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Metro Recycling

FOCUS GROUPS



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Introduction & Methodology

1

DHM Research conducted four focus groups with Spanish-speaking, Hispanic/Latinx residents in the greater Portland area. The purpose of the research was to gauge awareness of regional recycling rules and determine the types of information that would be most helpful in improving residents' recycling behaviors. The research will be used to update communications, in an effort to lower recycling contamination, while maintaining a high rate of recycling region-wide.

Research Methodology: The four focus groups were held February 12–23, in Portland and included 37 people. Each discussion was led by a bilingual, Hispanic/Latinx moderator, who conducted the groups predominately in English. On occasion, the moderator prompted participants to speak in Spanish, and they were free to write or speak in Spanish at any time they preferred to do so.

All participants were screened to ensure they personally identify as Hispanic, Latino/a/x, or Chicano/a, and that they—or a member of their household—speak Spanish at home at least some of the time. Each group was then tailored to a specific audience. Group 1 (n=10) included residents who have lived in Clackamas, Multnomah, or Washington County for less than ten years, while Group 2 (n=9) included residents who have lived in the area for longer. The other groups considered housing type. Group 3 (n=10) consisted of residents of single-family homes and Group 4 (n=8) consisted of residents from multifamily homes.

Efforts were made to ensure diversity by age, gender identity, county, education, and income. See Appendix A for complete participant demographics.

Statement of Limitations: The focus groups were led by a bilingual, Hispanic/Latinx moderator and consisted of both written exercises and group discussions. Although research of this type is not designed to measure with statistical reliability the attitudes of a particular group, it is valuable for giving a sense of the attitudes and opinions of the population from which the sample was drawn.

This report highlights key findings from the focus groups. Each section reviews a major topic from the group discussions and includes representative quotations, as well as evaluative commentary. The quotes and commentary are drawn from both written exercises and transcripts produced from recordings of the group discussions.¹ The referenced appendices provide the complete responses to all written exercises.

DHM Research: DHM Research has been providing opinion research and consultation throughout the Pacific Northwest and other regions of the United States for over 40 years. The firm is nonpartisan and independent and specializes in research projects to support public policy making.

¹ Quotations were selected to represent the range of opinions regarding a topic, and not to quantitatively represent expressed attitudes. Some have been edited for clarity to ensure correct punctuation and to eliminate non-relevant or intervening comments.

Showing participants what items do not belong in the bin eased their confusion about plastics.

Participants said it was helpful to see which items should not go in their home recycling bin, as appeared in two different pieces of information. They said this approach was most helpful because they felt they already had a strong grasp of items that *may* be recyclable, such as any glass or plastic container, paper and cardboard, and metal cans and containers. With this basis of information, seeing a clear description of which items *should not* go in the recycling bin at home made their decisions easier.

To participants, a clear description included names for items that were relatable and covered the wide variety of products available on the market. Participants described items by what was in them, or where they came from. Short, illustrative lists of items (e.g., “yogurt containers, sour cream containers, salsa containers”) are likely to be more effective than broad categories, such as “dairy containers,” which did not fully resolve participant’s questions about what to recycle.

Participants also believed that color photographs are more helpful than icons because they more accurately represented items they may have in their kitchen. Participants could pick up clues from images of real items that may not be evident in an icon. For example, someone suggested a photograph of a “Yoplait container.” Residents already know the approximate size and thickness of a Yoplait container, which may help them better understand the recycling rules (as in, rigid plastics six ounces or larger). An icon, on the other hand, cannot fully convey these details.

The different pieces of information presented different benefits. Some participants said the sheet that only provided what items should not go in the home recycling bin was easier to understand because it was so streamlined. Many people also commented on the benefits of the photographs, which only appeared on that sheet. Other participants preferred the sheet that compared items that belong in the home recycling bin to those that do not. These participants said that it would be easier to make a yes or no decision while holding an item in their home. This information also helped some participants resolve questions about rules that seem—at first glance—to contradict each other, like the rule that milk cartons are accepted but no cardboard boxes from the freezer or refrigerator are accepted.

The communications that worked well with residents in the quantitative survey also resonated with the Hispanic/Latinx participants, but the participants described possible changes that could make the communications more relevant and effective.

A primary purpose of this research was to determine whether communications that resonate with the dominant, white population (as tested in the quantitative survey) also resonate with Hispanic/Latinx residents who are bilingual. Overall, the communications did resonate with the participants, but they suggested several changes to improve their effectiveness.

Participants also talked frequently about the colors in the materials. Some thought the muted blue and green colors were drab, and one participant even suggested a brighter, “more Latin” approach to the palette. Specifically, participants noted what they believed were missed opportunities to use color to help people who do not speak English or have limited English proficiency. They suggested making certain

words red (like “item that stay *out* of the bin”) and using red lines to cross out items that are not recyclable at home.

The participants also expect that these materials will be translated into Spanish, as is planned. They highlighted the importance of a transcreation process, to eliminate any confusion that could be caused by attempting to translate colloquial phrases, such as, “When in doubt, find out.”

Participants recycle because they want to protect the environment. Messages that help them understand the importance of recycling right resonated with their primary motivations.

The main motivation to recycle in each of the four groups was to protect the environment. Before they were presented with a list of possible motivations, participants described in their own words why they think recycling is important. They described living in or visiting other countries where litter is common in neighborhoods and, more concerningly, in natural areas and in the ocean. They said that Oregon’s natural beauty—free of litter—was inspiring.

Some also spoke of the ease and opportunity of recycling in Oregon, which has a robust system unlike many of the countries participants had lived in or visited. They spoke about these values in terms of the environment, as well.

The top message from a provided list of possible reasons to recycle was that *recycling protects the environment*, which reiterated what participants had shared. The second-best message was that *recycling right reduces waste*. Participants liked this message because it signaled to them that there was a right way and a wrong way to recycle—and that there is an opportunity to reduce waste. They highlighted positive words like “reduce” and “protect.”

On the other hand, messages that made participants feel bad for not knowing the rules and intricacies of the recycling system were perceived by some as attacks. Because the system is already so confusing, words like “harm” made some participants feel shamed for their understandable mistakes. Other factors, like the cost of recycling and worker safety, were less important to residents.

Ultimately, participants said they recycle because they want to protect the environment for future generations. They indicated that simple information will help them incrementally change their behavior.

Many participants used the phrase “future generations” or mentioned their children when discussing their motivations for recycling. Their desire to do it—and to do it right—runs deep, and they are happy to take part in a system that seen as easy to use.

To best inspire them to make changes that benefit the overall system, simple communications that present incremental changes are likely the best. Most participants preferred communications that were straightforward, without too much detail.

Although participants described the act of recycling as something they do when they are busy with other things—like cleaning or leaving the house—they are receptive to new messages. While they may not take the time to immediately look up an item to see if it can be recycled, most said they would consult a chart delivered to their home or affixed to their bin. Some also said they might look up confusing items at another time.

Finally, a feedback system is important for residents to build confidence in their new recycling behaviors. Any system of delivering that feedback, whether through a bin tag, a website, or an app, will be helpful to residents. Although not every resident will access these materials, it was clear that many residents rely heavily on word of mouth for their recycling behaviors, often referring to a rule that “someone” told them once. Capturing even a portion of recyclers will, over time, help to improve the overall system.

Meet residents where they recycle.

- Residents of single-family homes prefer flyers and magnets because they recycle in the kitchen most of the time.
- Residents in multifamily housing also sort materials in the kitchen—but again at the bin. Bin stickers that show which items are not accepted would be helpful for double checking confusing items.

Differentiate “contamination” from cleanliness.

- Residents think that whether an item is clean or dirty, used or unused, determines whether it can be recycled at home.
- When talking about contamination, focus on the *items* that cause contamination, not their condition.
- When sending recycling guidelines to residents, clearly state that all items must be rinsed before recycling.

Name containers by what was in them and include a short list of specific items.

- Residents talk about items in specific terms. Short lists of items (“yogurt cups, sour cream containers, salsa containers”) are more effective than trying to group these items into a single phrase or idea.
- Residents also consider where an item came from, which may be helpful when talking about takeout containers from restaurants or delis.

Residents need to know that recycling symbols, labels, and numbers are not important.

- Residents believe that packaging instructions, chasing arrows symbols, and the numbers inside the chasing arrows are indicative of how to recycle in this region.
- Clear messages that alert residents to the fact that these labels are not reliable will help resolve their confusion.

Residents are motivated to recycle because they want to protect the environment. Messages that tell people how to recycle right can build on these values.

- Positive action words like “protect,” “reduce,” and “recycle right” make people feel good about sorting trash and recycling.
- Negative words that highlight residents’ personal incorrect actions, like “you can harm the system,” make people feel attacked and shamed.

Indicate to residents that there is a right way and a wrong way to recycle.

- Messages about wishful recycling are too complicated for most residents, but when they learn there is a right way and a wrong way to recycle, they want to take responsibility and do it right.
- Give feedback about their choices. Providing bin tags, quizzes, and other assessments will help recyclers become more confident and more excited to do it right.

Increasing costs aren’t a motivating factor to recycle properly—but it’s something to watch in the future.

- Residents think the cost of recycling isn’t as important as protecting the planet—but if they need to buy more trash bins or schedule more frequent pickups, they might bristle.
- Help residents in single-family homes better understand how to reduce trash, repurpose items, and save space in their trash bins as they learn more about the rules of recycling.

4.1 HOME RECYCLING BEHAVIORS

Participants recycle at home and rely on information from their recycling providers—which they often find incomplete or confusing.

Each of the 37 focus group participants indicated that they recycled at home at least sometimes. Although one participant indicated that he typically did not, he noted that he and his household “recycle some things, but not as much as we should.”

Participants began the groups by sharing how they dispose of empty food containers at home. Most said they sort their garbage and recycling in the kitchen, although some keep one or more bins in the garage for this purpose. Some residents also keep additional receptacles near the bathroom for items like shampoo bottles.

Residents in multifamily housing noted that sometimes they initially store recycling in their apartments or on the patio, and then sort (or re-sort) items when they take it to the communal recycling area.

“Sometimes I will do it actually at the bin.” —Multifamily resident

Consideration | Residents living in multifamily homes are likely to benefit from educational materials that are sent to them (flyers, magnets) and bin stickers, as they sort recycling in multiple locations.

Participants indicated that they rely on a variety of information sources to determine whether items are recyclable at home. Many rely on materials delivered to their home, including flyers, fridge magnets, or bin stickers from their recycling provider. However, some were quick to note that these materials did not provide clear information for sorting the vast variety of containers that exist today.

“I just recently moved into a house in Beaverton, got a similar thing from Waste Management. And to be honest with you, my roommate and my girlfriend, we all get into fights as to what we should do, looking at this thing. It’s not clear.” —New resident

“I like the bins that have pictures on top. Sometimes, you might not be thinking. I find it helpful to have a little reminder. Yeah, that doesn’t go there or maybe it should go in the trash. At work, they have pictures. I know where to go with what.” —Long-term resident

In addition to unclear information, residents allocated a relatively short amount to recycling. Some residents set confusing items aside to sort them later, but many choose a bin and move on with their day.

“Honestly, when we are in a hurry, I tend to put them in the recycling bin we have and later figure out if in fact it is recyclable or not. Our apartment complex has big areas where we can later place all garbage, recycle, etc.” —Multifamily resident

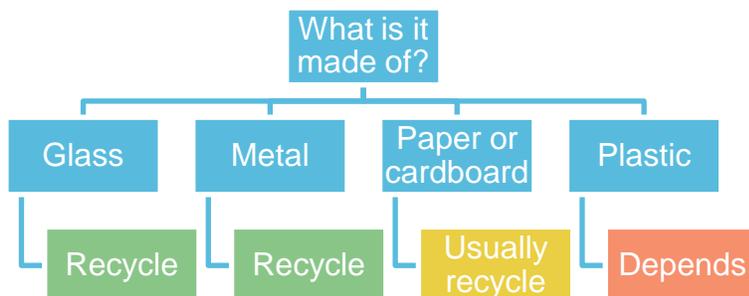
“When in doubt, I put it in recycling.” —New resident

Residents rely on a number of clues when determining if an item is recyclable at home, like material, weight, and cleanliness.

Participants shared a number of different factors that they use to determine whether items are recyclable at home or not. The key attributes they consider are the item’s material, cleanliness, weight or texture, and any labels or emblems on the item.

Most participants first rely on an item’s **materials or texture** to determine whether it is garbage or recycling. Commonly, participants said that they consider recycling as a few broad categories. They said that, for the most part, paper, glass, and metal belong in the recycling bin. Glass was perhaps the least confusing, followed by metal (which many described as “aluminum”).

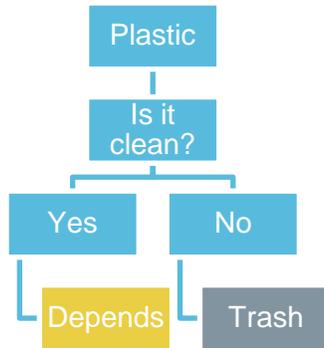
Paper recycling raised a few questions, mostly about texture. For example, they weren’t sure if glossy junk mail was recyclable or whether paper envelopes with plastic windows could go in the curbside recycling bin. For cardboard, the rules seemed simple (until participants later learned that refrigerated or frozen food boxes are not recyclable).



Confirming what is evident from contamination in the region, residents expressed the most confusion and frustration about plastics. A few participants simply didn’t recycle plastic at all, but most did—and most believed that a whole host of plastic items should go in the recycling bin.

“I won’t recycle plastic. I’m sure that’s not a good thing, but I just automatically put plastic in the trash, and I don’t rinse it either. It just goes in the trash.” —Single-family resident

Participants placed a considerable amount of emphasis on whether containers were **soiled or clean**, and they believed that this was a critical factor in determining whether the item is recyclable at home. In many respects, they were not wrong. However, their heavy emphasis on cleanliness led them to believe that clean items, like paper coffee cups and clamshells, are recyclable at home.



“If [the takeout container] was full of cookies, you just rinse that out and give it a wipe. It’s done. It’s clean. If you have some oily food in it, there’s zero hope for that.” —Long-term resident

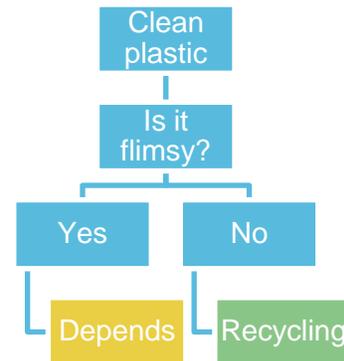
“If [the paper cup] has been used then it’s trash, but if it’s unused, recycling.” —Single-family resident

Consideration | Ensure communications say that all items in the recycling bin must clean. However, when talking about “contamination,” focus on the items that don’t belong in the bin, not their condition.

Residents were also aware that the **weight or thickness** of plastic was important in some way. But the line between a rigid plastic that is recyclable curbside and thinner plastic, like a clamshell, eluded participants.

“If it is a plastic or box container, I put it in my recycling. If it’s a wrapper I throw it out (trash).” —Long-term resident

“If it’s thicker plastic, I will always recycle it. Thinner plastic, I don’t know. I would probably recycle that [takeout container], though.” —Multifamily resident



When they weren’t sure if the plastic—or other items—were recyclable, they turned to the item’s **labels and symbols**. Many residents think the chasing arrows symbol means an item can be recycled at home. One participant believed that the chasing arrows meant the item could be recycled, but not necessarily at home.

