

Unlocking Recycling's Potential: Interactive Adventures with Behavioral Insights

February 21, 2024



**The Recycling
Partnership**
Solving for Circularity



**CENTER FOR
BEHAVIOR & THE
ENVIRONMENT**



CRRA
Ending waste.

Agenda

DAY 1

Welcome

Why Behavior Change Matters in this Moment?

Behavior Change & Behavior-Centered Design

Equity & Recycling

Interactive Adventures with Behavioral Insights

Framing, Empathizing, Mapping

DAY 2

Opening, Reflections, and Warm-Up

About Connected Recyclability

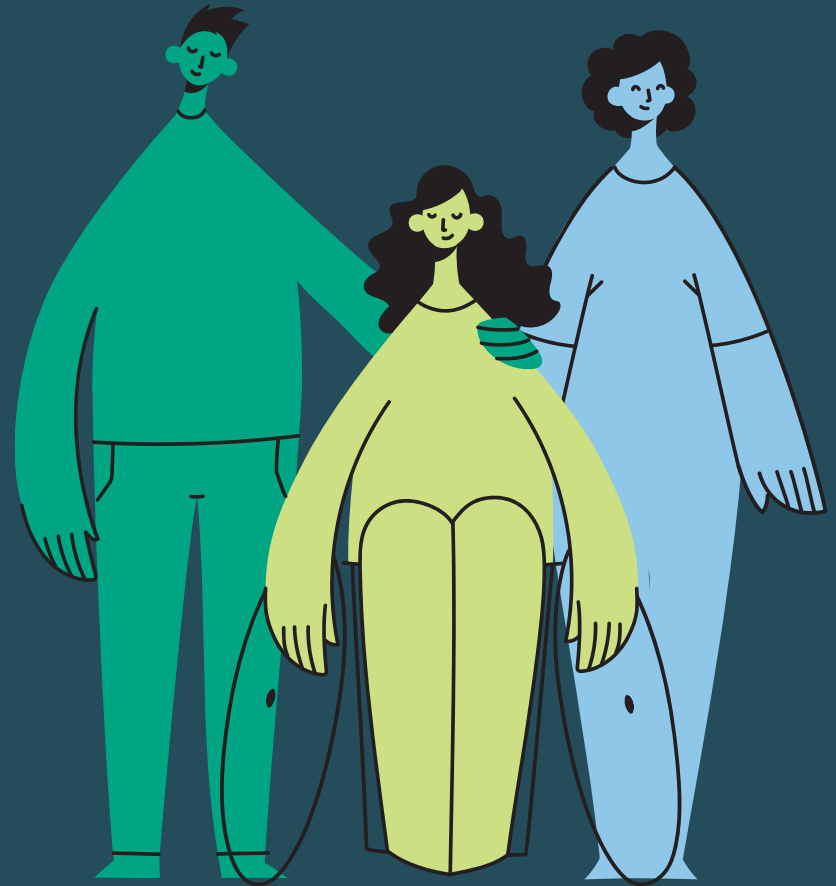
Levers of Behavior Change

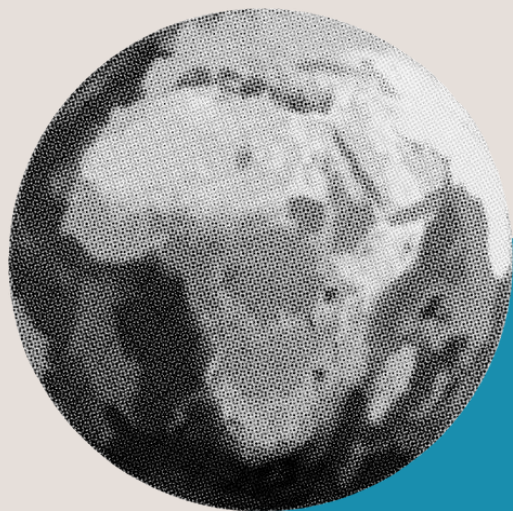
Ideate, Prioritize & Refine Solutions

Prototype, Test, Launch, Assess

Equity - What's next?

Behavioral Science Speed Talks





COMPOST

BREAKING IT DOWN

Presented by: Joseph Sherlock



Duke



A (VERY BRIEF) INTRO

The Center for Advanced Hindsight works at the intersection of research and the real world, using behavioral science to make people happier, healthier, and wealthier at home and abroad.

Who We Are

Behavioral scientists, PhD students, post-docs, interns, volunteers, and generally interesting people from across the globe

WHY WE'RE WORTH LISTENING TO

Over 250 publications & more than 50 reputable partners

OUR GOAL

*Design a program that
helps people...*

- 1) Start composting
- 2) Continue composting
- 3) Compost correctly

OUR APPROACH



Behavioral
Economics



Human Centered
Design



Rigorous
Evaluation



OUR DESIGN JOURNEY



START

Partner with City Hall

Return to City Hall; develop next steps for scaling program

1 EXPLORATION

2 PILOT

3 RANDOMIZED CONTROL TRIAL

PHASE 1

Exploration



Meet with Durham Solid Waste Management

Conduct user surveys and interviews

Define and refine program prototypes

I-TEAM • SOLID WASTE MANAGEMENT • CENTER FOR ADVANCED HINDSIGHT
Reducing Compostables in Durham's Residential Waste Stream

A SNAPSHOT OF WHAT WE'VE DONE

- 4,400+ Resident surveys
- 20+ In-home interviews
- 2 Frontline staff engagements
- 2 Resident collection prototypes
- 4 City Hall event prototypes

A SNAPSHOT OF WHAT WE'VE LEARNED FROM DURHAM RESIDENTS

Marketing—and cost—matters: consider who this is accessible to and how Durham invites its diverse community in to participate.

"As many awards as possible about what this is, and what it does, finding what's important to people, would be helpful. Making sure photos show diverse people, and so people could imagine themselves composting themselves."

"It would be easier to sell if it came at little to no cost to you. I think I can't emphasize enough, that if you're doing this at low cost and feel like you're making an impact, the adoption is going to be way higher."

"When I think about where these benefits are, that's what motivates me to contribute as little as possible to them."

Residents want to be compost ambassadors for their community.

"I gotta say this pilot program was great, I really enjoyed it. If you do larger tests, I'd be really happy to be a part of it. I would definitely reach out to neighbors too. People would be down to see this kind of stuff happen."

"I'd be willing to go around and talk to my neighbors. We've gone around to our neighbors for other things."

People are concerned about Yard Waste collection issues affecting the compost service.

