



# Five Year Municipal Waste Management Plan Update McLean County, Bloomington, and Normal, IL

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Original Plan Adoption Date: 1991, 1992  
New Plan Adoption Date: 2018  
Plan Update Due: 2023

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## Introduction and Background

### Purpose of the 2024 ISWMP Update

The Illinois Solid Waste Planning and Recycling Act (SWPRA) was adopted in 1988 and requires all counties in Illinois to prepare, adopt, and implement comprehensive plans to manage the solid waste being generated within county borders. The Act also requires that the adopted plans be reviewed and updated every five years to show any changes in waste generation and management practices. At each five-year interval, any necessary and appropriate revisions are submitted to the Illinois Environmental Protection Agency (IEPA) for review and comments.

McLean County adopted its first Integrated Solid Waste Management Plan in 1991 and re-adopted the plan shortly after in 1992. Five-year updates were made to that plan over the next twenty years consistent with the SWPRA. When it came time to begin work on the 2017 five-year update, it became apparent that a short-term update would insufficiently meet the contemporary needs of the Bloomington-Normal and McLean County area. Over the next two years the Ecology Action Center developed and authored a new Solid Waste Management Plan adopted in 2018.

This five-year update is the first update developed for the new plan and includes updates to the recommendation and implementation schedule in the adopted plan, current implementation efforts, recycling program status, a current needs assessment, and new recommendations and implementation schedule.

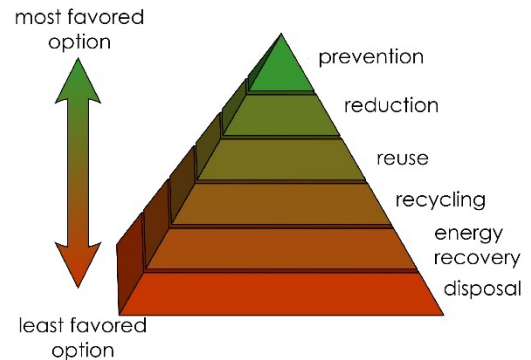
This update comes in 2024 as opposed to 2023 (5 years) to allow for the results of a survey conducted in partnership with Illinois State University. This survey was funded through an agreement with the Illinois EPA for solid waste planning updates.

## 1. Recommendation and Implementation Schedule Contained in the Adopted Plan

### a. Source Reduction

- i. The 2017 ISWMP has a strong adherence to the solid waste hierarchy, prioritizing the highest value use of materials over the lowest value. The hierarchy starts with waste prevention, which is considered the most beneficial, followed by waste reduction.
- ii. The McLean County Solid Waste Technical Committee developed and approved the following goals for the 2017 McLean County Recovery and Resource Management Plan:

1. Significantly reduce the amount of solid waste requiring disposal through increasing source reduction, reusing, recycling, and composting.
2. Manage the remaining solid waste requiring disposal in an efficient, equitable, and environmentally protective manner, consistent with the solid waste hierarchy.
3. Adopt secure, long-term funding mechanisms that provide sufficient revenue for all local waste program needs while providing incentives for increased waste reduction and diversion.



### b. Recycling and Reuse

- i. The ISWMP is an assertive plan with a strong emphasis on addressing existing gaps in recycling and waste services in McLean County. The following recycling and reuse goals are included in the plan:
  1. Increase McLean County recycling rate goal to 50% during quarter 1, 2017-2022. Increase the recycling rate goal to 60% during quarter 2, 2022-2027. Increase the recycling rate goal to 70% during quarter 3, 2027-2032, and increase the recycling rate goal to 80% during quarter 4, 2032-2037.
  2. Implement a C&D recycling ordinance.
  3. Determine if a voluntary program for multi-family housing recycling is feasible in lieu of an ordinance.
  4. Determine if a voluntary program for commercial recycling is feasible in lieu of an ordinance.
  5. Work with community partners to transition to a new food waste processing facility and/or help attract a new service provider to develop a local facility.
  6. Initiate a feasibility study for a permanent household hazardous waste facility for McLean County.
  7. Work with McLean County Wellness Coalition and other partners to expand food rescue in the community.

- c. Combustion for Energy Recovery
  - i. The ISWMP does not include any specific goals for expanding combustion of municipal solid waste.
- d. Combustion for Volume Reduction
  - i. The ISWMP does not include any specific goals for combustion for volume combustion. Only a small amount of brush is combusted by the City of Bloomington every year.
- e. Disposal in Landfills
  - i. In 2022 McLean County landfilled roughly 112,000 tons of municipal solid waste.
  - ii. The anticipated closure of the McLean County landfill occurred in late 2018. Republic Services now transports local waste to the nearby Pontiac Landfill in Livingston County through their transfer station located in Bloomington-Normal.
    - 1. The pollution control facility (PCF) siting process for an additional transfer station operated by LRS was approved by the McLean County Board in early 2024.
    - 2. The plan recommends that the establishment of an additional waste transfer station could have multiple economic benefits.

## McLean County Landfill To Close Sunday

WGCT

Published September 26, 2018 at 3:00 PM CDT



The Livingston County Landfill, where McLean County waste will be rerouted after the McLean County Landfill closes Sunday, Sept. 30.

Livingston Action Center

## **2. Current Plan Implementation Efforts**

- i. During the first quarter (2017-2022) of the ISWMP the following recommendations have been implemented:
  1. In addition to existing solid waste staff at the EAC, provide funding for a full-time solid waste technician for business waste consultations, negotiations of non-exclusive franchise waste/recycling agreements, to identify barriers and solutions to recycling in older neighborhoods/areas with limited space, and to conduct additional research and outreach.
    - a. The EAC has hired a fulltime program technician however, this person is technician for other program areas in addition to the solid waste program so not all of these goals have been implemented yet. The PCF siting process also required many hours of the program technician over the course of 1.5 years.
  2. Determine if a voluntary program for multi-family housing recycling is feasible in lieu of an ordinance. If so, implement a pilot program to verify feasibility. If not, propose an ordinance to achieve the recycling goal.
    - a. In 2018 an ordinance was passed by the Town of Normal requiring apartments and other multifamily residences to provide recycling options. Many of the apartment buildings in Normal are located near Illinois State University and house students. While most multifamily residences now offer recycling, the containers provided often lack the necessary capacity for adequate collection. A recent meeting with the Town of Normal Public Works department revealed that they often receive calls about inadequate or absent recycling collection.
    - b. Major fluctuations in the global recycling commodity business, including China banning the import of US recyclables, are indirectly making implementation difficult. The Covid-19 pandemic also made this implementation challenging.
    - c. While this goal has technically been met, it needs to be revisited and updated to allow for recycling availability in multifamily housing. Landlords and town council may still be sensitive to a new tenet notice ordinance that just passed. Therefore, the EAC intends to wait before pursuing this further. In the meantime, the EAC plans to increase outreach and awareness to students during the fall semester and work with the ISU Office of Sustainability to reach the student body. The EAC also plans to meet with student housing rental companies to discuss ways to make implementation feasible.
  3. Initiate feasibility study for permanent Household Hazardous Waste facility for McLean County.

- a. In the fall of 2022, the EAC drafted a request for proposals for a feasibility study for a permanent Household Hazardous Waste facility for McLean County. The submitted proposals were evaluated by the RFP team and a firm was selected to begin the process. The first stage of this study was completed and is currently being reviewed.
- ii. During the first quarter (2017-2022) of the ISWMP the following recommendations were not implemented:
  - 1. Increase McLean County Recycling Rate Goal to 50%.
    - a. While the recycling rate goal has not been met, it is getting close with the 2023 recycle rate at 47.7%. The recycle rate has gradually increased over the years but dramatically decreased in 2020 due to the pandemic. The rate has gradually been increasing ever since. However, with recent changes in Construction and Demolition regulations it's expected that the recycle rate will decrease in the following years.
  - 2. Implement C & D Recycling Ordinance.
    - a. Due to current economic conditions, limitations at the local C&D facility, and other variables, it is not feasible to pursue an ordinance at this time.
  - 3. Determine if a voluntary program (e.g. geographic based non-exclusive franchise agreement for waste and recycling) for commercial recycling is feasible in lieu of an ordinance. If so, implement a pilot program to verify feasibility. If not, propose an ordinance to achieve the recycling goal.
    - a. This strategy has not been implemented yet do to staffing levels, time, and funding
  - 4. Work with community partners to transition to a new food waste processing facility and/or help attract a new service provider to develop a new local facility.
    - a. Better Earth Logistics is a small-scale composting facility located in Peoria County, IL that services some institutions, grocery stores, restaurants, and community kiosks in Bloomington-Normal. While this goal has not been met, steps are being made in that direction.
  - 5. Institute regular meetings of an informal solid waste coalition of service providers and other relevant parties.
    - a. This strategy has not been implemented yet do to staffing levels, time, and funding.
  - 6. Work with the McLean County Wellness Coalition and other partners to expand food rescue in the community.
    - a. This strategy has not been implemented yet do to staffing levels, time, and funding. The McLean County Wellness Coalition has disbanded so new partners will need to be found.

**b. Recommendations in the adopted plan that have been implemented according to schedule and which ones were not.**

- i. Increase McLean County Recycling Rate Goal to 50%.
  - 1. Somewhat implemented according to the plan's schedule. The goal has increased to 60% in quarter two.
- ii. Implement C&D Recycling Ordinance.
  - 1. Not implemented according to the plan's schedule.
- iii. In addition to existing solid waste staff at the EAC, provide funding for a full-time solid waste technician for business waste consultations, negotiations of non-exclusive franchise waste/recycling agreements, to identify barriers and solutions to recycling in older neighborhoods/areas with limited space, and to conduct additional research and outreach.
  - 1. Somewhat implemented according to the plan's schedule.
- iv. Determine if a voluntary program for multi-family housing recycling is feasible in lieu of an ordinance. If so, implement a pilot program to verify feasibility. If not, propose an ordinance to achieve the recycling goal.
  - 1. Implemented according to the plan's schedule but needs to be revisited.
- v. Determine if a voluntary program (e.g. geographic based non-exclusive franchise agreement for waste and recycling) for commercial recycling is feasible in lieu of an ordinance. If so, implement a pilot program to verify feasibility. If not, propose an ordinance to achieve the recycling goal.
  - 1. Not implemented according to the plan's schedule.
- vi. Work with community partners to transition to a new food waste processing facility and/or help attract a new service provider to develop a new local facility.
  - 1. Somewhat implemented according to the plan's schedule.
- vii. Institute regular meetings of an informal solid waste coalition of service providers and other relevant parties.
  - 1. Not implemented according to the plan's schedule.
- viii. Initiate feasibility study for permanent Household Hazardous Waste facility for McLean County.
  - 1. Implemented according to the plan's schedule.
- ix. Work with the McLean County Wellness Coalition and other partners to expand food rescue in the community.
  - 1. Not implemented according to the plan's schedule.



**c. Revised implementation schedule**

Recommendation	Implementation Timeframe
<b>Increase recycling rate to 50% during quarter 1 and 60% during quarter 2</b>	2024-2027
<b>Implement a C&amp;D ordinance</b>	Revisit in 2026
<b>Provide funding for a full-time solid waste technician</b>	2025-2026
<b>Determine if a voluntary program for multi-family housing recycling is feasible in lieu of an ordinance</b>	Revisit in 2026
<b>Determine if a voluntary program for commercial recycling is feasible in lieu of an ordinance</b>	2025-2027
<b>Work with community partners to transition to a new food waste processing facility and/or help attract a new service provider</b>	2024-2027
<b>Institute regular meetings of an informal solid waste coalition</b>	2025-2027
<b>Work with the McLean County Wellness Coalition and others to expand food rescue in the community</b>	2024-2027

### 3. Recycling Program Status

- a. Has the program been implemented throughout the county or planning area?
  - i. Yes.
- b. Has a recycling coordinator been designated to administer the program?
  - i. Yes, the Ecology Action Center has been contracted by the County, City of Bloomington, and the Town of Normal to administer the Solid Waste Program since 1998.
- c. Does the program provide for separate collection and composting of leaves?
  - i. Yes.
- d. Does the recycling program provide for public education and notification to foster understanding of and encourage compliance with the program?
  - i. Yes.
- e. Does the recycling program include provisions for compliance, including incentives and penalties?
  - i. No.
- f. Does the program include provisions for recycling the collected materials, identifying potential markets for at least three materials, and promoting the use of products made from recovered or recycled materials among businesses, newspapers, and local governments?
  - i. Yes. Several municipal, for-profit, and not-for-profit recycling programs exist in McLean County, which provide for the collection, processing, and marketing of at least three materials. The Ecology Action Center promotes the use of products made from recycled materials among residents, businesses, schools, and other organizations.
- g. Provide any other pertinent details on the recycling program.
  - i. Recycling is available to all residents of McLean County through both curbside and drop-off programs. Almost all municipalities in McLean County now offer curbside recycling collection. The drop-off program is open to anyone and is conveniently located at four collection sites throughout the Town of Normal.

## ii. Rural McLean County Municipal Recycling Programs

Municipality	Recycling Program Type	Materials Accepted
Anchor	Curbside	Single stream
Arrowsmith	Curbside	Single stream
Bellflower	None	N/A
Carlock	Curbside	Single stream
Chenoa	Curbside	Single stream
Colfax	Curbside	Single stream
Danvers	Curbside	Single stream
Downs	Curbside	Single stream
Ellsworth	Curbside	Single stream
Gridley	Curbside	Single stream
Heyworth	Curbside	Single stream
Hudson	Curbside	Single stream
LeRoy	Curbside	Single stream
Lexington	Curbside	Single stream
McLean	Curbside	Single stream
Saybrook	Curbside	Single stream
Stanford	None	N/A
Towanda	Curbside	Single stream

### iii. Electronics recycling

1. The Consumer Electronics Recycling Act requires a number of certain electronics to be recycled. The act establishes a convenience standard for electronics recycling that ensures a minimum number of collection locations in each participating county. The McLean County Residential Recycling program is a self-service drop-off facility housed in the Normal Public Works. There are also a number of retail stores that accept electronics for recycling.

### iv. Promoting Others To Succeed (POTS)

1. The former garden pot recycling and Illinois plastic pot recycling initiative is now called POTS. The POTS program operates multiple collection sites for plastic flower pots and plant trays. These locations are conveniently located at local garden stores in the community.

v. Food Scrap Composting

1. In 2020, the Ecology Action Center launched the BN Community Composting program which allows participating residents to drop off their compost at two conveniently located kiosks. The kiosks are serviced by a commercial composting facility which means the program can accept more complex



items for compost such as meat, dairy, bones, processed foods, and compostable packaging. This program continues to grow and recycled 46.8 tons of food scraps in 2023.

- vi. Commercial recycling is also available through several commercial haulers.
- vii. See the Current Recycling Programs table below for more information.

**Current Recycling Programs**

Program	Waste Stream	Public or Private	Location/Comments
<b>Residential curbside single stream recycling collection</b>	Mixed materials - paper, cardboard, cans, bottles, some plastic containers	Public	Town of Normal 70% participation rate
<b>Residential curbside single stream recycling collection</b>	Mixed materials - paper, cardboard, cans, bottles, some plastic containers	Public	City of Bloomington 79% participation rate
<b>Residential recycling drop-off program</b>	Mixed materials - paper, cardboard, cans, bottles, some plastic containers	Public	Four locations in the Town of Normal 2023: 1,088 tons recycled
<b>E-Waste recycling</b>	All CEDs, EEDs, including CRTs	Public	Town of Normal Public Works 2023: 426 tons recycled
<b>E-Waste recycling</b>	Most CEDs and EEDs, excluding CRTs	Private	BestBuy
<b>Textile recycling</b>	Clothing, sheets, towels, etc.	Private	Home Sweet Home Ministries dropboxes 2023: 104 tons recycled

<b>Food scrap composting program</b>	Residential, commercial, and institutional food waste	Public	Better Earth Logistics collects from residential and institutional kiosks and from commercial properties. 2023: 581 tons recycled
<b>Pharmaceutical disposal</b>	Prescription and non-prescription drugs	Private-Public	OSF Eastland Pharmacy, Walgreens Pharmacy, Normal Police Dept.
<b>Mattress recycling</b>	Mattresses and box springs	Private	Kern Mattress Outlet 2023: 22 tons recycled
<b>Plastic bag/film recycling</b>	Plastic grocery bags, newspaper sleeves, dry cleaning bags, etc.	private	Most grocery stores
<b>TerraCycle recycling</b>	Nontraditional Items	Private	St. Luke's Union Church garage and Common Ground Grocery
<b>Household hazardous waste collection</b>	Oil-based paint, paint thinners, lawn chemicals, cleaning products, etc.	Public-Private	Ecology Action Center collection event usually held once a year. 2023: 15,727 gallons of HHW materials collected
<b>Construction and demolition recycling</b>	Shingles, wood, drywall and plaster, metal, vinyl siding and other materials from a C&D site	Private	Henson Disposal C&D Recycling Facility (Now owned by LRS) 2023: 6,987 tons recycled
<b>Scrap metal</b>	Iron, aluminum, and all other metals	Private	Alter Metal Recycling 2023: 14,927 tons recycled Olson's Scrap Metal Recycling (new in 2024)
<b>Appliances</b>	White goods	Public	Municipalities or private haulers
<b>Brush and/or yard waste</b>	Wood yard waste or vegetation	Public	Municipalities 2023: 19,024 tons recycled
<b>Mercury thermostats</b>	Mercury containing thermostats	Public	Normal Public Works
<b>Fluorescent bulbs</b>	CFL and tube fluorescent	Private	Batteries Plus Bulbs, some box hardware stores (CFL only) 2023: 0.5 tons recycled
<b>Non rechargeable batteries</b>	Watch batteries through AAA, C, D, 9V, etc.	Private	Interstate Batteries and Batteries Plus Bulbs 2023: 8.3 tons recycled
<b>Promoting Others to Succeed (POTS)</b>	Plastic garden/plant pots	Public	Multiple locations (garden centers) 2023: 13 tons recycled
<b>Confidential Onsite Paper Shredding (COPS)</b>	Paper, OCC	Public	Various locations, multiple times per year 2023: 3,329 tons recycled

## Education and Outreach Programs

Program	Target Audience	Location	Comments
<b>Youth classroom waste and recycling education</b>	Fourth grade	McLean County	Goal of visiting at least 70% of eligible classrooms reaching 1,500 students
<b>Youth waste and recycling education</b>	Young library visitors	McLean County	Goal of visiting at least 60% of public libraries reaching 300 library patrons
<b>Public recycling and waste presentations and information booths at public events/health fairs</b>	Community groups, service organizations, scouts, college classes	McLean County	Provide presentations for at least 25 local groups reaching 750 individuals
<b>Social media outreach</b>	Adults of all ages	McLean County	Promote recycling and sustainable practices through social media with a target of 30,000 interactions
<b>Traditional media outreach and newsletters</b>	Adults	McLean County	Paid promotions and featured stories. The EAC sends 8 digital newsletters and 4 hard copy newsletters a year
<b>Recycling information center</b>	All sectors	McLean County	Community-wide information center on recycling and waste issues with around 810 inquires in 2023 via in person visit, email, and phone
<b>Online recycling and waste directory</b>	All sectors	McLean County	Extensive recycling listings for all public and many private programs with over 43,000 visits to these pages in 2023
<b>Composting workshops</b>	Homeowners and apartment dwellers	McLean County	Hands-on build-your-own composter workshops for both backyard and vermicomposting.
<b>Recycle Coach</b>	Residential	McLean County, with a heavy Bloomington-Normal focus	User-friendly, browser based and smart phone application, geographic-based comprehensive information with Spanish language translation available.

