The Recycling Partnership
Solving for Circularity

Center for Sustainable Behavior & Impact

Studying Recycling Behavior and Capture with In-Home Recycling Bins

How Delivering In-Home Recycling Bins to Residents Could Increase Recycling

Elgin, IL & Baldwin Park, CA • 2022

Since 2014, The Recycling Partnership has brought over 1.4 million recycling carts to households across the nation, significantly increasing access to and improving the ease of recycling. But even for homes with better access to the convenience of curbside recycling, there is still a significant opportunity to improve recycling capture. Can providing in-home recycling bins help to boost capture?

To determine whether the delivery of in-home recycling bins and education would impact the capture of recyclable materials, The Recycling Partnership conducted a study in two dramatically different regions: Elgin, Illinois, and Baldwin Park, California. These two communities are representative of community programs with relatively high recovery (over 500 pounds per household when the national average is 400 pounds per household for a community with curbside recycling in carts). Therefore, this was an exercise to test tactics in a higher recovery program versus a program that might be dramatically underperforming.

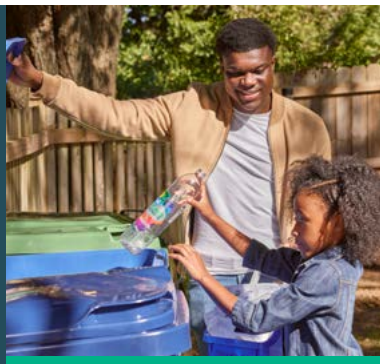
The Recycling Partnership is grateful for the generosity of the City of Baldwin Park, City of Elgin, and WM for collaborating and graciously offering staff time, resources, and ideas to strengthen this study. Without their partnership, this would not have been possible.

Key Takeaways

In total, **23,726 homes** were reached with recycling education interventions as part of this study, which comprised of 51% of the households in Elgin, IL, and 27% of the households in Baldwin Park, CA.

Residents who received an intervention that included an in-home recycling bin were **more likely** to recall campaign materials and agree with positive sentiments about recycling.

There was an increase in some programmatic materials for the group of residents that received in-home recycling bins and messaging, though this finding was not statistically significant.



THE PROJECT REACHED OVER 23,000 HOMES WITH EDUCATIONAL INTERVENTIONS OVER EIGHT WEEKS IN 2022.

Study Design & Implementation

This project sought to increase recycling across all recyclable material groups with an emphasis on increasing the capture of recyclable plastics. The study interventions included the testing of two tactics: one that coupled in-home bins with education and one that was education alone. Deployed tactics include:

→ **In-Home Recycling Bin and Mailer**

- Delivery of an in-home recycling bin accompanied by an FAQ educating single-family households on how to use the bin to capture recyclable materials in the home.
- Delivery of an info card mailer focusing on recyclable plastics to all households that received an in-home bin approximately two weeks after receiving it.

→ **Mailer Only**

- Delivery of the same info card mailer to a group of households that did not receive a bin. These households were part of the education-only intervention group.

Intervention Group	Recycling Intervention
Group 1	Control, no intervention
Group 2	In-Home Recycling Bin with FAQ Plus Follow-up Mailer
Group 3	Mailer Only

Regional variation exists in recycling programs across the nation. To adequately test the interventions, the study was deployed in two communities within two different regions. The study design and deployed interventions were identical, with the only difference being the number of households reached. This design provides insight into how results may be impacted by regional variation.

The Recycling Partnership worked with a team of designers to develop 20 different visual designs from 10 different data backed concepts. We interviewed nine infrequent recyclers for 30-40 minutes each to learn which messages were most motivating to them. One of the designs that resonated with this audience was a logical message. Everyone wanted to know the story of what happens to their recyclables. We put together visuals to represent the process and they tested well. Since a focus of this pilot was increasing plastic recycling, we thought that this messaging would also demonstrate transparency in plastic recycling as it shows materials being made into new things.

Logical Message
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.

The informational mailers distributed to each household included detailed information about accepted recyclables with an emphasis on accepted recyclable plastics. Along with a focus on programmatic plastic materials, the mailer included images showing the recycling process to help residents understand and relate to the transformation of recycled material. All educational materials included Spanish translations and were localized for each community.

We deployed interventions over eight weeks from August to October 2022. Between both cities, we reached 23,726 homes with educational interventions as part of this study. This represents 73% of single-family households serviced in Elgin, IL, and 39% in Baldwin Park, CA.

	Elgin, IL	Baldwin Park, CA
Households received a mailer only.	8,409	2,810
Households received an in-home recycling bin and mailer.	10,600	1,907

The cost per tactic for the mailer-only groups was $0.31 in Elgin, IL, and slightly greater at $0.44 in Baldwin Park, CA. The cost per tactic for the bin and mailer groups was $6.20 in Elgin, IL, and $18.61 in Baldwin Park, CA. The cost per household was much lower for the bin and mailer group in Elgin, IL, because city staff delivered all the bins to households and internalized all costs. In Baldwin Park, CA, a consultant was hired to deliver the bins, and this price included compensation for staff time.