"You must be more diligent than the yard waste. It's really important that you come. They'd have to come right away or they'd lose people. That'll be a challenge."

"I've had to call [to have my yard waste collected]. A lot."

The household food shopper and the "conscious composter" tends to be the same person. These people will often aspire to reduce food waste at the source, but find it challenging.

"When we buy food in the store, there's a tendency to buy lots of stuff and then it expires. By composting, we could actually see what was wasted and plan better."

"With kids, it's hard to plan. You end up wasting a lot of food."

Recycling, Compost and Garbage feel intimately tied, but aren't currently explicit.

"What I would like to see is this in a larger waste reduction in general, not just food. It feels very tied into recycling and garbage."

"This process is simple. We try to recycle, but there can be too many restrictions on what is allowed in and it gets confusing."

Children are particularly interested in participating in the composting process, and have a powerful influence on their parents' choices and behaviors.

"My daughter really liked it. She brought food home from school she didn't want and put it into the compost."

"My daughter was like, 'That's my trash can! I want to pull out the can!'"

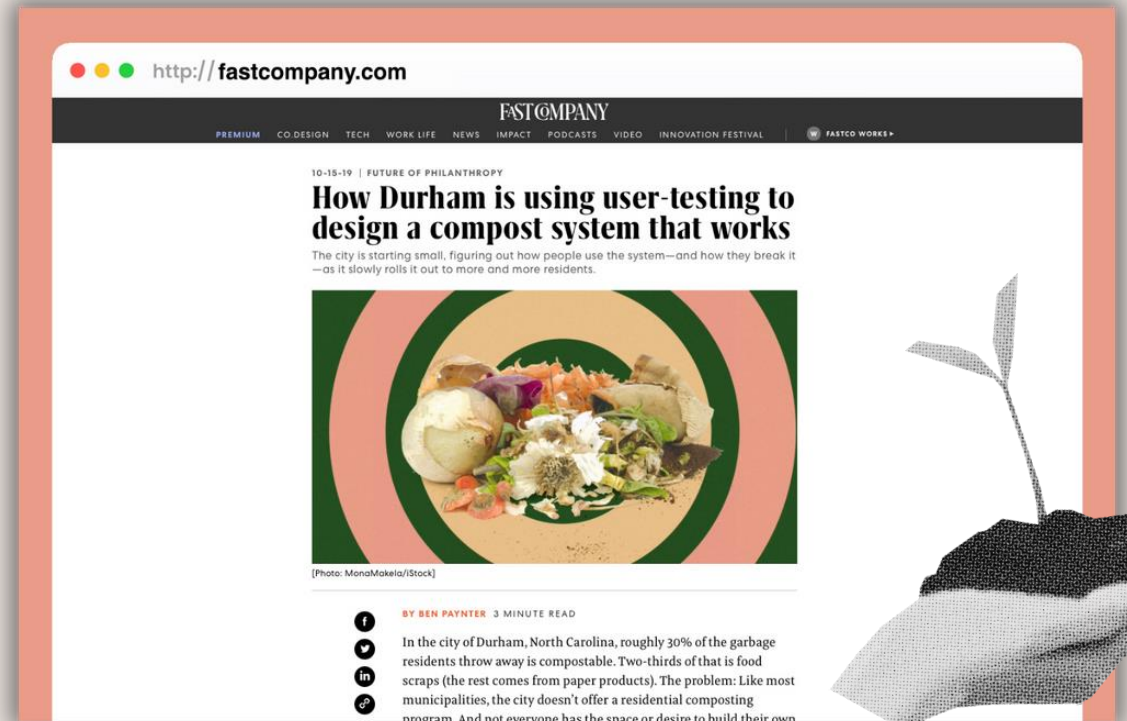
PHASE 2

Pilot

80 household curbside composting pilot

User surveys and interview

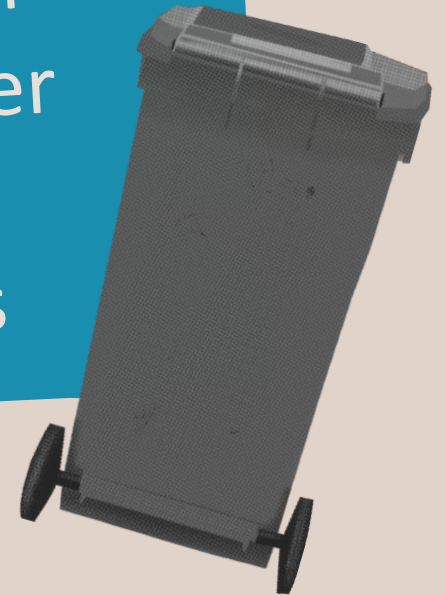
Feedback-based adjustments





Insights & RESULTS!

- Education & awareness reduced contamination
- 5,550 lbs food waste diverted from landfill
- More participants reported using 1 or fewer trash bags per week (54% --> 70%)
- Composting linked to identity and values



PHASE 3

Randomized Control Trial

360 household trial

Modify for environmentalist spillovers

Measure trash & compost

Interview and off-board

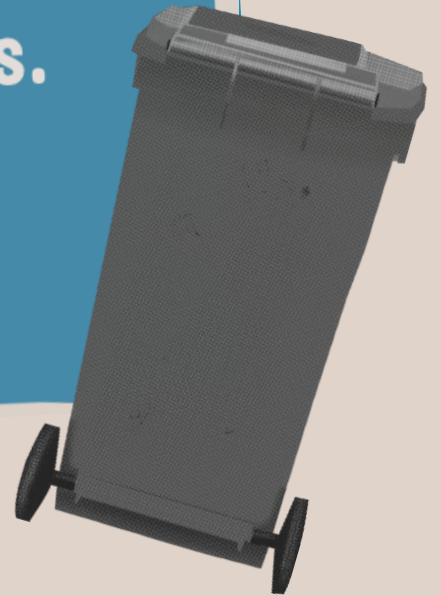
Data analysis





CURRENT STATUS

We are currently analyzing the effects of the RCT on participants' behaviors, feelings, and identities.
Here's a sneak peek at our results...