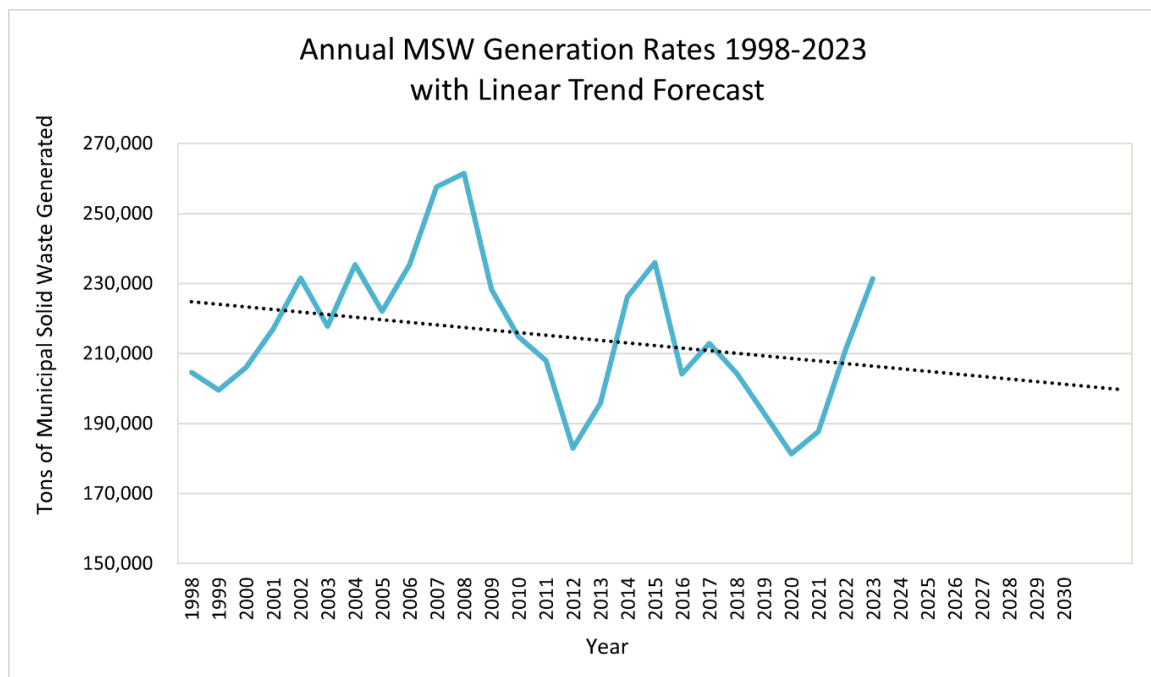
#### 4. Current Needs Assessment Information

**Time Period for this information: 2022**

- a. MW Generated per year: 211,213 tons
- b. MW Generation Rate: 6.76 Lbs./capita/day
  - i. McLean County 2022 population: 171,284
- c. MW Recycled/Year: 98,949 tons
- d. MW Incinerated/Year: 3,062 tons
- e. MW Landfilled/Year: 112,264 tons

**McLean County Recycle Rate 2019-2023**

	2019	2020	2021	2022	2023
Total MSW Recycled (tons)	88,330	76,487	82,205	98,949	112,577
Total MSW landfilled (tons)	104,772	104,919	105,442	112,264	123,339
Total MSW Generated (tons)	193,102	181,406	187,647	211,213	235,916
Recycling Rate	45.7%	42.2%	43.8%	46.9%	47.7%



## **5. New Recommendations and Implementation Schedule**

- a. In 2023 the Ecology Action Center received funding from the Illinois Environmental Protection Agency to use towards solid waste planning updates. The EAC partnered with Illinois State University's Stevenson Center Fellows to address the community's understanding about local recycling practices and contamination within recycling. The students created and administered a survey to over 600 participants. Their findings indicate that most participants have a willingness to recycle but there are gaps in knowledge regarding contamination. Their findings also show a lack of awareness regarding how to find recycling information.
  - i. With this information the EAC will focus on providing more educational material and outreach concerning the negative impacts of contamination in recycling.
  - ii. The EAC will advertise their services more widely to the community so that residents know where to go for up-to-date recycling information.
  - iii. New signage for the residential recycling drop-off containers is being designed and will include information on how to contact the EAC for recycling questions.
  - iv. The EAC will continue to promote the use of the RecycleCoach, a web based and smartphone app that tells residents where and how to recycle different materials.
- b. In 2024 and 2025 the EAC will develop new educational materials to promote zero waste practices and will provide assistance to event coordinators, businesses, and residents on how to create a zero-waste event.
- c. The EAC will continue to look for Styrofoam densifier grant opportunities and connect interested parties.
- d. In 2024-2025 the EAC will continue to assess the need for a medical sharps collection program.
- e. In 2025 the EAC will look for additional funding opportunities including grants, fundraising, and support from local government to add more kiosks to the Community Composting program.
- f. The EAC will work closely with Illinois State University and local student rental companies during fall move-in to provide recycling information to incoming students starting in fall of 2024.
- g. As changing needs rise with yard waste disposal, the EAC will explore other sustainable organics disposal practices that are consistent with state laws.
- h. The EAC will continue to explore waste to energy facility feasibility and other anaerobic digester technology.
- i. The EAC will explore how the recent permitting of an additional municipal solid waste transfer station in Bloomington will impact the community by increasing competition and therefore lowering waste disposal rates and other potential economic benefits.



## **Appendix**

1. Recycling in McLean County: Contamination in the Single-Stream System: A Mixed Methods Research Study by Illinois State University's Stevenson Center. Funded by the Illinois Environmental Protection Agency Solid Waste Planning Grant award to the Ecology Action Center.

# RECYCLING IN MCLEAN COUNTY:

## CONTAMINATION IN THE SINGLE-STREAM SYSTEM: A MIXED METHODS RESEARCH STUDY

Dr. Frank Beck

Rainah Folk, Sam Kortkamp, Sierra Mack-Erb,  
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STEVENSON CENTER

FOR COMMUNITY AND ECONOMIC DEVELOPMENT

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## ABSTRACT

The Ecology Action Center partnered with Stevenson Center Fellows to assess contamination issues in the Single Stream Recycling system. The research goal was to determine to what extent McLean County residents and non-residents who recycle in the county, understand the county's single-stream recycling system and to determine their knowledge regarding what types of materials are recyclable in that system and what constitutes contamination. Recycling habits and contamination in McLean County were measured utilizing a mixed methods approach, leveraging both an original quantitative survey and qualitative semi-structured interviews.

Employing convenience sampling, 663 individuals who utilize recycling facilities within McLean County, Illinois were surveyed, and 8 interviews were conducted utilizing non-probabilistic convenience sampling. Our findings indicate that while most participants reported a willingness to recycle or actively participate in recycling, there are gaps in participant knowledge regarding contamination. Additionally, our findings indicate that there are not significant local barriers to recycling but there is a lack of awareness regarding how to find recycling information. Results from this study can help provide further information on residents' knowledge of the single-stream recycling system as well as provide recommendations on where efforts can be made to further inform recycling efforts.

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## INTRODUCTION

Graduate students from Illinois State University's Stevenson Center for Community and Economic Development partnered with the Ecology Action Center (EAC) to conduct a residential study of single-stream recycling systems in McLean County, Illinois. This study served to aid in determining where efforts in education should be improved concerning single-stream recycling systems in McLean County. The purpose of this study is to document the experiences and opinions of residents regarding recycling systems and to better understand the locals' knowledge of the McLean County single-stream recycling system, recycling contamination, and barriers to recycling. The researchers conducting this study held multiple backgrounds, such as: Social Work, Sociology, Anthropology, and Politics.

This study focused primarily on McLean County's single stream recycling system (SSR) and issues of contamination as it relates to recycling. Contamination in SSR has continued to be an issue that many have researched. The current recycling system in the United States is based on the majority population utilizing a single-stream method (*"Single Stream Recycling"* n.d.). This method took off around 1990 to make recycling more accessible for the masses. As single stream became more popular, the percentage of people utilizing recycling services went up, however, so did contamination (Department of Energy & Environmental Protection, 2020).

Contamination, in this research, refers to when a recycling receptacle contains trash, locally non-recyclable items, materials soiled by food or liquid, or items placed in plastic bags. What materials are recyclable varies from county to county. This means that municipalities can only process recyclable materials that are acceptable in their region (e.g., some municipalities can recycle plastic takeaway cups while others cannot). This is due to market issues; some recyclable materials are worth more than others-- therefore there is a higher market value when recycling this material (*"Why can't all plastics be recycled?!"* n.d.). Other materials might cost the municipality money to recycle, this means they are not qualified recyclable materials. If unqualified materials are placed in recycling receptacles, this leads to contamination of that recycling which can then lead to the entire batch of recycling being thrown out. Providing information on recyclable and nonrecyclable material is an important task for residential solid waste management departments.

In the following, the relevant literature was categorized into three themes: waste management, contamination, and education. The Methods section follows the discussed literature. Methods are broken down into Quantitative and then Qualitative where each section discusses its sampling process, respondent pools, and collected data. After this, the findings of both Quantitative and Qualitative research are discussed and compared in the discussion section. This section reveals the strengths and limitations of the study as well as unexpected findings. Suggestions for future research concludes the discussion section and is based on the limitations of the study.

The study found that clear and universal signage and communication regarding what can be recycled and what cannot, will assist with contamination. Along with communication, the study found that education is also an important factor in recycling habits.

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## LITERATURE REVIEW

### *Waste Management*

Waste Management (WM) is the first step for a society when they are determining what to do with their unwanted food, clothing, containers, and various other items. This study seeks to understand personal habits when it comes to waste management. To understand this, the literature behind WM must be analyzed. Upon doing this, themes of WM were found: urban versus country or less developed areas, waste classification, communication, education, and willingness to pay for WM (Lee and Krieger 2020; Meng et al. 2019; Xiao et al. 2017).

When looking at the rural versus urban issue with waste management, specifically regarding recycling, it is evident that urban areas have higher access to recycling systems and waste disposal (Xiao et al. 2017). A study done on WM in China showed that multiple factors influence a person's ability to properly dispose of their waste, but the leading factors included education, access, and financial ability. The study is based in one of eight cities, Xiamen, which has been participating in a waste separation program since 2000. A correlation was found between satisfaction rates and home values. Factors that were found from this study, listed most important to least, include citizen knowledge, social motivation, and institutional factors. More affluent people tended to live in modernized areas that encompassed a community of people who practiced more environmentally friendly behaviors, leading to a greater chance of participating in sustainable waste management. Some issues China has with WM is having the population agree with various methods such as incineration. China's landfills are filling up and they need to find a way to raise citizen participation in WM to solve this issue. More than half of the respondents were satisfied with WM. There was a higher satisfaction rate in newly developed areas than old downtown areas, even when there were higher populations in those older areas. 44.9% hoped for recycling to be built into their community, 44.4% wanted to keep selling to informal sectors.

Community regulation held a higher influence than the presence of laws. People were more likely to support source separation rather than a proposed unit-charging. The people who did support unit-charging were more likely to hold higher socio-economic status. Messaging on waste bins plays a role in informing the population and citizens who are better informed have a greater likelihood of participating in source separation. Meng and colleagues (2019) conducted a study looking at the increase in household waste and the influencing factors on human behavior in participating in waste classification such as recycling. He found that HHW disposal is affected by four intrinsic factors: willingness to participate, environmental awareness, social responsibility and behavioral attitudes. And seven external factors: publicity and education received, accessibility to recycling facilities, influence of neighbors, accessibility to classification facilities, time spent, economic cost & benefits, and knowledge on classification and recycling.

A study done on communication strategies regarding WM showed that clear language in communication is a key aspect in improving Municipal Solid Waste based on the understanding that contamination is a key issue in the Municipal Solid Waste (MSW) system with only 34.7 percent of materials recovered from recycling or composting in 2015 (Lee and Krieger 2020).

The study looks at the difference in municipality communication and why rural communities do

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not engage with recycling to the extent that urban communities do. The study recognizes the importance of mass media and leveraging personal networks to understand recycling methods. Additionally, leveraging knowledge of nonexperts and/or local experts is meaningful to engage locals in meaning-making. The research identified two dominant communication characteristics: communication accommodation which describes the degree to which recycling communication is adjusted based on audience characteristics and campaign customization which refers to the extent to which messages use elements that are relevant and relatable to the intended audience groups.

These characteristics appropriately reflect significant levels of variance in communication because of localized knowledge, practices, and the capacities of local organizations and coordinators. Overall, the study found that communication via one way education and communication promoting local engagement and collaboration added in the understanding of waste management.

### *Contamination*

Contamination is an existing issue in many areas. When examining the different literature on contamination, it becomes clear that the issue exists in not only the United States but other countries as well (Xiao et al. 2017). Contamination is an issue in the current recycling system because depending on the nature of the contamination, the recyclable material can no longer be used after being mixed with non-recyclable waste (Atkinson et al. 2023). Most of this contamination happens when utilizing SSR (Bafail 2022). Bafail explains that there are a few different issues when looking at contamination: awareness, inbound materials, and whether there is a Materials Recovery Facility (MRF). Awareness can be broken down into consumer knowledge, issues with the collection companies providing clear signage and campaigns, and consumer resistance. Consumer knowledge is understood as, “insufficient public consumer awareness regarding identification of recyclables and non-recyclables” and this leads to contamination in the SSR system because people are not sure what needs to go in recycling and what cannot. Issues with the collection companies stem from ineffective signage that uses unclear language on what can be processed as recyclable material. Consumer resistance to participating in recycling programs can be a product of these first two factors. Without the awareness or knowledge of what is recyclable and what is not, consumers would rather not participate at all. Inbound materials play a huge role in causing contamination, by either the material itself not belonging or destroying other materials that would have otherwise been usable. An example of this would be a household utilizing an SSR bin and putting glass and paper products in it together. Should the glass products break, this can destroy and contaminate the paper products downstream. Another issue with inbound material is the pick-up and delivery of the material. While the items are waiting to be picked up, rain can create contamination by reaching and destroying the integrity of them. Material can also break during transport, specifically glass, creating further contamination. Then lastly, Bafail looks at the use of MRFs and SSR systems and the role they play in contamination. The machines in the MRFs separate the recycling into their specific classification however they tend to be old and in need of replacement or upgrade. This leads to manual separation for the items that get missed or that cannot be separated by a machine. Manual separation can have human error due to insufficient worker training.

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Bafail and peers (2022) found that contamination happens when there is a lack of public knowledge or signage on the receptacles. With the lack of knowledge, mistakes occur that can contaminate an entire bin of otherwise usable recyclable material. Where the recycling bin is placed is also a consideration as it can be contaminated by the weather or create situations where glass breaks after being placed in there. The systems used to sort SSR are outdated and in need of repair and manual sorting leaves a margin of error due to lack of knowledge.

### *Education*

Contamination and education go hand in hand and what many researchers have found is that the more standardized the education, the less the contamination (Lee and Krieger, 2020). One consistent theme across the literature is the need for clear messaging. Communication plays a big part in education because what is recyclable varies depending on the municipality. One study looks at the importance of positively framing messaging (Lee et al. 2022). The study found that by increasing positively framed instructions one could increase the recycling intention for more people. While the last study looked at the benefits of positively framing messaging, Catlin and associates (2021) look at the labeling on trash and recycling receptacles in their study and created a counter argument. The study found that labeling can be both beneficial and determinantal when used incorrectly. Pro-environmental labeling, a type of point-of-disposal signage, was used to help aid recycling and is one identified factor that has had an impact on municipal solid waste recycling in the United States. Although the strategy of pro-environmental labeling was expected to increase recycling by diverting consumers from throwing away recyclable materials, it instead resulted in overinclusive recycling and therefore, contamination. This outcome was attributed to emotion evoking labeling. Feelings and emotions when trashing an item, versus recycling the item are discussed in the context of how labeling of trash and recycle receptacles prompts an emotional response.

Another study looked at immediate feedback and its relationship to recycling habits and contamination (Luo et al. 2019). This study looks at the use of a digital sorting game that gives immediate feedback on the players actions as they choose between four distinct categories to put things into: food scraps, recyclable containers, paper, and garbage. When they tried the study with residences, they found that the amount of trash and recycling increased, and the contamination in the recycling decreased. The first experiment required the participants to press a key on the keyboard that represented the bin they wanted the waste to go to. The second experiment required the participants to drag and drop the items in said bins so that the motion was tracked. To figure out how to reinforce recycling knowledge, the study first aimed to discover the gaps by testing people without feedback. Once that took place, there were 80 trials where one item would appear on screen and would be sorted. The participants got 8 practice trials beforehand with feedback. The items in the practice trial would not show up in the later trial. The results concluded that having immediate feedback significantly helped with contamination.

In 2011, another class of Applied Community/Economic Development students (Conrad et al.), worked with the EAC on a project related to recycling. Like this semester, the students conducted a survey and interviews with key informants. There was strong support for changing the recycling structures and procedures in Bloomington-Normal (e.g., curbside recycling and providing more recycling options for apartment dwellers). Specific recommendations were made for the EAC, City of Bloomington, Town of Normal, school districts, and solid waste disposal companies.

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## RESEARCH METHODS

The Illinois Solid Waste Planning and Recycling Act (SWPRA) requires counties to adopt a plan to manage solid waste generated within its boundaries. This plan must include several measures important for local planning, including a description of the programs planned to handle waste over the next twenty years among others. The data and information garnered through this study will help inform the mandatory five-year update of the solid waste plan for McLean County, Illinois that will be submitted to the Illinois Environmental Protection Agency (IEPA) for approval. Thus, this study leverages mixed methods incorporating original data from a cross-sectional survey and semi-structured in-depth interviews to understand individual's knowledge of the McLean County, Illinois single-stream recycling system and to answer the questions (A) Do residents understand contamination in the recycling stream? and (B) What gaps exist in the current recycling information provided to McLean County, Illinois residents?

## QUANTITATIVE METHODOLOGY

### *Procedure*

This study was primarily interested in understanding residents' knowledge of contamination in the McLean County single-stream recycling system. Upon the approval of the Institutional Review Board (IRB) at Illinois State University, the researchers used non-probabilistic convenience sampling to recruit a total of 663<sup>1</sup> survey respondents by way of flyers, QR codes, press releases, newspaper announcements, LISTSERV email blasts and word of mouth. The survey took place via Qualtrics XM, an online survey software program, from March 28 through April 26 and was administered in two languages: English (default) and Spanish. Upon completion of this study, individuals were provided with a link to the Ecology Action Center's website in which they could gather more information about recycling in McLean County.

