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## Who is Being Blamed for Food Waste

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Food waste has commanded growing attention in recent years, with recent estimates suggesting that people fail to consume as much as 40% of food grown globally (Parfitt, Barthel, and Macnaughton, 2010; Buzby, Farah-Wells, and Hyman, 2014). Given the potential magnitude of food waste, researchers and policy makers are working to lower food waste, as noted in the United Nations Sustainable Development Goal 12.3 (reduce food waste by 50% by 2030). Policy makers need the citizenry's support to use policy to affect this change, but, as Oliver and Lee (2005, p. 926) stated, "Politicians are unlikely to pass laws that would offend large portions of their constituents and policies that aim to change individual behavior must be seen as legitimate by their target populations." Thus, support is contingent on which stakeholder citizens view as contributing to the problem (Lusk and Ellison, 2013; Thibodeau, Perko, and Flusberg, 2015). In this article, we study an unexplored area of food waste: attribution of blame. We assess consumers' attribution of blame for food waste to different stakeholders and analyze blame attribution predictors. Following the extant literature on blame attribution and obesity, we argue that the motivation to action and accept policy change has a root in individuals' blame for a societal problem.

A diverse set of entities is responsible for the food loss and waste problem and could contribute to practical solutions. ReFED (2016), a food-waste-oriented nonprofit, tracked loss and waste of food along each stage of the food system, attributing 16% of losses to the farm level; 13% to the supermarket, distribution, and grocery store level; 18% to the restaurant level; 42% to the residential level; and the remaining 11% to institutions, industry/manufacturing, and government. Researchers cite market conditions as drivers of loss at the farm level. Simultaneously, various supply chain management challenges and food marketing decisions are sources of loss between the farm and consumers (FAO, 2011; Minor, Thornsby, and Mishra, 2020).

Given the relative size of food waste by consumers, a large and growing literature focuses on consumer behavior. However, this literature does not address

consumer understanding of the contributors to food waste. Our article fills a gap in the literature by studying consumers' perceptions about which stakeholders contribute to food loss and waste. A better understanding of blame attribution will shed light on what food waste policies may garner more consumer support.

### Data and Methods

In September 2017, we collected data for this study through Qualtrics. The sample of participants reflected the U.S. population based on race, gender, age, income, and education. Qualtrics administered the survey to U.S. residents over 18 years old who were the primary shopper in their household. Of the participants who consented to participate in the study ( $N = 1,506$ ), 182 did not attribute blame to each stakeholder. We excluded these participants from the analysis. We also lost participants ( $N = 2$ ) who did not report shopping behaviors, for a final sample of 1,322.

This study is part of a larger survey of a choice experiment about shopping behavior and food waste (see Fan, Ellison, and Wilson, 2021; Ellison, Fan, and Wilson, 2022). After the choice experiment, participants saw a series of questions about the attribution of the blame of food waste, shopping behavior, and food waste mitigation strategies. In this exploratory analysis, the outcome variables are the attributions of the blame of food waste of six stakeholders in the United States: farmers, individuals, grocery stores, government policies, food manufacturers, and restaurants and food service. Following Lusk and Ellison (2013), we asked respondents to assign blame attribution on a 3-point scale—"Do not blame at all" (1 point), "Somewhat blame," (2 points), and "Primarily blame" (3 points)—for each of the six key stakeholders. We also calculated the mean blame, which is the average blame score across all six actors.

The survey also assessed preferences for grocery shopping routines and the quantity of food respondents typically ate or left unconsumed (wasted) in their households. The key predictors for our analysis are the food waste mitigating strategies that participants

reported. We identify seven activities that align with food waste mitigation strategies. A key potential predictor of blame is the use of uneaten food. In the survey, we asked, "What does your household typically do with food that is not eaten?" Participants could answer: throw uneaten food in the garbage, give uneaten food to a pet, compost uneaten food, donate uneaten food, or other. We constructed a binary variable called Food Diversion, which was equal to 1 if participants stated that they gave uneaten food to a pet, composted, or donated uneaten food, and 0 otherwise.