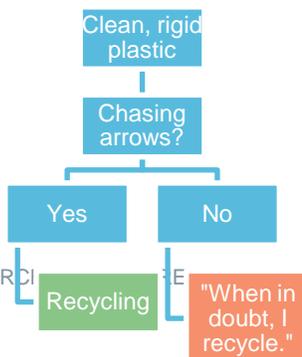
“It’s confusing because it has a recycling thing on it, but I don’t think it’s maybe actually recyclable. But I feel like I’d try to recycle it.” —Single-family resident

“If I wasn’t sure, I would look at the bottom and there’s a little triangle. Some have different numbers, which I don’t know what that means. If it has the triangle, I will put it in the recycling.” —Multifamily resident

Finally, when residents have exhausted their review of the item at home—most take only a few seconds—they go with their gut. **When in doubt**, many participants said they put items in the recycling bin and hope they are actually recycled. Some participants thought machines sorted all items, others

believed a mix of machines and workers do the sorting. Either way, most felt comfortable that any mistakes they made would be caught later in the process.

“I’m going to recycle [the takeout container]. I don’t think you’re supposed to recycle clamshells.”



They're, for some reason, not recyclable—even though it looks really recyclable. I feel like it should be recycled.” —Long-term resident

“They have people that sort them and machines that sort them. I figure that they will double-check mine. I’m okay with making some mistakes like that.” —Long-term resident

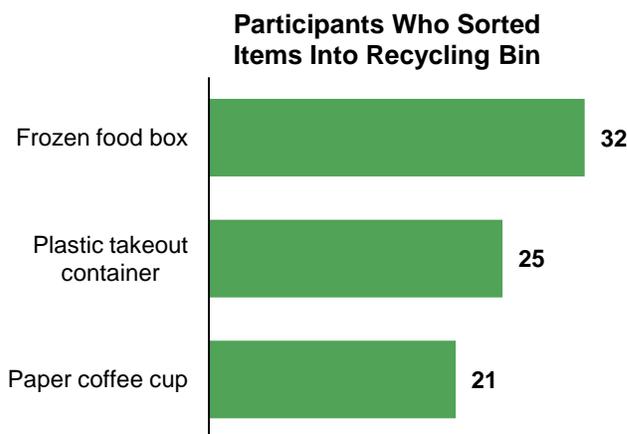
Notably, very few participants said they relied on a **container’s size** to determine whether it is recyclable. Although one participant did mention size, she said that plastic containers “four ounces or larger” was accepted in home recycling bins.

4.2 RECYCLING RULES AND COMMUNICATIONS

Residents admit they are most confused about which plastics can be recycled at home, but they are also stymied by frozen food boxes.

The results from the quantitative survey conducted in 2018 show that many residents in the region believe common items, like plastic clamshells and frozen food boxes, should go in their home recycling bins. Specifically, respondents indicated that they were confident these items could be recycled.

The focus groups provided an opportunity to better understand resident confusion, as well as their confidence level in what items belong in which bin. Participants examined four items and sorted them into trash or recycling.



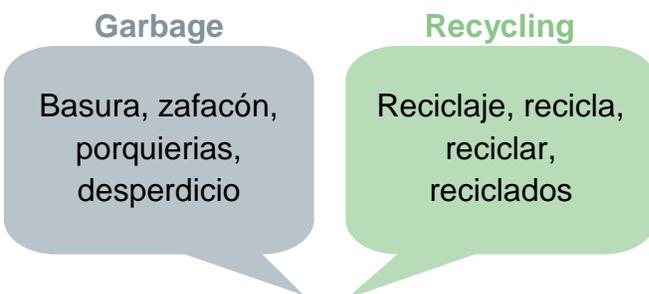
As in the quantitative survey, most participants said they would recycle three items that are not accepted in home recycling bins in this region. Additionally, 29 of the 37 participants said they would recycle an 8-ounce plastic sour cream tub. As the participants examined the items, they were quick to flip them over and look for different clues about whether the item could be recycled. Some participants also felt the items to determine how rigid or sturdy they were, or whether they were waxed or coated with plastic.

DHM RESEARCH | FEBRUARY 2019 | CHART 1

When the exercise was complete and the discussions began, participants immediately expressed confusion.

“I have confusion. This is the same with [the to-go container] and the [plastic tub]. One day I will put it in the garbage, and one day I will put it in the recycling. I don’t know what the line is. You don’t recycle Saran Wrap. It’s plastic. You don’t recycle it because it’s too small of a burden. There’s no sense in doing it. I don’t know if [the to-go container] should be recycled or it is thicker. That’s my confusion with plastic.”

—Multifamily resident



Before turning to the educational materials, participants described each of the items by name. They also shared the words they would use in Spanish to describe garbage and recycling generally.

I would say “vaso,” which is not a cup. In Spanish, [cup is] “una taza.” [But I would say], “una vaso de café.” —Multifamily resident

| Item | English Names | Spanish Names |
|---------------------------------------|--|---------------------|
| Frozen food box | Box, cardboard box, carton, ice cream box | <i>Caja, cartón</i> |
| Plastic takeout container (clamshell) | To-go box/container, takeout box/container, plastic restaurant container, meal box | <i>Traste</i> |
| Paper coffee cup | Cup, disposable cup, coffee cup, paper cup, hot cup | <i>Vaso</i> |
| 8-ounce plastic tub | Yogurt cup/container, sour cream container | N/A |

DHM RESEARCH | FEBRUARY 2019 | TABLE 1

Participants responded positively when educational materials told them what not to put in the recycling bin.

Once participants had considered the items, sorted them, and named them, they reviewed three pieces of information.

- A **Yes List** presented a list of items that can be recycled at home. It included iconography of each item, and a list of descriptors, including items types and conditions.
- A **No List** presented a list of items that *cannot* be recycled at home. It included color photographs of each item and short names to describe the items.
- A **Yes/No List** presented a short list of items that can be recycled that can be recycled at home, and a short list of items that cannot be recycled at home. Each item was accompanied by a short name, an icon, and some items had brief descriptors.

Participants spoke about the merits of each piece of information. Many people said that having specific instructions about what not to put in their recycling bin was helpful. These comments applied to both the **No List** and the **Yes/No List**.

There was not clear consensus on which of these two pieces of information was better. Some people felt like they already knew to recycle a lot of items, and in fact defaulted to recycling, so the No List was simpler. Others said they would benefit from having the Yes/No List in their kitchen, so they could consult it and come up with an answer for what to do with any given item.

“I got lost in all the detail of [the Yes List]. I want to hang something on the refrigerator that will give me quick information. I prefer [the Yes/No List]. What I have in my hand: is it recyclable or not?” —Multifamily resident

“I think I generally know that if something is plastic or paper that, ‘Oh, maybe this is recyclable.’ [Which items] aren’t recyclable, that’s really the question.”—Single-family resident

In the quantitative survey, the No List was most effective at improving residents’ sorting behavior in a pre-test and post-test. However, these participants were also less likely to recycle items like a 16-ounce plastic tub.

A Yes/No approach likely provides residents with the information they need to keep items out of the recycling bin that don’t belong there, along with positive reinforcement of what is recyclable. The Yes/No approach may also be less frustrating for residents, some of whom had questions after reviewing only the No List.

*“Having the information separated (these vs. not these) and having a picture.”
—Single-family resident*

Several participants commented that the **Yes List** included too much information and raised questions without answering them. A few people did like the detail, however, but these participants tended to point to the “six ounces or larger” directive for plastics. This small piece of information could be highlighted in a simpler communication in the future.

One draw of the Yes List was that it created clear categories for different types of materials: glass, plastic, metal, and paper. This concept may be effectively recreated in future materials.

“How it is divided into different sections, like glass.” —New resident

*“[The Yes List] is very detail-oriented. It listed items that we hadn’t previously discussed. It talks about ounce sizes for plastic containers, which is good to know.”
—Multifamily resident*

Consideration | Categorize items by type of material and keep descriptions short. Only the easiest details, like size restrictions for plastic tubs is a simple detail, should be added to materials to keep things simple for residents. Details such as the weight of an item, which are hard for participants to adjudicate, are not very helpful.

People talk about items based on what was in them or where they came from. Avoid trying to simplify categories of items by using the words “some,” “many,” and “most.”

Participants indicated that specific item names were the most helpful, such as “a yogurt cup” or a “sour cream cup.” Giving a short list of these items may help recyclers know what should go in the bin. Summarizing these items into a category with just one moniker, like “dairy containers” works for some residents, but it may need be helpful enough for everyone. For example, one resident was quick to point out that the materials referred to dairy containers, so she felt confident recycling the 8-ounce tub. Another said she searched for the cup and “didn’t see it anywhere in the materials.” The second participant may have been searching for a more a more specific name.

“Describing or mentioning what they’re used for helps identify them more easily.”

—Long-term resident

“Frozen and refrigerated food boxes [was confusing]. I feel like I want a better description of the container so I can be sure what to look for.” —Single-family resident

Consideration | Use a short, illustrative list of items instead of words like “many” and “most.” For example, “yogurt cups, sour cream containers, salsa containers,” or “frozen pizza boxes, ice cream cartons, and butter boxes.”

Participants did see in the materials that frozen and refrigerated food boxes could not be recycled at home, although listing specific items, rather than that phrase, may be more effective.

“[I had questions about] the part about food boxes that are meant to be ‘frozen or refrigerated.’” —Long-term resident

However, when listing the items from the fridge and freezer that *cannot* be recycled, pair these messages with an exception for milk, juice, and egg cartons. Participants knew—often from childhood or when they learned to recycle in Oregon—that these items are recyclable, but they don’t know why. When they read that fridge and freezer boxes couldn’t be recycled at home, they were left with even more confusion.

“What specifies as a “food box?” Can juice cartons with a wax film be recycled?”

—New resident

Although this pairing appeared on the Yes/No List, many participants missed the detail. Creating another category for frozen and refrigerated items—to go along with glass, paper, plastic, and metal—may help residents recognize that some items from the fridge can be recycled at home, and others cannot.

The terms “some,” “many,” and “most” were frustrating for participants. These words created more confusion without answering questions about the items in their hands. Once again, simply providing a short list is likely to cause less confusion.

“Some of these were talking about ‘most’ or ‘many.’ That’s very vague. What does ‘most paper’ mean?” —Long-term resident

Clear photographs, bolder colors, and other visual cues can be used to improve understanding of the rules among all residents—and especially those with limited English proficiency.

Participants frequently shared that the images in the materials were helpful in understanding recycling rules. Specifically, they noted that the color photographs made it easier to see each item and that the icons were “vague.” One participant elaborated:

“Examples of some items that are very popular. ‘Oh, the Yoplait yogurt,’ or whatever... So people can tell right away what item we’re talking about when we see the picture.” —New resident

People also shared considerable feedback about color. One participant mentioned that the muted colors were less inspiring. Several noted that there was a real opportunity to use red to identify which items do not belong in the recycling bin.

“It needs more color because everything is green and black. I think the top part [could] have more Latin color, like more bright, and [the No List] could be... more red or something, so [people know] you shouldn’t put these in the recycling bin.” —New resident

“I think the color-coded pictures... are good for me to quickly identify.” —New resident

Although heavily relying on color-coding may not be the most effective tool for residents who are color-blind, participants added that other details could be used in conjunction with color, like making certain words larger or underlined, and using a slash through items that are not recyclable. These elements also help people with limited English proficiency and those who do not speak English at all.

“I noticed that [the No List] says, ‘Keep these items out of your recycling bin.’ ‘Out’ was the biggest part. I caught that pretty quick, but I feel like it should be either in all caps or a different color. I feel like, so like my roommates would have been like, ‘Oh yeah, these are the ones we can put in there.’” —Single-family resident

“I prefer actual pictures. The pictures are good as well as the X’s for people who don’t speak English.” —Single-family resident

Participants may also appreciate greater clarity on the condition of items, and whether the chasing arrows symbol means anything.

Residents initially explained that they rely heavily on two factors when determining whether a plastic item is recyclable: whether it is clean, and whether it has a chasing arrows symbol on it.

If an item is dirty, participants agreed it belongs in the recycling bin. But it is important to recall that residents often believed that some items, like coffee cups and clamshells, could be recycled if they were in very clean or unused condition. Simple phrases may be added to communications to make this point.

“I think in the messaging I would put, like, ‘used or unused’ or something, just to kind of get that idea out of my head. Because I still find myself being like, ‘This one is used, I’m going to throw it away. And this one is new, so I’m not going to.’”

—Single-family resident

One participant explained that all the action words in the materials were helpful for ensuring items were in the proper condition, words like “rinse,” “remove cap.” Another participant was confused by the mix of

words like “rinse” and “clean,” perhaps thinking about experiences in which rinsing an item does very little to remove oil, grease, or other contaminants.

“The truth is I don’t understand ‘clean.’ If it is washed and it is still dirty, no? And if it’s dirty and I rinse it and it’s still dirty, no? It’s easier to say, ‘it’s clean, recycle. It’s dirty, trash.’” —Longer-term resident

The chasing arrows symbol did not appear on any of the materials, which may not have mattered much to participants if all of their questions about plastics had been answered. Unfortunately, these questions remained.

“I am still unsure of [the sour cream container], but it has a recycle label and the info sheets didn’t say anything about it.” —Single-family resident

“I’m confused about that one. It says in one of them that you can’t put in [a takeout container], unless it has the recycling logo on it.” —Multifamily resident

Consideration | Clearly stating that symbols and labels on items aren’t indicative of whether they can be recycled at home in our region. Chasing arrows symbols, numbers, and national labels that instruct residents how to recycle items are common sources of information.

Participants also offered up a few additional recommendations for these materials. First and foremost, they hoped that they would be translated into Spanish and other languages. To that end, they emphasized transcreation in their own words.

“Don’t use colloquial terms or slogans which would be difficult for limited English speakers to understand.” —Single-family

One participant was also confused by the word “metal,” since they had always heard it referred to as “aluminum.” While this only represents one person’s confusion, it drives home the point that short lists with several descriptors (“aluminum, tin, or metal cans”) can help a broad range of people better understand the instructions.

Participants’ last recommendations touched on details that may be unnecessary for the average recycler. One participant wasn’t sure what “corrugated” cardboard meant; since participants believe cardboard is recyclable, the distinction may be unnecessary. Another said he didn’t have “any clue what type of scrap metals to recycle,” while others laughed a little thinking about how to measure and weight scrap metal to ensure it is accepted.

These types of details were interesting to a select few—and those participants also noted that they had resources they consulted at home. These details may be helpful to “super recyclers,” but for the average resident they add too much text to the materials and make the messages more confusing.

4.3 MOTIVATIONS TO RECYCLE

Before participants recycle, they consider whether they can reuse items, especially single-use plastics.

A number of participants were quick to note that before they consider whether an item—often a single-use plastic item—should go in the trash or recycling, they consider whether they would reuse. They noted that cultural attitudes toward reuse are different in the United States.

