Exploring an Opportunity to Support Local Food Systems through Online Food Delivery Services with Live-Streaming Farms in China

Xiaotong Du Rutgers University New Brunswick, NJ, USA xd103@rutgers.edu Sunyoung Kim Rutgers University New Brunswick, NJ, USA Sunyoung.kim@rutgers.edu

ABSTRACT

The use of online food delivery (OFD) services has skyrocketed despite lingering concerns about food safety during the COVID-19 pandemic. The pandemic has impacted most business sectors, including local farms and ranches whose channels to sell through local food markets have shut down. With the demand for food delivery is increasing while the local food market at risk, we saw an opportunity to connect these two complementary businesses through "live-streaming farms." We conducted interviews to investigate the current challenges of using OFD services, designed and evaluated the concept of live-streaming farms in OFD services to promote sustainable local food systems. Our findings indicate that offering extra food-related information through live streaming could potentially reduce primary concerns about food safety for OFD users and build local food networks. We conclude by discussing the design considerations of live-streaming farms that can improve user experience with OFD and support the local food systems.

CCS CONCEPTS

• Human-centered computing \rightarrow Human computer interaction (HCI).

KEYWORDS

Food; Sustainability; Online Food Delivery; Live Streaming; Local Food Systems.

ACM Reference Format:

Xiaotong Du and Sunyoung Kim. 2021. Exploring an Opportunity to Support Local Food Systems through Online Food Delivery Services with Live-Streaming Farms in China. In Adjunct Publication of the 23rd International Conference on Mobile Human-Computer Interaction (MobileHCI '21 Adjunct), September 27-October 1, 2021, Toulouse & Virtual, France. ACM, New York, NY, USA, 6 pages. https://doi.org/10.1145/3447527.3474859

1 INTRODUCTION

The increasing number of smartphone users has boosted online food delivery (OFD) services [2]. OFD is a service that enables customers to purchase food for delivery online through service

MobileHCI '21 Adjunct, September 27-October 1, 2021, Toulouse & Virtual, France

© 2021 Association for Computing Machinery.

ACM ISBN 978-1-4503-8329-5/21/09...\$15.00 https://doi.org/10.1145/3447527.3474859 providers such as Uber Eats and DoorDash in the U.S. or Meituan Waimai and Elm.me in China. Digital restaurant orders in the U.S. have grown by 23% over the past four years [7]. The Asia Pacific is the largest OFD market worldwide as of 2019 [21]. China, followed by the U.S., is the leading market with a market volume of \$28,910 million in 2019 [21]. With the onset of the COVID-19 pandemic and the resulting lockdown orders that closed restaurants, the use of OFD services has skyrocketed as people limited trips outside the home and order food for delivery [10].

Meanwhile, the COVID-19 pandemic significantly impacts business across sectors. Local farms and ranches that sell through local and regional food markets are facing losses. Social distancing imposed, the food insecurity heightened, and local business closures have put the local food industry under the risk of disruption [5]. Researchers have estimated that we might lose small and disadvantaged farms and the market they serve without immediate mitigation [22]. Thus, this study aims to explore how OFD services could reduce the loss of small local businesses and make connections between users, local food markets, and restaurants.

Recently, the economic, social, and environmental sustainability in local food systems has drawn increasing attention. Previous research promotes sustainable food systems from both individual and systematic dimensions. Individual practices include purchasing local produce [15], reducing meat-based dietary [1], or managing food waste [6]. Systematic practices include shifting the control of food production from global actors to local people [18] or viewing individuals as contributors to build local food networks [19]. While current OFD services have been criticized for the negative impact on sustainability [13], Dillahunt et al. propose that online grocery shopping could promote healthy eating and food access in food deserts [4] and Clear et al. argue that digital technology might encourage sustainable food shopping behaviors [3]. Thus, this study will further investigate how online food delivery services can promote sustainable local food systems for both individual and systematic change.

In this study, we adopted a user-centered approach by interviewing nine participants about their experience with OFD services. We found that food safety is a primary concern. We designed a prototype of an OFD application, *Backyard*, that allows users to not only reduce food safety concerns by watching live-streaming farms and restaurants but also support local food systems by ordering food from restaurants that purchased ingredients from local farms. We later conducted a pilot study with eleven participants to gain initial feedback. In the end, we contribute to HCI and design communities by confirming that people are more likely to place an order if they can see the food sourcing, meal packing process,

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org.

and its environment. Based on our findings, we explore design considerations involved in offering OFD showcasing live-streaming farms.