Additionally, participants were thanked for their time and were given the opportunity to enter a gift card drawing to incentivize their participation.

### *Participants*

Individuals who reside in McLean County or live in a neighboring county and utilize recycling facilities within McLean County were invited to complete the survey. The 2023 McLean County, Illinois Census data, estimates that the population is 170,441. While non-probabilistic sampling does not ensure representativeness, the research team distributed surveys through personal and community networks to increase the likelihood of reaching individuals who reside outside of McLean County but utilize its recycling facilities. Table 1 represents the frequency of distribution methods. The link was far more advantageous than the QR code.

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<sup>1</sup> There were a total of 1059 total completed survey questionnaires. Due to several factors, 396 respondents were excluded from the final report as they were not representative of McLean County's population.

Table 1. Survey Distribution Frequency

Distribution Method	Percent	Number
QR code	9%	61
Anonymous link	91%	602

### Measures

The survey instrument (see Appendices D and E) was an original composition, constructed in partnership with the EAC to examine residents' knowledge of the McLean County single-stream recycling system, recycling contamination, and barriers to recycling. The questionnaire encompasses six sections: (1) assessment of waste disposal practices, (2) knowledge of recycling and recycling practices, (3) barriers to recycling, (4) values concerning recycling, (5) knowledge of contamination, and (6) demographic questions.

*Assessment of Waste Disposal Practices.* To understand the current waste disposal of participants, five items were used. Questions 1-3 are dichotomous yes/no questions (1 = Yes, 2 = No). These questions were used to measure who participates in recycling, who is familiar with recycling procedures, and who has the information to recycle properly. Question 4 is a contingency question prompting participants to indicate where, if at all, they dispose of their recyclables outside of their place of residence.

*Knowledge of Recycling and Recycling Practices.* Five items were used to evaluate residents' knowledge of recycling procedures in McLean County, Illinois. Question 5 asks participants to indicate how much they agree (1 = Strongly disagree, 4 = Strongly agree) with the statement "I know what single-stream recycling means." Question 6 is an open-ended follow-up question used to assess how respondents would define single-stream recycling. Question 7 is a dichotomous yes/no question (1 = Yes, 2 = No) asking participants to indicate if their household participates in single-stream recycling. Question 8 asks participants to indicate where, if at all, they have gathered information on recycling (1 = School, 8 = I am not informed about proper recycling). Two responses in the answer categories are open-ended. Question 9 measures attitudes towards and procedures concerning recycling using a four-point Likert scale (1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly agree).

*Barriers to Recycling.* Five items were used to gauge respondents' perceived barriers to recycling. Questions 10 and 11 are dichotomous yes/no questions (1 = Yes, 2 = No). Question 10 assesses respondents' perceived difficulty in recycling in their community. Question 11 assesses respondents' satisfaction with the recycling pick-up schedule at their place of residence.

Question 12 utilizes a four-point Likert scale (1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly agree) to assess 6 statements regarding barriers to recycling. Question 13 and 14 are dichotomous yes/no questions (1 = Yes, 2 = No). Question 13 assesses respondents' ability to understand the recycling pickup schedule based on the map provided by the City of Bloomington. Question 14 assesses respondents' usage of the "Recycle Coach" app.

*Value Concerning Recycling.* Three items were used to measure respondents' values concerning recycling. Questions 15 and 16 are dichotomous yes/no questions (1 = Yes, 2 = No). Question 15 assesses if recycling matters to the respondent, and question 16 assesses if respondents' perception of if recycling matters to the residents of McLean County. Question 17 utilizes a four-point Likert scale (1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly agree) to assess 6 statements regarding respondents' recycling values.

*Knowledge of Contamination.* Four items were used to understand respondents' knowledge of contamination within the recycling stream. Question 18 utilizes a scale ranging from 0 to 10 (0 = Not confident at all, 10 = Completely confident) to assess respondents' confidence in their recyclables truly being recycled. Question 19 utilizes a four-point Likert scale (1 = Strongly disagree, 4 = Strongly agree) to measure respondents' knowledge of recycling contamination. Question 20 is an open-ended follow up question used to assess how respondents would define recycling contamination. Lastly, question 21 measures respondents' recycling knowledge using a 14-point quiz that asks participants to indicate if an item is recyclable in McLean County (1 = Acceptable, 2 = Unacceptable, 3 = Unsure/Don't know).

*Demographic Questions.* To understand characteristics relevant to the sample population of the survey respondents, questions 22-29 were included as demographic questions. The demographic questions asked respondents to indicate their age, gender identity, race, highest level of education, number of children under the age of 18 living in the household, home ownership status, zip code, and household income.

## QUALITATIVE METHODOLOGY

This study additionally utilized semi-structured interviews to collect qualitative data regarding McLean County residents' perspectives on the single-stream recycling system, recycling contamination, and barriers to recycling. Whereas our survey provided us with ample statistics to analyze regarding the above foci, interviews provided us with a chance to give research participants (i.e., residents of McLean County and non-residents who recycle here) the opportunity to share with us in greater detail their perspectives and experiences with recycling.

### *Participants & Setting*

Interview participants in this study were either 1) residents of McLean County or 2) non-residents of McLean County who utilize the county's recycling services. Interviews were conducted by three members of the research team with relevant qualitative interviewing experience. Interview participants were recruited by word of mouth and through the research team's networks. To incentivize participation, interviewees were offered a \$25 VISA gift card in exchange for their participation in our study.

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The interviews took place locally in Bloomington-Normal in locations selected by the interviewees to prioritize convenience, including on-campus at Illinois State University and off-campus at locations such as local grocery stores and virtually in some cases. Additionally, we took an ethnographic approach to interviewing. An ethnographic interview is different from other interview techniques used in the social sciences. In most cases, ethnographic interviews are a series of conversations that take place in the context of a larger set of interactions between interviewer and interviewee (O'Reilly, 2012, 118). However, due to the time constraints of this study and our additional use of an original qualitative survey, we only conducted one interview with each research participant. While we lacked the repeated interactions typical of ethnographic interviewing, such as interviewing individual participants and participating in their everyday lives, we did employ many aspects of an ethnographic interview. As a research team, we took a semi-structured approach and maintained a conversational cadence throughout the interview. We used an interview guide which gave us a starting point for conversation and questions to refer to if needed (see Appendix A). Each interview evolved between the respective interviewer and interviewee based on their individual responses and the particular flow of conversation. Interviews lasted between 30 and 45 minutes.

### *Data Collection & Analysis*

Before interviewing, all potential interviewees were provided with a letter of Informed Consent outlining the details of the study and ensuring their voluntary participation (see Appendix B).

Interviewers also verbally overviewed this Informed Consent at the beginning of each interview. All interviews were audio-recorded and then transcribed verbatim using Otter.ai and proofread/edited by the interviewer to ensure accuracy. Transcripts were coded to anonymize participants' personal information. As a research team, we reviewed the transcripts collectively and utilized thematic analysis to identify key themes and commonalities across interviews (see Findings). Special attention was paid to repeated words or phrases and the recommendations and advice interviewees gave regarding improving the recycling system here in McLean County.

Divergent perspectives and points of difference across interviews were also noted.

### *Demographics*

In total, eight interviews were conducted. Our intention as a research team was to identify interview participants with varied backgrounds, identities, and relationships to recycling to mirror the diversity of McLean County and recycling engagement. However, as is showcased below, our interviewees mostly consisted of women, between 20 and 60 years old, who do participate in recycling. While the demographics of each interviewee do vary to some extent, their perspectives as eight individuals should not be decontextualized to be considered necessarily representative of the total population of McLean County. Please see the below table for specific demographic data corresponding to each interviewee.

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Table 2. Demographic Characteristics of Interview Subjects

Pseudonym	Gender/Age	Time in McLean County	Recycling Participation (yes/no)	City of Residence
Tamarra	W/30s	13 years	yes	Bloomington
Alex	M/30s	27 years	yes	Normal
Hannah	W/20s	26 years	yes	McLean
Eva	W/20s	8 years	yes	Bloomington
Katherine	W/50s	24 years	yes	El Paso
Lisa	W/50s	26 years	yes	Bloomington
Alfred	M/20s	> 1 year	no	Bloomington
Mia	W/20s	10 years	no	Ellsworth

## FINDINGS

### QUANTITATIVE FINDINGS

#### *Respondent Relationships Compared*

In the following sections, we provide pertinent frequencies and descriptive information of select variables and crosstabulations of more than one variable. A crosstabulation (crosstab) is a two- (or more) dimensional model that indicates the frequency of respondents falling into a specific characteristic described in the cells of a table. They provide information about the relationship between variables. Crosstabs are useful for understanding nominal, mutually exclusive data. The survey questionnaire is primarily comprised of qualitative answer categories (e.g., strongly agree to strongly disagree), in which crosstabs are useful to analyze the relationships between recycling participation, barriers, contamination, and knowledge of single-stream systems. The tables represent these relationships (see Appendix H for additional frequency distributions).

Additionally, bar graphs and pie charts are included in this section of the data analysis to provide a visual representation of one-way relationships and comparisons between groups. The figures in the subsequent sections represent these relationships.

#### *Overview of Respondents*

Overall, trends in the demographic data collected from respondents indicate the participants are not representative of the population of McLean County. Compared to the 2023 McLean County Census data, racial minorities are underrepresented. There is an overwhelming representation of white, highly educated women in their early 20s to mid-40s.

Demographic frequencies are represented in Table 3. As the link to the survey went out to the entire Illinois State University email list, many of the respondents hold Master's degrees or higher. The flip side of that coin is that individuals with that level of education may be highly aware of recycling procedures in a single-stream environment.

Table 3. Demographic Frequencies of Respondents

Demographics	Percentage of Sample
<b>Gender</b>	
Man	26.78%
Woman	69.89%
Other	2.87%
<b>Race</b>	
Asian	1.82%
Black	3.95%
Latinx	2.43%
White	87.10%
Other	1.52%
Two or More Races	2.43%
<b>Age</b>	
18-24	24.21%
25-34	14.52%
35-44	17.85%
45-54	15.89%
55-64	13.92%
65-74	8.77%
75-84	2.72%
85-94	0.15%



Education	
High school diploma/GED	4.84%
Some college	16.94%
Associates degree	8.47%
Bachelor's degree	33.13%
Master's degree +	36.31%
Household Income	
\$0 to \$19,999	10.59%
\$20,000 to \$49,999	9.68%
\$50,000 to \$89,999	21.48%
\$90,000 to \$129,999	19.52%
\$130,000 to \$149,000	8.32%
\$150,000+	14.52%
Prefer not to answer	15.58%
Homeownership Status	
I own my home	63.41%
I rent/sublease	25.15%
I live with family/friends	8.54%
Other (please specify)	2.90%

It is also the case that 20% of respondents live in households with a combined income of less than \$50,000 per year and another 21% of households have incomes between \$50,000 and \$90,000 per year. So, households with lesser incomes responded to the survey.

### *Culture of Recycling*

The survey begins with a simple question of whether or not respondents recycle. The vast majority of the sample 608/661 (or 92%) recycle. Given the topic, that is good news but also not much of a surprise. While many recycle, some find it difficult. A minority of respondents (26%) think it is hard to recycle in their community; 74% do not think it is hard.

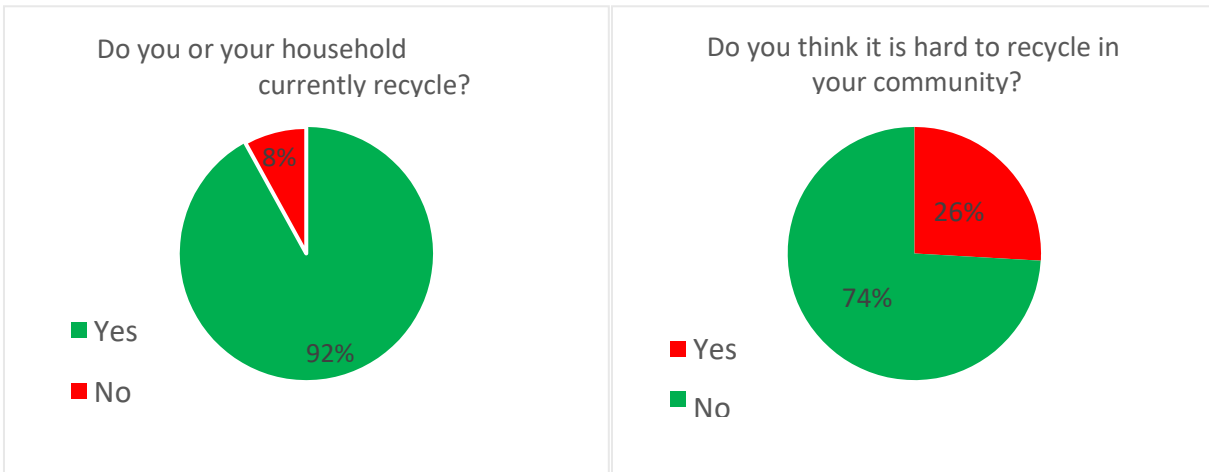


Figure 1. Recycling Participation: Do You Recycle?

Figure 2. Recycling Barriers: Do You Find It Hard to Recycle?

\* Please note that the charts are designed so the red portion is the less than good news and the green portion indicates good news.

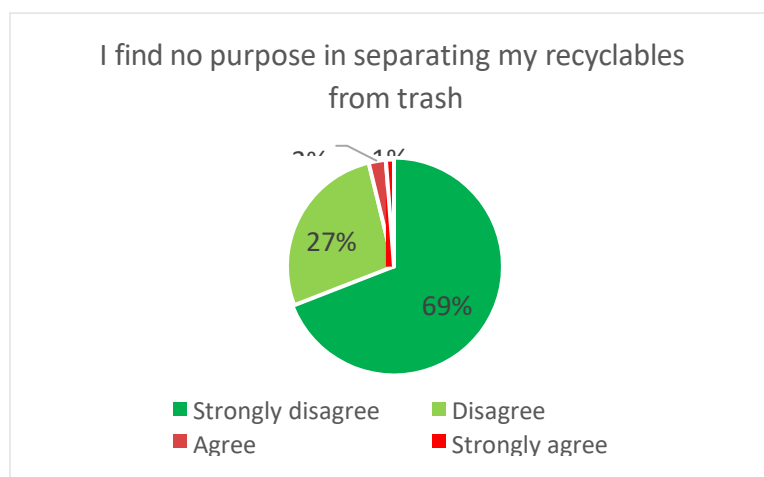


Figure 3. Recycling Values: Separating Trash from Recyclables

An even better picture emerges when looking at the above chart. 96% of respondents disagree that there is no purpose in separating recyclables from trash. So, only 4% agree with that less than hopeful sentiment.

Examining the next two charts together offers an interesting juxtaposition. While the vast majority of respondents (90%) at least agree that they know how to sort their trash from recycling (see Figure 4), only 75% claim that they are sure of what goes where (see Figure 5). So, it appears more education is needed.

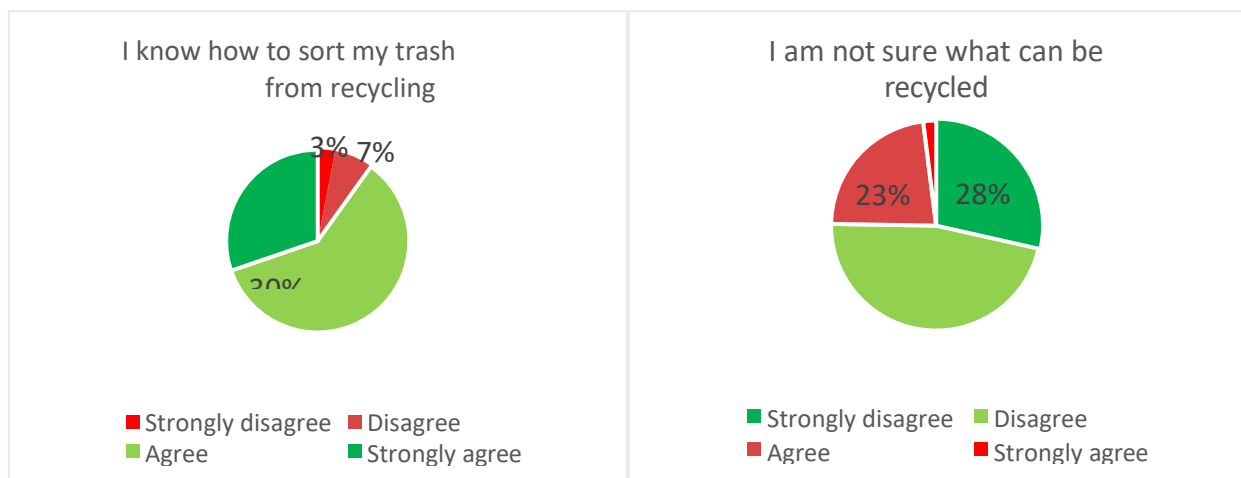


Figure 4. Recycling Knowledge: Sorting Figure 5. Recycling Knowledge: Acceptable Items

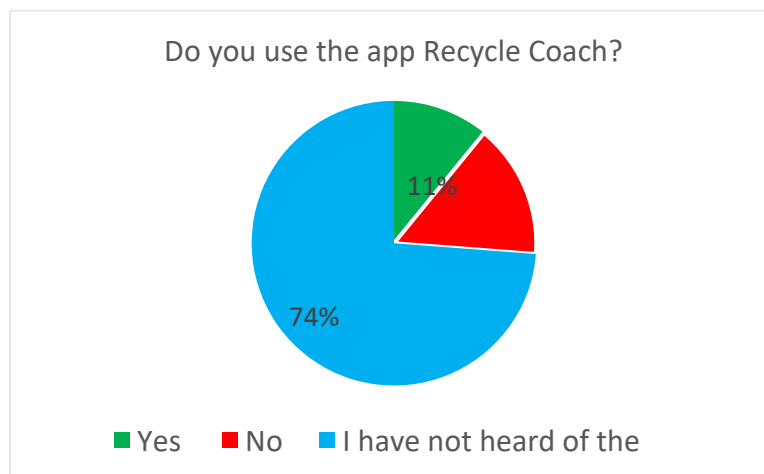


Figure 6. Recycling Knowledge: Use of Recycle Coach App

As far as education is concerned, Recycle Coach seems to be a useful app that can be downloaded onto a smart phone or accessed through the EAC website. However, almost 75% of respondents stated that they are unfamiliar with the tool. An additional 15% may know what it is but do not use it. Thus, only 72/661 (11%) use the Recycle Coach app (see Figure 6).

Taken together the 25% of individuals who agree with the statement “I am not sure what can be recycled,” (see Figure 5) would benefit from using the Recycle Coach app. To mitigate barriers and increase the knowledge of recycling participants, the Recycle Coach app should be advertised more by organizations and townships that teach recycling in McLean County.

#### *Recycling Participation and Practices*

Respondents were between the ages of 18 and 85. The average age is 41.7 and it's approximately a normal curve. This means there is not a large group of older or younger respondents; respondent's age is evenly distributed.