“Recycling is very US. People repurpose more in Mexico.” —Multifamily resident

“When I was little, I remember my mom telling me that having a plastic bag in Mexico was a gift. They would reuse it and wash it and reuse it. That was the plastic bags they had and would take care of it.” —Long-term resident

While this information may not directly inform communication about contamination, it may be helpful in helping residents use, repurpose, or dispose of items that they have been putting in the recycling bin. While many items that may be repurposed, like glass jars, are recyclable at home, some such items belong in the trash.

Participants expressed that recycling protects the environment, and that the ease of recycling in Oregon presented an opportunity to help future generations.

Many participants shared personal motivations for recycling that were rooted in their experiences living in or visiting other countries that lack a robust recycling system such as Oregon’s.

“Because living in Argentina, I never had the opportunity to recycle so easily. Here we have easy access to recycling. I believe in a more sustainable environment and I know that this can be done. Many things that we use are recyclable, we just need more guidance if we really want to make a change. Not recycling creates a list of unnecessary waste.” —New resident

“When I lived in Mexico, we didn’t recycle things like plastic or paper. There was no infrastructure or place to do that. Here, we can do the plastic, paper, and all of that.” —Multifamily resident

The opportunity to recycle in Oregon—at home, with curbside recycling—gave these participants a sense of responsibility. But the deeper values that underpinned these motivations were primarily environmental.

“If it’s reusable I will pack my lunch for work in it, or I will recycle it. I hate when I go on vacation and see garbage littered with the wildlife and nature.” —Single-family resident

Images of litter, especially in natural areas and in the oceans, were mentioned frequently by participants. One specifically noted an iconic image from National Geographic, of a seahorse with its tail wrapped around a plastic cotton swab. When participants described these images, they spoke from the heart and indicated that they are powerful motivators.

“When I go to Mexico or on the beach, and I see plastic floating around with the wildlife. That just aggravates me because we’re doing it to ourselves.” —Single-family resident

Participants viewed recycling, then, as a small step toward a broader goal of protecting the environment. At least one participant in every group mentioned “future generations” or their children as a major motivation for recycling and protecting the environment.

“I try my best because I know that saves our environment, saves all kind of wildlife, trees, and makes our planet cleaner. I like to be responsible. ‘Un granito de arena a la vez.’ One little grain of sand at a time.” —Single-family resident

Participants also recycle for practical reasons, like saving space in their garbage bin or avoiding the judgment of their neighbors.

A few participants admitted that not all of their reasons for recycling were so altruistic. One new homeowner explained:

“This is going to sound dumb. I admit it freely. All my neighbors put out recycling, and if I don’t, I feel like an idiot. I feel like I’m that guy. It’s peer pressure.” —New resident

Quite a few talked about the space in their garbage and recycling bins, noting that their recycling is picked up more frequently than their garbage. As conversations continued, participants thought aloud about how they would adjust their behavior, knowing their garbage bin is likely to overfill much quicker, now that they know what can and cannot be recycled at home.

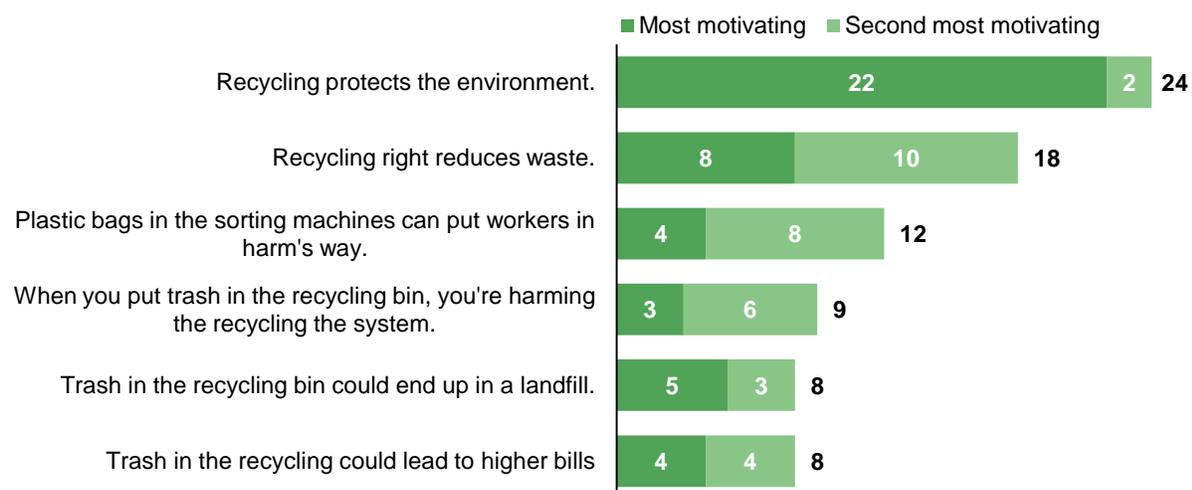
“We have a bigger container for recycling and smaller container for garbage. [The takeout container] takes too much space to be in the garbage. It will make me want to put it back in the recycling space.” —Multifamily resident

Additional information from providers about additional bins or pickups, how to save space in garbage bins, and even how to reduce the number of items that need to be thrown away may make for helpful communications alongside education about contamination.

Action words like “reduce” and “protect” resonated with participants, who want to recycle right and keep waste out of landfills.

After participants shared their own motivations for recycling, they reviewed a set of messages that covered the environment, cost, worker safety, and the importance of recycling right. The messages that most closely mirrored their personal motivations, which were primarily environmental, performed the best.

The most motivating message in each group was simply *recycling protects the environment*. This message was followed by *recycling right reduces waste*. One participant explained that the words “protect” and “reduce” were action words that motivated her.



Several participants shared that the *recycle right* message alerted recyclers to the idea that maybe they needed to refine their recycling habits, without coming across as too judgmental. Because the vast majority of participants spoke about the environment in their personal motivations for recycling, these messages not only capitalized on their values but took them one step further.

“I just like the way that was worded. Recycling right. I like that statement that there’s recycling and then recycling the right way. For me, it signals that, hey, you should probably check and see what that means.” —Multifamily resident

“‘Recycling right reduces waste.’ I feel like that’s a pretty powerful statement. A lot of us are recycling but didn’t know we were doing it wrong. It’s direct and not judging, and just letting you know. Having that word, ‘right,’ lets us know there is a room for error.” —Long-term resident

This is in contrast to a similar message that recycling improperly can harm the system. Telling residents that they are causing harm—while they are taking time out of their day to do the right thing—came across as too judgmental for some participants. In fact, residents ranked it as the second of all messages in terms of “least motivating.”

“When you put items in the recycle bin that don’t belong there, you’re harming the recycling system. That feels very ‘shame on you’ and judging you. It doesn’t feel like a helpful statement.” —Long-term resident

Consideration | Use positive action words, like “reduce” and “protect” that inspire people and build on their environmental motivations for recycling. Stay away from words that shame people or make them feel bad, like “harm.”

In the group of residents living in single-family homes, the message about trash in the recycling bin ending up in a landfill resonated strongly.

*“‘It could even end up in the landfill.’ So, for me, that was the most motivating to do it right because what if I’m doing all this work to have that thing be thrown away?”
—Single-family resident*

The other participants in the single-family resident group agreed that the word “landfill” was a strong motivator. In a show of hands, seven of the ten participants said they were motivated by that word in particular. A participant in the group of residents living in multifamily housing also commented that “our landfills need reduction.”

Worker safety is important to participants, but they did not have a strong enough grasp of the recycling system to be strongly motivated by safety.

A message about worker safety performed in the middle of the pack across all focus groups. Of the 27 participants who completed the messaging written exercise, 12 said worker safety was the most or second most motivating message.

Participants generally wanted recycling workers to feel safe, but they hadn’t given much thought to the process of sorting recycling. Although several indicated earlier in the groups that they relied on someone, or a machine, to sort any “mistakes” they made, it was clear these participants did not typically know that that process looks like.

“Yeah, I think I’ve never really thought about the fact that there were people involved in the process. I literally thought there was just like a giant machine that did it.”

—Single-family resident

“I don’t know the system well enough to have it be either motivating or not motivating.” —Single-family resident

But some participants did find this factor motivating. One said that learning that she could be harming a worker was the opposite of her intention, which was, “almost job security, maybe.” But, she added, “now I realize what I’m doing is dangerous.”

A few participants went on to explain that the message about worker safety is important, but it is just not as *motivating* as messages about the environment—because those messages to speak to why people recycle in the first place.

“This is going to sound kind of bad, [but] I didn’t really care too much about that. Not that I don’t care about people getting hurt. I am more concerned with our environment getting affected than some people that work there getting affected.”

—Long-term resident

“I really have never really thought about the workers that are doing the recycling ... So it was a concern, but it’s not, like, the first thing I’m thinking when I’m recycling. The first thing is that I want to make sure that we’re recycling it correctly, and it’s not ending up in a landfill, but it is a concern still.” —Single-family resident

Cost is not a motivating factor for participants to recycle right—but they may be frustrated by issues around bin space down the line.

As one participant explained, recycling “*convierte en algo que lo hace de corazón*,” meaning that it has become an act that is done from the heart. So, the idea that higher recycling bills would be a motivation didn’t resonate with participants. One even found it “kind of insulting.”

“A lot of people are willing to do that. If I have to pay two dollars more a month so that I can put more stuff in there and let someone carry it out.” —Long-term resident

One participant also explained that recycling is “free” because it comes with the household garbage bill. Although participants were cavalier about price increases, if additional increases are necessary, communications should clearly lay out what improvements residents can expect. Because residents don’t have a strong grasp of the recycling system, they may need additional education.

Although it was a minor concern, one participant explained:

“I put it at the very bottom of the list, but I did put if I didn’t recycle, I would have to pay for the bigger garbage cans. And I don’t want to pay for the bigger garbage can.”
—Single-family resident

Consideration | Residents say they don’t care that much about the cost of recycling—but having to pay for additional trash bins or pickups is likely to frustrate some. In addition to education about contamination, materials that help residents understand how to limit their trash and save bin space could help alleviate those concerns.

4.4 TEACHING RESIDENTS TO RECYCLE RIGHT

Most participants said they wouldn't seek out information about whether something could be recycled. Instead they would click on website links or read printed information delivered to their home.

Participants were provided with three separate taglines about recycling right. The first instructed, **“When in doubt, find out.”**

Some participants said they liked how catchy the phrase was, and that it would be easy to remember. The phrase signaled to participants that there was more information available, but it didn't answer enough questions. It also put the burden on residents to search and find answers to their questions—something many said they are too busy to do, especially while cleaning house.

“When I'm actually recycling? I don't know. I hate cleaning. It's my least favorite thing to do. That includes throwing out the trash or recycling or cans just sitting on my counter. So, I'm not going to be like, [typing] in websites. People just click links. So maybe an app or something would be good.” —New resident

There was a split in opinion when it came to the preferred type of educational material. Many participants said they wanted a printed copy to keep in their home, while others said digital materials with links that took them directly to recycling information would be helpful. Those who preferred a digital format did not specify what platforms they would use to see that information.

“I would rather have a physical copy of it.” —Long-term resident

“I don't have time to Google my doubts. When in doubt, I recycle. The type of media matters. If these were all printed materials, then they're all useless. If it was online, I would click it and it takes you directly to a chart.” —Single-family resident

Googling recycling rules came up throughout the conversations. It is important to note that instructing residents to “find out” without providing a clear source of information is likely to lead to Google searches, which may provide incorrect information for this region.

“That was my first [reaction], when I read, ‘When in doubt, find out.’ My immediate answer was Google.” —New resident

The most preferred phrase in the groups did provide a clear source of information: **“Does it recycle...or not? Find out at recycleornot.org.”** This phrase answered the key question of where to turn for information, although one resident suggested keeping the phrasing from the first tagline.

“The first one, I said, catchy and simple. I like to keep things simple. I think the first and second one should be combined so you get the information.” —Multifamily resident

“It motivates you to find out. I'm not going to go to recycleornot.org to validate a bet within a household, but ultimately it's going to resonate with me over and over, not just now, but in the future.” —New resident

Residents will care where this phrase appears. If it is on the printed materials they receive at home, many people will skip the step because of the time, patience, and mental energy required to check.

“Yeah, I might be like, ‘Oh, I’m trying to run out the door. Do I want to go get my phone?’” —Single-family resident

*“That sounds difficult. I don’t have time being a single mother and working full time.”
—Multifamily resident*

The message **“Wishful recycling creates more trash”** was the least popular of the three taglines, but those who identified with it explained how it motivated them. The concept—when understood by participants—resonated with their existing behavior of wishful recycling.

“I was like, ‘That’s exactly what I was thinking.’ I just throw it in there and hope for the best, but that’s exactly what I’m not supposed to do, and that’s what that slogan speaks to. That resonated with me.” —New resident

“I kind of like ‘wishful.’ I’m thinking, well, I have good intentions and I’m trying to do this right. My good intentions are not good enough. Do it the right way.” —Multifamily resident

However, several participants were simply confused by the language. Some circled the word “wishful” and drew question marks around it, while others specifically pointed out that this phrasing would not make sense to a Spanish speaker who only spoke a little English. One participant suggested a similar phrase using plain language:

“Don’t just recycle because you think it might be recyclable.” —Single-family resident

Although the phrase about wishful recycling was ranked lower by participants in terms of motivation, it was the phrase that was linked most closely to their stated motivations for recycling. Participants said over and over again that they recycled to reduce trash and to protect the environment for future generations. They also believed that “hoping for the best” was a good approach, relying on the assumption that machines and people will sort out their “mistakes.” Phrased differently, the message about wishful recycling could resonate with residents and spark their curiosity—without immediately asking them to take time-consuming actions.

4.5 REMAINING QUESTIONS AND RECOMMENDATIONS

Participants left the groups with a few remaining questions about recycling.

The vestiges of old recycling rules or incorrect information continued to dog participants, who repeatedly asked about the **chasing arrows** and **numbers**. While addressing these clues could muddy the waters in future communications, it’s worth noting that other people, resources, and organizations continue to tell residents to rely on these symbols.

For example, the paper coffee cup used in the sorting exercise was from Starbucks, and several participants talked about how they would recycle a Starbucks cup differently from other paper cups. They said their “experience at Starbucks” indicated that it was recyclable (if clean), or that it could be recycled because it was a “Starbucks product.” This confusion stemmed from the fact that Starbucks has recycling bins in their stores that residents believed indicated the cups were recyclable. After learning the rules, one participant felt deceived.

“At the Starbucks stores, they have the recycle things. They obviously don’t recycle them. They have to go into their garbage. It’s like they’re tricking us or making it less understandable for a lot of people.” —Long-term resident

Addressing these concerns may take up valuable space in education materials—and could cause further confusion. But it could also help residents struggling to understand outdated principles.

Other questions came from participants who may be “super recyclers” at home—or on their way to becoming experts. After reading all the materials, some hoped for a lot more detail. The biggest question was simply, **why?** Why couldn’t some plastics be recycled? Why did it matter? Furthermore, some participants wanted to know **where** they could recycle certain items, like plastic bags and produce clamshells. The answers to these questions about the recycling system should be easily accessible (via a link or website) from the guidelines provided to residents.

An app or other service that provides feedback to residents may spark interest and challenge them to recycle right.

