INFORMAL RECYCLERS' LIVELIHOODS, THE ROLE OF PLACE AND WASTE GOVERNANCE AT CAMPUS FOOTBALL TAILGATES IN MICHIGAN

By

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ABSTRACT

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Low-income people worldwide engage in informal or unregulated livelihood activities, but these activities have remained understudied and often misunderstood, especially in the global North cities. Michigan's 10-cent deposit law for the return of beverage containers has led to recycling as a means of earning income, especially at campus football tailgates. Little is known about the livelihood opportunities that campus football tailgates create. To our knowledge, no prior studies have examined the factors that facilitate or constrain canners' activities when collecting aluminum cans and bottles at campus football tailgates. In addition, only a few studies document how place-based contexts influence informal recyclers to (un)successfully engage in their livelihood activity. Lastly, no study has looked specifically at how campus officials effectively govern the waste management system at football tailgates while co-existing productively, specifically with tailgaters and people who earn their income from collecting cans at these events.

In this dissertation based on qualitative research, I present three essays related to informal recycling livelihoods, the role of a place-based context, and waste governance at campus football tailgates in the United States. Maximum variation (heterogeneity) sampling, a purposeful sampling method, was used to recruit participants from different races, genders, age groups, and years of experience in either tailgating or collecting cans for income. All three essays used direct observation and semi-structured interviews.

The first essay explores the assets that informal recyclers bring to construct their livelihoods and examines the constraints and opportunities that they encounter, using the lens of a modified sustainable livelihood framework. The findings indicate that differences in capital assets such as social

networks, physical strength, skills, and access to equipment led to differences in canners' ability to earn an income from collecting cans and bottles. Other significant sources of motivation include contributing to environmental stewardship and recognition for doing so. The study recommends that policy makers support capital assets that enable informal recycling activities and reduce barriers that constrain successful engagement with the livelihood activity.

Using the Institutional Analysis Design Framework, the second essay analyzes the roles and relationships among different actors in governing waste at campus football tailgates. It examines the formal and informal rules practiced and how they shape waste governance at on-campus football tailgates and with what outcomes. There is lack of communication between university officials resulting in missed opportunities for improving waste governance.

The last essay examines how place-based contexts influence informal recyclers to collect recyclables for income at football tailgates and not in other places. The explores how football tailgates are places that enable canners to engage in their livelihood activity more than other place-based contexts. Canners are self-conscious of the stereotyping, stigma, and discrimination associated with their social identities. The findings offer insights into how a place-based context supports collecting cans for income and recognizes the environmental value of canners compared to other places. Nonetheless, tailgaters recognize the environmental value of canners at football tailgates more than they would at other places. The study contributes to literature on informal recyclers from a global North context and recommends that opening lines of communication among the actors would legitimize the role of canners in campus sustainability and in other environments.

Dedicated to my aunt Margaret Chawafambira-Nyatsanza who unexpectedly passed on three days after my arrival in East Lansing.
To my parents who have always believed in me

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CHAPTER 1: Introduction

Informal or unregulated livelihood activities have remained understudied and are often misunderstood, especially in cities of the global North (Mukhija and Loukaitou-Sideris, 2015). Although scavenging and informal recycling activities have been perceived as recent activities, these activities have existed since colonial America as an adaptive strategy to scarcity (Medina, 2001). Despite ecological modernization of waste management systems in the global North, informal recyclers who earn an income from collecting cans and bottles have remained significant in the waste resource recovery value chains in developed countries. Low-income individuals who collect aluminum cans for income in North America are known as canners, informal recyclers, binners, or professional recyclers. In this dissertation, canners and informal recyclers will be used interchangeably. Unlike in the global South, where informal livelihood activities such as informal recycling fill a vacuum left by local municipalities that lack an efficient waste management system, the case is different in the global North.

For instance, the deposit refund program for returns of beverage containers in some parts of North America has led to informal recycling activities as one source of income for the urban poor (Ashenmiller, 2009; Porter, 2015). Considerable research attention in Canada has been directed towards understanding issues such as the influence of gentrification on informal recyclers (Parizeau, 2017), perceptions and experiences of informal recyclers' everyday life in (Wittmer & Parizeau, 2016), how the recyclers perceive stigma (Gutberlet & Jayme, 2010) and how "binning" is an important survival strategy to generate income (Gutberlet et al., 2009). These studies have demonstrated some similarities and differences between the livelihood experiences of informal recyclers in Canada and those in the global South.

Whereas in the US, the role of canners in the circular economy, especially in New York, is mainly prominent in grey literature such as online media platforms (Watt, 2019; Newman, 2019). A few research studies have primarily focused on homelessness and how informal recyclers have contributed to increased recycling rates in California (Ashenmiller, 2009; Gowan, 2009; Esmail, 2016). Recent literature has highlighted the environmental health concerns among canners in New York Bose et al., 2018) and explored the significance of informal recyclers and how local authorities perceive them in metropolitan Atlanta (Shreeves, 2020). But the role and impact of informal recyclers in other contexts such as campus football tailgates remain misunderstood and how informal recyclers influence waste governance.

Campus football tailgates are a social event in the US that involves the open consumption of alcoholic beverages and food before and during a football game, generating a great deal of waste. Michigan has a 10-cent bottle deposit, one of the highest in the United States, which has created an opportunity for people to supplement or earn an income by collecting empty cans and bottles and returning them for the deposit, especially at football tailgates.

Relatively little is understood about canners who collect cans and bottles at campus football tailgates. Firstly, to date, no study has explicitly looked at canners' experiences and the factors that facilitate or constrain them to engage in collecting aluminum cans and bottles at football tailgates. Although some studies suggest that informal recyclers' stigma and discrimination are produced in specific spaces over time (Peres, 2016; Gutberlet & Jayme, 2010), little is known about how place-based contexts such as football tailgates influence informal recyclers to engage in their livelihood activity (un)successfully.

Furthermore, literature from the global South indicates a hybrid interaction of formal and informal rules between informal recyclers and local authorities in waste governance (Guibrunet, 2019; Jiménez-Martínez, 2018). However, no study has looked specifically at how campus officials effectively govern the waste management system at football tailgates while co-existing productively with tailgaters and people who earn their income from these events. Yet, the informal recyclers contribute to the circular economy even on campus as they recover valuable materials that could otherwise be disposed of at the landfill and reduce costs related to waste management at campus football tailgates and in other contexts. This dissertation aims to fill some of these knowledge gaps by tackling these three issues.

Hence, this dissertation is presented into three chapters, comprising three distinct yet interrelated studies. Accordingly, some sections of the methods section appear repetitive across the three chapters. The dissertation begins with an overview introduction. I then present the overall research methodology used for this dissertation. Each empirical chapter has its introduction, conceptual framework, methods, results, discussion, and conclusion sections. Each chapter of the dissertation has a reference section as well. An appendix is provided at the end of the three chapters to show additional information on the data collection instruments and data analysis. Following the methods chapter, the dissertation is structured as follows.

The first essay is "A qualitative inquiry into collecting recyclable cans and bottles as a livelihood activity at football tailgates." This essay explores the livelihood activity of people who collect cans and bottles as a source of income at football tailgates and examines the constraints and opportunities they encounter. The essay investigates the research question: *What are the motivational factors and outcomes of collecting aluminum cans and bottles at football tailgates and the opportunities and constraints that influence their livelihood activities?* This chapter builds on a modified sustainable livelihoods approach framework to

understand factors that create opportunities or constraints that influence collecting cans and bottles for income at football tailgates. This essay's results indicate that capital assets such as physical strength, skills, and social networks enable canners to engage in their livelihood activity. Other significant sources of motivation include contributing to environmental stewardship and recognition for doing so. The study recommends that policymakers support capital assets that enable informal recycling activities and reduce barriers that constrain successful engagement with the livelihood activity.

The second essay is "Waste governance at campus football tailgates in Michigan: An application of the modified Institutional Analysis and Development (IAD) framework". The essay examines the role of formal and informal rules and how they shape waste governance at on-campus football tailgates. This essay explores the institutional arrangements that shape the performance of the waste management system at football tailgates and how these have changed over time. The study investigated the questions: *What are the roles of tailgaters, canners, and campus officials in governing waste at football tailgates, and what are the relationships among these groups? What institutional arrangements shape the performance of the waste management system at football tailgates, and how have these changed over time, and with what outcomes*. This essay uses Ostrom's modified Institutional Analysis and Development (IAD) framework to explore the role of formal and informal rules and how they shape waste governance at on-campus football tailgates. The findings indicate that there is no communication between university officials and canners hence their relationship is not smooth. Improved communication between the actors will improve how wase is managed at football tailgates.

The third essay is, "The role of place, social identities, and social capital: Exploring informal recyclers' livelihoods in Lansing, Michigan." This study explores the research question: *What is the role of the place-based context of tailgating events that supports collecting cans for income that would be uncommon outside of tailgating*

events? This essay examines how place-based contexts influence informal recyclers to collect recyclables for income at football tailgates and not in other places. This study's findings indicate that collecting cans and bottles for income is more socially acceptable in some places because of the friendly and welcoming environment at football tailgates than in other places. The stigma associated with canning activities makes it difficult for canners to collect cans in other places. This study offers insights on how places such as football tailgates enable canners to engage in their activities, unlike in other place-based contexts.

REFERENCES

REFERENCES

Ashenmiller, B. (2009). Cash recycling, waste disposal costs, and the incomes of the working poor: Evidence from California. Land Economics, 85(3), 539–551.

Berardi, F. (2021, March 3). https://canners.nyc/about/

Bose, M., Knapp, C., Winchester, M. S., Besada, A., & Browning, A. (2018). Project Redemption: Conducting Research with Informal Workers in New York City. In Global Health Collaboration (pp. 65-73). Springer, Cham.

Esmail, Y. (2016). "Geographies of recyclers in the San Fernando Valley." Thesis, California State University, Northridge.

Gowan, T. (2009). New hobos or neo-romantic fantasy? Urban ethnography beyond the neoliberal disconnects. Qualitative Sociology, 32(3), 231–257.

Guibrunet, L. (2019). What is "informal" in informal waste management? Insights from the case of waste collection in the Tepito neighborhood, Mexico City. Waste Management, 86, 13–22.

Gutberlet, J., & Jayme, B. de O. (2010). The story of my face: How environmental stewards perceive stigmatization (Re)produced by discourse. Sustainability, 2(11), 3339–3353.

Gutberlet, J., Tremblay, C., Taylor, E., & Divakarannair, N. (2009). Who are our informal recyclers? An inquiry to uncover crisis and potential in Victoria, Canada. Local Environment, 14(8), 733–747.

Jiménez-Martínez, N. M. (2018). The governance of waste: formal and informal rules in the central region of Mexico. Regional Studies, Regional Science, 5(1), 353-360.

Medina, M. (2001). Scavenging in America: Back to the future? Resources, Conservation and Recycling, 31(3), 229–240.

Mukhija, V., & Loukaitou-Sideris, A. (2015). Reading the informal city: Why and how to deepen planners' understanding of informality. Journal of Planning Education and Research, 35(4), 444-454.

Parizeau, K. (2017). Witnessing urban change: Insights from informal recyclers in Vancouver, BC. Urban Studies, 54(8), 1921–1937.

Porter, M. E. (2015). Marginal recycling: Place and informal recycling in St. John's, Newfoundland. Local Environment, 20(2), 149–164.

Shreeves, A. D., (2020). "The Significance of the Informal Waste Sector in A Minority World Country: A Case-Study of Metropolitan Atlanta." Thesis, Georgia State University.

Watt, C. (2019, March 1). New York's canners: the people who survive off a city's discarded cans. The Guardian. https://www.theguardian.com.

Wittmer, J., & Parizeau, K. (2016). Informal recyclers' geographies of surviving neoliberal urbanism in Vancouver, BC. Applied Geography, 66

CHAPTER 2: Research Methodology

This study is based on the constructivism paradigm to investigate and understand the experiences of people who collect cans and bottles during football tailgates. Researchers using this paradigm focus on understanding and reconstructing meanings that people and the researcher give about the phenomenon under study (Lincoln S. & Guba G, 1985). Hence, it becomes important to explore the lived experiences of people who collect cans and bottles and the factors that they perceive as opportunities or constraints in their livelihood activity.

Geographic setting

The study was conducted during the football tailgates at Michigan State University in the 2019 season. Football tailgates are an American cultural event where football fans party before and during the football game and can drink alcoholic beverages publicly, which is not common in the US. These football tailgates generate a lot of discarded empty cans and bottles. These tailgates create an opportunity to earn income for the local vulnerable populations by collecting returnable cans and bottles for the 10-cent deposit. Tailgating is permitted in all open spaces on the university campus from 5 hours before the game until shortly after the game ends. There are different tailgating zones across MSU's large campus and people who collect cans and bottles are found in all the tailgating zones. As one moves away from the football stadium, the tailgating spaces are less densely populated.

Overview of the study design

This study used a qualitative approach to examine the factors that facilitate or hinder the activities of people who collect cans and bottles at tailgates as a source of income at Michigan State University. This was an appropriate approach for this study because it allows researchers to understand how

people interpret their experiences and how they construct their worlds and meanings attributed to their experiences (Merriam & Tisdell, 2015).

In addition, qualitative research enables observation of social processes and human behavior in their natural setting without the researcher interfering or manipulating the setting (Patton, 2015) . Carrying out research in its natural setting allows the researcher to observe first-hand experiences and hear how participants interpret their experiences (Bernard, 2017; Rubin & Rubin, 2012). In addition, an emergent process allows the research questions and the conceptual framework to evolve as the research process emerges (Maxwell, 2012). Specifically, ethnography gives the researcher the flexibility to consider new concepts and explanations that emerge from the research process. This flexibility is important because it results in the refinement of the conceptual framework during the research process and may provide results that are more relevant for policy applications.

Sample selection and recruitment

This study allowed the researcher an opportunity to explore the lived experience of people who collect cans and bottles as a source of income and the governance of waste at football tailgates. I used purposeful sampling to select only those who could offer insight into the experience of collecting cans for income purposes (Creswell, 2012). People who collect cans for fundraising purposes were not included in the sample. I interviewed canners face to face whereas tailgaters and campus officials were interviewed online and over the phone respectively due to covid 19 restrictions.

The first phase of data collection began with interviewing canners at football tailgates. In particular, I used maximum variation (heterogeneity) sampling (Patton, 2015), in an effort to recruit canners from different races, gender and age group. My sample for the canners included 28 individuals

purposefully drawn from a diverse demographic background to avoid a demographically homogeneous sample. The inclusion criteria for the canners were that they must at least be over 18 years of age and they should collect cans and bottles at MSU's football games. Towards the end of the study, to increase the number of people in the sample with substantial experience in collecting recyclables during tailgating, an additional inclusion criterion was added that participants must have at least five years of experience. This helped to get a rich and more detailed information about the canners' livelihood experiences.

The canners were recruited using a recruitment flyer. Those interested in participating in the study were requested to contact the researcher to schedule an interview. The participants were compensated $30 for taking part in the study. My academic advisor, one member of my dissertation committee and five other graduate students helped with the sample selection and recruitment. During the first football game on August the 30th, I assigned each member of the research team to specific tailgating zones that they could observe the following: (i) the specific locations where they saw people collecting cans in their zone, (ii) descriptive characteristics of people collecting cans, and (iii) description of can collectors' systems of collecting cans and bottles. Fifty-eight possible participants were observed in the first observation. The first observation informed the sample selection and recruitment strategies that followed in the next six home football games.

The second phase of data collection was carried out during the Covid 19 pandemic either over the phone or through Zoom a virtual platform. I interviewed tailgaters, campus officials and had follow up interviews with canners. Due to covid 19 restrictions, there were no football tailgates which made it difficult to recruit tailgaters. Hence, tailgaters were recruited using an online participant recruitment platform. I administered a screening survey to confer suitability for inclusion in the study based on

the frequency of football tailgate attendance. Semi-structured interviews (n=9) with tailgaters were conducted through the phone and zoom video calling.

Participants for follow up interviews were selected based on the unanticipated themes and missing information (Rubin and Rubin, 2012) that emerged in their responses in the first interview. The follow-up interviews gave deeper insights on aspects that emerged. Such interviews give the researcher an opportunity to seek for clarification and get more nuanced data and enhance validity on data collected in the first interview. The most experienced canners were selected purposefully for the follow up interviews.

Lastly, three campus officials with different roles in two departments were selected to participate in the study. The selection of these officials was based on the recommendation from a senior official after an informal interview.

The study protocol was approved by Michigan State University's Institutional Review Board (IRB# 00002994). The primary researcher obtained verbal informed consent from the participants after explaining the purpose of the study. Table 1 represent the demographic characteristics of the sampling frame.

TABLE 1: PARTICIPANT SAMPLING FRAME OF CANNERS

Characteristics	Recruited on the Sept 28th	Final Sample for study
Gender		
Male	50	17
Female	14	11
Race		
African American	27	17
Caucasian	31	11
Other	6	0

On September the 28th, four members of the research team helped to recruit participants to maximize recruitment. During the participant recruitment exercise, sixty-four participants received recruitment flyers, and some declined to participate at the time of recruitment. Eventually, there were no participants in the sample from a higher social income who responded to the recruitment flyer to participate in an interview.

Table 2 provides the biographical data of canners who participated in the interviews. Most of the participants who were interviewed identified as male and most were African Americans. The 28 participants were aged between 22 years to 65 years, and they earned between $20-$200 at any football game. During the study it was observed that there are people who collect returnables, firstly to earn an income. Secondly some people collect bottles and cans for fundraising purposes and only one person such person was included in the sample size. I included some of this person's experience in the data analysis that answered the research questions.

TABLE 2: PROFILES OF PEOPLE WHO COLLECT CANS AND BOTTLES N = 28

Category	Profiles of canners interviewed
Gender	Males :17 Females: 11
Race	African American: 17 Caucasian: 11
Age	Mean age: 43 Mode age: 51 Range: 22-65 years
Years collecting cans	Mean: 7 years Min-Max years: less than 1 year - 20 years

Data collection methods

Approval from the Institutional Review Board was obtained prior to recruitment of participants and data collection. Data collection and analysis occurred simultaneously throughout the study but, I will describe each of these processes separately. The use of qualitative methods is an iterative process that merges the processes of data collection and data analysis during the research process to generate theories (Chung, 2000; Miles, Huberman, & Saldaña, 2014). Direct observation and semi-structured interviews are the primary qualitative methods of data collection used for this study.

Direct observation

Observational data is used to describe in depth and in detail the physical environment under study, the activities taking place and the characteristics of participants (Patton, 2015). The first observation involved a team of seven people as complete observers which allowed us to observe the study site without interfering with the canners' activity. This method of observation minimizes the bias that may results from the presence of the researcher (Hesse-Biber & Leavy, 2017). This observation was meant to familiarize the researcher with the setting of football tailgates and to identify the characteristics of people who collect cans. In addition, the team observed how these canners engage in their activities. I developed a template that was used by all team members to collect the same

observational data on the first game day. This first observation informed the recruitment process of participants of the study. Furthermore, I continued with direct observations on every game day to get a detailed description of how people who collect cans and bottles engaged in their activities and how they interacted with different stakeholders. I focused on popular common tailgating spaces that are popular with canners.

Semi-structured interviews

Qualitative semi-structured interviews were the primary method of data collection for this study. This method was appropriate for an exploratory study as I wanted to understand canning form the perspective of the canners. This is mainly because qualitative interviews result in "thick descriptions" (Rubin & Rubin, 2012) or result in "rich description and explanation of processes occurring in local contexts" (Miles & Huberman, 1984). In addition, qualitative interviews can be modified to match the knowledge, experience, or comfort level of the participant unlike survey methods (Rubin & Rubin, 2012). The interview questions for this study were designed to probe further to get honest and authentic responses rather than lead the participants' responses.

I used a semi-structured interview protocol (Appendix A) that clearly outlined issues to be explored. Such type of interviews use open ended questions to allow the researcher to probe for detail and ensure all relevant topics are covered (Patton, 2015). The protocol also allowed me to explore similar questions among all the participants. The in-depth interview with canners explored issues on motivational factors, factors that facilitate or hinder canners to engage in canning livelihood activities and their overall experience of collecting cans and bottles at football tailgates.

In the first phase of the data collection all interviews of canners were in person in a private study room at one of the local public libraries and a few interviews were conducted on campus. These in-person interviews took approximately 45-60 minutes. I carried out in-depth interviews during the football season of 2019 from September to November.

The second phase of semi-structured interviews were online interviews with tailgaters, campus officials and follow-up interviews with tailgaters. Interviews with tailgaters were to elicit for their experience with canners at campus football tailgates and in other places off campus. The campus officials were interviewed to get their perspectives on the impact of canners on the overall waste management system and how the waste system has evolved over time. The follow up interviews with canners focused on their experiences of collecting cans in other places and how it compared with the experience at football tailgates.

To begin the interview, participants were informed about the purpose of the study, data collection procedure, their right to participate or withdraw and data protection and confidentiality. To protect the identities of participants, a signature was not required on the consent form. Therefore, participants verbally declared their consent to participate in the study.

I audio recorded the interview and also took field notes. Within 24 hours after the interview, the audio recordings were transcribed using an online transcription software Otter.ai. I manually verified the accuracy of the transcription and made edits before exporting transcripts as Microsoft Word documents into a qualitative analysis software MAXQDA2020. When I reached data saturation, I stopped the data collection process.

Data Analysis

Thematic analysis is a data analysis method used to identify, analyze and report themes that emerged from the qualitative data (Braun & Clarke, 2006). This approach was appropriate for the study because it allowed the researcher to analyze the first transcripts and consequently modify subsequent data collection (Rubin & Rubin, 2012). In addition, thematic analysis involves the critical review of responses to determine appropriate coding and the formation of themes from those codes. Throughout the analysis I processed the data with a focus on answering the research questions which is a requirement with thematic analysis (Willig, 2013). Data analysis for this study was guided by six phases of thematic analysis (Braun & Clarke, 2006). The following phases will be discussed in detail on how they were used in the study i.e. familiarization with the data, generation of codes, generation of initial themes, review of themes and the write up phase.

The first phase of thematic analysis involves familiarization of the data and this involves the researcher being immersed with the data collected. This phase occurred on a continuum from the data collection throughout data analysis. I re-read all the transcripts as the data collection process evolved and checked for accuracy of transcripts with the original audio recordings. I created a contact summary form (Miles, Huberman, & Saldana, 2014) also known as memos (Rubin & Rubin, 2012) as another way of familiarizing myself with the data as in Appendix B. A contact summary form/memo is a written summary of key concepts, themes or issues that arose during the interview and reflects on each data collection process. The use of a contact summary forms is important in qualitative research because it allows the researcher to be familiar with the data collected, helps to plan the next interview, to revise existing codes and to further their data analysis ((Miles, Huberman, & Saldana, 2014). The contact summary form for this study focused on the main issues or themes that really

stuck out from the interview, an overview of emerging information relevant to the research question, and issues that needed follow up.

The second phase involves generating codes that are relevant in answering the research question. I developed a preliminary codebook using the modified conceptual framework for the study. The codebook had a list of coding rules that included the code name, definition of the code, rules when the code can be applied, rules when the code cannot be applied, and an example of data coded as detailed in Table 3 in the appendices. The transcripts were coded using concept coding and simultaneous coding where applicable (Saldaña, 2016). Concept coding is assigning a code to a large unit of data, while simultaneous coding is when data suggests multiple meanings and is assigned more than one code. The process of coding and organizing data is an iterative process of identifying themes, patterns and categories across the data sets (Miles, Huberman, & Saldaña, 2014) . After coding the first three transcripts, the research questions, conceptual framework, and interview guide were further refined. As I coded, I moved between the contact summary form and the full interview transcripts to ensure that I did not miss any important reflections.

Generating initial themes is the third phase of thematic analysis. This phase involved examining and organizing codes into broader patterns or identified themes. A theme-based overview grid/matrix was used to display my data set for appropriate analysis and interpretation. The use of theme based grid allows the researcher to reduce the data so as to focus on the coded data sets for specific themes and participants (Miles, Huberman, & Saldana, 2014). In addition, the grid provides a systematic way of analyzing data which helps the researcher to remain grounded in the data collected (Knodel 1993). I used MAXQDA's Compare Cases & Groups function which allowed me to compare coded qualitative data from the transcripts. This resulted in a collection of themes, and sub-themes data

extracted and summaries for each of them as in Table 4 in the appendices. The rows indicated the theme or sub-theme, and the columns were each participant's coded data.

