

Investigating barriers to pipelining food assistance to America's food insecure via web platforms

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

Security thrives as a field built to prevent, mitigate, and predict the occurrence of danger. In an age dominated by digital infrastructures that manage how we socialize, travel, and eat, a vast array of nascent technologies grow to secure the modern digital landscape. Non-profit efforts have evolved to leverage these digital systems for their unparalleled efficiencies, exposing stakeholders to a new age of technical vulnerabilities regarding privacy (Council of Nonprofits, 2019). A collective push for digitizing commercial and nonprofit organizations stresses the need for comprehensive security measures across an ever-increasing number of distributed web applications. Current researchers emphasize the extent to which the food insecure rely on social support, food nutrition aid programs, and unconventional food sources (Marco, D., Thorburn, S., and Kue, J. 2009). In recent times, the COVID-19 pandemic has exemplified the need to move food assistance and similar programs to the web as we have been forced to distance and distribute ourselves (USDA Announces Coronavirus Food Assistance Program, 2020). As these programs are moved to the web, examining their security standards is critical to ensuring the online security of America's most vulnerable.

My STS research topic investigates the potential viability of web platforms that attempt to serve the food insecure, given the current issues that hinder adoption of food assistance programs. I also examine potential roadblocks that can prevent migration of current government and non-profit assistance programs to the web.

Part 1: Food insecurity and the infrastructure supporting food assistance programs

Food insecurity is a socio-political issue at its core, not without considerable cultural and social roadblocks. I examine investigations that cover socio-political aspects of the food-waste issue and provide perspective on the differences in perceived American disdain for food recycling as well as international disdain for food waste. Examining and comparing socio-political aspects between communities illuminates current cultural and social roadblocks as well as motivators for proper adoption of web platforms that aid the food insecure.

Food waste, prevalent throughout American communities, is an issue that affects communities differently based on their respective geographical, cultural, and industrial situations Whitley, S. (2013). Whitley examines how the attitude toward food recyclability and food assistance programs in rural America contrasts to communities found within populated cities. She goes so far as to suggest social and cultural shame in seeking food assistance is present at reduced rates in rural American communities, where less connected and isolated residents suffer the most from inaccessible food aid. A contrasting situation is present within cities where wealth disparity across neighboring streets can amount to millions of dollars; the fear of shame in seeking food assistance is present at higher rates and could hurt adoption of food assistance programs.

Attempts to remedy wanton waste of food through changes to policy or marketing have great room for increased efficiency and effectiveness. A far too common adversarial attitude among Americans towards the issue of food waste has contributed to an incomplete adoption of proper food waste management. Efficient solutions such as food recycling or reuse fail to attract proper adoption due to this attitude (Dang K., 2014). An analysis and comparison between attitudes toward French and American food waste management systems illuminates ways in

which each can be made more efficient (Mourad, 2016). These beg the question: If there were a web platform to match food insecurity organizations with excess food from around the community, would the platform attract the necessary users by circumventing the current attitude towards food recycling? Furthermore, what socio-political problems have groups encountered when attempting to redistribute excess food?

The issue of food waste should concern every American, especially after realizing Americans waste 40% of human consumed food, or 420 pounds of food per person yearly (Chen R., Chen R. 2018). The sheer amount of wasted food deals a great blow to metrics describing general community and environmental health as well as economic efficiency. Despite the fact that 1 out of 8 Americans struggle with food insecurity, the general attitude towards food waste is counterproductive to efforts to rectify the situation (Chen R., Chen R. 2018). The ease with which some Americans can purchase food has resulted in social barriers surrounding food recycling and redistribution. When using the lens of Actor-Network theory to understand how American food infrastructure contributes to these social barriers as an actor, it becomes easier to identify how the lacking care for wasted food came about. Kelsey Dang recognizes animosity after interviewing a food waste activist seeking to redistribute extra food from a Stanford campus event who was told, “You’re not welcome at these events unless you act normal” (Dang K., 2014). This general animosity indicates the existence of friction between those with extra food to potentially redistribute and those who may feel ashamed to ask for assistance when managing food insecurity.

Efforts to combat food waste have arisen within the services industry, as web applications aiming to reduce local and domestic food waste enter the market. These apps struggle with

anxiety with regards to interacting with strangers which comes into play with any crowdsourcing application (Weymes M., Davis R. 2018). The applications themselves as well as the infrastructure upon which they operate must also be considered actors if a proper understanding of how they can be improved is to be reached. Research indicates that the aforementioned anxiety could be remedied if a middleman could operate within the realm of a food redistribution system. This brings to light interesting possibilities, could a non-profit leverage currently established transportation infrastructure like Uber/Uber eats to serve as a middleman between donors and the food insecure? Perhaps an anonymizing, recognizable, and reliable guarantor for food distribution transactions could serve to alleviate potential users' worries surrounding such a food distribution system. The introduction of an actor to combat the current attitude towards food waste could serve as a solution to the current state of ICT (Information and Communication Technologies) within the space of food redistribution, as seen in how communal recycling bins have been engineered as 'actors' to place onus on consumers to recognize, come to terms with, and sort their own waste (Lorton J., 2015).

