

NEEDS ASSESSMENT REPORT

BARRIERS AND BENEFITS TO DESIRED
BEHAVIORS FOR SINGLE-USE PLASTIC ITEMS
IN NORTHEAST OHIO'S LAKE ERIE BASIN



Table of Contents

EXECUTIVE SUMMARY.....	1
INTRODUCTION.....	3
BACKGROUND	4
METHODS.....	7
RESULTS	8
RECOMMENDATIONS.....	21
REFERENCES.....	22
APPENDIX A:	23

Scott D. Hardy, PhD

Extension Educator
Ohio Sea Grant College Program
1314 Kinnear Road
Columbus, OH 43212-1156
(614) 247-6266
Hardy.116@osu.edu

Jill Bartolotta

Extension Educator
Ohio Sea Grant College Program
99 East Erie Street
Painesville, OH 44077
(440) 350-2267
bartolotta.2@osu.edu

Acknowledgements

The authors would like to thank the National Oceanic and Atmospheric Administration Marine Debris Program, City of Cleveland Mayor's Office of Sustainability and Thunder Tech Inc. for supporting this project. We are also indebted to our many partner organizations who helped distribute the survey for this study. Lastly, we thank the survey and focus group participants for their time and candid answers regarding use and disposal of plastics in the region. Credit for the photographs on the title page belong to Sue Bixler and Jill Bartolotta of Ohio Sea Grant.



BARRIERS AND BENEFITS TO DESIRED BEHAVIORS FOR SINGLE-USE PLASTIC ITEMS IN NORTHEAST OHIO'S LAKE ERIE BASIN

NEEDS ASSESSMENT REPORT | MARCH 2017

This report summarizes the findings of a research project conducted by the Ohio Sea Grant College Program (OHSG) in the fall of 2016.

Funding for the project was provided by the National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program through an award to the City of Cleveland Mayor's Office of Sustainability. OHSG was subcontracted by Thunder Tech Inc., a private marketing firm located in Cleveland, Ohio, to conduct applied research to inform a social marketing campaign focused on reducing plastic marine debris. OHSG Extension Educators Scott Hardy and Jill Bartolotta examined the barriers and benefits to positive behavior for three plastic debris items in northeast Ohio's Lake Erie basin: plastic bags, plastic water bottles and plastic cigar tips. An online survey and focus group were employed to gather data on the use and disposal of these plastic items in the Cleveland-Elyria Metropolitan Statistical Area (CEMSA), which includes Cuyahoga, Geauga, Lake, Lorain, and Medina Counties, and to solicit recommendations on how to affect positive behavior change. The results will be used by the City of Cleveland and Thunder Tech Inc. to develop a social marketing campaign designed to support environmentally conscious behaviors regarding the use and proper disposal of the three plastic items.



BAGS

- Consumers always use either plastic or reusable bags about the same amount of the time.
- The most common reason people don't use reusable bags is because they forget them. Other reasons include because people use plastic bags to make art, to line trash cans or to pick up after pets.
- Approximately 75% of those surveyed are in favor of either a bag ban, bag fee or both.
- The preferred way to encourage use of reusable bags is by offering economic incentives such as store discount programs, followed by reminder signs in parking lots and reusable bag exchanges.

WATER BOTTLES

- Tap water is the most common type of water consumed at home, followed by bottled and well water.
- Tap water in a reusable bottle is more frequently used than bottled water when away from home.
- The biggest reason reusable water bottles are not used away from home is people forget them. Other reasons include because there are not enough filling stations and they are a hassle to carry.
- The preferred approach to encourage use of reusable water bottles is to install more water filling stations. People also want more education about tap water, mirror tag reminders and a pledge.

CIGAR TIPS

- Barriers to positive behavior for cigar tips include a lack of disposal receptacles, social norms that validate use of cigars, and difficulty reaching local residents with anti-smoking messaging.
- Community-based approaches that connect public and environmental health, neighborhood pride and city beautification are vital to reducing the use and improper disposal of cigar tips.
- The target audience for municipal and social marketing efforts to reduce plastic cigar tip debris in the CEMSA are minority youth ranging in age from 14-25 years old.
- Positive incentives such as reward programs and mail-in rebates, tax increases, deposit programs, and strict age enforcement by vendors are identified as municipal options for reducing debris.

TRENDS ACROSS CASES

- Slightly fewer people are in favor of a ban on plastic water bottles than they are on plastic bags.
- Online newspapers, social media and internet searches are the most used methods for receiving information about the environment. Lesser used methods are print newspapers and TV.
- Financial incentives are prioritized as a means to impact behavior change in general.
- Location-specific solutions that focus on education and outreach are applicable to all three items.

In a relatively short period of time plastic has become the most common form of marine debris on the planet^{25, 9}.

This trend is extremely worrisome in the Laurentian Great Lakes, where approximately one fifth of the fresh water on Earth is found. Sadly, coastal residents of Great Lakes states are no stranger to plastic marine debris. Almost 80% of trash found on beach cleanups in the region in recent years has been identified as plastic¹². This is especially evident along the southern beaches of Lake Erie, where high population and industrial development have contributed to the plastics problem.

In Ohio, which represents the largest percentage of Lake Erie coast in the United States, plastic bags and water bottles have been identified as two of the top ten items found on beach cleanups^{17, 2}. The most common items found are cigarettes and other smoking related materials (filters and cigar tips). In total, cigar tips (*Figure 1*) account for 14% of all smoking related debris on Ohio beaches². These trends are

especially noticeable on beaches found near Ohio's largest coastal city, Cleveland, and its surrounding communities. Given the growing awareness of marine debris and the impact of plastics on beaches and aquatic environments in the Great Lakes, applied research is needed to support municipal and nongovernmental campaigns to prevent debris from entering Lake Erie.



*of debris found
on Great Lake
beaches is plastic.*

Marine debris

A general consensus among scientists is that plastic debris in our oceans presents a substantial hazard to marine life, either by entanglement and ingestion of litter, or less so by absorption of Polychlorinated biphenyls (PCBs) and other contaminants from ingested plastic ⁹. Plastics have even been shown to act as a conduit for invasive species ¹⁶, as well as persistent organic pollutants (POPs) and heavy metals ³. Research in this field further indicates that plastics are already ubiquitous in the ocean ecosystem and promise to become even more abundant there in the coming decades.

Although less well-studied than plastic debris in the world's oceans, plastic debris in the Laurentian Great Lakes is beginning to garner more attention. A recent survey of all published articles on plastics in the Great Lakes drew on substantial data sets from the Alliance for the Great Lakes Adopt-a-Beach Program (2014) and the Vancouver Aquarium and World Wildlife Fund Great Canadian Shoreline Cleanup Program (2012) to consider the impact on marine and coastal environments throughout the region ¹². Results tell us that amounts of surface water plastics in the Great Lakes are as high as those reported for the oceanic gyres. Moreover, the vast majority of shoreline trash in the Great Lakes is made up of plastics, including microbeads from consumer products, pellets from plastic manufacturing, and waste from recreation, shipping and fishing.