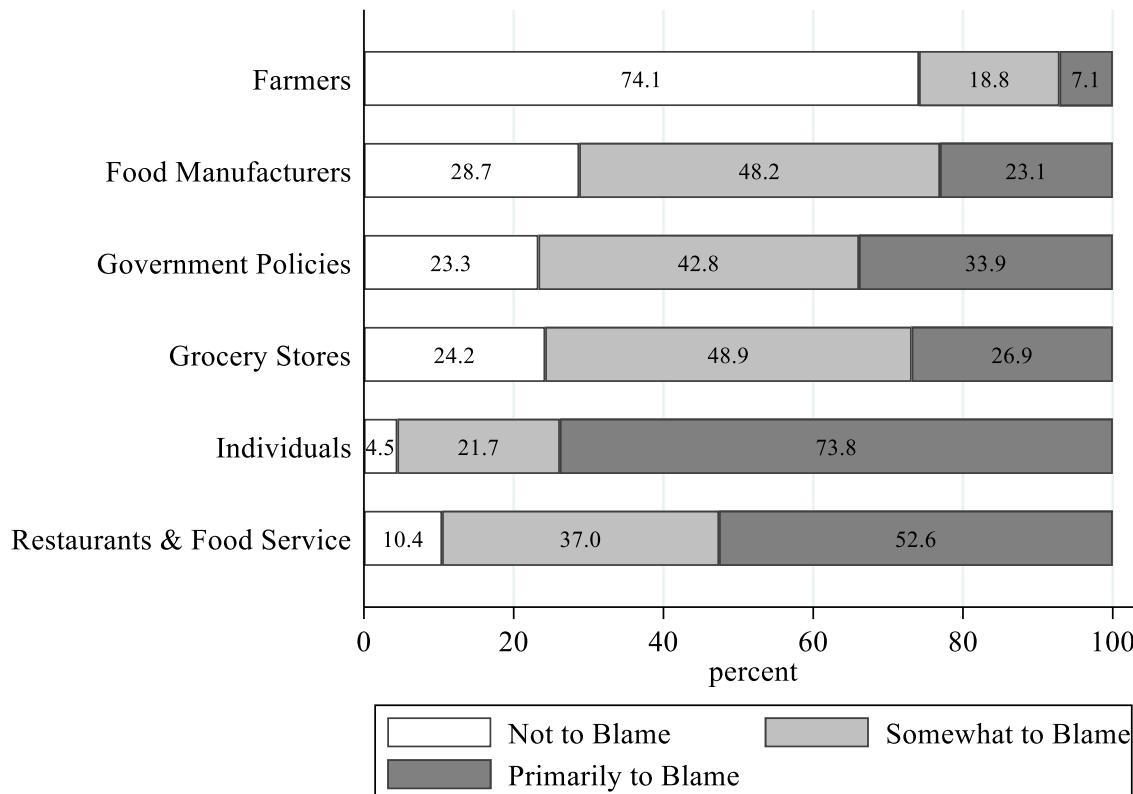
The other six food waste mitigating strategies are from a question about shopping behaviors. First, we asked, "Do you engage in the following activities related to grocery shopping?" For example, participants could answer "Yes" or "No" to statements such as "I typically use a list when grocery shopping" and "I typically buy items in bulk at the grocery store to save money." From there, we constructed six binary variables (Use of a Grocery List, Use of Coupons, Not Buying in Bulk, Online Grocery Shopping, Use of Meal Kits (e.g., Blue Apron, Sun Basket), and Shopping at Multiple Stores). We scored the variables with 1 if the participant engaged in the activity and 0 otherwise. We constructed the number of food waste mitigating activities as the sum of the seven binary variables. In addition, participants provided data on sociodemographic variables.

Social desirability is a concern for our research on food waste. We evaluated behaviors that can help reduce food waste. Thus, participants may report that they engage in more behaviors than they do. However, we were careful not to frame the questions with values or food waste mitigation connotations. For example, our questions were about shopping, not waste, as the study focused on food shopping. Further, we asked the shopping behavior questions before the blame questions, thus lowering participants' tendency to report more prosocial behaviors in response to the blame questions.

## Results

We report the distribution of responses to the six blame attribution questions (see Figure 1). Overwhelmingly, respondents (73.9%) placed primary blame for food waste on individuals. The opposite was true for the blame on farmers, with 74.2% of respondents attributing no blame to farmers. Respondents generally had a similar blame attribution pattern for grocery stores, government policies, and food manufacturers. Each stakeholder had at least 40% of respondents mark "somewhat to blame." Like the blame score for individuals, most respondents (52.6%) placed primary blame for food waste on food service and restaurants, with only 10.4% of respondents who attributed no blame to these stakeholders.

**Figure 1. Attribution of Blame for Food Waste to Stakeholders in the Food System (N = 1,322)**



We now turn to the number of food waste mitigating activities to identify how the cumulative engagement in these food waste mitigation strategies was associated with blame in regression models. Figure 2 shows the coefficients of the number of food waste mitigation behaviors in regressions on blame scores (1–3) for farmers, food manufacturers, government policies, grocery stores, individuals, and restaurants and food service, respectively. The sociodemographic variables were controlled for in the regressions. The coefficients indicate the marginal effects (i.e., how the blame scores will change when people engage in one more food waste mitigating activity). We find that participating in more food waste mitigating activities was associated with a higher blame score for farmers, food manufacturers, government policy, and grocery stores. When people engaged more in food waste mitigation activities, they blamed individuals less (i.e., regression coefficient is negative). One explanation for this is that people who undertake food waste mitigation behaviors think that others do the same, forming an in-group bias. Social categorization literature suggests that individuals perceive a high level of similarity with other members of their in-group and will judge them as being similar to themselves. Conversely, individuals will see out-group members as dissimilar to themselves (Ashkanasy, 1997; Nikolaus, Nickols-Richardson, and Ellison, 2018).