While cultural and social attitude towards food insecurity and food waste hinder adoption of assistance programs, both physical and virtual, investigations indicate a failure in outreach on the community and state levels could also be a contributing factor (Pinard, A., Bertmann, W., Shanks, B., Schober, J., Smith, M., Carpenter, C., and Yaroch, L. 2016). Image 1 illustrates the results of the study's social and behavioral analysis of factors that both increase and decrease participation in Supplemental Nutritional Assistance Programs (SNAP). Many of the factors that indicate an increased participation, such as simplified enrollment, availability, and outreach could all be focused upon with a robust web platform. The factors that decrease participation

such as perceived stigma, working full-time or more than one job, and lack of knowledge in applying could also be remedied via a web platform. In creating a secured, easy to distribute, and usable web platform that allows the food insecure to enroll, it could be possible to alleviate the stresses of participation in food assistance programs.

Image 1: A Table illustrating factors that increase and decrease Supplemental Nutrition Assistance Program participation

Macrolevel approaches	
Society level	Higher unemployment and poverty rates (+) Strong economy (-)
Federal/state policy level	Broad-based categorical eligibility standards (+) Align SNAP policy with TANF and Medicaid (+) Simplified enrollment and reporting (+) Shorter recertification periods (+) Lengthier application (-) Stricter verification and recertification (-)
Community/organizational level	Greater availability of state assistance offices (+) Increased outreach (+) High housing and utility costs (+)
Microlevel approaches	
Household level	Single parents (+) Increased number of children in a household (+) Higher incomes and available assets (-)
Individual level	Persons with disability (+) Receiving other federal assistance benefits (+) Lower levels of education (+) Job loss (+) Age, in particular the elderly (-) Race/ethnicity, in particular Hispanic (-) Perceived stigma (-) Working full-time during nontraditional hours (-) Working more than one job (-) Lack of knowledge, motivation, or confidence in how to apply (-) Citizenship status (lack) (-)

While nonprofits have historically stood at the forefront of food recovery and redistribution, private companies have launched platforms and applications to contribute to the effort. These private companies are often incentivized in the form of tax reductions and tax deductions. Social attitudes toward food recovery could contribute to the extent to which governments encourage these platforms, as seen in how France’s incentives are some of the most generous around the world while the US lacks the same energy (Mourad M., 2016). Actor-Network theory allows tax benefits to be seen as actors within the systems by which food

redistribution operates, which establishes their importance with respect to the successful adoption of food redistribution networks.

Part 2: Roadblocks to a migration of food assistance and other government programs to the web

While there is plenty of motivation to move currently existing infrastructures online, the migration creates an attack surface that places the most vulnerable at risk. Udo-Akang investigates the prevalence of attacks on modern government aid infrastructures, specifically the web platform for Obamacare (Udo-Akang, D. 2014). He notes how those who seek aid from the Obamacare platform are vulnerable to compromising their identities, as sensitive information like Social Security numbers and other identifiers are necessary for enrollment. Oftentimes these individuals do not have the necessary means or knowledge to mitigate damage in the event of a security breach on a web platform operated by government organizations.

Looking elsewhere for other online government platforms, the Department of Homeland Security reported it faced up to 626 cyber attacks per day in 2012, a number that is most certainly smaller than that which the DHS could report today in 2020 (Larotonda & Newcomb, 2013). When weighing the benefits of moving programs for aid or food assistance online, it is critical to understand these web-based infrastructures will need to be continuously updated as time goes on, creative hackers will continue to discover and publish exploits within their communities against these platforms. This means further investment must be made in continually securing these platforms days, weeks, even years after their inceptions.

Conclusion

While the benefits of an online migration for food assistance or other non-profit organizations seems readily evident, it is important to evaluate the consequences of such drastic changes. It is key to ask, which groups are at the highest risk, with what recourse in the event of failure in online security? Furthermore, who are we leaving behind in the event of normalizing internet powered assistance programs?

We've already examined studies such as that done by Pinard et al. which dig into the behavioral and psychological factors that ease adoption of food assistance programs. However, comprehensive studies on the effects of web platforms for these programs and adoption have yet to be completed in high enough volumes (Pinard, A., Bertmann, W., Shanks, B., Schober, J., Smith, M., Carpenter, C., and Yaroch, L. 2016). Going forward, it may be worthwhile to investigate the adoption rates for online platforms before full-heartedly committing to a migration of every government and non-profit service to the web, despite the robustness and distributability web platforms can offer.

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