

Evaluation of Current Knowledge and Attitudes Towards Waste Management in Broome County

S. Bouillon , C. Davey, B. Goodman, L. Kidd,
C. Manolian, D. Tepe

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Dr. George Homsey



Executive Summary

Waste management is a multifaceted process concerning local governance, county resident participation, and education. To gain better understanding of attitudes towards food waste management and recycling in the county, a voluntary survey was issued this past Fall season by the Broome County Environmental Management Council, spearheaded by Binghamton University students, to Broome County residents at public events. The survey was completely voluntary and consisted of questions discerning interest in recycling, current recycling and food waste management behaviors and specific county demographics. Since all residents participate with daily food management via garbage and residential waste generation, there is potential for a composting program to divert food waste from landfills to a program aimed at creating gardening soil or compost soil for residential/commercial use with wider spread community support.

To gauge if the community would support food scrap management initiatives like this, we specifically asked questions on their willingness to store and dispose of food scraps, their interest in a compost program and their thoughts on a compost program. We delved into the survey data and the results show that there is interest for a food scrap/composting program in Broome County. Overall, residents are mostly willing to not only separate food scraps but to store them, and they offered feedback on what they needed, like curbside pickup or at-home bins, to make a countywide composting program possible.

The findings from this survey reflect positively on residents' attitudes toward food waste management. Our analysis shows that home ownership was the most prominent factor in a person's willingness to compost, for example. The survey also reveals a strong preference for home composting bins, curbside pickup (at a cost), and neighborhood drop-off as the composting programs of choice. This demonstrates that the survey-takers overwhelmingly value convenience.

There is room to build on these results by asking more questions related to what residents impacted by low income, lack of access to transportation or storage to store food scraps, truly need to be able to participate in these programs. It is not possible to fully understand the ability of residents to participate without understanding what factors could prevent them from successfully participating. This research analysis found support for composting programs, but it did not fully dive into how we can support the community's residents to participate in said program. We hope future research occurs to bridge this gap in information.

91% would like Broome County to start a composting program

Home Type & Housing Tenure*
are related to household waste management

**homeowners or renters*

Up to 88% would be willing to separate food scraps

Habits & Preferences
vary across the county

Background & Objectives

Landfill gas (LFG) is formed when food and other organic matter breaks down in the anaerobic environment of landfill. LFG is approximately half methane and half carbon dioxide¹. Methane is a potent greenhouse gas, with 25x more heat-trapping potential than carbon dioxide².

The Broome County Environmental Management Council (EMC), “is a citizen advisory group to the County government on local environmental matters... [Their] mission is to provide support and advice to the County Executive, legislature, municipal bodies, and citizens; conduct environmental research activities; raise public awareness through education; investigate sound methods of ecological planning for the County’s natural resources; review environmental assessments, plans, and reports; and to respond to other environmental concerns as they arise³.”

Students from the Binghamton University College of Community and Public Affairs’ Sustainable Communities and Public Administration graduate programs were enlisted by the EMC to conduct research on garbage, recycling habits, and composting through surveying residents across Broome County.

The goal of this report is to collect community feedback on waste management programs, organize the data and synthesize it in a way that can be most useful for the successful implementation of sustainable waste management policies and programs throughout Broome County.



Image: Broome County Solid Waste

REFERENCES

[1] Basic Information About Landfill Gas <https://www.epa.gov/lmop/basic-information-about-landfill-gas>

[2] Environmental Protection Agency <https://www.epa.gov/gmi/importance-methane>

[3] Broome County Environmental Management Council <https://www.gbroomecounty.com/emc>

Methodology

Sampling Methods

The dataset for this report was collected at various community events and locations throughout Broome County over the period September 29, 2021 through October 17, 2021. These events in and around the Binghamton area in Broome County, including: the Ross Park Zoo, Binghamton Downtown Farmers Market, Broome County Public Library, Vestal Library, Spiediefest, Deposit Octoberfest, Binghamton Restaurant Week, and first Friday Art Walk. Surveying completed via convenience sampling, allowing for student-researchers to take advantage of community events to aid in data collection.

To uphold ethical standards of research, responses were voluntary. As a result of having to explain the nature of the survey to potential participants, there will be elements of nonresponse bias. Conversely, there is also a propensity for certain population groups to want to actively participate in this survey, thus potentially inflating parts of the data. The survey itself was one sheet of paper – front and back – consisting of twenty-two questions. The questions varied in typology, ranging from standard yes or no, true/false, and various “select all that apply” questions.

Survey Data Processing: Cleaning the Data

Survey Data Processing followed these steps- Survey data entered into a spreadsheet after data work post survey collection period. A team member first developed a coding strategy to represent the answers to each question. Using coded nominal, dummy, and ordinal variables, multiple people entered the raw survey data. After organizing the data in the spreadsheet, the team then “cleaned” the dataset by sorting each category, searching for any data discrepancies, errors and lapses in standardization to then be corrected by us. We removed responses from respondents under the age of eighteen, non-Broome County residents, and those who did not fill out the second side of the survey. As a result of these criteria, the total number of surveys used for the final dataset decreased the survey sample size from 867 to 619. The data ‘cleaning’ included manipulating data in Excel to create various tables, charts, and/or graphs for the purpose of communicating the survey findings.

Results & Analysis

Here we share the findings we believe will be of most interest to the EMC.

The survey demographics are representative of the Broome County (as reported by the US Census Bureau), in most ways (*Appendix A*).

We examine overall waste habits of County residents, including:
recycling, volume of trash, yard waste, and food scrap solutions.

One of the interesting themes from this survey is revealed by the data surrounding housing tenure (owning or renting). Our results show that home ownership was the most prominent factor in a person's willingness to compost. Housing tenure is also related to other waste management habits.

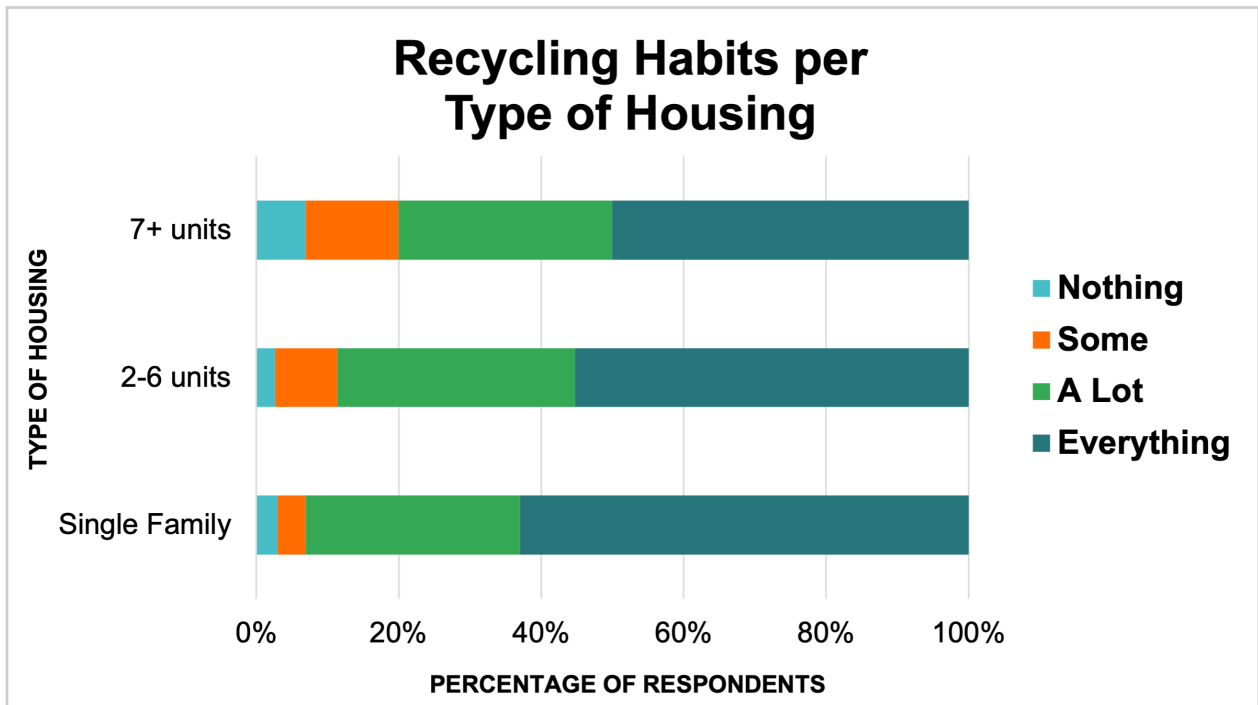
We represent total respondent averages, as well as break down some data by location, as answers can vary widely from place to place.