After carefully reading information about recycling for two hours, participants were clearly challenged by the materials. Although a few participants remained somewhat unrepentant and said they might continue to recycle wishfully, most seemed excited about the opportunity to do better.

“It was a lot of information. I want to help, but wow. I thought I had a small grasp on recycling. Now, not so much.” —New resident

The feedback that participants received throughout the group—from their peers and from the materials—appeared to be helpful. Although they had been mistaken about some things, they seemed to appreciate finding out how they did at sorting materials. One participant laid out the benefits of feedback:

“Also, a service that provides me feedback is a great asset and motivator to keep recycling properly.” —Multifamily resident

Some recycling providers currently give feedback with “Oops!” tags, but an app or simple website could provide feedback to the same people who are clicking the link or searching for more information. A simple and engaging quiz could help challenge residents and show them how to change their behavior—while also teaching them more about why some items are not accepted in the home recycling bin.

**Metro Recycling Focus Groups
DHM Research
Project #: 00829**

**Group 1 New Residents; 2/12/19; Portland; N=10
Group 2 Longer-term Residents; 2/13/19; Portland; N=9
Group 3 Single-family Residents; 2/23/19; Portland; N=10
Group 4 Multifamily Residents; 2/23/19; Portland; N=8**

**Appendix A
Participant Demographics**

City and Zip Code

| Group 1 | Group 2 |
|--------------------|-------------------|
| Beaverton 97005 | Gresham 97060 |
| Beaverton 97007 | Oregon City 97045 |
| Portland 97217 | Portland 97210 |
| Portland 97229 | Portland 97214 |
| Portland 97213 | Portland 97223 |
| Forest Grove 97116 | Portland 97225 |
| Fairview 97024 | Portland 97266 |
| Portland 97232 | Tigard 97223 |
| Portland 97233 | West Linn 97068 |
| Tigard 97223 | |
| Group 3 | Group 4 |
| Beaverton, 97005 | Hillsboro 97123 |
| Lake Oswego, 97035 | Hillsboro 97124 |
| Milwaukie 97267 | Oregon City 97045 |
| Oregon City 97045 | Portland 97206 |
| Portland 97239 | Portland 97212 |
| Portland, 97206 | Portland 97219 |
| Portland, 97216 | Portland 97225 |
| Portland, 97217 | Portland 97239 |
| Tigard 97223 | |
| Tigard 97223 | |

Length of Residency

| Response category | Group 1 | Group 2 | Group 3 | Group 4 |
|-------------------|---------|---------|---------|---------|
| 1-5 | 7 | 3 | 3 | 1 |
| 6-10 | 2 | -- | 2 | 1 |
| 11-15 | -- | 2 | 1 | -- |
| 15+ | 1 | 4 | 4 | 5 |
| No response | -- | -- | -- | 1 |

Occupation

| Group 1 | Group 2 |
|---|------------------------------------|
| Barista | Homemaker |
| Computer network engineer | Manager |
| Customer service rep | Personal support worker |
| Hospitality consultant | Delivery |
| House manager | Residential HVAC |
| Installer | Operations/Policy analyst |
| Library outreach specialist | Sales manager |
| None | Nanny |
| Student | Unemployed |
| Vendor relations | |
| Group 3 | Group 4 |
| Construction | Admissions coordinator at a school |
| Corporate project and diversity coordinator | Bilingual assistant |
| Engineer | Cashier |
| Housekeeper | Clinical Supervisor |
| Manager, language company | Financial specialist |
| Program coordinator | Owner Rose City DJs |
| Retired US postal service retail clerk | Sales |
| Self-employed | Student |
| Tutor program coordinator | |
| Wealth management | |

Education Level

| Response category | Group 1 | Group 2 | Group 3 | Group 4 |
|--------------------------------|---------|---------|---------|---------|
| Less than high school graduate | -- | 1 | -- | -- |
| High school diploma | 1 | -- | 1 | 1 |
| Some college; 2-year degree | 3 | 5 | 3 | 4 |
| College degree; 4-year degree | 3 | 2 | 2 | 2 |
| Master's degree or equivalent | 3 | -- | 3 | 1 |
| Doctorate degree or equivalent | -- | 1 | 1 | -- |

Household Income

| Response category | Group 1 | Group 2 | Group 3 | Group 4 |
|---------------------|---------|---------|---------|---------|
| Less than \$25,000 | 3 | 3 | -- | 1 |
| \$25,000–\$49,999 | 1 | 1 | 1 | 3 |
| \$50,000–\$74,999 | 2 | 2 | 3 | 4 |
| \$75,000–\$99,999 | 2 | 2 | 4 | -- |
| \$100,000–\$150,000 | 1 | 1 | 2 | -- |
| More than \$150,000 | -- | -- | -- | -- |

Age

| Response category | Group 1 | Group 2 | Group 3 | Group 4 |
|-------------------|---------|---------|---------|---------|
| 18–24 | 1 | 2 | -- | -- |
| 25–34 | 3 | 4 | 5 | 4 |
| 35–44 | 2 | 3 | 3 | -- |
| 45–54 | 3 | -- | 1 | 3 |
| 55–64 | 1 | -- | 1 | 1 |
| 65–74 | -- | -- | -- | -- |
| 75+ | -- | -- | -- | -- |

Gender

| Response category | Group 1 | Group 2 | Group 3 | Group 4 |
|-------------------------------------|---------|---------|---------|---------|
| Male | 5 | 5 | 5 | 3 |
| Female | 5 | 4 | 5 | 5 |
| Non-binary or gender non-conforming | -- | -- | -- | -- |
| Something else | -- | -- | -- | -- |

Racial or Ethnic Identity*

| Response category | Group 1 | Group 2 | Group 3 | Group 4 |
|---|---------|---------|---------|---------|
| White | 1 | 2 | 1 | 2 |
| American Indian, Alaska Native or First Nations | -- | 1 | -- | 1 |
| Asian | 1 | -- | -- | -- |
| Hispanic or Latino | 10 | 9 | 10 | 8 |
| Middle Eastern or North African | -- | -- | -- | -- |
| Black or African American | -- | 1 | -- | -- |
| African | -- | -- | -- | -- |
| Native Hawaiian or Pacific Islander | -- | -- | -- | -- |

*Multiple responses accepted

Political Party

| Response category | Group 1 | Group 2 | Group 3 | Group 4 |
|--------------------------|---------|---------|---------|---------|
| Democrat | 4 | 2 | 7 | 2 |
| Republican | 1 | -- | -- | 1 |
| No political party | 4 | 6 | 3 | 3 |
| Other: Independent | 1 | -- | -- | -- |
| Other: none | -- | 1 | -- | 1 |
| Other: [nothing written] | -- | -- | -- | 1 |

Type of Residence

| Response category | Group 1 | Group 2 | Group 3 | Group 4 |
|---|---------|---------|---------|---------|
| Single-family home | 6 | 6 | 9 | -- |
| Duplex, triplex or quadplex | 1 | -- | -- | 1 |
| Multi-family home (apartments, condos with more than four units.) | 1 | 3 | 1 | 7 |
| Other: ADU | 1 | -- | -- | -- |
| Other: Mobile home | 1 | -- | -- | -- |

Appendix B Written Exercise 1

Think about the foods you eat and prepare at home. When food comes in packaging or a container, and you are finished with the food, what do you do with the packaging or container?

Write a sentence or two about how you make your decision about what to do with the packaging or container.

Group 1

- Depending on packaging labeling, I either throw it away or recycle the packaging or containers.
- Depending on the packing or the container, I classify if it is a recyclable one or a disposable one. Also, I recycle plastic packaging in a separate bag.
- Determine if the time is recyclable. Popping noise is always fun.
- I put in the garbage. *Yo pongo en la basura.* I put it in the garbage.
- I rinse it and, if appropriate, I set it out to put into the recycling bin or glass recycling bin. If not, I throw it in the regular garbage.
- If it can be recycled, I recycle the package or container. If not, put it in the trash.
- If the packaging is recyclable and can be cleaned with an easy rinse, then I recycle it. Otherwise, I throw it in the trash.
- If the packaging is recycling, I put it in the recycle bin. Otherwise it'll go to the garbage bin.
- It depends on what kind of container the food comes in.
- Usually I will put it in the recycling bin if it is plastic or some form of cardboard. If the container is too dirty or if I'm not sure if it's recyclable, then I will just throw it away in the regular trash container.

Group 2

- I check if the container is recyclable. If it is, I rinse it out and recycle it. I make my decision if I can locate a recycle label.
- I recycle it if possible, if it's not recyclable material it gets thrown away. I rinse it prior to disposal. I always check to make sure it can be recycled.
- I usually throw it away to the specific can, like cardboard with cardboard, glass with glass, straight garbage with garbage.
- I wash the container and recycle. With the packaging I throw it in the garbage.
- If it can be recycled, I put it in a basket with other recyclable items. If there's no way to recycle it, put it in the garbage.
- If it is a plastic or box container, I put it in my recycling. If it's a wrapper I throw it out (trash).
- It depends on the container that I am using. If it's glass, I rinse it and recycle it, and if it's plastic I decide if it should go in the trash.
- Rinse and recycle primarily. If the container has a lid or some other function, I try to give the container a second life. I decide based on the recycle items accepted by WM.
- Usually it just goes in the garbage can and then in the dumpster at night. Soda cans go into a different container.

Group 3

- Check the labeling to see if it can be recycled or not and then throw it in the trash or recycle accordingly. If the packaging is sturdy, then possibly wash it to reuse it. Example: glass or hard plastic.

- Decide if it is landfill or recyclable. If recyclable, clean and rinse and place in bag in home designated for these items. We also check for box tops. Glass items place in blue bin for pickup by local garbage company.
- Depending on the size and cleanliness, I will usually clean it and set it aside next to my garbage. So, I categorize what is waste and what can be recycled. If it's too big, I put it outside in a container. If it's smaller, I'll do the aforementioned.
- Depends on the container. Example: if it's reusable I will pack my lunch for work in it, or I will recycle it. I hate when I go on vacation and see garbage littered with the wildlife and nature.
- If it is a container like yogurt, I would wash it and use for storage. If it isn't usable, I will put it in the recycling box. Sometimes I'm not sure if I can recycle something, but I usually try anyways instead of putting it in the garbage. However, I'm also considerate about what I put in the recycling because I know people have to sort it.
- It depends on the container. If the container is cardboard, I recycle it. If it's plastic I throw it in the trash. Anything that's not cardboard, I throw away.
- It depends. Sometimes, I reuse it or throw it away. For example, like butter or margarine containers, I use them to pack food, or rice. It depends on what I need to put away. Some I recycle I take the lid off and put it on the recycle bin.
- It really depends on the container. If it is a can, I usually will put it in a recycling bin inside the home. If it's glass, I put it in a separate red box down in the garage. The more involved packaging is when it comes to plastic. Recent changes have stated that some plastics are no longer accepted in the recycling bin. For the most part, any kind of bag, I'll put it in the trash. Any rigid container may be reused. Otherwise I will try to put it in the recycling.
- Recycle as much of it as possible. For example, box, rinse can, plastic. If food didn't touch it. Example; meat. If it's too much water wasted to rinse out container, I will throw it away vs. washing it.
- Rinse and to recycle bin; just throw it in bin if clean; depending on the product and package I could reuse or just dispose.

Group 4

- Depends on what style of packaging. Cans, rinse/recycle bin. Glass, rinse/recycle bin. Paper, if thick enough recycle. Plastic, if thick enough recycle. Thin such as covering, garbage.
- I check for the recycling logo and if it's recyclable I put it in my recycling bin. If it isn't, I throw it away.
- I check packages to see if I can recycle it. I look for recycle label or mark on bottom of container.
- I examine the packaging to determine what's recyclable. If only certain parts are, or the whole thing is, it goes in the recycling bin. If something can't be recycled it's thrown away. I just Google whatever I'm unsure of.
- I fold the container and put it in the recycling bin inside the house, outside the kitchen. If the recycle container is full or not there, I put it just in the garbage bin.
- I recycle it if it can be recycled. I decide that by knowing what the city recycler accepts in the containers at our apartment complex. If it can't be recycled, I throw it away or if it has spoiled food or expired food in it, I throw it away. It's too much work and gross to wash it out if the food is spoiled.
- If it is a recyclable container then I rinse it out, then recycle it. I like to do it (recycle) because 1. I care about the environment I know that our landfills need reduction. 2. Because I believe in sustainability.
- My mom and I are really good about separating things that are recyclable and which ones can be thrown away. Honestly, when we are in a hurry, I tend to put them in the recycling bin we have and later figure out if in fact it is recyclable or not. Our apartment complex has big areas where we can later place all garbage, recycle, etc.

What words do you use for *recycling* and *garbage*?

Groups 1–3

Group 1

| Recycling | Garbage |
|---|---|
| <ul style="list-style-type: none"> ▪ No answer ▪ <i>Recicla</i> ▪ <i>Reciclaje</i> [x5] ▪ <i>Reciclar</i> [x2] ▪ <i>Recidaje</i> ▪ <i>Resicladados</i> ▪ <i>Resiclas</i> | <ul style="list-style-type: none"> ▪ <i>Basura</i> [x8] ▪ <i>Basura o Zafacón</i> ▪ <i>Basura/chatarra; porquerias; mierda</i> |

Group 2

| Recycling | Garbage |
|--|--|
| <ul style="list-style-type: none"> ▪ <i>Reciclado</i> ▪ <i>Reciclaje</i> [x3] ▪ <i>Reciclar</i> ▪ Recycling ▪ <i>Recylaje</i> ▪ <i>Reizeclar</i> ▪ <i>Resiclaje</i> | <ul style="list-style-type: none"> ▪ <i>Basura</i> [x8] |

Group 3

| Recycling | Garbage |
|--|---|
| <ul style="list-style-type: none"> ▪ <i>Basura</i> ▪ <i>Reciclabé?</i> ▪ <i>Reciclables</i> ▪ <i>Reciclaje</i> [x4] ▪ Recycling ▪ Recycle ▪ Recycle | <ul style="list-style-type: none"> ▪ <i>Basura</i> [x9] ▪ <i>Basura desperdicio</i> |

**Appendix B
Written Exercise 2**

Imagine that you are at home and holding each of these containers. Which bin would you put each item in? Why?

