. Food waste weight per person was calculated using the raw data from participants as well as demographic data that asked respondents how many people were participating in their household in the first questionnaire (see Appendix A).

Results

The following table represents the demographic data of all participants, both those who simply signed up for the Challenge and those who participated every week. Of the original 84 people who signed up for the Challenge, 21 people participated every week for all four weeks. Twenty-nine participants responded the first week with data, so a retention rate of 72.41% from Week 1 to Week 4 is likely more accurate. It is likely that some participants simply wanted the educational information from the Challenge, and they were not interested in sending in any personal data. Further, twenty-seven people participated for at least two weeks in the Challenge; only two people participated once and never again.

<i>Demographic Composition</i>		
	Total Sign-Ups	4-Week Participants
Income		
Less than \$30,000:	9.52%	0.00%
\$30,000 - \$59,999	22.62%	22.73%
\$60,000 - \$99,999	22.62%	13.64%
\$100,000 or more	27.38%	31.82%
Prefer not to Say	15.48%	27.27%
Age		
		4.76%
20-30	11.90%	
31-40	8.33%	9.52%
41-50	20.24%	9.52%
51-60	21.43%	14.29%
over 60	38.10%	61.90%
Primary Food Waste Reduction Goal		
Help fight climate change	41.67%	50.00%
Learn to use and store food better	16.67%	9.09%
Save money on food	11.90%	9.09%
Throw away less food	23.81%	27.27%
Other	5.95%	0.00%
Gender		
Male	11.90%	4.76%
Female	83.33%	95.24%
Prefer not to Say	4.76%	0%

Figure 1: Demographic information compared from respondents who signed up at the start of the Challenge, and respondents who participated for all four weeks of the Challenge.

Maine Home Food Waste Challenge - Participant Stats

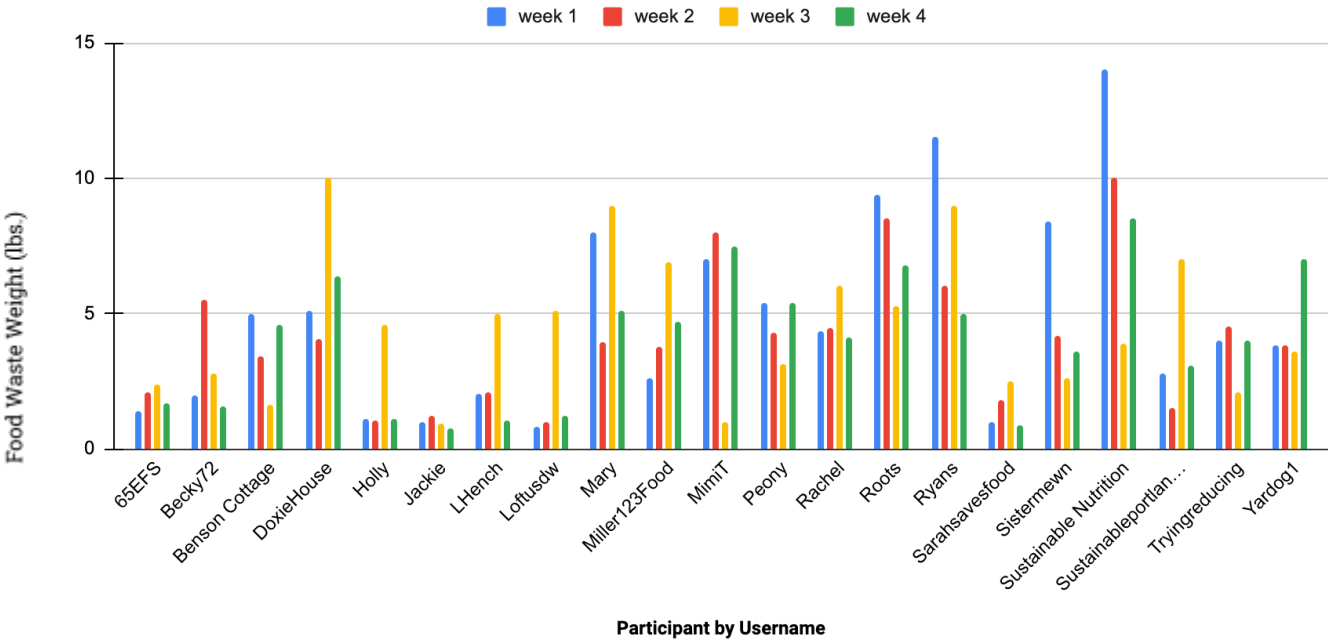


Figure 2: The entirety of participant statistics throughout the four weeks of the Challenge. There were 21 people who participated for all four weeks. The food waste weight is the total household weight. This is self-reported and measured in pounds.