The fourth phase is when the researcher reviews and refines themes. This phase involves a detailed analysis of each theme to provide an understanding of the "big picture" (Braun & Clarke, 2006). During the phase, I reviewed some themes and later-on merged some themes into broader themes. For instance, initially mutual relationship was identified as a sub theme which was revised and combined with social networks. This helped to tell a richer and more detailed story about different relationships canners have.

Defining and naming themes is the fifth phase in thematic analysis. This phase of analysis involved a more detailed analysis of the themes and how they related to the research questions. In addition, themes and sub-themes are further refined to give structure to themes and demonstrate the organization of meaning within the data (Braun & Clarke, 2006). For instance, during the analysis, two themes were once named livelihood outcomes and vulnerability context. But these were later refined to align with the assigned sub themes to outcomes and external shocks respectively.

Lastly, is the write up phase. This phase tells a story of the data analysis with enough evidence in a "concise, coherent and non-repetitive and interesting manner." In the write up, I use quantifiers like "a few", "some" and "most", to give the reader a sense of the overall experiences of the participants. The use of numbers helps researchers to be analytically honest and protect against biases (Miles, Huberman, & Saldana, 2014). These authors argue that the use of quantifiers in qualitative research is not to generalize results but, to provide detailed information on whether themes appeared to be common or atypical in the study.

APPENDICES

APPENDIX A: Can collector's interview guide protocol

Interviewee ID number…….

Interview guide for people who collect bottles and cans

Thank you so much for giving me the opportunity to interview you. The purpose of this interview is to understand your experience on how you interact with MSU officials, tailgaters, student voluntary groups and others during collection of bottles and cans at tailgating. This study is important as it helps to give an in-depth understanding on the role of these people in the overall waste management system at MSU tailgates and how you can fit in the system. In addition, this interview is meant to meet research requirements for a degree program. Therefore, I request your consent (*share the contents of the informed consent form*). I would like to record information in both audio and writing if that's fine with you.

Demographic characteristics

Age…… Race……Gender……

Frequency of collecting per season…….

How many years have you been doing this?.....

Do you also collect outside football tailgates?...

MOTIVATIONS AND EXPERIENCES

- **What made you decide to collect cans and bottles at football game tailgates?**
  - *What do you mean when you say….? (motivation behind)*
  - *How important is this income? (question was added later)*
  - *Do you have any other occupation?*
  - *What was your occupation before canning?*
- **Do you collect either cans or bottles or you collect both? Why ?**

- *Has it always been like that?*

- **Tell me about the first-time experience when you started collecting bottles and cans at tailgates?**

- *When was that?*

- *Any good/bad experiences…For example, ….*

- *Are now people treating you better or worse? Give an example…*

- **How is it like now?**

- *How are your previous experiences similar/different? (this depends on the participant's response above)*

- *Any good/bad experiences…For example, ….*

- *Are people treating you better or worse?*

- **What is your attitude towards the:**

1. *MSU workers i.e people who clean up, police, parking officials etc.*
2. *Tailgaters.*

- *Give an example…*

- *Has it always been like that?*

- **How do tailgaters perceive you?**

- *Has it always been like that? What has changed?*

- *How does that make you feel?*

- *Give an example…*

- **Do you ever interact with OTHER people who collect bottles and cans?**

- *Why and Why not? Tell me more about it ….*

- *What kind of interactions do you have with people who collect cans?*

<u>COLLECTION PROCESSES</u>

- **Describe the specific characteristics of places that you usually collect cans from during tailgates?**
  - *Why did you choose those spots?*
  - *Why is it you don't go to other spots?*
  - *How do you decide which zone you go to?*
- ***Do other can collectors have a particular zone that they go to every game day?***
  - *How do you feel when someone comes to your zone?*
  - *What if you go to a different zone is that a problem?*
  - *Are other can collectors okay with it?*
  - *Do can collectors ever get tense to each other?*
- ***What's your system for collecting cans?***
  - *What's your plan on collecting cans and bottles on a typical gameday?*
  - *How do you collect cans and bottles at tailgates?*
  - *Why do you choose the way you carry your cans? Why chose to collect cans/bottles?*
  - *What do you mean?*
  - *Where do you get the things you use? (gloves, trash bags, trolleys etc.)*
  - *Give me an example…*
- ***In your system of collecting cans is there anything that is slowing down or anything that you would want it to be more effective?***
  - *(challenges related to the system and how they relate with stakeholders-probe for this)*

ORGANIZATION OF SYSTEM

- **Looking at how MSU manages waste, have they changed or they are still doing the same thing to manage waste?**
  - *What's different? When was that?*

- *What's still the same? When was that?*
- *Is the system more/less organized now?*

- **Do you think your particular situation influence how you are treated compared to other can collectors?**
  - *anything that's specific to you that make you treated in a certain way?(e.g gender, race, age)*
  - *What do you mean, they're nice what do you mean do they offer food, are people helpful to you?) ? has it always been like this?*
  - *do you think all the people who collect cans are treated the same way?*
  - *Has it always been like that or it has changed*
- **How do you feel you have a role in keeping MSU campus clean? (attitudes)**
  - *Give me an example*
  - *Does this happen all the time? When, where, how. Did it happen frequently back then? Does this happen a lot?*
  - *Why does this make you feel that way? (Is there something attractive besides the money? is it enjoyable?)*
  - *Give an example…*
- **Do you think there is anything that MSU officials can do to make your work easier?**
- ***Do you think there is anything that you can do to make their work to manage the campus clean easier?***

Is there anything you want to add ? ***THANK YOU***

APPENDIX B: Memo Example

Memo #10

Interviewee: #10

Location: Downtown Library

Date Interview: October 1, 2019

Date Transcribed: October 1, 2019

Date Memo: October 1, 2019

Transcript and Audiofile Filename: Can collector #10

1.What were main issues or themes that really stuck out from this data collection?

- This is a unique participant with a totally different experiences and way of collecting cans
- College student, has a Jeep as a car and expensive bike which makes his activity much easier than others. He is highly mobile. Having 2 different modes of transportation besides his legs makes things easy for him than other can collectors.
- he is environmental conscious
- He is young and not comfortable to go around college students' tailgates-they will look down upon him...so he tends to select collection spaces depending mainly on the age of tailgaters, number of tents (how different is this to other types of tailgaters)
- As tailgaters become more intoxicated, they are more acknowledging than when tailgate begins-as tailgaters hey get more intoxicated, they get more friendly-so he tends to target these. This makes me think to look at the power dynamics created by tailgates spaces and how these influence how can collectors access cans and bottles
- He isn't comfortable with collecting cans as he feels it's a bum to do so and he feels tailgaters need their spaces as he has been on the other side of the fence.

- He knows his "**hot spots**" where he easily gets cans with minimum effort.
- Mentions different ways of collecting cans, some leave their carts close to trash cans and people throw cans into the carts. Whilst he crawls under trees and digs into the trash to access cans/bottles. So, can collectors do it differently.
- He has a vehicle so it's easier for him to cash cans at different locations especially where there are long queues.
- MSU tailgates are not sectioned off as it was at Western Michigan, here it is mixed- **2. Overview of emerging info relevant to RQs**

RQ 1 Motivation

- Different motivations besides the money, it's a side hustle but gets an opportunity to exercise as well
- Positive interactions with tailgaters offered cookies

RQ 2 Experiences

- Prefers to collect later in the tailgates as people are more drunk and more welcoming
- Challenges with redeeming cans at Meijer Lake Lansing where the queues are sometimes long, and he goes to Meijer Lansing

RQ 3 Relationships

- He never gets time to interact with other can collectors
- Interacts with tailgaters but mostly later when they are more intoxicated and more relaxed

RQ 4 System organized

- MSU is trying its best but the greatest challenge is that there aren't enough trash cans around some "hot spots".
- There are certain spaces not popular with tailgaters but have trash barrels that are underutilized e.g. behind Natural Resources

- University can give a trash bag specifically for 10cents returnable to tailgaters to avoid mix up of trash as already some separate 10 cents returnable. He wasn't not sure how such system may work where there are many tailgaters.

3. What needs to be followed up?

- I should have asked about what the impact of mixed tailgates is on collecting cans

Reflection

- I may need to make observation on how recyclable bins are placed around campus
- ****In my data analysis and presentation, I need to think about how to protect the identity of the participants as he is a student.

Memo #13

Interviewee: #13

Location: Lansing Downtown Library

Date Interview: October 7, 2019

Date Transcribed: October 7/8, 2019

Date Memo: October 7, 2019

Transcript and Audiofile Filename: Can collector #13

1.What were main issues or themes that really stuck out from this data collection?

- She does it for fundraising for a basketball team with other parents, she is the coach.
- They make an average of $1000 per home game and she makes $300-400 , her family is also supportive .
- They also have a meeting spot where 1 member looks over the cans and members can stop by for a drink, grill etc. … they will be partly tailgating as well.

- Her husband collects cans until 5:00 am the next morning after a home game, there are too many cans out there
- So, they come a every home game and sometimes travel to UM when MSU is playing
- She refers herself as a "regular" can collector and she goes to populated areas, and hers it's the student section
- There are drastic changes e.g before and after tailgating hours have been reduced
- People tend to **stereotype** people who collect cans at tailgates once they get to know what she does, their disposition changes
- There are subtle racism experiences e.g when she is told that they are not giving the bag of cans, but the bag is later given to a white can collector
- Student section is her territory and regular can collectors like her have territories. Sometimes she tells new can collectors that they have to find elsewhere to collect cans.
- Can collectors argue for cans, there are "unspoken rules" - the regulars are always respected but the new can collectors don't understand
- Some regulars have even stopped coming because of the new can collectors
- The parents have trucks and vans that they use but one parent hires a U-Haul to transport cans

2.Overview of emerging info relevant to RQs

RQ 1 Motivation

- To raise money for basketball activities e.g travelling expenses (this was a unique interview as she does it for fundraising purposes unlike other canners)

RQ 2 Experiences

- Generally, all her experiences have been okay

- Has had negative experiences of racism and stigmatization, being looked down upon, stereotyped as homeless
- she enjoys herself as she collects cans -always picks up those piled on the ground and asks for those cans in the vicinity of tailgaters
- She uses an industrial cart to collect bottles and cans, some of the parents bike and collect cans only.
- Some can collectors steal unattended cans collected by other collectors
- Sometimes it can take 7- 8 hours to cash in cans because they always have a lot.

RQ 3 Relationships

- Can collectors get tense towards each other regulars vs new collectors. The regulars know how to behave towards each other.
- She feels she cleans up the university and work as well-strictly business doesn't interact with tailgaters or other can collectors that much

RQ 4 System organized

- MSU seem to be cleaning up earlier than later
- More recyclable bins than before
- There is a lot of waste in the student section

3. What needs to be followed up?

- Whilst can collectors dig into the trash can, what happens when they throw trash on the ground.

Reflection

- She came with her grandchild -these are some of the things to consider when interviewing females
- Didn't have money to pay for parking, I ended up giving her a dollar for parking (always support participants in the best way I can, but is this ethical?... I don't know)

- As an Afro-American, I felt she was very open with me in her conversation, though at first, she was hesitant but later on said, I have to be real and honest. Since I am an outsider, she felt more comfortable to open up about her experiences. Later on, asked where I am from. (did this influence the research process? Maybe …I just need to be aware of my empathetic emotions during data interpretation

TABLE 3: LIVELIHOOD CODEBOOK

CODE *(the name of the code itself)*	**Brief description** *(coded data's qualities or properties)*	**Inclusion criteria-When to use** *(Conditions that merits the code)*	**Exclusion criteria-When not to use** *(exceptions/instances that do not merit the code)*	**Typical exemplars** *(Examples of data that represent the code)*
PERSONAL INFO	Personal data	Apply code to demographic characteristics and how much they make	Do not apply code to non-demographic characteristics	*I'm 23, white and female (Interviewee #1),page 1*
SOCIO-ECONOMIC CONTEXT	Motivations to collect cans and bottles	Apply code to reasons that causes one to collect cans and bottles	Do not use code to other reasons not related to collecting bottles and cans	*"Money issues" (#1) p.1*

Table 3 Continued

CAPITAL ASSETS				
SOCIAL CAP.	Social resources	Apply code to refer to relationships of trust and reciprocity by canners with either tailgaters or with other can collectors	Do not use to refer to interactions among canners and tailgaters.	*"I have done this with my family" (#1)* *…some actually put cans in the bag for you and save the bag just for you…(#1) p.6* *Before the game, they have it all lined up on the wall (#1) p.9* *…just pick up cans, my uncle told me to leave the bottles there (#5)*
HUMAN CAP.		Apply code to refer to being able to collect cans, skills, knowledge, the ability to work.	Do not use code to refer to other capitals	*What slows me down is my health. Oh, man, you know, I'm not in the best health. So, I can't go as fast as others I have to slow down issues with my heart. So, I just had to go at a minimum at a pace. (#7)*

Table 3 Continued

PHYSICAL CAP.	Tools	Apply code to refer to Tools and equipment that canners use.	Do not use to refer to interactions	*We go to Okemos go grab a cart and we walk to MSU and we start picking up cans …(#1) p. 5*
FINANCIAL CAP.	Savings	Apply code to refer to access to financial sources	Do not use to refer to interactions to anything that has nothing to do with their financial savings.	*I had enough money on my card and we bought the trash bag from Meijer…(#1) p.*
POLICIES AND PRACTICES				
REDEMPTION CENTER	Where you get a 10c value for beverage container	Apply to code experiences when get a 10c value for beverage container.	Do not include any other experience not to do with the redemption center.	*As soon as I went into QD the machine wasn't working properly and the other challenge is you got to sit there and rumble through the bag and some of them they don't take like these people drink exotic beers who like CIC Miller Lite*

Table 3 Continued

TRANSPORTATION	Transportation	Refer to their experience about transporting their cans throughout the process.	Do not include what happens at the redemption center.	*The bus…the first time I went with bus 1 in East Lansing, they let me jump on with the bunch of cans. But they made sure that they were not leaking first. After you do you $25 over here. If you don't get a car, your kind of screwed on trying to get the cans somewhere else to cash them.(#2)*
FACTORS	External factors	Apply factors that affect/put can collectors at risk and they cannot control	Do not use to refer to challenges.	*When it gets super-duper cold. I can't go out because my fingertips they've frost bits. So that cold and doing those cans doesn't work for me. (#13)*
		OUTCOMES		
INCOME	Income	Can collection results in improved income.	Do not use to apply to socio-economic context.	*Just to pay the bills and have money on me to go somewhere, pay for gas (#3)*

Table 3 Continued

INCREASED WELL -BEING	Improvement	Improved health, happiness, internal well-being outcomes.	Do not apply to motivation.	*"It's definitely your workout. But that's kind of why I'm doing it as well. It's a workout with carrying the bottles and picking them up."(# 8)* *I feel empowered? I mean, like I said, I'm a sparkling inside. (#5)*
ENVIRONMENTAL STEWARDSHIP	Environmental concerns	Apply to behavior and attitude towards environmental concerns	Do not use to refer to motivations	*I'm helping the environment because like I said, if you look at it, just think of all these cans were just left on this campus… it will not look good. It will be nasty and dirty. (#5)* *it just kind of disgusts me seeing returnable or recyclables in the garbage.(#10)*

TABLE 4: MAXQDA GRID MATRIX EXAMPLES

Number, date, race, gender, age	#9 (other data omitted)	#11 (other data omitted)	#14 (other data omitted)
LIVELIHOODS			
Physical capital	"So, I drive to Kroger's, go in and grab a shopping cart and then walk to MSU can dog come back to Kroger's throw the cans in the back of my truck, leave the car a Kroger's and go on my merry lane. It's hard because now you're carrying bags and cans, or bottles. So, now you're walking from Kroger's.	"See like I can't do like these other guys are doing? They bang, they go all the way to Kroger's and steal a grocery cart and push it all down here. I have never done it. No, I can't do that. Because it's too much of a hassle. I may see cans in the street right here and i see some way over there. I got to pick them up take the grocery cart and keep putting the cans in,turning all over the curves. I prefer to be just walking with my bag.	And the very next weekend was a Michigan, Michigan State game at Michigan State. And, boy, it turned out good for us. We ended up renting a big u haul truck. I always use our garbage bags, those with drawstrings so I can tie them up.

Table 4 Continued

Redemption center	The first Saturday, I went to the Meijer Lake Lansing road in East Lansing. I'd already been doing it for five hours. And I'm like, I'm not going to wait 45 minutes just to start cashing my cans. The difference between me and them again, I have a vehicle I drove across town and went to Lansing. It was 10-15 minutes out of my way but I went it right up started cashing cans literally right away. It didn't take time I was boom, boom, boom done. So,	I go to Meijer's. I catch the bus. When I first started, my first game was in 2015/16. I went there and got cans from the stadium. I walked from the football stadium to Kroger's. I just had 1 bag and then when I got there, guess what? There was a long line and people were waiting outside with bags and bags and bags of cans and grocery carts. I just had 1 bag and I had to wait. after that i never went to Kroger's again, i go to Meijer's.	So, we learned our lesson now. It was a Kroger's we had never went to on Lake Lansing road. So, we were thinking, well, maybe this is far enough from the school to get there. And it turns out, they only got two machines. And we can't take both machines up. Because there are other people who don't want to return bottles. It would just be rude for us to have hundreds of thousands of cans.

Table 4 Continued

Transportation	"Yes, the walk from Kroger's to the stadium. And then the walk back to stadium to Kroger's. And then probably my age. Probably my mindset like, let's say I go in here and I'm having a day. You know, I might walk a little slower than I normally do. Or I might say, Hey, I'm not stressed over them cans.	"Well, just this week alone. It wasn't hard for me at all because my bag wasn't leaking. But if my bag is leaking, they are not gonna let you on the bus. So, I was so lucky because my other bag had liquid but he didn't see it. They don't want to smell the beer or mess the floor. Well, you have to stay there until the next bus comes. That is terrible because you can wait for a long time. If you got a whole lot of cans three or four bags of cans to yourself you're not getting into the bus with that.	"I see people with grocery carts, and other kinds of wheeled apparatuses that I think if we had something like that, each one of us, it would help out tremendously. Like if I had a shopping cart, I could tie three or four bags on the outside. And then porter to on the inside. So, I could physically take on almost like six bags at once, you know, to where if I'm doing it by hand, I'm only given one of a chance no matter what.

REFERENCES

REFERENCES

Adama, O. (2012). Urban Livelihoods and Social Networks: Emerging Relations in Informal Recycling in Kaduna, Nigeria. https://doi.org/10.1007/s12132-012-9159-8

Aparcana, S. (2017). Approaches to formalization of the informal waste sector into municipal solid waste management systems in low- and middle-income countries: Review of barriers and success factors. Waste Management, 61, 593–607.

Bernard, H. R. (2017). Research methods in anthropology: Qualitative and quantitative approaches. Rowman & Littlefield.

Braun, V., & Clarke, V. (2006). Qualitative Research in Psychology Using thematic analysis in psychology Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101. http://www.tandfonline.com/action/journalInformation?journalCode=uqrp20%5Cnhttp://www.tandfonline.com/action/journalInformation?journalCode=uqrp20

Chung, K. (2000). Designing household survey questionnaires for developing countries. (M. Grosh & P. Glewwwe (eds.); pp. 337–364). World Bank.

Dias, S. M. S. M. (2016). Waste pickers and cities. Environment and Urbanization, 28(2), 375–390. https://doi.org/10.1177/0956247816657302

Fergutz, O., Dias, S., & Mitlin, D. (2011). Developing urban waste management in brazil with waste picker organizations. Environment and Urbanization, 23(2), 597–608. https://doi.org/10.1177/0956247811418742

Gutberlet, J. (2008). Organized and informal recycling: Social movements contributing to sustainability. WIT Transactions on Ecology and the Environment, 109, 223–232. https://doi.org/10.2495/WM080241

Gutberlet, J. (2015). Cooperative urban mining in Brazil: Collective practices in selective household waste collection and recycling. Waste Management, 45. https://doi.org/10.1016/j.wasman.2015.06.023

Hesse-Biber, S. N., & Leavy, P. (2017). The practice of qualitative research. Sage.

Jiménez-Martínez, N. M. (2018). The governance of waste: formal and informal rules in the central region of Mexico. Regional Studies, Regional Science, 5(1), 353–360. https://doi.org/10.1080/21681376.2018.1535281

Lincoln S., Y., & Guba G, E. (1985). Naturalistic Inquiry. Sage Publications. https://us.sagepub.com/en-us/nam/naturalistic-inquiry/book842

Maxwell, J. A. (2012). Qualitative Research Design: An Interactive Approach (Third edit). Sage.

Medina. (2017). The World's Scavengers: Salvaging for Sustainable Consumption and Production. Altamira. https://doi.org/10.1080/09614520802387304

Miles, M. B., & Huberman, A. M. (1984). Qualitative Data Analysis: A Sourcebook of New Methods. Sage Publications.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). Qualitative data analysis: A methods sourcebook (Third). Thousand Oaks,.

Miles, M. B., Huberman, M. A., & Saldana, J. T. (2014). Qualitative Data Analysis: A Methods Sourcebook. Thousand Oaks, SAGE.

Oguntoyinbo, O. O. (2012). Informal waste management system in Nigeria and barriers to an inclusive modern waste management system: A review. Public Health, 126(5), 441–447. https://doi.org/10.1016/J.PUHE.2012.01.030

Oh, J., & Hettiarachchi, H. (2020). Collective action in waste management: A comparative study of recycling and recovery initiatives from Brazil, Indonesia, and Nigeria using the institutional analysis and development framework. Recycling, 5(1), 4. https://doi.org/10.3390/recycling5010004

Ostrom, E. (1996). Crossing the great divide: Coproduction, synergy, and development. World Development, 24(6), 1073–1087. https://doi.org/10.1016/0305-750X(96)00023-X

Patton, M. Q. (2015). No Title Qualitative research & evaluation methods: Integrating theory and practice. (Fourth). Sage Publications.

Rubin, H., & Rubin, I. (2012). Qualitative Interviewing. The Art of Hearing Data. Thousand Oaks: Sage Publications.

Saldaña, J. (2016). The coding manual for qualitative researchers. SAGE.

Scheinberg, A., Nesić, J., Savain, R., Luppi, P., Sinnott, P., Petean, F., & Pop, F. (2016). From collision to collaboration - Integrating informal recyclers and re-use operators in Europe: A review. Waste Management & Research : The Journal of the International Solid Wastes and Public Cleansing Association, ISWA, 34(9), 820–839. https://doi.org/10.1177/0734242X16657608

Scheinberg Anne , Savin Rachel, Luppi Pietro , Sinnott Portia, Petean Flaviu and Pop Flaviu, N. J. (2016). From collision to collaboration – Integrating informal recyclers and re-use operators in Europe: A review. Waste Management & Research, 34(9), 820–839. https://doi.org/10.1177/0734242X16657608

Sembiring, E., & Nitivattananon, V. (2010). Sustainable solid waste management toward an inclusive society: Integration of the informal sector. Resources, Conservation and Recycling, 54(11), 802–809. https://doi.org/10.1016/j.resconrec.2009.12.010

Tremblay, C., Gutberlet, J., & Peredo, A. M. (2010). United We Can: Resource recovery, place and social enterprise. Resources, Conservation and Recycling, 54(7), 422–428. https://doi.org/10.1016/j.resconrec.2009.09.006

Tyson, W. (2017). Using social-ecological systems theory to evaluate large-scale comanagement efforts: A case study of the Inuvialuit Settlement Region. Ecology and Society, 22(1). https://doi.org/10.5751/ES-08960-220105

Willig, C. (2013). Thematic Analysis :Chapter 6. In Introducing Qualitative Research in Psychology. McGraw-hill education. https://doi.org/10.4135/9781483381411.n624

Wilson, D. C., Velis, C., & Cheeseman, C. (2006). Role of informal sector recycling in waste management in developing countries. Habitat International, 30(4), 797–808. https://doi.org/https://doi.org/10.1016/j.habitatint.2005.09.005

CHAPTER 3: A Qualitative Inquiry into Collecting Recyclable Cans and Bottles as a Livelihood Activity at Football Tailgates in the United States.