Overall, the data reveal a strong preference for home compost bins as the composting program of choice, closely followed by neighborhood drop-off and curbside pick-up (for a fee). Survey-takers value convenience, as emphasized in comments on the survey forms. Lack of time, knowledge, and space are the top three reasons people do not compost yard waste and/or food scraps.

The following pages include relevant charts and graphs, as well as additional comments provided by respondents.

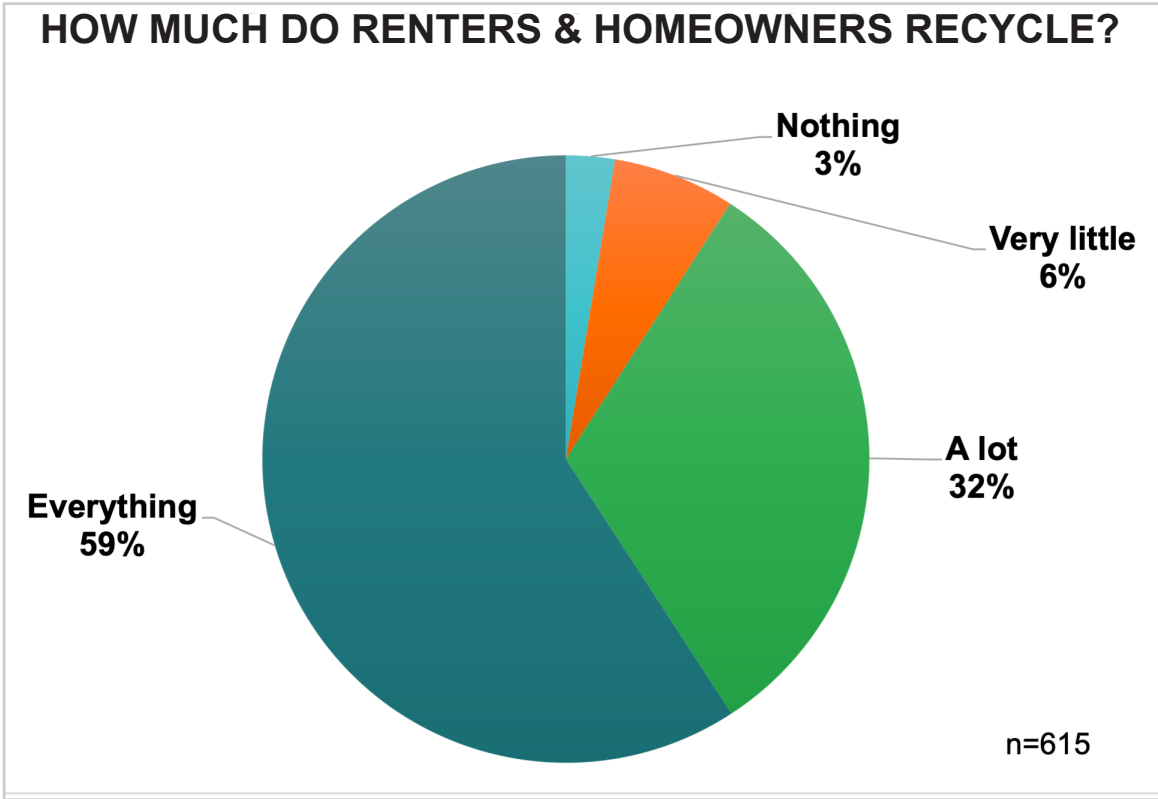


Images: Broome County Solid Waste

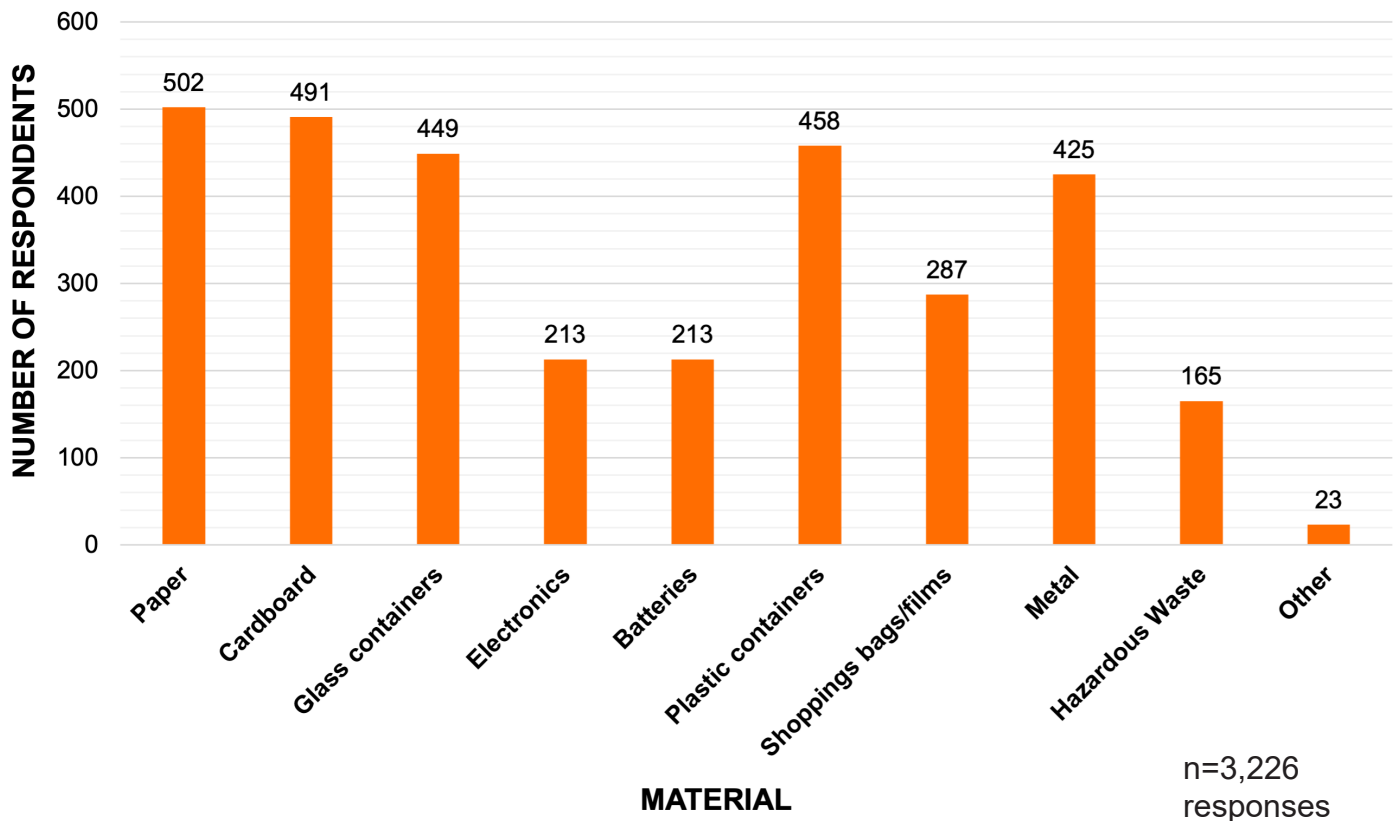


People in apartment buildings with 7+ units recycle less.

Renters & homeowners have equivalent average recycling habits.



Household Recycling



Respondents were asked to write out any other materials that they recycle.

What else do people recycle?