Lake Erie has one of the highest concentrations of microplastics.

Within the Great Lakes, as elsewhere, there is evidence to suggest that the greatest concentrations of plastic are found closest to the most populated areas and sites of industrial activity ^{9,12}. It is not a surprise that Lake Erie, with the highest population density of the five Great Lakes, has been found to have the highest concentrations of microplastics among Lakes Superior, Huron and Erie ¹², and that the highest concentrations of plastic debris are on public beaches that receive the highest numbers of visitors ²⁴.

Despite the growing focus on plastic debris in the Great Lakes, there is a need to better understand the behaviors that cause plastics to enter the biosphere in the first place. In an effort to explore this phenomenon, a summary of studies on behavior change and the link between social marketing and desired behaviors for conservation follows.



Behavior Change



Among projects focusing on marine debris, behavior change has often been suggested as an afterthought, rather than the focus of investigation. Legislation such as the 1972 Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter (London Dumping Convention) and the 1978 Protocol to the International Convention for the Prevention of Pollution from Ships have played large roles in limiting the amount of plastic that is intentionally dumped in international waters ⁹. Policy at the national level, such as the 1972 Clean Water Act and the Marine Plastics Pollution Research and Control Act of 1987 in the United States, might be more effective and efficient, especially when used in conjunction with local policies, tax structures and incentives. It has even been suggested that conservation can become engrained in culture given the proper legislative rules ¹⁹.

Education and outreach can also be an effective means to change behavior regarding plastic use and disposal by passing key information on to user groups. According to one study, “Information is one of the most widely used means to promote environmental behavior change ²¹.” Or “the goal of these interventions [information techniques] is to help people understand

The problem of plastic requires social intervention.

the nature of the environmental problem they are facing, the necessary behavior needed to resolve the problem, or the steps required to carrying out the behavior ⁸.” Education can certainly help overcome information deficits that block behavior change ⁷, especially when coupled with positive motivational techniques, such as monetary or social reinforcement, and coercive motivational techniques, like social pressure and use of physical barriers to non-conservation behavior ⁸.

Given the many approaches to influencing behavior change in general, it is no surprise that the problem of plastic marine debris has been suggested to require different, often complementary, forms of social intervention ²³. One report indicates that “awareness and educational based strategies have a role to play in ensuring broad scale understanding of the impact plastic pollution has on marine life ... However, we believe that these strategies should be incorporated in wider strategic programs integrating de-marketing and social marketing approaches ... ¹³”

Social marketing for this project is defined as “the systemic application of marketing (along with related areas such as psychology and sociology) concepts and techniques to achieve specific behavioral goals, for a social or public good” ¹³. When combined with legislation and education, the use of social marketing techniques has been shown to be more effective than information alone ¹⁰. Social marketing has even been suggested as a powerful tool to use in conjunction with other methods when addressing behaviors related to plastic marine debris ^{13, 20}.

This project’s design and recommendations for the implementation of social marketing interventions follows guidance from related projects ^{1, 15}. First, the methodology is insight driven – “focus should be on gaining a deeper understanding of what moves and motivates the consumer. Identification of key factors and issues relevant to positively influencing behavior allows actionable insights to be developed ¹⁵.” Second, it applies the principles of segmentation and targeting – “avoiding blanket approaches to segmentation and targeting allows interventions to be tailored to specific audience segments ¹⁵.”

Cleveland-Elyria Metropolitan Statistical Area (CESMA)

The study area for this project is the Cleveland-Elyria Metropolitan Statistical Area (CESMA), which refers to the five counties including and surrounding the City of Cleveland: Cuyahoga, Geauga, Lake, Lorain, and Medina (Figure 2). CESMA has a population of 2,246,207 making it the 29th largest metropolitan area nationwide and the largest metro area in Ohio (see the 2010 United States Census). Three counties (Lake, Cuyahoga, and Lorain) have coastlines along Lake Erie consisting of 83 miles of shoreline. All five counties are within the Lake Erie watershed.