2 RESEARCH DESIGN

Our user-centered approach consists of three phases: (1) Understanding the current OFD practices, (2) Prototype Design, and (3) Pilot Study.

2.1 Phase I: Understanding the current OFD practices

Participants were recruited through WeChat, a messaging and social media app in China. We designed a pre-screening survey to collect demographics (e.g., age, gender, occupation), platform usage, order frequency, and the impact of COVID-19. We distributed the survey to Takeout Coupon groups on WeChat under the permission of group owners, where OFD users share electronic coupons of OFD services. Participants who use the OFD service at least once over the past week and live in urban China were recruited for a semi-structured interview. We also use snowball sampling to recruit participants who might not in these social media groups. We recruited nine participants (3 females and 6 males), and the average age is 27 (M=27.11 SD=2.96). The participant demographics are presented in Table 1 Left.

All interviews were conducted via WeChat voice call except one video call based on participants' preferences. On average, the interview lasted about an hour. To help participants recall their experience of OFD services, we asked them to turn on the speaker mode and open their OFD application during the interview. When necessary, participants were asked to send screenshots of the OFD platform to the chat so that we can ask follow-up questions about their decision-making process. The interview protocols were classified into two categories: 1) the overall experiences with OFD: platform usage, frequency, and overall experience, 2) key considerations and challenges of ordering food online, and 3) environmental sustainability: utensils opt-in and recycling behaviors. All interviews were audio-recorded and transcribed in Chinese. We provided monetary compensation to participants at the end of each interview.

We used affinity diagramming [20], a method widely used in HCI and interaction design, for which we had recurring patterns and significant themes to emerge from our data. We first conducted open coding, where we identified and coded concepts that are significant in the data. We then put each data point or single concept on a digital and color-coded sticky note. We generated overarching topics by clustering each note based on the meaning and similarity of each topic. Overarching themes emerged by grouping and synthesizing all the topics based on their relevance. We then created an affinity diagram (Figure 1) with emerging themes. Finally, we translated the final insights, themes, and excerpts into English.

2.2 Phase II: Prototype Design

We designed a high-fidelity prototype of a mobile application called *Backyard* (Figure 2) based on the findings from Phase I and the concept that technology-supported systems can increase information transparency and consumers' trust in food safety [11, 16]. The prototype aims not only to address participants' food safety concerns but also to promote the consumption of seasonally and locally grown produce in a local food system. We designed restaurant profile (Figure 2d) and cuisine details (Figure 2e) pages to show the kitchen environment, staff members, collaborating local farms to increase the transparency of food sourcing, handling, and storage. We designed a live-streaming farm (Figure 2b), allowing participants to order dishes or visit restaurants with ingredients purchased from local farms.

2.3 Phase III: Pilot Study

A pilot study consisted of a prototype feedback session to validate the usability and a picture-sorting activity [14] to evaluate the concept of live-streaming. Considering the concept of live-streaming in OFD service is relatively new for our participants and one user interface cannot show various live-streaming scenes, we designed picture-sorting activity to help participants better understand different types of live-streaming. In total, we recruited eleven participants (7 females and 4 males) whose average age is 27 (M=27, SD=2.80). Two of them who participated in the semi-structured interviews agreed to join the pilot study. We then recruited nine more participants from those who responded to the recruitment survey. The participant demographics are presented in Table 1 Right.

We conducted a one-on-one pilot study with participants through video conferencing software (e.g., Zoom) of their preference. First,

ID	Age	Gender	Frequency (per week)	ID	Age	Gender	Frequency (per week)
P1	34	Male	1	U1	25	Female	2-3
P2	26	Male	5-10	U2	27	Male	3-4
P3	27	Female	5-7	U3	34	Male	1
P4	27	Male	3-4	U4	28	Female	3-5
P5	29	Male	5-7	U5	26	Female	7
P6	28	Male	5-10	U6	28	Male	3-4
P7	25	Female	1	U7	23	Female	<1
P8	23	Female	5-7	U8	27	Female	1
P9	25	Male	5-10	U9	24	Male	3-4
				U10	26	Female	5
				U11	29	Female	3-4

Table 1: Participant Demographics for Interviews (Left) and for Prototype Evaluation (Right).