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Introduction

In some parts of the global North, "the bottle bill," or "container deposit law" requires a refundable deposit on beverage containers to ensure that the containers are returned for recycling. Such recycling policies in the global North have had an ecological focus, with limited interest in social and economic opportunities for the urban poor ((Nas & Jaffe, 2004). Other scholars like Gutberlet & Jayme (2010) maintain the same position that waste has mainly been tackled from an engineering perspective in the global North without an integrated view that addresses social and economic concerns in resource recovery.

In Michigan, USA aluminum cans and bottles are recyclable with a 10-cent deposit refund monetary value at the retail level, which is one of the highest among the ten US states with a bottle bill. The bottle bill law has created an opportunity for people to earn income by collecting empty cans and bottles and returning them for the deposit. This activity of collecting returnables with a deposit value is becoming common in the global North (Jutta Gutberlet, Tremblay, Taylor, & Divakarannair, 2009b) as it provides an opportunity for vulnerable individuals or social groups to earn an income. These people are generally known as informal recyclers. However, locally they are known to each other as "canners" as they collect aluminum cans and bottles and redeem them for a deposit refund. They will be referred to as canners or informal recyclers in this article.

In Michigan, informal recycling has become popular during college football tailgates. Football tailgates are events in which football fans party outside the stadium before and during college and professional football games in the United States. Such spaces generate large amounts of aluminum cans and bottles, which has become a source of income for those who collect them in states with a bottle bill. Numerous scholars have focused on understanding tailgaters' pro-environmental behavior, fan engagement through green game days, and improved access to recycling facilities, respectively (Casper, Pfahl, & McCullough, 2014; Zawadzki, Schwartz, Blair, Larson, & Newton, 2016), little remains unknown of the livelihood opportunities these spaces create. To my knowledge, no prior studies have examined the experiences of canners and the factors that facilitate or constrain them to engage in collecting aluminum cans and bottles at football tailgates.

This article explores the livelihood activity of people who collect aluminum cans and bottles as a source of income at football tailgates in Michigan. The study uses concepts from a modified sustainable livelihood approach as a foundation to understand factors and processes that influence canners' livelihoods at football tailgates. This study is important because it presents an opportunity to understand the significance of this activity to vulnerable urban communities in the global North, which may help to build inclusive and sustainable urban environments. Qualitative data from direct observations and semi-structured interviews were used to document the livelihood experiences of canners at football tailgates. This study addresses the following questions:

1. What are the motivational factors and outcomes of engaging in collecting aluminum cans and bottles at football tailgates?

2. What are the opportunities and constraints that influence livelihood activities of people collecting aluminum cans and bottles at football tailgates?

Recycling as a livelihood activity

There are many news articles about people earning income from recycling in the US (e.g., Ellerson, 2020; Abate, 2020; Wollan, 2016), but there is limited academic literature on this issue. Although some research has been carried out about informal recyclers in the global North, there is little we know about people who collect recyclables as a livelihood activity in the United States. To date, a few studies from the global North and several studies from the global South have demonstrated the importance of informal recyclers and the challenges they face to access resources that enable them to engage in recycling as a livelihood activity. This section explores findings from the literature on how informal recycling provides a source of income to vulnerable populations, strategies adopted by informal recyclers to engage in their activities, and the various roles of informal recyclers.

To begin with, informal recycling provides employment opportunities and a means to improve the well-being of marginalized individuals or social groups (Downs & Medina, 2000; Omotoso, 2017). The few studies in North America indicate that the informal recyclers are likely to be immigrants or homeless (Ashenmiller, 2009), unemployed, and some may have limited or no social assistance, which motivates them to engage in this livelihood activity (Tremblay et al., 2010). Due to limited literature, we are not sure whether these are generalizable characteristics of informal recyclers. The income from informal recycling is a sole income for some individuals, while for others, it supplements their social assistance or social benefits (Medina, 2001).

Moreover, income from informal recycling activities is highly dependent on one's ability to access the recyclables and other resources to be able to engage in this livelihood activity. A study of informal recyclers in Vancouver, British Columbia, highlighted that the local by-laws prohibit retrieving recyclable materials from bins, which is a constraint to informal recycling livelihoods (Tremblay et al., 2010). However, informal recyclers have formed a Binners' Association, and they have developed a "Binners' Code" to guide their livelihood activities. This "code" guide is to legitimize their activities and to instill public confidence for easy access to recyclable material. Despite such efforts to legitimize informal recycling, a later study carried out in 2013 indicated that informal recyclers still face challenges in accessing recyclable materials and other resources like public spaces, which negatively affect their livelihood (Wittmer & Parizeau, 2016). While these studies have concluded that inclusive public policies will help to facilitate access to recyclable materials, other services, and resources (Gutberlet et al., 2009), there is a need for more context-specific studies to guide policy on informal recycling livelihoods in developed countries.

Subsequently, studies in various locations have found that informal recyclers support socio-technical systems for managing waste; they have a role as economic actors, political actors, and drivers of social change (Dias, 2016). Informal recyclers are involved in removal, recovery, transportation, and value aggregation of recyclables in some cities, and they provide a service to the local urban spaces. Thereby, they contribute to the socio-technical system for managing waste, as evident in the case of informal recyclers known as the "Zabaleen" in Cairo, Egypt. The latter has created one of the world's most efficient resource recovery systems (Fahmi & Sutton, 2010). Despite the ecological modernization of waste management systems in the global North, recyclers who earn income from their activities have remained significant in the resource recovery value chain in developed countries (Wilson, Rodic, Scheinberg, Velis, & Alabaster, 2012). For example, (Ashenmiller, 2009) finds that

informal recyclers known as "professional recyclers" in California have helped to raise the amount of recycled material by a great deal. Hence, (Porter, 2015) asserts that developed countries need to recognize or integrate informal recycling with formal waste management systems.

Besides, informal recyclers are economic actors and drivers for social change. Informal recyclers are economic actors as they depend on informal recycling as a source of income as they create opportunities that may not have existed otherwise (Tremblay et al., 2010). However, informal recyclers face marginalization and stigmatization that create obstacles to their livelihood activities (Gutberlet & Jayme, 2010; Coletto & Bisschop, 2017); they experience police harassment as their activities become prohibited by law (Gutberlet et al., 2009). These negative experiences have influenced informal recyclers to be drivers for social change mainly in the global South and in some parts of the global South (Dias, 2016; Tremblay et al., 2010; Gutberlet et al., 2009).

The role of informal recyclers as drivers of social change is evident in the global South (Dias, 2016). The informal recyclers have been mobilizing inclusive and integrative policies to gain recognition for their importance and secure livelihoods (Samson, 2009). A considerable amount of literature in the global South demonstrates how informal recyclers have self-organized into membership-based organizations such as cooperatives, associations, unions, community-based organizations, or micro-enterprises to further their drive for social inclusion (Dias, 2016). For instance, some of the informal recyclers inclusion programs in Latin America have recognized informal recyclers as contributors to employment creation, reduced environmental damage, and costs of landfills (Marello & Helwege, 2018). The study undertaken in Vancouver cited above, resource recovery and social enterprise called United We Can (UWC), has contributed to the social inclusion of informal recyclers and economic

development (Tremblay et al., 2010). Such self-organized organizations advocate for improved incomes, working conditions, social inclusion, and empower informal recyclers.

To understand the experiences of informal recyclers, the sustainable livelihood approach was used to study the livelihood activities of informal recyclers in Canada (Gutberlet et al., 2009), and in Dhaka, Bangladesh (Rouse & Ali, 2001). There are similarities in these two case studies, despite their geographic differences. The studies indicated that the informal recyclers draw their livelihood activity from the human, financial, physical, and social capital assets, and access and use of these capital assets differ among the recyclers. Both studies demonstrate that informal recyclers are marginalized and stigmatized because of their low-income status and the nature of their livelihood activity. Besides, both studies used participatory approaches to explore the livelihood experience of informal recyclers.

Despite the similar livelihood experiences of recyclers in Canada and Bangladesh, they also have different experiences. The study in Canada identified health aspects, homelessness, and drug abuse as socio-economic determinants that influence informal recycling as a livelihood activity. On the other hand, the Dhaka case study was not explicit about the context that influences informal recycling as a livelihood activity. The Canadian study suggested that resource recovery is a strategy that can enhance the livelihoods of informal recyclers through developing inclusive waste-management policies (Gutberlet, Tremblay, Taylor, & Divakarannair, 2009) of informal recyclers (Rouse & Ali, 2001). These similarities and differences call for context-specific studies to understand the experiences of informal recyclers.

Modified Sustainable Livelihood Conceptual Framework

The sustainable livelihood approach (SLA) has been used in the two case studies above, but there are no studies in the US that have used this approach in informal recycling. The studies in Canada and Bangladesh give useful insights on multiple factors and processes that shape the livelihood activities of informal recyclers. The sustainable livelihood approach analyzes and organizes the lives of the poor around factors that constrain or enhance their livelihood strategies (Scoones, 2009). Livelihood activities are pursued within the vulnerability context and structural processes that influence livelihood outcomes (Scoones, 1998; Carney, 1998). Livelihood activities are dependent on people's access to different types of capital, including financial, natural, human, physical, and social. In addition, there are mediating factors that include policies, structures, and power dynamics that influence access to different types of capital. While the SLA has been developed for rural contexts, Rouse & Ali (2001) assert that some elements of the SLA, such as natural capital, are not relevant in the urban context, or are inappropriate to the specific study of informal recyclers.

A modified Sustainable Rural Livelihood Framework (SRLF) is used as in **Error! Reference source n ot found.** (Scoones, 1998) to contextualize and evaluate canning as a livelihood activity at football tailgates in Michigan. The modified SRLF just conceptualizes specific factors that enhance or constrain people to pursue canning as a livelihood activity. In contrast, the original framework typically focuses on all the activities that together support a person's overall livelihood. The SRLF consists of five main components, namely (1) context (2) access to livelihood capital assets, (3) policies, institutions, and processes, (4) shocks that enhance or interfere with the activity, and (5) outcomes. These components, described in detail below, are essential in understanding the opportunities and constraints people face when engaging or attempting to engage in canning activities. Cans and bottles are a central resource that enables canning activities though they do not fit neatly in any of the SRLF components.

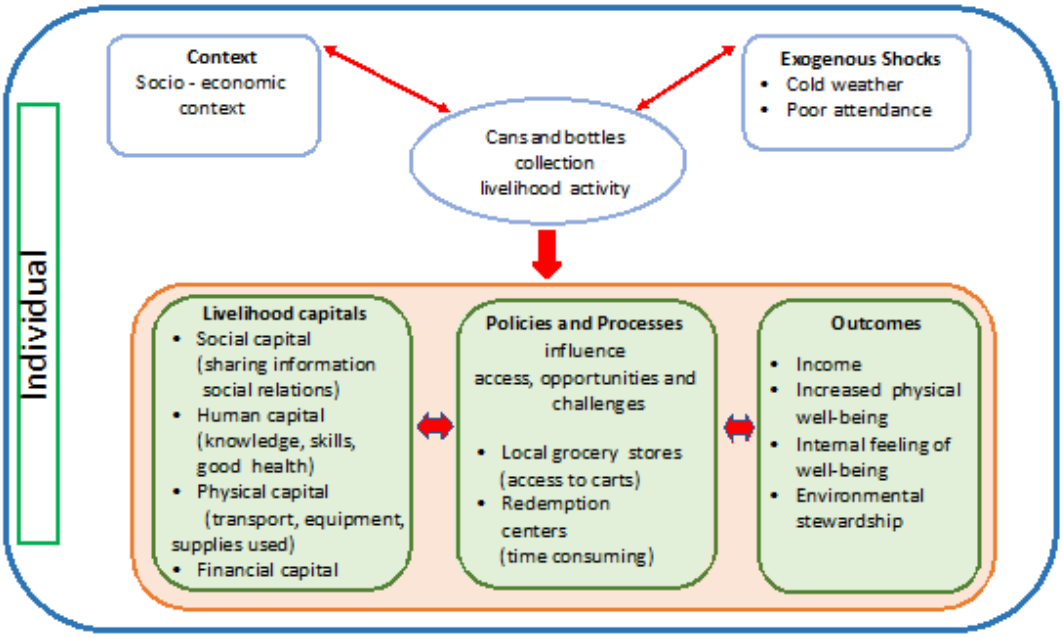

FIGURE 1: CONCEPTUAL FRAMEWORK EXPLAINING ENGAGEMENT IN CANNING AS A LIVELIHOOD ACTIVITY. IT IS ADAPTED FROM (SCOONES,1998).

Understanding the contextual background of people who collect cans and bottles at football tailgates is essential. The context and conditions in which people are situated determine their ability and desire to engage in specific livelihood activities (Scoones,1998). The background can be characterized by factors that include personal socio-economic and physical conditions, personal historical experiences, and policy and regulatory settings. For instance, social differentiation in terms of income, gender, homelessness, ethnicity, and immigration status characterize informal recycling livelihoods (Ashenmiller, 2009; Gowan, 2010; Gutberlet et al., 2009). The need for extra income, unemployment, and homelessness may influence canning livelihood activities.

Livelihood capital assets are the different kinds of resources available to individuals. Identifying the assets that canners have provides an understanding of resources that enable or disable people to collect cans and bottles at football tailgates. The framework recognizes that gaining access to, using, and

combining these assets is pertinent to engage in canning as a livelihood activity. The SRLF framework asserts that people have five types of capital assets (i. e social, social, human, physical, financial, and natural capital), which they combine to pursue livelihood strategies (Scoones, 1998; Serrat, 2017). In this study of an urban livelihood activity, natural capital is less applicable, and thus we exclude it from the modified framework.

Social capital is a resource that entails social network support and reciprocity that exist between individuals and within their communities (Meikle, Ramasut, & Walker, 2001). The interaction among different actors influences access to cans and bottles and other capital assets. Human capital assets refer to knowledge, skills, and good health that may allow canners to engage in canning as an income-earning activity. Physical capital refers to services, equipment, and supplies that canners require to support their livelihood. These include access to and use of transport services, shopping carts, and trash bags that enable canners to collect cans. Financial capital entails access to money from their savings or other sources of income.

Policies, institutions, and processes are important in shaping access to capital assets and outcomes of any livelihood activity or strategy (DFID, 1999). We refer to them as policies and practices, which influence canning livelihood in two main ways. Firstly, local policies and practices determine access to livelihood capital assets. Secondly, they present opportunities and constraints to engage in a livelihood activity. There are policies and practices by the local grocery stores, redemption centers, and the public transport service that facilitate or hinder canning activities.

There are exogenous factors that influence the viability of canning as a livelihood activity. It is vital to explore how these exogenous factors influence the sustainability of livelihood activity of people who

earn an income by collecting bottles and cans. For example, football tailgates are seasonal from August to the end of November. Furthermore, weather affects attendance, and people's ability to work outdoors may influence the dynamics of canning activities.

Lastly, people engage in a specific livelihood activity to achieve particular outcomes. Potential outcomes discussed in the literature include things like increased income, reduced vulnerability, improved food security (Serrat, 2017), self-esteem, happiness, and security (Chambers, 1997). Income, physical well-being, internal feeling of well-being, and environmental stewardship can be achieved through canning activities. However, the livelihood outcomes of canning activities depend on the access and use of assets and the ability to negotiate institutional processes.

Methods

The study was conducted during the football tailgates at Michigan State University in the 2019 season. Football tailgates are an American cultural event where football fans party before and during the football game and can publicly drink alcoholic beverages, which generates a lot of discarded empty cans and bottles. This study employed ethnography because it is a naturalistic form of inquiry, and it allows an emergent research process (Rubin & Rubin, 2012). A naturalistic inquiry means that social processes and human behavior are observed in their natural setting without the researcher interfering or manipulating the setting (Patton, 2015). Researching the natural environment allows the researcher to observe first-hand experiences and hear how participants interpret their experiences (Bernard, 2017; Rubin & Rubin, 2012).

I recruited participants through purposeful sampling at football tailgates and at one of the local redemption centers. An effort was made to recruit demographically diverse participants in terms of

races, gender, age, and years of experience in canning. Participants were recruited through a flyer, and those interested in participating in the study scheduled for an interview. Participants were compensated $30 for taking part in the study, and the interviews took approximately 45-60 minutes. Twenty-eight participants were interviewed, they were aged between 22 years to 65 years, and their earnings at any football game ranged between $20-$200. Based on one of our observation our participant sampling frame is mostly African American and participants for our study were exclusively low-income earners.

The in-depth structured interview guide allowed us to explore similar questions among all the participants. The interview guide focused on: (1) factors that motivate canners to engage in canning livelihood activities, (2) factors that facilitate or constrain canners in their activities, and (3) their overall experience of collecting cans and bottles at football tailgates. The questions were pilot tested to improve on clarity. Interviews were conducted in a location selected by the participants at either the local public libraries or on campus. Verbal consent was obtained from all participants before conducting the interviews. Within 24 hours after the interview, the audio recordings were transcribed using the online transcription software Otter.ai. Transcripts were manually verified for accuracy, and corrections were made before exporting transcripts as Microsoft Word documents into the qualitative analysis software MAXQDA2020. The verification process provided us with an opportunity to be immersed in the data collected. When we reached data saturation, we stopped the data collection process.

The data collected were analyzed using thematic analysis because it is a process to identify, analyze, and report themes that emerge from the qualitative data (Braun & Clarke, 2006). I created contact summary forms (Miles, Huberman, & Saldana, 2014) also known as memos (Rubin & Rubin, 2012)

for each interview to familiarize with the data, to capture immediately key concepts, themes, or issues that arose during the interview and reflections on each data collection process. The data familiarization process occurred on a continuum from the data collection throughout data analysis. The contact forms or memos helped us to plan for the next interview, revise existing codes, and further the data analysis (Miles, Huberman, & Saldana, 2014). Thematic analysis involves the critical review of responses to determine appropriate coding and the formation of themes from those codes. I generated a preliminary codebook which was modified as the coding process progressed. The codebook had a list of coding rules that included the code name, definition of the code, rules when the code can be applied, rules when the code cannot be applied, and an example of data coded. The transcripts were coded using concept coding and simultaneous coding where applicable (Saldaña, 2016). Concept coding is assigning a code to a large unit of data, while simultaneous coding is when data suggests multiple meanings and is assigned more than one code. The process of coding and organizing data was an iterative process of identifying themes, patterns, and categories across the data sets (Miles, Huberman, & Saldaña, 2014).

A theme-based overview grid/matrix was used to display and organize codes in a systematic way, which helped the researchers to be grounded in the data collected (Knodel 1993). I used MAXQDA's Compare Cases & Groups function as a grid, which allowed me to compare coded qualitative data from the transcripts. I reviewed some codes and subsequently merged them into broader themes for a richer and a more detailed story about canners' livelihood experience. I used quantifiers to report the results like "a few," "some" and "most," to give the reader a sense of the overall experiences of the participants. The use of numbers helps researchers to be analytically honest and protect against biases (Miles, Huberman, & Saldana, 2014). The use of quantifiers in qualitative research is not to generalize results, but to provide detailed information on whether themes appear to be typical or

atypical. Approval to conduct this research was obtained from Michigan State University's IRB prior to recruitment activities and data collection.

Findings

This section presents and discusses results from the interviews and focuses on participants' demographic characteristics and the contextual factors that influence them to engage in collecting cans and bottles at football tailgates. Besides, I will discuss findings on livelihood capital assets, policies, and practices that enable or constrain canning livelihood activities at football tailgates and their outcomes.

Socio-economic context of canners

Individuals experience context-specific conditions that they may or may not have control over. Such conditions have a direct impact on the likelihood that vulnerable people can engage in canning activities to contribute to their living.

Livelihood capital assets

Natural, social, human, financial, and physical capital were found to be utilized by respondents during the interviews. The challenges associated with accessing some capital types will be highlighted in the results.

Human capital

Human capital includes the knowledge, skills, health status, and ability to engage in canning activities. While canning does not require any formal training, it does require a certain amount of experiential knowledge and good health.

Knowledge and skills: Canners who have been collecting cans over a period tend to develop skills and techniques to collect cans at tailgates. The three types of knowledge and skills that emerged from the interviews included how to carry out the actual canning activity, how to approach tailgaters to have access to cans, and how to select returnables and avoid non-returnables at tailgates. Such knowledge and skills sometimes are shared with new canners depending on one's social networks. For instance, many experienced canners have developed efficient and effective ways of collecting bottles and cans at tailgates. One male canner (#2) said, *"My methods are now more organized definitely…. The first time ever, I was kind of like, everywhere, like, …instead of following down the line, I am now zigzagging…"*

During the interviews, several canners mentioned that they have specific locations that they visit at every football tailgate, and the canners now know how to navigate those spaces as they collect cans easily. Some of the canners prefer tailgating spaces close to the football stadium because the number of cans disposed of is higher compared to other spaces. This also minimizes the distance they must walk to collect the maximum number of cans. On the other hand, the few elderly canners in the study expressed that due to poor health, they collect cans in spaces that they can easily access the local public transport, even though the density of cans available is lower compared to other spaces. Nonetheless, most canners tend to specialize in collecting cans only and avoid bottles due to their weight.
Furthermore, most of the canners have developed skills to access cans and bottles from tailgating spaces without encroaching into personal spaces of tailgaters. During their first-time experience, most of the canners expressed self-consciousness of the stigma associated with canning.

However, they have learned to develop specific skills to carry out their livelihood activity through time. The skills include maintaining eye contact, being respectful to ask for cans, and minimizing any forms of interaction with tailgaters. A first-time canner (#5) said, *"It's like eye contact, body language, and*

I could read people pretty good. At first, I was nervous, but now, I think I got it. I got it (he is excited). *I mean, look at my bag* (showing me their trash bag)!"

Lastly, the nearest grocery store does not accept every brand of alluminium cans, and people learn that through experience as they develop skills in selecting only the bottles and cans, they can redeem for money. For instance, one canner expressed disappointment the first time he collected cans at tailgates and realized that some cans were not returnable at that store, and he had collected them for nothing. Such a lack of experience in canning limit canner's ability to maximize their income from collecting cans.

Good health: The main form of human capital that canners rely on is their physical strength and ability to collect and transport the cans and bottles during canning activities. Most participants emphasized on how one needs to be physically healthy to participate in canning activities.A few canners indicated that collecting cans is physically constraining as they have to bend over to pick up the cans and the cans are heavy. Hence, canners can only carry what they can. In addition, some of the canners interviewed indicated that there are positive health outcomes associated with canning activities that strengthen their human capital. Some canners perceive canning as not only an opportunity to make money but also an opportunity to engage in physical exercise.

On the other hand, some canners revealed that their poor health is a detrimental factor for them to participate fully in canning activities. A male canner, aged 58, said, *"What slows me down is my health."* They indicated that physical problems such as high blood pressure, heart problems, asthma, and back and leg pain, limit their ability to walk long distances and the number of cans and bottles

they can collect and carry at any given time. This, in turn, limits their earnings from canning at football tailgates.

Physical capital

While canners rely on their human capital to collect cans, they also rely on physical capital in the form of equipment and supplies, and bottle redemption centers are essential for canners to carry out their livelihood activities. There are also challenges in accessing and using physical capital. Despite these challenges, the canners have also developed coping strategies to engage in canning as a source of income.

Transport: Many of the canners interviewed revealed that they either use the local public transportation system and a few canners use their vehicles or bicycles to transport cans to the redemption centers. Many of the canners stated that the local public bus service is the most accessible means of transporting cans. However, the use of public transportation is a common challenge for canners. Most of the canners highlighted that sometimes they are denied using the bus because their cans are either leaking or too bulky, and the strong alcohol smell may bring discomfort to passengers. This has also forced most canners to walk to the closest redemption centers, which is physically straining and is time-consuming. One canner (#11) expressed his experience: *"If you got a whole lot of cans three or four bags of cans to yourself, you're not getting into the bus with that."*

Just a few canners interviewed have a personal vehicle, and they tend to collect as many returnables as they can, including both cans and bottles, unlike those who use public transport and bicycles. In addition, canners with personal transport can easily transport their cans to redemption centers that are not congested compared to those who walk or use public transportation. One canner (#6) said, *"I*

walked around and to a soccer field over there. There were so many cans lying out there... If I had a truck or car, I would have probably had been out all night... I can only carry so many." However, there are challenges highlighted by canners who use a personal vehicle. These include incurring a cost for parking spaces, or they must park far away at public parks or shopping parking lots to avoid paying for parking.