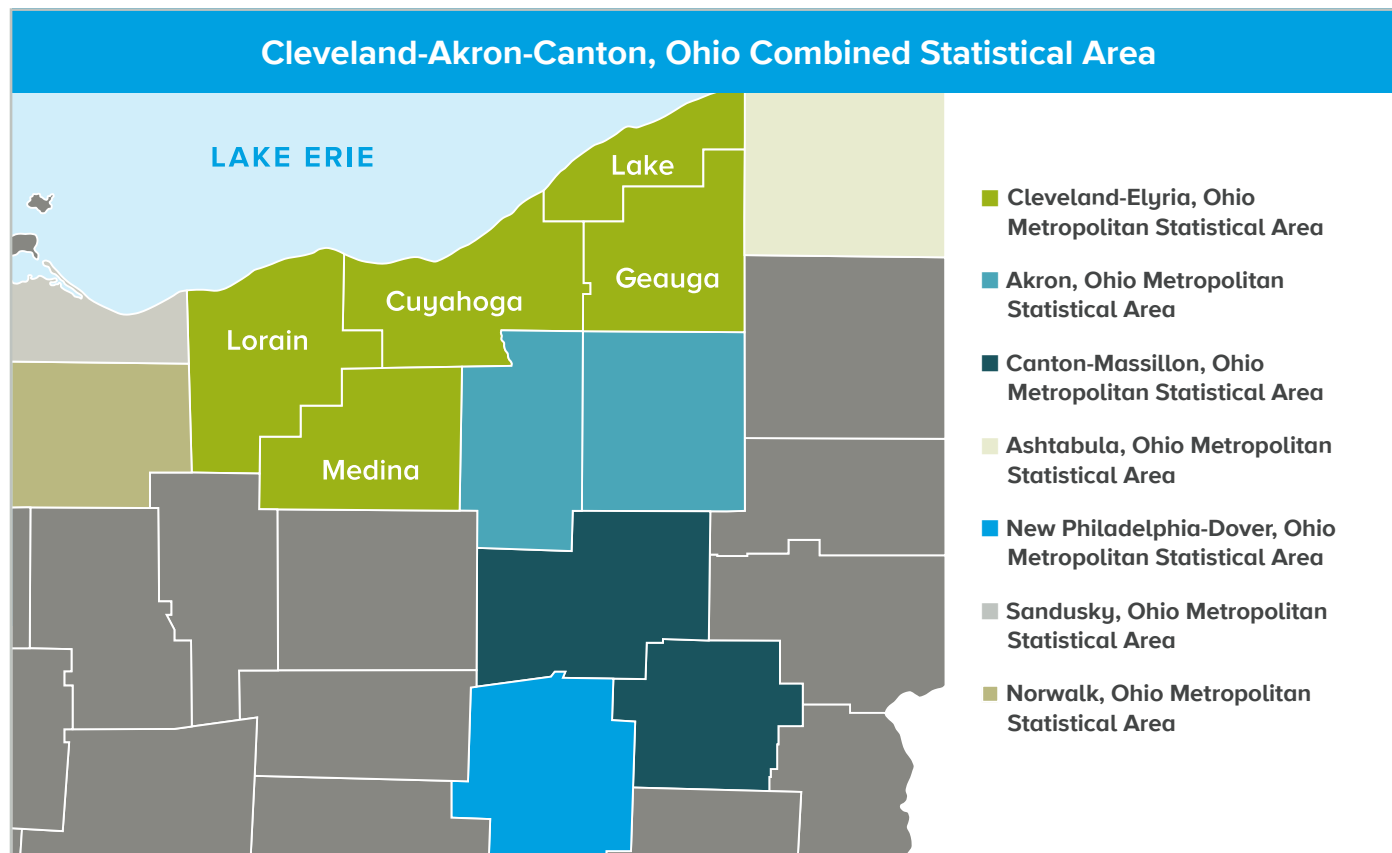


Figure 2. Cleveland-Elyria Metropolitan Statistical Area shown in green. Map created by EurekaLott based on 2013 U.S. Census Definitions

Data for this project was collected through an online survey focusing on three plastic items (bags, bottles and cigar tips), as well as a focus group looking specifically at plastic cigar tips.

The survey went live online on August 18, 2016 and was closed November 3, 2016. A total of 1,489 respondents started the survey, with 1,139 finishing. Following guidance from the Cleveland Mayor's Office of Sustainability, only responses from the five counties represented in CEMSA were used for data analysis totaling 982 individual cases. The survey asked respondents about their use and disposal behavior for all three plastic items. The survey also asked for how the City of Cleveland can support the use of reusable alternatives to single-use plastic bags, water bottles and cigar tips, as well as how to encourage proper disposal of single-use items.

The survey was distributed throughout the study area via multiple channels. Partner organizations publicized the study and included a link to the online survey in their newsletters, on webpages and via social media. A description of the study with a link to the survey was also distributed to public libraries and recreation centers in the City of Cleveland and handed out at community events, including beach clean ups, neighborhood festivals and an open house for the Northeast Ohio Regional Sewer District. The survey was designed so that it could be taken multiple times from the same IP address, so that different members of the same household could participate, as well as unlimited public

users at municipal libraries, community centers, etc. The survey followed standard social science protocols, including creation and testing of the survey instrument, identification of the study population and sampling frame, and development of the contact database ¹¹.

In addition to the survey, a focus group was convened to specifically address the topic of plastic cigar tips. This follows guidance from experts in the field ⁴, who suggest that focus groups are useful to explore a theme in depth within a larger field of inquiry. They are also helpful to "develop an understanding about why people feel the way they do ⁴." This was particularly useful for this study given the emphasis on respondent behavior. Similar to the survey, the focus group followed standard procedures, such as development of an interview guide, participant recruitment, recording and transcription of the group interview, and moderation of the group discussion ⁴.

The focus group took place November 10, 2016. Recruitment for the focus group covered a diverse range of stakeholders, including institutions of higher learning in CEMSA, government and nongovernmental organizations that manage land in coastal locations where cigar tips are commonly found, and residents of the City of Cleveland. In total, eight participants worked with a trained facilitator for more than 90 minutes.

The survey asked questions on frequency of use for plastic bags, water bottles and cigar tips; the barriers to reusable alternatives for plastic bags and water bottles; reminder preferences to use reusable alternatives; and disposal methods for all three items. All demographic categories for age, race, annual household income and highest level of education achieved correlate to categories established by the 2015 United States Census.

DEMOGRAPHICS

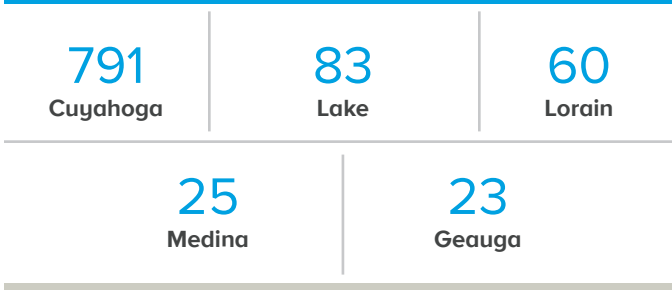
Data was collected for all counties along the Lake Erie coast. Only responses from the counties within CEMSA are included in this report. Of the 982 responses recorded from counties within CEMSA, Cuyahoga County has the greatest number of responses with 791 (80.6%). For other CEMSA Counties the numbers of responses are as follows; Lake County had responses from 83 people (8.5%), Lorain County had responses from 60 people (6.1%), Medina County had responses from 25 people (2.6%), and Geauga County had responses from 23 people (2.3%).

Data was also collected on age range, gender, race, household income level, highest level of education attained and student status. The survey was representative of the CEMSA population for several of the demographic identifiers. The survey was most similar to the CEMSA population for all age ranges 18 years and over. For gender, the survey is skewed to females. The census data shows the ratio of males to females to be almost 1:1. The survey is skewed in favor of females with a ratio of 3:1. The survey matches with CEMSA for all the race categories with the exception of the category Black/African American, for which the survey response is 5% less than what is representative of CEMSA. The survey demographic data is similar to CEMSA for all annual household income data with the exception of persons below the \$29,999 income level. The survey is skewed in favor of a population with a greater than \$30,000 annual household income level. The only demographic identifier that has no similarities between the survey and CEMSA is the education attainment level. The survey is strongly skewed in favor of those who have achieved higher levels of education. There is no U.S. Census Data comparison for the student data collected through the survey. Please see Appendix A for a comparison table outlining the demographic similarities and differences between the survey and CEMSA.