POSTER

Reasons for Food ordering Safety and food online Hygiene More Save discounts Brands than dining Rainy or time Walkir make me itside out cold ust a r have a outside restaurant better moo

Figure 1: Affinity Diagramming Result.



Figure 2: Backyard Prototype Design: a. Home Page b. Live-streaming Farm c. Farm Profile d. Restaurant Profile e. Cuisine Detail

we introduced ourselves, explained the purpose of this study, and asked their age, occupation, and the frequency of using OFD. We screen-shared the prototype and showed our willingness to get feedback due to the early stage of design. Then, we asked participants to interact with it by telling us what action they want to perform (e.g., click, scroll). We adopted a think-aloud method [12] to encourage participants to verbalize their thoughts, noting any features, questions, or difficulties while interacting with the prototype. Then we navigated to the next page and repeated the process. We then presented a worksheet (See Figure 3) with pre-defined categories in the picture-sorting activity, including 1) food types, 2) scenes, and 3) time and duration of live-streaming farms. We then chose a set of images from the internet to represent different contents, including food types (e.g., vegetables, fruits, poultry) and scenes (e.g., harvesting, picking, packing, and transportation). We asked participants to select images for each category verbally, dragged pictures under each category, and asked why they choose each image (Figure 3). We took notes about their comments and reactions and saved their picture-sorting result, which were later be used for data analysis. On average, the pilot study lasted about an hour. Only notes were taken because most feedback could be captured by field notes and later be used to optimize the prototype. Monetary compensation was provided to participants at the end of the session.

The raw data from the pilot study includes participants' reactions, attitudes, and challenges while interacting with the prototype and

sorting picture for live-streaming farms. We used the same affinity diagramming [20] as Phase I. Raw data were separated into notes. Each note with a single concept related to prototype design or live-streaming farm. We grouped notes based on the similarity to generate overarching topics related to common usability issues of the prototype, their attitudes, and concerns of live-streaming farms. We then got emerging themes by grouping similar topics. In this data analysis, we sought to use the result to improve the prototype design and inform design implications for live-streaming farms.

3 FINDINGS AND DISCUSSION

3.1 Findings from Phase I: Understanding the current OFD practices

3.1.1 Food safety concerns. Most participants used OFD service because it is more convenient than cooking at home, and it saves time and money compared to dining out in China. However, most participants felt unsafe about food hygiene, food quality, and restaurant sanitation on the OFD services. Some participants mentioned that previous food scandals in the OFD industry raised their food safety concerns: "According to news reports several years ago, the delivery-only restaurants did not have a physical storefront. They just set up a kitchen in a residential building. [...] They did not have various hygiene and sanitation permits. Then the reporter showed up unannounced and reported the kitchen has a very messy countertop, there will be cockroaches, beetles, mice, and cooking

MobileHCI '21 Adjunct, September 27-October 1, 2021, Toulouse & Virtual, France

MobileHCI '21 Adjunct, September 27-October 1, 2021, Toulouse & Virtual, France



Figure 3: A Worksheet of Picture-sorting for the Live-streaming Farm

oil are also particularly unhygienic" (P4). Unlike cooking at home or dining out, participants were uncertain about where the food ingredients come from, whether the ingredients are fresh, and the cleanliness and hygiene of the food handling process (e.g., cooking, storage, and packing).

We found that over 18% of our survey respondents used OFD services more frequently, 40% remain the same, while 37% ordered less frequently than before the COVID-19 pandemic. In the interview, some participants had to use OFD more often due to the stay-athome order or the company canteen closed. In contrast, others used OFD less due to more time cooking at home or feeling uncertain about food hygiene and safety during the COVID-19 pandemic. Some participants mentioned that extra information (i.e., a card with delivery rider's and food packer's temperature) provided by OFD service during the COVID-19 pandemic makes them feel safer. While P6 said that the handwritten temperature card is not useful, he believed that providing images of their temperatures will be more persuasive and trustworthy.

3.1.2 Coping strategies. Due to the food safety concerns of the OFD services, participants adopted a few strategies to help them identify trustworthy restaurants. First, ordering food from restaurants with a storefront and dining room. Some participants would evaluate the restaurants based on their prior experiences of dining in, seeing the store on the street in person, or checking the online maps. Most participants ordered food from restaurants they had visited before since they felt safe about food security and quality from their past visits.