Coffee Pods • Fabric • Paper (shredding)
Medication (return) • Scrap Metal • Styrofoam

9%
of respondents are
members of an
environmental
group

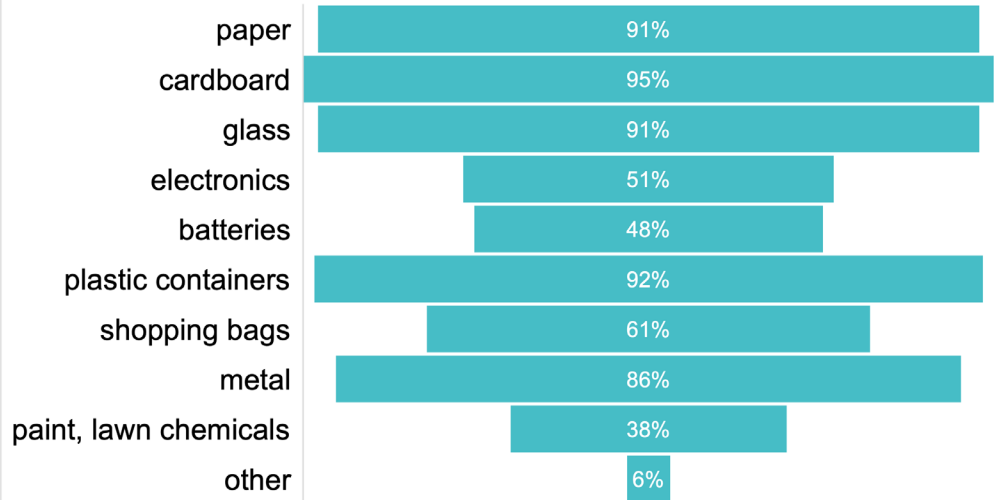
Overall, there is a slight increase in recycling among members of an environmental group, but the sample size for this population is not large enough to be sure there is a real difference here.

We think the chart below illustrates that those committed to recycling might benefit from more educational outreach and opportunities to increase recycling of specific materials.

Respondents who “Recycle Everything” throw out an average of 0.9 bags/person/week

Respondents who “Recycle Nothing” throw out an average of 1.2 bags/person/week

What People Actually Recycle When They Say “Everything We Can”

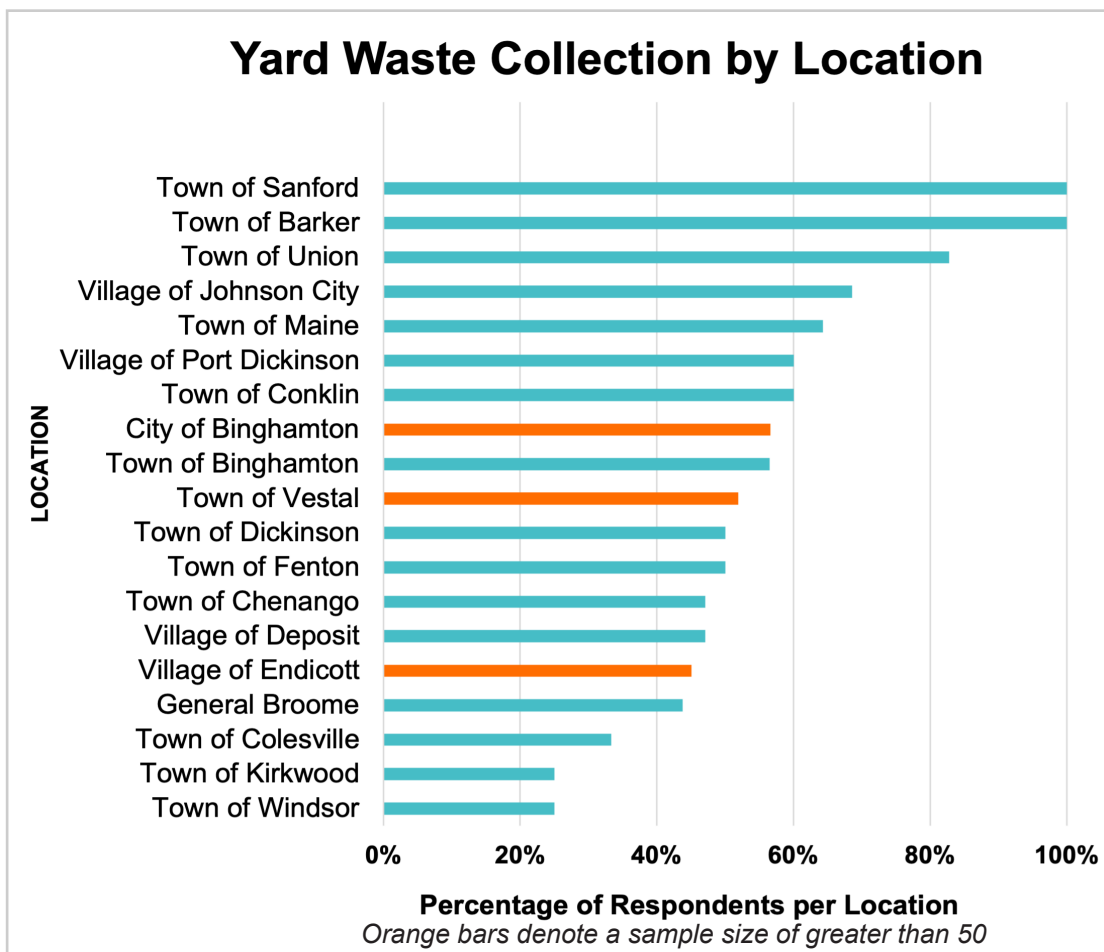
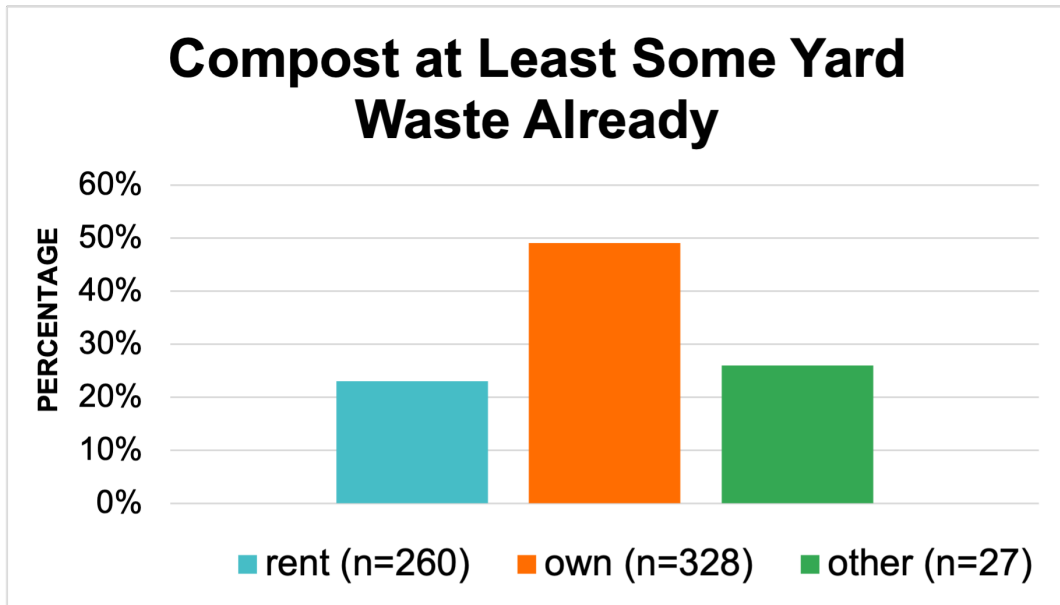