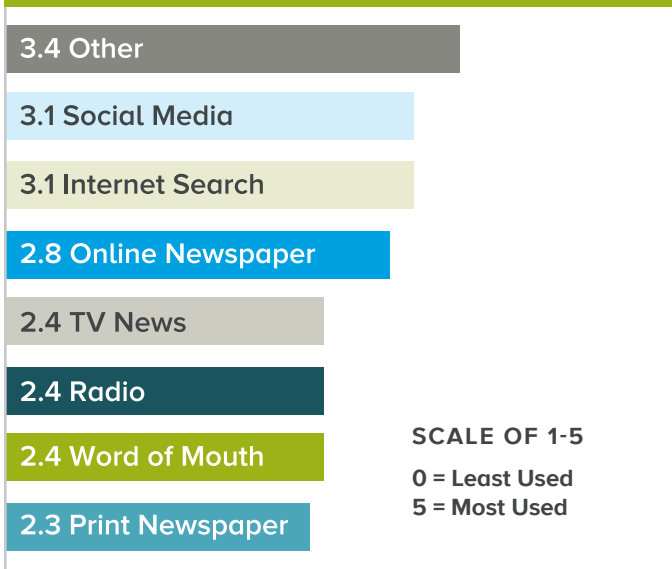
RECEIVING INFORMATION

Data was also collected to determine methods used by respondents to receive information about the environment. Respondents were asked to rate their most and least used methods for receiving information about the environment (0, least to 5, most). People said that online newspaper, social media (Facebook, Twitter, Instagram and YouTube), and internet searches are the most used methods for receiving information about the environment. The lesser used methods are print newspaper, word of mouth, radio and TV news. For the “other” category, most respondents wrote in that they receive information about the environment through email, followed by environmental organizations, with the Metroparks being the most popular environmental organization.

Number of Responses per CEMSA County



Methods Used to Receive Information About the Environment



Plastic Bags

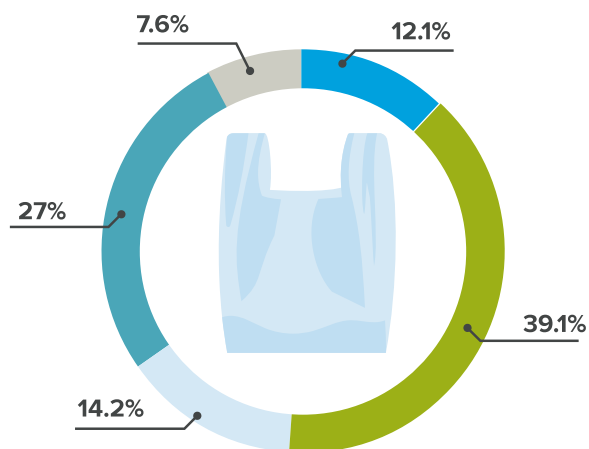
In order to support strategies for reducing plastic bag usage and improper disposal, the survey asked questions about what type of bags people prefer to use at stores, what prevents them from always using reusable bags, how they dispose of their plastic bags, and what reminders they prefer to encourage the use of reusable bags. The results indicate that plastic bags and reusable bags are used approximately the same amount of the time (plastic bags 12.1% of the time and reusable bags 13.5% of the time). The survey also shows that paper bags are used very infrequently compared to plastic and reusable options (1.4% of the time). This is important because paper bags can be

more impactful on the environment than plastic due to the amount of fuel needed to transport them (paper bags are heavier), and because the breakdown process of paper bags uses more energy and releases more emissions at landfills⁵. Paper and plastic bags together was the least used option noted by respondents (0.5% of the time). Unsurprisingly, coupled plastic and paper bag combinations consume the most energy and have the greatest negative effect on the environment. For respondents who chose the “other” category, some common responses included boxes from stores left over from stocking shelves, hand carrying items, and not using bags.

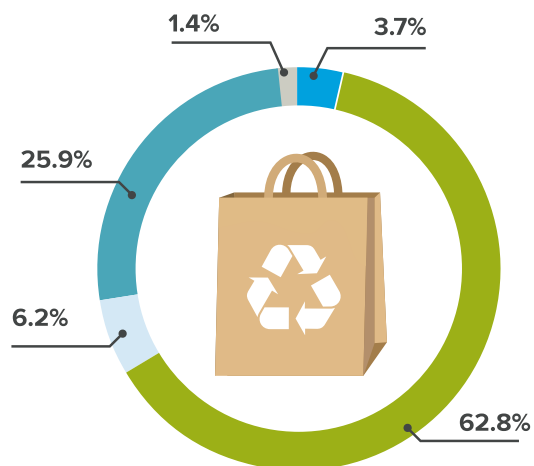


Type of bag use

■ Always ■ Most of the Time ■ About Half of the Time ■ Sometimes ■ Never



PLASTIC BAG USE



PAPER BAG USE



RE-USABLE BAG USE



PAPER IN A PLASTIC BAG USE

For those respondents who do not always use a reusable bag when at the grocery store, 80.4% stated it was because they “forget to bring the reusable bags into the store with them.” The second most common reason for not always using a reusable bag (55.4%) was because people prefer to use plastic bags for something else after shopping, such as a garbage can liner, for art purposes or to pick up animal waste. Some people (6%) say they like getting a bag from the store, some (4.7%) do not think reusable bags are clean or sanitary, and others (3%) think they are not suitable to carry certain items. A few people (1.3%) do not use reusable bags since friends or family do not use them, and yet others (0.1%) state they are not conducive for taking public transportation.

Reasons why re-usable bags are not always used	%
I forget to bring them in the grocery store	80.4%
I use the plastic bag for something else (examples: art, to line garbage can, pick up pet waste)	55.4%
I do not want to carry it with me	9.9%
Other	9.5%
I like getting a plastic bag from the grocery store	6%
I do not think they are clean or sanitary	4.7%
They are not suitable for the items I need to carry	3.5%
My friends and family do not use one	1.3%
I take public transportation to the grocery store and do not want to carry them with me	.3%

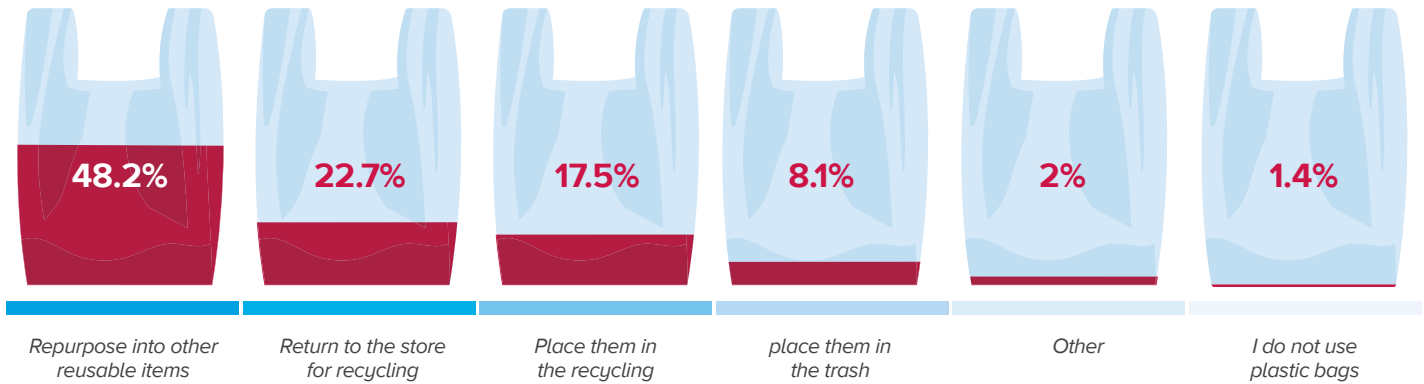


To encourage the use of reusable bags, respondents were asked to rate their preferences for reminders to use reusable options. The most preferred method is for financial incentives, such as store discount programs. A sign in the store parking lot and a reusable bag lending program were the second most preferred options. Less preferred options were mirror tag reminders or a pledge to sign. For those who wrote in other options, the preferred methods were to not offer plastic bags, establish a fee for plastic bags, and establish reusable bag checkouts at grocery stores. Cashiers were also encouraged to promote no bag or use of a reusable bag.