Equipment and supplies used: The equipment and supplies include trash bags, a household cart or shopping carts from the grocery stores, and gloves. The trash bag is the most basic equipment that canners use, and most of them indicated easy access to these bags. Interviewees have at least three different ways that they get access to trash bags. During the interviews, most canners indicated that they get the trash bags from their household, and a few revealed that they get the household types of trash bags from home shelters that they come from. In addition, most canners buy trash bags, and a few often buy the industrial type of bags. Lastly, most canners receive more trash bags from the university officials who patrol the campus during tailgates and hand out garbage bags to those who need them.

While most canners have easy access to trash bags, they indicated three significant challenges in the use of trash bags. Some of the canners indicated that the trash bags tend to tear easily, limiting the number of cans they can carry in each bag. Besides, most canners indicate that they can collect cans but not returnable bottles, which are too heavy for the bag and too heavy to carry. Lastly, the trash bags with cans are difficult to transport as they tend to be bulky, making them difficult to carry or to take onto a public bus. These challenges limit what people can earn from canning. Most canners indicated that they double bag the trash bags to reduce the chances of tearing or buy industrial-strength bags. Nevertheless, those who walk or take the bus do not have a solution for the bulkiness of the bags and must limit how many they take.

Shopping grocery carts or household pull-carts or wagons are common types of equipment that canners use for their canning activities. The canners either have a household cart or access a shopping cart from the nearby grocery store on their way to tailgating events. A few canners who use their carts can transport as many cans and bottles as they can collect. Also, the use of cart enables the canners to transport the cans and bottles without much physical strain.

However, the canners revealed that they had been denied access to grocery carts from nearby stores over the past years, which threatens the sustainability of their livelihood activity. The local stores implemented new policies against borrowing the carts because it inconvenienced the shoppers and risked damaging the carts, which has negatively affected canners' activities. Most canners who used to borrow grocery shopping carts to take to campus reported that they no longer make as much money as when they had access to grocery shopping carts. *"I wish I had some kind of way to carry more. Basically, that's it. If I could carry more, I could collect more money,"* said one canner (#6). In addition, canners without access to a cart are no longer able to collect returnable bottles because they are too heavy to carry. On the other hand, those who use their carts or wagons indicated that they do not suffer such limitations.

During the interviews, a few of the canners revealed that they use gloves. These canners highlighted concerns for health and safety as they sometimes are in direct contact with liquids, and some dig in the trash cans. Another canner (#5) said, *"I need these gloves because some of these people they put cigarette butts in the cans, I want to be clean at the same time."* Moreover, some of the canners indicated that some tailgaters spit tobacco or stick gum in some of the cans, which pose a health hazard to the canners. Some indicated that sometimes they are offered food by tailgaters, they cannot eat the food because their

hands are dirty from canning. Given access to gloves, most of the canners would want to use gloves for canning activities.

Financial capital

Financial capital refers to financial resources available for people to acquire resources and tools they need to earn a livelihood. In the interviews, canners emphasized the importance of having financial resources to help them begin to engage in canning activities. In particular, they need money to buy carts, trash bags, and gloves that they use to collect cans and bottles. Furthermore, they use their income to pay for their transportation costs to access recyclables at football tailgates and to transport them to the redemption centers. However, most canners said they have other sources of income that enable them to pay for the necessities of canning. These include disability allowance, social security income, and income from seasonal jobs. On the other hand, some canners cannot afford to buy the tools they use for canning, limiting their capacity to can.

Most canners have faced adverse socio-economic circumstances, which led to them being unemployed and, in a few cases, homeless. During the interviews, nearly all canners revealed that they collect bottles and cans at tailgates to supplement their current income. In addition, there is just one person who collects cans all year at different places, and it's his sole source of income. Three essential circumstances emerged during the interviews. Firstly, most elderly canners expressed that due to poor health, they can no longer formally work; hence this worsens their situation. These canners explained that they receive disability allowances as their primary source of income, but it is not adequate to meet their basic needs. A male canner (#11) said, *"I lost my job anyway, I got hurt in 1996…then I'm on disability now for that. So, it is just hard for me. I gotta do what I gotta do to make a living, you know."* Secondly, another canner shared that ever since the economic recession, she had not managed to recover from that

economic shock. Lastly, one of the canners indicated that he lost his job and is now homeless; canning is now a temporary way of earning a living while he makes a long-term plan.

Policies and Practices

Policies and practices serve as mediating processes to create barriers or opportunities that allow canners to engage in their activity. There are decisions made by other stakeholders that have a negative influence on canners' livelihood activities. When interviewed, the canners expressed how some policies shape their canning livelihood activities and how they influenced access to and use of different forms of capital assets. The local grocery stores and local public transport service providers have policies that negatively affect the livelihood of canners. In addition, most canners are concerned about the possibility of policies that may limit their ability to collect cans.

Local grocery stores: The use of shopping carts from the local grocery stores and shops have become illegal. Although there are still a few canners who take the risk of using grocery shopping carts, most of them have stopped using them. Some of the canners who previously used grocery carts are now finding it difficult to collect and transport their cans, which affects their income earnings. When asked during the interviews, the canners indicated that what they would want to improve about their canning activities is having access to carts. However, some canners acknowledge that their use of grocery shopping carts inconveniences customers to these stores; hence they understand that the ban is justified in a way.

Public transport system: As highlighted earlier, most canners use the local public transport system to transport their returnables to the redemption centers. While there is easy access to public transport, most canners face challenges in using the local public buses. Most canners are denied use of the bus

because the trash bags full of aluminum cans tend to be bulky and give a pungent smell of alcohol, which may bring discomfort to other passengers. A male canner (#4) said, "*Sometimes I ride bus one if I don't have too many cans. But the driver always tells me that next time I won't give you a ride because you have all these cans which disturb people."* However, one elderly female canner said she does not face challenges in using the bus as much as the younger canners, maybe because she is elderly.

Redemption centers: Most of the canners expressed two concerns about redemption centers: the limited number of returnables one can redeem at some redemption centers and congestion at the redemption center nearest the stadium. The closest redemption center has a $25 cash limit that pays for any returnables on a given day, and they get a receipt for excess cans that they can redeem another time. Therefore, canners are forced to find another center where they can redeem the excess cans and bottles, or else wait and return another time, risking losing their receipt in the interim. This becomes difficult as most of the canners do not have access to convenient transport. In addition, canners indicated that the closest redemption center is always congested. Most of the canners spend more time redeeming the cans than collecting the cans at football tailgates; hence, it is a time-consuming process. One male canner (#2) said, *"Like, the first time I did it, I think I waited in line for two hours before cashing the cans."* However, some canners with vehicles can go to more distant grocery stores that are not crowded and that do not impose a limit on returnables. Some others take their cans and bottles home and prefer to redeem them days after the football tailgates.

Speculation about the university: Interestingly, most canners raised concern that the university may ban them from collecting cans at football tailgates. Through their social networks, there has been speculation that the university may want to earn income from collecting the cans and bottles at their football tailgates. One canner (#17) said, *"I hope they don't stop us, you know because it's an opportunity for*

whoever wants to do it. You know, there's no discrimination. If you want to do it? You can do it too." During the interviews, some of the participants asked whether the university was planning to stop them. The interviewees considered it necessary that the university knows that this source of income is essential for their welfare, and they must continue to have access to canning.

External Shocks

The seasonality of football games and the seasonal changes in weather conditions at football tailgates affect canning opportunities, as does the level of attendance during tailgating. Football games are seasonal, from the end of August to the end of November; thus, they provide an opportunity to make a living or supplement income from canning only during this season. Some of the canners indicated that outside of the football season, they struggle to meet their needs, and they do not have much choice.

In addition, changing weather patterns during the football season create climatic shocks that influence attendance at tailgating events. Most of the participants explained that when the temperature drops towards the end of the football season, the number of tailgaters decreases, which reduces the number of cans and bottles they can collect. *"But I noticed that some games, especially if it's poor weather, oh, there's not as many people out there collecting,"* revealed one canner (#14). In addition to that, some canners due to ill health are not able to fully engage in canning activities once it becomes cold, thereby resulting in reduced income. Another canner pointed out that each time when it is rainy and windy, and it becomes harder for him to continue collecting returnables and push his cart. Most of the canners agree that adverse weather conditions during football tailgates influence their incomes and the number of returnables available. However, some canners highlighted that they will always collect cans irrespective of bad weather because they need the money.

Canners also indicated that the performance of the MSU football team affects attendance and thus the opportunity to earn from canning. When the team is doing well, crowds are more substantial, and income-earning potential grows. In 2019 the team did poorly towards the end of the season, so the crowds were smaller, and there were fewer cans to collect.

Outcomes

There are economic and non-economic aspirations of canners in their livelihood activity. Although people collect aluminum cans and bottles to earn income, they cite other benefits as well. From the qualitative analysis, the livelihood outcomes included the source of income, improved physical well-being, and environmental stewardship are themes that emerged from the canners. On the other hand, one canner clearly stated that she was canning to earn money for fundraising purposes and nothing else.

Income: In interviews, canners indicated that canning is an important income-generating activity for the unemployed or underemployed. Only one canner indicated that he does not only can at football tailgates, he also cans in and around the city of Lansing. Almost all the canners at tailgates mainly do so to supplement their other sources of income, such as disability allowance and seasonal jobs. Most of the canners who receive disability allowance or are employed part-time revealed that meeting their basic needs is still a struggle. The income earned from canning, no matter how small, is important to meet their basic needs. The income is used to increase food security, pay for bills such as the internet and phone, and to buy basic toiletries. One female canner (#23) said, *"It's money to go to my income in my household. Basically, it is for food, and I pay bills. I paid my phone bill at one time."*

Increased well-being: The data analysis revealed that increased physical well-being emerged as one of the relevant outcomes for some canners. Three participants who identify as males indicated that they do not only make money from canning, but it is an opportunity for them to work out. One of the canners (#8) said, *"It's definitely your workout. But that's kind of why I'm doing it as well. It's a workout with carrying the bottles and picking them up."* Another elder canner felt that canning increases his physical well-being despite his poor health.

Not only that, but most of the canners also expressed that the canning experience gives them an internal feeling of well-being. These canners expressed a good feeling from having been treated with respect while canning. Furthermore, they felt appreciated for their role in keeping the environment clean. One male canner (#3) said, *"I actually got good comments from the tailgaters like you're doing a good job picking these cans, and this made me feel good…it feels warm inside here…* (beats his chest). *At times tailgaters will come and talk to you, which made me feel better."*

Environmental stewardship: While canners acknowledge that they can earn a living, they also reveal that they also perceive this activity as a contribution to the environment in several ways. Most of the canners I interviewed expressed that by recovering cans and bottles from the waste streams, they are helping maintain the environment. While at the same time, they are providing a service to the university by cleaning up during tailgates. They also reduce the number of returnables that can be sent to the landfill. One canner (#5) said, *"I'm helping the environment because, like I said, if you look at it, just think of all these cans were just left on this campus… it will not look good. It will be nasty and dirty."*

Discussion and Conclusion

This paper identified the different capital assets that people who collect aluminum cans and bottles at football tailgates have access to and use and the opportunities and constraints that they experience. This study found out that most canners collect cans to supplement their existing income from social assistance (Tremblay et al., 2010). Having another source of income supports canning activities as the canners can acquire equipment to support their activities. In addition, we found out that most people who collect aluminum cans and bottles as a livelihood activity are mainly African Americans and Caucasians. However, from the observation, there were a few people from other races who declined to participate in the study. These findings are similar to a study in Vancouver where most recyclers were local Canadians (Gutberlet, Tremblay, Taylor, & Divakarannair, 2009). In contrast, most people who engage in collecting returnables in California were observed to be immigrants or homeless (Ashenmiller, 2009).

Besides being a source of income, increased physical well-being, and an internal feeling of well-being are other outcomes of engaging in canning livelihood activities. The canners are treated with respect and dignity, and the tailgater appreciates their role in keeping the environment clean. These positive outcomes keep the canners motivated to engage in their livelihood activities. These findings contradict other studies where adverse outcomes like stigmatization constrain informal recycling activities (Gutberlet & Jayme, 2010; Gutberlet et al., 2009). This somewhat contradictory result is still not completely clear, maybe because football tailgates are different spaces for engaging in this livelihood activity compared to household door to door or accessing garbage dumpsters. Hence future studies may explore how and why collecting cans and bottles is socially acceptable in some places and not in other places.

People who collect aluminum cans and bottles as a source of livelihood at football tailgates use a variety of capital assets. Having the knowledge and skills on how to carry out the actual canning activity, how to build rapport with tailgaters to have access to cans, and how to select the returnables with the deposit value enhance one's ability to engage in the livelihood activity. In addition, good health is key as it enables canners to collect as many cans and bottles at football tailgates.

Having a grocery shopping cart or wagon or bike is an important asset for canners. Having access to and use the shopping cart enables canners to collect all types of returnables and efficiently transport their cans during their livelihood activity. While the grocery shopping cart is an essential asset to canners, restricted access, and use of the grocery shopping cart to canners constrain the ability of canners to collect aluminum cans and bottles at football tailgates. These findings are consistent with previous research in Canada (Gutberlet et al., 2009; Porter, 2015), where the shopping grocery cart is the most used equipment by informal recyclers. Although, in these previous studies, using a grocery shopping cart as physical capital is associated with stigma as the use of these carts is perceived as inappropriate, noisy, and uncomfortable. These challenges were not explored in this study.

Furthermore, the canners found it challenging to have access to and use redemption centers. The canners have to walk if they cannot use public transport, which is physically straining as they will be carrying the carts. The long queues at the nearest redemption centers are time-consuming, which is a concern raised by most participants. Previous studies by (Ashenmiller, 2009; Tremblay et al., 2010) emphasized that it is important for redemption centers to be easily accessible and useable to informal recyclers.

Despite these factors that create opportunities for canners at football tailgates, some challenges constrain their livelihood activity. These results are similar to those reported in Vancouver (Gutberlet et al., 2009), where the use of grocery shopping carts is restricted. However, the seasonality of football games, cold weather conditions towards the end of the football season, and poor attendance at football tailgates constrain canners' livelihood activities at football tailgates. These circumstances are beyond the canners' control, and they either stop canning activities or continue their activities as coping mechanism.

To conclude, despite the seasonality of canning at football tailgates, canning is an essential livelihood activity for individuals who need to supplement their existing incomes. This study suggests that having access to different capital assets enable or disenable canners to engage in their livelihood activity at football tailgates. Canners feel that they provide an important service to football tailgates as they help with cleaning up the tailgate spaces, and they also retrieve valuable returnables that may otherwise end up in the landfill. I think that possible areas for further research include examining the broader livelihoods activities of people who collect aluminum cans and bottles in the big cities with the bottle bill deposit law.

REFERENCES

REFERENCES

Abate, C. (2016, May 13). How Homeless People Make their Livings Redeeming Recyclables. Retrieved March 9, 2020, from http://www.pbs.org/independentlens/blog/how-homeless-recyclers-make-living-redeeming-recyclables/

Bernard, H. R. (2017). Research methods in anthropology: Qualitative and quantitative approaches. Rowman & Littlefield.

Braun, V., & Clarke, V. (2006). Qualitative Research in Psychology Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101.

Casper, J. M., Pfahl, M. E., & McCullough, B. (2014). Intercollegiate sport and the environment: Examining fan engagement based on athletics department sustainability efforts. Journal of Issues in Intercollegiate Athletics, 7, 65–91.

Chambers, R. (1997). Editorial: Responsible well-being - A personal agenda for development. World Development, 25(11), 1743–1754. https://doi.org/10.1016/S0305-750X(97)10001-8

Chung, K. (2000). Designing household survey questionnaires for developing countries. In M. Grosh & P. Glewwwe (Eds.) (pp. 337–364). Washington, D.C: World Bank.

Coletto, D., & Bisschop, L. (2017). Waste pickers in the informal economy of the Global South: included or excluded? International Journal of Sociology and Social Policy.

DFID. (1999). Sustainable livelihoods guidance sheets (No. 445). London.

Dias, S. M. (2016). Waste pickers and cities. Environment and Urbanization, 28(2), 375–390. https://doi.org/10.1177/0956247816657302

Dias, S. M. S. M. (2016). Waste pickers and cities. Environment and Urbanization, 28(2), 375–390. https://doi.org/10.1177/0956247816657302

Downs, M., & Medina, M. (2000). A Short History of Scavenging. Comparative Civilizations Review (Vol. 42).

Elverson, Page. (2020 Feb 17), "How One Woman in New York City Makes Ends Meet by Collecting Cans." CNN, Cable News Network,

https://www.cnn.com/2020/02/17/us/go-there-new-york-collecting-cans/index.html

Fahmi, W., & Sutton, K. (2010). Cairo's contested garbage: Sustainable solid waste management and the Zabbaleen's right to the city. Sustainability. https://doi.org/10.3390/su2061765

Gowan, T. (2010). Hobos, Hustlers, and Backsliders: Homeless in San Francisco. Minneapolis: University of Minnesota Press. https://doi.org/10.1086/666348

Gutberlet, J., & Jayme, B. D. O. (2010). The story of my face: How environmental stewards perceive stigmatization (re) produced by discourse. Sustainability, 2(11), 3339–3353.

Gutberlet, Jutta, & Jayme, B. de O. (2010). The story of my face: How environmental stewards perceive stigmatization (Re)produced by discourse. Sustainability, 2(11), 3339–3353. https://doi.org/10.3390/su2113339

Gutberlet, Jutta, Tremblay, C., Taylor, E., & Divakarannair, N. (2009a). Local Environment Who are our informal recyclers? An inquiry to uncover crisis and potential in Victoria, Canada. https://doi.org/10.1080/13549830903096478

Gutberlet, Jutta, Tremblay, C., Taylor, E., & Divakarannair, N. (2009b). Who are our informal recyclers? An inquiry to uncover crisis and potential in Victoria, Canada. Local Environment, 14(8), 733–747. https://doi.org/http://dx.doi.org/10.1080/13549830903096478

Gutberlet, Jutta, Tremblay, C., Taylor, E., & Divakarannair, N. (2009c). Who are our informal recyclers? An inquiry to uncover crisis and potential in Victoria, Canada. Local Environment, 14(8), 733–747. https://doi.org/10.1080/13549830903096478

Hesse-Biber, S. N., & Leavy, P. (2017). The practice of qualitative research. Sage.

Lincoln, S., Y., & Guba, G, E. (1985). Naturalistic Inquiry. Sage Publications. Retrieved from https://us.sagepub.com/en-us/nam/naturalistic-inquiry/book842

Marello, M., & Helwege, A. (2018). Solid Waste Management and Social Inclusion of Wastepickers Opportunities and Challenges. Latin American Perspectives, 218(1), 108–129. https://doi.org/10.1177/0094582X17726083

Maxwell, J. A. (2012). Qualitative Research Design: An Interactive Approach (Third edition). Thousand Oaks, CA: Sage.

Medina, M. (2001). Scavenging in America: Back to the future? Resources, Conservation and Recycling, 31(3), 229–240. https://doi.org/10.1016/S0921-3449(00)00082-3

Meikle, S., Ramasut, T., & Walker, J. (2001). Sustainable Urban Livelihoods : Concepts and implications for policy. DPU Working Paper The Development Planning Unit, University College London, London.

Miles, M. B., & Huberman, A. M. (1984). Qualitative Data Analysis: A Sourcebook of New Methods. Beverly Hills: Sage Publications.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). Qualitative data analysis: A methods sourcebook (Third). CA: Sage.: Thousand Oaks,

Nas, P. J. M., & Jaffe, R. (2004). Informal waste management shifting the focus from problem to potential. Environment, Development, and Sustainability, 6, 337–353.

Omotoso, K. O. (2017). Informal waste recycling activities: Implications for livelihood and health. African Journal of Science, Technology, Innovation and Development, 9(6), 785–793. https://doi.org/10.1080/20421338.2017.1380584

Patton, M. Q. (2015). No Title Qualitative research & evaluation methods: Integrating theory and practice. (Fourth). Sage Publications.

Porter, M. E. (2015). Marginal recycling: place and informal recycling in St. John's, Newfoundland. Local Environment, 20(2), 149–164. https://doi.org/10.1080/13549839.2013.836162

Rouse, J., & Ali, M. (2001). Waste pickers in Dhaka: Using the sustainable livelihoods approach - Key findings and field notes. WEDC, Loughborough University. https://doi.org/10.1007/978-94-007-0753-5_104452

Rubin, H., & Rubin, I. (2012). Qualitative Interviewing. The Art of Hearing Data. Thousand Oaks: Sage Publications.

Saldaña, J. (2016). The coding manual for qualitative researchers. SAGE.

Samson, M. (2009). Refusing to be Cast Aside: Waste Pickers Organizing Around the World | WIEGO. WIEGO. Retrieved March 9, 2020 from https://www.wiego.org/publications/refusing-be-cast-aside-waste-pickers-organising-around-world

Scoones, I. (1998). Sustainable rural livelihoods: A framework for analysis. IDS Working Paper No.72. IDS: Brighton.

Serrat, O. (2017). The Sustainable Livelihoods Approach. In Knowledge Solutions (pp. 21–26). https://doi.org/10.1007/978-981-10-0983-9_5

Tremblay, C., Gutberlet, J., & Peredo, A. M. (2010). United We Can: Resource recovery, place, and social enterprise. Resources, Conservation and Recycling, 54(7), 422–428. https://doi.org/10.1016/j.resconrec.2009.09.006

Willig, C. (2013). Thematic Analysis : Chapter 6. In Introducing Qualitative Research in Psychology. UK: McGraw-hill education. https://doi.org/10.4135/9781483381411.n624

Wilson, D. C., Rodic, L., Scheinberg, A., Velis, C. A., & Alabaster, G. (2012). Comparative analysis of solid waste management in 20 cities. Waste Management and Research. https://doi.org/10.1177/0734242X12437569

Wittmer, J., & Parizeau, K. (2016). Informal recyclers' geographies of surviving neoliberal urbanism in Vancouver, BC. Applied Geography, 66. https://doi.org/10.1016/j.apgeog.2015.10.006

Wollan, Malia. (8 Apr. 2016), "How to Make Money Collecting Bottles and Cans." The New York Times, Retrieved March 9, 2020, from www.nytimes.com/2016/04/10/magazine/how-to-make-money-collecting-bottles-and-cans.html.

Wong, J. C. (2016, August 8). Collecting cans to survive: a 'dark future' as California recycling centers vanish. Retrieved March 9, 2020, from https://www.theguardian.com/us-news/2016/aug/08/can-collectors-california-recycling-centers-close

Zawadzki, S. J., Schwartz, F. G., Blair, J. C., Larson, E. C., & Newton, J. N. (2016). Understanding Recycling While Tailgating: Applying an Information-Motives-Behavior Skills Approach. In Contribution of Social Sciences to Sustainable Development at Universities (pp. 289–305). Springer, Cham.

CHAPTER 4: Waste governance at football tailgates in Michigan: An application of the institutional analysis and development framework.

Introduction

Tailgating is a social event in the US that involves the open consumption of alcoholic beverages and food before and during a football game, generating a great deal of waste. The Environmental Protection Agency (EPA) estimated that a football game produces about 50 to 100 tons of waste (EPA, 2012). Recyclemania (2019) reported that during the Fall 2019 football season, 50 participating colleges and universities with 6.9 million fans diverted more than 1.8 million pounds of waste from 115 football games, including 1.5 million pounds of bottles, cans, paper, cardboard, and other materials—thereby preventing the emission of 1,801 metric tons of carbon dioxide (MTCO2E) equivalent. As a result, football tailgates have become a focus of campus sustainability as universities now promote reuse, reduce, and recycle waste to minimize football games' ecological footprint. Therefore, universities have implemented various initiatives to improve the waste management system at football tailgates to maintain campus sustainability goals. Some initiatives focus on improving access to recycling facilities, promoting pro-environmental behavior to tailgaters (Zawadzki, Schwartz, Blair, Larson and Newton, 2016; McCullough, 2014), and strategies on greening football tailgates (Martin, Ross, & Irwin, 2015).