Bags of Trash per Person per Week

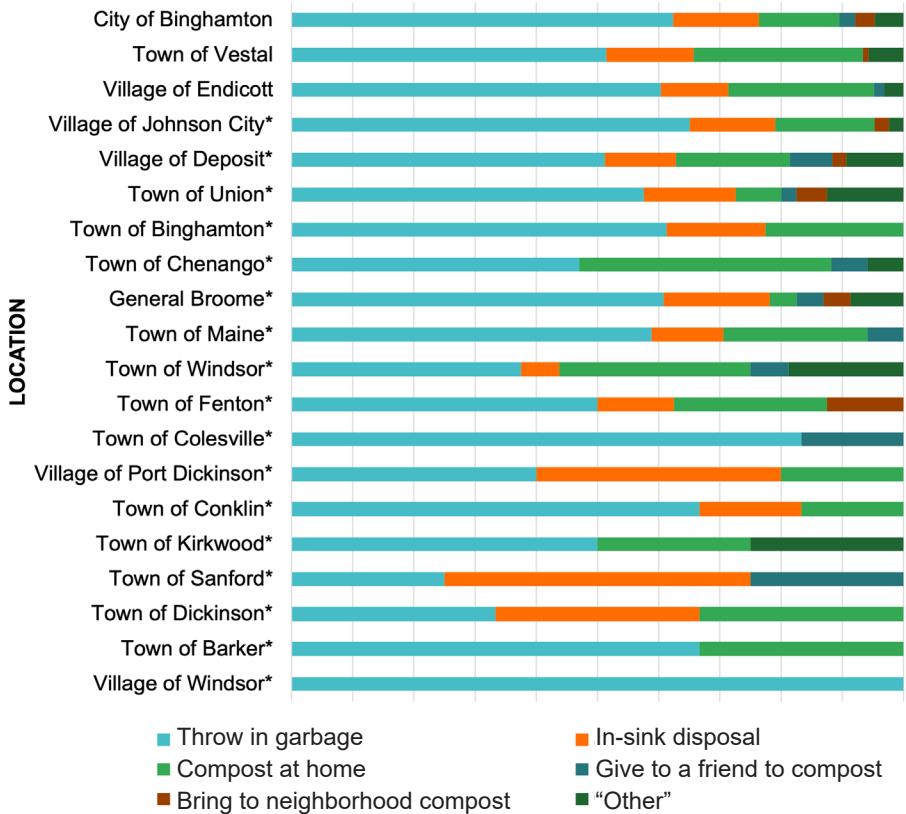


These results indicate that there may be a reduction in the number of trash bags per person per week due to Binghamton’s Blue Bag policy, as well as due to increased recycling practices.

37% of respondents compost at least some yard waste already.
55% of respondents put yard waste out for collection.



Current Food Scrap Solutions by Location

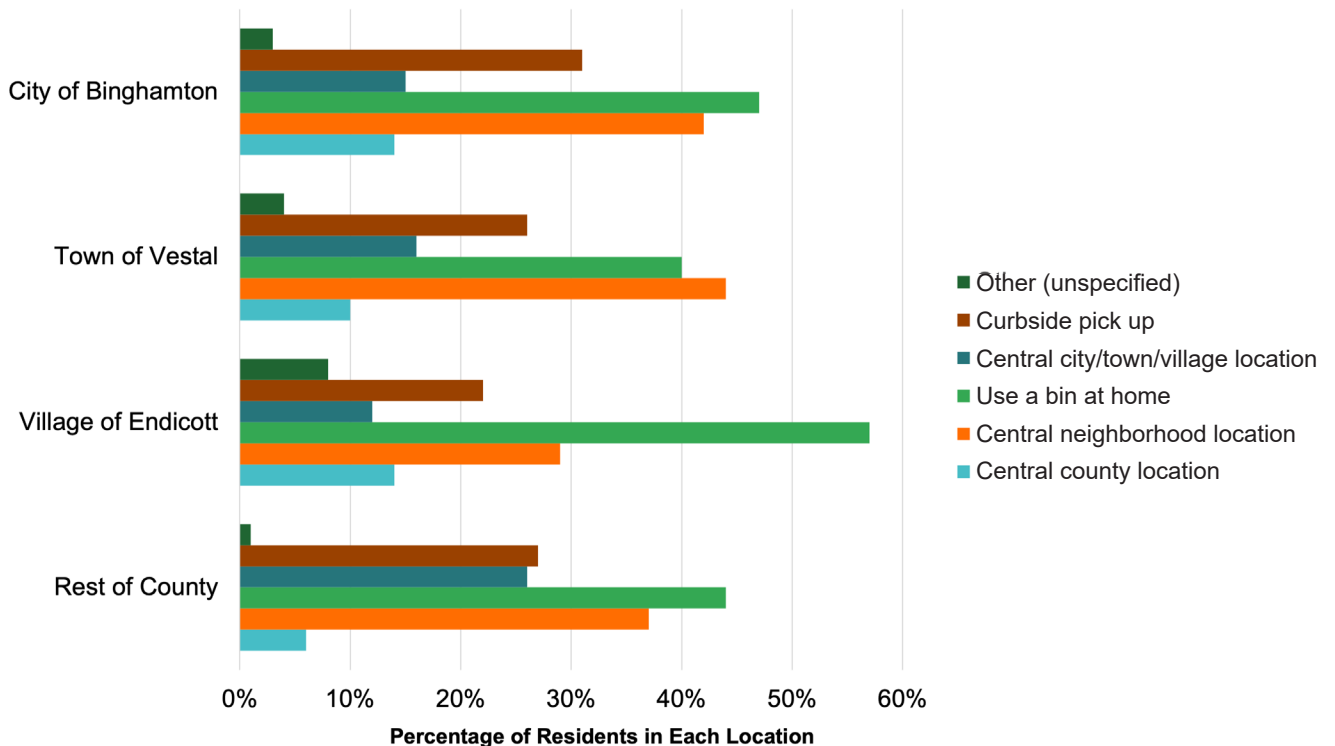


*sample size < 20

Respondents reported these "other" food scrap solutions:

- Feed to farm animals
- Feed to dog
- Feed to wild animals
- Put in garden
- Put in woods
- Flush down toilet
- Freeze & make soup stock

Compost Program Preferences by Location

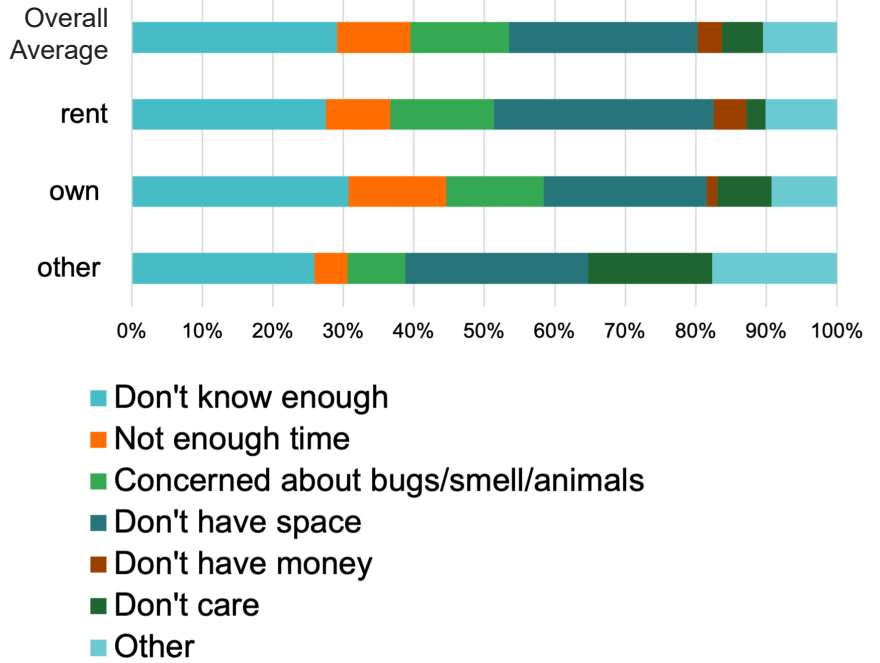


“Other”
reasons respondents
don't compost:

- No building materials
- No waste
- Professional lawn care
- Town collection
- No yard
- Homelessness
- “Not much fresh produce consumed”