Throughout the Challenge, 52.38% of participants reduced their food waste from Week 1 to Week 4. Of the total group of participants, week 4 waste was on average 16.65% less than week 1 food waste per household. The entire group on average reduced food waste by 3.03% in week 4 compared to week 1. Participants ate meals from home the majority of the time. Over the course of four weeks, the average number of meals eaten at home per week was 18.5 for each participant, with household sizes included. This is useful data because it would not be useful to measure food waste across participants if some ate out the majority of the time and others ate at home – the waste would be imbalanced and inaccurate.

Discussion

The results of this study were interesting both demographically and statistically speaking. Though only half of respondents who participated for all four weeks ultimately reduced their food waste, the collective effort is still quite significant when it is considered in the context of similar studies. Through Figure 1, we can see that the majority of respondents had household annual incomes of \$100,000 or more. We can also see that the majority of respondents were over 60 years old and female. This is important to consider because of the overall reach of food waste reduction efforts in the United States. While the group of participants were committed and easy to work with for the most part, the population that we reached was not necessarily the population that “needs” to be reached in this context. However, respondents who were over 60 years old are also more likely to be retired and therefore have more time to participate in Challenges such as these. For the context of this study, the most important piece of demographic information gathered was the primary food waste reduction goals that participants set for themselves. Researchers believed that the best way to motivate people to reduce food waste was to highlight the cost of this waste and people would be persuaded to save money instead of throwing it away. However, the biggest reason participants gave for food waste reduction motivation was to help fight climate change. While this is a good sign that people understand the environmental impact of food waste, it also points out that our pool of participants were likely already engaged in food waste reduction efforts before this Challenge. This could be one of several reasons as to why we did not see higher food waste reduction from participants.

Another interesting thing to note is the drop off points for different demographic groups. For example, eight people signed up for the Challenge who had annual household incomes of \$30,000 or less. However, none of these people ended up participating in all four weeks of the Challenge. This could be used to argue that higher income levels allow

for more time and/or resources to participate in a food waste tracking and reduction challenge such as ours. Further, it is interesting to mention that everybody who ended up participating in all four weeks of the Challenge had a clear motivator identified as their primary food waste reduction goal – nobody answered “Other.” This could be supported by the idea that the people who ended up participating in the Challenge consistently were already motivated to reduce their food waste based on different values or lifestyles.

Figure 2 gives a breakdown of the participant data from the Maine Home Food Waste Challenge. Participants are sorted by their chosen username. Interestingly enough, several participants saw peaks of food waste during Week 3 of the Challenge which was the week of January 23rd - 29th. As seen in Figure 2, none of the participants consistently went up with their food waste week by week. For the most part, participants had food waste that both increased and decreased during the four week period. Something interesting to note is that throughout the Challenge, 90.48% of participants ate out 0-2 times per week. This is another sign that our population of participants were likely already engaged in low food waste and or sustainability practices in their households before their participation in the Challenge.

Following the MHFWC, we invited participants to take part in a survey (see Appendix D). While most people who participated were already involved in food waste reduction efforts, they still valued the experience of the Challenge. In the responses, all participants noted at least one part of the Challenge that they found useful. 85.7% of participants who responded noted that the Challenge changed their food waste behavior in at least one regard. The final question of the survey asked participants what final comments they had for researchers. Several participants commented on the positive experience they had with the Challenge. One participant noted that “This was a great reminder to me that I do waste food, even though I compost everything in either a green cone or traditional compost bin,” and another claimed that “I liked learning about how to use the different drawers in your refrigerator and food that should not be kept together. It was information like this that I most wanted to know. We waste almost no food, but now I can keep it fresher.” Participants enjoyed the Challenge and the overall awareness it brought, even if they already practiced household food waste reduction prior to the start.

