Bloomberg Cities
Idea Exchange

EVALUATION REPORT

Cart tagging reduces contamination & saves money

Recycling cart tagging programs provide personalized feedback to residents about contamination found in their recycling carts. Program ambassadors check the contents of carts and leave either "Oops" tags or "Good Job" tags based on what they find.

San José Recycling Feedback Program

In 2022, 57% of San José's single-family recycling waste stream was contaminated, costing the city an estimated **$20.4 million over two years**. This represented **18% of San José's total waste hauling costs**.

San José implemented a cart tagging program in March 2024. In 2025, the Idea Exchange Evaluation Fund evaluated the program and found reduced contamination and significant savings. Learn about the program and evaluation here.

Reduced contamination 19%
one to two weeks after household was tagged

Program could
save the city $3.5 million per year
once all households are tagged

Program provided a
return-on-investment of 1.6

Learn more about the Idea Exchange

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Executive Summary

CHALLENGE

In 2022, **57% of San José's single-family recycling waste stream was contaminated, costing the city an estimated $20.4 million** over two years. This represented 18% of San José's total waste hauling costs.

SOLUTION

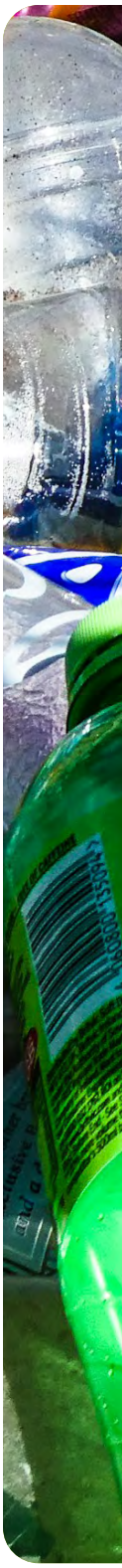
The City developed the **Contamination and Recycling Tagging (CART) program, which provides personalized feedback to residents about contamination** found in their recycling carts. The program involves City ambassadors checking the contents of residents' recycling carts, and leaving "Oops" tags or "Good Job" tags based on what they find. Ambassadors also engage in conversations with residents when approached on their tagging routes. Although the idea of "Oops" tags is not new, San José's program stands out for its citywide scale, high-quality data collection, and intentional resident engagement. [Read more about how cart tagging works]

IMPACT

We conducted a randomized controlled trial (RCT) to quantify the impact San José's cart tagging program has on single-family recycling contamination. Our evaluation found the **cart tags reduced contamination 19%** one to two weeks after a single-tagging, which we estimate could **save the city $3.5 million per year** once all households are tagged. We estimate that **for every $100,000 spent in the program's first 16 months, the city received $160,000 in savings**. However, **ambassadors' conversations were not prevalent enough to move the needle on contamination**. Residents who had conversations during baseline data collection had similar contamination reductions to residents who only received a CART tag. [Jump to evaluation results]

DRIVERS OF IMPACT

The 'Oops' tags drove the reduction in contamination. Households that received "Good Job" tags had little to no change in their recycling contents the following week. Qualitative research suggests three mechanisms for how "Oops" tags reduce contamination: (1) increasing the salience of recycling through conversations with family and friends, (2) serving as easily accessible reference guides, and (3) delivering personalized feedback that prompts learning and correction. **Conversations between ambassadors and residents reinforced the personalized feedback prompts of the 'Oops' tags**, among the small group of residents engaged (3% of households tagged). [Learn more about why cart tagging works]



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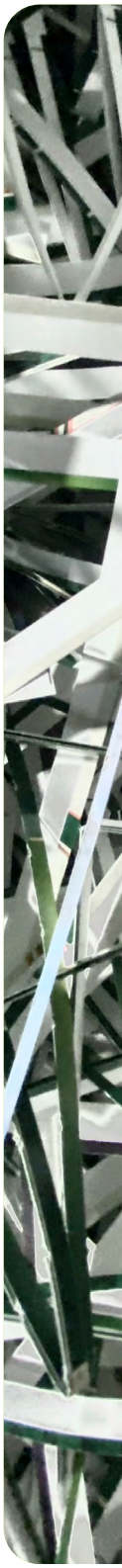


Intervention

How cart tagging programs improve cities' waste streams

Cities bear the financial and environmental consequences of the contents of residents' recycling carts. When carts contain non-recyclable or dirty recyclable materials, cities pay more to process loads that are harder to sort and process. Contamination also pushes more material into landfills, accelerating the use of limited landfill capacity and increasing emissions tied to hauling, sorting, and disposal.

Cart-tagging programs address these failures at their source. By sending staff to visually inspect recycling carts, leave immediate feedback (usually an "Oops" tag when contamination is found), and communicate in-person with residents, cities can help residents learn from their mistakes and improve their at-home waste sorting accuracy in the future. This kind of household-level feedback reduces errors that would otherwise harm the waste system.

When residents put the right things in their recycling carts, the whole system works better. Collection runs more smoothly, sorting facilities work more efficiently, and more material can actually be recycled instead of thrown away. In short, lower contamination means lower costs and fewer emissions.

Intervention in practice in San José

PREPARATION

City staff identify tagging routes and conduct outreach to alert residents about cart inspections.

PROGRAM OPERATIONS (DAILY)

City staff load daily tagging routes and prepare "blackout maps" (maps where haulers delay collection until carts are tagged).

Haulers follow"blackout maps" and delay pickup on tagged streets until ambassadors call to say they are finished. Haulers communicate route issues to ambassadors.

Ambassadors work in pairs starting at 6 a.m. They follow their tagging route map, inspect carts, record findings, and leave either an "Oops" or "Good Job" tag. They answer resident questions and log any conversations.

DATA PROCESSING

Shift leads conduct daily spot checks of data entries for accuracy. Any logical conflicts in the data are reviewed and resolved by the program team.

Context and history of cart tagging in San José

FALL 2022 | **PROGRAM ORIGIN AND BUDGET APPROVAL:** By 2022, San José's contamination levels reached 57% among citywide single-family homes, more than double the estimated 2000 national average of 17%. San José's cart tagging program originated within the Environmental Services Department's Integrated Waste Management (IWM) Division, which submitted a budget request in Fall 2022 for the FY23/24 budget year. The request was justified by rising contamination between 2020 and 2022, which were causing substantial financial impacts. San José paid approximately $10.4 million in contamination fees in FY23/24, representing 18% of its total hauling costs. The proposal received Council approval in June 2023. This approval funded new staff positions and one-time program dollars, enabling the City to begin developing what would become the CART program.

FALL 2023 | **WINTER 2024 - PROGRAM DEVELOPMENT:** Program planning included identifying priority routes, designing resident-facing materials, determining operational requirements, and hiring and training ambassadors.

MARCH 2024 | **PROGRAM LAUNCH:** Ambassadors began inspecting recycling carts for contamination and leaving "Good Job" or "Oops" tags, providing direct feedback to residents. Early implementation focused on routes with the highest contamination rates based on a Fall 2022 waste characterization study, where the potential for improvement was greatest.

SUMMER 2024 | **EARLY EVIDENCE OF BEHAVIOR CHANGE:** The CART team examined their data to start to understand the efficacy of the program. Data from a sample of 285 homes revealed that contamination decreased by 25% among 110 households, suggesting early evidence of behavior change. In Spring 2025, an analysis of route-level contamination found that routes with a higher percentage of tagged accounts tended to see larger contamination reductions, although the analysis was limited by confounding factors and a small sample size. The Fall 2024 waste characterization study measured 41 percent contamination compared to 57 percent in Fall 2022, a decrease likely impacted by many efforts across the City.

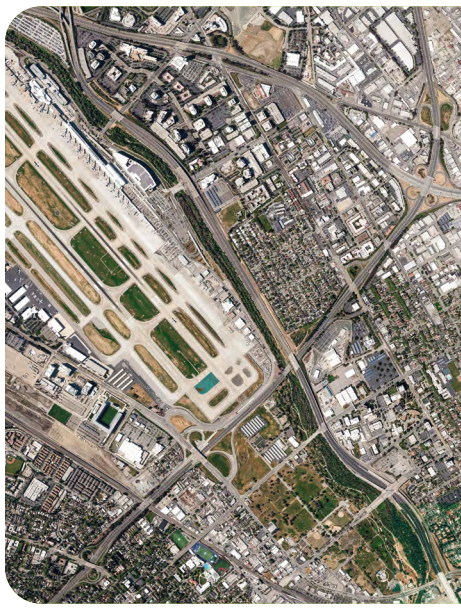
DECEMBER 2024 | **TRANSITION TO AN IN-HOUSE ARCGIS PLATFORM:** Initially, the City piloted a third-party app for data collection, which provided AI-powered assessments of contaminants and was easy for ambassadors to use in the field. However, as the volume of data increased and the need for cloud storage and additional support for processing and management grew, the data collection, storage, and management functions were transitioned in-house to an ArcGIS Survey123 app and ArcGIS Field Maps. A custom data-collection survey was built and integrated into Survey123, and daily field maps were loaded into ArcGIS Field Maps to support easy access and efficient data entry in the field.. By the fall of 2024, ambassadors had visited 57,000+ homes, inspected 45,000+ carts, left 44,000+ tags, and logged 900+ resident conversations.

2025 | **SCALING ACROSS THE CITY:** Following initial success in highly contaminated areas, tagging has been expanded across the city. Operations moved progressively from high-contamination routes to medium and lower-contamination routes, working towards the City's goal of reaching all single-family homes in the city.