We also found that participants heavily relied on visual information from consumer reviews to decide where to place an order. Especially, many participants evaluate the freshness of ingredients, food hygiene, and food packaging: "I mainly look at reviews like photos from other consumers to see if there is any sanitary problem in the negative reviews. In fact, everyone has their own taste, but if the food is not hygienic or there is something dirty like a small bug or hair in the dishes. That can be very disturbing" (P9). However, some participants questioned the trustworthiness of online reviews as well. They mentioned fake reviews and paid reviews. Some participants have seen rebate coupons sent by restaurants in exchange for positive reviews.

3.1.3 Environmental sustainability. We found that most sustainable food practices were driven by food hygiene or local policy, albeit current OFD services promote "no utensil" options for environmental protection. For instance, P7 and P9 believe that single-use plastic utensils are not hygienic soon after the COVID-19 outbreak. Most participants did not realize or use the utensil opt-out policy while ordering food online, except for P1, P5, and P7 since they live in a

city like Shanghai with mandatory waste classification. They will specifically ask for "no utensils" while ordering food at home.

3.2 Findings from Phase III: Pilot Study

Overall, Backyard was well-received by most participants as it increases transparency, ensures food safety and quality, and builds trust with online restaurants. However, some were concerned about affordability and time constraints.

3.2.1 Ensure food safety and quality. We found that most participants preferred close shots of live-streaming farms. Some participants took a closer look at live-streaming fruits and vegetables to evaluate the freshness or any excessive use of pesticides. Others were more interested in taking a closer look at live-streaming animals to evaluate their health status and living conditions. U5 and U1 expressed that a closer shot allows them to see if the chicken is overweight, has space to move around, or any environmental pollution caused by factories around their living surroundings. U5 cared more about live poultry because they are more likely to get sick and believed that animals living in a relaxed and clean condition indicate healthy and tasty food.

When interacting with the prototype and watching live-streaming farms, most participants paid more attention to food picking, packing, and transporting food supplies to restaurants because the process was directly related to the food that will be cooked by the restaurant and delivered to them. The live-streaming farm could also provide evidence of collaboration between local farms and restaurants. U2 suggested that if the restaurant staff wears the uniform with the restaurant logo and picks up those packed ingredients, which will make the experience more trustworthy. A picture with a greenhouse also proved that the farm could provide year-round food ingredients to restaurants. But If the vegetable still looks immature, they will not trust the restaurant that purchased these food ingredients.

3.2.2 Affordability and time constraints. Few participants worried that the food would be expensive due to the long-distance delivery or lack of discount compared to other OFD services. At the same time, some participants intended to order meals at a higher price to ensure the higher food quality on the current OFD platforms. We found that participants are more likely to accept a higher price on the existing OFD services than a new application like Backyard because using a new OFD application requires monetary incentives. Some participants worried about the time constraints of watching live-streaming farm during lunch break. But they later expressed the willingness to watch it at night and order food for dinner at home. The ideal duration ranges from five minutes to two hours,

MobileHCI '21 Adjunct, September 27-October 1, 2021, Toulouse & Virtual, France

while few participants mentioned they would only spend 5 to 10 seconds to watch before browsing dishes to order.

3.3 Discussion: Design Implications

While previous studies propose different approaches to encourage sustainable food practices (e.g., increasing food access [4], healthy eating [9], waste management [6]), we focus on promoting sustainable online food shopping practices and building local food systems because we found that food safety is the most emergent issue for our participants to order food online and local food markets are facing losses during the COVID-19 pandemic [5]. Our findings indicated that most participants did not prioritize environmental sustainability (e.g., use fewer plastic bags and utensils) while making food choices. Instead, they valued food hygiene, safety, quality, price, and time-saving of the OFD services. Therefore, the final design should alleviate food safety concerns while promoting sustainable local food systems. First, a previous study shows that information transparency can increase consumers' trust in food safety [11]. Therefore, we propose that OFD services should provide live-streaming farms to track food sourcing and live-streaming restaurants to show the kitchen environment, food storage conditions, and food packing process. Because some participants mentioned that how restaurants store and pack food is also essential to ensure food quality and safety.

Second, we see live-streaming farms as an opportunity for sustainable food practices such as purchasing local and seasonal produce. We also suggest that live-streaming farms should be categorized by food types since participants have different preferences. For example, some participants preferred to watch live-streaming animals for their living conditions and health status. While others wanted to see fruits or vegetables' picking, packing, and storage to evaluate freshness. In addition, we propose that the local farms could collaborate with streamers as some participants mentioned their willingness to purchase food directly from the farm or let streamers help them evaluate the food quality.