There is an interesting relationship between perceived knowledge of recycling and age. The average age is higher for those who see themselves as confident in their recycling knowledge, confident in their recycling habits, and that they know how to sort their solid waste. From strongly disagree to strongly agree, the average age increases by 10+ years (see Table 4.).

Table 4. Crosstab: Mean Age x Confidence (Habits, Knowledge, and Sorting Ability)

		Mean Age of Respondents		
Confidence in...		Habits	Sharing Knowledge	Sorting Ability
	Strongly Disagree	34.5	32.0	32.7
	Disagree	34.2	34.3	36.7
	Agree	41.0	43.5	40.6
	Strongly Agree	50.0	48.1	45.9
	Total	41.7	41.7	41.7

Table 5. shows respondents' participation in recycling by whether they have the necessary information to recycle properly and whether or not they are familiar with the recycling procedures of McLean

County. It makes perfect sense that 372 individuals state they have the necessary information and are familiar with recycling procedures in McLean County.

Table 5. Crosstab: Do You Recycle x Necessary Info x Mclean County Procedures

		Do you have the necessary information to recycle?		
Do you recycle?		Yes	No	Total
Yes	McLean Procedures YES	372 (88%)	102 (55%)	474 (78%)
	NO	50 (12%)	85 (45%)	135 (22%)
	Total	422	187	609
No	McLean Procedures YES	4 (57%)	4 (9%)	8 (15%)
	NO	3 (43%)	42 (91%)	45 (85%)
	Total	7	46	53
Total	McLean Procedures YES	376 (88%)	106 (45%)	482 (73%)
	NO	53 (12%)	127 (55%)	180 (27%)
	Total	429	233	662

Those respondents are 78% of the 474 respondents who perceive themselves as having the necessary information. In contrast, 233 respondents perceive themselves as not having the necessary information and 102 of them (44%) perceive themselves as not knowing McLean County procedures and recycling. So, there is clearly a relationship between knowledge of recycling information and whether or not an individual recycles.

Intriguing as well is that 88% of those that perceive themselves to have the necessary information also perceive themselves as understanding McLean County procedures; and yet, still 45% perceive themselves as understanding McLean County procedures while also claiming they do not have the necessary information to recycle.

The two-way crosstabulation in Table 6. shows respondents' indication of whether they recycle by location. Among those who live in McLean County, 92% of respondents indicate that they participate in recycling compared to 89% of individuals who reside outside McLean County.

Table 6. Crosstab: Do You Recycle x Location (Zip Code)

		Location (Zip Code)		
Do you recycle?		McLean County	Outside County	Total
Yes		571 (92%)	39 (89%)	610 (92%)
No		48 (8%)	5 (11%)	53 (8%)
Total		619	44	663

### *General Recycling Knowledge*

Baseline knowledge of recycling was assessed by comparing the response to the questions “do you recycle?” “Do you feel you have the necessary information about your local recycling program to recycle properly?” “Do you use the Recycle Coach app?” and participants’ indication of where they have obtained information on how to recycle and if recycling matters to them.

Below are the distribution frequencies and distributions representing these relationships.

Table 7. shows respondents’ indication of whether they have the necessary information to recycle and whether they use the recycle coach app. Among those who use the recycle coach app, 77% (57/71) of individuals indicate that they feel they have the necessary information to recycle properly. Additionally, 75% (76/102) of individuals who indicate that they have the necessary information to recycle properly in their community do not use the recycle coach app.

Table 7. Crosstab: Do You Recycle x Necessary Info

		Do you use the app Recycle Coach?			
Necessary Info		Yes	No	Unfamiliar	Total
Yes		57 (77%)	76 (75%)	296 (61%)	429 (65%)
No		17 (23%)	26 (25%)	191 (39%)	234 (35%)
Total		74	102	487	663

The table above shows that use of or knowledge of the Recycle Coach app is largely unrelated to respondent perception that they have the necessary information.

Figure 7. shows the distribution of responses to the question “Where, if at all, have you gathered information on how to recycle?” According to the data, participants mostly obtain their information from their respective city or town. When selecting “other” or “community organization,” participants were asked to specify their choice. Among the most popular answers, individuals indicated that they received information on recycling from the Ecology Action Center, Mid Central Community Action, Illinois State University’s Office of Sustainability, and from Normal Township.

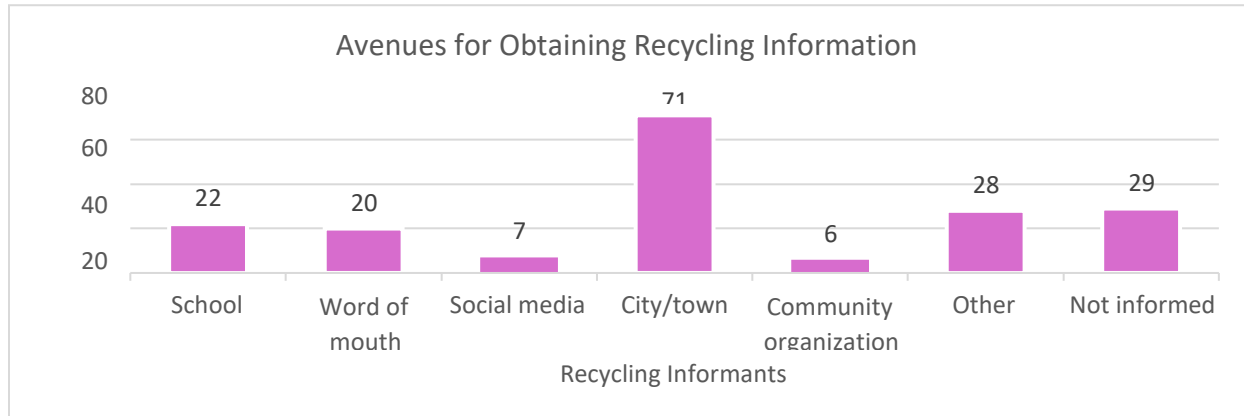


Figure 7. Recycling Knowledge: Obtaining Recycling Information

Table 8. shows respondents’ use of the recycle coach app by whether recycling matters to them. Clearly the majority (648/662) of respondents say recycling matters to them. Given the topic, this makes sense. Of those who claim recycling matters to them, 11% use the Recycling Coach app.

Table 8. Crosstab: Do You Use the App Recycle Coach x Recycling Matters to Me

		Recycling matters to me		
Do you use the app Recycle Coach?		Yes	No	Total
	Yes	72 (11%)	1 (7%)	73 (11%)
	No	101 (16%)	1 (7%)	102 (15%)
	Unfamiliar	475 (73%)	12 (86%)	487 (74%)
Total		648	14	662

### *Knowledge of Single-Stream Recycling*

The information below in Table 9. shows respondents' indication of whether or not they participate in recycling by their county location within their acknowledgment of whether or not they agree that they know what single stream recycling is. Looking at the shaded cells for McLean County, one sees that 63% (40+23) of those who recycle perceive that they understand what single-stream recycling is. For those that do not recycle, only 21% (17+4) have the same perception.

Table 9. Crosstab: Location (Zip Code) x I Know What Single Stream Is x Do You Recycle

		Location (Zip Code)		
Do you recycle?		McLean County	Outside County	Total
Yes	I know what single stream is			
	Strongly Disagree	55 (10%)	6 (15%)	61 (10%)
	Disagree	154 (27%)	16 (41%)	170 (28%)
	Agree	228 (40%)	13 (33%)	241 (40%)
	Strongly Agree	134 (23%)	4 (10%)	138 (23%)
Total		571	39	610
No	I know what single stream is			
	Strongly Disagree	15 (31%)	2 (40%)	17 (32%)
	Disagree	23 (48%)	2 (40%)	25 (47%)
Agree		8 (17%)	1 (20%)	9 (17%)
Strongly Agree		2 (4%)	0 (0%)	2 (4%)
Total		48	5	53
Total	I know what single stream is			
	Strongly Disagree	70 (11%)	8 (18%)	78 (12%)
	Disagree	177 (29%)	18 (41%)	195 (29%)
	Agree	236 (38%)	14 (32%)	250 (38%)
	Strongly Agree	136 (22%)	4 (9%)	140 (21%)
Total		619	44	663

Respondents were asked to define single-stream recycling; we coded their responses as correct, incorrect, and unfamiliar. The two-way crosstabulation in Table 10. shows respondents' indication of



whether they know what single stream recycling is by their own definition. Among those who provided a correct definition, 84% perceive themselves as understanding what single- stream means. Of those who provided an incorrect definition, 29% perceived their understanding of single stream correctly. We take this to mean that education works. Those with a correct definition are confident of it.

Table 10. Crosstab: Know Single Stream Is x Define Single Stream

		What is your definition of single stream recycling?			
I know what single stream is		Correct	Incorrect	Unfamiliar	Total
	Strongly Disagree	21 (5%)	13 (18%)	34 (27%)	68 (11%)
	Disagree	44 (11%)	38 (53%)	89 (70%)	171 (28%)
	Agree	221 (53%)	20 (28%)	3 (2%)	244 (39%)
	Strongly Agree	133 (32%)	1 (1%)	2 (1%)	136 (22%)
	Total	419	72	128	619

#### *Knowledge of Recycling Contamination*

The figures and tables below represent a picture of the recycling culture in McLean County as it relates to contamination. In general, most participants know what constitutes contamination within the recycling stream. In the open-ended question where participants indicate their definition of contamination, the most common response “was left over debris in recyclables” and “mixing non-recyclable materials with recyclable materials.” Compared to the question asking participants to indicate their definition of single-stream recycling, individuals appear to be more confident in their provided answers. This is in line with the findings in the literature review.

Language plays a crucial role in the ability of participants to recycle properly.

Figure 8. shows the distribution of responses to the question asking participants to categorize items that are acceptable or not acceptable in the single-stream system based on their knowledge. There were 14 items on the quiz: plastic bottles/jugs/jars, aluminum cans, spray paint cans, pesticide cans, cardboard office paper/newspaper/magazines, glass bottles/jugs/jars, plastic bags, ice-coffee cups, hot-coffee cups, plastic kids’ toys, scrap metal, electronics, and dirty diapers.

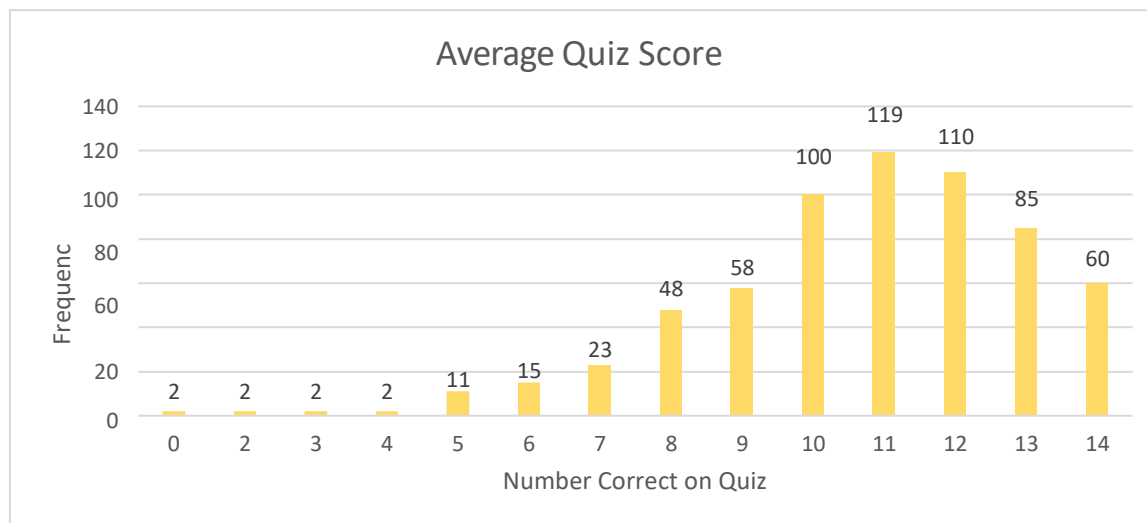


Figure 8. Recycling Knowledge: Average Quiz Score

The average score was 11/14, with the highest recurring score among all participants also being

11. Participants generally know what is acceptable within the McLean County single-stream recycling system. The most commonly misclassified items were iced coffee cups (35% correct), scrap metal (43% correct), and hot coffee cups (49% correct). All other items of the 14 received scores greater than 50% correct. Dirty diapers were correctly classified 94% of the time. We also compared the average score on the quiz to the respondent's perception of their knowledge. The pattern is in the expected direction, in that persons who are more knowledgeable correctly claim to know more about single-stream recycling, but the difference is not great. Even those not knowing what single stream recycling is still scored an average of 10/14 on the quiz.

The three-way crosstabulation in Table 11. shows the respondents' participation in recycling by their familiarity with McLean County recycling procedures within whether they know what recycling contamination is. Among those who recycle 85% (400/473) agree to some extent that they know what recycling contamination is and are familiar with recycling procedures in McLean County. 53% (71/135) of individuals who recycle to some degree agree that they know what contamination is but are not familiar with McLean County recycling procedures.

Table 11. Crosstab: Mclean County Procedures x Know Contamination x Do You Recycle

		Familiarity with McLean recycling procedures		
Do you recycle?		Yes	No	Total
Yes	I know what contamination is	9 (2%)	8 (6%)	17 (3%)
	Strongly Disagree			
	Disagree	64 (14%)	56 (41%)	120 (20%)

	Agree	288 (61%)	60 (44%)	348 (57%)
	Strongly Agree	112 (24%)	11 (8%)	123 (20%)
	Total	473	135	608
No	I know what contamination isStrongly Disagree	1 (13%)	5 (11%)	6 (11%)
	Disagree	0	12 (27%)	12 (23%)
	Agree	4 (50%)	21 (46%)	25 (47%)
	Strongly Agree	3 (37%)	7 (16%)	10 (19%)

	Total	8	45	53
Total	I know what contamination isStrongly Disagree	10 (2%)	13 (7%)	23 (3%)
	Disagree	64 (13%)	68 (38%)	132 (20%)
	Agree	292 (61%)	81 (45%)	373 (46%)
	Strongly Agree	115 (24%)	18 (10%)	133 (20%)
	Total	481	180	661

### Barriers

To assess the respondents' perceptions of barriers to recycling and understand the relationship between recycling participation and difficulty, the items "do you think it is hard to recycle in your community" "please indicate your zip code" and "please indicate to what extent you agree or disagree with the statement: 'I have to travel to discard my recyclables'" were used within a crosstabulation comparison.

The two-way crosstabulation in Table 12. shows perceived difficulty by the respondents' location. Those who live outside of McLean County (32%) find it more difficult to recycle than those who live within McLean County (25%)

Table 12. Crosstab: Is It Hard to Recycle x Location (Zip Code)

		Location (Zip Code)		
Hard to recycle?		McLean County	Other County	Total
	Yes	157 (25%)	14 (32%)	171 (26%)
	No	461 (75%)	30 (68%)	491 (74%)
	Total	618	44	662

Table 13. compares County residence to whether the respondent has to travel to recycle. Only 22% (14+8) of those living in McLean County have to travel to recycle. 39% of those living outside McLean County have to travel to recycle.

Table 13. Crosstab: I Have to Travel to Discard My Recyclables x Zip Code

		Location (Zip Code)		
I have to travel to discard my recyclables		McLean County	Other County	Total
	Strongly Disagree	309 (50%)	13 (30%)	322 (49%)
	Disagree	175 (28%)	14 (32%)	189 (29%)
	Agree	85 (14%)	13 (30%)	98 (15%)
	Strongly Agree	50 (8%)	4 (9%)	54 (8%)
	Total	619	44	663

Table 14 below indicates how strongly the relationship is between home ownership vs renting is related to whether someone has a recycling receptacle. 71% of those who said they have a receptacle also own their home. Of those that do not have a receptacle at their residence, 65% rent or sublease. Other analyses indicated the strong relationship between home ownership and income. That's a driver of access to recycling; higher income = greater access.

Table 14. Crosstab: I Have a Recycling Receptacle x Homeownership Status

		I have a recycling receptacle at my place of residence		
Homeownership status		Yes	No	Total
	I own my home	385 (71%)	28 (28%)	413 (64%)
	I rent/sublease	95 (17%)	64 (65%)	159 (25%)
	Live w/ others	47 (9%)	7 (7%)	54 (8%)
	Other	18 (3%)	0	18 (3%)
	Total	545	99	644

Compared to the table above, whether someone lives in McLean County or not is less of a determining factor in whether someone has a receptacle. 85% of McLean County respondents have a receptacle; that drops to 75% for respondents living outside the county.

Table 15. Crosstab: Possession of Receptacle x Location (Zip Code)

		Location (Zip Code)		
Do you have a recycling receptacle?		McLean County	Other County	Total
	Yes	528 (85%)	33 (75%)	561 (85%)
	No	91 (15%)	11 (25%)	102 (15%)
	Total	619	44	663

### Summary

The findings indicate that there is a significant percentage of respondents who recycle. Participants seem to care about recycling, contamination, and the related issues. The majority of respondents know what recycling contamination is; they perceive themselves as aware of McLean County procedures and they have the necessary information to recycle properly. The most common means by which information is shared is through government bodies, but many indicated receiving information from the EAC.

However, a sizeable percent of respondents indicate they are not wholly confident in their recycling knowledge. As we know from the literature review, the “rules” regarding what can be recycled vary from place to place; that variation carries forward into people’s uncertainty. When deciding which items could or could not be recycled, the average score was 11/14 (78.6%, a C+). Folks misclassified iced coffee cups the most. As one might expect, they correctly classified paper and aluminum cans. We also found that older respondents (35-60) were more comfortable in their knowledge of good recycling practice.

There are greater barriers to recycling for those that rent an apartment or sublease. This is highly related to household income. Those that live outside McLean County have greater difficulty recycling; they lack a receptacle and/or must travel to recycle.

There are connections between the findings from the survey and those from the interviews; they are accounted for below.

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## QUALITATIVE FINDINGS

We decided to organize our qualitative findings based on themes that arose out of conversations with our semi-structured interview participants. Themes are common topics that were mentioned in more than one interview. These themes are values, knowledge, barriers, habits, and recommendations. Since each participant brings a unique perspective, we value each interview equally. Although we looked for themes, some interviews offered valuable insights that others may not have mentioned, which we felt important to include. We share some of these perspectives in quotes directly from our interview transcripts with the pseudonyms assigned to those who wished to remain anonymous.

### *Values*

Of the eight participants interviewed, each participant expressed some level of care for protecting the environment, whether it be a personal ethical responsibility or the responsibility of a larger power. Although not all of the participants recycled, they still expressed concern about the environment. Mia, a participant living in the small rural farm town of Ellsworth estimated that about 85% of the town does not recycle but ensured that they are environmentally minded as they keep gardens and livestock. She said that if her neighbors were presented with recycling information, they would use it wisely. Katherine, another participant living in rural farmland outside of El Paso claimed she feels that “it’s a social and ethical obligation to recycle.” Although Katherine does not live in McLean County, she makes the effort to bring her recycling to the drop-off bins in Bloomington-Normal on her way to work or run errands.