What makes San José's cart tagging program unique

San José's cart tagging program stands apart from other initiatives because it combines citywide scale, high-quality data collection, and intentional resident engagement. Many U.S. cities have run cart tagging pilots, but most of these efforts are short-term, small-scale, lightly staffed, or reliant on simpler technology. By contrast, San José has built a robust, data-driven operation.

San José's program distinguishes itself in the following ways:



1. SCALE & ROLLOUT

Most U.S. cart tagging programs reach only a fraction of households or run only for a few months. Atlanta, Chicago, Spokane, Fort Worth, Centerville had pilots that targeted less than 5,000 households or less than 40% of single-family homes, with duration ranging between 8–12 weeks. San José departs from this model in ambition and longevity:

- The program's goal is to reach 100% of single-family households (216,800 households total).
- The program conducted 184,992 inspections, reached 184,061 households, and left 137,228 tags by December 2025, far surpassing typical pilots.
- Most U.S. pilots run one season; San José operates a permanent, multi-year tagging program.
- As a tradeoff for its wide reach, San José has tagged each household only once, while other U.S. programs typically tag households multiple times. In previous research, tagging a household multiple times has led to stronger behavior change.

2. STRUCTURED RESIDENT CONVERSATIONS

It is rare for cities to invest in their cart tagging staff as ambassadors to the public. Structured, 1:1 practitioner interactions can make all the difference in changing attitudes and behaviors. San José uses cart tagging as an opportunity for high-quality community engagement:

- Ambassadors receive training on how to have productive and positive conversations with residents about their recycling practices.
- Ambassadors log each interaction as a data point in their data collection app.
- The City uses these logs to identify pain points and refine messaging.

3. IN-HOUSE ARCGIS PLATFORM

San José designed and built an in-house platform that is customized to the program's needs. Some of the in-house platform's key features include:

- Functionality for logging resident conversations, contamination levels, and tag types.
- Data fields aligned with San José's waste characterization study, allowing for more relevant analysis.
- Ability to capture photos that support quality assurance checks.
- Reliable mapping and routing for ambassadors' daily routes through ArcGIS Field Maps.

4. DATA QUALITY PRACTICES

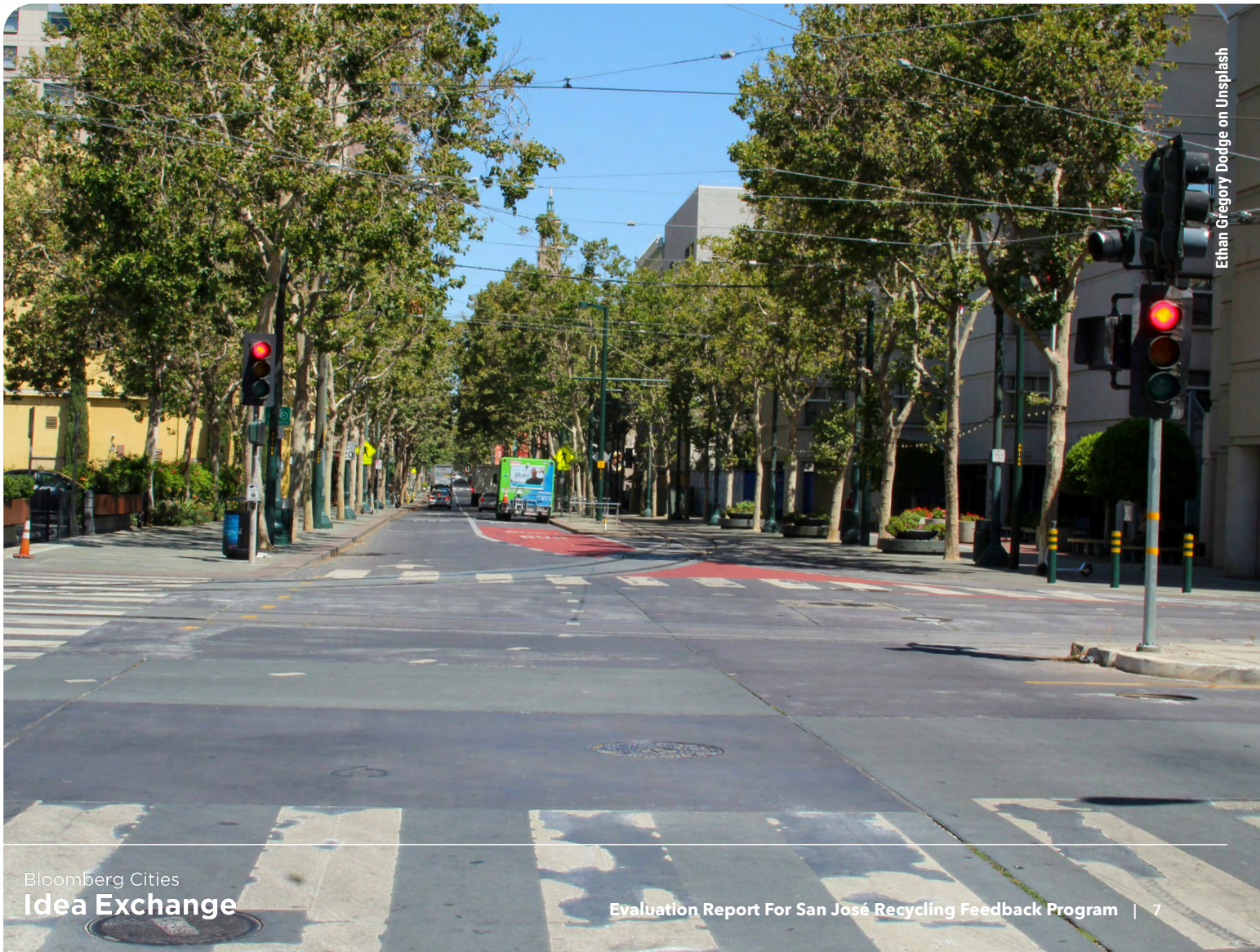
Reviews of other programs suggest that data quality is limited in many of them, even though data can support improved communications and programming. San José has invested heavily in data accuracy. Key practices include:

- Frequent audits to check ambassador-recorded data against photos of cart contents taken in the field and ensure consistent tagging criteria is applied across staff.
- Daily spot checks by field supervisors, followed by feedback conversations with ambassadors.
- Calibration training and debriefs to maintain consistency in identifying special contaminants.

5. STRONG AMBASSADOR CULTURE AND SUPPORT

Some programs rely on temporary staff, volunteers, or contractors, which may lead to inconsistent implementation. San José has invested in:

- Selective hiring focused on recycling interest and reliability; jobs promoted on university job boards and through professional recycling associations
- Paid, year-round ambassador roles
- Ongoing training, field shadowing, and scenario practice
- Regular team meetings and constant supervisor support



Ethan Gregory Dodge on Unsplash

Evaluation Methodology

Lessons from existing evidence

Previous studies have shown that cart tagging can reduce contamination, but none have used experimental methodologies, or examined programs that tag carts just once. Quasi-experimental studies have found strong positive effects when households are tagged 6+ times in a row. [1][2] Two studies of programs that tag carts 2-4 times found no statistically significant impact, but neither study used experimental methods. [4][5][6] To our knowledge, there has not been a large-scale randomized controlled trial to examine the causal impact of a single tagging intervention on contamination rates. There is also little evidence about the specific aspects of programs that lead to behavior change (e.g., conversations between residents and staff, cart tag design, program communications). This evaluation was designed to provide that missing evidence.

Prior to this evaluation, San José conducted a data analysis that showed that tagged routes demonstrated a significantly higher mean reduction (-27%) compared to non-tagged routes (-11%), a 16 percentage point difference. However, that study was limited in its ability to isolate the program's true impact from the effects of concurrent city initiatives. This study provides causal evidence that the cart tagging program is working, and precisely measures the magnitude of that impact.

EFFECT SIZES DETECTED IN PREVIOUS STUDIES OF CART TAGGING PROGRAMS

Location	Number of weeks each household is tagged	Effect size detected	Evaluation methodology
Snohomish County, Wash	2	None	Quasi-experimental (Pre / post)
Large, Mid-Western city	4	None	Non-experimental
New Bedford, Mass	4	25%	Quasi-experimental (Pre / post)
Clackamas County, Ore	6	27%	Quasi-experimental (Pre / post)
Minneapolis, Minn	6	8.5%	Quasi-experimental (Difference-in-differences)
Chicago, Ill	16	32%	Quasi-experimental (Pre / post)

Research goals

We aimed to accomplish the following goals through a mixed-methods evaluation:

- Isolate the effect of the intervention from other concurrent city efforts by rigorously assessing the causal impact of San José's cart tagging recycling program.
- Understand the mechanisms and program design elements that support program success.
- Account for differences in context when cities elsewhere seek to replicate the program.

Evaluation methods

This evaluation used a mixed-methods approach to assess the program's impact on contamination rates and to understand the mechanisms of behavior change. The design combined a **randomized controlled trial (RCT)** to rigorously measure the causal effect of the intervention with a series of **qualitative research methods** to explore resident engagement, perceptions, and responses.

RANDOMIZED CONTROLLED TRIAL (RCT)

The goal of the randomized controlled trial (RCT) was to precisely measure the isolated impact of the cart tags on subsequent cart contamination.

We used quasi-random assignment to assign 5,457 households to either a treatment or control group based on their street address number (odd vs. even). The **treatment group (2,705 households)** received a one-time cart inspection and a feedback tag, while the **control group (2,752 households)** received no intervention. Contamination levels were measured at both baseline and 1-2 weeks post-intervention through direct cart inspections. Data collection was conducted August 18, 2025 to September 26, 2025.