One of our researchers led a post-Challenge interview with several participants over Zoom. She conducted two interviews in two separate groups. The first interview group consisted of four women over the age of 60. Three of these women grew their own food and were heavily involved in sustainability practices in the state of Maine for around two years. One of these women had moved to Maine and gotten involved in food waste reduction and sustainability more recently. Feedback from participants was positive, and there were several points that these women agreed on. First, all women stated that their primary motivation for joining this Challenge was environmental, and that they had felt

this call far before our Maine Home Food Waste Challenge. Second, all of these participants agreed that while the Challenge was beneficial to them, the key groups that we need to reach were not reached through the study. One of these participants noted, "I thought that if there's another food waste Challenge, in order to work where we would like it to work, we need a totally different participant list because we're all aware and educated and committed to this anyway." She has a point, and this is currently a major point being considered across all food waste reduction efforts – how to engage key demographics that are likely large contributors to food waste, but that have less time and or motivation to aid in this effort. One participant, who had moved to Maine more recently, noted that she was slow to the game in food waste reduction and environmental efforts: "I was working a lot and it wasn't easy and I didn't prioritize it...if it's not easy, its going to be very hard for people to do." Interestingly enough, another participant noted that she could not be this engaged in food waste reduction efforts if she was not retired: "If you've got three kids and working full time...like me, I wasn't able to really do what I wanted to do until I retired...how do we make it easy for [those folks], how do we reach them." All of these participants pointed out that food waste reduction is beneficial for the whole of society, but that not everyone in society has the proper motivation and/or time to contribute to this effort. Our task as researchers is to find a way to reach the demographic of people who are busy or working, and those who are not currently engaged in food waste reduction efforts. We need to find a way to engage everyone in this work because it is quite essential to our health as a society, as well as the health of the environment for subsequent generations.

Conclusion

At the Mitchell Center, we are committed to reducing food waste in the greater state of Maine, and we are committed to finding easy solutions and ways for the residents of the state to participate in food waste reduction efforts. The Maine Home Food Waste Challenge was our first attempt to reach residents in their households and encourage food waste reduction beyond previous pilots. We learned a lot from this study, and we find that this study has several implications for future food waste reduction efforts. First, we need to find a way to reach a more diverse demographic population in terms of participation. To do this, we will likely have to find innovative ways to motivate and reach people that are not inherently motivated by factors such as the health of the environment. Second, we need to offer services as a state to residents to aid in the reduction of food waste. As one participant noted, "The vast majority of people we would like to reach maybe do not have the availability where they can compost...we need in the state, and all over, a composting business." A composting business, or something of that nature, would be greatly beneficial

to reducing food waste all throughout the state because it would mitigate the issue of availability for people who cannot or will not compost at home.

It is important to highlight again that the Maine Home Food Waste Challenge was a test to prepare for a consumer food waste reduction app. Our sample was small, and while the data was meaningful for its purpose, these results are not able to be generalized. We took a specific group of people and noted what motivated them, what they wished to see change, and most importantly, what their experience was in tracking food waste and if that ended up changing their behavior or not. Our study served its purpose, but a more comprehensive project would be useful to generalize food waste attitudes across the state of Maine.

By making more educational information available, we have a better chance of encouraging people to reduce their food waste. Education is the starting point for all people, and we need a greater dissemination of information to achieve our food waste reduction goals as a state. This can come through several channels, but local politicians have a large pull, and could be quite helpful in this area. While the Maine Home Food Waste Challenge was a starting point, we cannot stop with this singular study. First, it is likely that we repeat this Challenge annually, with more diverse groups of participants. Second, the members of Mitchell Center and the University of Maine Computer Science Capstone are working jointly to create a food waste tracking application for cell-phone users in the state of Maine. The addition of further projects and research will be aimed at spreading awareness of food waste reduction throughout Maine.

Appendix A – Maine Home Food Waste Challenge Sign-Up Web Form

High food costs getting you down? Tired of throwing perfectly good food into the trash? Enjoy some fun competition? Join the Maine Home Food Waste Challenge and compete with your fellow Mainers to reduce your household food waste. To sign-up, please fill out the quick questions below and click "Submit." *Note: We will not share personal data. Data requested is important for internal for internal analysis and insights.

Email *(Required)*

ZIP Code *(Required)*

What is your first and last name? *(Required)*

We will not publish or share this data. This is for internal use only in tracking food waste data.