*“Well it’s really environmental responsibility, but of course, you know, everybody in the world has some environmental responsibility, but most people in the world don’t have access to, you know, to recycling [...] And so I think if the facilities are available, which they are, then I feel obligated to make use of them.”*

*- Katherine*

Alfred, a participant knew to Bloomington who moved to the area in the fall of 2023 for his graduate studies offered another perspective. His experience working at a computer recycling center and other jobs in the environmental field makes him feel like his actions are small and do not have a significant impact on the environment. He admits that recycling is important to him on a large scale.

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*"...there could be large scale changes made. Do I know what off the top of my head? No. But that's someone else's job. I'm doing something else right now. But I do feel very tiny. And when it comes to like, oh, like.. I don't know, I.. get a little upset when people talk about your carbon footprint. It's like, well, I think I'm fine. You know, I don't do too much as compared to others.*

*There's only so much I can do. You know, I'm kind of at the bottom. It feels like I'm at the bottom. [...] I'm for recycling. I want to say that again. But as an individual, I understand my limits and how much interaction I can have."*

*-Alfred*

*Knowledge*

The participants interviewed showed some prior recycling knowledge, and most showed a keen interest in learning more about recycling. Many of them mentioned that they had learned about what can and cannot be recycled from signage on the recycling drop-off bins outside of Jewel- Osco and Walmart. They also suggested that using single-stream residential recycling did not lead to a greater understanding of the recycling system. Those who had experience utilizing the drop-off bins said the signs on the bins taught them what can and cannot be recycled, claiming that greater knowledge would be gained from having to sort recyclables at the drop-off bins.

When asked how she decides what should and should not go in her recycling bin, Hannah said:

*"I just use like my internal judgment, which is probably frowned upon."*

*-Hannah*

When asked what informs her internal judgement, Hannah mentioned reflecting back on the pictures she had seen on some of the recycling bins she has used around town that show what should and should not go in recycling. Some participants were unaware of the recycling drop-off stations in Bloomington-Normal; however, all but one participant expressed interest in utilizing the bins in the future. The one participant who was uninterested also expressed no interest in seeking additional recycling information independently due to their busy schedule; however, he did say if information presented itself to him, he would engage with it. Others shared that they use Google or Reddit to find out if something is recyclable or not.

*"I didn't realize how much there was on recycling or how many subreddits there are. So that's helpful, people being like, oh that can be recycled but that can't. I guess it's not even like only I'm recycling actual*

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*trash, but like reusing and all of that stuff. Instead of doing that you should do this and like better ways of what like bags to use when you go and recycle, how to actually go and like, put it in the boxes to make it easier for the people and like those kinds of things. I learned to read it or honestly I use the first link on Google if I did not find it."*

*-Eva*

Almost all participants interviewed seemed to lack knowledge of plastics recycling specifics. Even the participants who initially expressed confidence in their ability to decide which items are and are not recyclable revealed confusion about which plastics could and could not be recycled in McLean County.

*"Plastics is the most confusing part of recycling."*

*-Mia*

None of the interview participants mentioned the Recycle Coach app when asked about where they find their recycling information. Similarly, nobody mentioned the Ecology Action Center without being prompted. Of the two interview participants that recognized the Ecology Action Center, neither knew that the organization offers recycling assistance. Lisa, a former elementary school teacher, was vaguely familiar with the Ecology Action Center from environmental presentations they give to students and Katherine knew them mostly from their hazardous waste collection days.

Most of the interviewed participants expressed interest in knowing what happens to their recycled items after they get picked up. This interest was often paired with a lack of confidence that their plastics are being recycled. When Katherine was asked if she was confident that what she drops off gets recycled she responded:

*"No, no, no, at least not the plastic. I assume the other stuff does. You know, I figure if it doesn't go somewhere recyclable, then they probably wouldn't have the bins. But with the plastic, I really kind of assume it's not being recycled. But I'm like, well, just in case I'm wrong, I'm gonna take it to the recycling bin anyway."*

*-Katherine*

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Mia shared that she had heard a disappointing statistic about recycling:

*“...even after it's [the recycling] picked up, um, I heard a statistic, I don't know how accurate it is, but I heard like 85% of recycling isn't even recycled. So, it's like I don't, I don't know. It's nice to have. I feel like people think they're doing the service to the environment by doing it. But it's like, how do you regulate it? How do you ensure that [...] the recyclables are actually being turned into something else? Or being reused?”*

-Mia

### *Barriers*

Two main barriers were expressed by more than one participant, the first being a lack of residential recycling being offered in Bloomington, and the second is the additional monthly cost of curbside recycling pick-up. It appears Bloomington and Normal both have programs in place for low-income families to have a reduced or waived fee for curbside recycling pick-up or have a recycling cart provided free of charge; however, those living in rural towns are dependent on private companies to pick up their recycling and do not have access to the resources that Bloomington-Normal residents have.

*“And then then, moving here (laughter) to rural...McLean, I think there could be more initiatives, or even more information for people that do want to recycle, who probably can't afford it, and folks who are like low income families and on fixed income, it's like, they might not want to pay that extra just to recycle, you know, they're trying to live so that part of it isn't as important.”*

- Mia

Some participants in smaller households said that they did not need to put their recycling out more than every-other-week, while one participant in a larger household discussed the struggle with fitting all their recycling in their curbside receptacle and wished Bloomington would have more frequent curbside pick-up like the schedule Normal operates on. Similarly, those who use the recycling drop-off bins said that they fill up fast and wish they could be emptied more frequently.

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## Habits

Many participants described recycling as something that is habitual. Those who said they bring their recycling to the drop-off bins or elsewhere to recycle expressed some inconvenience at first but that eventually taking their recycling with them just became a habit, requiring no extra thought. One participant, Lisa, who has curbside recycling pick-up also repeatedly described recycling as a habit, and in response to researcher, Sierra, describing her routine of bringing her recycling to Jewel-Osco on her way to go for a walk around a lake, she used the term “happy habit.” As a team, we latched onto this term. Participants in both the survey and interviews mentioned feeling good after recycling. We thought the marketing of recycling as a “happy habit”, as something that makes you and the environment “happy” and that becomes part of your routine, could be an impactful message.

*“Sierra:*

*Yeah, so it's nice. Drop the recycling off, go for a nice walk. Lisa:*

*Yeah, that's true. That's great. You know, that kind of thing makes it a positive experience. Sierra:*

*Yeah and to your point about habits. Right. It's like then that can be part of a routine. Lisa:*

*Right. And in your mind, I think since you've a walk, that's a **happy habit**. You know, so even to me, **I'm going to do happy habits first.**”*

## Recommendations

Two participants, Alex and Hannah, recommended that informational pamphlets or postcards on proper recycling habits and recycling resources in McLean County be sent by mail to residents’ addresses. One participant, Mia, recommended more recycling receptacles be placed in Downtown Bloomington, along with signs that show what does and does not belong in recycling. Another participant, Tamarra, suggested putting QR codes on recycling bins, leading them to a website that will provide information about what can and cannot be recycled. Such a QR code could lead people to the Recycle Coach tool on the EAC’s website for example.

*“...if those trash cans had like a QR code on them that I could scan, and then they can really give me some in depth information of ‘Hey, this is what goes in this bag. This is what's appropriate.*

*This is what's not.’ I think, for me, that would be super helpful, because I could just scan it while I'm doing my next drop off, read up on it. And then by the time I'm ready for my next one, then I'll be more informed.”-Tamarra*

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Some participants expressed interest in community informational sessions or information booths located at community events such as the annual Sweet Corn Festival or the farmer's market in Downtown Bloomington.

### *Concluding thoughts*

Overwhelmingly, our interview participants were interested in recycling and were environmentally minded. Each participant provided thoughtful responses to our questions, and we are grateful for the time they devoted to helping with this study. We want to end this section with a quote from a particularly passionate participant about why recycling is important to her.

***"It makes me, I guess there's a pride factor there. Or just a feeling of we're trying to do something for our kids and our future grandkids and, you know, just future generations."***

***-Lisa***

## DISCUSSION

### *Key findings*

Most participants understand contamination in recycling, with common definitions including leftover debris and mixing non-recyclable materials. Participants generally know what is acceptable in the single-stream recycling system. From both the interviewees and survey respondents there appears to be a clear purpose of recycling. Whether the value is environmental consciousness or economic issues, or even personal satisfaction, each participant appears to have a clarity in purpose. 96% of survey respondents find purpose in separating recyclables from trash.

With respect to knowledge, there are clearly some definitive truths. For example, they can recycle aluminum cans and they should recycle paper. Participants claimed to know about recycling. However, when asked more specific questions, there was some confusion evident in responses. Both the interviewees and the survey respondents were unsure about some materials, especially coffee cups and plastics. Another key finding from the surveys and interviews was that there is more access to recycling in Bloomington-Normal than outside McLean County, and fewer barriers to access. That was not unexpected, but it was present in both the quantitative and qualitative. Another expected outcome

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from the surveys was that respondents who rent or sublease had less access, more barriers, to recycling. We found that this is highly related to household income.

Survey respondents obtained their information on recycling from their respective city or town, but also the Ecology Action Center, Mid-Central Community Action, Illinois State University's Office of Sustainability, and Normal Township. The qualitative data suggested that participants also receive information on recycling from the recycling bins themselves because of signage, the products, and online information (Google search and Reddit social media). The interviews were categorized thematically with sections including values, knowledge, barriers, habits, and recommendations.

Some of the survey data is worth reiterating: most respondents could correctly define SSR, perceived that they understood SSR, and were confident. Most of the participants correctly defined "single-stream recycling", perceived understanding it, or expressed confidence. More recyclers understood SSR than non-recyclers. A small minority of survey respondents and interviewees who prioritize recycling use the Recycle Coach mobile application. Slightly more of those who used Recycle Coach felt that they had necessary information to recycle properly than survey respondents who did not use the Recycle Coach application. Our finding that participants who recycle demonstrated higher comprehension of SSR than non-recyclers suggests a correlation between knowledge and active participation.

The findings indicate that individuals outside of McLean County find it more difficult to recycle than residents of McLean County. According to the participants, this perception of relative difficulty is due to their need to travel to dispose of recyclables.

Most participants did not know how to dispose of coffee cups or plastics. On the knowledge quiz, most survey respondents were wrong about ice coffee cups and cold coffee cups. Almost all the interviewees expressed confusion about how and where to recycle plastics. As Mia said, *"Plastics is the most confusing part of recycling."*

The eight interviewee respondents provided similar results. Each advocated for education, indicating increased education for clearer recycling guidelines, more accessibility to that information, and increased community education for best practices. Each interviewee desired improved recycling infrastructure, accessibility, community engagement, and education. Each interviewee expressed concern for the environmental impact of pollution. Where the interviewees differed was by access, attitude, source of values, and urban/rural residence.

The qualitative findings revealed a lot and supported the quantitative findings. Many respondents expressed a need for increased education and awareness. The interviewees felt that more initiatives

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would improve recycling practices, clarify unclear recycling standards, and increase community engagement.

*Barriers.* The results show few barriers to recycling in general. The survey gauged respondent's perceived barriers with five questions (Questions 10-14). Most indicated that there were few barriers to recycling: accessibility, community attitude, ability to visually understand the recycling pickup schedule from the map, and less usage of the Recycle Coach mobile application. While the lack of perceived barriers can be regarded in a positive light, it might also indicate a blind spot. Generally, we surveyed residents who nominally professed to be engaged in recycling, who knew about contamination and how to separate contaminants and other non-recyclable materials from acceptable recyclables, and who stated they had sufficient resources and infrastructure to recycle. However, when we asked more questions in the interviews, we learned that respondents were misguided or confused by the concept of contamination and the applicable method to separate materials. However, researchers could also gather data on negative attitudes, behaviors, and perceived or actual lack of resources. Additionally, the interviews indicated more barriers than the survey results. Most common was the perception that others in the interviewees' community do not care about recycling. Most interviewees also indicated lack of knowledge was a barrier. Lack of knowledge was qualified by conflicting sources of information for how to separate recyclable materials, especially plastics. Conflicting sources of information, such as online and on the products, might confuse interviewees as to how to separate products; some learned differently about how and where to recycle; some were unaware that there are different considerations for separating different types of materials, with gradations of those materials; and other factors. A common barrier was lack of curbside pickup, and though residents with curbside pickup perceived it as helpful, one interviewee indicated that individually hauling recyclables to recycling centers increased her resolve and knowledge on separating materials. Relatedly, the lack of barriers might indicate that the sample is skewed toward respondents that already recycle.

*Overrepresentation.* This study utilized purposive and non-probabilistic convenience sampling. Because the researchers leveraged their social connections, our study primarily pooled its population sample from the campus. The quantitative survey used convenience sampling. The interviews used purposive sampling. One of the natural limitations of such a study is that the responses may not be representative of the County population. The quantitative findings suggest that the demographic characteristics of the respondents to the survey differ from the general population of the county, especially indicating an overrepresentation of white, highly educated women. As such, the results may imply questions of generalizability of the study's findings.

Many respondents can be characterized as young (18-44 years old), childless (no children reside with them), higher educated, middle-income earning white women. While the area surveyed does have higher educated, white men, the majority of residents and people nearby who recycle in McLean County are not mostly young women.

*Knowledge and Behavior.* Knowledge of contamination in the recycling stream, confidence of that knowledge, and the effect of such confident knowledge may have contrasted behavior. As indicated by

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past research in the literature review, self-identified recyclers do not always recycle or recycle correctly by separating materials. One of the initial nine interviews was scrapped because the interviewee at first indicated that they recycle at the university and demonstrated knowledge of recycling. However, they did not haul recycling to the county, separate recyclable materials except on campus, or really know what materials needed to be separated. Such a disconnection is consistent with previous literature, especially Atkinson et al., whose study on college campuses showed that when faced with any inconvenience, students, and educators that researchers assumed knew better mixed recyclable materials with trash.

Regardless of education level, when participants on a college campus were unsure what materials to recycle, or when faced with a trash bin that overflowed with rubbish, participants in that study would sometimes dump waste into the recycling bin (Atkinson et al. 2023). Recall that Meng and colleagues identified four intrinsic factors and seven external factors that affect household waste disposal. Intrinsic factors can be distinguished from the external factor of education. These intrinsic factors included willingness to participate, environmental awareness, social responsibility, and behavioral attitudes, and were also evident in our interviews when assessing how participants recycle in McLean County. Meng's study also indicated that when waste management was too costly, purportedly environmentally conscious respondents also behaved differently (Meng et al. 2019). Thus, there would appear to be a disconnect between knowledge and behaviors.

### *Unexpected Results*

From the qualitative results researchers learned that routine behaviors, or "habits," are important to the recycling stream. One interviewee notably described it as a "happy habit," in the sense that recycling was no longer a chore. The other unexpected result includes the recommendation responses. Interviewees gave helpful recommendations such as adding recycling receptacles downtown, a general mailer, QR codes above the bins, and other suggestions as to where the EAC could publicly advance knowledge of recycling.

### *Strengths*

In general, leveraging a mixed-methods approach to a study provides researchers with more meaningful results that balance out the limitations of each method employed. Combining quantitative data through an online survey resulting in 663 responses with eight qualitative interviews, this comprehensive approach empowered the researchers to triangulate data, which enhanced reliability and validity of the findings. By partnering with the Ecology Action Center and engaging with McLean County residents through research methods, the study boosted community engagement and awareness of the Ecology Action Center and our recycling system. A particular strength of this study is the use of an original, online survey. It was inexpensive to develop and easy to distribute. While online surveys tend to have low response rates and adequate statistical analysis requires a minimum of 400 completed survey questionnaires, we had more than enough responses. As mentioned, most of the survey participation

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occurred through clicking on an anonymous link. As the research first began, most of the recruitment happened by way of flyers with a QR code and by word of mouth. It wasn't until emails and social media were used that the survey response rate drastically increased. As a result, this survey initially had 1059 completed survey responses. However, due to several factors such as infiltration of bots, duplicated responses, and a large population of completed questionnaires from individuals not in the geographic location of the survey's interest, 396 responses were excluded from all statistical analysis.

One of the final strengths was the attempts to correct the barrier of overrepresentation. The effort to include diverse voices remains a strength of the study. This study attempted to include minority populations in both the survey and the interviews. Regarding interviewing, the participants were overwhelming white, but one woman of color was included. Additionally, the research team distributed the survey across varied and diverse county and community channels. The research team additionally considered the largest language minority, Spanish, and conducted a survey in Spanish for monolingual respondents. However, all the survey responses were in English, even responses from those who took the Spanish survey.

Lastly, the research team designed interview outlines to avoid potential biases. For example, to avoid responder bias, interviewers reminded participants "there is no right or wrong answer." Each interview was audio-recorded, transcribed, and reviewed as a research team. Since each researcher could access and review interviews, bias or the overinfluence of one interpretation of interview data was limited. The transcriptions provided interviewers and participants with some level of transparency. The development and use of an interview guide also enabled researchers to avoid bias or misdirection in interviews. The interviews gave the team various responses that added invaluable information to the survey data. Interviewees identified more barriers to recycling and limiting contamination, they added nuance and introduced innovative solutions through their recommendations.

### *Limitations*

While the survey provided meaningful insights into the recycling practices within McLean County and beyond, it had several limitations. First is the use of non-probability convenience sampling. Several probability sampling strategies were considered upon the construction of this study. However, due to limited funding and time constraints, the research resorted to utilizing convenience sampling for ease of accessibility. This form of sampling causes discrepancy between respondents and demographic representation. As noted above, the survey participants were not representative of the population of McLean County, therefore the relationships between certain variables cannot be fully interpreted meaningfully. The overwhelming percentage of educated individuals within the sample indicates that they may be knowledgeable about recycling procedures, which ineffectively assesses knowledge of those who do not hold higher education degrees. When designing both the quantitative and qualitative studies, the team considered biases that might occur. As mentioned in the previous section, the study

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was designed in anticipation of sampling, or inclusive bias, by including a Spanish language survey and selecting men and a woman of color to interview. Also identified in the previous section, the issues with online responses might have indicated measurement bias; and were corrected after the fact. Both the quantitative and qualitative studies may have shown design bias due to time constraints.

Similar to the limitation of convenience sampling in the survey, the qualitative study relied on the researchers' social networks. Thus, the interviews were limited to eight participants that may not represent the county. The qualitative study also revealed limitations, such as interviewer bias, response bias, and possibly time constraints, or procedural bias. Interviewer bias is often difficult to avoid. While the team conducted interviews over the phone and in-person, interviewers in both settings can inadvertently indicate their opinion. For example, some of the phone interviews could betray the interviewer's opinion through slight verbal intonations or phrasing. Participants may have indicated response bias because they answered how they thought the researcher wanted them to, but then contradicted or qualified their response later in the interview. At times, the potential for response bias was indicated when interviewees directly asked the interviewer the correct answer to the interviewer's question, and how to define "contamination" and "single-stream recycling."