Container A—Frozen Food Box

Which bin would you put this item in?

| Response category | Group 1 | Group 2 | Group 3 | Group 4 | Total |
|-------------------|---------|---------|---------|---------|-----------|
| Recycling bin | 9 | 6 | 10 | 7 | 32 |
| Garbage bin | 1 | 3 | -- | 1 | 5 |

Why?

| Response category | Group 1 |
|-------------------|---|
| Recycling Bin | <ul style="list-style-type: none"> ▪ Because it's made out of cardboard ▪ Cardboard (not sure because it may be coated with plastic) ▪ Carton boxes are recyclable ▪ Clean and paper with no wax lining ▪ I typically recycle paper products ▪ It's cardboard, so recycling ▪ Paper/cardboard material |
| | <p align="center">Group 2</p> <ul style="list-style-type: none"> ▪ Because I think it's cardboard ▪ Because it's made of recyclable material ▪ Cardboard is recyclable ▪ It feels like paper carton, but it does feel like it's laminated or something which makes me feel like it should not be recycled, and it doesn't have a mark that says it's recyclable. But I'd recycle it anyway, just in case. ▪ It's dry cardboard ▪ Not cardboard, wax ▪ Paper box |
| | <p align="center">Group 3</p> <ul style="list-style-type: none"> ▪ Because it's made of cardboard ▪ Completely recyclable curbside ▪ I recycle all cardboard. I always assume that paper can be recycled. ▪ It's cardboard ▪ It's cardboard and unused ▪ Material, clean ▪ This box doesn't have the coating inside, therefore it makes it recyclable |
| | <p align="center">Group 4</p> <ul style="list-style-type: none"> ▪ Because it's cardboard and cardboard is recyclable. ▪ Because it's carton ▪ Because it's made of paper ▪ I recycle all cardboard boxes, even food ones. ▪ Paper/box ▪ Paper/thick ▪ Typically, boxes/cardboard are recyclable. |

| | |
|---|---|
| Garbage Bin | Group 1 |
| | <ul style="list-style-type: none"> No logo as well, plus it has plastic |
| | Group 2 |
| | <ul style="list-style-type: none"> Garbage for all. I have two little kids, so it all goes in the garbage. It has no indication of recycling. Additionally, it is coated, disqualifying this packaging. |
| | Group 3 |
| | No responses |
| Group 4 | |
| <ul style="list-style-type: none"> Frozen food boxes are not recyclable. | |

Container B—Plastic Clamshell (takeout)

Which bin would you put this item in?

| Response category | Group 1 | Group 2 | Group 3 | Group 4 | Total |
|-------------------|---------|---------|---------|---------|-------|
| Recycling bin | 6 | 6 | 6 | 7 | 25 |
| Garbage bin | 4 | 3 | 4 | -- | 11 |
| Both | -- | -- | -- | 1 | 1 |

Why?

| | |
|---------------|---|
| Recycling Bin | Group 1 |
| | <ul style="list-style-type: none"> Clean and plastic <i>El único problema es cuando los recipientes están sucios, cuando esto sucede la mente piensa [illegible]. The only problem is when the containers are dirty, when that happens my mind thinks [illegible].</i> Has the recycling logo It has the recycling watermark Plastic container includes recycle contains recycling symbol Plastic containers are recyclable |
| | Group 2 |
| | <ul style="list-style-type: none"> Because it's plastic Clean plastic container should be recyclable. Knowingly did it wrong. Cut it in half and recycle based on the # (I think I saw 6) It's washable so I feel like it could be recycled. Plastic Recyclable plastic |
| | Group 3 |
| | <ul style="list-style-type: none"> It has a recycling label on it It has the recycling sign on it. But I think maybe it could be garbage. |
| | Group 4 |
| | <ul style="list-style-type: none"> Because it is plastic and has the small triangle on the bottom. Because it's a plastic container Has recycle label on the bottom. I recycle once rinsed. It has the recycling emblem on the bottom. Recycle logo on bottom of container. Recycling logo |

| | |
|-------------|---|
| Garbage Bin | Group 1 |
| | <ul style="list-style-type: none"> I'm not sure about this material but they are usually dirty, so I just throw them away My old roommate told me Non-recyclable plastic |
| | Group 2 |
| | <ul style="list-style-type: none"> Garbage for all. I have two little kids, so it all goes in the garbage. It's completely plastic, though it does have the recycling symbol on it. Thin plastic |
| | Group 3 |
| | <ul style="list-style-type: none"> Due to recent flyers that came in the mail It's trash Not recyclable curbside Plastic can't be converted into anything Recycle logo. Clean |
| | Group 4 |
| | No responses |
| Both | Group 4 |
| | <ul style="list-style-type: none"> Confusion: What is too thin? Example: Saran Wrap |

Container C—Paper Coffee Cup

Which bin would you put this item in?

| Response category | Group 1 | Group 2 | Group 3 | Group 4 | Total |
|-------------------|---------|---------|---------|---------|-------|
| Recycling bin | 7 | 3 | 4 | 7 | 21 |
| Garbage bin | 3 | 6 | 6 | 1 | 16 |

Why?

| | |
|---------------|---|
| Recycling Bin | Group 1 |
| | <ul style="list-style-type: none"> Based on the material Clean and paper If it's clean It is made of cardboard |
| | Group 2 |
| | <ul style="list-style-type: none"> It's a paper cup, feels pretty recyclable. Paper Thicker cardboard cup |
| | Group 3 |
| | <ul style="list-style-type: none"> Cup paper Paper cups I feel like can be recycled. Starbucks product. Clean Wax coating might not work |
| | Group 4 |
| | <ul style="list-style-type: none"> Because it's paper It's paper, which is recyclable, and has no food on it. Once I've rinsed it out. Paper cup Paper product, not soiled Paper-like material. Generally, can be recycled. Paper, thick, easy |

| | |
|--|--|
| Garbage Bin | Group 1 |
| | <ul style="list-style-type: none"> ▪ Cups are dirty after being used ▪ My experience at Starbucks ▪ WM doesn't like coffee cups |
| | Group 2 |
| | <ul style="list-style-type: none"> ▪ After using a Starbucks cup it's usually wet and dirty. ▪ Because it's made with a material that can [illegible] ▪ Garbage for all. I have two little kids, so it all goes in the garbage. ▪ Paper cup—biodegradable ▪ Starbucks cup has no recycle sign, it's compost. ▪ There are wax coated garbage, a tremendous source of waste. |
| | Group 3 |
| <ul style="list-style-type: none"> ▪ Food touched it. ▪ If it has been used then it's trash, but if it's unused recycle. ▪ It has a thin layer inside that makes it ineligible to be recycled easily ▪ Someone told me these can't be recycled but I used to put them in recycling. ▪ Sometimes both. Depends on if clean or dirty. ▪ Starbucks cups are not recyclable if used. | |
| | Group 4 |
| | <ul style="list-style-type: none"> ▪ It's not cardboard nor plastic |

Container D—Sour Cream Cup

Which bin would you put this item in?

| Response category | Group 1 | Group 2 | Group 3 | Group 4 | Total |
|-------------------|---------|---------|---------|---------|-----------|
| Recycling bin | 6 | 7 | 9 | 7 | 29 |
| Garbage bin | 4 | 2 | 1 | 1 | 8 |
| Both | -- | -- | -- | 1 | 1 |

Why?

| | |
|---------------|--|
| Recycling Bin | Group 1 |
| | <ul style="list-style-type: none"> ▪ Clean and plastic ▪ Plastic containers are recyclable ▪ Same as B [It has the recycling watermark] |
| | Group 2 |
| | <ul style="list-style-type: none"> ▪ Because it's plastic ▪ I recycle these at home. ▪ My recycling bin says any plastic container can be recycled without a lid. ▪ Plastic, recycling symbol ▪ Recyclable ▪ Recycling, plastic ▪ Thick plastic |

| | |
|-------------|---|
| | <p style="text-align: center;">Group 3</p> <ul style="list-style-type: none"> ▪ It has a recycling label. ▪ It's on my recycling pamphlet at home and it also can be recycled. ▪ It's plastic, recyclable ▪ Over four ounces recyclable curbside. ▪ Plastic containers such as this one are recyclable. ▪ Recycle logo. Clean <p style="text-align: center;">Group 4</p> <ul style="list-style-type: none"> ▪ I recycle this once I have rinsed it out. ▪ Recycle label on bottom ▪ Recycle logo on bottom of cup. ▪ Recycling logo ▪ The little triangle ▪ These plastic containers are recyclable if washed out. |
| Garbage Bin | <p style="text-align: center;">Group 1</p> <ul style="list-style-type: none"> ▪ No Logo ▪ Non-recyclable plastic ▪ Usually they are dirty, but sometimes I clean them and then throw it in the recycling bin <p style="text-align: center;">Group 2</p> <ul style="list-style-type: none"> ▪ Garbage for all. I have two little kids, so it all goes in the garbage. ▪ I had not thought about recycling it before. <p style="text-align: center;">Group 3</p> <ul style="list-style-type: none"> ▪ Plastic goes in the trash Sometimes, depending on if it's clean or dirty <p style="text-align: center;">Group 4</p> <ul style="list-style-type: none"> ▪ Because I am thinking it is recyclable (unsure). I throw it away. |
| Both | <p style="text-align: center;">Group 4</p> <ul style="list-style-type: none"> ▪ Confusion: What is too thin? Example: Saran Wrap too thin |

Appendix C Written Exercise 3

In this packet, there are three different pieces of information. Read the first piece of information and cross out any words that you don't understand or that are confusing. Circle any words or phrases that are especially helpful.

Then, answer the questions on the following page. When you are finished, move to the second and third pieces of information. Please do not skip ahead.

Information A: What goes in the bin

What about this information is most helpful to you in knowing what should be recycled?

Group 1

- I think the “no broken glass” is the most useful because I have put broken glass, closed in a paper bag in recycling and thought that was okay.
- I think the clear, relevant information such as cleaning and taking lids off is helpful. Additionally, specific details such as “less than an inch” are helpful.
- *Imágenes*. Images.
- It was a lot of information. I want to help, but wow. I thought I had a small grasp on recycling. Now, not so much.
- Metal paint cans was helpful. Didn't know it could be recycled. Food boxes is also helpful.
- Pictures and descriptions are helpful. It would better if they were in color.
- Rinse, remove lids, what kind of paper and cardboard and metal. Glass recycling is very clear. Paper recycling is pretty straightforward, plastic is the most confusing category
- The details of what should be done to certain materials, or what are the limits until something is recyclable.
- The examples it gives as well as sizes. The way it's divided into different sections/categories.
- This information is very straightforward to understand

Group 2

- I didn't know that things you put in the freezer could not be recycled, as well as plastic bags and buckets.
- I liked the clear examples of what to recycle.
- Most paper and cardboard
- New information (to me) on this graph contains size restrictions
- Pretty much it was very direct about the rules of recycling all items
- Saying what cannot be recycled rules out any unknowns. Saying lids cannot be recycled and containers must be rinsed. Sizes or amounts (oz., lbs., etc.) are confusing.
- Specific examples of common items.
- The pictures help out
- The words that go with the picture.

Group 3

- Descriptions
- Detailing what and how goes into recycling. A lot of info to go through quickly.
- Giving several examples is helpful.

- Information is clear and helpful. I like the details that help guide you into making decisions when you are uncertain about them.
- It was very helpful learning the plastic is recyclable. Any kind of pictures or images help.
- Kind of how I base my decision on what bin to put it in my house.
- Qualifying information, such as type of container but there needs to be more, such as cardboard unless it is food soiled like a pizza box.
- The brief descriptors, including additional information such as size and cleansing. The bulleted list format was helpful.
- The detailed list of items
- The way they explain what can go in the recycling bin like the sizes and the type of recycling.

Group 4

- I didn't know if magazines were recyclable, also the bit about paint cans is new to me.
- No broken glass is recyclable.
- That frozen food boxes and refrigerated food boxes can't be recycled.
- The breakdown of things that can be recycled (@home)
- The really detailed info, i.e. caps vs. lids, size of bottles, tubs, plant pots, buckets, etc.
- The specific details listed. It makes it very helpful to know what should be recycled.
- Very specific, best one. Photos would be great, combine B and A.
- Yes, I knew most of the items that can be recycled. Not size specific.

Do you have any questions about what should and should not go in the recycling bin after reading this information?

Group 1

- [Nothing written] [x2]
- Can this be made easier?
- I might be a bit unsure about some of the items, but I think the majority are recyclable.
- It says "many plastic containers" but it is not clear which ones (for example, are sour cream containers, etc., recyclable?)
- No, I don't have any questions. The information is very clear.
- Specifically, regarding generic wording such as metal scraps. Do scraps have specific size variables/restrictions, etc.?
- What about boxes of food that are dirty? Like takeout pizza boxes, etc. Are food and drink cans supposed to be clean/rinsed? Are wet cardboard boxes recyclable?
- What specifies as a "food box?" Can juice cartons with a wax film be recycled? What about frozen juice boxes?
- Yes. Which plastics? The info says "many" but doesn't clarify which.

Group 2

- [Nothing written]
- Foil, what if it's rinsed or washed? Confused a little on the plastic container sizes.
- No [x4]
- Reynold's wrap?
- So maybe measuring paint cans and weighing the scrap metal.
- Yes, the part about food boxes that are meant to be "frozen or refrigerated."

Group 3

- [Nothing written] [x3]

- A couple of the terms could be clarified.
- Juice cartons are sometimes waxed inside so now I'm rethinking after looking at food boxes because it's refrigerated. So now juice cartons are unclear!
- No.
- Some items are not of everyday use like paint or metal pieces.
- Still unclear on paper products based on usage, soilage, and coatings.
- What is on the refrigerated boxes that can't be recycled?
- Why not plastic bags?

Group 4

- 1. Scrap paper? All scrap paper? What about if it has been written on? Or if it is colored paper? 2. Also no mention of paper that has been stapled together, do the staples need to be removed? Paperclips? Paper—what if something has been glued to it? Is it now null from being recycled? 3. I've been told that milk cartons need to be rinsed first. 4. I was also told that you can recycle pizza boxes if they had no food or food stains in them.
- I think this document would be paired well with document A. I like the visuals on B better. But I imagine the ink would be costly.
- Most paper and cardboard (give more examples) for like an office setting (work) but I know we were talking about home here, but it would be helpful to know.
- No [x2]
- Styrofoam, what to do with it dirty, do milk/juice cartons? Cardboard?
- What about plastic restaurant containers? I assume they can be recycled but do they need to be rinsed first? Are there places when the frozen and refrigerated food boxes can be recycled? Emblem, what does it mean if it can't be recycled? What do the numbers mean?
- What common products are recycled that shouldn't be?

Information B: What stays out

What about this information is most helpful to you in knowing what should be recycled?

Group 1

- After knowing this information, I am going to put the correct items in the recycling bin
- *Imágenes a color y letras grande.* Color images and big letters.
- Pictures are always a great tool to indicate or help deduce any issues.
- Pictures. None of the items are recyclable
- Plastic produce containers and freezer boxes as well as paper cups should be kept out and this helps me.
- Real world examples are very helpful.
- The color pictures are helpful and some of the descriptions too.
- The info about plastic takeout containers and plastic produce containers is helpful because I thought if it has a watermark it should be recycled.
- The pizza boxes is very helpful. In the past, we used to put those in the recycling bin, but not anymore, I guess.
- The recycled pizza box being compostable
- The smaller titles as well as the pictures.

Group 2

- All of them
- Giving specific examples like frozen and refrigerated boxes, plastic produce containers, because it is very specific
- I know not to put any film into my recycling now.
- Knowing what to do
- The examples next to the picture
- The images are very helpful, describing/mentioning what they're used for helps identify them more easily.
- The images. This looks like an assistive device for individuals struggling in their cognitive functions (no disrespect intended) except it is a "keep out" list.
- The photos of specific items
- The pictures, such as the frozen boxes. It seems to be cardboard.

Group 3

- Having the pictures with items that should not be recycled is helpful. Not having lots of text makes it easy to use this guide quickly. This list would be easy even for a child to understand.
- Material it is made from. I think I put more stuff in recycling bin than I should
- Pictures
- Pictures and information on the material of the object
- Pictures help a lot. Title may need additional information
- The colored images, and the clear examples of what they look like.
- The overarching category of the page: Keep these items out of your recycling bins
- The pictures and descriptions of what should be there
- The pictures are helpful. It's also helpful to have a description to go along with the example as there are so many different types of items.
- The pictures were great. Overall, this was the best one. Generally, I think people know what paper and plastic products might be recyclable, but don't always know which aren't.