Third, we argue that building connections between participants and live-streaming animals might reduce meat consumption, which reduces carbon emissions in local food systems [1]. Some participants mentioned naming or adopting animals during the livestreaming farm. It not only improves engagement but also creates an emotional connection between participants and live-streaming animals. Few of them even expressed their unwillingness to eat animals after seeing them grow over time, which is consistent with a previous study that decreased meat consumption was associated with both increased recognition of human features of animals and increased empathy to animals [17].

4 LIMITATIONS

Our findings must be evaluated within the context of several limitations. First, we conducted this study with participants in China about Chinese OFD services, and thus further research is needed to be justified for other countries. Second, we had a relatively small sample size with a skewed age range. Thus our participant pool may not represent the general population. Though, prior work demonstrates that the younger generation, primarily single and unmarried people, accounts for 44.6% of users in online food delivery services in China [8]. Third, we lack input from other stakeholders, such as farmers and restaurant owners, to understand their willingness and challenges when using live-stream technology. Finally, our study has a limited scope of environmental sustainability in our research protocol due to the broad definition of sustainability. We propose that future research could investigate participants' perspectives on sustainability, sustainable food systems, and how their value of sustainability impacts their food choices.

5 CONCLUSION

We conducted interviews with 9 participants to understand their current experience of using OFD services in urban China. We found that food safety is a primary concern due to the lack of transparency in OFD services. We designed Backyard, aiming to increase the transparency and trustworthiness of the OFD system and encourage consumption of local and seasonal produce by connecting farms and restaurants in local food systems. We then evaluated the prototype with 11 participants. We found that although few of them were concerned about the affordability and longer delivery time, ordering food online with access to live-streaming farms allowed participants to ensure food safety and build trust with local farms and restaurants. We contribute design implications of live-streaming farms and restaurants to improve transparency, encourage sustainable food practices, enhance local food networks, and reduce meat consumption by building connections between participants and live-streaming animals. We provided implications for the HCI community to better design OFD services that not only meet the need of individuals but also promote the sustainability of local food systems.

REFERENCES

- Annika Carlsson-Kanyama and Alejandro D González. 2009. Potential contributions of food consumption patterns to climate change. The American Journal of Clinical Nutrition 89, 5 (04 2009), 1704S-1709S. https:// doi.org/10.3945/ajcn.2009.26736AA arXiv:https://academic.oup.com/ajcn/articlepdf/89/5/1704S/23852011/1704s.pdf
- [2] Varsha Chavan, Priya Jadhav, Snehal Korade, and Priyanka Teli. 2015. Implementing customizable online food ordering system using web based application. *International Journal of Innovative Science, Engineering and Technology* 2, 4 (2015), 722–727.
- [3] Adrian K. Clear, Kirstie O'neill, Adrian Friday, and Mike Hazas. 2016. Bearing an Open "Pandora's Box": HCI for Reconciling Everyday Food and Sustainability. ACM Trans. Comput.-Hum. Interact. 23, 5, Article 28 (Oct. 2016), 25 pages. https: //doi.org/10.1145/2970817
- [4] Tawanna R. Dillahunt, Sylvia Simioni, and Xuecong Xu. 2019. Online Grocery Delivery Services: An Opportunity to Address Food Disparities in Transportation-Scarce Areas. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (Glasgow, Scotland Uk) (CHI '19). Association for Computing Machinery, New York, NY, USA, 1–15. https://doi.org/10.1145/3290605.3300879
- [5] Shulang Fei, Jia Ni, and Guido Santini. 2020. Local food systems and COVID-19: an insight from China. *Resources, Conservation and Recycling* 162 (2020), 105022. https://doi.org/10.1016/j.resconrec.2020.105022
- [6] Eva Ganglbauer, Geraldine Fitzpatrick, and Rob Comber. 2013. Negotiating Food Waste: Using a Practice Lens to Inform Design. ACM Trans. Comput.-Hum. Interact. 20, 2, Article 11 (May 2013), 25 pages. https://doi.org/10.1145/2463579.2463582
- [7] The NPD Group. 2019. While Restaurant Delivery Gets All The Buzz, Digital Orders Overall Grow by Double-Digits. The NPD Group. Retrieved September 20, 2020 from https://www.npd.com/wps/portal/npd/us/news/press-releases/2019/whilerestaurant-delivery-gets-all-the-buzz-digital-orders-overall-grow-by-doubledigits/
- [8] Meituan Research Institution and China Hospitality Association. 2020. https://about.meituan.com/news/institute
- [9] Azusa Kadomura, Cheng-Yuan Li, Koji Tsukada, Hao-Hua Chu, and Itiro Siio. 2014. Persuasive Technology to Improve Eating Behavior Using a Sensor-Embedded Fork. In Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing (Seattle, Washington) (UbiComp '14). Association for