Ambassadors used digital tablets to record the contamination levels of each recycling cart, assessing the percentage of contamination in twenty five-point increments (0%, 25%, 50%, 75%, 100%). This manual data collection was subject to a rigorous quality assurance process. Shift supervisors regularly spot-checked ambassador entries and verified that tags were left at the correct households. Data checks show that the treatment was applied according to the quasi-random assignment protocol in 99.7% of cases.[1]

QUALITATIVE RESEARCH

The goal of the qualitative methods was to understand how the program works and why. We conducted four qualitative research methods: user testing, focus groups, canvassing interviews, and ambassador conversation notes analysis. The purpose of each method is described in the Qualitative Methods Overview table below.

QUALITATIVE METHODS OVERVIEW		
Method	**Purpose**	**Participants (n)**
User Testing	To assess residents' comprehension and the usability of program materials (e.g., tags, postcards).	16
Focus Groups	To understand residents' perceptions of the program, and motivations and barriers to proper recycling.	12
Canvassing Interviews	To capture immediate reactions and behavior changes shortly after a tag was received (within one week).	23
Ambassador Conversation Notes Analysis	To assess the impact of ambassador-resident interactions and identify how communication shapes program outcomes.	161 recorded conversations

User testing, focus groups, and canvassing interviews occurred during a 3-day period in late October, 2025.

1 For the RCT analyses, we followed the Intent-to-Treat (ITT) principle, meaning we analyzed all households according to the treatment they were originally assigned. Households assigned to treatment were supposed to receive a tag left by ambassadors after the baseline inspection, while control households were not. Although a very small number of cases (0.3%) did not follow this pattern (i.e., a tag was left when it shouldn't have been, or vice versa) we still analyzed households based on their original assignment. This approach preserves the benefits of randomization and yields an unbiased estimate of the effect of being assigned to the intervention.

Evaluation Findings

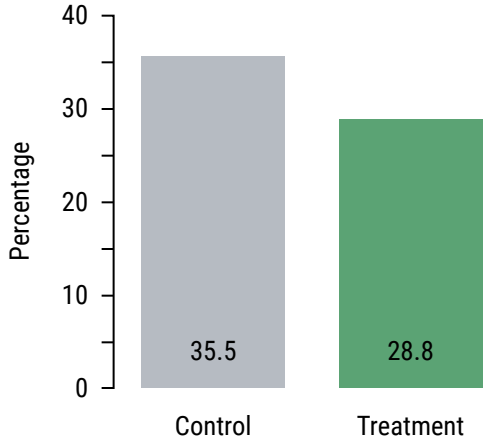
Our evaluation found that San José's cart tags have a significant impact on recycling contamination, support engagement and learning, and are generally well-received by residents. Additionally, we find that the cart tags, not ambassador conversations, are the driver of contamination reductions.

Impact of cart tags on contamination

The results of the randomized controlled trial (RCT) demonstrate that San José's recycling cart tagging program had a statistically significant and substantial impact on recycling cart contamination levels.

Households that were randomly assigned to receive a cart tag had 6.7 percentage points (or 18.9% less) contamination in their recycling carts 1-2 weeks later. This effect remains robust across models controlling for covariates and clustering, and a sensitivity analysis for model specification. These results are highly meaningful to the City, as waste haulers charge additional fees for each 2 percentage points of increased contamination.

Contamination level at post-intervention inspection



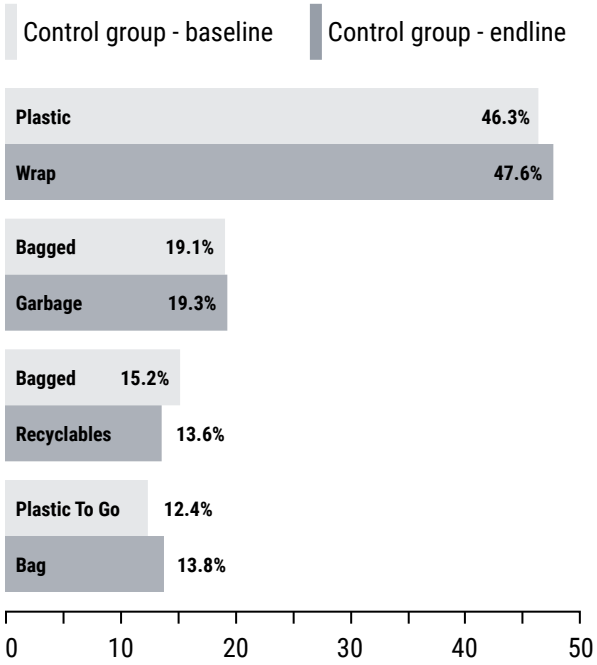
n=5,457
*** p < 0.01, ** p < 0.05, * p < 0.1
Primary anlalysis, controlling for baseline contamination and week of inspection

When looking at specific contaminants, **tags appear to have been particularly effective at reducing "bagging" behaviors and soft plastics**:

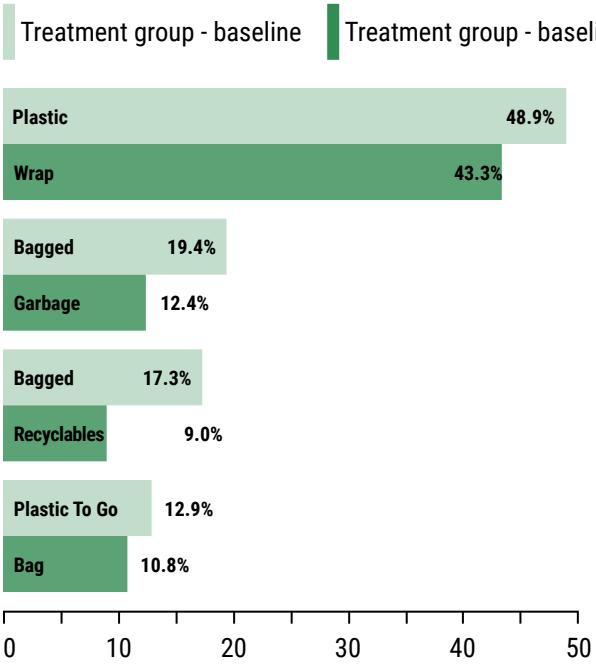
- Bagged recyclables decreased 8.3 percentage points
- Bagged garbage decreased 7 percentage points
- Plastic wrap decreased 5.6 percentage points
- Plastic to-go bags decreased 2.1 percentage points

Details about all contaminants can be found in Appendix C.

Baseline vs. endline - Control

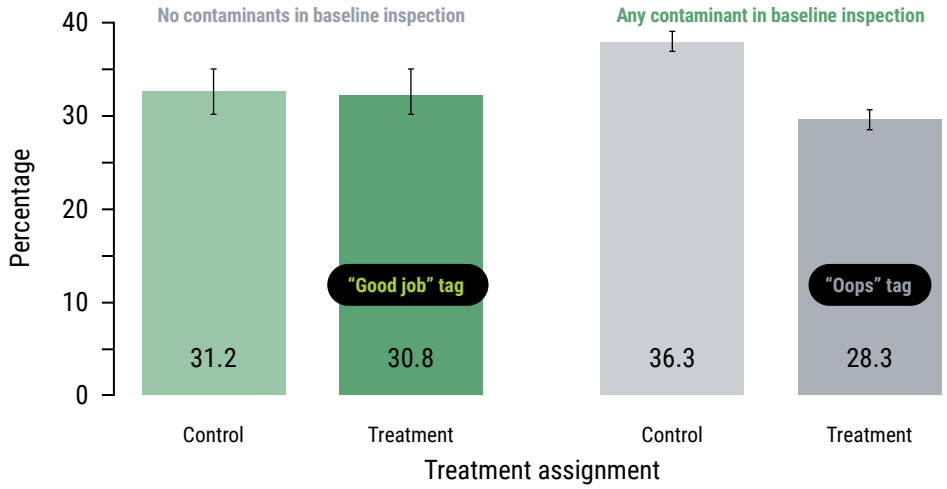


Baseline vs. endline - Treatment



The effect was driven by households receiving "Oops" tags, while little behavior change was seen in households that received a "Good Job" tag. Among residents who did not have contaminants in their carts at baseline measurement, those who did and those who did not receive "Good Job" tags had similar levels of contamination at the endline (around 31%). Among residents who had contaminants in their carts at baseline measurement, those who received an "Oops" tag had 8 percentage points less contamination level in their carts at endline than residents who did not receive a tag.

Contamination level at post-intervention inspection



n=5,457

- No contaminants in baseline inspection (total n= 952 | control= 493 | treatment= 459)
- Any contaminants in baseline inspection (total n= 4,505 | control= 2,259 | treatment= 2,246)

Return on investment (ROI)

To investigate whether the cart tagging program is a good financial investment, we considered the costs and potential savings of the program. We estimate that the program would have had a **return on investment (ROI) ratio of 1.6 for the budget spent in the first two fiscal years** if the contamination reductions found in the RCT hold across neighborhoods and maintain over time. This means that **for every $100,000 spent on the program, the city received $160,000 in savings**. We expect the ROI to grow as the start-up costs of the program reduce proportionally over time, and as the city continues to improve the efficiency of the program.

SUMMARY OF COSTS AND RESULTS FOR THE CART PROGRAM'S FIRST 16 MONTHS		
Costs	**Total costs (Sep 2023 - June 2025)**	**$1,018,084**
	Start-up costs (program design, field equipment, staff training) Sep 2023 - March 2024 (7 months)	$207,708
	Operating costs March 2024 - June 2025 (16 months)	$810,568
Results	Carts tagged	101,311 carts ($10.05 cost per cart)
	Estimated savings	$1,647,275
	Return on Investment	1.62

In the remainder of this section, we detail the program's costs, calculate potential savings based on a range of effect sizes, and compare program costs and savings.