### *Future Research*

Future research could utilize different measures to account for some of the limitations of this study. To address overrepresentation, the research could leverage multi-stage cluster sampling to pull a sample of individuals representative of McLean and surrounding counties from most recent census data. Additionally, focus groups might advance future research. Future research could also use purposive sampling to improve on representation, focusing instead on the populations that fell through the cracks of this study by surveying older (44+ year old), lower and/or higher income, less educated, women of color, and non-white men. That last demographic, men, could also be the focus of future research. Future research possibly could identify different aspects of such possible underrepresentation of men through follow-up interviews. We could ask participants about relationship status and inquire into who is the primary recycler in future studies.

While there were no significant issues with the online survey format, future research could prevent some of the problems that generally tend to occur with online surveys. Recall that one interviewee recommended education through a mailer or flyer; this could benefit elderly residents along with otherwise technologically unempowered individuals. Such a recommendation might also inform future surveys. Using mail surveys and online surveys might be useful in continuing research. Additionally, going door-to-door to record responses may be a useful way to increase survey response rates. The barrier of lacking curbside pickup might be solely addressed in future research. Future research might include behavioral interventions and a single study solely dedicated to barrier analysis. The possible disconnection between knowledge and behaviors from past research might be addressed in future

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research. Future research could focus on the disconnect between environmentalist knowledge and toxic behaviors through a number of different studies (e.g., experiments, focus groups, and natural and structural observations). Experiments could identify participants' reactions to inconvenience.

Advancing the study conducted by Atkinson and peers on how people disposed of waste and recycling in two different college campus hallways, researchers could observe how recyclers *separate* recycling materials into different bins. Additionally, observational research could document recycling behaviors near public and private waste/recycling bins or at recycling centers. Since one participant in the study mentioned that lack of curbside pickup increased their drive to recycle correctly, future observational research could focus on that factor. Curbside pickup could also be the independent variable in future experiments. The limitation of assessing knowledge could be remedied in future research as well. To remedy this, leveraging multi-stage cluster sampling would be beneficial to pull a sample of individuals representative of McLean and surrounding counties from most recent census data.

## CONCLUSION

The topic of contamination in the recycling stream is often overlooked. A basic solution to more pervasive issues, such as widespread pollution and environmental damage is single-stream recycling. However, the more complex, time-consuming, and costly process entails limiting contamination. In partnership with the EAC, students from the Stevenson Center at Illinois State University designed a study to understand knowledge of single-stream recycling, knowledge of contamination, and where gaps exist in recycling education for individuals who participate in and utilize McLean County, Illinois recycling facilities. This research utilized mixed methods to record quantitative data using an online survey and capture qualitative research through semi-structured in-depth interviews. A total of 663 residents and others who recycle in McLean County responded to the online survey which assessed several factors concerning recycling participation and practices. The researchers additionally interviewed eight individuals to gain further insights into respondents' perspectives, experiences with recycling, and recommendations for future development. Together, the surveys and interviews shed light on barriers, values, and recommendations for improving recycling and reducing contamination.

Overall, the findings underscore the importance of clear communication and increased education, and the need to more effectively connect residents and non-residents who recycle in the county with recycling information in McLean County. Survey respondents' knowledge and behaviors and the interviewee's recommendations inform this study and assist the discussion of future research. The highlights of the study were that education is important, targeted information could reduce contamination, and that even if participants were confident and highly educated, they could still be misinformed regarding recycling and contamination. There is always more to learn.

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## APPENDICES

### APPENDIX A: Key Informant Interview Guide

#### **McLean County Resident Interviews**

1. Researchers will introduce themselves and thank the interviewee for considering your request for an interview.
2. Researchers will ask for their name and how they would like to be addressed.
3. Researchers will discuss consent form and answer any questions. If they agree to participate, the researcher will leave a copy of the form with them.
4. Researchers will emphasize that there are no right or wrong answers and we are interested in their honest opinions.
5. Researchers will also request permission to audio record.

#### **Guide**

##### **Tell me a bit about yourself.**

(Are you from the county? What town do you live in? How do you like the community? Do you recycle?)

##### **Is recycling important to you?**

(Why do you or don't you recycle? Is recycling important to you? Why or why not? Do you think other residents think recycling is important?)

(How long have you or haven't you recycled locally? How does recycling compare here to other places you've lived? Has information about recycling here been shared with you?)

##### **Tell me about your experience recycling here.**

Follow Up:

Do you have recycling pick-up at your residence? If so, what does it look like? Do you organize the recycling in your household?

How do you sort/organize your recycling?

How do you decide what you put in recycling and what you leave out?

##### **What are your opinions of the recycling system here?**

Follow Up:

IMP: Is there anything you'd like to understand better regarding our recycling system? Do you find anything about recycling difficult?

If you recycle here, what are some things about the recycling system that you like?

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**What do you know about recycling contamination?**

Follow Up:

How would you describe contamination?

Can you tell me how you sort out contamination in your recycling? How do you know how to sort your contamination from your recycling?

**What advice would you give regarding how to improve our recycling system and reduce contamination in recycling?**

Are you interested in knowing more about recycling? Do you think other residents are interested? Why / why not?

Do you have any concerns about our single stream recycling system?

**Is there anything I didn't ask you about that you think I should know?**

[Hold space for resident ideas / opinions / thoughts they connect with recycling + contamination]

**May I follow up with you if I have any additional questions or need clarification? If so, how do you prefer I contact you?**

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## APPENDIX B: Letter of Informed Consent for Interview Participants



## Participant Consent Form

You are being asked to participate in a research study conducted by Dr. Frank Beck (professor) and students of the Sociology 477: Community Project Design and Management class (graduate students), of Illinois State University in partnership with the Ecology Action Center. The purpose of this study is to document the experiences and opinions of local residents regarding recycling systems. The goal of the research is to better understand local knowledge of the McLean County single-stream recycling system, recycling contamination, and barriers to recycling.

**Why are you being asked?**

You have been asked to participate because you are a local resident.

Your participation in this study is voluntary. You will not be penalized if you choose to skip parts of the study, not participate, or withdraw from the study at any time.

**What would you do?**

If you choose to participate in this study, you will speak to a researcher about your experiences with recycling. If you agree, this conversation may be recorded so that we may take notes on it and transcribe it later. In total, your involvement in this study will last approximately one hour.

If you are willing, we might follow up with you to clarify something or ask an additional question. If you don't want us to contact you again, that is fine too.

**Are any risks expected?**

We, the research team, do not anticipate any risks beyond those that would occur in everyday life. If there is a topic that is distressing to you or that you don't want to talk about, tell me, the interviewer, and we can skip it.

**Will your information be protected?**

We will use all reasonable efforts to keep any provided personal information confidential. We do not use names in notes or transcriptions so that your name is never associated with your stories or opinions. Unless you tell me otherwise, I will use a pseudonym for you in publications and make every effort to

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hide your identity so that your stories and opinions are represented accurately but a reader wouldn't be able to guess your identity. If you would like to be known by your full, real name, that is also fine. I, the interviewer, will always follow your preferences to be named or remain confidential.

Information that may identify you or potentially lead to reidentification will not be released to individuals who are not on the research team. Recordings of our conversations (emails, texts, voice recordings) will only ever be used so we can most accurately remember our conversation and will not be shared with anyone. All recordings and notes from our conversation will be stored in a password-protected computer network drive that Illinois State University has determined is secure for confidential information.

When required by law or university policy, identifying information may be seen or copied by authorized individuals. (Although possible, this is highly unlikely to occur and would require a subpoena by a judge.)

### **Could your responses be used for other research?**

We will not use any identifiable information from you in future research, but your de-identified information could be used for future research without additional consent from you.

### **Will you receive anything for participating?**

To compensate you for taking the time to talk to us, you will be offered a \$20 gift card.

The IRS may consider this payment to be taxable compensation. You may want to consult with your personal tax advisor for advice regarding this compensation. You are free to participate in the study without accepting the gift card.

In order to receive the compensation, we must keep a log of who has received compensation. This information will be kept entirely separate from the research data and will be securely stored by us for audit purposes only.

### **Who will benefit from this study?**

The results of this research will be shared with the Ecology Action Center to improve the McLean County recycling systems and communications and potentially other interested local organizations in addition to Illinois State University.

### **Whom do you contact if you have any questions?**

If you have any questions about the research or wish to withdraw from the study, contact Frank Beck 309-438-7770 (office phone) [or fdbeck@ilstu.edu](mailto:fdbeck@ilstu.edu)

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If you have any questions about your rights as a participant, or if you feel you have been placed at risk, contact the Illinois State University Research Ethics & Compliance Office at (309) 438- [5527](tel:3094385527) or [IRB@ilstu.edu](mailto:IRB@ilstu.edu).

By continuing the interview, you are agreeing to participate, but you can stop the interview or withdraw from the study at any time.

You will be given a copy of this form for your records.

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## APPENDIX C: Interview Recruitment Email

**RE: Ecology Action Center Recycling Study - Interview Invitation**

Dear [insert name],

Thank you again for your interest in our study! I am writing to you to coordinate your participation in a semi-structured interview as part of our research.

We are conducting research with the [Ecology Action Center](#), whose mission is to inspire and assist our community in creating, strengthening, and preserving a healthy environment. The EAC's primary areas of focus include waste reduction and recycling, clean water protection, energy efficiency and renewable energy, and air quality improvement/greenhouse gas emissions reduction.

Through our research, we want to learn more about the experiences of residents of McLean County who recycle. We will ask you general questions about your experiences and opinions about recycling in McLean County. We do intend to record the interview so that we can transcribe it and take notes. We will destroy the audio recording after we transcribe it.

We want to pick a date, time, and location for the interview that works best for your schedule. With that in mind, where would be a convenient location for us to connect with you? We are open to meeting in any public location, i.e. a local coffee shop or library or over Zoom.

Interviews will take approx. 45 minutes to complete. Regarding timing, here are a few options that work for us:

[insert preferred availability]

If these times are not workable, please feel free to suggest alternative times.

Please read the attached Informed Consent form. We will go over it with you and will answer any questions you have about it. Some of the important points to note are that:

- Your participation is voluntary;
  - You can withdraw at any time;
  - You don't have to answer any question that you don't want to answer.
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- There are no right or wrong answers.
- We do not expect that this research will put you at any risk.
- We will keep your name and information **confidential** unless you *want* us to use your real name.
- We will offer you a \$25 gift card as compensation for your time.

If you have any Concerns or questions, just let me know. Best,

[Insert Names]

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## APPENDIX D: English Survey Instrument

### Study Information Sheet Residential Study of Single-Stream

#### Recycling Systems in McLean County, Illinois

[https://illinoisstate.az1.qualtrics.com/jfe/form/SV\\_2tygVxYvObQjlma](https://illinoisstate.az1.qualtrics.com/jfe/form/SV_2tygVxYvObQjlma)

You are invited to participate in a research study conducted by Dr. Frank Beck and graduate students of the Sociology 477: Community Project Design and Management class of Illinois State University in partnership with the Ecology Action Center. This study wants to examine residents' knowledge of the McLean County single-stream recycling system, recycling contamination, and barriers to recycling.

#### Content and Procedure

This study requires you to complete an anonymous online survey that includes questions about waste disposal practices, knowledge and attitudes toward recycling, perceived barriers to recycling, and knowledge of contamination. The questionnaire will take about 15 minutes to complete. Residents living within McLean County, including students at Illinois State University, may be given this survey.

#### Participation

Your participation in this study is voluntary. If you decide to participate, you may withdraw from the study without penalty at any time. If you withdraw from the study prior to its completion, your data will be destroyed.

Participants may also be invited to participate in a second part of this study, a 45-minute to 1- hour interview. Participation in the second part of this study is completely voluntary. At the survey's end, those interested in participating in an interview will be redirected to an external link in which they can provide information for researchers to contact them. This link will be separate from survey data collection and securely stored by researchers.

As with all projects involving human subjects conducted at Illinois State University, this survey has been approved by the University Committee on the Use of Human Subjects in Research (CUHSR). In accordance with CUHSR guidelines, your completed survey will serve as your consent to participate in this study, and your completion of the survey implies that you are at least 18 years old.

#### Benefits

In some cases, individuals will receive compensation for participation in this survey. At the completion, participants will have the option to enter a drawing for one of five \$25 gift cards. Participants must

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complete the survey to enter the drawing. The researchers will keep a log of those who entered the drawing. This information will be kept separate from the research data and securely stored by the researchers for audit purposes only.

The IRS may consider these payments to be taxable compensation. Recipients of a research participant incentive payment may want to consult with their personal tax advisor for advice regarding the participant's situation. Any participant also can participate in the study without accepting the research incentive payment.

The results from this research will be shared with the Ecology Action Center to inform them of residents' knowledge of and participation in recycling throughout McLean County and to improve McLean County recycling systems and communications. This study will expand this body of knowledge on factors related to recycling in McLean County and potentially inform other interested local organizations in addition to Illinois State.

### Confidentiality

Your participation in this study is anonymous. No reference will be made in written or oral reports that could link you to the research study. If individuals are invited to participate in the interview, researchers will take the proper steps to ensure participant confidentiality.

### Contact

If you have any questions about the study or procedures, you may contact Dr. Frank Beck at the Department of Sociology and Anthropology (phone: 309-438-7770; email: [fdbeck@ilstu.edu](mailto:fdbeck@ilstu.edu)). If you have general questions about being a research participant, you may contact the CUHSR office at (309) 438-2528 or [IRB@ilstu.edu](mailto:IRB@ilstu.edu).

### Consent to Participate

You are voluntarily deciding to participate in this study. Your submission of the survey means that you have read and understand the information presented, and have decided to participate. Your participation also means that all of your questions have been answered to your satisfaction. If you think of any additional questions, you should contact the researchers.

Clicking "I agree" means you are a resident of McLean County or utilize McLean County recycling facilities.

**I agree**

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Please respond to the questions by following the directions and marking the appropriate blank or filling in the information requested. Work alone. Be sure to answer all questions as honestly and as completely as possible.

***The survey will begin by asking your current waste disposal practices.***

1. Do you or your household currently recycle?

1. \_\_\_\_\_ YES

2. \_\_\_\_\_ NO

2. Are you familiar with the recycling procedures in McLean County?

1. \_\_\_\_\_ YES

2. \_\_\_\_\_ NO

3. Do you feel you have the necessary information about your local recycling program to recycle properly?

1. \_\_\_\_\_ YES

2. \_\_\_\_\_ NO

4. Do you have a recycling receptacle provided at your place of residence?

1. \_\_\_\_\_ YES (CONTINUE TO QUESTION 4A)

2. \_\_\_\_\_ NO (CONTINUE TO QUESTION 4B)

4a. Please indicate where, if at all, you take your recyclables outside of your curb side receptacle.	4b. Please indicate where, if at all, you recycle.

CONTINUE TO QUESTION 6	CONTINUE TO QUESTION 6
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***Now we will ask about your knowledge of recycling/recycling practices.***

5. Please indicate to what extent you agree or disagree with the following statement: "I know what single-stream recycling means."

1. \_\_\_\_\_ Strongly Disagree

2. \_\_\_\_\_ Disagree

3. \_\_\_\_\_ Agree

4. \_\_\_\_\_ Strongly Agree

6. If someone asked you to explain to them what single-stream recycling is, what would you say?

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**Single-stream recycling refers to the process of collecting all recyclable materials (paper, plastic, metals, glass, cardboard) in the same recycling bin.**

7. Do you or your household participate in single-stream recycling?

1. \_\_\_\_\_ YES

2. \_\_\_\_\_ NO

8. Where, if at all, have you gathered information on how to recycle? (Check all that apply)

1. \_\_\_\_\_ School

2. \_\_\_\_\_ Word of mouth

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3. \_\_\_\_\_ Social media
4. \_\_\_\_\_ City/town
5. \_\_\_\_\_ Community organization (please specify): \_\_\_\_\_
6. \_\_\_\_\_ Other (please specify): \_\_\_\_\_
7. \_\_\_\_\_ I am not informed about proper recycling

9. Please indicate to what extent you agree or disagree with the following statements about recycling:

	1. Strongly Disagree	2. Disagree	3. Agree	4. Strongly Agree
I am confident in my recycling habits				
I can confidently share my knowledge of recycling with others				
I know how to sort my trash from recycling				
I feel a sense of gratification when I recycle				
I seek out recycling in public places				
When there are no trash bins, I toss my waste into the recycling bin				

***The following questions will ask about barriers to recycling.***

10. Do you think it is hard to recycle in your community?

1. \_\_\_\_\_ YES
2. \_\_\_\_\_ NO



11. Are you satisfied with the recycling pick-up schedule at your place of residence?

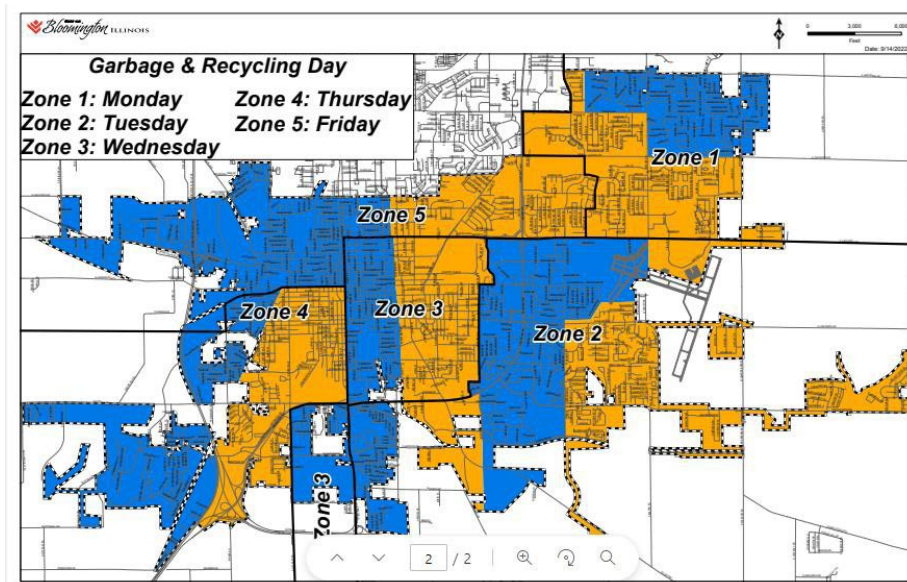
1. \_\_\_\_\_ YES

2. \_\_\_\_\_ NO

12. Please indicate to what extent you agree or disagree with the following statements about barriers to recycling for yourself:

	1. Strongly Disagree	2. Disagree	3. Agree	4. Strongly Agree
There are no recycling receptacles provided at my place of residence				
I am not sure what can be recycled				
I do not have enough time to separate my recyclables from trash				
I have to travel to discard my recyclables				
There is not enough space in the recycling receptacle				
I have difficulty understanding the pick-up schedule				

13. If you lived in this area, could you figure out your recycling schedule based on this map?



1. \_\_\_\_\_ YES

2. \_\_\_\_\_ NO

14. Do you use the app *Recycle Coach*?



1. \_\_\_\_\_ YES
2. \_\_\_\_\_ NO
3. \_\_\_\_\_ I have not heard of the app

***The following question will ask about your values concerning recycling.***

15. Does recycling matter to you?

1. \_\_\_\_\_ YES
2. \_\_\_\_\_ NO

16. Do you think recycling matters to the residents of McLean County?

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1. \_\_\_\_\_ YES

2. \_\_\_\_\_ NO

17. Please indicate to what extent you agree or disagree with the following statements about recycling values:

	1. Strongly Disagree	2. Disagree	3. Agree	4. Strongly Agree
I find no purpose in separating my recyclables from trash				
No one around me recycles				
I feel passionate about environmental issues				
I think it's important to recycle				
I don't worry about recycling contamination because someone will sort it				
I don't think recycling is beneficial				

*The following questions will ask about your knowledge of contamination.*

**Respond to the following statement using the scale provided**

18. I have confidence that my recyclables are truly being recycled.

0 ----- 1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7 ----- 8 ----- 9 ----- 10

**Not confident at all      Completely confident**

19. Please indicate to what extent you agree or disagree with the following statement: "I know what recycling contamination is."