Treatment vs. Control Average Trash Weight

Weekly Average Trash Weights

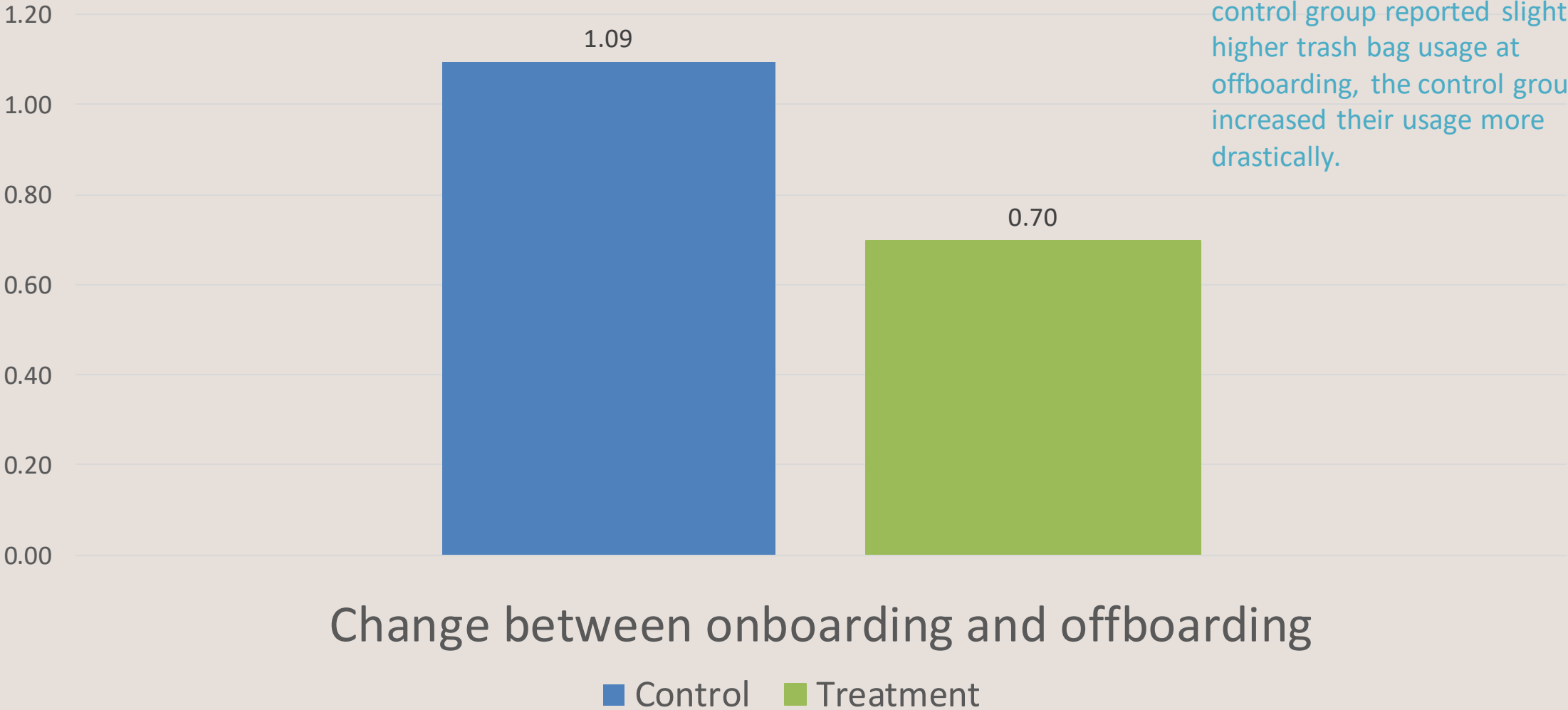
Treatment: 71.8 lbs.

Control: 74.1 lbs.

Difference: -2.3 lbs.