Top 6 Preferred Options to Encourage the Use of Reusable Bags

1	2	3	4	5	6
Incentives to use a reusable bag such as money off my purchase	A sign in the store parking lot reminding me to use my reusable bags	Donated reusable bags at the grocery stores available if I forget to my bags	A mirror tag in my car reminding me to use a reusable bag	Sign a pledge so I feel I should use my reusable bag	Other preferred option

Plastic Bag Disposal Behavior



Options Supported to Limit Use of Plastic Bags

FEE FOR USE OF PLASTIC BAGS	23%
BAN ON USE OF PLASTIC BAGS	19%
BOTH	36%
NEITHER	22%

In an effort to measure support for bag fees or bag bans, survey respondents were asked their preferences to limit use of plastic bags. The greatest number of respondents (36%) were in favor of both a bag fee and ban, 23% were in favor of just the bag fee, and 19% were in favor of just the bag ban. Twenty-two percent were not in favor of a bag fee or bag ban. One person said that they cannot afford to pay a fee for bags, but they do rely on the plastic bags to serve as liners for their garbage cans and for other purposes around the house.

For those who do use the plastic bags after shopping, information was gathered on their disposal methods. Approximately 50% of people repurpose them for other uses, 22.7% take them to the store for recycling, 17.5% recycle them in their curbside recycling, 8.1% put them in the trash, and no one throws them on the ground.

Check with your recycling company to see if you can recycle bags curbside.

You cannot recycle bags curbside in Cuyahoga county.



Plastic Water Bottles

What type of water do Clevelanders prefer to drink at home and away from home? What prevents people from always using reusable water bottles when out of the house? How do they dispose of their plastic water bottles? What reminders would people prefer to encourage the use of reusable water bottles? The answers to these questions will help inform efforts to encourage drinking tap water and using reusable bottles instead of plastic.

Respondents were asked what type of water (tap, bottled or well) they prefer to drink, both at home and out of the house. Survey results found that people prefer to drink tap water at home, with bottled water and well water being used by a similar number of people. The data further indicates that people prefer to drink tap or well water in a reusable bottle rather than bottled water when away from home.

Water used at home		
1 TAP WATER	2 BOTTLED WATER	3 WELL WATER

Water used away from home	
1 TAP OR WELL WATER IN A REUSABLE BOTTLE	2 BOTTLED WATER



Individuals who do not always use reusable water bottles suggest that the most common reason (38.1% of responses) is because they forget to bring them from home. The second most common (17.5%) is the lack of water filling stations. Roughly 15% of respondents also stated they do not want to carry the reusable bottle with them. A small portion of respondents (5.3%) do not drink tap water because they prefer the taste of bottled water to tap water. An even smaller percentage (4.7%) think tap water is cleaner than bottled water, and 3.2% think bottled water is healthier than tap water. A very small amount of people (1% or less) said they do not use reusable bottles since their family does not use them, or they use the reusable water bottle for something else. Most comments in the “other” section were related to the reuse of single-use plastic water bottles several times before they are discarded. The “other” section only accounted for 10% of the total responses.

For those that reuse plastic bottles, research has indicated that bottles meant to be used one time should not be reused. Disposable bottles are weaker in structure and therefore harbor cracks much easier, leading to bacterial contamination. Hot water, like what is used in a dishwasher to clean the bottle, can also increase the rate at which chemicals, such as endocrine disruptors, in the plastic are released ⁶. This is an important consideration given the education and outreach component of the project.

Reasons why re-usable water bottles are not always used	%
I forget to bring it with me	38.1%
There are not enough water refill stations that I can use to refill my reusable water bottle	17.5%
I do not want to carry it with me	14.7%
Other	9.5%
I prefer the taste of bottle water over tap water	5.3%
I do not use a reusable water bottle	5.1%
I think bottled water is cleaner than tap water	4.7%
I think bottled water is healthier than tap water	3.2%
My friends and family do not use one	1%
I repurpose the plastic water bottle	.9%



“[Disposable bottles] are intended to be used [one] time and then disposed, not reused... Heating will certainly increase the rate at which chemicals can migrate from the plastic⁶.”

— Scott Belcher, PH.D. Professor of Pharmacology at the University of Cincinnati

One important outcome of this study was to determine the most preferred methods to encourage the use of reusable water bottles instead of plastic water bottles. Survey respondents indicated that the most preferred option is for increased water filling stations, and the second most preferred option is more education on the cleanliness of tap water. Less preferred options were a mirror tag reminder or a pledge to sign. The most common responses in the “other” option were subsidized filters for water filtration at home and greater access to filtered water. Part of the message to water drinkers that is important for this project is that the City of Cleveland follows all EPA regulations to ensure drinking water is suitable for consumption. In fact, the Cleveland Water Department conducts more tests than required to guarantee drinking water is safe. What the survey did not capture is how well this message is reaching the target audience.



To determine support for water bottle fees or water bottle bans, the survey asked people’s preferences to limit use of plastic water bottles. The greatest number of respondents (31%) was in favor of both a bottle fee and ban. About 26% were in favor of just the bottle fee, and 15% were in favor of the bottle ban. Twenty-eight percent were not in favor of bottle fee or ban. These results are similar to the idea of a proposed ban or fee for plastic bags, with slightly more people in favor of a fee or ban for plastic bags.