Group 4

- Detailed pictures and examples. I thought food boxes could be recycled and coffee cups.
- I was shocked that all items listed said to not put in recycle bin except for the following: Pizza boxes (if it shows signs of use, food stains, etc.) if they are new you can recycle them, plastic bags, plastic film, and Styrofoam. I knew about these items.
- Once again, I like how specific everything is.
- That plastic takeout containers and plastic produce containers can't be recycled.
- The plastic takeout and produce containers is more helpful in what should not be.
- The visual pictures are really helpful to me and would make it easy to me to recycle the correct items. This is something that I would keep by my bin.
- Things I thought were recyclable are not (items I circled).
- Very specific/photos

Do you have any questions about what should and should not go in the recycling bin after reading this information?

Group 1

- [Nothing written] [x2]
- All plastic bags?

- For any paper or plastic cups, I think more detail should be given. For example, if it has been used, is it recyclable?
- No [x3]
- No, I don't have any questions
- Why can't any paper or plastic cups go in recycling?
- Would like something more specific for the plastic film.

Group 2

- Dry paper cups vs. soiled/used paper cups.
- No [x4]
- No questions
- Plastic bags, plastic lids and cups
- The should is not addressed.
- What if these items have the recycling symbol?

Group 3

- [Nothing written] [x2]
- Besides pizza boxes, other food-stained boxes, right?
- I thought that all paper cups went into the recycle
- It is pretty clear. It would help to say, "both used and unused should stay out of recycling."
- N/A
- No
- No, now it's clear to me what can't go there. I am a little confused about the paper cups.
- None
- Why did this image focus on just the items that we shouldn't recycle? Still don't understand why some things can't be recycled.

Group 4

- Can paper cups and plastic takeout and produce containers be recycled somewhere? What about metal caps? Do they get thrown away like plastic caps?
- I look for recycling label and some of these containers had them.
- It would be nice to include what should be recycled.
- No
- No but memorization might be tough, need a sheet like this for refrigerator.
- The plastic lids and caps are not recyclable but the container itself is? Or no?
- What aren't takeout and produce containers recyclable if they have the logo? So confused.
- What to do with Ziploc bags, milk and juice boxes, Styrofoam, pizza.

Information C: What goes in + what stays out

What about this information is most helpful to you in knowing what should be recycled?

Group 1

- "Not these" section is helpful.
- [Nothing written]
- Again, the icons are helpful to indicate what is and isn't acceptable. I also feel like the sign is helpful.
- It is clear about glass and cardboard, but less detailed about plastic.

- It is helpful to know that shampoo bottles are considered recyclable, but I'd be curious to know more about that since shampoo and other bath products come in various containers.
- Knowing what should be or should not be recycled is the most helpful way to educate people about recycling.
- Separation between recyclables and non-recyclables/pictures.
- The list of items that are crossed out are helpful in quickly identifying which ones can or can't be recycled.
- The logo with the slash is reassuring.
- The pizza boxes [information] is very helpful. In the past we used to put those on the recycling bin, but not anymore, I guess.

Group 2

- It's helpful to know that I should not recycle takeout boxes.
- Knowing how to dispose of all recycling and trash the right way.
- Listing what items shouldn't be recycled.
- The graphics, having it laid out like this is very clear and helpful. This one is my favorite.
- The pictures are helpful because it takes out second guessing. I didn't know plastic lids didn't go in recycling.
- The words, most pictures were fine. Glass was 50/50, plastic was 50/50. Clearer pictures are better, drawings are vague.
- This one had both what to and what not to recycle. Also, I liked the cross line on the ones not to recycle.
- Very unhelpful when the words some or most are used. Mentioning that some things can be composted if your city has a facility for it.
- Well it's always good to know and learn what things can be recycled and why.

Group 3

- Clean food products are more likely to be recycled, otherwise it is garbage.
- Descriptions
- Having the information separated (these vs not these) and having a picture. Having examples was also very helpful in deciding what should/shouldn't be recycled.
- Images and details on what materials can and cannot be recycled
- Pictures are okay, could be better. One line mostly describes the items, which is great when deciding to recycle.
- The brief descriptions under each title in the "recycle these at home" section.
- The images. Especially the ones on the bottom like "you can't" recycle.
- The pictures are good though I prefer actual pictures. The pictures are good as well as the X's for people who don't speak English.
- The pictures help a lot because we have an example on how to do the recycling.
- The section on what not to include

Group 4

- All of it was helpful. Combining words and pictures is helpful. Information about metal items is helpful.
- Example, detailed pictures and description.
- I appreciate specifics, I don't like general terms.
- It clarifies what the recycling categories are: metal, plastic, glass, cardboard.
- Now I know what I've done wrong in recycling and can improve.
- Specific details about what should and should not be recycled. I like that it lists specific items.
- Specific examples

- The detailed clarification on what NOT to recycle, i.e.; plastic container caps or lids.

Do you have any questions about what should and should not go in the recycling bin after reading this information?

Group 1

- [Nothing written]
- *Esta necesita mejores imágenes muy dijial[illegible] de saben que desde una primera impresión.*
They need better images/pictures very [illegible] to know from a first impression.
- In the picture of the plastic cup, there is a lid included. Are these lids not recyclable as well?
- No [x2]
- No, I don't have any questions.
- These examples seem to be better to understand.
- Yes, again, generic words like "some" are confusing and not indicative enough.
- Yes. What IS recyclable? The "recycle these at home" section is very broad. Need specifics.
- Yes. Which plastic containers do not go into the recycling bin?

Group 2

- [Nothing written]
- Although I think I've been doing it wrong
- No [x3]
- No, but a lot more than I thought.
- Nope, even young children can follow this.
- Plastic bags, plastic lids and caps
- What about produce containers with a recycling symbol?

Group 3

- [Nothing written]
- Frozen and refrigerated food boxes. I feel like I want a better description of container so I can be sure what to look for.
- I am pretty clear, but the terms might be confusing for people whose first language isn't English.
- Metals recycling still not sure.
- No
- Paper, plastic cups at home only? Curbside? Plastic takeout at home only? Curbside?
- The wording in the recyclable items is open-ended. Using "most," and "many" and "some" makes it open to interpretation.
- There wasn't any information on which metal items can't be recycled. There are several limiting words in the upper area and not enough qualifying information before.
- Why is this one so vague? And why are lids, plastic bags, frozen and refrigerated boxes not recyclable?

Group 4

- Are egg cartons then recyclable? It's a refrigerated type of material so now I am not sure.
- No
- No, however in the area I live (Washington County) I don't believe that the food paper frozen and cry goods are listed as non-recyclable. Specifically, frozen or refrigerated.
- No. I still need reference sheet.
- Same as others. If I see [illegible] label I recycle. And now I know things I can and can't recycle.
- So, all of the plastics that don't go in the recycling go in the garbage?

- Where does Styrofoam go?
- Where I live, the criteria for recycling seems to be different than what is listed here. Makes me think that there may be factors that dictate what can be recycled in different places.

**Appendix D
Written Exercise 4**

Imagine again that you are at home and holding each of these containers. Thinking about what the information you just read, which bin would you put the item in? Why?

Container A—Frozen Food Box

Which bin would you put this item in?

| Response category | Group 1 | Group 2 | Group 3 | Group 4 | Total |
|-------------------|---------|---------|---------|---------|-------|
| Recycling bin | 2 | 1 | 2 | -- | 5 |
| Garbage bin | 8 | 8 | 8 | 8 | 32 |

Why?

| Response category | Group 1 |
|---|---|
| Recycling Bin | No responses |
| | Group 2 |
| | <ul style="list-style-type: none"> ▪ The [illegible] freezer clears things up |
| | Group 3 |
| | <ul style="list-style-type: none"> ▪ Cardboard box |
| Garbage Bin | Group 4 |
| | No responses |
| | Group 1 |
| | <ul style="list-style-type: none"> ▪ Details in previous exercise provided this example ▪ Food carton boxes are not recyclable ▪ Frozen food box ▪ Frozen food containers are not recyclable ▪ It has a plastic film and from the previous information that we shared. ▪ Plastic |
| | Group 2 |
| <ul style="list-style-type: none"> ▪ Anything that can be frozen cannot be recycled ▪ Frozen food boxes go in the trash ▪ Frozen foods box ▪ Saw it in WE3 ▪ Wax cover/the paper said not to | |
| Garbage Bin | Group 3 |
| | <ul style="list-style-type: none"> ▪ Because it's a frozen food package ▪ Due to information given in this focus group ▪ Frozen food container ▪ Frozen food items, from info, shouldn't go in recycling. ▪ It is freezer packaging (something new I learned) ▪ Refrigerated. I was originally confused because of the print/film outer coating, but if I'm confused, I default to recycling. ▪ The new information showed me that not all cardboard is recycled ▪ Used B in my packet. Reframed my understanding |
| | Group 4 |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▪ Because it is a “frozen” food box ▪ Frozen food boxes can’t be recycled ▪ Frozen item/food ▪ I read that frozen food boxes aren’t recyclable ▪ It’s a freezer box, and they are not recyclable ▪ It’s a frozen container ▪ New information listed on the other packet. It says frozen food boxes are trash. |
|--|---|

Container B—Plastic Clamshell (takeout)

Which bin would you put this item in?

| Response category | Group 1 | Group 2 | Group 3 | Group 4 | Total |
|-------------------|---------|---------|---------|---------|-------|
| Recycling bin | 1 | 1 | 1 | -- | 3 |
| Garbage bin | 9 | 8 | 9 | 7 | 33 |
| No response | -- | -- | -- | 1 | 1 |

Why?

| Response category | Group 1 |
|-------------------|---|
| Recycling Bin | No responses |
| | Group 2 |
| | <ul style="list-style-type: none"> ▪ Saw it in WE3 |
| | Group 3 |
| | No responses |
| Garbage Bin | Group 4 |
| | No responses |
| | Group 1 |
| | <ul style="list-style-type: none"> ▪ Food boxes are not recyclable ▪ Food plastic boxes are not recyclable ▪ It’s not recyclable ▪ Plastic ▪ Plastic takeout container ▪ Takeout containers |
| | Group 2 |
| | <ul style="list-style-type: none"> ▪ I learned it is not for recycle from WE3 ▪ It’s a plastic takeout food container ▪ It’s a single-use plastic ▪ Takeout boxes go in trash ▪ Thin plastic |
| | Group 3 |
| | <ul style="list-style-type: none"> ▪ Because it says not to on the images ▪ It’s a takeout container and I referenced the information given ▪ It’s plastic takeout which was clearly stated on last exercise as not recyclable ▪ Not recyclable ▪ Recycling per info. ▪ Takeout container goes in the trash ▪ This remains unchanged from my previous decision ▪ Used B in my packet. Reframed my understanding |
| Group 4 | |

| | |
|-------------|---|
| | <ul style="list-style-type: none"> ▪ [Scratched out "Recycling bin" option] Oops, I learned ▪ Food to-go container ▪ My guess is because it isn't the right type of plastic that can be regenerated into new materials, or the process may emit toxins into the environment. ▪ New information says that when you're at home, this should go in the garbage (plastic takeout containers) ▪ Not recyclable takeout material ▪ Plastic takeout containers are not recyclable ▪ Plastic takeout containers can't be recycled. |
| None chosen | <p style="text-align: center;">Group 4</p> <ul style="list-style-type: none"> ▪ It has recycling logo, but I read no takeout boxes |

Container C—Paper Coffee Cup

Which bin would you put this item in?

| Response category | Group 1 | Group 2 | Group 3 | Group 4 | Total |
|-------------------|---------|---------|---------|---------|-------|
| Recycling bin | 2 | -- | 1 | -- | 3 |
| Garbage bin | 8 | 9 | 9 | 8 | 34 |

Why?

| Response category | Group 1 |
|-------------------|---|
| Recycling Bin | <ul style="list-style-type: none"> ▪ Because it is paper, in the rest is plastic |
| | Group 2 |
| | No responses |
| | Group 3 |
| | No responses |
| Garbage Bin | Group 4 |
| | No responses |
| | Group 1 |
| | <ul style="list-style-type: none"> ▪ Cups are not recyclable ▪ Disposable cup, not recyclable ▪ If they're dirty, it should not go in the recycle bin ▪ Paper cups are not recyclable |
| | Group 2 |
| | <ul style="list-style-type: none"> ▪ Compost ▪ It's a paper drinking cup and they don't get recycled. ▪ It's a single-use cup ▪ Paper and plastic coffee cups go in the trash ▪ Saw it in WE3 ▪ The paper said all drinking cups should go in the trash |
| | Group 3 |
| | <ul style="list-style-type: none"> ▪ All paper drink containers should be kept out of recycling ▪ Drink cup ▪ It's a drink cup ▪ It's a paper cup. It goes in the trash. ▪ Paper cup with drinks don't go to recycling. Not rinseable. ▪ Referenced image C and it says no. ▪ Same. I assumed that paper cups were recycled. ▪ This remains unchanged due to previous knowledge ▪ Used B in my packet. Reframed my understanding |
| Group 4 | |

| | |
|--|--|
| | <ul style="list-style-type: none"> ▪ <i>[Scratched out "Recycling bin" option]</i> Oops, learned ▪ Coffee cup ▪ I read no drink cups ▪ It feels like garbage. ▪ My guess is because it has been used ▪ New information lists that this should be tossed (coffee cups should go in the garbage) ▪ Paper cups can't be recycled ▪ Saw it and it was not recyclable (I think) based on the sheet we saw |
|--|--|

Container D—Sour Cream Cup

Which bin would you put this item in?

| Response category | Group 1 | Group 2 | Group 3 | Group 4 | Total |
|-------------------|---------|---------|---------|---------|-------|
| Recycling bin | 6 | 9 | 8 | 8 | 31 |
| Garbage bin | 4 | -- | 2 | -- | 6 |

Why?

| Response category | Group 1 |
|-------------------|---|
| Recycling Bin | <ul style="list-style-type: none"> ▪ Dairy cups are recyclable ▪ Some answers changed based on the information that was given to us. ▪ Some plastic containers are recyclable |
| | Group 2 |
| | <ul style="list-style-type: none"> ▪ In the recycling because it's a plastic tub over 6 oz. ▪ It's plastic ▪ It's washable, recyclable ▪ Plastic containers go in recycling ▪ Saw it in WE3 ▪ Thick plastic |
| | Group 3 |
| Recycling Bin | <ul style="list-style-type: none"> ▪ Clean it out and place it; plastic ▪ Dairy ▪ I am still unsure of this one, but it has a recycle label and the info sheets didn't say anything about it. ▪ It's a "dairy tub" which, as referred to by last exercise. ▪ Over 6 oz. ▪ Plastic containers like this one, when cleaned out, can be recycled. ▪ Plastic cup rinsible. |
| | Group 4 |
| Garbage | <ul style="list-style-type: none"> ▪ Cup presented is 8 ounces. I can't remember if that ounce size is recyclable, I think it is. 4 ounces+ maybe? ▪ Dairy item ▪ New information but I'm unsure about this. It would be helpful to have it by me when I'm at home. ▪ Plastic yogurt/sour cream containers can be recycled. ▪ Recyclable material ▪ Recycling logo ▪ Rinse and recycle |
| | Group 1 |

| | |
|-----|--|
| Bin | <ul style="list-style-type: none"> ▪ If dirty, they can't. Not good, go in the recycle bin ▪ Not clear if this specific plastic container is recyclable ▪ Plastic ▪ Still not sure |
| | Group 2 |
| | No responses |
| | Group 3 |
| | <ul style="list-style-type: none"> ▪ Trash |
| | Group 4 |
| | No responses |

Appendix D Written Exercise 5

Below are three different phrases about recycling. Below each phrase, write down any thoughts that come to mind or questions you may have.