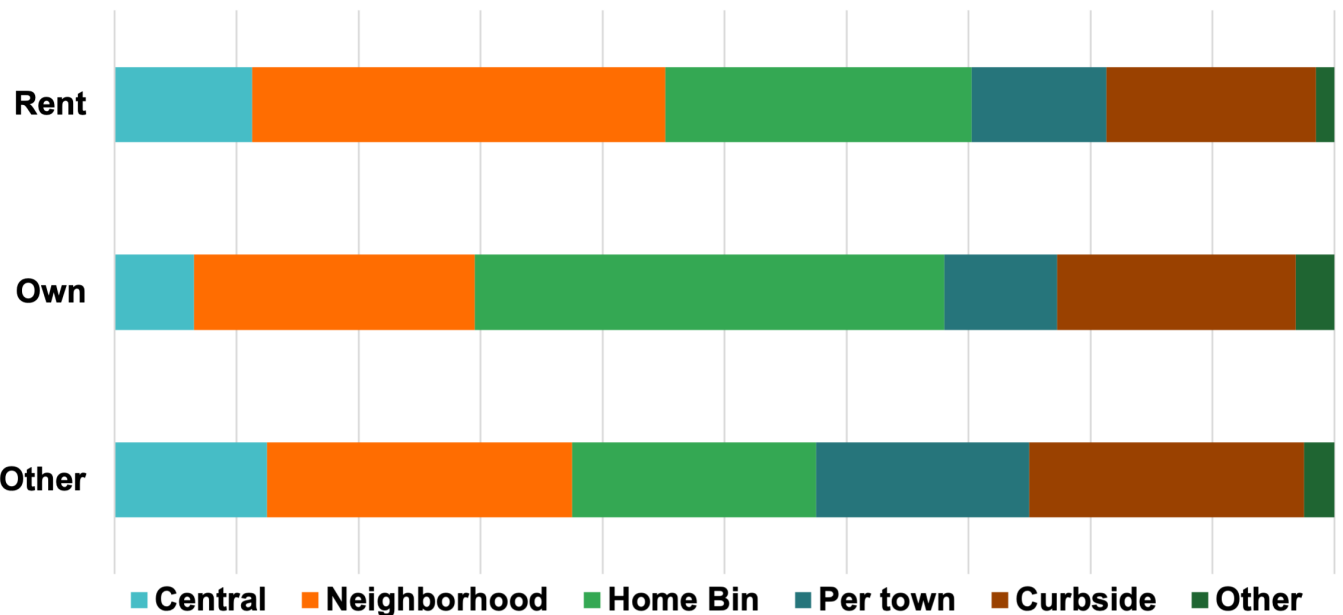
Why I Don't Compost

HOME TENURE



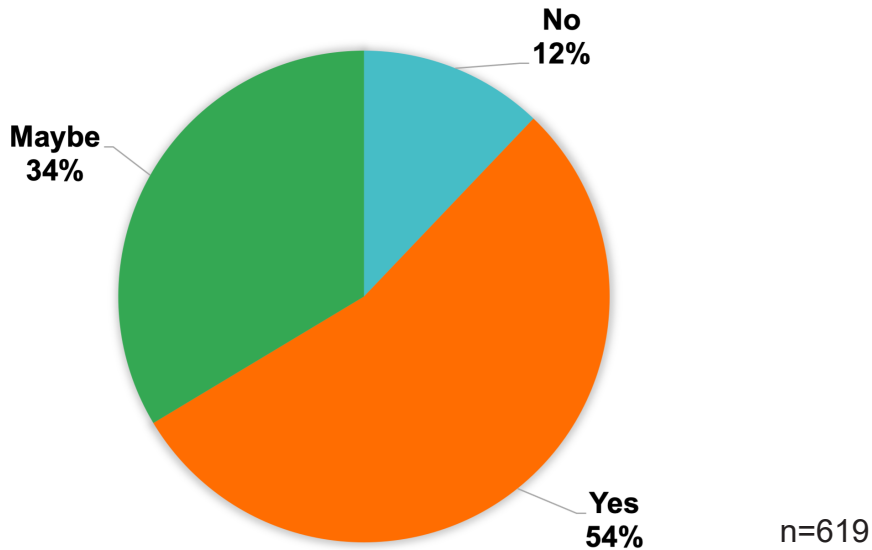
Compost Program Preferences by Home Tenure

HOME TENURE



In order to compost food scraps,
people have to separate & store their food scraps

WOULD YOU BE WILLING TO SEPARATE FOOD SCRAPS?

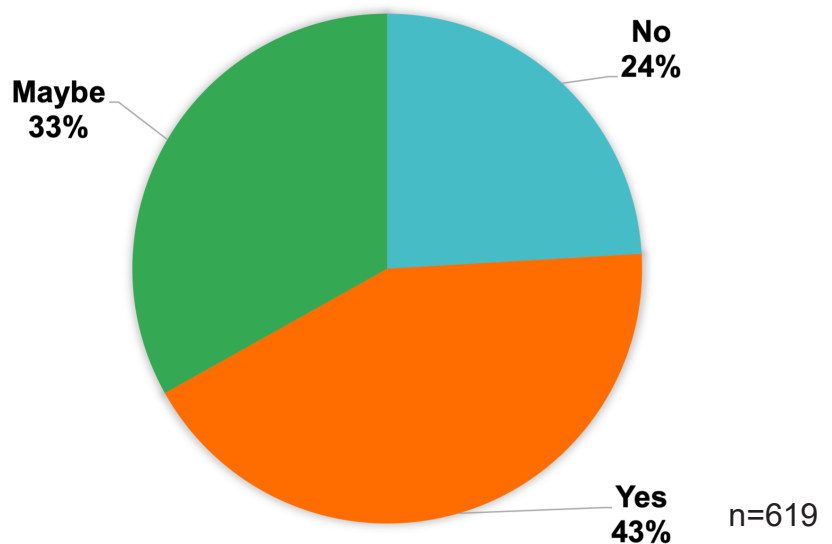


Up to 88%
would be
willing to
separate
food scraps

People who recycle more are increasingly willing to separate food scraps for composting.

- Type of home and homeownership is not a factor in willingness to separate food waste.
- Men are the least likely to be willing to sort scraps

WOULD YOU BE WILLING TO STORE FOOD SCRAPS?