1. \_\_\_\_\_ Strongly Disagree

2. \_\_\_\_\_ Disagree

3. \_\_\_\_\_ Agree
4. \_\_\_\_\_ Strongly Agree

20. If someone asked you to explain to them what recycling contamination is, what would you say?

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**When your recycling bin contains trash, locally non-recyclable items, materials soiled by food or liquid, or items placed in plastic bags, they are considered contaminated.**

21. Based on your current knowledge of recycling procedures categorize the following items into what you think is acceptable in **curbside single-stream recycling**, what is not acceptable, or if you are unsure or don't know.

	1. Acceptable	2. Not acceptable	3. Unsure/Don't Know
Plastic bottles/jugs/jars			
Aluminum cans			
Spray paint cans			
Pesticide cans			
Cardboard			
Office paper/ Newspapers/ Magazines			
Glass bottles/jugs/jars			
Plastic bags			
Iced-Coffee Cups			
Hot-Coffee Cups			

Plastic Kids Toys			
Scrap Metal			
Electronics			
Dirty Diapers			

***Finally, this section will ask a few demographic questions.***

22. Please indicate how old you are turning in 2024.

\_\_\_\_\_

23. How do you identify your gender?

1. \_\_\_\_\_ Man
2. \_\_\_\_\_ Woman
3. \_\_\_\_\_ Non-binary
4. \_\_\_\_\_ Other (please specify): \_

24. How do you identify your race/ethnicity? (Choose all that apply)

1. \_\_\_\_\_ Asian
2. \_\_\_\_\_ Black
3. \_\_\_\_\_ Latinx
4. \_\_\_\_\_ White
5. \_\_\_\_\_ Other (please specify): \_

25. What is your highest level of education completed?

\_\_\_\_\_

1. \_\_\_\_\_ Some high school
2. \_\_\_\_\_ High school diploma/GED
3. \_\_\_\_\_ Some college
4. \_\_\_\_\_ Associates degree
5. \_\_\_\_\_ Bachelors degree
6. \_\_\_\_\_ Master's degree or higher
7. \_\_\_\_\_ Other (please specify): \_

26. How many children under the age of 18 live in your household?

1. \_\_\_\_\_ None
2. \_\_\_\_\_ 1-2 children
3. \_\_\_\_\_ 3-4 children
4. \_\_\_\_\_ More than 4 children

27. Please indicate your home ownership status.

1. \_\_\_\_\_ I own my home
2. \_\_\_\_\_ I rent/sublease
3. \_\_\_\_\_ I live with family/friends
4. \_\_\_\_\_ Other (please specify): \_

28. Please indicate your zip code

\_\_\_\_\_

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29. Which of the following best describes your household income last year?

\$0 to \$19,999

\$20,000 to \$49,999

\$50,000 to \$89,999

\$90,000 to \$129,999

\$130,000 to \$149,000

\$150,000+

Prefer not to answer

The next page will submit your response and redirect you to enter into the gift card drawing. By proceeding, you are acknowledging that your questions have been answered to your satisfaction. We thank you for your time spent taking this survey.

I understand

### **Gift card drawing**

To enter the drawing for 1 of 5 \$25 gift cards please provide your information below:

1. \_\_\_\_\_Name \_\_
2. \_\_\_\_\_Email address \_\_
3. \_\_\_\_\_Confirm email address \_\_

**This study has a second part: an in-depth interview.**

Would you be interested in being contacted for a 45-minute to 1-hour interview about your experiences with recycling in McLean County?

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1. \_\_\_\_\_ No
2. \_\_\_\_\_ Yes (Please provide your email) \_\_\_\_\_

## APPENDIX E: Spanish Survey Instrument

### **Hoja de Información de Estudio Estudio Residencial del Sistema de Reciclaje de Flujo Único en el Condado de McLean, Illinois.**

[https://illinoisstate.az1.qualtrics.com/jfe/form/SV\\_2tygVxYvObQjImla](https://illinoisstate.az1.qualtrics.com/jfe/form/SV_2tygVxYvObQjImla)

Está invitad@ a participar en un estudio de investigación realizado por el Dr. Frank Beck y estudiantes de posgrado del curso de Sociología 477: Diseño y Gestión de Proyectos Comunitarios de Illinois State University en colaboración con el Ecology Action Center. Este estudio tiene como objetivo examinar el conocimiento de los residentes sobre el sistema de reciclaje de flujo único del Condado de McLean, la contaminación en el reciclaje y las barreras para reciclar.

#### Contenido y Procedimiento

Este estudio requiere que complete una encuesta anónima en línea que incluye preguntas sobre prácticas de eliminación de residuos, conocimientos y actitudes hacia el reciclaje, barreras percibidas para reciclar y conocimiento de la contaminación. El cuestionario tomará aproximadamente 15 minutos en completarse. La encuesta puede ser administrada a residentes que vivan dentro del Condado de McLean, incluyendo a estudiantes de Illinois State University.

#### Participación

Tu participación en este estudio es voluntaria. Si decide participar, podrá retirarse del estudio sin penalización en cualquier momento. Si se retira del estudio antes de su finalización, sus datos serán destruidos.

Los participantes también pueden ser invitados a participar en una segunda parte de este estudio, que consiste en una entrevista de 45 minutos a 1 hora de duración. La participación en la segunda parte de este estudio es completamente voluntaria. Al finalizar la encuesta, aquellos interesados en participar en una entrevista serán redirigidos a un enlace externo donde podrán proporcionar información para que los investigadores se pongan en contacto con ellos. Este enlace será independiente de la recopilación de datos de la encuesta y se almacenará de manera segura por los investigadores.

Como ocurre con todos los proyectos que involucran sujetos humanos realizados en Illinois State University, esta encuesta ha sido aprobada por el Comité Universitario sobre el Uso de Sujetos Humanos en Investigación. De acuerdo con las pautas de este comité, la finalización de esta encuesta se considerará su consentimiento para participar en este estudio, y su realización implica que tiene al menos 18 años de edad.

#### Beneficios

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En algunos casos, las personas recibirán una compensación por participar en esta encuesta. Al completarla, los participantes tendrán la opción de participar en un sorteo para ganar una de las cinco tarjetas de regalo de \$25.

Los participantes deben completar la encuesta para ingresar al sorteo. Los investigadores mantendrán un registro de quienes participaron en el sorteo. Esta información se mantendrá separada de los datos de investigación y se almacenará de manera segura únicamente con fines de auditoría por parte de los investigadores.

El IRS podría considerar que estos pagos son compensaciones sujetas a impuestos. Los destinatarios de un pago de incentivo para participantes en una investigación tal vez deseen consultar a su asesor fiscal personal para obtener asesoramiento sobre la situación del participante. Cualquier participante también podrá participar en el estudio sin aceptar el pago del incentivo de investigación.

Los resultados de esta investigación se compartirán con el Ecology Action Center para informarles sobre el conocimiento y la participación de los residentes en el reciclaje en todo el condado de McLean y para mejorar los sistemas y las comunicaciones de reciclaje del condado de McLean. Este estudio ampliará este conjunto de conocimientos sobre los factores relacionados con el reciclaje en el condado de McLean y potencialmente informará a otras organizaciones locales interesadas además de Illinois State University.

### Confidencialidad

Su participación en este estudio es anónima. No se hará ninguna referencia en informes escritos u orales que puedan vincularlo con el estudio de investigación. Si se invita a personas a participar en la entrevista, los investigadores tomarán las medidas adecuadas para garantizar la confidencialidad de los participantes.

### Información de Contacto

Si tiene alguna pregunta sobre el estudio o los procedimientos, puede comunicarse con el Dr. Frank Beck en el Departamento de Sociología y Antropología (teléfono: 309-438-7770; correo electrónico: [fdbeck@ilstu.edu](mailto:fdbeck@ilstu.edu)). Si tiene preguntas generales sobre cómo participar en una investigación, puede comunicarse con la oficina de Comité Universitario sobre el Uso de Sujetos Humanos en Investigación al 309-438-2528 o [IRB@ilstu.edu](mailto:IRB@ilstu.edu).

### Consentimiento para Participar

Usted decide voluntariamente participar en este estudio. Su envío de la encuesta significa que ha leído y comprendido la información presentada y ha decidido participar. Su participación también significa que

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todas sus preguntas han sido respondidas satisfactoriamente. Si tiene alguna pregunta adicional, debe comunicarse con los investigadores.

Al hacer clic en "Acepto", usted indica que es residente del Condado de McLean o utiliza las instalaciones de reciclaje del Condado de McLean.

### **Acepto**

Por favor, responda a las preguntas siguiendo las instrucciones y marcando el espacio en blanco correspondiente o completando la información solicitada. Trabaje de forma individual.

Asegúrese de responder todas las preguntas de la manera más honesta y completa posible.

***La encuesta comenzará preguntando sobre sus prácticas actuales de eliminación de residuos.***

1. ¿Usted o su hogar reciclan actualmente?

1. ☐ Sí

2. ☐ No

2. ¿Está familiarizad@ con los procedimientos de reciclaje en el condado de McLean?

1. ☐ Sí

2. ☐ No

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3. ¿Cree que tiene la información necesaria sobre su programa de reciclaje local para reciclar adecuadamente?

1. ☐ Sí

2. ☐ No

4. ¿Dispone de un contenedor de reciclaje proporcionado en su lugar de residencia?

1. ☐ Sí (CONTINÚE CON LA PREGUNTA 4A)

2. ☐ No (CONTINÚE CON LA PREGUNTA 4B)

4a. Por favor, indique dónde, en caso de hacerlo, lleva sus materiales reciclables fuera de su contenedor en el bordillo.	4b. Por favor, indique dónde recicla, si es que lo hace.
<b>CONTINÚE CON LA PREGUNTA 6</b>	<b>CONTINÚE CON LA PREGUNTA 6</b>

***Ahora le preguntaremos sobre su conocimiento sobre el reciclaje/prácticas de reciclaje.***

5. Por favor, indique en qué medida está de acuerdo o en desacuerdo con la siguiente afirmación: "Sé lo que significa reciclaje de flujo único."

- 1. \_\_\_ En desacuerdo total
- 2. \_\_\_ En desacuerdo
- 3. \_\_\_ De acuerdo
- 4. \_\_\_ Totalmente de acuerdo

6. Si alguien le pidiera que le explique qué significa reciclaje de flujo único, ¿qué diría?

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**El reciclaje de flujo único se refiere al proceso de recolección de todos los materiales reciclables (papel, plástico, metales, vidrio, cartón) en el mismo contenedor de reciclaje.**

7. ¿Participa usted o su hogar en el reciclaje de flujo único?

1. ☐ Sí

2. ☐ No

8. ¿Dónde, en todo caso, ha obtenido información sobre cómo reciclar? (Marque todas las opciones que correspondan)

1. ☐ Escuela

2. ☐ Boca a boca

3. ☐ Redes sociales

4. ☐ Ciudad/municipio

5. ☐ Organización comunitaria (por favor, especifique): \_\_\_\_\_

6. ☐ Otro (por favor, especifique): \_\_\_\_\_

7. ☐ No tengo información sobre el reciclaje adecuado

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9. Por favor, indique en qué medida está de acuerdo o en desacuerdo con las siguientes afirmaciones sobre el reciclaje.

	1. En desacuerdo total	2. En desacuerdo	3. De acuerdo	4. Totalmente de acuerdo
Tengo confianza en mis hábitos de reciclaje.				
Puedo compartir con confianza mi conocimiento sobre el reciclaje con otras personas.				
Sé cómo separar mi basura del material reciclable.				
Siento una sensación de gratificación cuando reciclo.				
Busco opciones de reciclaje en lugares públicos.				
Cuando no hay contenedores de basura, tiro mis residuos en el contenedor de reciclaje.				

***Las siguientes preguntas tratarán sobre las barreras para reciclar.***

10. ¿Cree que es difícil reciclar en tu comunidad?

1. ☐ Sí

2. ☐ No

11. ¿Está satisfech@ con el horario de recogida de reciclaje en su lugar de residencia?

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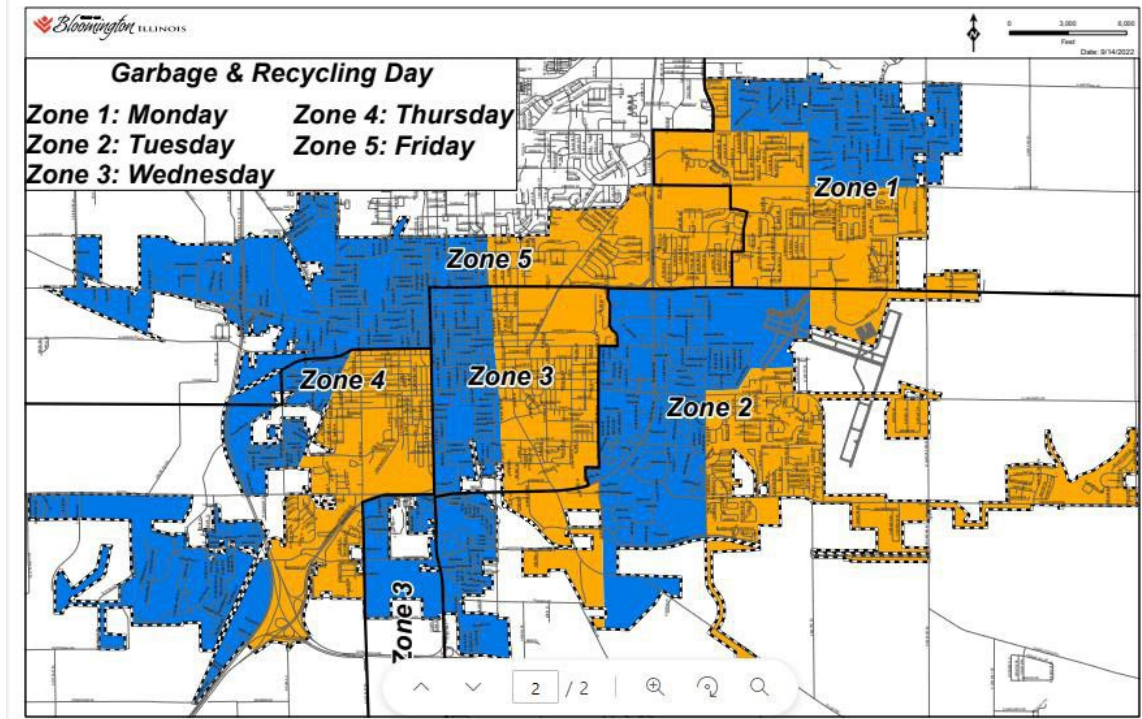
1. ☐ Sí

2. ☐ No

12. Por favor, indique en qué medida está de acuerdo o en desacuerdo con las siguientes afirmaciones sobre las barreras al reciclaje para usted.

	1. En desacuerdo total	2. En desacuerdo	3. De acuerdo	4. Totalmente de acuerdo
Mi residencia no provee contenedores de reciclaje.				
No estoy segur@ de qué se puede reciclar.				
No tengo suficiente tiempo para separar mis materiales reciclables de la basura.				
Tengo que viajar para desechar mis materiales reciclables.				
No hay suficiente espacio en el contenedor de reciclaje.				
Me resulta difícil entender el horario de recogida.				

13. Si viviera en esta área, ¿podría entender su horario de reciclaje basándose en este mapa?



1. ☐ Sí

2. ☐ No

14. ¿Utiliza la aplicación Recycle Coach?



1. ☐ Sí
2. ☐ No
3. ☐ No conozco esta app.

***Las siguientes preguntas le preguntarán sobre sus valores en relación con el reciclaje.***

15. ¿El reciclaje es importante para usted?

1. ☐ Sí
2. ☐ No

16. ¿Cree que el reciclaje es importante para los residentes del Condado de McLean?

1. ☐ Sí
  2. ☐ No
-

17. Por favor, indique en qué medida está de acuerdo o en desacuerdo con las siguientes afirmaciones sobre los valores en relación con el reciclaje.

	1. En desacuerdo total	2. En desacuerdo	3. De acuerdo	4. Totalmente de acuerdo
No encuentro ningún propósito en separar mis materiales reciclables de la basura.				
Nadie a mi alrededor recicla				
Me apasionan los temas ambientales.				
Creo que es importante reciclar.				
No me preocupo por la contaminación en el reciclaje porque alguien lo clasificará.				
No creo que reciclar sea beneficioso.				

*Las siguientes preguntas se referirán a sus conocimientos sobre la contaminación.*

**Responda a la siguiente afirmación utilizando la escala proporcionada**

18. Tengo confianza en que mis materiales reciclables realmente se están reciclando.

0 ----- 1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7 ----- 8 ----- 9 ----- 10

**Completamente inseguro**

**Completamente seguro**

19. Por favor, indique en qué medida está de acuerdo o en desacuerdo con la siguiente afirmación: "Sé lo que es la contaminación por reciclaje."

1. \_\_\_ En desacuerdo total

- 2. \_\_\_En desacuerdo
- 3. \_\_\_De acuerdo
- 4. \_\_\_Totalmente de acuerdo

20. Si alguien le pidiera que le explicara qué es la contaminación en el reciclaje, ¿qué diría?

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**Cuando su contenedor de reciclaje contiene basura, artículos no reciclables localmente, materiales manchados por alimentos o líquidos, o artículos colocados en bolsas de plástico, se consideran contaminados.**

21. Según su conocimiento actual de los procedimientos de reciclaje, clasifique los siguientes elementos en lo que cree que es aceptable en el reciclaje único de clasificación en el bordillo, lo que no es aceptable, o si no está seguro o no lo sabe.

	1. Aceptable	2. No es aceptable	3. No estoy segur@
Botellas/jarras/tarros de plástico			
Latas de aluminio			
Latas de pintura en aerosol			
Latas de pesticidas			
Cartón			
Papel de oficina/ Periódicos/ Revistas			
Botellas/jarras/tarros de vidrio			
Bolsas de plástico			
Tazas de café helado			
Tazas de café caliente			
Juguetes de plástico para niños			
Chatarra			
Electrónicos			
Pañales sucios			

***Finalmente, esta sección realizará algunas preguntas demográficas.***

22. Por favor, indique la edad que cumplirá en 2024.

\_\_\_\_\_

23. ¿Cómo identifica su género?