COSTS

The CART program cost the city $1,018,084 to develop and implement for the first 16 months. These costs are, in part, driven by labor and equipment costs in the San José area, as well as the CART program's investment in high-quality data collection and quality assurance.

PROGRAM SPEND FOR THE FIRST 16 MONTHS OF OPERATION	
FY 23/24 Actual Spend [2] (Tagging started March 2024)	$340,831 Total $207,708 - Start-up costs $133,123 - Operating costs (3/24 - 6/24)
FY 24/25 Actual Spend	$677,253
Total FY 23 & FY 24	**$1,018,084**

Operating costs make up the majority of the expenses ($993,445), while equipment costs (tablets, gear, etc.) to date total $24,639. Costs for the program include:

2 Fiscal year runs July 1 - June 30

- Department staff labor costs for program design and supervision
- Ambassador labor costs, paid to a temporary staffing agency
- Vehicle rentals (from City fleet)
- Design and printing of all outreach
- Field equipment (e.g., tablets, safety vests, rain gear, messenger bags, business cards, touch screen gloves, sun hats) and office hardware, including a GIS workstation computer
- Subscriptions for apps and software

Total program costs will likely come down in the future, as equipment for the program has already been purchased. The City continues to find efficiencies, such as ending the postcard mailings and transitioning ambassador positions from contractor to part-time, permanent City positions. As average annual costs come down, the cost per cart inspection and the return on investment for the program will continue to improve.}

POTENTIAL SAVINGS

The trial provided us with a precise estimate of contamination reduction in a few neighborhoods of the city, but not all carts were monitored. If we assume that the reduction in contamination (6.7 percentage points) holds for every **cart that has been in the first 16 months of the program**, then the city is **saving $1.65 million per year** in hauling costs.

If every cart in the city saw the same reduction in contamination (6.7 percentage points), the City would save **$3.5 million per year** in hauling costs. Included in that estimate are the following assumptions:

- Savings are estimated using San José single-family recycling haulers' FY24/25 pricing schedules. San José uses two haulers, each of which adjusts their per-cart price according to the percentage of contamination found in biennial curbside studies.
- The impact of the cart tags may be different in areas with higher or lower baseline levels of contamination. Our analysis assumes the same magnitude of impact regardless of baseline contamination rates.
- The CART program's measure of contamination is different from the biennial curbside studies that determine hauler pricing, but we would expect them to be correlated.

We also anticipate that the impact of the cart tagging intervention may dissipate over time. Previous research has shown that cart tagging effects can last ten months to three years. We see that even smaller long-term reductions result in significant savings:

ANNUAL SAVINGS FROM REDUCTIONS COMPARED TO 2024 CONTAMINATION RATES							
Contamination reduction	**6.7 pp** (RCT results)	**6 pp**	**5 pp**	**4 pp**	**3 pp**	**2 pp**	**1 pp**
Estimated savings for all San José households	$3,531,305	$3,531,305	$2,523,167	$2,523,167	$1,862,724	$1,862,724	$1,169,187
Estimated savings for households tagged through end of FY24 [3]	$1,647,275	$1,647,275	$1,177,001	$1,177,001	$868,919	$868,919	$545,399

3 101,311 carts were tagged from program start through the end of FY 24. Assumes that hauler districts A, B, and C were proportionately represented in the households tagged during this time period

COMPARING COSTS AND SAVINGS

The City tagged 101,311 carts between the program launch and the end of FY24 (46% of single-family carts). Based on program costs, **San José would need to see between a 3 and 4 percentage point decrease in contamination to have recouped costs** on the first 16 months of the program. This compares favorably with the 6.7 percentage point decrease measured in the randomized controlled trial.

ANNUAL SAVINGS FOR HOUSEHOLDS TAGGED THROUGH END OF FY 24							
Contamination reduction	**6.7 pp** (RCT results)	**6 pp**	**5 pp**	**4 pp**	**3 pp**	**2 pp**	**1 pp**
Estimated savings for households tagged through end of FY24 4	$1,647,275	$1,647,275	$1,177,001	$1,177,001	$868,919	$868,919	$545,399
				Break even point Costs = $1,018,084			

If the contamination reductions found in the RCT hold across neighborhoods and are maintained for households across the full program period, the program would have a **return on investment (ROI) of 1.6 in its first 16 months**. The true ROI may be higher if neighborhoods with more contamination (those targeted early in the program) had larger reductions in contamination in response to the tag. The true ROI may be lower if either 1) neighborhoods with more contamination (those targeted early in the program) had smaller reductions in contamination in response to the tag, or 2) if the effect of the tag dissipates over time (based on historical tagging rates, the City can tag every household once every two years).

Ambassador conversations

While tagging carts, ambassadors sometimes interacted with residents. During the study period from August 18, 2025, to September 26, 2025, ambassadors recorded data on 161 conversations with residents. Descriptively, residents who did and did not have conversations with ambassadors during baseline data collection had similar contamination reductions at endline (see Appendix C)--meaning that **conversations between ambassadors and residents are not driving the overall ROI of the CART program. Still, our analysis demonstrates that the conversations deliver important results for the program**. For residents that approach ambassadors, the conversations 1) keep or turn residents into program supporters, and 2) reinforce learning from the 'Oops' tags.

CONVERSATIONS OVERWHELMINGLY SHIFT TOWARD A POSITIVE TONE

During the study period, ambassadors were asked to record the tone of the beginning and end of each conversation.[5] Most conversations began with a neutral or positive tone–but even when a conversation started with a negative tone, ambassadors were able to improve the interaction. Of the 13 conversations that began with a negative tone, 69% ended with a positive tone and 23% ended with a neutral tone. 76% of all conversations ended with a positive tone, nearly double the number of conversations that started with one.

4 101,311 carts were tagged from program start through the end of FY 24. Assumes that hauler districts A, B, and C were proportionately represented in the households tagged during this time period

5 Before the study period, all ambassadors received training about the new data collection fields. The training included reviewing examples of how to categorize common resident questions and comments as "negative", "neutral", or "positive", and practicing categorizing scenarios.

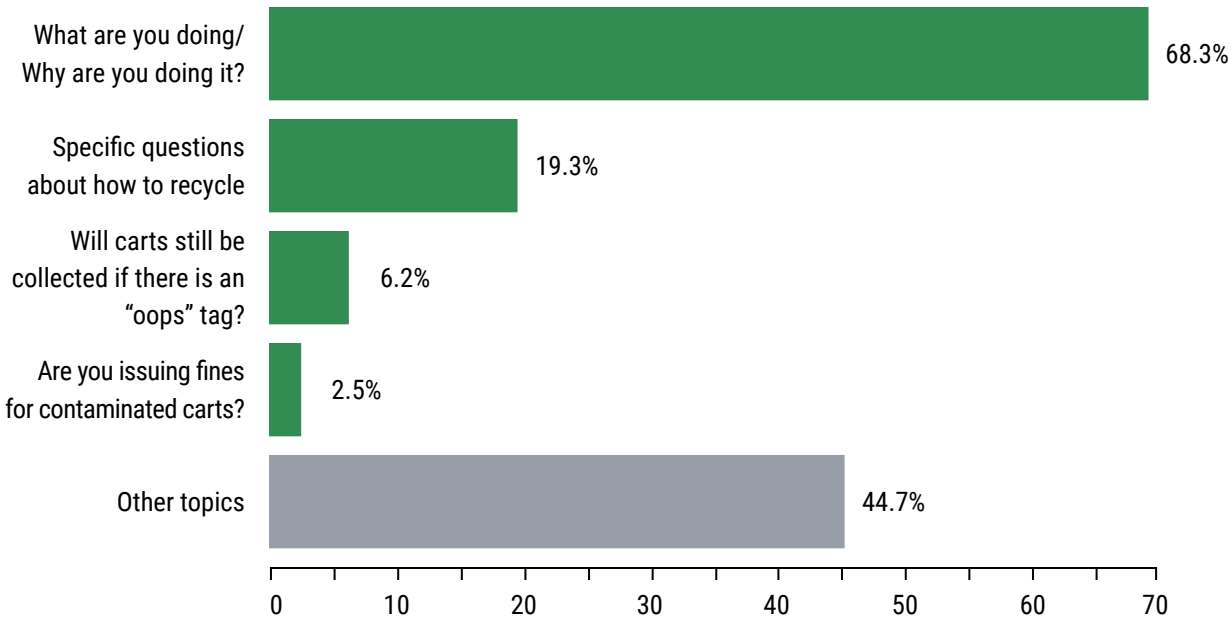
Tone shift: Start of Conversation vs End

START TONE	END TONE: Negative	END TONE: Neutral	END TONE: Positive
Negative	1	3	9
Neutral	0	33	53
Positive	0	1	61

AMBASSADOR INTERACTIONS ARE AN EDUCATIONAL OPPORTUNITY FOR RESIDENTS

Ambassador conversations were an opportunity to teach residents about recycling practices. The majority of conversations began with residents asking ambassadors what they were doing or why tagging was happening. Many residents also asked questions about how to recycle correctly, often specifically asking about plastic bags, plastic wrap, or food residue on containers.

Very few residents expressed concerns about enforcement; only a few inquired about whether their cart would still be collected and about potential fines. This suggests that the program is largely perceived as informative and helpful, and not as punitive.



Among conversations that included questions about how to recycle, most centered on plastic materials, especially plastic bags and plastic wrap. These are among the most common contaminants in San José, and those reduced the most by the tags. Residents also asked about food residue, pizza boxes, metal cans, and hard-to-recycle items such as batteries, hazardous waste, and electronic waste.