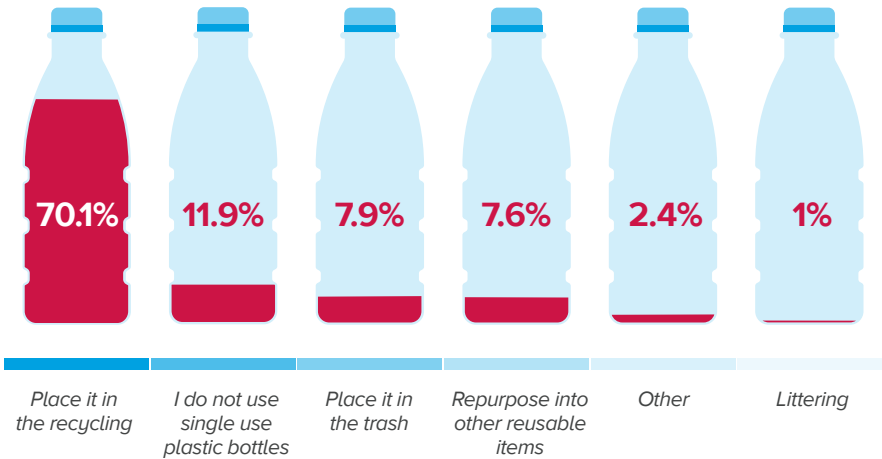
For those who do use plastic water bottles, information was gathered on their disposal methods. Approximately 70% of respondents recycle them in curbside recycling, 7.9% place them in the trash, 7.6% repurpose them for something else (primarily reusing as a water bottle), and 0.1% said they just throw them on the ground.

Check with your recycling company to see what types of plastic can be recycled.

Cuyahoga county allows for disposable water bottles to be recycled with the cap left on. You cannot recycle any plastic cups in cuyahoga county.

Options Supported to Limit Use of Water Bottles	
FEE FOR USE OF SINGLE-USE PLASTIC WATER BOTTLES	26%
BAN ON USE OF SINGLE-USE PLASTIC WATER BOTTLES	15%
BOTH	31%
NEITHER	28%

Plastic Water Bottle Disposal Behavior



Plastic Cigar Tips

Survey respondents who indicated they used cigars with plastic tips were taken to an additional set of questions asking how they dispose of their cigar tips, what locations they prefer to have smoking receptacles, and preferred reminders to encourage disposal of cigar tips in a proper receptacle. Unfortunately, only 2 people out of the 982 who took the survey identified as cigar tip users. Given the low number, the survey data was not analyzed and these responses were not included in the report. In an effort to thoroughly address the issue of plastic cigar tips in the region, a focus group was instead convened to gather information on this particular single-use item.

CIGAR TIPS FOCUS GROUP

The focus group sought to investigate improper disposal of plastic cigar tips differently than the survey addressed plastic bags and plastic bottles. Unlike the online survey that sought responses from users of plastic bags and plastic bottles, the cigar tip focus group was comprised of individuals with practical knowledge of plastic cigar tip use and disposal issues, including representatives of government agencies, local nongovernmental organizations, community groups, and local academic institutions. Conclusions from the focus group are summarized on the next pages.



I. Knowledge

The first step in identifying barriers, and ultimately leading to solutions, to desired behaviors focuses on the WHAT, WHY, and HOW of the problem. This section starts by asking the group what their level of knowledge was regarding the use of plastic cigar tips in CESMA. The group was also asked why they think the issue matters, and how residents would benefit from the proper disposal of plastic cigar tips.

A. What was the level of knowledge of focus group participants?

- All participants were aware of how tobacco-related products and plastic cigar tips have contributed to litter found in CESMA.
- All participants were aware that plastic cigar tips were found in abundance along Lake Erie's shore.

B. Why does this matter and how would residents benefit from proper disposal of plastic cigar tips?

- Community benefits were cited as the biggest reason why this issue matters. Group members felt that addressing the problem of plastic cigar tips would enhance the perception of, and appreciation for, community, family, and personal health. This was seen as relating to an increased feeling of community and rejuvenated sense of pride in the City of Cleveland and surrounding region.
- Social benefits were also thought to be important. Reduction of plastic cigar tips was suggested as a way to attract more people to the community. The more beautiful the community, it was suggested, the more people would want to visit or live there. The group also felt that cleaner communities could equate to safer communities.
- Environmental benefits of reducing plastic cigar tips were also mentioned, and included drinking water improvements, wildlife habitat improvements, cleaner natural spaces, more efficient stormwater management, and safer and healthier fish consumption.
- Financial benefits were also mentioned as a potential outcome. For example, if a plastic cigar tip tax was levied, the increase in tax dollars could go back into the community.

II. Barriers to desired behaviors

The focus group sought to identify barriers to sustainable behavior in terms of convenience of disposal options, social norms for use and disposal of cigar tips, and lack of knowledge of the issue. For this report barriers are broken down into two sections: material barriers and social barriers. Responses are listed in order of importance. Quotes from focus group participants that help illustrate the suggestions are included on page 21.

A. What material barriers exist to proper disposal of plastic cigar tips?

- There are not enough smoking disposal receptacles to accommodate the number of people that smoke.
- Cigarette and cigar tip receptacles are not coupled together (ideal scenario would be a smoking receptacle with a trash can specific to cigar tips).
- Geographical distribution of smoking receptacles does not meet user needs (some locations have more receptacles than others, and often times there are no receptacles in locations where smokers congregate).
- There are no receptacles specifically for cigar tips (with targeted outreach messages).

B. What social barriers are impeding the proper disposal of plastic cigar tips?

- Long-term user habits that are difficult to change.
- It is difficult to reach young populations (under 21) because smoking is illegal for that group. They attempt to hide or be inconspicuous about the behavior.
- Some minority groups do not relate to technical language (e.g., "marine debris" does not resonate well with everyone).
- Many cigar tip smokers identify as "ex-smokers" or "social smokers" and use tipped cigars (e.g., Black and Mild's) as justification for quitting cigarettes, or only smoke as a group activity with others.

III. Strategies for behavior change

One of the goals of the focus group was to inform strategies for overcoming the barriers to desired behavior for plastic cigar tips. Both material and social approaches were identified by the group and are listed below. Many come in direct response to the barriers listed in Section II above.

A. What are some material strategies that would help increase disposal of plastic cigar tips?

- Create more designated smoking areas with visually appealing and clearly marked disposal bins for cigar tips (attached to trash cans/ recycle bins).
- Develop education and outreach via billboards and public signage.
- Location is seen as extremely important. Identified locations include bus stops or on busses, stores that sell tipped cigars, fast food restaurants, and parks.
- Organize fundraising opportunities and cleanup events to raise awareness.
- Create visually attractive education pieces (e.g., art installations, storm drain stenciling, and signage on the side of disposal bins).

B. What are examples of social strategies for increasing disposal of plastic cigar tips?

- Target outreach to 14-25 year olds via a variety of media.
- Social media should focus on Instagram and Snapchat.
- Implement continuous education on how to dispose of cigar tips (e.g., training manuals for offices, stores, and restaurants that purchase or request disposal units).
- Develop outreach focused on solutions (how/where to properly dispose), rather than the hazards.
- Support community-based approach to communicating impacts (positive and negative).

