

Center for Sustainable Behavior & Impact

# Increasing Recycling by Utilizing Cart Tags and Mailers with Motivational Messages

How Messaging and Methods Can Affect Recycling Behavior

## Reynoldsburg, OH • 2022

Local programs rely on cart tags and mailings as critical tools in single-family recycling contamination. But how well will motivational messages distributed by cart tags and direct mail impact recycling participation and capture?

To answer this question, The Recycling Partnership's Center for Sustainable Behavior & Impact (The Center) developed and piloted three motivational messages with single-family households in Reynoldsburg, Ohio. The focus was to learn which message, delivered by cart tags and direct mail, was the most effective in increasing recycling participation and awareness, as well as increasing overall tons collected.

The Recycling Partnership is grateful for the generosity of the City of Reynoldsburg, the Solid Waste Authority of Central Ohio, and Local Waste Services for collaborating with us and graciously offering their staff time, resources, and ideas to strengthen this study. Without their partnership, this would not have been possible.

## Key Takeaways



In two intervention groups (empathetic and emotional messages), **there was an increase in average recycling tons** at the route level sustained for three months after the interventions, and over the same time period, no change in total household waste generation.



There was a **38% increase in recycling tons after the interventions**, relative to the control, in the empathetic message group resulting in an average increase of seven additional tons of recycling per month per route.



**Cart tagging was shown to be effective in increasing recycling awareness**, as 65% of survey participants reported that they recalled the cart tag.



**ON ONE ROUTE IN THE EMPATHETIC MESSAGE GROUP THERE WAS A 51% INCREASE IN AVERAGE RECYCLING ROUTE TONS, RELATIVE TO THE CONTROL.**

## Study Design & Implementation

Cart tagging has historically been an effective method for communicating recycling contamination among single-family households. Through The Partnership’s Feet on the Street program, it has shown that four consecutive rounds of cart tags with specific feedback coupled with direct mailings and cart rejection is effective in reducing contamination among single-family residents in participating communities. In that program, field staff examine the contents of each household’s recycling cart and provide direct feedback on their recycling habits.

For this pilot in Reynoldsburg, The Center wanted to learn if similar tactics, a direct mailing and four consecutive rounds of cart tags, but with motivational messages would increase a household’s awareness, participation, or set out of their recycle cart, and overall tons collected per route.

To test this, The Center developed and tested three unique messages that intended to speak to different motivations for recycling. The Center worked with a team of designers to develop and test 20 different visual designs from 10 different data-backed concepts. The Center interviewed nine infrequent recyclers for 30-40 minutes each to learn which messages were most motivating to them. The three designs that resonated most with this audience were:



- **Empathetic Message (left):** Empathized with confused recyclers. This design was relatable. “This cat gets me!” is something we heard several times.
- **Logical Message (middle):** Demonstrated how recyclables are made into new things. This wasn’t in the original set of designs. We had a design that mentioned 60 days from the recycling cart to the shelf. Everyone wanted to know that story: How does that happen? We put together these visuals and they tested well.
- **Emotional Message (right):** Encouraged residents to think about the future of their waste. While this image didn’t test as high as the others, everyone seemed to remember it.

Households were divided into three groups who each received the same cart tag and a mailer with one of the three above message themes. One control group did not receive any outreach. Information on all materials was in English and Napali. Each group had two recycling routes and had a similar demographic makeup based on average household income, race, and level of education from the U.S. Census Bureau’s 2019 American Community Survey 5-Year Estimates.



Cart tags were applied to the recycling cart at each address if the cart was set out. If the recycling was not out, the tag was applied to the garbage cart. All households have weekly recycling collection on Wednesdays or Thursdays.

| Intervention Group by Message Theme | Tactics |           | Households Per Group | Impact Identified |
|-------------------------------------|---------|-----------|----------------------|-------------------|
|                                     | Mailer  | Cart Tags |                      |                   |
| Empathetic Message                  | 1       | 4         | 2,673                | Yes               |
| Emotional Message                   | 1       | 4         | 2,749                | Yes               |
| Logical Message                     | 1       | 4         | 2,817                | No                |
| Control                             | N/A     | N/A       | 2,707                | N/A               |

Interventions were deployed over a five-week period in September and October 2022. In total, 8,239 households received motivational messaging. The cost per household was \$5.37 for print materials and field labor to deliver cart tags over four weeks.

## Evaluation Methodology & Findings

The impact of the interventions was measured in three ways.