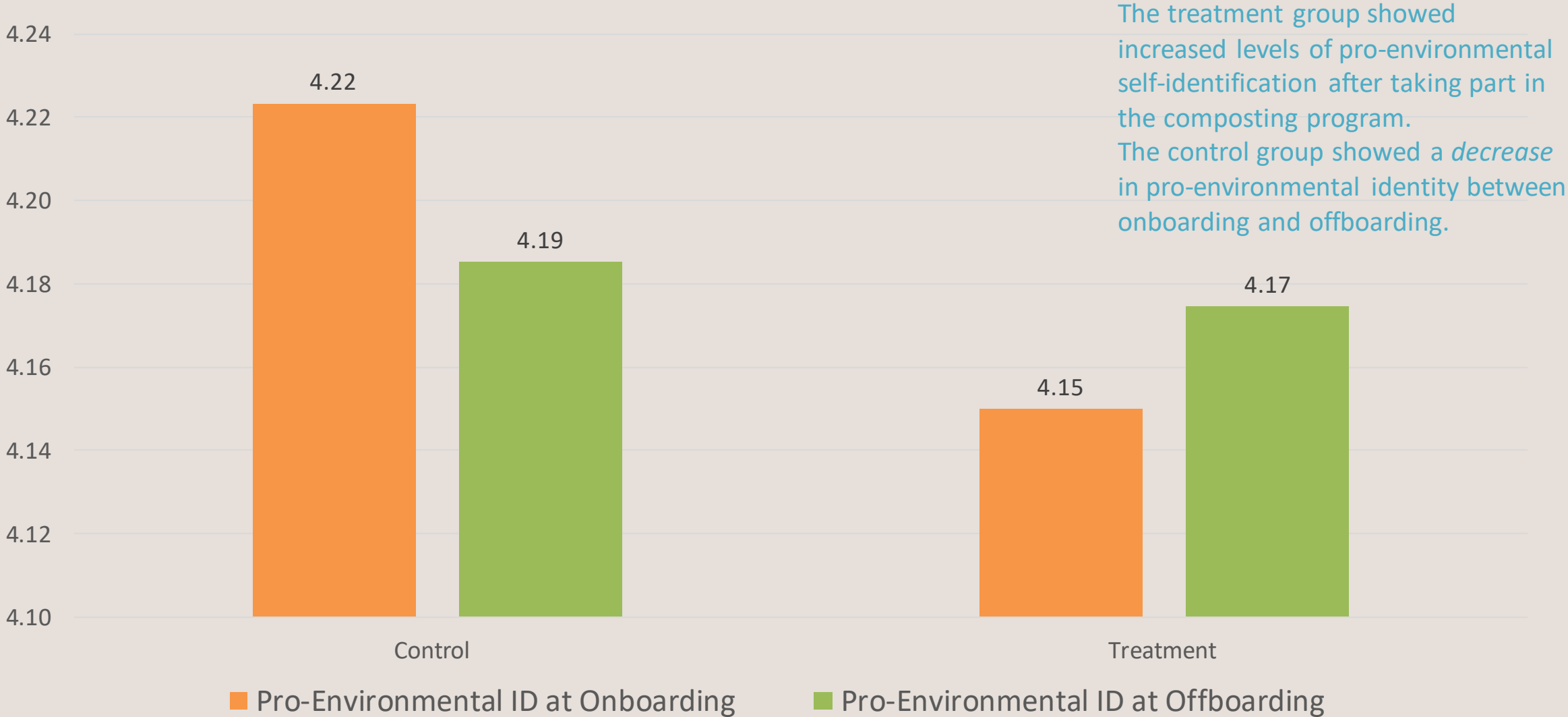


Estimated Increase in Number of Trashbags Used in the Last Week

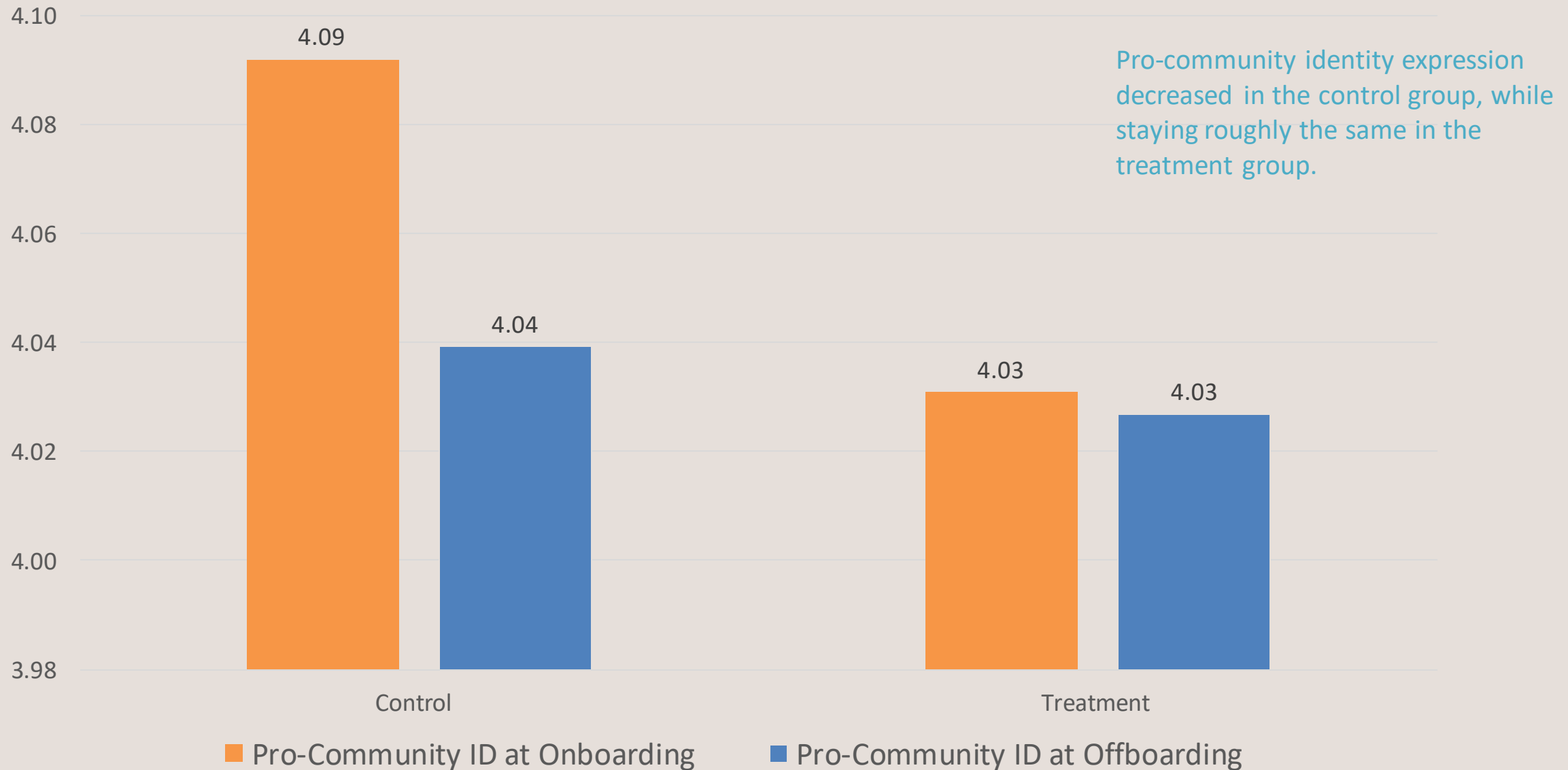


Although both the treatment and control group reported slightly higher trash bag usage at offboarding, the control group increased their usage more drastically.