C. What message would best reach the target audience?

- Enhance the connection between swimming and drinking water (e.g., not just a beach issue; this impacts everyone's health).
- Couple public health and environmental health issues.
- Connect outreach to city beautification or Cleveland pride, rather than "stop smoking!"
- Create pop-culture "synergy" and recruit celebrity support.

D. What are a few strategies beyond the scope of social marketing that might be helpful?

- Offer positive incentives (e.g., reward program for returning cigar tips, mail-in monetary rewards, etc.).
- Implement a tax increase or a deposit program.
- Involve the FDA in the environmental/public health aspect of plastic cigar tips in our waterways.
- Restrict sales of plastic-tipped cigars to tobacco retailers instead of all stores.



Cigar Tips Focus Group Feedback: Quotes from Participants

ON MATERIAL BARRIERS ...

"You could try different types of receptacles with different types of messaging. That's what I find, is some of the messaging, especially water quality and watershed words, you've got to really simplify and use really basic words that people understand when you're talking watersheds."

ON SOCIAL BARRIERS ...

"It's interesting because there's this concept of smoker and how people perceive themselves, but it's just that people no longer think of themselves as smokers because they're smoking cigars. They're not really a smoker because they're not smoking cigarettes. So there's a group that's kind of [wrong] because of that thinking it's safer even though it's not. But there's also a larger portion of smokers who are using both cigars and cigarettes and there's also the potential for educating on both products."

ON MATERIAL STRATEGIES ...

"I do think there's an interesting opportunity right now to work with the retailers and do some retailer education to promote appropriate disposal and some of the other work that we're doing. We're working with retailers and small servers and advertisers at least about a lot of these things. They are pretty receptive to educational opportunity and to sharing information with their audience or their customers. So they have an opportunity, particularly in combination with the tobacco 21 policy change in April and the education that's happened through that, they've been fairly receptive so maybe something present like that as a more effective way to reach folks."

ON SOCIAL STRATEGIES ...

"I can definitely see, I mean in terms of outreach again, in order to also deal with the environment, right, we're talking about, you know, yes the people who continue to buy them, you know, we want to stop that and we talked about public health as well and the environment and propagating that the more that if you buy them, the more debris is going into Lake Erie and the more it affects public health. I mean, that's just one example of a message to deliver that would help the environment and public health."

ON MESSAGING ...

"I think whatever messaging comes around this has to be really targeted for young people in a way that they're going to hear it because that's predominantly who in the City of Cleveland and Cuyahoga County is smoking these products."

ON OTHER STRATEGIES ...

"We have a ratio on tobacco in our tax structure, but cigarettes are actually taxed much higher than the non-cigarette tobacco products. I think that would be a good rationalization for increasing the tax at least on the tipped products and gear more from that tax for the work to reduce the trash..."

Based on the survey and focus group data, the following set of recommendations were developed to help inform the City of Cleveland's municipal actions moving forward, as well as the social marketing campaign to be developed in conjunction with this project by Thunder Tech Inc.

BAGS

- Create reminder signs for store parking lots and work with store owners on installation.
- Develop receptacles and signage for reusable bag exchanges at stores and collaborate on installation.
- Focus education and outreach materials on alternatives for picking up pet waste (e.g., metal scoopers).
- Design mirror tags to remind residents to bring reusable shopping bags when leaving the car.

WATER BOTTLES

- Produce an education campaign touting the cleanliness and safety of municipal tap water.
- Decorate existing water fountains and water filtration stations with positive signage (see above).
- Design mirror tags to remind residents to bring reusable water bottles when leaving home.
- Create a pledge for consumers to sign committing them to drink from a reusable bottle.

CIGAR TIPS

- Develop billboards and public signage at bus stops, convenience stores, restaurants and public parks.
- Message should equate proper disposal of cigar tips to community pride and public/environmental health.
- Implement social media campaign aimed at minority youth (14-25 year olds).
- Create educational messaging for existing disposal receptacles that focuses on plastic cigar tips.

MUNICIPAL ACTIONS

- Designate more smoking areas with visually appealing and clearly marked bins for cigar tips.
- Install additional water filtration stations throughout the region.
- Implement incentives for the use of reusable bags/bottles and disincentives for use of plastic bags/bottles.
- Prioritize municipal education and outreach campaigns for all marine debris.