When in doubt, find out

Group 1

- [Nothing written]
- Google. Looking at package containers
- I agree. I like it.
- I should, but honestly, don't.
- It is a good beginning
- Look or seek more information but will need to know the source.
- Online?
- We need to have a recycling guide handy, but it's a good phrase.
- Yes, this is good, but often the decision is made in seconds so there is no time to find out.
- Yes!

Group 2

- [Nothing written] [x2]
- Do your research
- Find out where?
- Find out where? How?
- I like this simple phrasing. No judgement.
- This is not clear enough. Find out where?
- When in doubt I usually throw it out
- Yep, Google time

Group 3

- An important mindset to have with information as critical to our environment about recycling. Specifically, what should and should not be included in your home recycle bin? Educate yourself and your household.
- Convenience. Information on recycling tends to be vague
- I don't have time to Google my doubts. When in doubt, I recycle. The type of media matters. If these were all printed material then they're all useless. If it was online, I would click it and it takes you directly to a chart.
- I feel like most people would NOT go search for more information unless there is a quick link that would take less than three seconds to click on.
- Means that if I don't know, I should ask. (This wouldn't make sense to someone who speaks Spanish and a little English. The term "find out" is colloquial. Easier: If you don't know, ask.)
- Now I will investigate more before making any decisions about whether it goes in the recycle or trash;
- Online
- We all have smartphones. It is simple to find out.
- What are things that are recyclable? I don't understand this phrase. Like, okay, find out what? How to recycle? Where to recycle?
- Yes, I will try to find out information how to recycle.

Group 4

- I throw it in the garbage. I am a very busy person and will research at a later time.
- It does not answer the question
- It's catchy and simple. Needs more info about website.
- That sounds difficult. I don't have time being a single mother and working full time.
- This would be a great lead in and then send people to the website. Catchy and memorable but would need to be prominently placed so it's known it is related to recycling. I like it but hopefully will have the info following and easy to find to take the action.
- Very vague, cliché sounding. For me, a phrase like this would go in one ear and out the other.
- Where is the most reliable and up to date information? If for example I can go online yes, but for people like my mom who are not tech savvy and don't have a computer or internet, how could they find out?
- Where?

Does it recycle...or not? Find out at recycleornot.org

Group 1

- Did not know about this website. Favorite. Simple/it's easy, yes or no.
- Going to link out of curiosity to find out if the website is user-friendly and informative enough to consistently use.
- Good idea. I like this as a resource
- Great! I have a place where I can check.
- Having a website to reference is useful.
- It is helpful knowing about online resources about recycling.
- Looking for more information about
- Not useful sometimes. I don't have internet.
- Too much time when I have trash/recycling in my hand. Would use to settle argument.
- Too much work if in a hurry.

Group 2

- [Nothing written]
- Didn't know that was even a thing
- How long is it going to take to locate the specific info I need at the moment, how easy is it to navigate this webpage? What if I don't have internet handy?
- If it was user-friendly it could work
- Now I know where to check
- Sure, that's not fun to type into my browser
- This is better because I know where to go
- To search on the website and be informed what is recyclable and what is not
- Very helpful to say where we can find out.

Group 3

- "Can it be recycled or not?" is more clear. People might not want to do research when in a hurry.
- Did not know this website.
- Don't have time to go online to check.
- Helpful. Now I know where to go.
- I didn't know about the website. Usually I just Google "recycling in the city"
- I like that it provides a resource I can go to easily in any electronic device.
- I now have a resource I can access if I have questions.

- Not proper grammar. Also, not powerful language.
- Self-explanatory
- This phrase would be a little more certain to have people go look for answers. However, I feel like the majority would still not visit this website.

Group 4

- I like this phrase and I like that it includes a solution. It's not presenting a problem and leaving you hanging. Would be cool as a sticker or a magnet.
- I think this should be paired with the last statement.
- Is this new? I've never heard of this site before.
- It's confusing
- Not memorable to me but I like the website after.
- Perfect
- This would be helpful, but I don't know if I would look it up every time.
- When I have time I will research, hard to do working two jobs.

Wishful recycling creates more trash.

Group 1

- [Nothing written]
- Don't just recycle because you *think* it might be recyclable
- Good to know
- I agree. When we guess we might be causing more work or harm.
- I don't agree with
- I think it's a little bit more confusing, especially for Spanish-speaking people (or other languages)
- Probably
- This may be true but doesn't motivate me.
- This reminds me of exactly what I was referring to as "hoping for the best"
- Ugh, it's true.

Group 2

- [Nothing written]
- Does it create trash because it takes time away from the recycling centers to sort those items? I'm guessing that's the case.
- Guilty as charged. Trying to do well can cause more problems instead of going the extra mile to be informed.
- Huh? What does this mean?
- I don't know what this means. Not sure of the point.
- It does, because you throw away everything wishing someone else will deal with it
- Ouch, is everything trash? The polar bears?
- That's a cool saying
- This is deep...it is a guilty and shame heavy statement that would do well in Portland.

Group 3

- [Pointing to the word "Wishful"] What??
- Confusing and lacks immediate [...] for me
- Does that mean throw anything in the trash?
- How? If it's trash, it is trash, no matter what.

- I agree because I have a hard time wrapping my head around not being able to recycle refrigerated or frozen food containers.
- Perhaps the information shown may not be accurate as many counties handle recycling differently.
- So true for me. I will try my best.
- This doesn't make me want to recycle. It is unclear to me and I would just ignore it.
- This feels like a personal attack? I don't get this.
- This is kind of clear to me but not clear at all to an English language learner

Group 4

- Confusing.
- I like where this is going
- I'm not sure about this one. It might be true, but it also might lead people to throw things in the trash that can be recycled.
- No idea what this means.
- This is also a good phrase, but it would be great to have the website right under it. This one is my favorite.
- Too much for someone to put a thought into it.
- Yes, I think so. People need more knowledge. With labels and what they mean.
- Yes, but how do people know? Access is important.

Which phrase most motivates you to take action to recycle properly?

| Response category | Group 1 | Group 2 | Group 3 | Group 4 | Total |
|---|---------|---------|---------|---------|-------|
| When in doubt, find out | 1 | 3 | 5 | 3 | 12 |
| Does it recycle...or not? Find out at recycleornot.org | 5 | 4 | 4 | 3 | 16 |
| Wishful recycling creates more trash | 4 | 2 | -- | 2 | 8 |
| None of them | -- | -- | 1 | -- | 1 |

Additional comments:

Group 3

- [Does it recycle] Best, but I don't like any of them
- [Does it recycle] None of them work for me, but the one marked is the most motivating for me.
- [When in doubt] I guess these are if it is meant to see an info sheet or something concise that is readily available. It is the cleanest message and the only one with the proper grammar and a clear call to action. Generally disliked all of them.
- [When in doubt] Really, not any, but best

Group 4

- [When in doubt] "One person can do this..." A,B,C then give examples of how not doing it right and the effects of one person can be drastic. People aren't motivated by slogans, terms, or words. They are or aren't for a variety of reasons depending on the person. But they do help!
- [Wishful recycling] With some resolutions?

Appendix E
Written Exercise 6

| Response category | Group 1 | Group 2 | Group 3 | Group 4 | Total |
|-------------------|---------|---------|---------|---------|-------|
| Yes | 10 | 8 | 10 | 8 | 36 |
| No | -- | 1 | -- | -- | 1 |

What are some reasons why?

Group 1

- Because living in Argentina, I never had the opportunity to recycle so easily. Here we have easy access to recycling. I believe in a more sustainable environment and I know that this can be done. Many things that we use are recyclable, we just need more guidance if we really want to make a change. Not recycling creates a list of unnecessary waste.
- Environmental reasons, predominantly
- Global warming; social pressures, neighbors; money; should make the planet better
- Good for the environment
- Is good for the environment; I would like to help future generations; I would like to do something good; would like to be a role model for my daughter; would like to protect wildlife
- Recycling is good for the planet; recycling reduces the amount of trash for the landfill; I have more space in the recycling bin (that gets picked up weekly) than in the regular trash (that only is emptied every two weeks.)
- To get my money back. To my [...] stop telling my [...]
- To help the planet, the trees, oceans, etc. To combat global warming. It's my responsibility as a global citizen.
- Trash pickup is less often, and the landfill is not repurposed like recycling is. Also, our recycling bin is much larger than our trash, so it doesn't fill up as quickly.
- We have to reduce our footprint on Earth; we can reuse some materials to turn them into new products; it is helpful for the environment; it helps to create jobs

Group 2

- [No] Yes on some things, but not as much as we should. For that reason, no. Reasons to recycle are to keep our community clean for our kids and theirs.
- Because everything has to go in the right place. Garbage with garbage. Recycling with recycling.
- Better for environment, more room in recycle bin. The recycle bin is way bigger than the trash bin. Use fewer trash bags.
- Environment. I feel it's important to reduce waste.
- I care about the future of our planet, I don't want to live selfishly and recklessly. I don't know how else to help our planet stay healthy and recycling makes me feel like I'm doing my part and not just standing by. I hate seeing trash on the street and/or images of animals with their heads stuck in bottles or plastic. I care.
- It is the right thing to do. Global warming. Why not? Look at the countries that don't? For future generations.
- It reduces my trash. There is no additional cost to recycle. I have a belief that recycling is a positive for our environment and our planet. I model the behavior for my children.
- My parents taught me to recycle and be organized with our trash. It creates less waste.
- Not just because of my girlfriend, but I feel like it's a good thing to keep the pollution down, especially when times are hard enough.

Group 3

- Because of the environment. Many of the items that go into recycling can be used again. Some will just contaminate more if not recycled properly. Plastic doesn't decompose fast.
- Because Portland has a culture of recycling and some people will actually get bad if you don't. Plus, the city measures the efforts. I want to prevent the environment from getting worse (small part in the scheme of things). Stuff can be reused. It's not that hard.
- Due to all the information circulating about the impact that not recycling has on the environment. Also looking at trash in the community is ugly and I feel like maybe my efforts at home can decrease the amount of trash outside. I also find interesting the innovating ways that people and companies come up with to recycle items.
- Guilt. Picture of trash in the environment on social media. Desire that my nephews inherit a clean earth. I've traveled and seen trash in nature.
- I am passionate about the environment. It's the right thing to do. It's not that much extra effort. It makes me feel responsible. My community offers recycling programs. I don't have to get too granular with my recycling sorting based on how my community recycles program words. If it were significantly more difficult, I might not do it as diligently.
- I love nature and we are filling it with garbage. We need to reuse and recycle.
- I try my best because I know that saves our environment, saves all kind of wildlife, trees, and makes our planet cleaner. I like to be responsible. *"Un granito de arena a la vez."* One little grain of sand at a time.
- I want to reduce waste; I think it's very important; I believe in reusing things; I don't want to pay for a large garbage can; I think that if a great service exists, we should use it.
- Our environment; repurpose possibilities; consumerism of resources; right/moral/responsible thing to do; respect for our world; ease of being able to recycle (local resources)
- We are being inundated by garbage all around us. We are a throw-away society. We use it once, then throw it away. Our oceans are paying the price for all the garbage, especially plastics of all kinds. Animals of all kinds are being affected. The production of plastics themselves isn't good for the environment.

Group 4

- 1. Because I feel that I am contributing to the problems our earth is suffering from (landfill issues) if I don't. 2. I feel it's my responsibility as an inhabitant of God's beautiful place he created for us. 3. To keep the recycling bill down (it is combined for all residents).
- Because I have been my whole life. It almost feels unnatural not to. I've lived in states where they don't recycle like Oregon does and there's trash everywhere. I want to keep Oregon beautiful and I care about the environment.
- Because I want our earth to be clean for my children and for my children's children and for generations after them. It is my responsibility to help take care of the earth that God gave us and preserve it so that we can all enjoy it. Also, it is easily accessible at our apartment complex.
- Because it's always been instilled in my home from when I was little (ever since I arrived in the USA), we knew it's good for the environment and we (my mom and I) like to contribute to it. Before (back in Mexico) I don't remember doing this.
- Earth preservation
- Feels good, space efficiency, others do it.
- For our environment. In Portland we have trash pickup two times a month so it's important to recycle everything I can.
- Society, everyone should do their part and takes very little effort to recycle. Love for our homes, towns, and planet. Where I live makes it very easy to recycle, I'd feel guilty if I didn't.

Appendix F
Written Exercise 7

Below are some different reasons why it is important to recycle properly. Read all the reasons first, and then indicate which reason is most motivating, the second most motivating, and the least motivating.

Group 1 completed this exercise verbally

Group 2

| Response category | Most motivating | Second most motivating | Total |
|---|-----------------|------------------------|-------|
| When you put items in the recycling bin that don't belong there, you're harming the recycling system. | 2 | 4 | 6 |
| Trash in the recycling bin makes all recycling harder to process and sell—it could even end up in a landfill. | 4 | 3 | 7 |
| Plastic bags and other trash in the recycling bin clog up sorting machines, which can put workers in harm's way. | 4 | 3 | 7 |
| When you put trash in the recycling bin, it has to be sorted out. This increases the cost of recycling, which could lead to higher bills. | 3 | 2 | 5 |
| Recycling right reduces waste. | 5 | 3 | 8 |
| Recycling protects the environment. | 9 | -- | 9 |

Group 3

| Response category | Most motivating | Second most motivating | Total |
|---|-----------------|------------------------|-------|
| When you put items in the recycling bin that don't belong there, you're harming the recycling system. | 1 | 1 | 2 |
| Trash in the recycling bin makes all recycling harder to process and sell—it could even end up in a landfill. | 1 | -- | 1 |
| Plastic bags and other trash in the recycling bin clog up sorting machines, which can put workers in harm's way. | -- | 3 | 3 |
| When you put trash in the recycling bin, it has to be sorted out. This increases the cost of recycling, which could lead to higher bills. | -- | -- | -- |
| Recycling right reduces waste. | 2 | 5 | 7 |
| Recycling protects the environment. | 7 | 1 | 8 |

Additional feedback Group 3:

- [Plastic bags and other trash in the recycling bin clog up sorting machines, which can put workers in harm's way.] I don't want to create risk or more work for them, but it's not my top three concerns.
- [When you put trash in the recycling bin, it has to be sorted out. This increases the cost of recycling, which could lead to higher bills.] Recycling is a moral, not financial issue.
- Bring it in, take it out-->when going to the beach. *Mantengamos nuestras playas limpias.* We maintain our clean beaches -->makes you feel like it's something you need to do, since it's "yours"
- Personally, I think it's better to have slogans in English that are simple, rather than translating them. Translated slogans are generally horrible and pandering or simply make no sense.