Change in Pro-Environmental Self-Identification

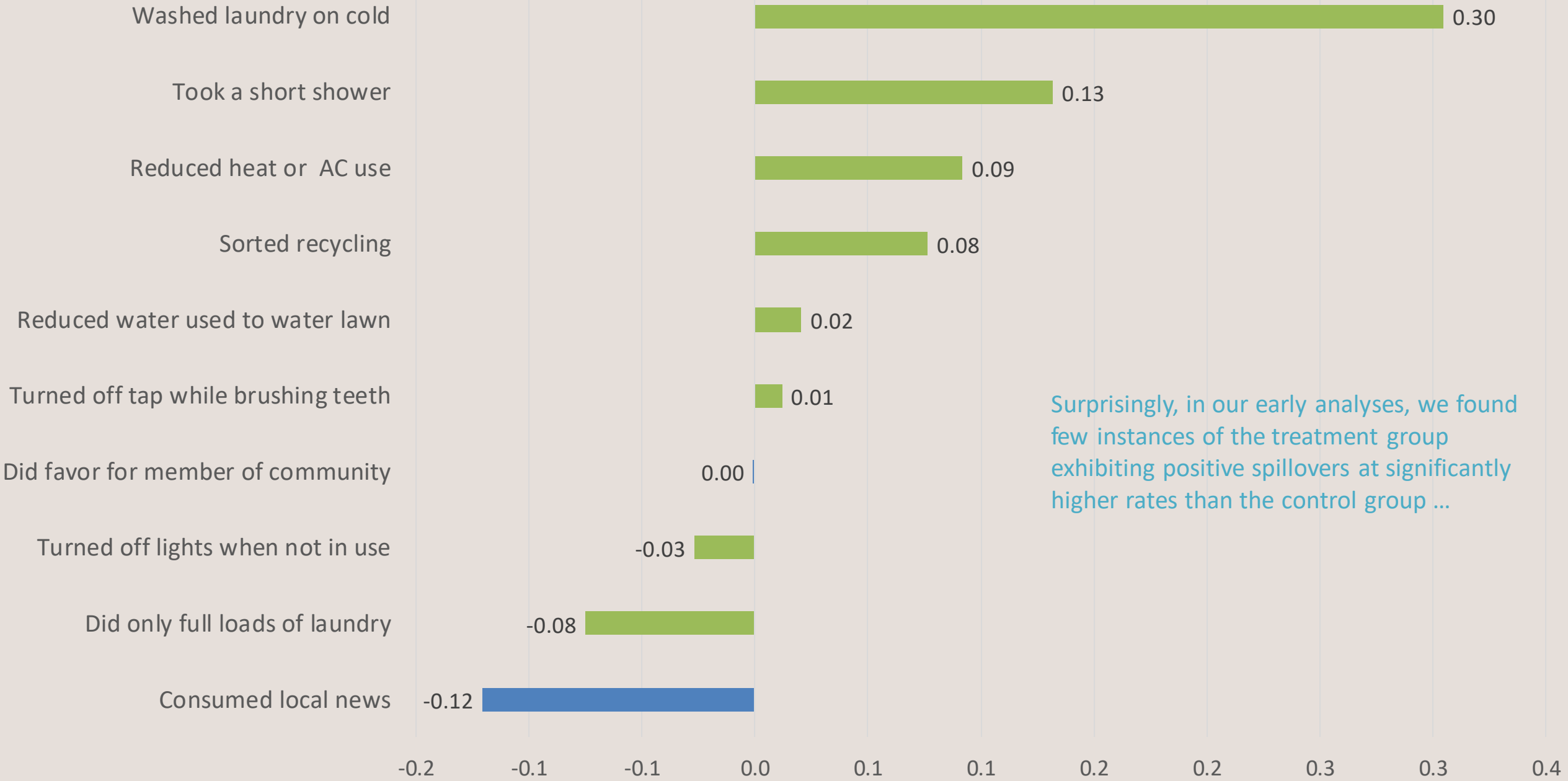


Change in Pro-Community Self-Identification



Subjective Frequency (never- always) of Pro- Environmental and Pro-Community Spillovers

(difference between treatment and control)

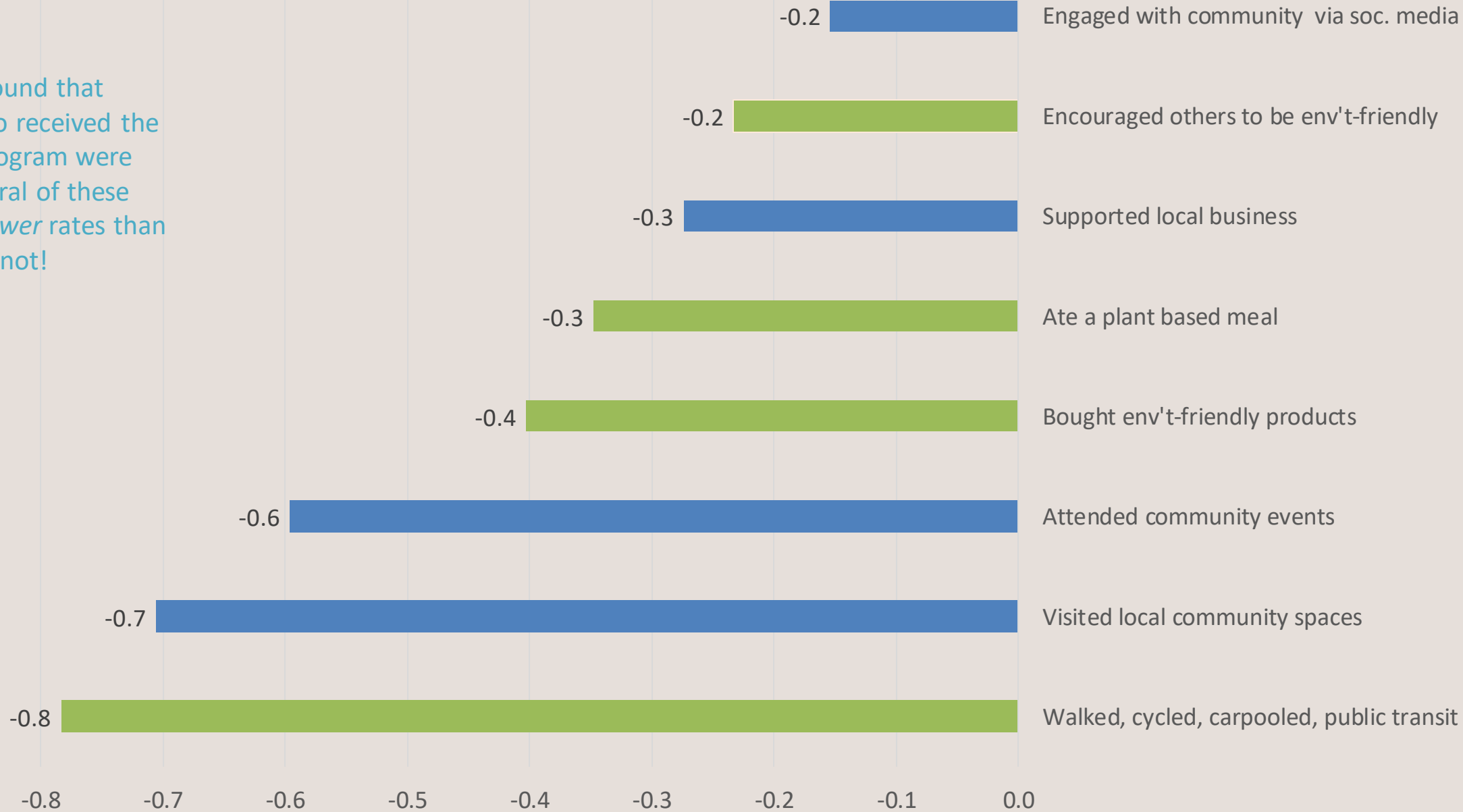


Surprisingly, in our early analyses, we found few instances of the treatment group exhibiting positive spillovers at significantly higher rates than the control group ...

Numeric Frequency of Pro- Environmental and Pro-Community Spillovers

(difference between treatment and control)

... In fact, we found that individuals who received the composting program were exhibiting several of these behaviors at *lower* rates than those who did not!