Residents who started conversations with a positive tone were more likely to seek detailed clarification or validation of their existing practices. Those who started with a neutral or negative tone were more likely to ask broader questions, such as why the program was being conducted.

The "other topics" category reflects a wide spectrum of resident concerns beyond recycling questions, raised during 72 interactions. Most began with a neutral or positive tone, with residents frequently seeking affirmation about whether they were "doing it right," logistical guidance on issues like damaged carts or obtaining extra garbage stickers, and clarification about the tagging program and enforcement. Negative conversations that covered "other topics" included instances in which residents misunderstood the audit's intent, expressed frustration with plastic bag rules, or feared punitive action. These conversations show that residents often used ambassador encounters to ask customer service questions and seek personal reassurance.

Why the tags work

Our qualitative research indicates that the cart tags influence recycling behavior through three primary mechanisms: (1) increasing the salience of recycling through conversations with family and friends, (2) serving as easily accessible reference guides, and (3) delivering personalized feedback that prompts learning and correction. These mechanisms align with behavioral science principles and help explain why the RCT detected reductions in contamination.

1. THE TAGS INSPIRE CONVERSATIONS THAT MAKE RECYCLING MORE SALIENT AND SOCIAL

Across canvassing, focus groups, and user-testing sessions, the **most common behavior reported after receiving a tag was talking to another person about it**. Residents described:

- Conversations with family members about what they were doing wrong and how to improve.
- Discussions with neighbors, often comparing the tags that each household received.
- Sharing tags in social group chats or even with coworkers, extending the reach of the tag beyond the tagged household.

These conversations work in three ways:

- **Social norms and accountability**: Family members and neighbors become involved, creating subtle social pressure for all participants to get it right and avoid future "Oops" tags.
- **Modelling**: In some cases, participants described family members discussing how to clean containers or where to put plastic bags. These conversations may reinforce learning and increase the likelihood of consistent behavior over time.
- **Accessibility heuristic**: The topic of correct recycling is easily retrievable for even family members who did not see the tag because they have been exposed to it recently through conversation.

2. GOOD DESIGN MEANS PEOPLE ARE MORE LIKELY TO RETAIN THE TAGS AS REFERENCE GUIDES

Many recipients reported **keeping their tags, often for several days or weeks**, in spaces where recycling decisions happen (e.g., on the refrigerator, near the kitchen bin, taped to the garage wall, or left directly on the recycling cart). Participants also shared examples of sending photos of the tags to family or colleagues, posting them in communal kitchens at work, using the graphics during household conversations about what is recyclable.

User-testing confirmed that the **strong design of the tags supports its use** as a reference guide. Residents described the tags as more informative and memorable than other recycling guidance that they had previously seen. Because the tags are considered useful, residents keep them–extending the timeline of their impact.

3. THE PERSONALIZED FEEDBACK PROMOTES LEARNING

Residents consistently interpreted the "Oops" vs. "Good Job" distinction as a form of **direct, personalized feedback**. Reported behavioral responses included:

- Removing or correctly disposing of the specific contaminant cited on the "Oops" tag (e.g., plastic bags, food boxes or containers, padded mailers).
- Expressing a desire not to get another Oops tag, to avoid negative reinforcement.
- Adjusting their household's recycling habits or setup immediately after receiving feedback.

Resident responses indicate that the **"Oops" tags were more educational than "Good Job" tags** and more motivating because they highlighted concrete errors. In contrast, "Good Job" tags produced positive emotions like pride and reassurance, but rarely motivated behavior change. They served more as validation than as a driver of improved accuracy. This aligns with the quantitative findings that households who received "Oops" tags drove the treatment effect.

When cart tags do not lead to behavior change

In addition to the ways in which cart tags lead to behavior change, we identified reasons that the cart tags may not lead to recycling improvements in some instances, or for some people:

- **Indifference**: A substantial minority of the tag recipients said they felt indifferent about the cart tags. Some of these recipients stated that they didn't learn anything from the tags, and already felt confident about their recycling knowledge.
- **Demotivation**: A small minority of tag recipients said that receiving an "Oops" tag made them less interested in recycling. In some cases, this reaction was tied to frustration about limits on what is recyclable or about rule changes (e.g., clothing was accepted in the past, perception that plastic bags were formerly accepted).
- **Low comprehension of recycling guidelines**: Even after reviewing the tags in-depth, some user testing subjects displayed persistent confusion about certain recycling behaviors, including cleaning food containers and whether plastic bags and pizza boxes are recyclable. Although the tag design is strong, there are some elements that could be improved – see user testing recommendations in Appendix B.
- **Multi-person households**: Tag recipients from larger households describe not having control over the recycling behaviors of others (especially teenagers and adult children).

Cart tagging is well-received by residents

In addition to being effective, the cart tagging program was overwhelmingly acceptable to residents.

RESIDENTS LIKE THE CONCEPT OF CART TAGGING

A large majority of interviewed cart tag recipients supported the program, with many supporting it strongly. Rationales for support included that the program is good for the planet, helps the city improve, and is an effective teaching tool.

Support for running the program was high, even among participants who did not feel it was useful or effective for them. Among this group, participants felt the program was either benign or helpful to others.

A few critical voices were upset because they felt unfairly burdened by real or perceived changes to recycling rules, or argued that the city should focus on cleaning streets instead.

REACTIONS TO RECEIVING TAGS WERE MOSTLY POSITIVE

Recipients' reactions to the tags are dependent on the type of tag that they received. The **"Good Job" tag triggers positive emotions**, mostly pride. The **"Oops" tag leads to surprise, curiosity, and mild defensiveness**. Some recipients interpreted the "Oops" tag as a warning or even public shaming, but most framed it as constructive feedback. For some recipients who felt that they were already trying their best to recycle accurately, the "Oops" tag created frustration and confusion.

Some participants reported feeling annoyed when they first received the tag because they **thought their bins would not be emptied**. Those recipients later felt relieved when their recycling bins were emptied.

CART TAGS ARE WELL-DESIGNED; POSTCARD IS FORGOTTEN

The Oops and Good Jobs tags performed well in user-testing, supporting learning and positive feelings among participants. See Appendix B for more details about strong tag design elements and opportunities for improvement.

The notification postcard was recalled by very few recipients, and there was consensus among focus group participants that it is a "nice-to-have" rather than necessary. Some design elements of the postcard hindered comprehension. See Appendix B for more details about opportunities to improve the postcard design.

Interpretation of results and conclusions

Taking the quantitative and qualitative results together paints a portrait of a successful, cost-effective program.

The randomized controlled trial (RCT) showed that the CART program has a large, statistically significant short-term impact. Long-term impacts are important because, at current tagging rates, each household can be tagged only once every two years. Previous research has shown that cart tagging effects can last ten months to three years. Although this evaluation did not measure long-term impact, the qualitative research identified an influential behavior-change mechanism likely to produce lasting change: recipient learning. For example, in user-testing sessions and interviews, residents consistently reported that they learned from the cart tags that they should not put soft plastics (single-use bags, plastic wrap) in recycling carts. In the RCT data, we find that soft plastic is the contamination type that declines the most after households receive a tag. This implies that learning new information about recycling

guidelines was strongly impacting behavior. Residents are likely to remember the new rules that they learn from the tag, especially since the learning will be reinforced through repeated behavior; the act of recycling on a daily or weekly basis acts as a repeated cue to recall the lesson.

While the "learning" impact of cart tags will likely persist, we can also assume that other drivers of behavior change will recede over time. For example, the household conversations that made recycling top of mind for cart recipients are unlikely to occur after the first week or so. Similarly, many recipients reported using the tags as a reference guide for only a few days to a few weeks. Luckily, San José will still see a positive return on investment even if the long-term impact of cart tags is much lower than the short-term impact (6.7 percentage points). This is because waste haulers charge higher rates when contamination increases by just 2 percentage points. For other cities subject to similar pricing structures, cart tags may be a cost-saving measure.

The program is positively received by the vast majority of residents who receive cart tags. We attribute this success to two key program elements. First, the thoughtfully designed tags that use a friendly, non-punitive tone and clearly communicate information about common recycling errors. Second, San José's team of highly trained ambassadors frequently turns skeptics into program supporters. Although these conversations improve residents' experience of the program, conversations between ambassadors and residents do not appear to affect cart contamination or the program's ROI.

San José's investment in a systematic program with a highly trained workforce is leading to measurable results and positive resident reception–and serving as a model for other cities.

Recommendations for San José's CART program

The following recommendations for San José's CART program are based on the RCT and qualitative research findings.

1. DISCONTINUE THE NOTIFICATION POSTCARD; REPLACE WITH AN INFORMATIONAL MAILER

The informative postcard provides minimal value. Very few residents remembered receiving it, and it did not reliably prepare them for the tagging experience. User testing also showed that its design obscured the main message and was difficult for non-English households to navigate. Given the cost and low recall, the postcard is not a necessary component of the program.

That said, qualitative research uncovered gaps in residents' understanding of San José's recycling rules. Research participants found the Oops tag to be very informative. Previous research has also emphasized that continual engagement and reinforcement is needed. A mailer based on the Oops tag design, or built using a tool such as the Recycling Partnership's Campaign Builder or One Planet's Campaigns that Work, could help maintain the CART program's impact between tagging events.

2. FOCUS ON EFFICIENCY

With the strong evidence that the CART program reduces contamination, the program team may want to reduce their focus on high-quality data collection, and focus instead on lowering operating costs. This may look like:

- Reducing time spent on data quality assurance practices, such as spot-checks by shift supervisors.
- Discontinuing the notification postcard (see Recommendation 1)
- Revisiting previously constructed tagging route maps (see Recommendation 3)

3. TARGET THE HIGHEST CONTAMINATION NEIGHBORHOODS

Our analysis showed that Oops tags spur behavioral change, whereas Good Job tags do not. To ensure that a high number of Oops tags are delivered, target neighborhoods where carts are most likely to have contaminants. Focusing on high-contamination neighborhoods may also allow ambassadors to tag the same households multiple times, which has delivered larger effect sizes in other cities.