Beverage container deposit laws in some states, also called bottle bill laws, have influenced waste governance dynamics at sporting events in colleges and universities. The bottle bill laws are designed to reduce litter and increase recycling rates of bottles, aluminum cans, and other containers. In addition, such laws conceptualize waste materials as a resource in the circular economy. These laws have been implemented in eleven states of the United States, Guam, and some provinces in Canada. For example, Michigan has a 10-cent deposit bottle bill for all beverage containers and any airtight

container under one gallon composed of metal, glass, paper, or plastic. This 10-cent deposit is one of the highest in the US, and it has attracted people who collect aluminum cans and bottles as a source of income at football tailgates. These people are known as informal recyclers or canners, and both these terms are used in the paper.

Different actors such as tailgaters, campus officials, informal recyclers, and the private sector influence the waste management systems during football tailgates. While university officials have established rules and tried to influence norms regarding tailgaters' waste generation and management, there has been little effort to engage with informal recyclers even though they play a large role in the tailgating waste management system.

This study explores the interactions and co-existence of the formal and informal waste management systems at football tailgates. The findings can provide useful insights into campus sustainability and resource recovery at sporting events, while also having larger implications for the relationship between formal and informal waste management actors in general. The present study examines how different actors influence waste at football tailgates and explore how their relationship affects the campus waste governance system. The research questions are:

1. What are the roles and relationships of tailgaters, canners, and campus officials in governing waste at football tailgates?
2. What are the outcomes in managing waste generated at football tailgates?

To answer the research questions, I observed participants at football tailgates and interviewed actors involved in waste management, and I used thematic analysis to analyze the qualitative data. The study's

findings lead to a better understanding of how waste management at football tailgates can be improved for the benefit of all actors while attaining campus sustainability. In addition, the findings have implications for improving the relationship between formal and informal actors in waste management systems.

Below I examine how waste has been conceptualized, describe different waste management systems, and explore waste and campus sustainability. I also utilize the Institutional Analysis and Design (IAD) framework as it helps to understand how different actors collaborate and self-organize to manage a system.

Waste conceptualization and paradigms

Waste has been perceived in two main ways over the years. Firstly, in the sanitary paradigm, waste generated is viewed as a hazard, a "public bad" that is dirty and has detrimental impacts on the environment (Buckingham, Reeves, and Batchelor, 2005). Secondly, in a sustainability paradigm, waste is also a resource that has value (Negrao, 2014), i.e., an object to be managed and governed at different scales (Moore, 2012; Bulkeley, Watson & Hudson, 2007). For instance, waste as recycled material is used in production inputs (Moore, 2012) and is a source of livelihood strategy for those able to collect and sell recyclables (Fahmi & Sutton, 2010; Gutberlet, 2009). Therefore, the different conceptualizations of waste and its transition to the sustainability paradigm has attracted different circular economy actors.

Different waste management systems

The three major systems in managing waste are the formal waste management system, informal waste management system, and an inclusive waste management system (Oguntoyinbo, 2012). The *formal*

waste management system includes state, local government agencies, and private registered organizations involved in waste collection, transportation, and waste disposal. This is typically common in all countries where local authorities tend to have the jurisdiction to manage waste and ensure a clean environment.

Conversely, the *informal waste management system* is a labor-intensive, low-technology, low-paid, unrecorded, and unregulated activity of people collecting and sorting recyclables to earn a living (Wilson et al., 2006). The informal recyclers not only provide recyclable material for production (Navarrete-Hernandez & Navarrete-Hernandez, 2018; Wilson, Araba, Chinwah, & Cheeseman, 2009), but they also contribute significantly to recycling; they reduce the amount of waste deposited to the landfill, and they create livelihood opportunities (Wilson, Velis, & Cheeseman, 2006; UN, 2005).

However, in the global North, the informal recyclers' activities tend not to be recognized, supported, or acknowledged by formal authorities or operate in violation of authorities and other actors. For instance, formal waste management system actors tend to perceive informal waste collection activities as undermining their work and creating public health risks (Ezeah, Fazakerley, & Roberts 2013). Hence, there has been an unwillingness to acknowledge informal recyclers in the formal waste management systems, especially in Europe, Oceania, high-income areas of Asia, and most parts of North America (Scheinberg et al., 2016).

In addition, modernized approaches to waste management consider informal waste systems as a nuisance and detrimental to modern city development (Birkbeck, 1978; Nzeadibe & Ajaero, 2011). Such perceptions lead to the exclusion, marginalization, and exploitation of informal recyclers (Moreno-Sanchez & Maldonado, 2006) and their increased exposure to environmental health hazards

(Binion & Gutberlet, 2012). Consequently, there has been a lack of inclusive waste governance approaches that consider the excluded informal recyclers (Adama, 2012) and recognize their social, environmental, and economic development role.

Against this background, *inclusive waste management system* is an emerging waste management system is mostly in some parts of the global South where the role of the informal waste management systems has become more prominent (Oteng-Ababio et al., 2017). An inclusive waste management system integrates the formal and informal systems, which complement each other, so that it is efficient as well as inclusive. Inclusive waste management recognizes the specialized role of informal recyclers and their expertise in recycling practices (Gutberlet, 2017). Scholars such as (Medina, 2017), emphasize that an inclusive waste management approach recognizes the role of informal recyclers in building sustainable communities and others state that through co-production, informal recyclers are a desirable alternative to provide an integrated solid waste management system in the global South (Fergutz et al., 2011; Ostrom, 1996; Tyson, 2017).

Numerous scholars propose an inclusive waste management system where informal recyclers are recognized as critical in the circular economy (Hartmann,2018; Gutberlet, 2015; Sembiring, E., & Nitivattananon, 2010), with recognition of their economic, social, environmental, and political roles (Dias, 2016; Rutkowski & Rutkowski, 2015; Magni & Günther, 2014). For instance, in eastside Vancouver, Canada, informal recyclers have self-organized into a social enterprise such as the United We Can, which has helped retrieve recyclables, contributing to the formal resource recovery value chain (Tremblay, 2007).

Waste management and campus sustainability

Higher education institutions generate a high amount of waste, and resultantly, waste minimization is now at the forefront of campus sustainability initiatives (Zen et al., 2016). An increasing number of universities are now part of a sustainable campus movement by introducing initiatives that address waste management attitudes and practices (Zhang, Williams, Kempa, & Smith, 2011). In addition, most American universities have institutionalized recycling programs (Armijo de Vega et al., 2008), and sporting events have become a priority in attaining campus sustainability (Tangwanichagapong et al., 2017; Michael & Elser, 2019).

Sustainable zero waste management programs have been implemented in higher education institutions across the globe. Furthermore, universities have adopted high-end technological and policy solutions to improve recycling and recovery rates of recyclable material. Studies have also focused on environmental management structures on university campuses. For instance, a New Zealand university campus has implemented a zero-waste program (Mason et al.,2003). Others have evaluated policy factors influencing effective zero-waste management at higher education institutions in the US (Ebrahimi and North, 2016). The zero-waste management strategies meet environmental protection goals and help the institutions minimize the number of financial resources needed for waste management (Armijo de Vega et al., 2008). Hence, exploring the relationship between different actors that govern waste management systems at sporting events may help inform how to improve campus sustainability.

Institutional Analysis and Design (IAD) Framework Conceptual Framework

This study uses Ostrom's Institutional Analysis and Design (IAD) framework (2011) to understand the roles and responsibilities of different actors and the formal and informal rules that influence how

they manage waste at football tailgates, as in Fig 5.1. The framework informs how to explore the context in which local actors formulate institutional arrangements that shape collective decisions and individual actions over time (Ostrom, 2011, 1990; McGinnis, 2011). Additionally, the IAD framework guides the analysis of the relationship between individuals and organizations and the outcomes of collective actions in different contexts (Imperial & Yandle, 2005).

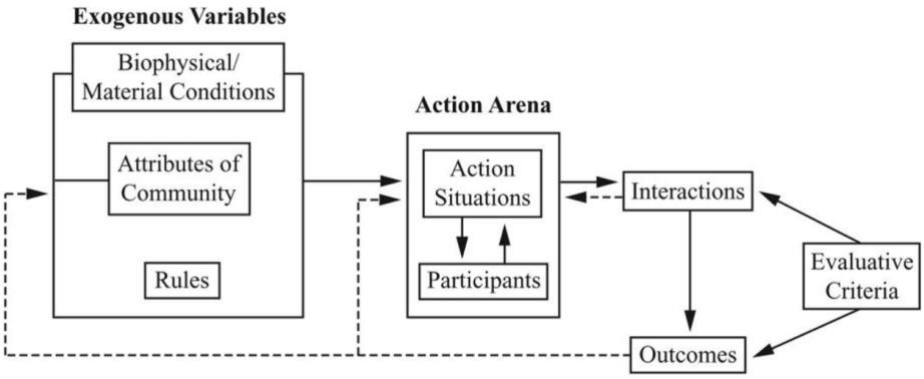

FIGURE 2: INSTITUTIONAL ANALYSIS AND DEVELOPMENT (IAD) FRAMEWORK, (OSTROM, 2011)

The framework's core element is the **action arena,** consisting of the action situation and the participants (Ostrom et al., 1994; McGinnis, 2011). An action situation is a unit of analysis used to describe, analyze, and explain institutional arrangements (Ostrom, 2011). Within the action arena, actors enter the action situation with different roles, strategies, and a range of actions they may, must, or must not take to meet expectations. The action arena is influenced by **exogenous variables** such as biophysical/material conditions, attributes of the community, and rules. The biophysical/material conditions are the physical environment in which an action situation is situated. Attributes of the community describe the socio-economic characteristics of the community that influence the social environment of the action situation. Formal rules are regulations, and informal rules are based on socially shared beliefs on expected behavior (Ostrom, 2005). The actors develop strategies, and different working rules that influence what is required, prohibited or permitted in an action situation

(Ostrom, 2007). Processes of interactions result in different outcomes; both elements are assessed by various evaluative criteria determined by the actors in the action arena.

The IAD has been used mainly to understand how people collaborate and organize themselves across organizational and political boundaries to manage a common pool resource (Ostrom, Gardner, Walker, Walker, & Walker, 1994). Recently, the IAD framework has been useful in understanding waste management initiatives in developing country contexts. For instance, it has been used to explore formal and informal rules in waste management in Mexico (Jiménez-Martínez, 2018) and examine households' willingness and activities on waste disposal monitoring (Zhang & Zhao, 2019). In other related studies, the IAD has been adopted to analyze recycling/recovery policy initiatives (Oh & Hettiarachchi, 2020) and explore how the links and motivation between and among actors in a compost project contribute to its outcomes (Nguyen & Watanabe, 2020).

Waste governance at football tailgates conceptual framework

The waste management system at campus football tailgates is multidimensional as it includes different stakeholders and an enabling environment to attain campus sustainability. Different actors and institutions influence the effectiveness and efficiency of a waste management system. I applied the IAD framework for this study focusing on the following broad elements: the background context of on-campus football tailgates, the action arena, local actors, and the interactions and outcomes, as shown in Fig. 5.2.

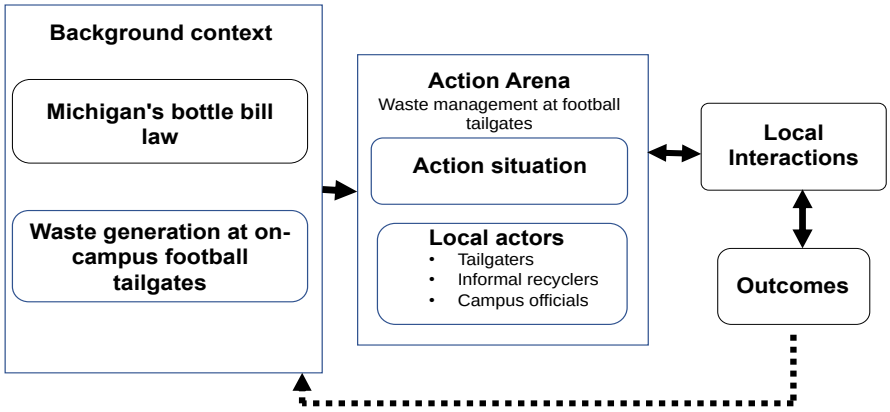

FIGURE 3: APPLICATION OF INSTITUTIONAL ANALYSIS AND DEVELOPMENT (IAD) FRAMEWORK FOR WASTE MANAGEMENT AT FOOTBALL TAILGATES: ADAPTED FROM (OSTROM, 2011).

The background context influences how waste is managed at football tailgates. Michigan's bottle bill or container deposit law requires a refundable deposit on beverage containers to ensure that the containers are returned for recycling. This law has also created an opportunity for people to earn an income by collecting cans generated at football tailgates. Furthermore, some factors influence waste generation at football tailgates, affecting the overall waste management system. Waste governance at football tailgates is the action arena where recyclables and non-recyclable waste materials are generated and managed by different actors, who interact with each other formally and informally. Football tailgates are the action situation where large amounts of waste and recyclables are generated, creating an action where different stakeholders interact and exchange goods and services using formal and informal rules.

The various actors that interact to manage waste at football tailgates –tailgaters, campus officials and informal recyclers – are driven by different roles, norms, and interests, which sometimes may be in conflict. Tailgaters generate recyclables and non-recyclables materials while they party before and during football games. Campus officials are responsible for efficient and cost-effective waste cleanup at football tailgates. Parallel to the campus officials, there is an informal, unregulated system of informal recyclers who focus on collecting bottles and cans to exchange for income. The various interactions and strategies among the different actors result waste governance outcomes at football tailgates.

Study Area and Methods

The campus football tailgates under study attract many football supporters, especially when popular teams are playing. The university officials estimate that football game days generate 50,000 lbs. of different types of waste material on average. In 2018, one well-attended football game generated 82,000 lbs. of waste. In the past, tailgaters generated high volumes of waste leading to pollution of on campus grounds. The campus officials have made a concerted effort to minimize waste generation and encourage recycling to reduce waste at football tailgates. A few experienced canners indicated that they had observed changes in how campus officials are managing waste at football tailgates. Lastly, the amount of waste generated varies and is higher for games with higher attendance, early in the season when the weather is good and depending on the team playing.

Data collection methods

I used direct observations and semi-structured interviews to collect data for the study. I conducted direct observations at all home football games on campus during the 2019 football season. Direct

observations were used to document the interactions among the actors to authenticate responses from interviews.

I used semi-structured interviews to gather information on their role and how they interact with tailgaters and canners, and how the outcomes influence waste management systems at football tailgates. I used heterogeneity sampling to select participants for semi-structured interviews with twenty-nine informal recyclers from September to November 2019. The semi-structured interview asked canners about their role in waste management at football tailgates and their interactions with tailgaters and campus officials. The canners' interviews were conducted in person based on the agreed geographic location.

I held online interviews with nine tailgaters from May to June 2020. The interview guide for tailgaters included how they interact with canners and campus officials and with what outcomes. In addition, three campus officials were interviewed over the phone to examine how the waste management system at football tailgates has evolved. All participants consented to participate in the study, and all interviews were audio-recorded and lasted from 30 minutes to 60 minutes. After each interview, I developed a memo, transcribed the audio recordings within 24 hours, and transferred the transcripts to MAXQDA for data organization. Once data saturation was reached, I stopped conducting interviews.

I used thematic analysis to analyze the data. Data was inductively coded using MAXQDA software. A codebook was developed and with my supervisor to refine the codes. The coded texts were then developed as themes emerging from the data analysis. The themes included roles relationships and

interactions of various actors in waste governance. Table 5 highlight the various themes identified and the sources of information from the data collection.

TABLE 5: COMPONENTS OF THE MODIFIED IAD FRAMEWORK AND DATA SOURCES

Components of the modified IAD framework and the methods		**Information sources**
Background context	Michigan's bottle bill law Waste generation at tailgates	Literature review Secondary data Semi-structured interviews
Action Arena	Action situation Local actors	Semi-structured interviews Direct observations
Formal and informal rules	Interactions between campus officials and tailgaters; tailgaters and canners, and among canners	

Findings

Roles of actors governing waste at football tailgates

Actors at football tailgates occupy different roles in managing waste at these sporting events. This study's findings demonstrate that different actors at football tailgates are concerned with dealing with waste both as a pollutant and as a productive resource.

Campus officials are primarily responsible for cleaning up waste at football games. They perceive waste as a nuisance to be managed to protect the environment and public health. The campus officials' main goal is to clean up the campus environment as fast as they can and cost-effectively as possible.

Tailgaters generate a large amount of waste, which significantly impacts the environment, including increased costs related to managing the waste generated in on-campus environments. Most tailgaters minimize waste generation and properly dispose of their waste in the correct facility. From the direct observations, generally tailgaters left little trash and are responsible for cleaning up and proper disposal of waste generated after their football tailgate parties.

Lastly, the canners' role is to collect cans for income as cans generated at football tailgates pose an opportunity for canners to collect aluminum cans to earn income from redeeming these recyclables. Some of the canners are regulars as they have been collecting cans for as long as 20 years, and others have been collecting for the first time to earn money during hard times.

Relationships among the actors and their outcomes in managing waste

The rules-in-use are formal and informal rules on what actions are required, prohibited, or permitted, resulting in different outcomes (Polski & Ostrom, 1999, Ostrom, 1999). Formal rules are prescribed rules and regulations, and informal rules relate to a shared understanding of acceptable behavior or social norms used at football tailgates. These formal and informal rules influence how the diverse local actors interact to influence waste governance at football tailgates. The findings from observational and semi-structured interview data reveal a shared understanding of how these actors interact. This section will represent four interactions: interactions between campus officials and tailgaters, interactions between campus officials and canners, interactions between tailgaters and canners, and the interactions among canners.

Interactions between campus officials and tailgaters regarding waste management

Campus officials: The campus officials highlighted the formal rules regulating how football tailgates operate. Firstly, the regulations included banning early drinking on campus tailgating by limiting

tailgating hours to decrease the amount of waste generated. The officials I interviewed revealed that, unlike fifteen years ago, the university now restricts football tailgates to at most five hours before the game, and tailgating parties are no longer allowed after the game. Secondly, the university began limiting access to some tailgating spaces that were previously used for tailgates. These regulations were put in place to reduce the amount of waste generated. In addition, MSU officials indicated that most tailgaters from Michigan make an effort to follow the rules and regulations required for recycling at football tailgates.

Furthermore, the officials use their social media platforms and website to raise awareness and education on cost-effective ways to manage waste at football tailgates. For instance, the university has implemented a "green your tailgate" initiative accessible on its website to improve campus sustainability during football tailgates. The initiative encourages and suggests strategies to recycle and manage waste at campus tailgating parties. The university also encourages tailgaters to take home their mini-propane tanks as currently, the university does not have facilities to manage or dispose of them. In all these efforts, the officials emphasized that they are cautious in their approach as they want football fans to enjoy their football tailgates without any interference. One official said, *"…The tailgaters are not focused on waste or recycling on game day…So if you can make it convenient and easy for them, they might follow the rules and regulations as far as recycling goes…."*

Lastly, the campus officials mentioned that they have managed to build relationships with a few tailgaters who have been tailgating at the same tailgating spot over the years. The officials have raised awareness on proper recycling behaviors, and they have increased the accessibility of disposal facilities to promote sustainable waste disposal practices. However, the officials try to minimize their interactions with tailgaters as they want tailgaters to enjoy their leisure time. One official said, *"I think*

once tailgaters know what we're doing and what we need, they adapt…and trying to educate whenever we can, but we have very little opportunity to educate."

Tailgaters: A few tailgaters indicated that they have very minimal interaction with campus officials. Most tailgaters' only interaction with campus officials is when they hand over trash bags for them to use. All tailgaters I interviewed revealed that they are unaware of any communication with campus officials on managing waste at football tailgates. Nevertheless, the tailgaters seem to follow the expected rules on managing their waste informally. One tailgater explained, *"I don't know of any rules. It's a matter of just cleaning up after yourself."* A few tailgaters highlighted that their friends have tailgating permits for specific spots, and they were not sure if there is any information shared on how to manage waste that comes with the permit. However, from the observation, there is no face-to-face communication efforts beyond that during on campus tailgating.

Interactions between campus officials and canners regarding waste management

Campus officials: The officials informally acknowledge the presence of canners and their influence on the waste management system at football tailgates. One official said, *"By the fact that they go around, and they pick it up off the ground…if you look at it from that perspective, they do help clean up the grounds at the university…."* Furthermore, the officials indicated that when waste collection staff collect trash during tailgates, they even leave cans for canners to pick up if they are nearby.

The officials raised two concerns they have with some canners. Firstly, some canners upend trash cans to access aluminum cans disposed of in the trash cans resulting in littering. Secondly, some canners still remove bin liners to use when they collect the cans. Therefore, campus officials have been handing out trash bags to canners to use these bags rather than removing the bin liners. During that process

of handing out trash bags, one official highlighted that sometimes they express their appreciation to canners on how the canners are helping in cleaning up the campus.

Canners: Most canners indicated no interactions or communication with campus officials except when they receive trash bags from the officials. In addition, the canners indicated that sometimes officials point canners to locations where cans are plentiful, one canner said,

> *"My relationship with them (campus officials) is like the more I pick up, the less they have to pick up. So, they want you to get this stuff… they will help you, and they would tell you. Look, man, there is a pile of cans over there. There are piles of cans over here. Hey, go get that over there, man."*

Additionally, a few canners expressed concerns that there might be a pending ban on collecting cans at football tailgates, threatening their livelihood. One canner stated, *"The cans and bottles help us a lot… I would hope the university allows that practice to continue."* However, the campus officials interviewed expressed that it is not their current position to stop people from collecting cans and bottles at football tailgates.

Interaction between tailgaters and canners regarding waste management

Tailgaters: Most tailgaters described the informal rules that influence their interactions with canners. From the field observations, tailgaters toss their cans on the side where canners pick them up without interfering with canners. One tailgater said,

> *"It's like there is a certain understanding …so it's almost like the natural order of things... people that are collecting cans are doing a service…not just to the campus itself and the university staff, but they are helping the people that come to tailgate because they are part of the cleaning team."*

Nonetheless, most tailgaters indicated that they have no direct interactions with canners. They acknowledge and accept the presence of canners at football tailgates. Hence the tailgaters support the canners' livelihood activities. One tailgater said, *"Those people collecting cans are part of the community; everyone knows that they need the money…."*

Therefore, most tailgaters expressed that they support canners' activities by giving them access to their cans. For instance, most tailgaters described an informal arrangement whereby they toss off their recyclables by the sidewalk for canners to collect without any interaction

Canners: The canners highlighted informal rules used to access cans from tailgaters with minimal interactions with them. Most canners mentioned that tailgaters accept their presence at football tailgates, and they minimize interactions with tailgaters as they collect cans at tailgates. One male canner said, *"…I pick them up (the cans) as they are left on the ground. I don't make a point to start a conversation with tailgaters… I'm not going to invade their privacy…."*

However, most canners also ask for cans respectfully and politely or sometimes they ask for cans from tailgaters cautiously not to disturb the tailgating parties, and tailgaters treat them well. *"I give them all the respect and politeness, and 98% of them give it back," s*aid a male canner who has been collecting cans for five years. Most canners indicated that some tailgaters hand over their cans or collect cans to give to them. *"There are some people who help you. They go and grab cans and pass to you or put them in your cart,"* another male canner highlighted. A few canners highlighted that some tailgaters keep cans for canners to collect later. *"…They tell me to come back for more in a while…they say we will keep them besides the table for you...they are doing me a favor…."* Another male canner revealed that some tailgaters also keep cans for canners that they have known over the years; he said, *"…the tailgaters can tell you that they are saving them for someone around the corner. They actually keep for different people that's been there for years…they know the same*

people…." Other canners highlighted that sometimes tailgaters drink on their way to the football stadium as they know that the canners will come and pick up the cans for income. One male canner described, *"Sometimes when you walk, somebody drinking will say, I got one for you, you can have this."*

A few canners indicated that sometimes they ask for cans from tailgaters cautiously not to disturb the tailgating parties. For example, a male canner said, *"If I see cans floating and laying around (at a tailgating party), I am going to ask politely…."*

Interactions among canners

Most canners revealed that they minimize interactions with each other. However, most canners mentioned that they respectfully give each other access to cans to avoid conflicts and tensions amongst themselves. *"I just try to steer clear not to step on anybody's toes,"* said a female canner. One man who has been canning for the past five years said, *"If you see (the cans) first, it's yours, first come, first served."*

Furthermore, most canners revealed that there is some competition to access cans at football tailgates. Nonetheless, the competition does not lead to tensions or conflicts among the canners. Another male canner said, *"It's competition. But it's not to the point that we're fighting…no."* The more experienced canners revealed that new canners tend to encroach in their regular space that they collect from, and they restrict other canners from accessing cans from their territory. The experienced canners expressed that the presence of other canners in their regular spaces reduces the cans available to them. One female canner said, *"All regulars, we have respect for each other when it comes to canning…everybody has their area…everybody already knows that…."* Most of the canners who are less experienced indicated that they try to avoid tensions and conflicts. A male canner revealed, *"If I notice that there is another canner, I try to find a different place…I hate conflicts..."*

Outcomes

The roles of each actor and the interactions among the actors at football tailgates result in different outcomes. The campus officials, tailgaters, and canners revealed outcomes of their approaches to managing waste at football tailgates.