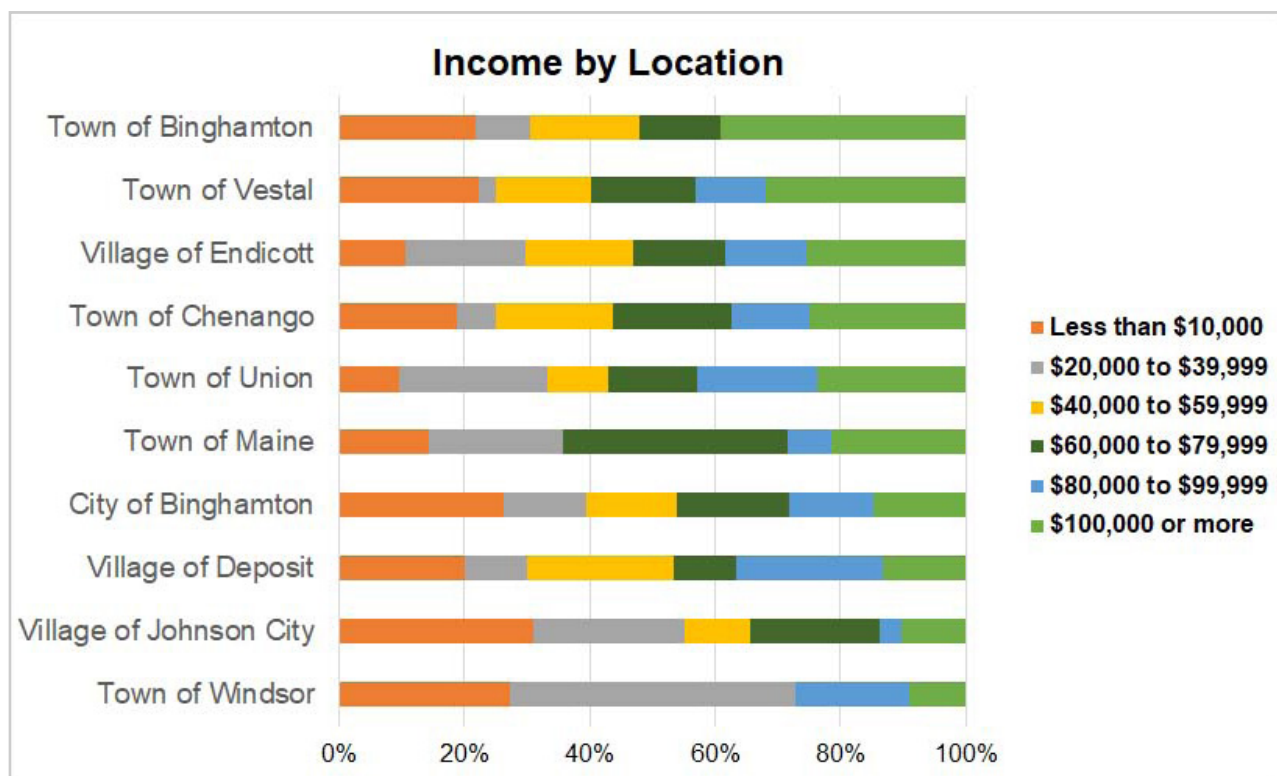
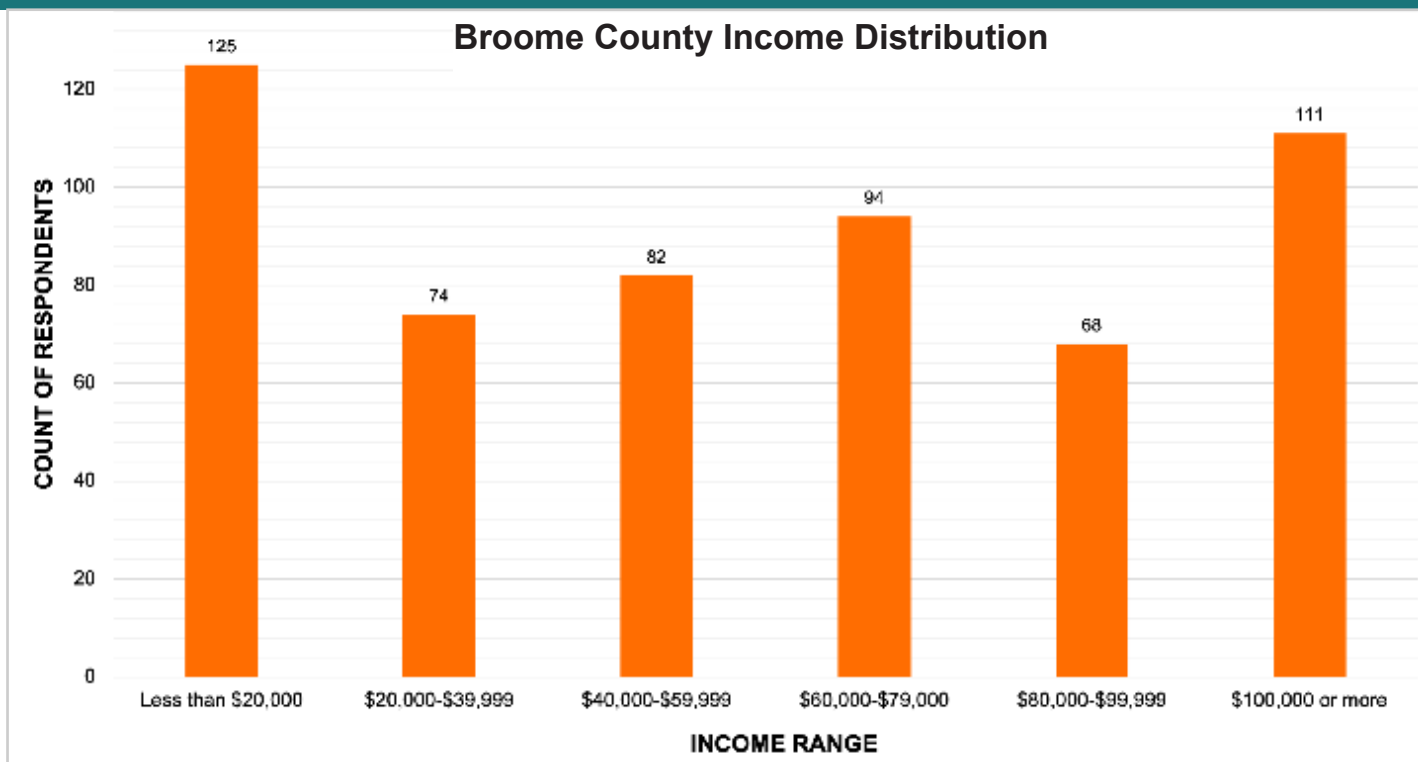
Up to 76%
would be
willing to
store
food scraps

Survey respondent income is skewed to the highest and lowest brackets, which is indicative of high inequality. The City of Binghamton, Village of Johnson City, Town of Windsor, Town of Vestal, and Town of Binghamton all have over between 20-30% of their populations making less than \$10,000 per year.

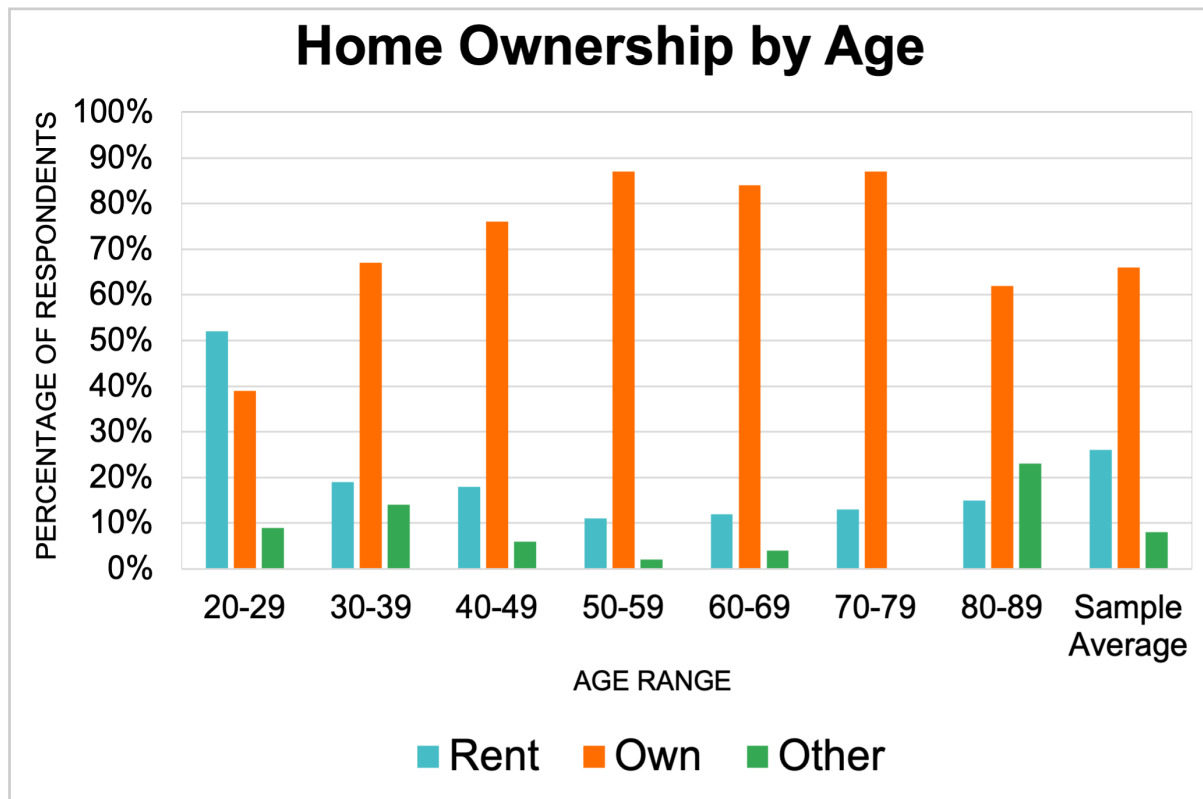
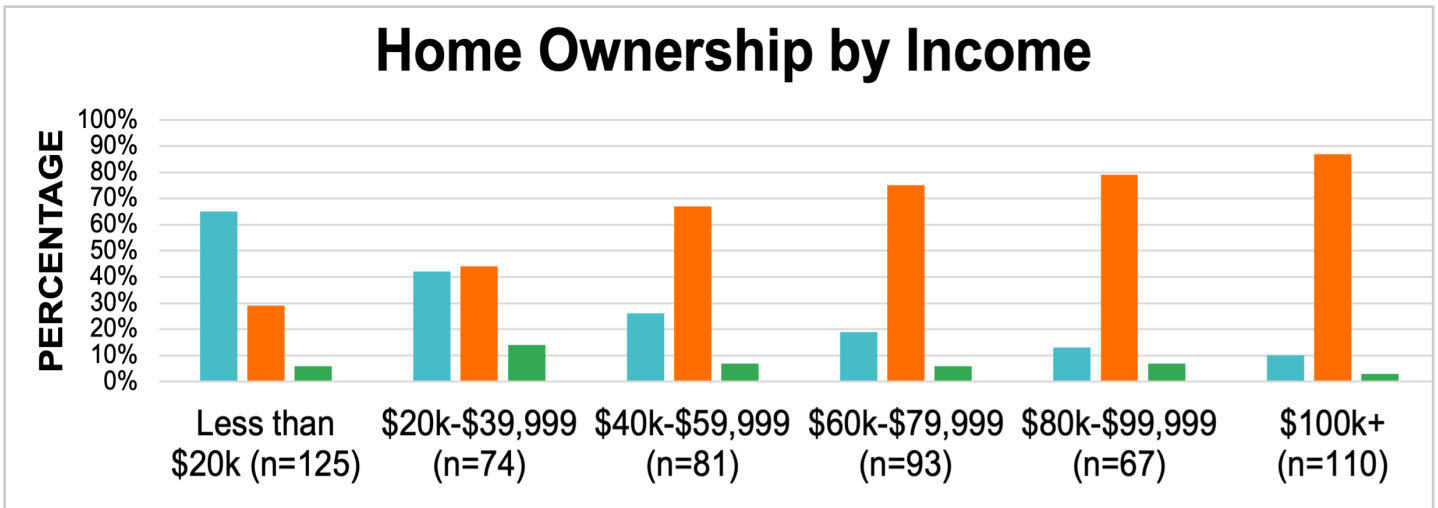
How can the County better serve poorest population with regards to composting?