If the same households consistently receive Oops tags, consider whether those households face additional barriers, such as not receiving information in their language.

4. MAKE TARGETED IMPROVEMENTS TO THE OOPS TAG DESIGN

User testing and canvassing identified specific improvements that could be made to the "Oops" tag, which is already strong. See Appendix A for user testing feedback and recommendations.

Key program elements for impact

San José's program stands out for its level of data collection and planning. Our evaluation shows that an effective cart tagging program simply needs strong fundamentals: partnerships, staff, communications, and engagement. For San José, and cities considering implementing cart tagging, below are the most essential program design elements. They are the "minimum viable components" that allow a cart tagging program to affect meaningful, measurable change.

1. CART TAGS THAT ARE CLEAR, MEMORABLE, AND ACTIONABLE. The tag itself is the primary communication tool and driver of behavior change. Residents consistently said the tags were the clearest explanation they had ever received about how to recycle correctly. Appendix A includes a copy of San José's tag design. Tag elements may include:

- Clear, image-based instructions about recycling and intuitive contaminant categories.
- Personalized feedback on contaminants found (e.g., by circling the relevant items).
- Multilingual messaging (based on the local context).
- A simple explanation that the cart will still be collected.

2. CONSISTENT COORDINATION WITH HAULERS. In San José, tagging requires haulers to adjust pickup timing, follow daily "blackout maps", communicate unexpected changes in real time, and coordinate on hazardous waste pickups. If a recycling truck shows up early or routes shift unpredictably, ambassadors cannot tag. Program elements may include:

- Regular check-ins between haulers and City staff early in the program.
- Agreement about tagging timing and ensuring drivers do not collect carts before the ambassadors tag.
- "Blackout maps" co-designed with haulers to respect their operational needs.
- Protocols for hazardous waste identification (e.g., San José's data collection system automatically emails hauler contacts when hazardous waste is found), missed carts, and resident complaints.

3. A WELL-SUPPORTED AND WELL-TRAINED AMBASSADOR WORKFORCE.

Well-supported ambassadors deliver accurate data and high-quality resident engagement. Program elements may include:

- Hiring staff who genuinely care about recycling.
- Structured staff onboarding with shadowing and scenario-based practice.
- Weekly team meetings to discuss issues and re-align on tagging procedures.
- Field supervision by shift leads who provide real-time quality assurance.
- Provision of safety gear, weather gear, belts, and working equipment.
- Clear escalation pathways for resident conflict or confusion.

4. HIGH-QUALITY RESIDENT ENGAGEMENT. Programs that feel punitive or unclear may prompt defensiveness. Programs that feel human and educational motivate change. Effective approaches include:

- Rapidly addressing misinformation on social media.
- Sharing ambassador stories and photos to humanize the program.
- Offering multilingual support if needed.
- Ensuring that tags and ambassador interactions are respectful and informative, not punitive.

Further resources

Are you a city staff member interested in learning more about cart tagging in your city?

- Reach out the Bloomberg Cities Idea Exchange Evaluation Fund at EvaluationFund@citiesideaexchange.org with additional questions about this work
- Register your city for the Bloomberg Cities Idea Exchange for exclusive access to our full suite of idea-sharing, implementation, and evaluation supports.

APPENDIX A

Tested Versions of Program Material

Good Job Tag

Good Job!

¡Buen trabajo!
Rất tốt!

CITY OF SAN JOSE — CAPITAL OF SILICON VALLEY — Environmental Services

You are recycling properly. Keep recycling these items.

Está reciclando correctamente. Siga reciclando estos artículos.
Quý vị đang tái chế đúng cách. Hãy tiếp tục phát huy.

Clean Plastic #1-5 and 7
(unless labeled compostable)
Plástico limpio nº 1-5 y 7
(al menos que lleve etiqueta de compostable)
Nhựa Sạch số 1-5 và 7
(trừ khi được dán nhãn là có thể phân hủy)

Clean, dry paper
Papel limpio y seco
Giấy sạch, khô

Clean Metal
Metal limpio • Kim Loại Sạch

Clean Glass Jars and Bottles
Botellas y botes de vidrio limpios
Chai Lọ Thủy Tinh Sạch

Here are three tips to recycle right:
Aquí hay tres consejos para reciclar correctamente:
Dưới đây là ba mẹo để tái chế đúng cách:

- ☑ **Empty and scrape containers before recycling. No need to rinse.**
  Vacíe y raspe el contenido en la basura antes de reciclar. No hay necesidad de enjuagar.
  Trút hết toàn bộ và vét sạch đồ bên trong vào thùng rác thải bình thường trước khi tái chế. Không cần rửa.
- ☑ **Recycle plastics #1-5 and #7 (unless labeled compostable).** Recicla plástico #1-5 y 7 (a menos que esté etiquetado como compostable). Tái chế nhựa số 1-5 và 7 (trừ khi có nhãn dễ phân hủy).
- ☑ **Keep recyclables loose; do not bag recyclables.**
  Mantén los reciclables sueltos; nunca en bolsas.
  Để rời rác tái chế; không bỏ rác tái chế vào túi.

SanJoseRecycles.org/Extra-Garbage

Look up what's recyclable

SanJoseRecycles.org

Busque lo que es reciclable
SanJoseRecicla.org
Tìm hiểu những gì có thể tái chế
SanJoseTaiChe.org

Reminder!

¡Recordatorio!
Nhắc nhở!

CITY OF SAN JOSE — CAPITAL OF SILICON VALLEY — Environmental Services

Keep these out of your recycling cart.
Mantenga estos fuera de su contenedor de reciclaje.
Xin đừng bỏ những thứ này trong thùng rác tái chế.

⊘ **Non-Recyclable Plastics: Styrofoam (plastic #6), wrap, packaging bags**
Place in garbage or bring plastic bags, wrap, and packaging to a drop off location.
Plásticos no reciclables: Plástico nº 6, bolsas, envoltura, materiales de empaque
Deposítelos en la basura o lleve bolsas de plástico, envoltura y materiales de empaque a un punto de recolección.
Nhựa/Nilon Loại Không Tái Chế Được: Nhựa số 6, túi, màng bọc, bao bì
Bỏ vào thùng rác thải bình thường hoặc mang túi nilon, màng bọc và bao bì tới địa điểm tiếp nhận.

⊘ **Dirty or Non-Recyclable Paper**
Place in garbage.
Papel sucio o no reciclable
Deposítelo en la basura.
Giấy Bẩn hoặc Không Thể Tái Chế
Bỏ vào thùng rác thải bình thường.

⊘ **Food, Garbage**
Place in garbage.
Comida, basura
Deposítelo en la basura.
Thực Phẩm, Rác Thải Thường
Bỏ vào thùng rác thải bình thường.

⊘ **Bagged Recyclables**
Do not bag items. Keep loose.
Reciclables en bolsas • No ponga los artículos en bolsas. Manténgalos sueltos.
Đồ Tái Chế Trong Túi • Đừng bỏ đồ tái chế vào túi. Hãy để rời.

⊘ **Household Hazardous Waste (including E-Waste)**
Make a *FREE* appointment.
Residuos peligrosos del hogar (incluyendo desechos electrónicos)
Programe una cita *SIN COSTO.*
Rác Thải Gia Dụng Nguy Hại (bao gồm cả rác thải điện tử)
Làm hẹn *MIỄN PHÍ.*
HHW.org • (408) 299-7300

⊘ **Yard Waste, Construction Debris**
Place yard trimmings in yard waste. Special instructions for construction debris at:
Residuos del jardín, escombros de construcción
Ponga los recortes de jardín con los residuos de jardín. Instrucciones especiales para escombros de construcción en:
Rác Thải Sân Vườn, Rác Vụn Xây Dựng
Bỏ rác thải sân vườn vào thùng rác sân vườn. Hướng dẫn đặc biệt xử lý phế liệu xây dựng có tại:
SanJoseRecycles.org

⊘ **Bulky Items**
Schedule a **Junk Pickup** at NO COST.
Artículos grandes • Programe una recogida de artículos grandes SIN COSTO.
Đồ Cồng Kềnh
Làm hẹn Thu Gom Rác MIỄN PHÍ.

⊘ **Dirty Recyclables with Food/Liquid**
Empty and scrape before recycling.
Reciclables sucios con comida/líquidos
Vacíelos y ráspelos antes de reciclar.
Đồ Tái Chế có dính bẩn Thức Ăn/Chất Lỏng
Hãy trút hết toàn bộ và vét sạch trước khi tái chế.

⊘ **Clothing, Shoes, Textiles**
Donate or place in garbage.
Ropa, zapatos, textiles
Dónelos o tírelos a la basura.
Quần Áo, Giày Dép, Vải Vóc
Quyên góp hoặc bỏ vào thùng rác thải bình thường.

Scan for more information or to share feedback.