IMPACT



Scalability

City of Durham to create “How To” guide for other municipalities to emulate once local programming is complete



Environmentalism

Increasing awareness and accessibility of composting reduces greenhouse gases and promotes healthy soil



Capacity Building

By partnering with community stakeholders, we build their capacity to create data-informed programs

RESOURCES

Center for Advanced Hindsight:

Advanced-hindsight.com



City of Durham:

durhamnc.gov/935/Composting



KEEP IN TOUCH!

Joseph Sherlock, Principal Researcher



Social Norms and Sustainable Behavior

February 21, 2024



**The Recycling
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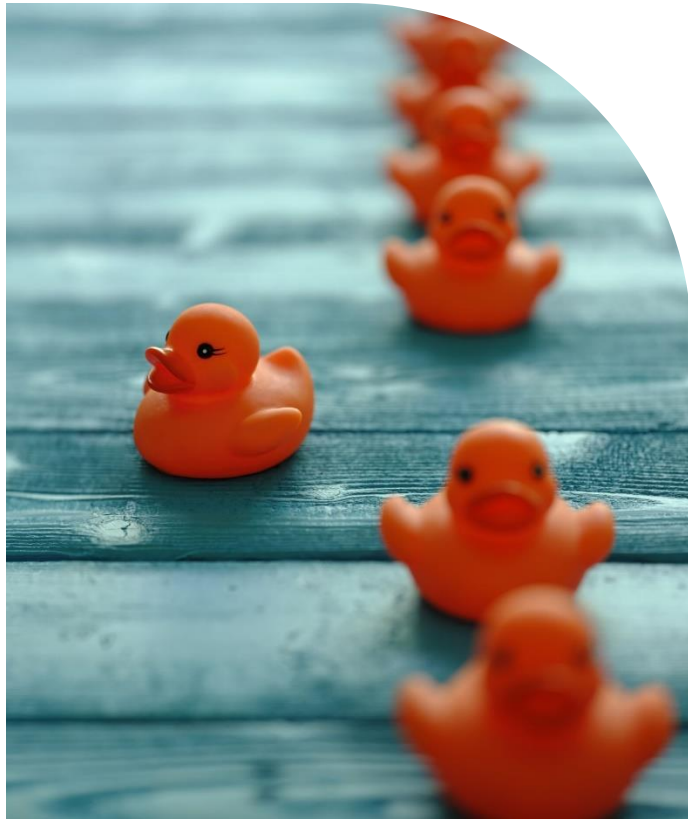


**CENTER FOR
BEHAVIOR & THE
ENVIRONMENT**

TAKE HOME MESSAGE

We can leverage the human desire for belonging and drive behavior change by strategically highlighting what other people do or approve of doing.



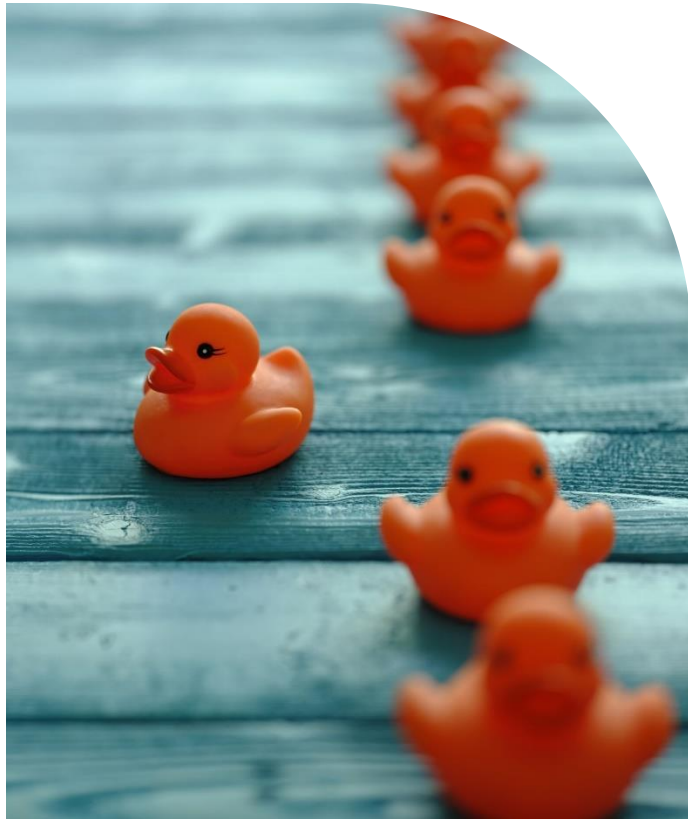


Not Sure How to Act?

We Pay Attention to...

 **What other people DO**

 **What other people APPROVE or DISAPPROVE of**

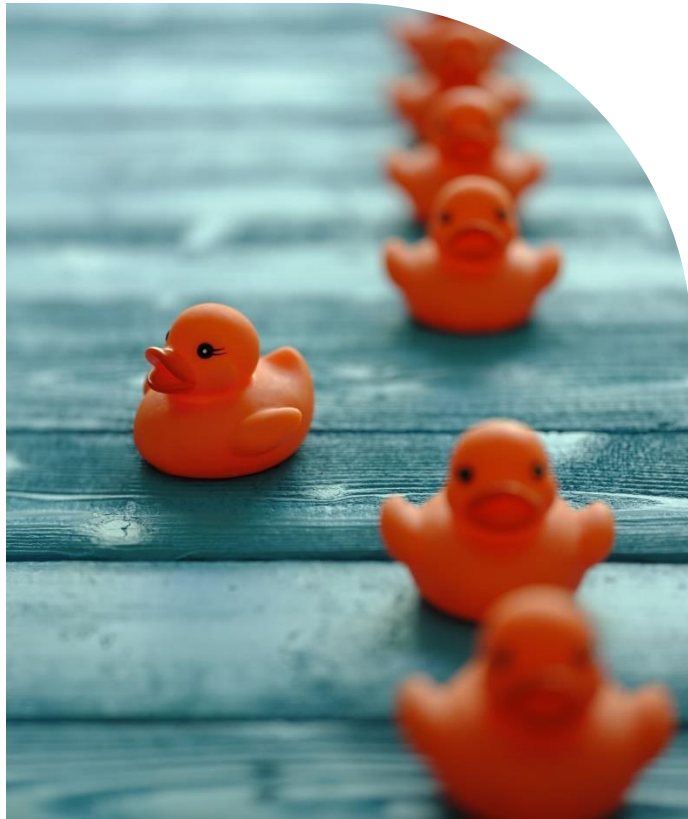


Not Sure How to Act?