- 1 Set out data was collected through software installed on trucks that determines if a recycling cart was collected, set out, driven by, or not set out, per household. This was collected for one month prior to the interventions, for the duration of, and one month following the intervention. This data was also used to determine recycling set-out and participation rate.
- 2 Recycling tonnage was the primary metric used to determine if residents changed their behavior because of the interventions. Recycling tonnage data was collected using scale house weights on collection trucks servicing the respective routes. This was collected for one month prior to the interventions, for the duration of and three months following the interventions.
- 3 A pre- and post-study survey, modeled after The Recycling Partnership’s Recycling Confidence Index national survey, was conducted to gain a deeper understanding of how residents received motivational messages and all recycling communications materials. The survey gathered a self-assessment of the respondent’s recall of local recycling campaigns, knowledge of how to find information on recycling, and confidence in the recycling system. Survey respondents were able to submit the survey via mail or online. Residents across the control and intervention groups were included in the survey.

### Impact on Community Recycling Set Out

There was not a detectable change in recycling set out or participation across the intervention or control groups. Recycling set out and participation was high across all groups before the intervention, which likely contributed to the lack of increase. Across all routes, the average set out was over 85% prior to the interventions.

Prior to the interventions, the recycling participation rate across the city was 98.9%. This is an extremely high recycling participation rate. Of these households, 97.7% set out their recycling at least 50% of the time over the baseline period.

## Impact on Recycling Tonnage

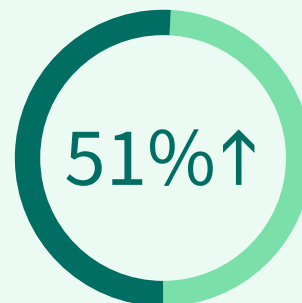
Each intervention group included two recycling routes. To further understand the impact of the interventions, we analyzed the recycling tons from the individual routes as well as by intervention group. By looking at each route, it provides greater visibility to the impacts of the interventions.

**In two of the intervention groups, the empathetic and emotional message groups, there was a substantial increase in average recycling tons at the route level that was sustained for the three months of tracking done after the interventions.**

Over this same time period, there was no change in total household waste generation.

|   | Empathetic  | Emotional  | Logical  |
|---|---|--|--|
| <b>Percent Change in Recycling Tons</b>                     | <p><b>On one route, there was a 51% increase in average recycling tons</b> in the months following the interventions and a 25% increase on the other route, relative to the control.</p> <p>At the group level there was a <b>38% increase in recycling tons</b> in the phase after the interventions, relative to the control.</p> | <p><b>On one route, there was a 38% increase in recycling tons</b> in the phase after the interventions, relative to the control.</p> <p>On the other route in this group, there was a decrease in average route tons consistent with the average decrease seen in the control group, though this finding was not statistically significant.</p> | <p>There was not a detectable increase in recycling tons in the logical message group.</p> |
| <b>Change in Average Recycling Tons per Route per Month</b> | <p><b>7 tons</b><br/>Relative to the baseline</p>   | <p><b>2 tons</b><br/>Relative to the baseline</p>  | N/A  |
| <b>Statically Significant</b>                               | On both routes  | On one route   | N/A  |

### Empathetic Message Performed the Best



Increase in Average Recycling Tons on One Route

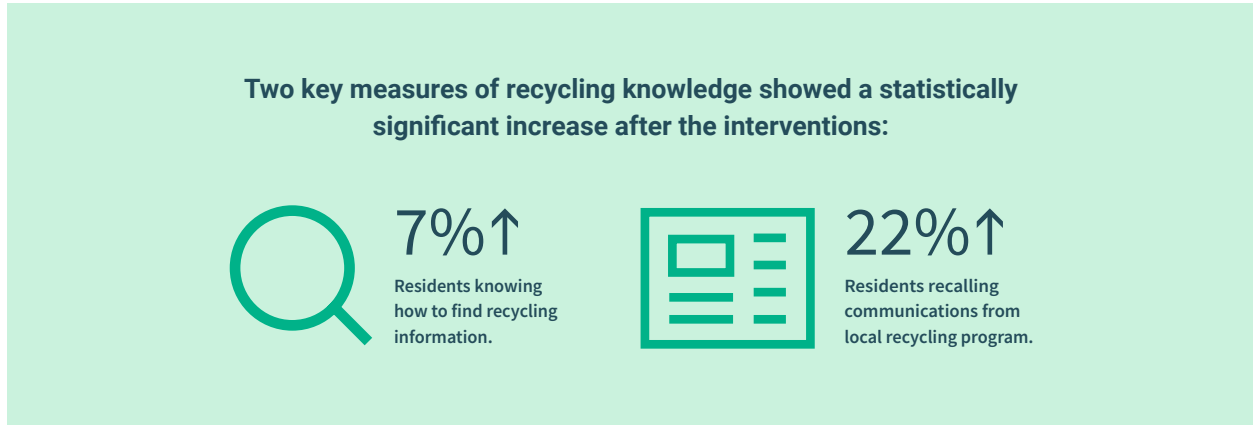
Prior to the interventions, the three routes that had a statistically significant change recycled route tons that fell in the middle compared to other routes (they were not the highest or lowest performing routes). **After the interventions, these three routes (highlighted and bold in the chart below) were the highest performing, on average recycling 35% more, or 1.64 more tons, than the other routes on each collection cycle.**