Residents in the lower income brackets share a preference for neighborhood drop-off locations, as well as home compost bins.

Let's look at how income is distributed across the County, based on this survey:



Let's explore the demographics of Broome County home ownership a bit more:



Regarding the short environmental knowledge quiz component of the survey
(see Appendix D, p. 27)

T/F Questions Answered Incorrectly Most Often:

- Natural gas is biggest source of Energy
- Most garbage in landfill is food waste
- Urban sprawl helps reduce drive times

Only **5%** of survey respondents got every question on the quiz right! *(out of 8)*
 Younger respondents had higher scores, on average.



Images: Broome County Solid Waste

While the overwhelming majority (91%) of respondents are in favor of Broome County starting a composting program for food scraps, some people are skeptical of, concerned about, or opposed to such a program for these stated reasons:

- Don't know enough to give opinion**
- Extra Cost**
- Messy/Smelly**
- People don't even put out regular garbage correctly**
- People are too lazy**
- Makes sense in the city, less so in the county**
- Other issues to focus on**
- Needs to be highly organized and monitored**
- Needs to be convenient**
- People should take care of it themselves**
- Should be an individual choice**
- Skeptical of government effectiveness**
- Time**
- Too hard**
- Would need to learn more about the potential impact**

Conclusion

Recycling habits are generally high in Broome County; people, on average, express wanting to be good stewards of their trash and environment. Additional outreach and recycling opportunities could increase this trend even further.

Renters show an almost equal interest in composting and can make a substantial contribution to Broome County's efforts. Perhaps landlords can be encouraged to make accessible composting arrangements? Not having access to space to compost because of rental status was the most cited comment.

Home bins, central neighborhood location, and curbside pick-up are the most popular food scrap composting solution, to varying degrees among different locations. Considering how many people are interested in home bins, a campaign to education people about the bins available through the solid waste facility, as well as educational opportunities through the Broome County Cooperative Extension Office⁴ and other community partners could go a long way towards the goal of getting food scraps out of the landfill. Grants or other subsidies to offset the cost of a home bin would benefit low-income households. Communities in Vermont⁵ have encouraged independent contractors to be certified haulers who would contract with household to pick up their waste and take it to a central location. This might be a good strategy for places in the County that would like to have curbside pickup but may be more difficult or less efficient for the County to serve.

Overwhelmingly, respondents approve of Broome County starting a composting program (91%). Hundreds of enthusiastic comments in support of this idea are aggregated here:



[4] <http://ccebroomecounty.com/>

[5] <https://www.yesmagazine.org/issue/how-much-is-enough/2021/08/10/composting-food-waste-system>

Appendix A

EMC Survey Demographics

Compared to Broome County

This survey is generally representative of Broome County, using these sociodemographic measures:

Age	Survey (n=619)	Broome County (n=190,448)
18-19	6.8%	N/A
20-29	34.6%	16.1%
30-39	11.8%	10.3%
40-49	9.5%	10.3%
50-59	15.5%	10.3%
60-69	15.3%	13.0%
70-79	5.0%	8.7%
80-89	1.1%	N/A
90-99	0.3%	N/A

Home Tenure	Survey (n=615)	Broome County (n=91,402)
Rent	42%	36%
Own	53%	64%
Other	4%	N/A

Type of Home	Survey (n=619)	Broome County (n=91,402)
Single Family	68%	66%
Multi-unit building	32%	30%*

Gender	Survey (n=615)	Broome County (n=190,683)
Male	37%	50%
Female	62%	51%
Other	1%	N/A

Education Level	Survey (n=608)	Broome County (n=126,674)
Did not graduate from high school	2%	10%
High school graduate (or G.E.D.)	13%	31%
Some college	22%	19%
2-year college degree	15%	13%
4-year college degree	27%	14%
Postgraduate degree	21%	13%

Race	Survey (n=619)	Broome County (n=198,683)
White	78%	79%
Hispanic	6%	5%
Asian	5%	5%
Black	5%	6%
2 or more	4%	5%
Other	3%	1%

Household size		
	Survey (n=566)	Broome County (n=78,549)
1-2	48%	68%
3-4	36%	24%
5-6	11%	7%
7+	5%	1%

Annual Income Broome County (n=79,309)	Less than \$10,000	8%
	\$10,000 to \$14,999	6%
	\$15,000 to \$24,999	12%
	\$25,000 to \$34,999	9%
	\$35,000 to \$49,999	14%
	\$50,000 to \$74,999	18%
	\$75,000 to \$99,999	13%
	\$100,000 to \$149,999	12%
	\$150,000 to \$199,999	4%
	\$200,000 or more	4%

Household income		
Annual Income Survey Respondents (n=554)	Less than \$20,000	20%
	\$20,000-39,999	13%
	\$40,000-59,999	14%
	\$60,000-79,999	16%
	\$80,000-99,999	12%
	\$100,000+	24%

Municipality	Survey (n=619)	Broome County (n=193,842)
City of Binghamton	43.9%	23.3%
Town of Vestal	13.1%	17.8%
Village of Endicott	8.2%	6.6%
Village of Johnson City	5.7%	7.5%
Village of Deposit	5.5%	0.8%
Town of Union	4.7%	13.7%
Town of Binghamton	3.7%	2.5%
Town of Chenango	2.7%	5.5%
Town of Maine	2.3%	2.7%
Unspecified	2.3%	N/A
Town of Windsor	1.9%	2.6%
Town of Colesville	1.0%	2.6%
Town of Fenton	1.0%	3.3%
Town of Conklin	0.8%	2.7%

Appendix B

Composting by Location

Preferred Compost Options by Location (full list)							
Location	Central County	Neighborhood	Home Bin	City/Town/Village	Curbside	Other	
City of Binghamton	14%	42%	47%	15%	31%	3%	n=272
Town of Vestal	10%	44%	40%	16%	26%	4%	n=81
Village of Endicott	14%	29%	57%	12%	22%	8%	n=51
Village of Deposit	24%	38%	32%	32%	3%	0%	n=34
Village of Johnson City	6%	46%	43%	6%	29%	3%	n=35
Town of Union	14%	28%	52%	10%	24%	10%	n=29
Town of Binghamton	9%	61%	43%	4%	22%	0%	n=23
Town of Maine	14%	57%	43%	14%	14%	0%	n=14
Town of Chenango	0%	18%	29%	18%	29%	6%	n=17
Town of Windsor	17%	33%	50%	0%	17%	8%	n=12
Unspecified Location	14%	29%	29%	14%	21%	0%	n=14
Town of Fenton	33%	17%	50%	33%	17%	0%	n=6
Town of Colesville	0%	33%	17%	17%	33%	0%	n=6
Town of Conklin	0%	0%	60%	40%	20%	0%	n=5
Village of Port Dickinson	0%	0%	40%	40%	40%	0%	n=5
Broome County (unspecified)	0%	50%	50%	50%	50%	0%	n=2
Chenango Forks	0%	100%	100%	0%	50%	0%	n=2
Town of Kirkwood	0%	75%	0%	25%	25%	0%	n=4
Castle Creek	0%	0%	100%	100%	100%	0%	n=1

Appendix C

Non-Demographic Survey Results & Raw Data

1) How would you characterize recycling in your household?