REFERENCES

1. Andreasen, A.R. 2002. "Marketing Social Marketing in the Social Change Marketplace." *Journal of Public Policy and Marketing*. 21 (1): 3-13
2. Adopt a Beach Program. 2015. "Litter Report: Raw Data from Great Lakes Beach Cleanups." Cigar tip percentage calculated by Jill Bartolotta, Ohio Sea Grant College Program and The Ohio State University Extension, May 19, 2016.
3. Ashton, K., Holmes, L., and Turner, A. 2010. "Association of Metals with Plastic Reduction Pellets in the Marine Environment." *Marine Pollution Bulletin*. 60 (11): 2050-2055.
4. Bryman, A. 2012. *Social Science Methods*, 4th Edition. Oxford, UK: Oxford University Press.
5. Cadman, J., Evans, S., Hollan, M., and Boyd, R. 2005. *Proposed Plastic Bag Levy – Extended Impact Assessment Final Report. Volume 1: Main Report*. Scottish Executive Environment Research Group Report.
6. Cooper, J.E., Kendig, E.L., and Belcher, S.M. 2011. "Assessment of Bisphenol A Released from Reusable Plastic, Aluminum and Stainless Steel Water Bottles". *Chemosphere*. 85 (6): 943-947.
7. Costello, A., Abbas, M., Allen, A, Ball, S., Bell, S., Bellamy, R., et al., 2009. "Managing the Health Effects of Climate Change." *Lancet*. 373 (9676): 1693-1733.
8. De Young, R. 1993. "Changing Behavior and Making it Stick: The Conceptualization and Management of Conservation Behavior." *Environment and Behavior*. 25 (4): 485-505.
9. Derraik, J. G. 2002. "The Pollution of the Marine Environment by Plastic Debris: A Review." *Marine Pollution Bulletin*. 44 (9), 842–852.
10. Desai, D. 2009. "Role of Relationship Management and Value Co-creation in Social Marketing." *Social Marketing Quarterly*. 15 (4): 12-125.
11. Dillman, D. 2007. *Mail and Internet Surveys: The Tailored Design Method*, 2nd Edition. Hoboken, NJ: John Wiley and Sons.
12. Driedger, A.G.J., Durr, H.H., Mitchell, K., and Cappellen, P.V. 2015. "Plastic Debris in the Laurentian Great Lakes: A Review." *Journal of Great Lakes Research*. 41 (1): 9-19.
13. Eagle, L., Hamann, M., and Low, D. 2016. "The Role of Social Marketing, Marine Turtles and Sustainable Tourism in Reducing Plastic Pollution." *Marine Pollution Bulletin*. (2016).
14. Eriksen, M., Mason, S., Wilson, S., Box, C., Zellers, A., Edwards, W., Farley, H., and Amato, S. 2013. "Microplastic Pollution in the Surface Waters of the Laurentian Great Lakes." *Marine Pollution Bulletin*. 77: 177-182.
15. Gordon, R., Carrigan, M., and Hastings, G. 2011. "A Framework for Sustainable Marketing." *Marketing Theory*. 11 (2): 143-163.
16. Gregory, M.R. 2009. "Environmental Implications of Plastic Debris in Marine Settings- Entanglement, Ingestion, Smothering, Hangers-on, Hitch-Hiking and Alien Invasions." *Philosophical Transactions of the Royal Society B*. 364: 1526.
17. Ocean Conservancy. 2015. *International Coastal Cleanup 2015 Report*.
18. Ohio Department of Natural Resources Office of Coastal Management. 2017. *Lake Erie Beaches and Public Access*. Cuyahoga, Lake, and Lorain Counties. Website. Accessed February 6, 2017. <<http://coastal.ohiodnr.gov/gocoast>>.
19. Ray, G.C. and Grassle, J.F. 1991. "Marine Biological Diversity." *BioScience*. 41: 453-457.
20. Sheavly, S., and Register, K. 2007. "Marine Debris and Plastics: Environmental Concerns, Sources, Impacts and Solutions." *Journal of Polymers and the Environment*. 15 (4): 301-305.
21. Staats, H., Harland, P., and Wilke, H.A.M. 2004. "Effecting Durable Change: A Team Approach to Improve Environmental Behavior in the Household." *Environment and Behavior*. 36 (3): 341-367.
22. United States Department of Labor Bureau of Labor Statistics. May 2015 *Metropolitan and Nonmetropolitan Area Definitions*. Website. Accessed February 6, 2017. <https://www.bls.gov/oes/current/msa_def.htm#17460>.
23. Vegter, A.C., Barletta, M., Beck, C., Borrero, J., et al., 2014. "Global Research Priorities to Mitigate Plastic Pollution Impacts on Marine Wildlife." *Endangered Species Research*. 25: 225-247.
24. Zbyszewski, M., Corcoran, P.L., and Hockin, A. 2014. "Comparison of the Distribution and Degradation of Plastic Debris Along Shorelines of the Great lakes, North America." *Journal of Great Lakes Research*. 40: 288-299.
25. Zettler, E., Mincer, T., and Amaral-Zettler, L. 2013. "Life in the "Plastisphere": Microbial Communities on Plastic Marine Debris." *Environmental Science & Technology*. 47: 7137-7146.

Survey and CEMSA Counties Demographic Comparison Table

Table 1. Demographic information collected for the CEMSA compared to U.S. Census Data 2011-2015 and 2015 year estimates to determine if survey respondents are representative of CEMSA population.

If percentages are within 4% they are considered similar due to the margin of error at a 99% confidence level. **Green coloring means they are similar and **red** means they are not similar.*

Demographic Identifier	Survey	CEMSA	Do survey and CEMSA data match?
AGE RANGE	937 (100%)		No, survey does not match for ages but the survey is not skewed to a certain age group.
18-24 years	72 (7.7%)	8.1%	
25-34 years	132 (14%)	10.8%	
35-44 years	172 (18.4%)	12.2%	
45-54 years	198 (21.1%)	15.3%	
55-64 years	209 (22.3%)	14.4%	
65 years and over	148 (15.8%)	16.3%	
Prefer not to answer	6 (0.6%)		
GENDER	947 (100%)		No, survey is skewed in favor of females.
Female	680 (71.8%)	51.9%	
Male	253 (26.7%)	48.2%	
Transgender	1 (0.1%)	Data not available	
Prefer not to answer	13 (1.4%)	Data not available	
RACE	951 (100%)		The survey is similar to race groups in CEMSA with the exception of Black/ African American.
White/Caucasian	840 (88.3%)	86.8%	
Black/African American	32 (3.4%)	8.9%	
Hispanic or Latino	18 (1.9%)	4.24%	
Asian	12 (1.3%)	1.36%	
American Indian or Alaska Native	1 (0.1%)	0.2%	
Native Hawaiian or Other Pacific Islander	0 (0%)	0%	
Other	16 (1.7%)	0.88%	
Prefer not to answer	32 (3.4%)	Data not available	

APPENDIX A // DEMOGRAPHIC COMPARISON TABLE

Demographic Identifier	Survey	CEMSA	Do survey and CEMSA data match?
ANNUAL HOUSEHOLD INCOME LEVEL			The survey does not accurately represent the households making less than \$29,999 dollars annually. It is similar to all other annual household income levels.
Below \$14,999		10.2%	
\$15,000-\$24,999		9.7%	
\$25,000-\$34,999		9.6%	
\$35,000-49,999		13.2%	
\$50,000-74,999		18.9%	
\$75,000-\$99,999		13.4%	
Below \$20,000	36 (3.8%)		
\$20,000-\$29,999	44 (4.6%)		
\$30,000-\$39,000	62 (6.5%)		
\$40,000-\$49,000	64 (6.7%)		
\$50,000-\$59,000	79 (8.3%)		
\$60,000-\$69,000	66 (6.9%)		
\$70,000-\$79,000	62 (6.5%)		
\$80,000-\$89,000	42 (4.4%)		
\$90,000-\$99,000	72 (7.6%)		
\$100,000-\$149,000	168 (17.6%)	14.9%	
\$150,000 or more	100 (10.5%)	10%	
Prefer not to answer	158 (16.58%)		
HIGHEST LEVEL OF EDUCATION	956 (100%)		This survey is skewed to a higher education level than what is representative of CEMSA.
Less than High School	1 (0.1%)	10.8%	
High School/GED	40 (4.2%)	30%	
Some College/Associate's Degree	216 (22.6%)	30%	
Bachelor's Degree	381 (39.9%)	17.9%	
Graduate or Professional Degree	315 (33%)	11.4%	
Prefer not to answer	3 (0.3%)		
STUDENT STATUS	977 (100%)	There is no U.S. Census data to use for comparison.	
Yes	107 (11%)		
Full-time	63 (60.5%)		
Part-time	41 (39.4%)		
No	866 (88.6%)		
Prefer not to answer	4 (0.5%)		

NEEDS ASSESSMENT REPORT

Barriers and benefits to desired behaviors for
single-use plastic items in northeast Ohio's Lake Erie basin

OHSU-TS-1522

PRODUCED BY