First

Last

What is your challenge name? *(Required)*

Our weekly Challenge Leaderboard will list all participants and their progress. What unique name would you like to use for the Challenge Leaderboard? For example, use your first name "Jane1986" or last name "Smith12" or make up a fun name, e.g. MaineWasteGuru or MaineFoodStar.

What is the size of your household? *(Required)*

Please only include the household members that will be participating and including their food waste in this challenge. For example, if you are completing this challenge alone, write "1". If you have a child or a spouse that will be adding their food waste to yours, then write "2" people.

How many meals do you typically eat out per week? *(Required)*

- 1-2
 3-6
 7 or more

What is your age?

- under 20
 20-30
 31-40
 41-50
 51-60
 over 60
 Prefer not to say

Gender: How do you identify?

- Male
 Female
 Prefer not to say
 Other

What is your total annual household income?

- less than \$30,000
 \$30,000 - \$59,999
 \$60,000 - \$99,999
 \$100,000 or more
 Prefer not to say


What is your primary home food waste reduction goal?

- Save money on food
 Throw away less food
 Help fight climate change
 Learn to use and store food better
 Other

1/2

What do you hope to achieve through participating in the Challenge?

Appendix B – Weekly Google Forms



Maine Household Food Waste Tracker Week 1

Thank you for participating in the Maine Household Food Waste Tracker Challenge! Please fill out the form below as accurately as possible. Your results will be analyzed and you will receive a report next week with the breakdown of your household food waste.

halle.rogers@maine.edu [Switch account](#)

*** Required**

Email *

Your email _____

What is your zip code? *

Your answer _____

What is your Challenge Name? *

This is the username you submitted at the beginning of the competition, during the registration process.

Your answer _____

How many meals did you eat out this week? *

0-2
 3-6
 7 or more

How many meals did you eat at home this week? *


Your answer _____


What is your total amount of food waste for this week, in pounds? *


Your answer _____


What was the biggest source of food waste for you this week? *

Think back to this past week. If you noticed you were throwing away a certain type of food most often, record which type of food you noticed. If your personal answer is not listed, please write in your own category.

 Dairy

 Protein

 Produce (Fruit and/or Vegetables)

 Grain / Starch

Other: _____

What was the biggest reason for your food waste this week? *

The food spoiled
 Made too much
 Did not eat any leftovers
 Ate out more than planned
 Other: _____

Which further resources would you like to meet your food waste goals? *

Please feel free to select one or more of the answers listed, or write in your own. When we receive your response, we can send you these resources to help in your food waste reduction journey!

Meal planning
 Proper food storage
 Recipes
 How to utilize leftovers
 Other: _____

A copy of your responses will be emailed to the address you provided.

Appendix C – Weekly email examples

January 23 Email

Subject – Maine Home Food Waste Challenge: Week 3 – GO!

Today, **Monday January 23rd** is the start of the new food waste collection for Week 3 of the Maine Home Food Waste Challenge. Make sure to start this week with a clean, empty food waste collection container. If you are using our printable waste tracker, you can be sure to keep track of your food waste daily!

With the start of Week 3, we want to share some tips with you about how to properly store your food so less of it ends up in your wastebasket.

Week 3 Food Waste Tips: Storing Better = Wasting Less

Sometimes we bring home great produce that seems to last only a couple of days. We end up throwing away the food we were excited to eat because of storage issues! Luckily, there are ways to store food right after you bring it home from the store that can save you from throwing away those fresh foods for good.

- Make sure you know the [timeline](#) of your fresh food – that way you can know when you should use it for peak freshness!
- Make sure you know [how to store your food](#) to ensure that it lasts as long as possible
- Try new [organization techniques](#) for your fridge and note which ones keep your food fresh the longest!

Check out any or all of these food waste storage tips to try to reduce wasting your food that goes bad before you have a chance to eat it. If you are looking for something more basic, feel free to check out the [top 5 tips for food storage](#) that anyone can tackle.

We would love to hear more about how we can help in this journey! Send an email to foodrescumeaine@maine.edu with any questions or comments about the Challenge. You can also join our [Challenge Facebook Group](#) and share your own helpful tips or photos with other Challenge participants. If you are comfortable, feel free to send in what tips worked best for you from last week!