Household Recycling Habits	Everything	16
	A lot	40
	Very little	195
	Nothing	364

2) Does your household recycle any of the following either at curbside or by taking them to a drop-off center, store, or other location for recycling? Check all that apply.

Household Recycling	Paper	502
	Glass	491
	Cardboard	449
	Electronics	213
	Batteries	213
	Plastic Containers	458
	Plastic Bags	287
	Metal	425
	Hazardous Materials	165
	Other	23

3) Do you compost at least some yard waste?

Compost Yard Waste	No	390
	Yes	229

4a) If no, what prevents you from composting yard waste at home? Check all that apply.

Prevention of Composting Yard Waste	Lack of Knowledge	502
	Lack of Time	491
	Pest Concern	449
	Lack of Space	213
	Lack of Money	287
	Do Not Care	425
	Other	165

4) Do you put yard waste out for collection by city, town, or village?

Put Out Yard Waste	No	279
	Yes	340

5) How do you dispose of your food scraps? Check all that apply.

Food Scrap Disposal	Garbage	502
	In-sink disposal	491
	Home compost	449
	Friend compost	213
	Neighborhood compost	213
	Other	458

7) On average, how many bags of trash does your household throw away each week?

Bags of Garbage per Household	0 to 5	556
	6 to 10	45
	11 to 15	2
	16 to 20	2

8) Would you or someone in your household be willing to separate out your food scraps so that they can be composted?

Willing to Separate Food Scraps	No	75
	Yes	336
	Maybe	208

9) Would you or someone in your household be willing to store food scraps for a week so that they can be picked up?

Willing to Store Food Scraps	No	149
	Yes	265
	Maybe	205

10) If Broome County starts a food scrap composting program, what would make it better for you? Check all that apply.

Ideal Composting Program	Central location	78
	Neighborhood location	30
	Home bin	27
	City location	21
	Curbside pick up	15
	Other	1

11) Please answer the following True/False Questions

	Correct		Incorrect	
The biggest source of electricity in New York State comes from natural gas.	344	100%	0	0%
The majority of garbage in the landfill is food waste.	202	65%	111	35%
Green infrastructure reduces water runoff.	267	61%	169	39%
Recycling saves energy.	283	61%	180	39%
Urban sprawl generally helps people spend less time driving.	176	56%	139	44%
Organic matter, such as food waste in a landfill produces methane, a strong greenhouse gas.	287	62%	178	38%
Cities and towns can dump trash in the landfill for free.	217	55%	174	45%
Oil, natural gas, and coal are fossil fuels and non-renewable resources of energy.	280	62%	174	38%

19) Do you belong to an environmental group?

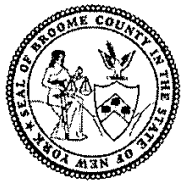
Environmental Group Membership		
Non-member	552	91%
Member	55	9%

22) Do you think Broome County should start a composting program for food scraps?

Should Broome County Start a Composting Program?		
Yes	551	91%
No	46	9%

Appendix D

Copy of Survey



**Environmental
Management
Council**

**BINGHAMTON
UNIVERSITY**
STATE UNIVERSITY OF NEW YORK

Thank you for agreeing to take our short survey. Please fill out BOTH sides of this sheet. This survey is COMPLETELY CONFIDENTIAL. Thank you so much for your time.

1. How would you characterize recycling in your household? (Check one.)

- We recycle everything that we can.
 We recycle a lot, but not everything.
 We recycle very little.
 We do not recycle anything.

2. Does your household recycle any of the following either at curbside or taking them to a drop-off center, store, or other location for recycling? (Check all that apply.)

- | | |
|--|---|
| <input checked="" type="checkbox"/> Paper | <input checked="" type="checkbox"/> Plastic containers |
| <input checked="" type="checkbox"/> Cardboard | <input type="checkbox"/> Plastic shopping bags or film plastics |
| <input checked="" type="checkbox"/> Glass containers | <input checked="" type="checkbox"/> Metal cans |
| <input checked="" type="checkbox"/> Electronic items like computers, televisions, etc. | <input checked="" type="checkbox"/> Paint, lawn chemicals, or other hazardous waste |
| <input checked="" type="checkbox"/> Household batteries | <input type="checkbox"/> Other: _____ |

Composting is the process of recycling organic matter, such as grass clippings, leaves and food scraps, into fertilizer.

3. Do you compost at least some yard waste at home? Yes No

4a. If no, what prevents you from composting yard waste at home? (Check all that apply.)

- | | |
|--|--|
| <input type="checkbox"/> I do not know enough about composting. | <input type="checkbox"/> I do not have the space to compost. |
| <input type="checkbox"/> I do not have time. | <input type="checkbox"/> I do not have the money to compost. |
| <input type="checkbox"/> I am concerned about the potential bugs, smell, rodents or other animals. | <input type="checkbox"/> I do not care to compost. |
| <input type="checkbox"/> Other: _____ | |

4. Do you put yard waste out for collection by the city, town, or village? Yes No

5. How do you dispose of your food scraps? (Check all that apply.)

- | | |
|---|--|
| <input checked="" type="checkbox"/> Throw away in the garbage | <input type="checkbox"/> Give to a friend to compost |
| <input checked="" type="checkbox"/> In-sink garbage disposal | <input type="checkbox"/> Take to a neighborhood compost pile |
| <input type="checkbox"/> Compost on my property | <input type="checkbox"/> Other: _____ |

7. On average, how many bags of trash does your household throw away each week? 1

8. In order to recycle, people have to separate out their recyclable waste. Would you or someone in your household be willing to separate out your food scraps in the same way so that they can be composted?

- Yes No Maybe

9. Again comparing composting to recycling, would you be willing to store food scraps for a week so that they can be picked up? Yes No Maybe

10. If Broome County starts a food scrap composting program, what would make it better for you? (Check all that apply.)

- One central, county-wide drop-off location One location per city, town, or village
 Drop-off locations in every neighborhood Curbside pick-up of material at a cost
 Home composting bin & instructions provided Other: _____

11. Please answer the following questions by circling either True or False.

- a. True | False: The biggest source of electricity generation in New York State comes from natural gas.
b. True | False: The majority of garbage in the landfill is food waste.
c. True | False: Green infrastructure reduces water runoff.
d. True | False: Recycling saves energy.
e. True | False: Urban sprawl generally helps people spend less time driving.
f. True | False: Organic matter, such as food waste, in a landfill produces methane, a strong greenhouse gas.
g. True | False: Cities and towns can dump trash in the landfill for free.
h. True | False: Oil, natural gas, and coal are fossil fuels and non-renewable sources of energy.

12. Where do you live? Vestal
(Please indicate city, village, or town. For example City of Binghamton, Town of Binghamton, Town of Maine, etc.)

13. Your home is in a: single-family house. two- to six-unit building. building with seven or more units.

14. Do you rent or own your home/apartment? Rent Own Other

15. What is your gender? Female Male Other: _____

16. How old are you? OLD

17. What racial or ethnic group best describes you?

- Asian or Asian-American Hispanic or Latino Two or more races
 Black or African-American White Other: _____

18. What is the highest level of education you have completed?

- Did not graduate from high school 2-year college degree
 High school graduate (or G.E.D.) 4-year college degree
 Some college, but no degree (yet) Postgraduate degree (MA, MBA, MD, JD, PhD, etc.)

19. Do you belong to an environmental group? Yes No

20. Including yourself, how many people currently live in your household? _____

21. Over the last year, what was your household income?

- Less than \$20,000 \$60,000 - \$79,000
 \$20,000 - \$39,999 \$80,000 - \$99,999
 \$40,000 - \$59,999 \$100,000 or more

22. Do you think Broome County should start a composting program for food scraps? Yes No

22a. In a few words, describe why or why not _____

THANK YOU

Staff use only - Location: _____