Campus officials: In recent years, campus officials indicated that they had experienced positive outcomes of their initiatives to improve how they manage waste at football tailgates. They said that tailgaters have improved in how they manage their waste at football tailgates, with a decrease in littering over the years and increased use of recycling facilities. One official said, *"…What we found is that if you can provide easy and convenient recycling, you're going to get a lot better opportunity for people to participate in recycling."* Fifteen years ago, some canners used to empty the trash bag liners and dump waste on the ground for their personal use. One official said,

> "*…It frustrates our staff out there working…when you go to one of our recycling containers, you need to pull the bag out and empty it, but the bag is gone…there is now a bunch of material in the can… if we could eliminate pulling the bags out of the trash cans, that would make the process smoother."*

In response to this problem, campus officials began giving out trash bags to canners to collect aluminum cans to discourage removing them from trash cans. Since initiating this practice they have seen a decrease in missing bin liners and littering.

Tailgaters: Most tailgaters indicated that they aim to dispose of their waste and recyclables responsibly as they enjoy their tailgating parties. One tailgater said, *"So our responsibility is definitely to clean up because that's our campus at the end of the day, and we don't want it to look dirty. So, my responsibility is to clean everything."*

Canners: Most canners expressed that they also help clean up the university and maintain the environment as unintended outcomes of their activities at football tailgates. As canners go around the

campus picking up cans, they help manage waste at football tailgates. One canner said, *"In a way, we are helping out… not only by picking cans, but also I separate cans from trash…if I notice trash on the ground and there is a garbage bin close by, I pick it up."* One university official also indicated that they appreciate the role of the canners in managing waste at football tailgates; he said, *"…Can pickers are somewhat that defense line because they are probably the earliest to pick up material on the ground…it works for us to that extent..."*

Furthermore, most canners both experienced and inexperienced indicated that they see themselves as environmental stewards. As the canners collect cans, they help increase recycling rates and reduce the number of cans that otherwise could be disposed of at the landfill. Therefore, many canners said that they feel that they are helping in maintaining the environment. One canner said, *"… we're doing a good thing for the planet. We're saving all this stuff from the landfill."*

Discussion and conclusion

The purpose of this study was to understand the roles of tailgaters, canners, and campus officials and the relationships among them in governing waste generated at football tailgates. Similar to common findings in the literature (Scheinberg, Spies, Simpson, & Mol, 2011; Guibrunet, 2019), we found co-existence between the formal and informal waste management systems, but with minimal interaction and no effort to establish a more productive or more formal relationship between university officials and canners.

The interactions between the formal and informal actors have positive outcomes regarding how waste is managed at football tailgates. University officials tolerate canners, and the canners interviewed in this study engage in their activities without feeling threatened. This is a sharp distinction from some spaces where informal recyclers' work is considered illegal and prohibited (Wittmer & Parizeau, 2018),

and they are often criminalized and harassed (Aparcana, 2017; Sembiring & Nitivattananon, 2010; Wilson et al., 2006).

However, due to lack of communication between university officials and canners, their relationship is not completely smooth and there are missed opportunities for improving waste governance. For example, university officials hand out new trash bags to canners to discourage them from emptying trash containers as they search for bin liners to use. It is now much less common for officials to find overturned trash cans than previously, but the problem occasionally persists.

Due to lack of communication, most canners interviewed are not even aware of why the university provides them trash bags to use. A better communication effort, perhaps through a more formal relationship between university officials and canners, could help all actors develop a common understanding of how waste and recyclables can be managed at football tailgates. A few studies have documented other cases where local municipalities share expectations with informal recyclers while facilitating their work to collect waste in urban areas (Guibrunet,2019; Katusiimeh et al., 2013).

Experienced canners interviewed for this study regularly expressed that they perceive themselves as environmental stewards who help clean up the campus and increase resource recovery of aluminum cans. However, the campus officials are unaware of these sentiments among canners despite campus officials acknowledging the role of canners and showing appreciation to canners in some cases. Meanwhile, our observations suggest that there are also numerous canners with no experience, suggesting that there is likely a large presence of transient canners who will not have received messages from university officials communicated informally over the years. A concerted effort to partner with

experienced canners might yield a system to spread the word about acceptable canning practices and eliminate the practice of overturning trash bins.

Currently, the canners appear to be in the dark about their place in waste management governance in tailgates and are uncertain about the future of this part of their livelihood. Several canners interviewed expressed concern that they might soon be banned from collecting cans during tailgating. Such uncertainties and speculation are common in places where informal recyclers are marginalized and considered illegal. Due to a lack of communication between formal and informal waste management actors, (Gutberlet 2008) asserts that informal recyclers rarely participate in public discussions or debate forums about their work, and they remain marginalized. In cases where a partnership is built between informal recyclers and other actors, it results in the implementation of more feasible strategies in resource recovery for the benefit of all actors involved (Tremblay et al., 2010).

To conclude, some recommendations are useful to work towards campus sustainability at sporting events and even in other contexts where informal recyclers exist. University officials should consider organizing discussions with canners to find ways to deliver better results of how to improve recyclable collection and waste management at football tailgates. Opening lines of communication among the actors would legitimize the role of canners in campus sustainability. It could build trust among the actors, resolve some of the challenges highlighted by both sets of actors, and increase the efficiency of the waste management system.

REFERENCES

REFERENCES

Adama, O. (2012). Urban Livelihoods and Social Networks: Emerging Relations in Informal Recycling in Kaduna, Nigeria.

Aparcana, S. (2017). Approaches to formalization of the informal waste sector into municipal solid waste management systems in low- and middle-income countries: Review of barriers and success factors. Waste Management, 61, 593–607.

Binion, E., & Gutberlet, J. (2012). The effects of handling solid waste on the wellbeing of informal and organized recyclers: A review of the literature. International Journal of Occupational and Environmental Health, 18(1), 43–52.

Birkbeck, C. (1978). Self-employed Proletarians in an informal factory: The case of Cali's garbage dump. World Development, 6(9), 1173–1185.

Bushouse, B. K. (2011). Governance structures: using IAD to understand variation in service delivery for club goods with information asymmetry. Policy Studies Journal, 39(1), 105-119.

Dias, S. M. S. M. (2016). Waste pickers and cities. Environment and Urbanization, 28(2), 375–390.

Didero, M. (2012). Cairo's informal waste collectors: A multi-scale and conflict sensitive perspective on sustainable livelihoods. Erdkunde, 66(1), 27–44.

EPA (2012) https://archive.epa.gov/epapages/newsroom_archive/newsreleases/0a91d535eae41545852579810058af31.html accessed June 29, 2020

Ezeah, C., Fazakerley, J. A., & Roberts, C. L. (2013). Emerging trends in informal sector recycling in developing and transition countries. Waste Management, 33(11), 2509–2519.

Fergutz, O., Dias, S., & Mitlin, D. (2011). Developing urban waste management in brazil with waste picker organizations. Environment and Urbanization, 23(2), 597–608.

Guibrunet, L. (2019). What is "informal" in informal waste management? Insights from the case of waste collection in the Tepito neighborhood, Mexico City. Waste Management, 86, 13–22.

Gutberlet, J. (2008). Organized and informal recycling: Social movements contributing to sustainability. WIT Transactions on Ecology and the Environment, 109, 223–232.

Gutberlet, J. (2015). Cooperative urban mining in Brazil: Collective practices in selective household waste collection and recycling. Waste Management, 45, 22-31.

Gutberlet, J. (2015). More inclusive and cleaner cities with waste management co-production: Insights from participatory epistemologies and methods. Habitat International, 46, 234-243.

Gutberlet, J., Baeder, A. M., Pontuschka, N. N., Felipone, S. M. N., & dos Santos, T. L. F. (2013). Participatory research revealing the work and occupational health hazards of cooperative recyclers in Brazil. International Journal of Environmental Research and Public Health. 10(10), 4607-4627

Hartmann, C. (2018). Waste picker livelihoods and inclusive neoliberal municipal solid waste management policies: The case of the La Chureca garbage dump site in Managua, Nicaragua. Waste management, 71, 565-577.

Imperial, M. T., & Yandle, T. (2005). Taking institutions seriously: using the IAD framework to analyze fisheries policy. Society and Natural Resources, 18(6), 493-509.

Jiménez-Martínez, N. M. (2018). The governance of waste: formal and informal rules in the central region of Mexico. Regional Studies, Regional Science, 5(1), 353-360.

Jordan, A. (2008). The Governance of Sustainable Development: Taking Stock and Looking Forwards. Environment and Planning C: Government and Policy, 26(1), 17–33.

Katusiimeh, M. W., Burger, K., & Mol, A. P. J. (2013). Informal waste collection and its co-existence with the formal waste sector: The case of Kampala, Uganda. Habitat International, 38(1), 1–9.

Magni, A. A. C., & Günther, W. M. R. (2014). Cooperativas de catadores de materiais recicláveis como alternativa à exclusão social e sua relação com a população de rua. Saude e Sociedade, 23(1), 99–109.

Marello, M., & Helwege, A. (2018). Solid Waste Management and Social Inclusion of Wastepickers: Opportunities and Challenges. Latin American Perspectives, 45(1), 108–129.

Martin, N. T., Ross, S. R., & Irwin, R. L. (2015). Utilizing community-based social marketing in a recycling intervention with tailgaters. Journal of Intercollegiate Sport, 8(1), 57-81.

McCullough, B. P., & Kellison, T. B. (2016). Go green for the home team: Sense of place and environmental sustainability in sport. Journal of Sustainability Education, 11, 1-14.

McGinnis, M. D. (2011) An introduction to IAD and the language of the Ostrom Workshop: a simple guide to a complex framework. Policy Studies Journal 39(1):169-183.

McGinnis, M. D. (2011) An introduction to IAD and the language of the Ostrom Workshop: a simple guide to a complex framework. Policy Studies Journal 39(1):169-183.

Medina. (2017). The World's Scavengers: Salvaging for Sustainable Consumption and Production. Rowman Altamira

Meira de Sousa Dutra, R., Harue Yamane, L., & Ribeiro Siman, R. (2018). Influence of the expansion of the selective collection in the sorting infrastructure of waste pickers' organizations: A case study of 16 Brazilian cities. Waste Management, 77, 50–58.

https://www.michigan.gov/. (2019, March 8). MICHIGAN BOTTLE DEPOSIT LAW FREQUENTLY ASKED QUESTIONS. https://www.michigan.gov/documents/egle/EGLE-MMD-Sustainability Michigan_Bottle_Deposit_Law_FAQ_updated_Jan_2019_691453_7.pdf.

Moreno-Sanchez, R. D., & Maldonado, J. H. (2006). Surviving from garbage: the role of informal waste-pickers in a dynamic model of solid-waste management in developing countries. Environment and Development Economics, 11(3), 371–391.

Navarrete-Hernandez, P., & Navarrete-Hernandez, N. (2018). Unleashing Waste-Pickers' Potential: Supporting Recycling Cooperatives in Santiago de Chile. World Development, 101, 293–310.

Nguyen, T., & Watanabe, T. (2020). Autonomous Motivation for the Successful Implementation of Waste Management Policy: An Examination Using an Adapted Institutional Analysis and Development Framework in Thua Thien Hue, Vietnam. Sustainability, 12(7), 2724.

Nguyen, T., & Watanabe, T. (2020). Autonomous Motivation for the Successful Implementation of Waste Management Policy: An Examination Using an Adapted Institutional Analysis and Development Framework in Thua Thien Hue, Vietnam. Sustainability, 12(7), 2724.

Nzeadibe, T. C. (2009). Solid waste reforms and informal recycling in Enugu urban area, Nigeria. Habitat International, 33(1), 93–99.

Nzeadibe, T. C., & Ajaero, C. K. (2011). Development Impact of Advocacy Initiatives in Solid Waste Management in Nigeria. Environment, Development, and Sustainability, 13(1), 163–177.

Oguntoyinbo, O. O. (2012). Informal waste management system in Nigeria and barriers to an inclusive modern waste management system: A review. Public Health, 126(5), 441–447.

Oh, J., & Hettiarachchi, H. (2020). Collective Action in Waste Management: A Comparative Study of Recycling and Recovery Initiatives from Brazil, Indonesia, and Nigeria Using the Institutional Analysis and Development Framework. Recycling, 5(1), 4

Oh, J., & Hettiarachchi, H. (2020). Collective Action in Waste Management: A Comparative Study of Recycling and Recovery Initiatives from Brazil, Indonesia, and Nigeria Using the Institutional Analysis and Development Framework. Recycling, 5(1).

Ostrom, E. (1996). Crossing the great divide: Co-production, synergy, and development. World Development, 24(6), 1073–1087.

Ostrom, E. (1996). Crossing the great divide: Co-production, synergy, and development. World Development, 24(6), 1073–1087.

Ostrom, E. (2005). Understanding Institutional Diversity. Princeton, NJ: Princeton University Press. page 1-66. Ostrom, E. (2011). Background on the institutional analysis and development framework. Policy Studies Journal, 39(1), 7-27.

Ostrom, E. (2005). Understanding Institutional Diversity. Princeton, NJ: Princeton University Press. Page 1-66.

Ostrom, E. (2011). Background on the institutional analysis and development framework. Policy Studies Journal, 39(1), 7-27.

Ostrom, E., 1990. Governing the commons: the evolution of institutions for collective action. Cambridge University Press, Cambridge, UK.

Ostrom, E., 1990. Governing the commons: the evolution of institutions for collective action. Cambridge University Press, Cambridge, UK.

Ostrom, E., and Hess, C. (2007). "A framework for analyzing the knowledge commons." In: Hess, C. and Ostrom, E., eds Understanding knowledge as a commons: from theory to practice. Cambridge, MA: MIT Press

Ostrom, E., and Hess, C. 2007. "A framework for analyzing the knowledge commons". In: Hess, C. and Ostrom, E., eds Understanding knowledge as a commons: from theory to practice. Cambridge, MA: MIT Press

Ostrom, Elinor, Roy Gardner, and James Walker. (1994). Rules, Games, and Common-Pool Resources. Ann Arbor: The University of Michigan Press.

Ostrom, Elinor, Roy Gardner, and James Walker. 1994. Rules, Games, and Common Pool Resources. Ann Arbor: The University of Michigan Press.

Oteng-Ababio, M., Arguello, M., Jose, E., & Gabbay, O. (2013). Solid waste management in African cities: Sorting the facts from the fads in Accra, Ghana. Habitat International, 39, 96-104.

Pacheco-Vega, R. (2020). Environmental regulation, governance, and policy instruments, 20 years after the stick, carrot, and sermon typology. Journal of Environmental Policy & Planning, 1–16.

Parizeau, K. (2017). Witnessing urban change: Insights from informal recyclers in Vancouver, BC. Urban Studies, 54(8), 1921-1937.

Polski, M. M., & Ostrom, E. (1999). An institutional framework for policy analysis and design. Indiana University, Workshop in Political Theory and Policy Analysis: Bloomington, IN, USA.

Recyclingmania, (2019) https://recyclemania.org/participate/gameday-recycling-challenge/2019-results/ accessed June 29, 2020

Rosaldo, M. (2016). Revolution in the garbage dump: The political and economic foundations of the Colombian recycler movement, 1986-2011. Social Problems, 63(3), 351-372.

Rutkowski, J. E., & Rutkowski, E. W. (2015). Expanding worldwide urban solid waste recycling: The Brazilian social technology in waste pickers inclusion. Waste Management and Research, 33(12), 1084–1093.

Sandhu, K., Burton, P., & Dedekorkut-Howes, A. (2017). Between hype and veracity; privatization of municipal solid waste management and its impacts on the informal waste sector. Waste Management, 59, 545–556.

Scheinberg, A., Nesić, J., Savain, R., Luppi, P., Sinnott, P., Petean, F., & Pop, F. (2016). From collision to collaboration - Integrating informal recyclers and reuse operators in Europe: A review.: The Journal of the International Solid Wastes and Public Cleansing Association, ISWA, 34(9), 820–839.

Scheinberg, A., Savin, R., Luppi P. , Sinnott P., Flaviu P., and Flaviu, P., (2016). From collision to collaboration – Integrating informal recyclers and reuse operators in Europe: A review. Waste Management & Research, 34(9), 820–839.

Scheinberg, A., Spies, S., Simpson, M. H., & Mol, A. P. J. (2011). Assessing urban recycling in low- and middle-income countries: Building on modernised mixtures. Habitat International.

Sembiring, E., & Nitivattananon, V. (2010). Sustainable solid waste management toward an inclusive society: Integration of the informal sector. Resources, Conservation and Recycling, 54(11), 802–809.

Tyson, W. (2017). Using social-ecological systems theory to evaluate large-scale co-management efforts: A case study of the Inuvialuit Settlement Region. Ecology and Society, 22(1).

United Nations. Department of Public Information. (2005). The millennium development goals report 2005. United Nations Publications.of the Colombian Recycler Movement, 1986-2011. Social Problems, 63(3), 351.

Wilson, D. C., Araba, A. O., Chinwah, K., & Cheeseman, C. R. (2009). Building recycling rates through the informal sector. Waste Management, 29(2), 629–635.

Wilson, D. C., Velis, C., & Cheeseman, C. (2006). Role of informal sector recycling in waste management in developing countries. Habitat International, 30(4), 797–808.

Zawadzki, S. J., Schwartz, F. G., Blair, J. C., Larson, E. C., & Newton, J. N. (2016). Understanding Recycling While Tailgating: Applying an Information-Motives-Behavior Skills Approach. The Contribution of Social Sciences to Sustainable Development at Universities (pp. 289-305). Springer, Cham.

Zhang, Z., & Zhao, L. (2019). Voluntary monitoring of households in waste disposal: An application of the institutional analysis and development framework. Resources, Conservation and Recycling, 143, 45-59.

Zhang, Z., & Zhao, L. (2019). Voluntary monitoring of households in waste disposal: An application of the institutional analysis and development framework. Resources, Conservation and Recycling, 143, 45-59.

CHAPTER 5: The role of place, social identities, and social capital: exploring informal recyclers' livelihoods in Lansing, Michigan.

Introduction

Collecting returnable aluminum cans and bottles has become a source of income for vulnerable populations in Canada and some states in the US with the bottle bill law (Ashenmiller, 2009; Gowan, 2010; Gutberlet, Tremblay, Taylor, & Divakarannair, 2009; Porter, 2015). The social group that engages in this activity is typically socially and economically excluded and usually unable to influence policy and decision making (Gutberlet et al., 2009). Due to the nature of their livelihood activity and sometimes their physical appearance, these people tend to be stigmatized and discriminated against (Gutberlet & Jayme, 2010). The informal recyclers in North America, known to each other as binners (Gutberlet et al., 2009) or canners (Chikowore & Kerr, 2020), are often perceived as a nuisance and even as criminals by the public because of their association with waste as they sometimes retrieve recyclables from the garbage (Downs & Medina, 2000; Tremblay, 2007).

Furthermore, multiple contexts influence informal recycling activities' success in terms of place and time in which they operate. Collecting waste for income is considered socially acceptable or unacceptable, depending on the social norms that govern the behavior of members of a social group or society in a specific place or context. Informal recyclers' activities are prohibited by law in many cases; consequently, the recyclers face harassment from the public and feel unwelcome (Gutberlet & Jayme, 2010; Gutberlet et al., 2009; Porter, 2015) and are socially and economically excluded (Gutberlet et al., 2009). These experiences demonstrate that informal recycling is socially unacceptable in most places. Several studies suggest that informal recyclers' stigma and discrimination are produced in specific spaces over time (Peres, 2016; Gutberlet & Jayme, 2010), constraining their livelihood activities.

On the other hand, where local communities perceive informal recyclers with different identities such as hard-working environmental stewards instead of criminals or a nuisance, their activity is socially acceptable. A few studies indicate that informal recycling is an activity that is entirely socially appropriate under certain circumstances or in certain places, depending on the community support offered in specific places for this livelihood activity (Porter, 2015; Tremblay, Gutberlet, & Peredo, 2010). This enhances people's livelihood activities who depend on collecting recyclables for income (Gowan, 2010). Therefore, if local communities normalize informal recycling activities, it makes an essential difference in how the informal recyclers engage in their livelihood activities.

Only a few studies document how place-based contexts influence informal recyclers to (un)successfully engage in their livelihood activity. We used qualitative semi-structured interviews to explore how the identity of place influences informal recyclers to collect recyclables for income at football tailgates, and not at other places. Football tailgates are large parties before major football games that generate large volumes of empty cans and bottles. This article addresses the following research questions:

1. How do demographic characteristics influence canners' livelihood activities?
2. What is the role of the place-based context of tailgating events that supports collecting cans for income that would be uncommon outside of tailgating events?
3. How do tailgaters and canners interact for canners to (un)successfully engage in their livelihood activity at football tailgates and in other settings?

Social identities of informal recyclers

Informal recyclers support recycling and waste management in urban areas, but their social, economic, and environmental contributions are often ignored (Dovey, 2012; Wilson, Velis, & Cheeseman, 2006; Dias, 2006). This population faces exclusion, not only from the local waste governance decision-making process but also from other urban dwellers and waste management stakeholders who often stigmatize informal recyclers in very negative ways (Dias, 2016). This section highlights the influence of informal recyclers' social identities, the role of place or context of their activities, and the impact of social capital at these specific places and times on their livelihood.

In the literature on informal recyclers, there seems to be a general agreement that they are a vulnerable population, irrespective of geographic location across the globe (Wilson et al., 2006). Informal recyclers are from vulnerable social groups characterized by social identities like gender, children (Coletto & Bisschop, 2017), race, age, homelessness, class, minorities, and immigrants (Gowan,2009). Numerous scholars contend that informal recyclers' multiple identities increase their vulnerability to be treated with prejudice by the public (Gutberlet & Jayme, 2010). Hence, they continuously suffer from social and economic exclusion, affecting how they engage in their activities in certain places or contexts (Coletto & Bisschop, 2017).

Due to their multiple identities, informal recyclers are perceived as either victims or perpetrators, or both. The informal recyclers are victims subject to social stigma and discrimination as they belong to socially vulnerable groups (Fahmi & Sutton, 2010; J. Gutberlet & Jayme, 2010). For example, nearly all of the informal recyclers known as the Zabaleen in Egypt identify as religious minorities (Fahmi & Sutton, 2010). Some informal recyclers in San Francisco and elsewhere in California identify as immigrants and homeless (Ashenmiller, 2009; Gowan, 2010). In contrast, the informal recyclers are often perceived as perpetrators because their activities are incompatible with modern cities, making

them vulnerable to harassment by local authorities and society at large (Gutberlet et al., 2009). The literature on informal recyclers provides useful insights into how informal recyclers' multiple social identities negatively influence their livelihood activities.

Conversely, in a few places, there has been a shifting focus from exclusion to the inclusion of informal recyclers to improve their livelihoods by integrating their activities into the formal system (Rutkowski & Rutkowski, 2015; Tremblay et al., 2010). In this case, the governments and waste management authorities formalize and support informal recyclers' urban livelihoods to promote social equity and environmental sustainability. Such integrated waste management systems are more inclusive, as informal recyclers can self-organize, which increases their safety, dignity, and self-esteem (Dias, 2016; Ogando, Roever, & Rogan, 2017a; Rutkowski & Rutkowski, 2015).

Role of place-based context in informal recycling activities

Informal recyclers' social identities are a critical lens for exploring informal recycling activities; understanding the role of a place-based context where informal recycling activities occur is also essential. Due to the nature of informal recycling activities, recyclers may feel out of place or in place depending on where they practice their activity (Porter, 2015). Porter further states that the place in which informal recycling activities occur "produces and is produced" by attributes that differ from one place to another.