Evaluation Methodology & Findings

1. This study included three forms of measurement to capture potential changes to the recycling stream and changes in resident recycling knowledge. We measured changes in the recycling stream with a baseline and post-intervention recycling sort on the recycling composition for routes with households in each group.

2. The recycling sort for Baldwin Park, CA, included 16 samples on nine different routes. Eighteen samples were collected in Elgin, IL, on 18 different routes. The sample weight was consistent for each community at about 200 pounds per sample, and the material was consistently sorted into 14 separate categories in each community. A baseline measurement was conducted in June, and post-intervention studies were conducted in October. Composition data was adjusted for seasonality by reviewing four years of audits from 2018 to 2021.

3. Recycling tonnage was also analyzed for the routes within the different intervention groups and derived from scale house weights on collection trucks servicing the respective routes. Historical tonnage was examined, along with tonnage during and post-intervention. Tonnage data was adjusted for seasonality.

Resident recycling knowledge was measured with a phone survey conducted on both cell phones and landlines, with a higher percentage completed on cell phones. Phone surveys were conducted in May before any intervention and again in November, at least four weeks after any intervention. In Baldwin Park, CA, the survey included 300 participants, and in Elgin, IL, the survey included 350 participants.

Impact on Composition of Recyclables and Recycling Tonnage

In both cities, the post sort data indicated an increase in the amount of fiber for the group that received in-home recycling bins and messaging. In Baldwin Park, CA there was a 9.4% increase and in Elgin, IL a 4.6% increase in fiber when compared to the change in composition for the control. However, these results were not found to be statistically significant which could be contributed to natural variability in the samples and/or limited sample sizes.

Post Recycling Composition

Sort data indicated an increase in the amount of fiber that was recycled by the group that received the in home recycling bins.

9.4%▲
in Baldwin Park, CA

4.6%▲
in Elgin, IL

However, these increases in composition did not equate to an increase in recycling tonnage within the communities. Across the intervention and control groups in both Baldwin Park, CA and Elgin, IL, there was not a detectable change in recycling tonnage at the route level. Since the campaign's focus was on recyclable plastics, and plastics make up such a small percentage of the recycling stream by weight, it is not surprising that a change was not detected at the route level. Additionally, given the variability in household recycling generation, detecting small shifts in recycling tons can be difficult. Route tons were included as one metric in this study since this data is readily available, but this was not the primary metric for measuring plastic recycling.

Additionally, before the interventions, Baldwin Park, CA, had a plastics recycling rate of twice the regional average. This community was already doing a better job of recycling plastic than many others, which makes it more challenging to increase the amount of plastic in the stream. In addition, California has a bottle deposit system that pays consumers when they recycle beverage containers at certified recycling centers, which would lead us to expect less recyclable plastic in the recycling stream.

Impact on Resident Recycling Knowledge

These slight changes in the recycling stream suggest there could be some behavior change occurring within each group that received an in-home recycling bin. Similarly, survey findings indicate that residents who received a bin may feel more confident in their recycling program and recycle materials more often. In Group 2, those that received in-home recycling bins and messaging stood out among the three groups in Baldwin Park, CA, and Elgin, IL, as the group with the greatest recall for campaign materials. For both communities, residents who received a bin reported recycling plastic bottles, containers, and jugs more than any other group.

Positive sentiments about recycling were reported most frequently by Group 2 in both cities. In Baldwin Park, CA, Group 2 most often agreed they are confident recycling positively impacts the environment. In Elgin, IL, Group 2 most often agreed that the city is doing enough to support recycling.

Study Limitations

→ Measurement for this study on the recycling stream was a back-of-truck composition study. This type of measurement does not allow for the same level of examination of the material stream as a capture rate study. The composition study was weight-based. Plastic materials have a relatively low weight, making it more challenging to detect changes that may occur in the stream since the frequency of occurrence is omitted.

→ The baseline phone survey was not initially segmented by the three groups, making it more challenging to create significant samples for this in the post-survey.

Conclusion

In-home bins coupled with recycling education is a promising tactic to help residents increase recycling. The high recall of in-home recycling bins in the survey findings and increases in the composition of some materials suggest that in-home recycling bins could help recycling programs improve performance. Further research could help us understand how, or if, in-home bins contribute to improved recycling and whether the universal delivery of in-home bins to single-family households with curbside carted recycling can increase the capture of quality recyclable materials.

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 Recycling Partnership is grateful to each of the communities and counties that participated. Additional information about each can be found at **recyclingpartnership.org**.

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