We Pay Attention to...

 What **we believe** other people **DO**

 What **we believe** other people **APPROVE or DISAPPROVE of**



Not Sure How to Act?

We Pay Attention to...

-  **Descriptive Norms**
What **we believe** other people **DO**
-  **Injunctive Norms**
What **we believe** other people **APPROVE** or **DISAPPROVE** of

Evidence for the Impact of Social Norms on Behavior



ENERGY + TRANSPORTATION

- Abrahamse et al. (2007)
- Nolan et al. (2008)
- Ayres et al. (2009)
- Bator et al. (2019)
- Bator et al. (2013)



WATER

- Dickerson et al. (1992)
- Kurz et al. (2005)
- Schultz et al. (2019)
- Bhanot (2021)



WASTE + RECYCLING

- Schultz (1999)
- Wang & Katzev (1990)
- Viscussi et al. (2014)
- Hewitt et al. (2023)



HOTEL TOWELS, LITTER, & MORE...

- Goldstein et al. (2008)
- Schultz et al. (2008)
- Cialdini, et al. (1990)
- Staats et al. (2011)
- Carrico et al (2013)

Research Guidance

Norms are Powerful, Use Wisely!



Highlight the desired norm



Show comparisons to similar others



Social influence is underestimated



Join Your Salinas Valley Neighbors by Properly Placing Your Food Scraps in the Green Cart

Our program turns food scraps into compost that can enrich the soil on our farms and in our home gardens while keeping waste out of the landfill.

Nothing Goes to Waste

- Burnt toast? That's compost!
- Strawberries spoiled? That's compost for your soil.

Reduce Waste Going to Landfills

- In the landfill food scraps go to waste but in your green cart they become compost for our farms and home gardens.

Need More Space in Your Trash Cart?

- Place food scraps where they belong, in your green cart.

79%

of residents think it's important to reduce the amount of waste going to the landfill by placing food scraps in the green cart.

Together, we are enriching the soil on farms and in home gardens throughout our valley.

Food Scraps Come From:



Unwanted trimmings from meal prep



Those last bits after a meal



Food that's been in the fridge too long



Real World Example

Injunctive Norms

79% of residents think it is important to reduce the amount of waste going to the landfill by placing food scraps in the green cart.



February 2022

Dear Soledad Resident,

In early January, a letter was sent telling you about a new state requirement for recycling food scraps instead of disposing of them in the trash. To meet the requirement, food scraps from residents in our City and throughout the Salinas Valley Region are now going in our green carts so they can be turned into compost.

Ahead of the new food scraps recycling program, we knew there would be widespread support from residents for this change in household routines. Residents in our region share the belief that making compost from food scraps is *the right thing to do* and 79% think it is *important to reduce waste going to the landfill*¹.

In only the first six weeks of this program, 23% of households in your neighborhood placed their food scraps in the green cart instead of the trash. The number of households will continue to grow as more of our neighbors create new food scrap habits.

As a reminder, *if it grows, it goes!* Collect food scraps from meal prep, the end of a meal, and even food that has gone bad in your refrigerator and place it unbagged in your green cart.

On behalf of the City of Soledad, Salinas Valley Recycles, and Tri-Cities Disposal & Recycling, thank you for your participation. For questions about this program, please visit the Salinas Valley Recycles website: <https://svswa.org/residential/foodscraps>.

Sincerely,

City of Soledad

¹ 2021 survey of Salinas Valley residents.

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Real World Example

Dynamic Norms



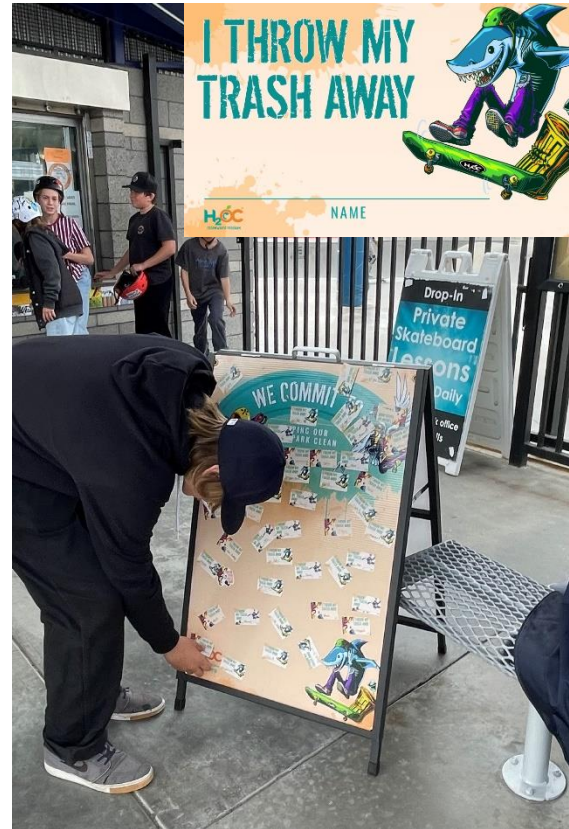
In only the first 6 weeks...
23% of households in your neighborhood placed food scraps in the green cart. The number will continue to grow.

Real World Examples

Grouping Commitments to Highlight Approval



Houston Zoo



Orange County Stormwater



Cal Recycle Used Oil Block Grantee

Real World Examples

Compare to Similar Others

Join Wenham Neighbors In Summer Water Savings!

How do you compare?

More than half of Wenham residents—including Town Hall—don't water their lawns in the summer. These residents are not only saving money, but also doing their part to save water. To prepare for this summer, we wanted to let you know where you stand based on your water usage last summer.

Average Water Use Per Month (May-July 2016)

Category	Gallons
Neighbors	6000
You	5000

During May, June, and July 2016, your household used **less water** than the average similar-sized Wenham household.

Your household is doing a good job regarding your water usage.

Check out the **Healthy Lawn, Happy Summer** flyer for tips to reduce your water use.

Together, we can conserve Wenham's water resources while keeping our lawns healthy all summer.

Thank you for helping your community!
www.wenhamma.gov/waterconservation

GRIMMER NEIGHBORHOOD Composting Report

See how your neighborhood stacks up with food scrap composting.

KEEP THOSE SCRAPS COMING!

FREMONT FOOD SCRAP COMPOSTING COMPARISON

NEIGHBORHOODS NEAR YOU

COMPOSTING METER

- Above Average
- Average
- Below Average

Here's how your neighborhood compares to others in Fremont.