Different groups of people have different ideas about what is more socially (in)appropriate in specific places and times (Cresswell, 1992). North American studies have shown that informal recyclers feel unwelcome, socially excluded, and stigmatized (Gowan, 2010; Gutberlet, Tremblay, Taylor, & Divakarannair, 2009b; Taylor, 2008; Tremblay et al., 2010). These experiences make it difficult for

them to engage in their livelihood activities in certain places. Such adverse experiences perpetuate their continuous marginalization. On the other hand, some studies have shown that informal recyclers have felt welcome in the specific place-based context where they practice their activities. For instance, informal recyclers who collect recyclables in the community where they live are interpreted as being in place, and their work is socially acceptable in the community (Porter, 2015).

Furthermore, an attachment to specific places provides a sense of security and is an indicator of social cohesion (Benko & Strohmayer, 2004). For instance, informal recyclers in Vancouver have designated routes known as traplines, and they are attached to these specific places (Tremblay et al., 2010). This attachment to place is also evident in an earlier study by Ashenmiller (2009), who classified informal recyclers into three categories defined by the location from which they collect most of their returnable bottles and cans. The professional recycler collects recyclables from public places, households, and garbage; a workplace recycler retains recyclables obtained from their workplace, and household recyclers collect recyclable personal household material. However, these studies did not explore social norms that characterize these contexts where these informal recyclers collect recyclables and these will be addressed in this study.

There are critical attributes of a place emanating from social capital that influence informal recycling as a socially acceptable or unacceptable activity. In particular, Onyx & Bullen (2000) highlighted that participation in networks, trust, reciprocity, and social norms are emerging themes from growing literature on social capital. First and foremost, the capacity and ability to participate in a network of relationships between individuals and groups is critical in any place-based context. Building social networks in any community creates opportunities for excluded populations to engage in civic life and promote economic prosperity (Tremblay et al., 2010). Despite the low-income status of informal

recyclers from St Johns, for example, they have built connections with the residents, who keep recyclables at the household for the informal recyclers to collect later (Porter, 2015). These connections demonstrate how canners and the local residents have developed a relationship to increase recycling at the same supporting the livelihoods of canners.

Relatedly, trust is another critical element of social capital that may define attributes of a place. Trust includes a willingness to take a risk in a social context based on a sense of confidence in a mutually supportive way. For instance, the informal recyclers in San Francisco are welcome to retrieve aluminum cans from residents' garbage cans, which gives recyclers a sense of being 'good citizens" and not "feared outcasts" (Gowan, 2010). Without such validation from residents about informal recyclers' work, it would be difficult for the recyclers to engage in their informal recycling activities (Gowan, 2010).

Furthermore, in a community where reciprocity is strong, people care for each other's interests. Informal recyclers in San Francisco treated their transaction with residents or business suppliers of recyclables as an exchange, with each one appreciating the role of the other (Gowan, 2010). The residents and business people appreciate that informal recyclers help them to collect and dispose recyclables, on the other hand the informal recyclers are given access to these recyclables which enables informal recyclers to engage in their livelihood. Such trust and reciprocity is built over a long period of time and the canners regularly and consistently collect cans from the residents.

Positive interactions and relationships also help to sustain informal recyclers' livelihood activities and create a social connection for otherwise marginalized individuals. For instance, in St Johns, Newfoundland, the informal recyclers' use of the grocery cart is positively interpreted as an indication

of hard work (Porter, 2015). Such positive feedback recognizes their activities as acceptable. In contrast, the use of the grocery cart in Victoria is interpreted as ugly and noisy (Gutberlet & Jayme, 2010). These negative perceptions about the cart put informal recyclers' work as out of place; consequently, they are unwelcomed and stigmatized by local communities.

Lastly, social norms determine the expected pattern of behavior in each social context. Social norms define what forms of behavior are valued or socially approved (Chen et al., 2016; (Crawford and Ostrom, 1995). In places where socially accepted norms have been developed, it has facilitated informal recyclers to engage in a non-threatening environment. For example, previous studies have provided evidence that residence or workers sometimes keep recyclables for specific informal recyclers to collect than wait for the weekly municipal run (Gowan, 2010; Porter, 2015).

To conclude, the combined effect of networks, reciprocity, trust, and norms at any place or context, influences how informal recyclers successfully engage in their livelihood activities. While there are many studies about informal recyclers' experiences, the research about the influence of place on the success of their activity remains limited. Porter (2015) suggests a need to use the attributes of place as an analytical tool to generate sustainable recycling programs that respond to the challenges and opportunities found in different places.

Conceptual Framework role of place, social capital, and intersectionality

This study uses the connection between three concepts, place, social capital, and intersectionality, as a conceptual framework to explore how informal recycling activities are perceived as socially appropriate or inappropriate in specific place-based contexts. Firstly, place is interpreted as a hybrid that connects social, political, financial, and cultural networks over time and space (Massey,1994).

Secondly, intersectionality is defined as the multiple dimensions of how race, class, gender, and other social identities intersect in marginalized subjects' lived experiences (Carastathis, 2013; Crenshaw, 1991) in any place. Lastly, social capital is defined as a structural phenomenon (relational/social networks) and a cultural phenomenon (trust and social norms) (Putman,1990) that may also influence the outcomes of informal recycling activities in any context. The interaction of these three concepts indicated in Figure 2 below determines the (in)appropriateness of informal recycling activities at football tailgates and other places.

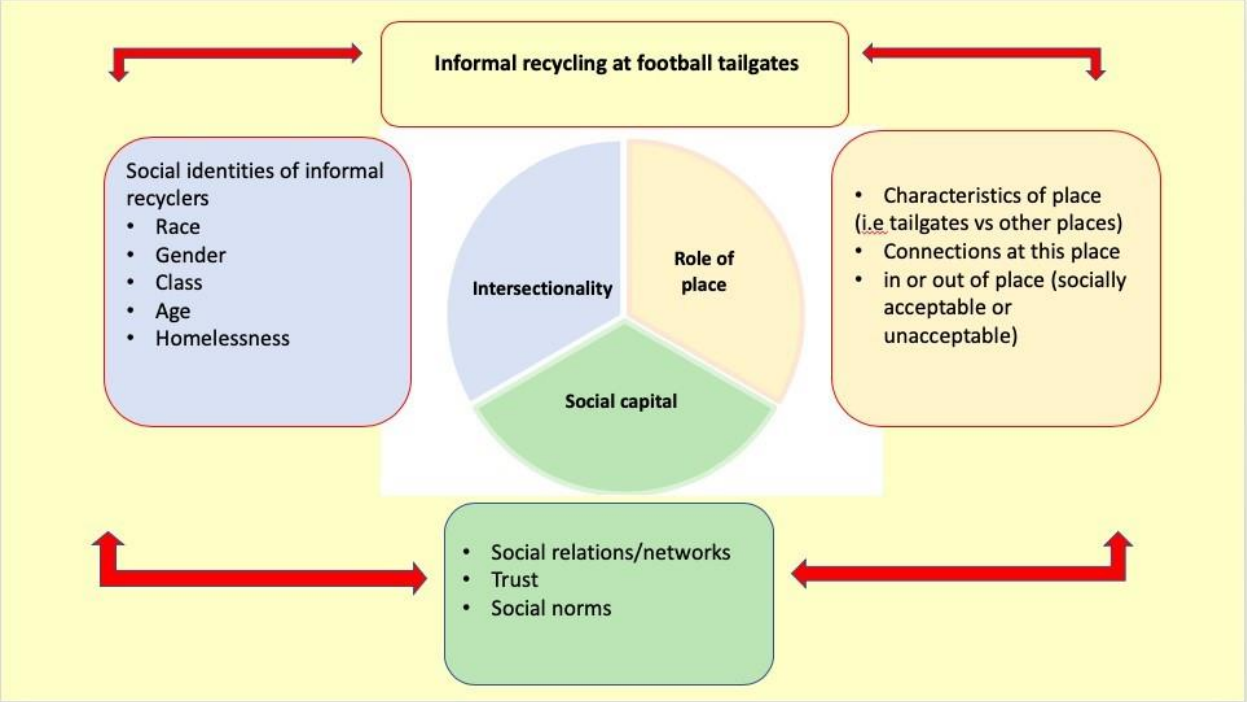

FIGURE 4: CONCEPTUAL FRAMEWORK ROLE OF PLACE, SOCIAL CAPITAL, AND INTERSECTIONALITY.

The concept of intersectionality is essential to understand how informal recyclers' multiple social identities influence their activities in specific place-based contexts. The idea of intersectionality is used to explore how informal recyclers' actual and perceived social identities affect their livelihood activities

in particular places. These sentiments are also raised by Valentine (2007), who highlights that social identity categories need to be understood based on how they relate to specific places.

While there is no robust literature on the everyday practices of informal recycling activities and their social identities, several studies address intersectionality in water access literature. For example, Sultana (2011) argues that gender and class's intersectionality influence everyday practices of water use, access, and control. Another study in India highlights that there is a need to explore broader inequalities associated with social and spatial differentiation processes in accessing water (Truelove, 2011). These sentiments are also demonstrated by Nightingale (2011), who emphasizes the importance of focusing on the intersectionality of gender, race, caste, ethnicity, and other subjective differences.

In addition, informal recycling activities are socially appropriate in some places and not in others. But there is a need to understand each context's characteristics and how it enables or constrains livelihood activities. Two characteristics define place (Massey, 2013), first as the interaction of people and place, and second as the social interactions that occur in the place. These definitions of place are supported by other scholars who not only define place as a geographic matter but assert that place also intersects with social-cultural expectations (Cresswell, 1992, pp. 4–6), and it is "both locational and relational." (Beirsack & Greenberg, 2006, p. 16). An examination of the hybrid conceptualization of place will help us understand how and why informal recycling activities are socially acceptable or unacceptable. Specifically, exploring the power of place helps to analyze the type of social relations that influence informal recycling activities to be in place or out of place.

Furthermore, relational networks, social trust, and norms are fundamental forms of social capital (Coleman, 1990) that can be found in any place. Several studies have indicated that strong relational

networks in informal recycling result in successful outcomes (Gutberlet et al., 2009; Ogando, Roever, & Rogan, 2017b; Parizeau, 2015; Prasad, Jain, Tata, & Parthan, 2012). However, relational networks have been critiqued for paying little attention to structural inequalities in class, gender, ethnicity, sexuality, and ability (Tzanakis, 2013). Hence, this study will explore the influence of the intersectionality of informal recyclers' multiple identities and how this influences their interactions at specific places.

Other scholars argue that knowing someone may not guarantee inclusion; hence, examining social relationships' functionality is essential (Goddard, 2003). Building social trust and supportive social norms are functions of a relationship that may determine whether informal recycling is socially appropriate or not in specific places. Trust gives group members confidence that there is reciprocity to act reliably and competently, unlike relationships characterized by low levels of social trust.

Another equally important function of social capital is that it shapes social norms at specific places that regard informal recycling as socially acceptable or unacceptable. Social norms are informal rules that govern acceptable or legitimate behavior in groups and societies (Coleman, 1990). These social norms include the physical, social, verbal, and non-verbal interactions between informal recyclers and other actors (i.e., tailgaters) at either football tailgates or other places. Exploring social norms that influence access to cans and bottles for informal recyclers may find their activity to be in place or out of place. It is essential to explore how social norms are maintained, reproduced, or reinforced in specific places as informal recyclers (un)successfully engage in their activities. While social capital is a key component of any place, it has the potential to exclude individuals who are not in a group that is characterized by relational networks, trust, and norms (Goddard, 2003).

Methods

This study took place in the State of Michigan, where the bottle bill law was implemented in 1978 to decrease litter and encourage resource conservation through a monetary incentive to reuse and recycle. The state of Michigan has a 10c deposit on aluminum cans and bottles, one of the highest in the US. The study was conducted primarily during the football tailgates from September to November at Michigan State University in the 2019 season. Football tailgates are an American cultural event where football fans party before and during the football game and can publicly drink alcoholic beverages, generating many discarded empty cans and bottles. These tailgates create an opportunity to earn income for the vulnerable local populations by collecting returnable cans and bottles for the 10-cent deposit.

During direct observations, I took field from all the football games to document the interactions of canners and tailgaters at football tailgates. I used a maximum variation (heterogeneity) sampling method (Patton, 2015) to recruit canners who differed by race, gender, and age group. The canners were recruited through a recruitment flyer during the football games and at redemption centers at local grocery stores. Twenty-eight informal recyclers participated in the in-person interviews to understand their experience and develop a rich description of their lived experiences (Creswell, 2009).

Semi-structured interviews for canners (n = 28) were conducted with the aid of a topic guide to explore how and why informal recyclers' activities are socially acceptable or unacceptable in specific places. Table 6 shows provides the demographic data of canners who participated in the interviews. The inclusion criteria for recruiting participants was that one must be over 18 years of age and must be collecting cans and bottles at MSU football tailgates. During the fieldwork, the criteria were updated to recruit participants with longer experience in collecting cans and bottles as a source of income.

TABLE 6: PROFILES OF CANNERS INTERVIEWED (N = 28)

Category	Profiles of canners interviewed
Gender	Males :17 Females: 11
Race	African American: 17 Caucasian: 11
Age	Mean age: 43 Mode age: 51 Range: 22-65 years
Income per game	Mean: $83 Min-Max range: $20-$200
Years collecting cans	Mean: 7 years Min-Max years: less than 1 year - 20 years

Tailgaters were recruited using online participant recruitment. I administered a screening survey to confer suitability for inclusion in the study based on the frequency of football tailgate attendance and I was looking for individuals who had more than four years of tailgating experience. Semi-structured interviews (n=9) with tailgaters were conducted through the phone and zoom video calling. The interviews for tailgaters focused on how they perceive canners and determine whether their treatment of canners is similar or different in other settings. I reached saturation after interviewing nine tailgaters. An in-depth interview protocol was designed for both canners and tailgaters to probe for detail and ensure all research questions are answered (Patton, 2015). Verbal informed consent was sought before the commencement of the interviews. All the interviews were audio-recorded with participants' permission. Canners and tailgaters were compensated $30 and $12, respectively, for their participation in the interviews, which lasted 45 mins to 1 hour.

The recorded interviews were transcribed within 24 hours using an online transcription software Otter.ai. When we reached data saturation, we stopped the data collection process. The transcripts were manually verified, and necessary edits were made before exporting transcripts as Microsoft Word documents into MAXQDA2020, a qualitative analysis software. Thematic data analysis was used to identify, analyze, and report themes that emerged from the qualitative data (Braun & Clarke, 2006) The coding framework was developed based on the conceptual framework and preliminary reviews of the transcripts. We revised the framework as coding progressed. I organized and refined recurring themes related to the research questions and the conceptual framework into the draft analysis through an iterative process. The authors provided feedback on the data analysis and interpretation of results. In this study, trustworthiness was established through a purposive sampling of the participants, an audit trail of memos, field notes, sharing a direct verbatim quotation from the participants to provide a comprehensive explanation of the results.

Findings

This section presents and discusses the findings from the observations and semi-structured interviews on the influence of place, social identities, and elements of social capital on successful informal recycling activities at on-campus football tailgates. The themes developed through thematic analysis include (1) perceived and actual social identities, (2) role of place and its characteristics, and (3) social capital. On-campus football tailgates are a place with specific characteristics (a welcoming and friendly environment), and there are connections (casual interactions and inclusion) that determine how canners' activities are more socially acceptable than in other places. Besides, social identities (class, age, race, and gender) and elements of social capital (i.e., relational networks, social trust, norms, and reciprocity) influence successful informal recycling activities. All these factors are intertwined. I

organize them into three separate sections that detail how each factor shapes canners' activities in place or out of place at on-campus football tailgates and elsewhere.

Stigmatization and stereotyping of canners

Stigma is a social construct as it depends on relationships and context (Major & Obrien,2005). It is associated with a person's attributes and how they are characterized or perceived by society (Goffman, 2009). The actual social identities are those social categories that canners identify with. On the other hand, the perceived social identities are those social categories that the tailgaters perceive the canners as belonging to, and what canners perceive as tailgaters' perception of them. As canners visit on-campus football tailgates to collect cans and bottles for income, they are self-conscious of their actual and perceived social identities, including low social class, age, race, homelessness, and gender. The individual characteristics and perceived social identities of can collectors made them feel out of place or in place, depending on their circumstances while engaging in their livelihood activity.

Demographic characteristics influencing canners' livelihood activity

From the observational data, canners are from different races, gender, and age groups, as indicated in the socio-demographic table 4. Economic status, the self-consciousness of one's age, race, and gender are the actual social identities of canners that influence how they are treated at football tailgates and other settings.

Firstly, all can collectors at on-campus football tailgates socially identified as of low socio-economic status except for one male student. One male can collector said, *"Because we live in a poverty level..."* All the participants interviewed, except for one female, revealed that they are low-income earners and collect cans and bottles to earn an income. Another male can collector said, *"I am homeless right now, I live in a shelter. I don't have any money. It's like I don't have income. For me to do this, it's helping me earn honest money, legal money."* Half of the participants indicated that they are unemployed, and they rely on

disability or social security allowance, which is not adequate to meet their needs. Others expressed that they live in a shelter, and one male participant was homeless.

Secondly, a few can collectors are self-conscious of their age, which influences how their livelihood activity is seen as in place or out of place at football tailgates. One older female can collector revealed that tailgaters support her activities by bringing cans and bottles to her because of her age. She said, *"I don't want to stop them from having fun... I think they tend to help me a little more just because I'm older and feeble than other people."* All these tailgaters' efforts seem to make her uncomfortable.

In comparison, one young male student who collects cans indicated that he felt uncomfortable to collect cans and bottles in the student tailgating section and prefers to collect cans in the sections where there are older tailgaters. He said, *"When I go to tailgates, you know, there's a bunch of young people my age or younger. I'm going to avoid that area. Because it's weird … I feel awkward if I am to meet my classmates, and someone says, I'm in class with you."*

Thirdly, while can collection is a male-dominated activity, several females engaged in this activity at on-campus football tailgates. However, all-female can collectors at least collect cans with a male partner except for one female who has been collecting cans and bottles for more than 20 years. Most females indicated that they always have a male partner for companionship and security, as they fear of victimization because of the stigma associated with their activity. For instance, one female can collector said, *"I have never really just gone out alone... there's just so many people, and it's so big out there... you just never know."*

Although most canners highlighted that they had not experienced any forms of discrimination or marginalization at football tailgates, a few have been vulnerable to ill-treatment from tailgaters. Two

African American women revealed that their racial identity affects how they are treated at football tailgates. Both women once experienced racial discrimination incidents at one of the on-campus football tailgates. One of them said, *"It was just like, you know, some racial comments throughout their emotions. I was angry for a minute. But then I had to think about how ignorant people can be."* However, most of the participants indicated that they had not been mistreated because of their race at football tailgates.

One male can collector asked for cans, and the tailgater gave him the whole bag of trash. The can collector said, *"He wanted me to take his trash. But I'm like, I'm not going to haul your trash. But I took it anyway."* Two tailgaters also revealed that they had heard of incidents where canners are mistreated at football tailgates. A female tailgater said, *"I've just heard stories... that some people have tried to take their cans that they are collecting, some kick cans away from them when they bend down to pick them up."* However, this is extremely rare based on the response of the interviewees on how canners are treated.

Perceived social identities of can collectors

The can collectors revealed how tailgaters perceive them during football tailgates. Participants were asked how tailgaters perceive them, and some indicated that they are homeless, violent, drug addicts. One male can collector said, *"Predominantly, everybody who comes out here, doing, is homeless, or low-income people. And so, they feel that you may be hungry. And so, they offer you food."* Another female canner said, *"I think they (tailgaters) think we're losers, and honestly, I think that's how they perceive people picking up cans out there... you can't just judge people from that."*

Similarly, most tailgaters indicated that they perceive canners as homeless and in need of money. One female tailgater said, *"I would say some of them do appear to be like homeless. They just look like someone who*

might not have a lot of money." However, one male tailgater said, *"These are just hardworking people…. people who are trying to make a living and invest their time to make a few bucks."*

All can collectors revealed that the first time they engaged in can collection at on-campus football tailgates, they were afraid, nervous, shy, and ashamed. At first, the canners felt out of place at football tailgates. One can collector said, *"The first time I was kind of nervous ...I didn't want to be intruding in anybody's tailgating because I didn't want to feel like I was stealing."* Another can collector said,

> *"…at first, I was very intimidated by it (silent). I almost felt like I was degrading myself to reach in the garbage to pull cans out or walking around with a trash bag. I noticed that it seemed to be like a lesser class of people were the ones out there collecting. The longer I was doing it, that stigma kind of wore off, I don't even worry about it anymore…I stopped worrying about what this person might think of me, and I just concentrate like am doing a job..."*

All canners indicated that after their first can collection experience during on-campus football tailgating, they became more comfortable as they realized that their activity is socially appropriate in the tailgating context. *"I kind of got used to it. I got over my fear...because I didn't know exactly how people were going to react."* revealed a male canner. Another female can collector said, *"I now feel like it's normal, it's easier and comfortable... I'm not ashamed or thinking that people are looking down on us all day because we are picking up cans..."* These sentiments were also raised by two tailgaters who were asked about the presence of canners at tailgates; one of them said, *"I'm just more aware that people are collecting them to get some money... I'm just more aware that they're there."*

Influence of different place-based contexts in canning experiences

Characteristics of on-campus football tailgates and other settings determine whether collecting cans for income is socially acceptable or unacceptable. All interviewees except for one male indicated that they only collect cans and bottles at on-campus football tailgates where it is safer to do and cans are easily accessible than in other places. Canners shared why they do or do not collect cans in specific places and how they are treated. Tailgaters also shared how and why they consider collecting cans and bottles for income to be in place or out of place.

Canning experiences in on-campus football tailgates

A high volume of returnable material characterizes on-campus football tailgates, and the MSU on-campus football tailgates generate abundant cans and bottles, which offers an opportunity to collect returnables for income. *"It's just money laying on the ground, free money. All you got to do is walk around and collect cans,"* said one male canner. A few can collectors indicated that the cans and bottles generated and lying around during campus football tailgates allow them to easily access the returnables and earn a legitimate source of income. Tailgaters also raise these sentiments that football tailgates are spaces that offer an opportunity to canners to collect cans for income; hence canners are accommodated at football tailgates. One female tailgater said, *"They're smart because obviously, they know they can get a lot of returnables on those days because everybody's drinking pop, beer, whatever it is."*

Most can collectors were at first hesitant and afraid of how they would be treated at football tailgates. But the canners were surprised that tailgaters accept their activities at tailgates. One male canner said, *"I was afraid. I didn't know what to expect... And I didn't know exactly what to do. I saw cans and stuff laying around. We just got them. They don't care whether you get the cans."* Most canners reported that they were

happy with the positive treatment at football tailgates. Another male canner said, *"It made me feel good, and it made me feel accepted… they accepted me as like part of their community…it has just been cool…"*

Most of the can collectors indicated that the tailgaters are welcoming, friendly, and helpful such that some of them even help them with access to cans and bottles, and sometimes they are offered food. For instance, one male can collector said, *"Everybody's been nice. I have had no bad experience. I know some people are so nice. They even invite you to their tailgates."* Most tailgaters reported that people who collect cans for income are in place at campus football tailgates because it is a public space with large crowds.

Canning experiences in off-campus settings

Most tailgaters highlighted those canning activities are more in place when practiced at football tailgates because different people collect cans in such places, unlike in other places. One female tailgater said,

"I could see people collecting cans inside campus might feel a different way than being in the city because, in the city, it would mostly be homeless people …But rather, when you are on campus, you can see some students collecting the cans and other people as well. So that could be a mindset change."

Tailgaters had mixed responses on how they felt about canners' potential presence in other settings outside campus football tailgates. A few tailgaters that live in neighborhoods far from campus felt that it would be weird, unusual, intrusive, and out of place to see canners collecting cans in their spaces. These tailgaters highlighted that they would feel unsafe and uncomfortable when there are canners in their neighborhood. A male tailgater said, *"I've always felt like I'm uncomfortable…like unsafe. And I don't know, based on maybe their appearance…I may feel that they are going to steal from me. I just feel unsafe."*

Except for one male canner, all canners reported that they do not collect cans and bottles in other settings besides campus football tailgates. The canners fear victimization and lack of safety and that their activity would be considered out of place. One male canner said, *"That's not safe at all, invading people's spaces...no one would want that. The police will be called on you".* Another female canner revealed that collecting cans and bottles outside football tailgates is not appropriate. She said, *"That's not acceptable, going around people's neighborhoods. I have not seen anyone doing it."* A few tailgaters felt that football tailgates are safe spaces for canners to engage in their livelihood activity compared to any other place.