- *Recicle para sus hijos.* Recycle for your kids. Medellin, Columbia
- Reduce, reuse, recycle. *Pa que reciclas?* What do we recycle for? *Recicla o sera basura.* Recycle or it will become trash.
- *Reusa mas, menos basura.* Reuse more, less trash.
- *Salvemos las fuentes de agua.* Save our water sources.
- Should have number scale 1–6 instead
- They are all motivating!

Group 4

| Response category | Most motivating | Second most motivating | Total |
|---|-----------------|------------------------|-------|
| When you put items in the recycling bin that don't belong there, you're harming the recycling system. | -- | 1 | 1 |
| Trash in the recycling bin makes all recycling harder to process and sell—it could even end up in a landfill. | -- | -- | -- |
| Plastic bags and other trash in the recycling bin clog up sorting machines, which can put workers in harm's way. | -- | 2 | 2 |
| When you put trash in the recycling bin, it has to be sorted out. This increases the cost of recycling, which could lead to higher bills. | 1 | 2 | 2 |
| Recycling right reduces waste. | 1 | 2 | 3 |
| Recycling protects the environment. | 6 | 1 | 7 |

Additional feedback Group 4:

- [Plastic bags and other trash in the recycling bin clog up sorting machines, which can put workers in harm's way] Nice but most people don't care, unfortunately. Not me :).
- Recycling = very US. People repurpose more in Mexico.

Groups 2–4 Combined

| Response category | Most motivating | Second most motivating | Total |
|---|-----------------|------------------------|-------|
| When you put items in the recycling bin that don't belong there, you're harming the recycling system. | 3 | 6 | 9 |
| Trash in the recycling bin makes all recycling harder to process and sell—it could even end up in a landfill. | 5 | 3 | 8 |
| Plastic bags and other trash in the recycling bin clog up sorting machines, which can put workers in harm's way. | 4 | 8 | 12 |
| When you put trash in the recycling bin, it has to be sorted out. This increases the cost of recycling, which could lead to higher bills. | 4 | 4 | 8 |
| Recycling right reduces waste. | 8 | 10 | 18 |
| Recycling protects the environment. | 22 | 2 | 24 |

Least Motivating

| Response category | Group 2 | Group 3 | Group 4 | Total |
|---|----------------|----------------|----------------|--------------|
| When you put items in the recycling bin that don't belong there, you're harming the recycling system. | 3 | 2 | 4 | 9 |
| Trash in the recycling bin makes all recycling harder to process and sell—it could even end up in a landfill. | 1 | 3 | 2 | 6 |
| Plastic bags and other trash in the recycling bin clog up sorting machines, which can put workers in harm's way. | 2 | 1 | -- | 3 |
| When you put trash in the recycling bin, it has to be sorted out. This increases the cost of recycling, which could lead to higher bills. | 3 | 6 | 2 | 11 |
| Recycling right reduces waste. | -- | -- | -- | -- |
| Recycling protects the environment. | -- | -- | -- | -- |

**Appendix G
Written Exercise 8**

Where and when did you first learn to recycle? Were you in the greater Portland region (Clackamas, Multnomah, or Washington County), in another part of Oregon, or somewhere else?*

| Response category | Group 1 | Group 2 | Group 3 | Group 4 | Total |
|--|----------------|----------------|----------------|----------------|--------------|
| Greater Portland region (Clackamas, Multnomah, or Washington County) | 5 | 6 | 2 | 6 | 19 |
| Another part of Oregon | 1 | -- | 1 | 1 | 3 |
| Somewhere else | 5 | 3 | 7 | 1 | 16 |

*Multiple responses accepted

Somewhere else:

Group 1

- California
- Los Angeles, California
- Los Angeles, California in the 90s 2000s
- Metal at D.R.
- Miami, Florida (my hometown)

Group 2

- Matias Romero Oaxaca
- Michigan
- Rio Rancho, New Mexico

Group 3

- California, Ventura
- Chicago, Illinois
- Grew up in California. When I was in middle school or high school it was made mandatory and you could be fined for not recycling or doing it incorrectly
- Havana, Cuba
- Los Angeles
- Southern California (L.A.)
- Texas, Austin

Group 4

- When I lived in Sacramento, California

How easy or difficult do you think it is to know what items or containers should be recycled

| Response category | Group 1 | Group 2 | Group 3 | Group 4 | Total |
|--------------------------|----------------|----------------|----------------|----------------|--------------|
| Very easy | -- | 4 | -- | -- | 4 |
| Somewhat easy | 5 | 5 | 7 | 5 | 22 |
| Somewhat difficult | 5 | -- | 3 | 3 | 11 |
| Very difficult | -- | -- | -- | -- | -- |

What questions do you have when sorting your garbage and recycling at home?

Group 1

- Can I throw away dirty containers? Are some of them compostable?
- How clean do the items need to be to be recycled? Where do the numbered watermarks come into play? Are there places that some of these common household things can be recycled and where?
- I always have the question if I am recycling good, or wrong; my wife and I discuss about what items are recycling or what are not.
- I have a ton. But these are product specific.
- Is it possible to have a watermark on the containers or perhaps something we can scan with an app?
- Most often it is surrounding soiled packages/containers; specific plastics are confusing
- Often, I do not know if certain plastic containers are recyclable
- The questions I have are mostly about plastic materials and some metal ones.
- Which plastics are recyclable?
- Why not plastic?

Group 2

- Does it still get recycled if it gets wet?
- How do I know where I can take compostable material, where are there facilities near me? If there are no available facilities, is it still better for the environment for me to purchase compostable garbage bags even if I don't have a special facility to take them to? Instead of regular plastic bags? Will it make a difference?
- I may forget occasionally moving forward but with charts like these I don't think there is room for doubt.
- No questions, all the information is very direct and clear.
- No, I think the information provided makes it very simple to recycle. At home it will just be a matter of getting a second trash bin.
- Well, with all the information that I learned today I don't have questions. It's good to know and learn what can go in the recycling and what should go in the trash.
- What happens if I don't flatten my boxes? I'm lazy ☺. What happens if something I'm going to recycle is not very clean.
- Why can't all cardboard be recycled? Why are waxed boxes not switched to non-wax? Is it all the dyes in the box advertising? I don't need all of that. Clamshells should either be made to be more recyclable or we need to switch to compostable.
- Why do so many non-recyclable containers have the recycling symbol?

Group 3

- It is recyclable or garbage?
- Most of the time the questions come up when recycling plastic. For the most part, cardboard and metal is clear (and efforts have been made to clarify the frozen food boxes and paper cups.) However, plastic containers are ever-changing, and people might not always keep up with the latest information.
- Mostly I have questions about particular items I consume. Envelopes with plastics? Plastic olive oil bottles?
- Sometimes about plastic bags? paper-like boxes? food containers?
- Usually about lids and caps, rinsing it out enough and plastic containers
- What do the numbers mean??? What are the limitations on recycling paper and cardboard products? Can heavily-inked appear like junk mail be recycled? I usually think no.
- What goes where?

- What I should look for or consider with paper items (i.e. why or why not to recycle a freezer paper container)
- Why are some items not recyclable when they appear to be? Maybe it's just a lack of knowledge. Time to do some research.
- Why on cardboard is or is not recyclable? Or plastic?

Group 4

- Can takeout containers and paper cups be recycled somewhere? What about frozen or refrigerated food boxes? Can all plastic bags/plastic packaging be recycled at the grocery store? What happens when things are put in the recycling that don't belong there or if they are dirty?
- I have a document provided by apartments about what can and cannot be recycled. It simplifies things for me. We also have people who take our recycling for us, but I realize they're probably tossing what I consider recycling but it's not. I can take a better approach and on a personal level it makes their job easier.
- I now know a little more about what items can and cannot be recycled. I need to learn a little more about the label and symbols on packages.
- I want to know more about the recycling logo.
- In the past what paper products can or can't be recycled, same with plastic? Need a reference sheet.
- None other than the ones I've listed on this document. Plastic items—bathroom—do they need to be rinsed out?
- What happens to the wrong recycle process? What's the success of recycling? Styrofoam?
- Where do you recycle batteries? How do you do it properly at home? Is there a more effective way to recycle? (properly) Bigger and more clear labels on packaging.

Appendix H Written Exercise 9

What final advice do you have for the people and organizations that provide recycling information to your community?

Group 1

- A good campaign about the benefits of recycling
- A magnet that you can stick on the fridge for easy access
- Do not give up with this noble labor. People should be educated about recycling and recycling should be easy for all in the future. People should be conscious about trash and recycling but should also be conscious about not generating more waste.
- I'd like to see what is done after getting the recycling. Specifics about how the recycling is helping our community, our country, and our own planet. Some videos or ads would be nice.
- Information easily available about what can't and can be recycled. The use of pictures with easy explanations and some examples might make things easier for people.
- More ads on TV and radio about recycling.
- More detail on what is specific to recycling; include the "nots" of recycling; pictures speak a thousand words; should this be in Spanish?
- More detailed information. Maybe an explanation of why certain objects is recyclable or not. Definitely advertise it better. Maybe creating a system that will reward people for recycling. Describe the effects of not recycling. What will happen in the future if we don't make a change?
- More information about different products like *quimicos, baterias, palsticos*. Chemicals, batteries, plastics.
- More information on compostable to-go containers. Thinking about making the job easier for the people who work at the recycling plant. Make it more personal and resonate more.
- Provide specifics when informing what is and isn't recyclable. Pictures are great. They go a long way. If when recycling you're in doubt and don't have time to look it up, just throw it in the garbage.
- Providing information in several languages if possible, including braille. Icons, pictures are extremely helpful. Indication action symbols are also really effective. Different versions of resources that a person can makes sense of.
- Send better information to customers in the mail explaining which items should/should not go into the recycling bin. Also, when rules change, make sure customers are notified. Perhaps offer workshops to teach customers how to better recycle. Use social media to encourage smarter, more accurate recycling practices. Offer in other languages (Spanish).

Group 2

- Be clear as to what each mean like sheet A was nice and clear. Stress that it's easy to do. It doesn't take much work, but it can have a large impact. Have information in multiple languages.
- Education is the most important. Guidelines taught with infographics like the ones we saw tonight are easier to remember. Make some new PSAs that teach these guidelines.
- I think pictures and colors or shapes make it easier. Have one bin for what you are sure of and one for what you are not. And refresher pamphlets.
- I think they should be more detailed. If it costs them to separate and takes time, then why don't they send out information so that it's easier for us and less expensive for them? Also take more information/awareness into schools.
- Include pictures, don't use words like most, many. Examples help when talking about sizes (metrics) like saying a milk carton or juice carton is helpful vs. a half gallon carton or whatever. Include things that need to go to a different facility to be composted and where to find said facility.

- Keep the information as clear and concise as possible, with no vague words like “some,” “most” or “many.” Use specific examples and photos/icons to show what is and isn’t allowed.
- Make it clear, color pictures or real items. Have right and wrong examples. Incentivize correct behaviors, make it feel easy and not bothersome.
- Maybe make the people that scrap metal with a weight higher than you can take, maybe put those guys out there. The scrap metal guys will take all the heavy stuff.
- Well, I think that they will be more specific and what things are recyclable. Give more information, with pictures and details.

Group 3

- Be very detailed about what goes on the recycling, use pictures and writing instructions and be very specific when telling them what goes on the recycling bins. Maybe use commercials to teach us or have an app that can help us make the decision. Tell them the harm it does to the planet.
- Bringing information to children is a great tool, as they often are capable of motivating adults to “do the right thing”; Providing clear information about what can and can’t be recycled goes a long way. A step further is to explain why certain items are not recyclable like frozen food packaging; pictures and text are necessary in information since people learn in different ways.
- Keep informing how to recycle; use some type of information like what was shown to make it easier to recycle; help make less waste by reducing plastic in foods.
- Make clear, detailed charts of what can and can’t be recycled and be as clear and concise as possible. People want detail, not catchy slogans. If you send detailed charts people generally hang them by the trash. Visual charts are best to avoid confusion. Qualifying information is key. Limiting words like “most” without clarification are discouraging because why put in the effort if it might be wrong. To add to the marine life conversation. I don’t trust that even recycled plastics will stay out of the oceans. I generally try to avoid plastics as much as possible. Using plastic upsets me.
- Make it more clear on what is or is not recyclable. It’s just confusing.
- Make it simple; clear and concise recyclable; where they can call, email, visit if they have questions; more color and real-life examples; consider how different cultures, backgrounds, prioritize environmental factors; keep doing focus groups like these
- Make the information clear; make accessing the information easy; use images as much as possible; have as much information as possible in other languages.
- Multi-language signage available; clear language including pictures on what is and isn’t recyclable; if possible, give them options where they can recycle plastics and things not recyclable curbside.
- Pictures are good, anything visual; X’s are good or the circle with a slash through it to let people know what we can’t recycle; provide information in multiple languages; don’t use colloquial terms or slogans which would be difficult for limited English speakers to understand. Clear and simple is the best.
- Provide opportunities for people to have forums/live resources to clarify doubts; be okay with knowing that there are things you don’t know—learn more, be curious, educate self; set up a system in your home. Be mindful of your approach.

Group 4

- Combine list A and B with definitions and pictures. Give handouts out through garbage company. Advertise on recycling and where we can find out info.
- Have information be bilingual (it’s important) multiple languages. Access is important; can everyone have access to the information provided? (materials online, printed, etc.) Have the information touch the individual (your target audience) not just the facts and information. Example: how do people get harmed (or the environment get harmed) if we don’t recycle right? What are the long-term impacts? Have information be in places where normally you don’t think to have it in (laundry places, car washes, popular stores, etc.) Visual is always better than lots of words (for me at least).

- I want to be an informed recycler and I like the universal recycling notice idea.
- It would be great to have a fridge magnet with the items that are recyclable, that is the place where you do your recycling and make those decisions on what is and not okay. Although there are signs posted at the recycle bins (community) by the time you get up there you don't want to go through everything to take out what isn't recyclable. An advertising ad on TV would help. Yes, I know it's kind of a lot but I remember the Smokey the Bear ads still to this day for litterers. More clarification on the signs or actual bins. Maybe a sticker on the top of the bin. Thank you!
- Keep it clear and concise. Provide it in different languages. Provide it in different formats. Not everyone uses the internet. Provide information about where to recycle things that can't be recycled in the bins. Can apartment complexes have compost containers? Using paper bags and boxes for recycling is helpful. Let people know they can recycle plastic bags at the grocery store.
- Need a reference sheet/refrigerator magnet with lists/photos that works 95% of the time (in general). Don't want to have to look it up online. Some people aren't online. Show a positive side/benefit as opposed to the negative (what will happen, guilt).
- See some of the positives of recycling beyond the environmental impact. (jobs, parks, water, communities, products)
- Universal materials/guidelines that list the proper procedure for recycling. Something to stick on the fridge or by your bins. Something that is accessible because most people won't do it or take time out of their day because it's too much of a hassle. Guidelines by my bin are helpful. Also, a service that provides me feedback is a great asset and motivator to keep recycling properly. For most though, I think guidelines by the bin is the best way to go. Universal, updated guidelines.