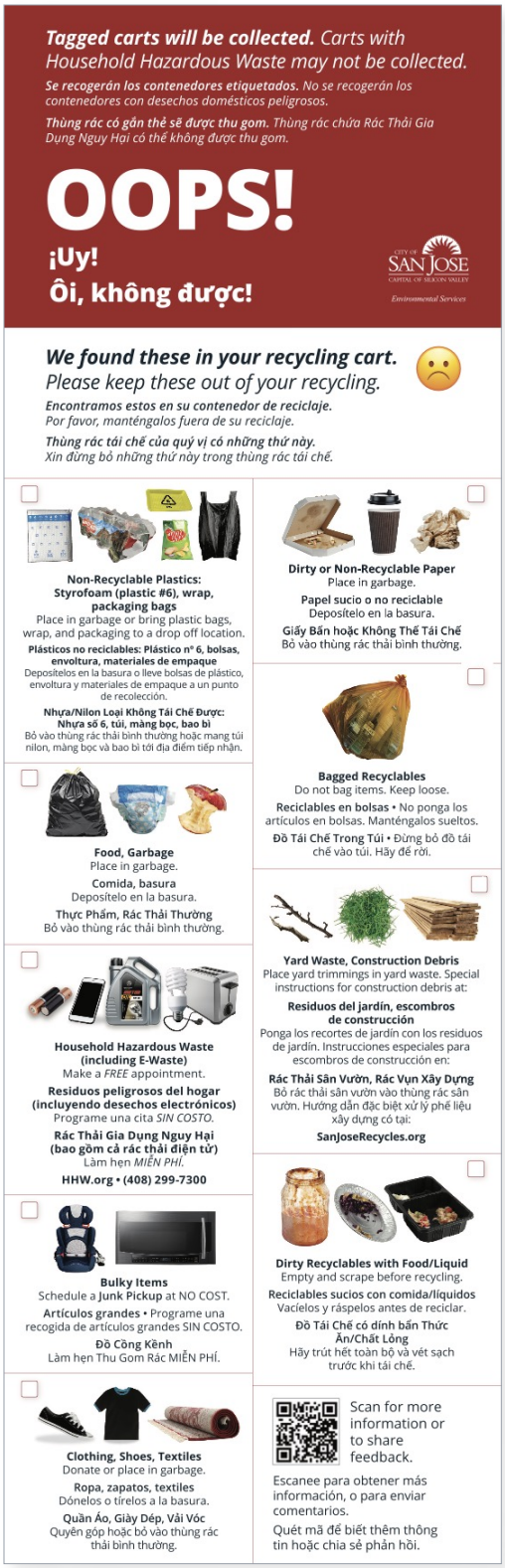
Escanee para obtener más información, o para enviar comentarios.

Quét mã để biết thêm thông tin hoặc chia sẻ phản hồi.

APPENDIX A

Tested Versions of Program Material

Oops Tag



Tagged carts will be collected. *Carts with Household Hazardous Waste may not be collected.*

Se recogerán los contenedores etiquetados. *No se recogerán los contenedores con desechos domésticos peligrosos.*

Thùng rác có gắn thẻ sẽ được thu gom. *Thùng rác chứa Rác Thải Gia Dụng Nguy Hại có thể không được thu gom.*

OOPS!

¡Uy!

Ôi, không được!

CITY OF SAN JOSE CAPITAL OF SILICON VALLEY — Environmental Services

We found these in your recycling cart.
Please keep these out of your recycling.

Encontramos estos en su contenedor de reciclaje.
Por favor, manténgalos fuera de su reciclaje.

Thùng rác tái chế của quý vị có những thứ này.
Xin đừng bỏ những thứ này trong thùng rác tái chế.

Non-Recyclable Plastics: Styrofoam (plastic #6), wrap, packaging bags
Place in garbage or bring plastic bags, wrap, and packaging to a drop off location.
Plásticos no reciclables: Plástico nº 6, bolsas, envoltura, materiales de empaque
Deposítelos en la basura o lleve bolsas de plástico, envoltura y materiales de empaque a un punto de recolección.
Nhựa/Nilon Loại Không Tái Chế Được: Nhựa số 6, túi, màng bọc, bao bì
Bỏ vào thùng rác thải bình thường hoặc mang túi nilon, màng bọc và bao bì tới địa điểm tiếp nhận.

Food, Garbage
Place in garbage.
Comida, basura
Deposítelo en la basura.
Thực Phẩm, Rác Thải Thường
Bỏ vào thùng rác thải bình thường.

Household Hazardous Waste (including E-Waste)
Make a *FREE* appointment.
Residuos peligrosos del hogar (incluyendo desechos electrónicos)
Programe una cita *SIN COSTO.*
Rác Thải Gia Dụng Nguy Hại (bao gồm cả rác thải điện tử)
Làm hẹn *MIỄN PHÍ.*
HHW.org • (408) 299-7300

Bulky Items
Schedule a **Junk Pickup** at NO COST.
Artículos grandes • Programe una recogida de artículos grandes SIN COSTO.
Đồ Cồng Kềnh
Làm hẹn Thu Gom Rác MIỄN PHÍ.

Clothing, Shoes, Textiles
Donate or place in garbage.
Ropa, zapatos, textiles
Dónelos o tírelos a la basura.
Quần Áo, Giày Dép, Vải Vóc
Quyên góp hoặc bỏ vào thùng rác thải bình thường.

Dirty or Non-Recyclable Paper
Place in garbage.
Papel sucio o no reciclable
Deposítelo en la basura.
Giấy Bẩn hoặc Không Thể Tái Chế
Bỏ vào thùng rác thải bình thường.

Bagged Recyclables
Do not bag items. Keep loose.
Reciclables en bolsas • No ponga los artículos en bolsas. Manténgalos sueltos.
Đồ Tái Chế Trong Túi • Đừng bỏ đồ tái chế vào túi. Hãy để rời.

Yard Waste, Construction Debris
Place yard trimmings in yard waste. Special instructions for construction debris at:
Residuos del jardín, escombros de construcción
Ponga los recortes de jardín con los residuos de jardín. Instrucciones especiales para escombros de construcción en:
Rác Thải Sân Vườn, Rác Vụn Xây Dựng
Bỏ rác thải sân vườn vào thùng rác sân vườn. Hướng dẫn đặc biệt xử lý phế liệu xây dựng có tại:
SanJoseRecycles.org

Dirty Recyclables with Food/Liquid
Empty and scrape before recycling.
Reciclables sucios con comida/líquidos
Vacíelos y ráspelos antes de reciclar.
Đồ Tái Chế có dính bẩn Thức Ăn/Chất Lỏng
Hãy trút hết toàn bộ và vét sạch trước khi tái chế.

Scan for more information or to share feedback.
Escanee para obtener más información, o para enviar comentarios.
Quét mã để biết thêm thông tin hoặc chia sẻ phản hồi.

These Are Recyclable

Estos son reciclables
Đây Là Rác Có Thể Tái Chế Được

CITY OF SAN JOSE CAPITAL OF SILICON VALLEY — Environmental Services

Don't bag recyclables. Keep items loose.

No ponga los reciclables en bolsas, manténgalos sueltos.
Không bỏ rác tái chế vào túi, hãy để rời.

Clean Plastic #1-5 and 7
(unless labeled compostable)
Plástico limpio nº 1-5 y 7
(al menos que lleve etiqueta de compostable)
Nhựa Sạch số 1-5 và 7
(trừ khi được dán nhãn là có thể phân hủy)

Clean, dry paper
Papel limpio y seco
Giấy sạch, khô

Clean Metal
Metal limpio • Kim Loại Sạch

Clean Glass Jars and Bottles
Botellas y botes de vidrio limpios
Chai Lọ Thủy Tinh Sạch

Recycling can be confusing.
Here are three tips to recycle right:

El reciclaje puede ser confuso. Aquí hay tres consejos para reciclar correctamente: • Quá trình tái chế có thể hơi khó hiểu. Dưới đây là ba mẹo để tái chế đúng cách:

☑ **Empty and scrape containers before recycling. No need to rinse.**
Vacíe y raspe el contenido en la basura antes de reciclar. No hay necesidad de enjuagar. Trút hết toàn bộ và vét sạch đồ bên trong vào thùng rác thải bình thường trước khi tái chế. Không cần rửa.

☑ **Recycle plastics #1-5 and #7 (unless labeled compostable).** Recicla plástico #1-5 y 7 (a menos que esté etiquetado como compostable). Tái chế nhựa số 1-5 và 7 (trừ khi có nhãn dễ phân hủy).

☑ **Keep recyclables loose; do not bag recyclables.**
Mantén los reciclables sueltos; nunca en bolsas.
Để rời rác tái chế; không bỏ rác tái chế vào túi.

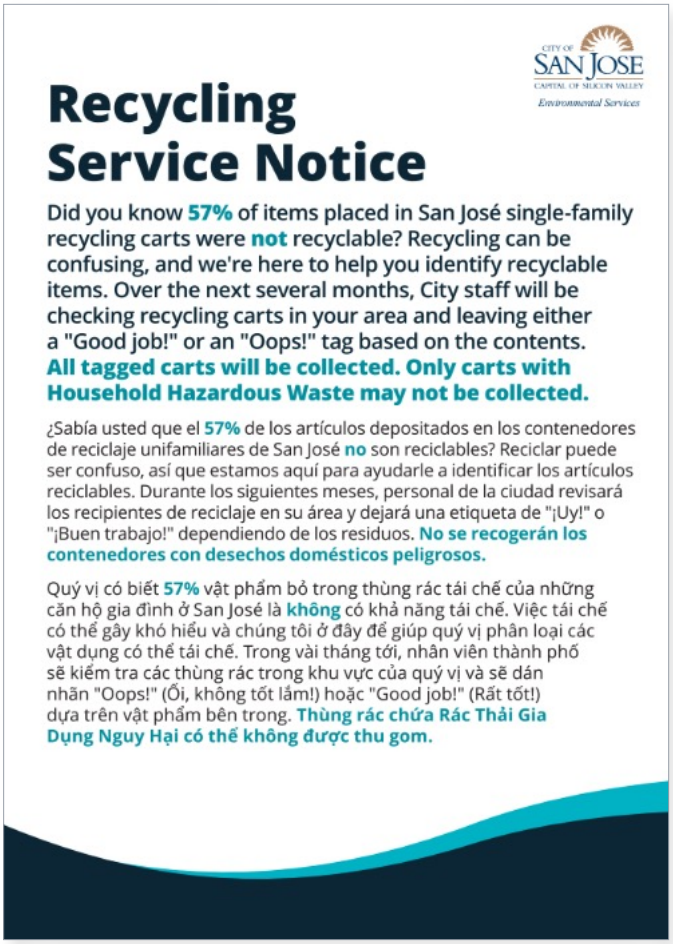
SanJoseRecycles.org/Extra-Garbage

Look up what's recyclable

SanJoseRecycles.org

Busque lo que es reciclable
SanJoseRecicla.org
Tìm hiểu những gì có thể tái chế
SanJoseTaiChe.org