In addition, the presence of canners in their neighborhood affects the atmosphere of their neighborhood. Another female tailgater reported, *"They (people in her neighborhood) would not want to see these people looking for cans even in the public spaces because they feel that they're poor and they're affecting the community and the environment they are living in. "*

However, all tailgaters reported that people collecting cans and bottles for fundraising purposes in their neighborhoods are more in place than canners who collect to earn income. For instance, a female tailgater said, *"We've had people collecting cans for fundraising, but not as a source of income."* In addition, most tailgaters feel comfortable having people collecting cans for fundraising purposes, as in some cases, they are notified of the collection drive. On female canner said, *"If we have cans, we usually support… But I don't usually feel any sort of way to that because usually, they give you some advance notice that they're going to be coming by and collecting."*

However, for tailgaters who had had an opportunity to stay in student apartments off-campus, they had a distinct experience with people collecting cans and bottles in such places. More than half of the tailgaters interviewed have lived or live in a student neighborhood near campus. They reported that

apartments off-campus have students who hold parties, and it is common and acceptable to see canners collecting cans at these places. Another tailgater said, *"I have seen people in apartment complexes going through a garbage dumpster to collect cans. Otherwise, tailgating is the most common spot that I see it."* More than half of tailgaters who have lived in student apartment complexes near campus have no concerns with the presence of canners in their neighborhood. One of the tailgaters said, *"So normally it doesn't bother us really because they just walk up and down the street, and that's about it."*

Social capital and social interactions

Social capital is embedded in society, and it is given value by the individuals that use it to further individual or collective interests (Coleman,1990). Canners and tailgaters have limited social capital and weak social ties while they are present at football tailgates. Hence, diverse levels of social interactions were reported by both canners and tailgaters. The interviews demonstrated that elements of social capital, i.e., social norms, reciprocity, and trust, exist among some canners and a few tailgaters at football tailgates. However, these elements of social capital do not extend beyond on-campus football tailgates.

Canners and tailgaters are from two different social groups; hence, they have diverse levels of interactions at football tailgates. The interviews revealed that there are minimal interactions between canners and tailgaters at football tailgates due to a few factors. Most canners reported that they avoid any forms of interactions with tailgaters. These canners revealed that they try to remain focused on collecting bottles and cans at football tailgates and are uncertain of tailgaters' attitude and behavior towards them. A male canner said, *"I try not to get right in the mix of tailgaters… sometimes you don't know how people are going to react."* A few canners set up barriers to avoid interactions with tailgaters. One

female canner said, *"I'm just really strictly business…I keep my earbuds in my ears and keep my hood and then my shades... I'm not here to socialize; I'm focused on what I am trying to do."*

Furthermore, a few canners pointed out that they are conscious of the stereotyping and stigmatization associated with collecting cans and bottles for income; hence, they avoid interacting with tailgaters. These few canners are determined to engage in their livelihood activity despite their internal struggles of stigma as they need the income. These canners negotiate how to co-exist with tailgaters by pretending that the tailgaters are not present as they engage in their livelihood activity. A male canner revealed,

"I don't like having to put that blinder on and off… I kind of feel that everybody's looking down on me…So if I stop and then start interacting with people, it feels like that blinder comes off me again, and I'd come back to normal, and then I get to put it back on again to try to go back out there, and it can be difficult. I don't like to have to do that. So, if I can avoid talking to some people, even some of the tailgaters, I try not to so that I keep focused on what I am doing, so I put that stupid blinder back on."

The data from canners revealed that there are diverse levels of interactions with tailgaters, which include minimal interactions and close interactions. A few canners indicated that they have minimal interactions with a small number of tailgaters through casual conversations. A male canner said, *"We just chit chat about the game. Sometimes we have other conversations."* Some of the few experienced canners with canning experience of over fifteen years indicated that they interact with a few tailgaters that they have come to know over the years. These few canners are sometimes invited to join a few tailgating parties and tailgaters reserve cans for later collection. One male canner said,

"They know when they see you out here that you're hustling for cans. They, they get to know you...They even save the bags of cans for you once you get to know them. Not only that, but they also offer you food. You know, I mean, there is more like a family atmosphere going on here."

With all these diverse levels of interactions at football tailgates, most canners revealed that some tailgaters are friendly. In contrast, others acknowledge their presence at football tailgates, and most tailgaters ignore them. A female canner revealed. *"A lot of people will just either be friendly... or they acknowledge you or they're just like... they're (canners) over there and then go back to their conversations."*

During the interviews and observations, three common interactions were demonstrated by different tailgaters. From our observations and the canners' experiences, there are rare scenarios where some tailgaters are sociable with canners. But such tailgaters are rare and were not represented in our sample size. This section reveals data of most tailgaters who completely do not interact with canners and a few tailgaters who are polite to canners.

Most of the tailgaters interviewed indicated that they have no interactions with canners at football tailgates. One female tailgater said, *"I haven't noticed them (canners) interacting with groups of people tailgating. I haven't had anybody say they were uncomfortable with the can collectors."* A few tailgaters pointed out that they are hesitant to interact with canners because of the stigma and stereotypes associated with canners. Hence, these few tailgaters avoid interacting with canners as much as they can. Another female tailgater said,

"I feel like tailgaters, for the most part, don't interact with collectors at all. This is because there is a stereotype that they're more like sketchy, lower class or, homeless or something like that...There are very minimal interactions in general."

There are also a few tailgaters who reported that the only time they interact with canners is when they greet canners or when they give out their cans to canners. One female canner said, *"It is usually a general greeting like how are you doing today?... That's about it, other than when I physically give them the cans...."* Furthermore, most tailgaters acknowledge the presence of canners at football tailgates though they do not interact with canners. Another canner said, *"… Mostly I've seen people being happy and enjoying their tailgate rather than interacting with these people…people just get used to them rather than shouting at them or treating them as poor people."*

Social norms between canners, tailgaters and the university

As canners and tailgaters have interacted with each other, they have self-organized an informal understanding that governs how canners access cans from tailgaters and how tailgaters give canners access to their cans at football tailgates. Social norms are a shared understanding of actions regarded by a group of people as proper or improper in specific settings (Woolcock 1998). The canners highlighted the socially acceptable conduct that enables them to collect returnables at football tailgates. The tailgaters reported their practices to make cans available to canners at football tailgates. All these social norms are exclusive to football tailgates and are only considered appropriate in that setting.

From the interviews, the canners highlighted how they socially conduct themselves, including observing tailgaters' body language and avoiding invasion of privacy at football tailgates. The canners revealed the diverse ways to access cans at football tailgates, including picking up cans on the ground and in trash cans, getting cans, and asking for cans from tailgaters.

All canners reported that they pick up cans from the ground as tailgaters tend to toss cans on the sidewalk or open spaces for canners to easily access aluminum cans. A male canner said, *"They throw*

them around, and I pick them up. Maybe they got tired of seeing people sticking their heads in the garbage cans. So, they got to throw them around." Another canner stated, *"They are either out in the grass or out in the parking lot. You see the cans when you're walking by… Or you'll see them tossing them out there… after they get done drinking."*

Again, most canners revealed that tailgaters tend to dispose of their returnable cans and bottles close to trash cans so that canners have easy access to cans. *"They (tailgaters) know that people go around and get the cans. So, they won't throw them in the trash can, but like stack them up around next to the trash can. There are a lot of cans close to trash cans,"* a female canner said. However, a few canners indicated that they also access cans from trash cans placed around tailgating spaces. A male canner said, *"The reason I look in the garbage cans is… I find a lot of them in the garbage cans, too, as people throw them away."*

A few canners indicated that tailgaters give them cans, or the tailgaters keep bags of cans for these few canners to collect later. One male canner said, *"People come up to you all the time to put cans and stuff in your bag. Or they might say, hey, we got some over here…"* Another female canner revealed, *"Now people automatically just come up to you and put their cans in your bag, and some people will have a bag set aside. So, it seems like they're more like used to seeing people out there and doing that."*

Furthermore, a few canners reported that they ask tailgaters for any cans available for pick up from their tailgating space. A male canner said, *"I have this respect thing where I need to ask people their permission to pick up their cans, and they put them out there…"* Another male said, *"…I don't just assume I can walk in and start picking up, I always ask."*

Lastly, a few canners take into consideration tailgaters' body language and avoid an invasion of the privacy of tailgaters when collecting cans at football tailgates. Keeping eye contact and self-awareness

of tailgaters' body language helps a few canners determine which tailgaters to approach for cans. *"It's like I keep eye contact, and I can read people's body language pretty well. At certain times you can tell the people who are willing to help or who are willing to give and the ones who don't want to be bothered,"* a male canner reported. A few canners pointed out that they usually wait to be invited by tailgaters. *"I don't approach their circle. I don't want to make them feel uncomfortable… I'll look for cans on the ground. And once they see me doing that, they tell me if they have any cans for me,"* one female canner reported.

The tailgaters I interviewed pointed out norms on how canners get access to cans at football tailgates. Different tailgaters revealed the diverse ways in which canners get access to their cans, which included picking up cans, retrieving cans from the trash, and asking for cans. Most tailgaters reported that there are informal rules that allow tailgaters to give their cans to canners. One female canner said, *"So there's almost like this unsaid understanding that people are allowed to take the cans and bottles...I think it's just more of like a mutual understanding."*

For instance, most tailgaters reported that they give access to their cans by throwing them on the sidewalk or ground for canners to pick. One male tailgater reported, *"I will toss them to the side... normally they pick up cans or bottles from like the public areas like sidewalks…."* Another female tailgater said, "They ask if they can take them…and I have no problem giving my cans."

Reciprocity

The canners and tailgaters revealed that reciprocity is also common at campus football tailgates. Reciprocity is when groups of people or individuals return favors and other acts of kindness (Gouldner, 1960). Canners collecting cans at football tailgates highlighted that the tailgaters support

their livelihood activity. The tailgaters reported that canners help them to manage the recyclable cans that they generate.

The canners I interviewed pointed out that by collecting cans for income, they are also helping to clean up tailgating parties on behalf of the university and the tailgaters. Most canners indicated that the opportunity to collect cans for income also helps to clean up the recyclables generated at on-campus football tailgates. One male canner said, *"I feel like I'm doing them a service... I am kind of like getting paid too by doing this."* Another canner said, *"Just for me to be out here and participate in canning. I'm helping. And I'm getting helped at the same time. You know, killing two birds with one stone."* Equally important, most canners pointed out that tailgaters value their livelihood activity of collecting cans and bottles at campus football tailgates. A male canner said, *"… They do not want to clean up after themselves. You know, and so when we come around, we are providing a service for them. And so, they appreciate."*

Tailgaters perceive canners as environmental stewards as they help tailgaters to recycle the cans they generate. Most tailgaters reported that canners at campus football tailgates increase recycling rates of bottles and cans that otherwise may not be recycled at football tailgates. A female tailgater said, *"...There are hundreds of dollars in returnables at football tailgates. These people pick up most of the cans that would have gone to waste. So, it would be a shame if that money went to waste if it were just thrown away, and these people fill in the gap."*

A few tailgaters expressed that the canners help clean up the campus and earn income concurrently. A female tailgater said, *"The number of people that come on campus to collect cans is doing a service… they are part of the cleaning team …."* Lastly, a few tailgaters reported that it is convenient for tailgaters to have people collecting cans and bottles at football tailgates as they do not have to manage the recyclables they

generate. A male tailgater said, *"You don't have to put the cans in your car…it's a convenient thing… you never take your cans back home."*

Trust

From the interviews, both canners and tailgaters seem to highlight a lack of trust between them. This has made it socially inappropriate for canners to collect cans in other places. Most tailgaters who live in neighborhoods far from campus expressed that they do not trust what else canners might do if they collect cans in their neighborhood. One female tailgater said,

> *"I would probably be uncomfortable that they're going through our garbage... these are our personal homes. They may end up looking for anything, like credit card statements or get identity information or have an idea of who's living there."*

Except for one male canner, most canners revealed that they do not collect cans outside football tailgates as they feel that the people in other places may be hostile to their presence. One female canner said, *"I am sure it will be different (from tailgates) …it is not even safe to do it out there…they may call the police."* A few canners who have been collecting cans for at least more than ten years at football tailgates revealed that they had built some form of trust, which has helped them get access to cans at tailgates. A male canner said, *"... I know them from the tailgates. They trust me, and I trust them. I have been collecting in one area for a long time."*

Discussion and conclusion

Results showed that football tailgates are a place-based context that allows people collecting cans and bottles for income to successfully engage in their livelihood activity at football tailgates but not necessarily in other places. Porter (2015) suggested that successful informal recycling activities are

produced by conditions found in specific places. From the perspective of canners and tailgaters, football tailgates are places that are welcoming and friendly to people who collect aluminum cans for income. Collecting cans as a livelihood activity is considered socially appropriate at football tailgates and only in student neighborhoods close to campus; it is not considered appropriate in other neighborhoods. Although other studies report that collecting recyclables is considered normal in some other places such as St. Johns (Newfoundland) and parts of San Francisco (Porter 2015; Gowan, 2010), canners in Lansing cannot easily collect cans beyond the tailgating setting.

Furthermore, the results of this study confirm that stigma results from being placed in social condition that influences how one is treated (Yang et al., 2007). Canners at football tailgates are self-conscious of their social identities, including their low-income status some are stereotyped as homeless. Unlike in previous studies, in which informal recyclers were ill-treated because of their actual and perceived social identities (Gutberlet et al., 2009; Nzeadibe & Ochege, 2018; Uddin, Gutberlet, Ramezani, & Nasiruddin, 2020), the situation is different at football tailgates. Some female canners will not do canning by themselves as they do not feel safe. In addition, the positive environment at football tailgates makes canners comfortable to collect cans in such a place despite being conscious of the stigma and discrimination associated with their livelihood activity.

But the stigma associated with canning leads to a lack of trust, which constrains canners collecting cans beyond the football tailgating context. As with other studies (Gutberlet & Jayme, 2010), people who collect cans have demonstrated that they are self-conscious of the stereotyping associated with their work, which increases their vulnerability in some contexts. Canners are not comfortable collecting cans and bottles outside football tailgates as it is inappropriate, and they fear victimization and harassment. Tailgaters consider that it would be out of place to find canners collecting cans in

their neighborhoods as it would disturb their neighborhood's ambiance. It is unusual, and it is considered out of place for canners to collect cans around neighborhoods beyond those where students live. This is consistent with most studies where informal recycling activities are out of place in most studies as informal recyclers are usually harassed and stigmatized in places they collect recyclables (Gutberlet et al., 2009; Parizeau, 2015).

Our findings highlight weak social ties and interactions between tailgaters and canners, although tailgaters do not limit canners' access to cans at campus tailgates. The weak social ties and interactions may be due to differences in social status between canners and tailgaters. These results are consistent with the previous literature where weak social ties characterize heterogeneous groups like those found in urban communities, limiting social networks and social relationships (Rakodi, 2002; Méndez-Lemus, 2012). However, tailgaters value the presence of canners at football tailgates as the canners help to recycle aluminum cans generated at football tailgates that maybe otherwise carelessly left behind.

Although previous studies have found out that weak social ties constrain livelihood activities (Méndez-Lemus & Vieyra, 2017; Nzeadibe & Ochege, 2018), the present study has demonstrated that human actions embedded in specific social contexts (Henry & Dietz, 2011) determine a more successful livelihood activity. Our findings highlight that canners and tailgaters have social norms that have made collecting cans for income a socially appropriate activity at football tailgates. The canners observe tailgaters' body language, and they avoid invading their privacy to ensure that their livelihood activity is in place. Tailgaters tend to make it easy for canners to access the cans they generate by throwing the cans in open spaces that canners can easily access; some of them also give out their cans or keep bags of cans for canners that they have known over the years. Such social norms have enabled canners to engage successfully in their other sources of income activity.

In conclusion, the study offers insights into how a place-based context supports collecting cans for income and recognizes the environmental value of informal recyclers compared to other places. The social norms developed in specific places make it socially appropriate to collect cans for income. In addition, the university accepts the social norms. This study contributes to a growing body of evidence suggesting that the role of place can be used to analyze sustainable recycling activities that respond to the opportunities and constraints found in different places (Porter, 2015). Football tailgates and other off-campus locations are constructed of diverse social and spatial characteristics (Massey, 2013), shaping how canners' livelihood activities are in place or out of place. Future studies will need to explore how place-based contexts create complex, and multiple lived experiences and how they lead to informal recyclers' vulnerability or resilience. Such studies may help to understand how different forms of social identities of canners are negotiated and performed within specific contexts leading to specific outcomes.

REFERENCES

REFERENCES

Ashenmiller, B. (2009). Cash recycling, waste disposal costs, and the incomes of the working poor: Evidence from California. Land Economics, 85(3), 539–551.

Beirsack, A., & Greenberg, J. B. (2006). Reimagining Political Ecology (New Ecologies for the Twenty-First Century). 419.

Benko, G., & Strohmayer, U. (2004). Human Geography: A History for the Twenty-First Century. Routledge.

Braun, V., & Clarke, V. (2006). Qualitative Research in Psychology Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101.

Carastathis, A. (2013). Identity categories as potential coalitions. Signs, 38(4), 941–965.

Coleman, J. S. (1990). Foundations of social theory. Cambridge. MA: Harvard University Press.

Coletto, D., & Bisschop, L. (2017). Waste pickers in the informal economy of the Global South: included or excluded? International Journal of Sociology and Social Policy, 37(5–6), 280–294.

Chen, X., Yang, W., Hull, V., Dietz, T., Frank, K., Lupi, F., & Liu, J. (2016). Social Capital and Social Norms Shape Human–Nature Interactions. In Pandas and People (pp. 134–147).

Crawford, Sue E. S., and Elinor Ostrom. 1995. "A Grammar of Institutions." American Political Science Review. September 89:3, pp. 582–600

Crenshaw, K. (1991). Mapping the Margins: Intersectionality, Identity Politics, and Violence against Women of Color. Stanford Law Review, 43(6), 1241.

Cresswell, T. (1992). In place-out of place: geography, ideology, and transgression ((Vol. 2)). U of Minnesota Press.

Dias, S. M. (2016). Waste pickers and cities. Environment and Urbanization, 28(2), 375–390.

Dovey, Kim (2012) Informal urbanism and complex adaptive assemblage. International Development Planning Review. 34(4): 349-368

Downs, M., & Medina, M. (2000). A Short History of Scavenging. In Comparative Civilizations Review (Vol. 42).

Fahmi, W., & Sutton, K. (2010). Cairo's contested garbage: Sustainable solid waste management and the Zabaleen's right to the city. Sustainability. 2(6), 1765-1783

Goddard, R. D. (2003). Relational Networks, Social Trust, and Norms: A Social Capital Perspective on Students' Chances of Academic Success. Educational Evaluation and Policy Analysis, 25(1), 59–74.

Goffman, E. (2009). Stigma: Notes on the management of spoiled identity. Simon and Schuster.

Gowan, Teresa. "New hobos or neo-romantic fantasy? Urban ethnography beyond the neoliberal disconnect." Qualitative Sociology 32.3 (2009): 231-257.

Gowan, T. (2010). Hobos, Hustlers, and Backsliders: Homeless in San Francisco.

Gutberlet, J., & Jayme, B. D. O. (2010). The story of my face: How environmental stewards perceive stigmatization (re) produced by discourse. Sustainability, 2(11), 3339–3353.

Gutberlet, Jutta, Tremblay, C., Taylor, E., & Divakarannair, N. (2009a). Who are our informal recyclers? An inquiry to uncover crisis and potential in Victoria, Canada. Local Environment, 14(8), 733–747.

Henry, A. D., & Dietz, T. (2011). Information, networks, and the complexity of trust in commons governance. International Journal of the Commons, 5(2), 188–212.

Massey, D. B. (2013). Space, place, and gender. John Wiley & Sons, Ltd.

Méndez-Lemus, Y., & Vieyra, A. (2017). Development in Practice How social capital enables or restricts the livelihoods of poor peri-urban farmers in Mexico. Development in Practice, 27(3), 301-315.

Nightingale, A. J. (2011). Bounding difference: Intersectionality and the material production of gender, caste, class, and environment in Nepal. Geoforum, 42(2), 153–162.

Nzeadibe, T. C., & Ochege, F. U. (2018). The urban vulnerability of waste workers in Nigerian cities: The case of Aba, Nigeria. In The Palgrave Handbook of Sustainability: Case Studies and Practical Solutions (pp. 313–329).

Ogando, A. C., Roever, S., & Rogan, M. (2017a). Gender and informal livelihoods: Coping strategies and perceptions of waste pickers in Sub-Saharan Africa and Latin America. International Journal of Sociology and Social Policy, 37(7–8), 435–451.

Ogando, A. C., Roever, S., & Rogan, M. (2017b). Gender and informal livelihoods. International Journal of Sociology and Social Policy, 37(7/8), 435–451.

Onyx, J., & Bullen, P. (2000). Measuring Social Capital in Five Communities. The Journal of Applied Behavioral Science, 36(1), 23–42.

Parizeau, K. (2015b). When Assets are Vulnerabilities: An Assessment of Informal Recyclers' Livelihood Strategies in Buenos Aires, Argentina. World Development, 67, 161–173.

Patton, M. Q. (2015). Qualitative research & evaluation methods: Integrating theory and Practice. (Fourth). Sage Publications.

Peres, T. S. (2016). Stigma management in waste management: An investigation into the interactions of waste pickers' on the streets of Cape Town and the consequences for agency. PhD Dissertation. University of Cape Town, South Africa.

Porter, M. E. (2015). Marginal recycling: Place and informal recycling in St. John's, Newfoundland, and Labrador. Local Environment, 20(2), 149–164.

Prasad, S., Jain, A., Tata, J., & Parthan, S. (2012). From Rags to Riches: Tapping the Social Capital within the Solid Waste Informal Sector. South Asian Journal of Business and Management Cases, 1(2), 77–89.

Rakodi, C. (2002). Urban Livelihoods A people-centered approach to reducing poverty. In Carole Rakodi & L.-J. Tony (Eds.), Urban Livelihoods A people-centered approach to reducing poverty.

Rutkowski, J. E., & Rutkowski, E. W. (2015). Expanding worldwide urban solid waste recycling: The Brazilian social technology in waste pickers inclusion. Waste Management and Research. 33(12), 1084-1093.

Sultana, F. (2011). Suffering for water, suffering from water: Emotional geographies of resource access, control, and conflict. Geoforum, 42(2), 163–172.

Taylor, E. (2008). Building community with recycling: A case study of two small islands in British Columbia, Canada (University of Victoria, Canada).

Tremblay, C. (2007). Binners in Vancouver: A socio-economic study on Binners and their Traplines in Downtown Eastside. University of Victoria, Victoria, BC 2007;192.

Tremblay, C., Gutberlet, J., & Peredo, A. M. (2010). United We Can: Resource recovery, place, and social enterprise. Resources, Conservation and Recycling, 54(7), 422–428.

Truelove, Y. (2011). (Re-)Conceptualizing water inequality in Delhi, India, through a feminist political ecology framework. Geoforum, 42(2), 143–152.

Tzanakis, B. M. (2013). Social capital in Bourdieu's, Coleman's, and Putnam's theory: empirical evidence and emergent measurement issues. Educate~, 13(2), 2–23.

Uddin, S. M. N., Gutberlet, J., Ramezani, A., & Nasiruddin, S. M. (2020). Experiencing the Everyday of Waste Pickers: A Sustainable Livelihoods and Health Assessment in Dhaka City, Bangladesh. Journal of International Development. 32, 833–853.

Valentine, G. (2007). Theorizing and researching intersectionality: A challenge for feminist geography. Professional Geographer, 59(1), 10–21.

Wilson, D. C., Velis, C., & Cheeseman, C. (2006). Role of informal sector recycling in waste management in developing countries. Habitat International, 30(4), 797–808

Yang, L. H., Kleinman, A., Link, B. G., Phelan, J. C., Lee, S., & Good, B. (2007). Culture and stigma: Adding moral experience to stigma theory. Social science & medicine, 64(7), 1524-153