MobileHCI '21 Adjunct, September 27-October 1, 2021, Toulouse & Virtual, France

Xiaotong Du and Sunyoung Kim

Computing Machinery, New York, NY, USA, 319–329. https://doi.org/10.1145/2632048.2632093

- [10] Martin Kenney and John Zysman. 2020. COVID-19 and the Increasing Centrality and Power of Platforms in China, the USA, and Beyond. https://doi.org/10.2139/ ssrn.3636509
- [11] Tri Khai Lam, Jon Heales, Nicole Hartley, and Chris Hodkinson. 2020. Consumer Trust in Food Safety Requires Information Transparency. Australasian Journal of Information Systems 24 (May 2020). https://doi.org/10.3127/ajis.v24i0.2219
- [12] Clayton Lewis. 1982. Using the" thinking-aloud" method in cognitive interface design. IBM TJ Watson Research Center, Yorktown Heights, NY.
- [13] Charlene Li, Miranda Mirosa, and Phil Bremer. 2020. Review of Online Food Delivery Platforms and their Impacts on Sustainability. *Sustainability* 12, 14 (2020). https://doi.org/10.3390/su12145528
- [14] Katharina Lobinger and Cornelia Brantner. 2020. Picture-sorting techniques: Card sorting and Q-sort as alternative and complementary approaches in visual social research. In *The sage handbook of visual research methods*, Luc Pauwels and Dawn Mannay (Eds.). SAGE Publications, Inc, 55 City Road, London, Chapter 19, 309–321.
- [15] James MacGregor and Bill Vorley. 2006. Fair Miles? The concept of 'food miles' through a sustainable development lens.
- [16] Meena Devii Muralikumar and Bonnie Nardi. 2018. Addressing Limits through Tracking Food. In Proceedings of the 2018 Workshop on Computing within Limits

(Toronto, Ontario, Canada) (*LIMITS '18*). Association for Computing Machinery, New York, NY, USA, Article 3, 9 pages. https://doi.org/10.1145/3232617.3232620

- [17] Aleksandra Niemyjska, Katarzyna Cantarero, Katarzyna Byrka, and Michał Bilewicz. 2018. Too humanlike to increase my appetite: Disposition to anthropomorphize animals relates to decreased meat consumption through empathic concern. Appetite 127 (2018), 21–27. https://doi.org/10.1016/j.appet.2018.04.012
- [18] Juliet Norton, Ankita Raturi, Bonnie Nardi, Sebastian Prost, Samantha McDonald, Daniel Pargman, Oliver Bates, Maria Normark, Bill Tomlinson, Nico Herbig, and Lynn Dombrowski. 2017. A Grand Challenge for HCI: Food + Sustainability. *Interactions* 24, 6 (Oct. 2017), 50–55. https://doi.org/10.1145/3137095
- [19] Henk Renting, Markus Schermer, and Adanella Rossi. 2012. Building Food Democracy: Exploring Civic Food Networks and Newly Emerging Forms of Food Citizenship. International Journal of Sociology of Agriculture and Food 19 (01 2012), 289 – 307.
- [20] Raymond Scupin. 1997. The KJ method: A technique for analyzing data derived from Japanese ethnology. *Human organization* 56, 2 (1997), 233–237.
- [21] Statista. 2020. Platform-to-Consumer Delivery. Retrieved September 1, 2020 from https://www.statista.com/outlook/376/117/platform-to-consumer-delivery/ china/
- [22] Dawn Thilmany, Becca Jablonski, Sarah Low, Debra Tropp, and Blake Angelo. 2020. COVID-19 Economic Impact on Local Food Markets. https://sustainableagriculture.net/blog/covid-economic-impact-local-food/