Notification postcard



CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY
Environmental Services

Recycling Service Notice

Did you know **57%** of items placed in San José single-family recycling carts were **not** recyclable? Recycling can be confusing, and we're here to help you identify recyclable items. Over the next several months, City staff will be checking recycling carts in your area and leaving either a "Good job!" or an "Oops!" tag based on the contents. **All tagged carts will be collected. Only carts with Household Hazardous Waste may not be collected.**

¿Sabía usted que el **57%** de los artículos depositados en los contenedores de reciclaje unifamiliares de San José **no** son reciclables? Reciclar puede ser confuso, así que estamos aquí para ayudarle a identificar los artículos reciclables. Durante los siguientes meses, personal de la ciudad revisará los recipientes de reciclaje en su área y dejará una etiqueta de "¡Uy!" o "¡Buen trabajo!" dependiendo de los residuos. **No se recogerán los contenedores con desechos domésticos peligrosos.**

Quý vị có biết **57%** vật phẩm bỏ trong thùng rác tái chế của những căn hộ gia đình ở San José là **không** có khả năng tái chế. Việc tái chế có thể gây khó hiểu và chúng tôi ở đây để giúp quý vị phân loại các vật dụng có thể tái chế. Trong vài tháng tới, nhân viên thành phố sẽ kiểm tra các thùng rác trong khu vực của quý vị và sẽ dán nhãn "Oops!" (Ối, không tốt lắm!) hoặc "Good job!" (Rất tốt!) dựa trên vật phẩm bên trong. **Thùng rác chứa Rác Thải Gia Dụng Nguy Hại có thể không được thu gom.**

Thanks for your cooperation in creating a more sustainable community.

Gracias por su colaboración en la realización de una comunidad más sostenible.

Cảm ơn quý vị đã hợp tác để góp phần tạo nên một cộng đồng bền vững hơn!

Look up what's recyclable

SanJoseRecycles.org

Busca lo que es reciclable
SanJoseRecicla.org

Tìm kiếm những gì có thể tái chế
SanJoseTaiChe.org

For more information and to provide feedback:

Para más información y para enviar comentarios:

Để biết thêm thông tin và chia sẻ phản hồi:

(408) 975-2550
SJEnvironment.org/CartTags
ZeroWaste@sanjoseca.gov

This postcard is made from recyclable materials.

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY
Environmental Services

200 E. Santa Clara St., 10th Floor
San José, CA 95113-1905

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San José, CA
Permit No. 502

APPENDIX B

User testing recommendations

The following findings are based on user-testing with 16 San José residents, as well as feedback from canvassing interviews with 23 residents who recently received tags.

Cart tags

USER TESTING FEEDBACK ON THE CART TAGS	
Strong design elements	The use of color and emojis effectively communicated a light and conversational tone.
	Categorized visuals help with comprehension. Participants liked the graphics, and non-English speakers relied on them.
	Placing the most important rules (e.g., do not recycle plastic bags) at the top of the tag ensured that they received the most attention from readers.
	Non-English speakers valued the multilingual format.
	Participants appreciated the clear city logo and the QR code to find more information – although few said they would use the QR code in practice.
Design drawbacks	The top of the "Oops" tag is too crowded - both the "Oops" headline and the key point about cart pick up are lost on some participants. • Most participants missed the text on top of the "Oops" tag as the top of the tag is too crowded with the trilingual text and the clarification about pick up. • Residents occasionally interpret tags as meaning their cart won't be collected, even with the clarification on the top.
	The text density makes it difficult for readers to scan quickly–recycling guidelines towards the bottom of the tag do not receive much attention. This is a limitation of the tag size and the multiple intended uses for the tag.
	The term "cart" confused some, as they typically use the term "bin".
	Some Spanish-speaking participants disagreed with the translation of "Oops" into Spanish.
	The color of the "Oops" tag was not associated with a warning as it was not a bright enough red.

To improve the heading of the "Oops" tag, consider visually separating the note about cart pick up and the "Oops" heading. See an example below of how this could look below.

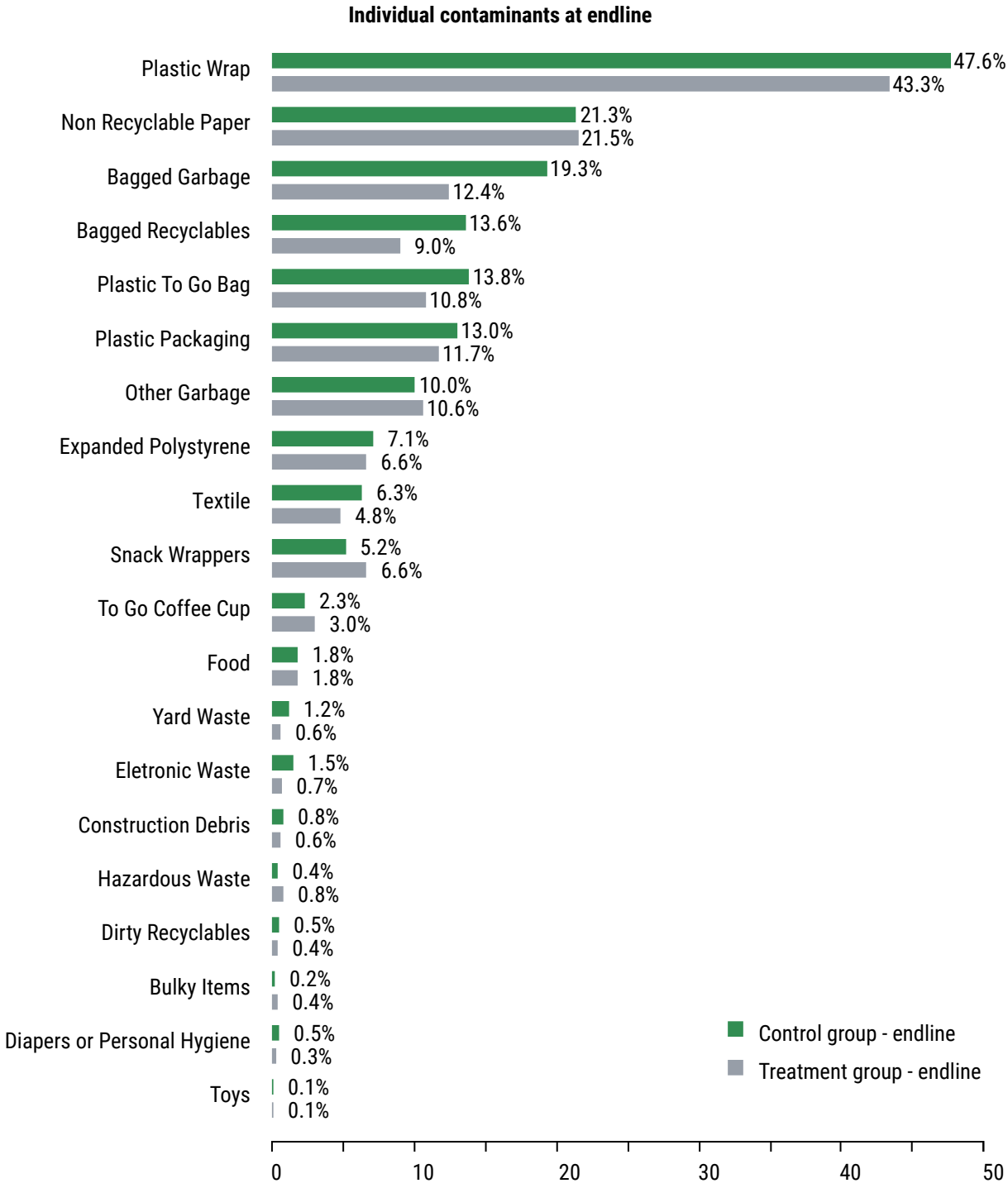
NOTIFICATION POSTCARD

USER TESTING AND INTERVIEW FEEDBACK ON THE POSTCARDS	
Overall findings	The postcard was remembered by very few recipients.
	There was consensus among participants that the postcard is a “nice to have”, but not necessary for the program.
Strong elements	The City was easily identified as the sender and there was high trust in the communication.
	Non-English speakers valued the multilingual format but struggled to find their language quickly on postcards.
Design drawbacks	The main message of the postcard was not immediately clear; participants remembered the opening statistic on recycling, but not much about the program.
	Participants felt that the postcard was too text-heavy and lacks visuals, and that the white space was underused.
	It was difficult for non-English speakers to find their language quickly.

APPENDIX C

Additional Tables and Figures

Individual contaminant detail



Endline contamination by ambassador conversation experience

	Residents who had conversations at baseline n = 73	**Resident who did not have a conversation at baseline** n = 5,384
Contamination mean at baseline	35.3%	37.0%
Contamination mean at endline	28.8%	32.1%
Difference	-6.5 pp	-4.9 pp