1. \_\_\_\_ Hombre
2. \_\_\_\_ Mujer
3. \_\_\_\_ No binari@
4. \_\_\_\_ Otro (por favor, especifique): \_\_\_\_

24. ¿Cómo identifica su raza/etnia? (Seleccione todas las que correspondan)

1. \_\_\_\_ Asiátic@
2. \_\_\_\_ Negr@
3. \_\_\_\_ Latinx
4. \_\_\_\_ Blanc@
5. \_\_\_\_ Otro (por favor, especifique): \_\_\_\_

25. ¿Cuál es su nivel más alto de educación completado?

1. \_\_\_\_ Algo de secundaria
2. \_\_\_\_ Diploma de escuela secundaria/GED
3. \_\_\_\_ Algo de universidad
4. \_\_\_\_ Título de asociad@
5. \_\_\_\_ Título de licenciatura
6. \_\_\_\_ Maestría o superior
7. \_\_\_\_ Otro (por favor, especifique): \_\_\_\_

26. ¿Cuántos niños menores de 18 años viven en su hogar?

1. \_\_\_\_ Ninguno
  2. \_\_\_\_ 1-2 niños
  3. \_\_\_\_ 3-4 niños
-

4. \_\_\_\_ Más de 4 niños

27. Por favor, indique su estado de propiedad de vivienda.

1. \_\_\_\_ Soy propietario@ de mi vivienda
2. \_\_\_\_ Alquilo/subarriendo
3. \_\_\_\_ Vivo con familia/amigos
4. \_\_\_\_ Otro (por favor, especifique): \_\_\_\_

28. Por favor, indique su código postal.

\_\_\_\_\_

29. ¿Cuál de las siguientes opciones describe mejor los ingresos de su hogar el año pasado? 1.

\$0 a \$19,999

\$20,000 a \$49,999

\$50,000 a \$89,999

\$90,000 a \$129,999

\$130,000 a \$149,000

\$150,000 o más

Prefiero no responder

La próxima página enviará sus respuestas y lo redirigirá para participar en el sorteo de la tarjeta de regalo. Al proceder, está reconociendo que sus preguntas han sido respondidas satisfactoriamente. Le agradecemos el tiempo dedicado a completar esta encuesta.

Entiendo.

**Sorteo de tarjeta de regalo**

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Para participar en el sorteo de una de las 5 tarjetas de regalo de \$25, proporcione su información a continuación:

1. \_\_\_\_Nombre \_\_\_\_
2. \_\_\_\_Dirección de correo electrónico \_\_\_\_
3. \_\_\_\_Confirmar dirección de correo electrónico \_\_\_\_

***Este estudio tiene una segunda parte: una entrevista en profundidad.***

¿Estaría interesad@ en ser contactad@ para una entrevista de 45 minutos a 1 hora sobre sus experiencias con el reciclaje en el Condado de McLean?

1. \_\_\_\_No
  2. \_\_\_\_Sí (Por favor, proporcione su dirección de correo electrónico) : \_\_
-

## APPENDIX F: Survey Recruitment Email

### **RE: Recycling in McLean County**

You are invited to participate in a research study conducted by Dr. Frank Beck and graduate students of the Sociology 477: Community Project Design and Management class of Illinois State University in partnership with the Ecology Action Center. This study wants to examine residents' knowledge of the McLean County single-

stream recycling system, recycling contamination, and barriers to recycling.

This study requires you to complete an anonymous online survey that includes questions about waste disposal practices, knowledge and attitudes toward recycling, perceived barriers

to recycling, and knowledge of contamination. The questionnaire will take about 15 minutes to complete.

At the completion, participants will have the option to enter a drawing for one of five \$25 gift cards. Participants must complete the survey to enter the drawing. The researchers will keep a log of those who entered the drawing. This information will be kept separate from

the research data and securely stored by the researchers for audit purposes only.

Use this link to access the Qualtrics survey:

[https://illinoisstate.az1.qualtrics.com/jfe/form/SV\\_2tygVxYvObQjlma](https://illinoisstate.az1.qualtrics.com/jfe/form/SV_2tygVxYvObQjlma)

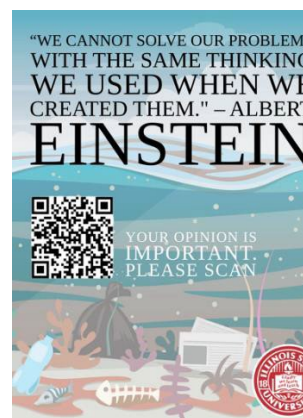
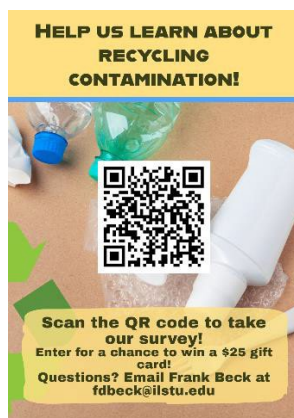
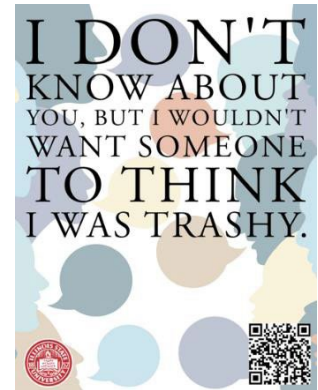
If you have any questions about the study or procedures, you may contact Dr. Frank Beck at the Department of Sociology and Anthropology (phone: 309-438-7770; email: fdbeck@ilstu.edu).

We thank you for your time and consideration,

Students of SOC 477

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## APPENDIX G: Survey Recruitment Flyers



## APPENDIX H: Recycling Survey Frequency Distributions

DO YOU RECYCLE?	
1_Do you or your household currently recycle?	Count
Yes	610
No	53
Grand Total	663

FAMILIAR W MCLEAN PROCEDURES	
2_Are you familiar with the recycling procedures in McLean County?	Count of 2_Are you familiar with the recycling procedures in McLean County?
Yes	480
No	180
	1
Grand Total	661

NECESSARY INFORMATION	
3_Do you feel you have the necessary information about your local recycling program to recycle properly?	Count of 3_Do you feel you have the necessary information about your local recycling program to recycle properly?
Yes	428
No	233
Grand Total	661

HAVE A RECYCLING RECEPTACLE	
4_Do you have a recycling receptacle provided at your place of residence?	Count of 4_Do you have a recycling receptacle provided at your place of residence?
Yes	561
No	102

Grand Total	663
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KNOW WHAT SINGLE STREAM MEANS	
Agree	Count of Agree
Strongly Disagree	78
Disagree	195
Agree	248
Strongly Agree	140
Grand Total	661

PARTICIPATE IN SINGLE STREAM	
7_Do you or your household participate in single-stream recycling?	Count of 7_Do you or your household participate in single-stream recycling?
Yes	514
No	141
	6
Grand Total	661

GATHERED INFORMATION	
8_Where, if at all, have you gathered information on how to recycle? (Check all that apply)	Count of 8_Where, if at all, have you gathered information on how to recycle? (Check all that apply)
School	22
Word of mouth	20
Social media	7
City/town	71
Community organization (please specify)	6
Other (please specify)	28
I am not informed about proper recycling	29
All of the above	6
	3
City/town, Community organization (please specify)	31
City/town, Community organization (please specify), Other (please specify)	15
City/town, Other (please specify)	21
Community organization (please specify), Other (please specify)	3
Other (please specify), I am not informed about proper recycling	1
School, City/town	23
School, City/town, Community organization (please specify)	8
School, City/town, Other (please specify)	4
School, Community organization (please specify)	4
School, I am not informed about proper recycling	2

School, Other (please specify)	2
School, Social media	20
School, Social media, City/town	7
School, Social media, City/town, Community organization (please specify)	2
School, Social media, Community organization (please specify)	1
School, Social media, I am not informed about proper recycling	2
School, Social media, Other (please specify)	1
School, Word of mouth	25
School, Word of mouth, City/town	21
School, Word of mouth, City/town, I am not informed about proper recycling	1
School, Word of mouth, City/town, Other (please specify)	8
School, Word of mouth, Community organization (please specify)	1
School, Word of mouth, I am not informed about proper recycling	5
School, Word of mouth, Other (please specify)	7
School, Word of mouth, Social media	32
School, Word of mouth, Social media, City/town	26
School, Word of mouth, Social media, City/town, Community organization (please specify)	11

School, Word of mouth, Social media, City/town, Other (please specify)	2
School, Word of mouth, Social media, Community organization (please specify)	4
School, Word of mouth, Social media, I am not informed about proper recycling	1
School, Word of mouth, Social media, Other (please specify)	3
Social media, City/town	20
Social media, City/town, Community organization (please specify)	22
Social media, City/town, Community organization (please specify), Other (please specify)	5
Social media, City/town, Other (please specify)	2
Social media, Community organization (please specify)	1
Social media, Community organization (please specify), Other (please specify)	1
Social media, I am not informed about proper recycling	2
Social media, Other (please specify)	1
Word of mouth, City/town	25
Word of mouth, City/town, Community organization (please specify)	12
Word of mouth, City/town, Community organization (please specify), Other (please specify)	2
Word of mouth, City/town, I am not informed about proper recycling	



	1
Word of mouth, City/town, Other (please specify)	7
Word of mouth, Community organization (please specify)	2
Word of mouth, Community organization (please specify), Other (please specify)	1
Word of mouth, I am not informed about proper recycling	8
Word of mouth, Other (please specify)	8
Word of mouth, Social media	17
Word of mouth, Social media, City/town	18
Word of mouth, Social media, City/town, Community organization (please specify)	6
Word of mouth, Social media, City/town, Community organization (please specify), Other (please specify)	4
Word of mouth, Social media, City/town, I am not informed about proper recycling	2
Word of mouth, Social media, City/town, Other (please specify)	3
Word of mouth, Social media, Community organization (please specify)	4
Word of mouth, Social media, I am not informed about proper recycling	3
Grand Total	663

CONFIDENT IN HABITS	
9_1_I am confident in my recycling habits	Count of 9_1_I am confident in my recycling habits
Strongly disagree	20
Disagree	125
Agree	351
Strongly agree	167
Grand Total	663

CONFIDENT IN SHARING INFO	
9_2_I can confidently share my knowledge of recycling with others	Count of 9_2_I can confidently share my knowledge of recycling with others
Strongly disagree	34
Disagree	158
Agree	325
Strongly agree	142
Grand Total	659

KNOW HOW TO SORT	
9_3_I know how to sort my trash from recycling	Count of 9_3_I know how to sort my trash from recycling
Strongly disagree	20
Disagree	45
Agree	396
Strongly agree	199
	1
Grand Total	661

GRATIFICATION	
9_4_ I feel a sense of gratification when I recycle	Count of 9_4_ I feel a sense of gratification when I recycle
Strongly disagree	14
Disagree	47
Agree	310
Strongly agree	291
	1
Grand Total	663

SEEK RECYCLING IN PUBLIC PLACES	
9_5_ I seek out recycling in public places	Count of 9_5_ I seek out recycling in public places
Strongly disagree	12
Disagree	54
Agree	292
Strongly agree	302
	3
Grand Total	663

TOSS WASTE IN RECYCLE BIN	
9_6_ When there are no trash bins, I toss my waste into the recycling bin	Count of 9_6_ When there are no trash bins, I toss my waste into the recycling bin
Strongly disagree	428
Disagree	166
Agree	45
Strongly agree	24
Grand Total	663

IT IS HARD TO RECYCLE	
10_ Do you think it is hard to recycle in your community?	Count of 10_ Do you think it is hard to recycle in your community?
Yes	171
No	491
	1
Grand Total	663

SATISFIED WITH PICK UP	
11_ Are you satisfied with the recycling pick-up schedule at your place of residence?	Count of 11_ Are you satisfied with the recycling pick-up schedule at your place of residence?
Yes	489
No	172
	2
Grand Total	663

NO RECYCLING AT RESIDENCE	
12_1_ There are no recycling receptacles provided at my	Count of 12_1_ There are no recycling receptacles

place of residence	provided at my place of residence
Strongly disagree	414
Disagree	124
Agree	51
Strongly agree	73
	1
Grand Total	663

UNSURE WHAT CAN BE RECYCLED	
12_2_I am not sure what can be recycled	Count of 12_2_I am not sure what can be recycled
Strongly disagree	188
Disagree	309
Agree	151
Strongly agree	13
	2
Grand Total	663

NO TIME TO RECYCLE	
12_3_ I do not have enough time to separate my recyclables from trash	Count of 12_3_ I do not have enough time to separate my recyclables from trash
Strongly disagree	370
Disagree	227
Agree	53
Strongly agree	9
Grand Total	659

TRAVEL TO RECYCLE	
12_4_ I have to travel to discard my recyclables	Count of 12_4_ I have to travel to discard my recyclables
Strongly disagree	322
Disagree	189
Agree	98
Strongly agree	54
Grand Total	663

NOT ENOUGH SPACE IN BIN	
12_5_ There is not enough space in the recycling receptacle	Count of 12_5_ There is not enough space in the recycling receptacle
Strongly disagree	244
Disagree	216
Agree	142
Strongly agree	60

	1
Grand Total	663

DIFFICULTY UNDERSTANDING SCHEDULE	
12_6_I have difficulty understanding the pick-up schedule	Count of 12_6_I have difficulty understanding the pick-up schedule
Strongly disagree	349
Disagree	210
Agree	78
Strongly agree	21
(blank)	3
Grand Total	661

MAP IS USEFUL	
13_If you lived in this area, could you figure out your recycling schedule based on this map?	Count of 13_If you lived in this area, could you figure out your recycling schedule based on this map?
Yes	453
No	204
	4
Grand Total	661

USE RECYCLE COACH	
14_Do you use the app Recycle Coach?	Count of 14_Do you use the app Recycle Coach?
Yes	72
No	101
I have not heard of the app	487
Grand Total	660

RECYCLING MATTERS TO YOU	
15_Does recycling matter to you?	Count of 15_Does recycling matter to you?
Yes	648
No	14
	1
Grand Total	663

RECYCLING MATTERS TO COMMUNITY	
16_Do you think recycling matters to the residents of McLean County?	Count of 16_Do you think recycling matters to the residents of McLean County?



Yes	550
No	106
	7
Grand Total	663

NO PURPOSE IN RECYCLING	
17_1_I find no purpose in separating my recyclables from trash	Count of 17_1_I find no purpose in separating my recyclables from trash
Strongly disagree	456
Disagree	181
Agree	17
Strongly agree	8
	1
Grand Total	663

NO ONE AROUND ME RECYCLES	
17_2_No one around me recycles	Count of 17_2_No one around me recycles
Strongly disagree	249
Disagree	309
Agree	82
Strongly agree	20
	3
Grand Total	663

PASSIONATE ABOUT ENVIRONMENT	
17_3_I feel passionate about environmental issues	Count of 17_3_I feel passionate about environmental issues
Strongly disagree	17
Disagree	43
Agree	335
Strongly agree	266
	2
Grand Total	663

IMPORTANT TO RECYCLE	
17_4_I think it's important to recycle	Count of 17_4_I think it's important to recycle
Strongly disagree	10
Disagree	9
Agree	244

Strongly agree	397
	3
Grand Total	663

SOMEONE WILL SORT FOR ME	
17_5_I don't worry about recycling contamination because someone will sort it	Count of 17_5_I don't worry about recycling contamination because someone will sort it
Strongly disagree	210
Disagree	348
Agree	94
Strongly agree	4
(blank)	
Grand Total	656

RECYCLING NOT BENEFICIAL	
17_6_I don't think recycling is beneficial	Count of 17_6_I don't think recycling is beneficial

Strongly disagree	423
Disagree	199
Agree	33
Strongly agree	6
	2
Grand Total	663

CONFIDENCE SCALE	
18_1_ I have confidence that my recyclables are truly being recycled.	Count of 18_1_ I have confidence that my recyclables are truly being recycled.
0	10
1	24
2	42
3	61
4	53
5	110
6	93
7	106
8	86
9	29
10	30
	19
Grand Total	663

KNOW RECYCLING CONTAMINATION
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19_Please indicate to what extent you agree or disagree with the following statement: "I know what recycling contamination is."	Count of 19_Please indicate to what extent you agree or disagree with the following statement: "I know what recycling contamination is."
Strongly Disagree	23
Disagree	130
Agree	374
Strongly Agree	132
(blank)	
Grand Total	659

GENDER	
23_How do you identify your gender?	Count of 23_How do you identify your gender?
Man	177
Woman	462
Non-binary	16
Other (please specify)	3
	3
Grand Total	661

RACE	
24_How do you identify your race/ethnicity?	Count of 24_How do you identify your race/ethnicity?
Asian	12
Black	26
Latinx	17
White	575
Other (please specify)	10
Asian, Latinx, White	1
Asian, White	3
Black, White	3
Latinx, White	7
White, Other (please specify)	2
	5
Grand Total	661

INCOME	
29_ Which of the following best describes your household income last year?	Count of 29_ Which of the following best describes your household income last year?
\$0 to \$19,999	70
\$20,000 to \$49,999	65
\$50,000 to \$89,999	142
\$90,000 to \$129,999	130
\$130,000 to \$149,000	55
\$150,000+	96
Prefer not to answer	103
	2
Grand Total	663

EDUCATION	
25_What is your highest level of education completed?	Count of 25_What is your highest level of education completed?
High school diploma/GED	32
Some college	112
Associates degree	56
Bachelors degree	219
Master's degree or higher	242
	2
Grand Total	663

HOMEOWNERSHIP	
27_Please indicate your home ownership status.	Count of 27_Please indicate your home ownership status.
I own my home	416
I rent/sublease	165
I live with family/friends	56
Other (please specify)	19
(blank)	
Grand Total	656

ZIP CODE	
28_Please indicate your zip code	Count of 28_Please indicate your zip code
61761	300
61701	144
61704	101



61705	35
61745	9
61753	7
61754	6
61748	4
61725	4
60073	3
61732	3
61615	2
61776	2
61752	2
61822	2
	2
61736	2
61728	2

61761	1
61774	1
61540	1
60563	1
61842	1
60004	1
60084	1
61702	1
60481	1
60030	1
61790	1
61704	1
62704	1
61701	1
61530	1
60639	1
61749	1
60062	1
60126	1
61726	1
60047	1
61727	1
61550	1
60546	1
61571	1

61730	1
62656	1
61111	1
67104	1
61455	1
61611	1
61744	1
61710	1
Grand Total	663

AGE	
22_Please indicate how old you are turning in 2024	Count of 22_Please indicate how old you are turning in 2024
(blank)	13

18-24	160
25-34	97
35-44	119
45-54	105
55-64	92
65-74	58
75-84	18
85-94	1
Grand Total	663

CHILDREN IN HOUSEHOLD	
26_How many children under the age of 18 live in your household?	Count of 26_How many children under the age of 18 live in your household?
1-2 children	161
3-4 children	24
More than 4 children	3
None	471
(blank)	
Grand Total	659