P.S. Check your email on **Wednesday, January 25th**, when we will send you a link to our second weekly **Maine Home Food Waste Challenge Leaderboard**!! Check your Week 2 |

January 27 Email

Subject – **Maine Home Food Waste Challenge Week 3 – Going Great! What's Next?**

Look who is on a streak! You and your fellow Challenge participants have been doing a great job collecting all your daily food waste in this third week of the **Maine Home Food Waste Challenge**! *Keep up your collecting to earn a Week 3 Challenge Award!!*

What's Next?

On Sunday, January 29th

- Collect your last day of food waste for Week 3. At the end of the day, weigh your **total** Week 3 food waste (or add up the week's total, if you are weighing daily) and record.
- Remove your collected food waste and...
 - compost it at home,
 - take it to a community food waste drop-off site,
 - use a curbside food waste collection service,
 - or offer it to a neighboring farm or fellow [composter](#).

Make sure you rinse your container to be ready for Week 4, the final week of the Maine Home Food Waste Challenge!

- Check your email on Sunday for our **Challenge Food Waste Form** that asks you to report your Week 1 food waste weight in pounds.
- Return your completed **Form** on Sunday night (or grace period – Monday morning at 8a.m.) so that you can track your progress, see your results on the **MHFW Challenge Leaderboard** and start earning weekly Awards!

On Monday, January 30th

- Start collecting your food waste for Week 4 of the **Challenge**
 - Make sure to clean out trash containers from the past week, so you can start fresh
- Check your email for new Week 4 food waste reduction tips and resources to help you!

We hope you are enjoying the Challenge so far. And again, we encourage you to join the [Challenge Facebook Group](#) to document your food waste reduction journey!

If you have any questions or need any help, please email: foodresucemeaine@maine.edu, or call: 207-581-3196.

Appendix D – Post-Challenge Survey

2023 Maine Home Food Waste Post-Challenge Survey

Thank you for participating in the first annual **Maine Home Food Waste Challenge!**

We are very interested in getting your feedback on the Challenge and your food waste reduction efforts - whether or not you completed the Challenge.

This Survey should take less than 10 minutes, if you use the multiple choice answers. But please feel free to share more details by using the "Other" answer sections.

As always, thanks so much for your participation!

Email *

Valid email

This form is collecting emails. [Change settings](#)

What is your email address? *

Short answer text

What is your Challenge Leaderboard name?

Short answer text

Why did you sign up for the Maine Home Food Waste Challenge? (check all that apply) *

To save money

What part of the Challenge did you find useful? (check all that apply) *

Money Saving Tips

Food Waste Tracking & Measuring

Food Waste Reduction Tips & Resources

Food Waste Recycling Ideas

Reminder Emails

Weekly Challenge Leaderboard

Weekly Challenge Awards (e.g. "4 Week Streak", "Lowest Total Food Waste", etc)

Challenge Support Groups (Facebook, Library, Friends)

Other...

What did the Challenge teach you about food waste? (check all that apply) *

Why food waste is an important issue

How I can reduce food waste

How to save money by reducing food waste

How to organize my kitchen to reduce food waste

How to understand date labels to reduce food waste

How to use recipes and meal planning to reduce food waste

How to store food to keep from spoiling and wasting

To reduce my household food waste

To learn about food waste

To protect the environment

To help fight climate change

To do something new and interesting

Because a friend, family or community member recommended

Other...

What were the benefits of the Challenge for you? (check all that apply) *

Saving money

Reducing household food waste

Learning about food waste

Protecting the environment

Fighting climate change

Promoting positive family and/or community activity

No real benefit (if selected, please explain in "other")

Other...

How many weeks did you track your food waste? *

What did the Challenge teach you that was **most** helpful in reducing your food waste? *

Collecting and measuring food waste

Donating and sharing food

Correctly organizing and storing food

Meal planning

Using a shopping list - and always shopping my fridge first

Using waste-free recipes

Composting

Other...

How did the Challenge **permanently** change your food waste behavior? (check all that apply) *

I will collect my food waste in a separate bin

I will organize and store my food correctly to avoid food waste

I will use meal planning to reduce food waste

I will use recipes to avoid food waste

I will shop with a list to avoid overbuying and reduce food waste

I will shop my fridge first to reduce food waste

I will donate food to avoid waste

Would you participate in the Challenge again? *

Yes

No

Maybe

How likely would you be to recommend the Challenge to friends and/or family? *

1

2

3

4

5

Extremely unlikely

Extremely likely

Do you have any other feedback or comments that you would like to share at this time?

Long answer text