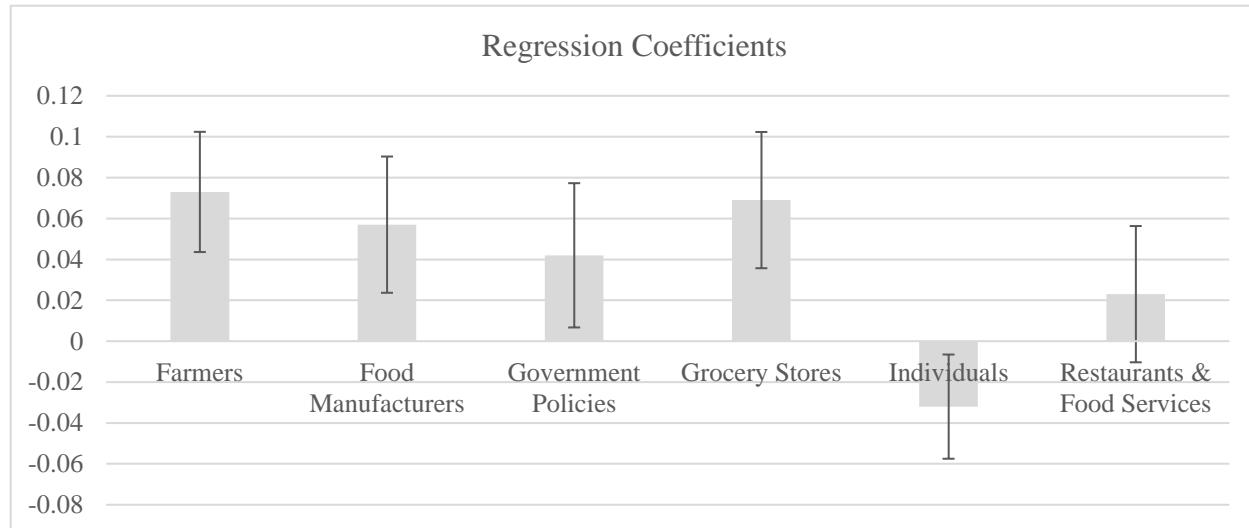
## Discussion

In the present study, respondents attributed the primary blame for food waste to individuals. The high level of individual blame attribution is consistent with the substantial estimated food waste that occurs at the residential level, according to ReFED (2016). Earlier research also found a tendency to blame individuals for

obesity (Lusk and Ellison, 2013; Thibodeau, Perko, and Flusberg, 2015). Conversely, consumers seem to under-attribute blame to farmers, considering that the actual amount lost at the farm level is on par with the amount of food waste that occurs at other stakeholders besides the consumer. We assume that consumers may have an easier time conceptualizing food wasted at an individual or food service level than at the farm level. Respondents could also believe that waste at the farm is ultimately driven by other actors (e.g., high cosmetic standards). Ellison, Lusk, and Briggeman (2010) found evidence that consumers may have a positive view of farmers, which may explain the low attribution of the blame of farmers.

The models suggest that as respondents engage more in food waste mitigating activities, they primarily blame multiple actors. Thus, we assert that these respondents consider food waste a systemic problem with multiple actors responsible for food waste. These consumers attribute food waste to individuals (personal responsibility) and the broader food environment. We argue that these consumers know the complexity of the food environment, with its multiple contributors and antecedents to food waste and loss. Most respondents (59.51%) reported no or one food waste mitigating activity, and these respondents tended to assign “primarily to blame” to individuals and food service and restaurants. Following the logic that blame is a condition of perceived culpability, then policies to mitigate food waste targeted at individuals and food service and restaurants may at least be politically acceptable. These consumers would tend to support punitive policies to correct the failings of personal responsibility. However, the other 40% of respondents would argue for a more systemic change.

**Figure 2. The Coefficients on the Number of Food Waste Mitigation Activities in Regressions on Blame Scores for Each Stakeholder in the Food System**



Notes: 95% confidence intervals are presented along with the coefficients. Sociodemographic variables are controlled for in the regression models.

## Conclusion

The findings of this study illustrate some potential points of concordance and discrepancy between how consumers attribute blame for food waste and where food waste occurs. The findings warrant careful consideration in developing practical approaches to mitigate food waste. In some instances, especially when considering upstream stakeholders in the food system,

consumers may poorly understand food waste. Consumer education on waste at various food system levels may serve as an effective policy or intervention element. Consumers' perceptions of the blame for food waste appear to mirror their experiences and behaviors. Promoting food waste diversion, such as donations and composting, may change how consumers conceptualize who is to blame for food waste.

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