| Group             | Route    | Average Route Tons Per Route Before Interventions | Average Route Tons City Wide Before Interventions | Average Route Tons Per Route After Interventions | Average Route Tons City Wide After Interventions |
|-------------------|----------|---|---|--|--|
| <b>Empathetic</b> | <b>1</b> | <b>4.81</b>                                       | 5.11  | <b>6.20</b>                                      | 5.25   |
|                   | <b>2</b> | <b>4.79</b>                                       |   | <b>6.59</b>                                      |  |
| Logical           | 1        | 6.66  |   | 5.09   |  |
|                   | 2        | 4.39  |   | 4.13   |  |
| <b>Emotional</b>  | 1        | 4.34  |   | 4.68   |  |
|                   | <b>2</b> | <b>5.53</b>                                       |   | <b>6.02</b>                                      |  |
| Control           | 1        | 5.09  |   | 4.96   |  |
|                   | 2        | 5.25  |   | 4.37   |  |

A literature review conducted by Cascadia Consulting Group suggests that recycling performance has been found to relate to factors such as differences in age, income, education, socio-economic status, homeownership, political ideology, race, household size, and employment, although the strength or direction of the trends may not be consistent. Based on the literature review, we qualitatively infer that differences in income could have had an impact on how the interventions impacted recycling tons within these demographic groups. Two of the three routes that had a statistically significant change in route tons had the highest incomes of any of the routes, with both routes having a median annual household income of \$120,000. Therefore, further study could test the correlation of demographics factors and recycling performance and determine if the impact of cart tags and mailings is greater with certain demographic groups.

## Impact on Recycling Awareness

From the pre- and post-surveys, respondents better understood how to find recycling information after the interventions, as well as recalled the cart tag most among other recycling communications, including the mailer.



→ **We hypothesize that recycling confidence and behavior are linked and sought to examine this in [The Recycling Confidence Index](#).**

The Recycling Confidence Index score in Reynoldsburg before the interventions was 770. After the interventions, the score increased to 790, a sizeable jump for this multi-factor index. Recall of communications from the local program and the feeling that one knows how to recycle are both important drivers of recycling confidence.

→ **There was a small increase in self-reported participation from the surveys.**

Although residents may have increased participation, this was not detected in the participation measurement.

→ **Sixty-five percent of respondents recalled the cart tag.**

This is a very high level of recall for a community campaign and suggests that cart tagging is a very memorable and visible tactic. And of the cart tags, the message of the “Recycling keeps things out of the landfill” was the only motivational indicator that increased between the pre- and post-survey. This messaging was memorable and shifted reasons why residents recycle. Before the interventions, 48% of residents identified “Recycling keeps things out of the landfill” as one of the top three reasons for recycling compared to 54% after the intervention.

## Conclusion

In this study, the motivational messages delivered by cart tag and mailings had a meaningful and sustained impact on the average recycling tons, with the emotional message generating the largest increase in recycling. This suggests motivational messages delivered by cart tag are an important tactic to consider in a recycling campaign. It also suggests that different households could be motivated to recycle by different motivational messages and that further study is needed to refine the impacts of various motivational messages.

Further study could tease out the impact of the motivational message versus the tactic of four cart tags and a mailer. Though the findings from this study indicate there is a strong correlation between the motivational messaging and the change in recycling tons because the empathetic message generated higher increases than the emotional messages and that no increase was detected in the logical message group.

Emotional and empathetic messages are likely the best messages to focus on in future studies. These were the most effective messages in this study, and this was also found in The Center's 2022 pilot in Chicago, Illinois.



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There is no one-size-fits-all, clear roadmap to increase participation and capture in recycling but there are tools and resources that The Recycling Partnership believes can help communities, counties, and states along the way. In 2022, The Recycling Partnership conducted a series of pilot projects in communities across the country through its Center for Sustainable Behavior & Impact to test types of messages, methods for education, and interventions. The project in Reynoldsburg, OH, was conducted with support from the Walmart Foundation. The Recycling Partnership is grateful to each of the communities and counties that participated. Additional information about each can be found at [recyclingpartnership.org](https://recyclingpartnership.org).