YOUR COMPOSTING RATE

44%

Your food scrap composting rate is calculated as the percentage of total waste collected.

A higher percentage means that a neighborhood composted more and produced less waste.

"Join me in keeping food scraps out of the landfill. It's easy—just put them in the green bin."

M. Fraticelli, Fremont

TAKE HOME MESSAGE

We can leverage the human desire for belonging and drive behavior change by strategically highlighting what other people do or approve of doing.

Get in Touch:

Jennifer Tabanico

 tabanico@actionresearch-inc.com

 actionresearch-inc.com



Wishcycling

Erez Yoeli with Eli Kramer and Dave Rand



Wishcycling is:

- placing things in the recycling bin when unsure if they're recyclable out of a desire to keep them out of landfill.
- thought to be an important contributor to the contamination problem.
- doing a bad thing out of a desire to do a bad thing

I'm going to tell you about a survey and experiment we designed to check if wish cycling is contributing to the contamination problem.

Survey a representative sample of ~700 Americans...

Survey a representative sample of ~700 Americans...






1. Ask participants whether they recycle
2. If respond yes: quiz to assess recycling knowledge
3. Assess attitudes towards recycling and climate change



Here are the items we used in the quiz/assessment of knowledge part. We asked people whether they would throw out or recycle the item exactly as is in the photo...

Item	Photo	Category
Cardboard		Unambiguous recyclables
Jar		Unambiguous recyclables
Paper		Unambiguous recyclables
Container		Unambiguous recyclables
Tuna can		Unambiguous recyclables
Tin foil		Unambiguous recyclables

Item	Photo	Category
Utensils		Unambiguous non-recyclables
Coffee cup (photo changed)		Unambiguous non-recyclables
Hanger		Unambiguous non-recyclables
Plastic bag		Unambiguous non-recyclables
Pizza box with leftover pizza		Unambiguous non-recyclables
Full peanut butter		Unambiguous non-recyclables
Dirty paper plate		Unambiguous non-recyclables

Item	Photo	Category
Empty peanut butter jar		ambiguous
Oily pizza box		ambiguous
Dirty tinfoil		ambiguous
Dirty can (photo changed)		ambiguous
Dirty container		ambiguous

Results...

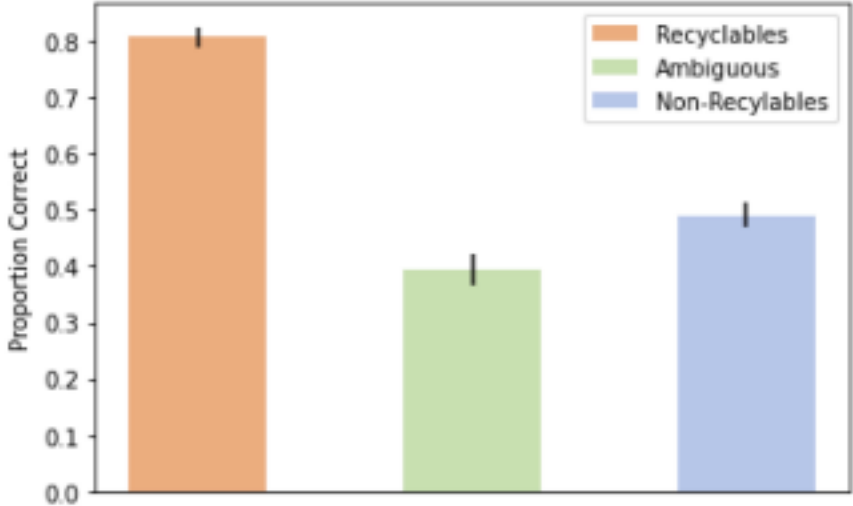
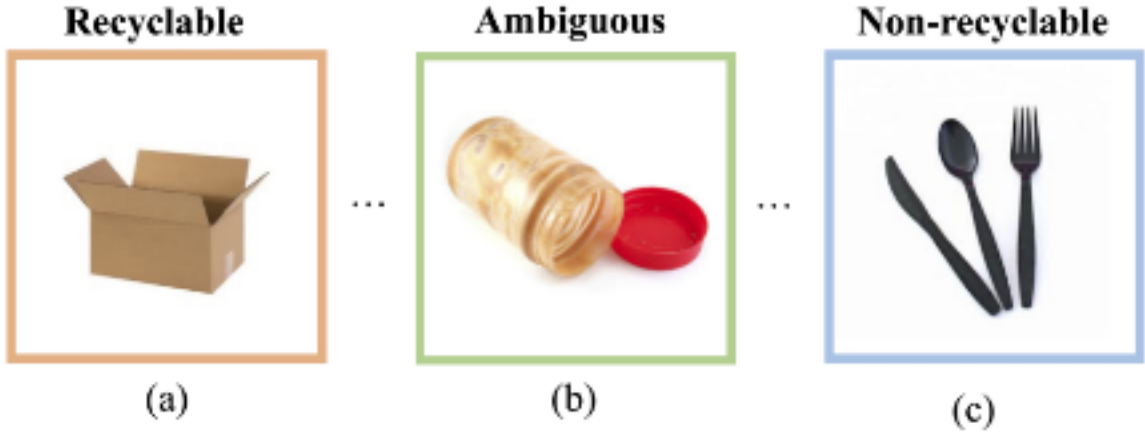
80% of respondents report that they recycle

80% of respondents report that they recycle

	(1)	(2)	(3)	(4)
Climate Gravity Question	0.058*** (0.015)		0.054** (0.018)	
Recycling Importance Scale		0.103*** (0.015)		0.097*** (0.018)
Individual Characteristics	No	No	Yes	Yes
Observations	635	638	554	554
Adjusted R ²	0.021	0.069	0.057	0.091

And those who care more about the environment or recycling recycle more
(by a meaningful amount)

Recyclers' Performance on the Quiz



	With Ambiguous Items		Without Ambiguous Items	
	(1)	(2)	(3)	(4)
Climate Gravity Question	-0.036*** (0.007)		-0.030*** (0.007)	
Recycling Importance Scale		-0.028*** (0.008)		-0.021** (0.008)
Controls for Individual Characteristics	Yes	Yes	Yes	Yes
Observations	8,152	8,152	5,887	5,887

Already motivated to help, but motivation is channeled ineffectively.

Can an informational intervention work?

Already motivated to help, but motivation is channeled ineffectively.

Can an informational intervention work?

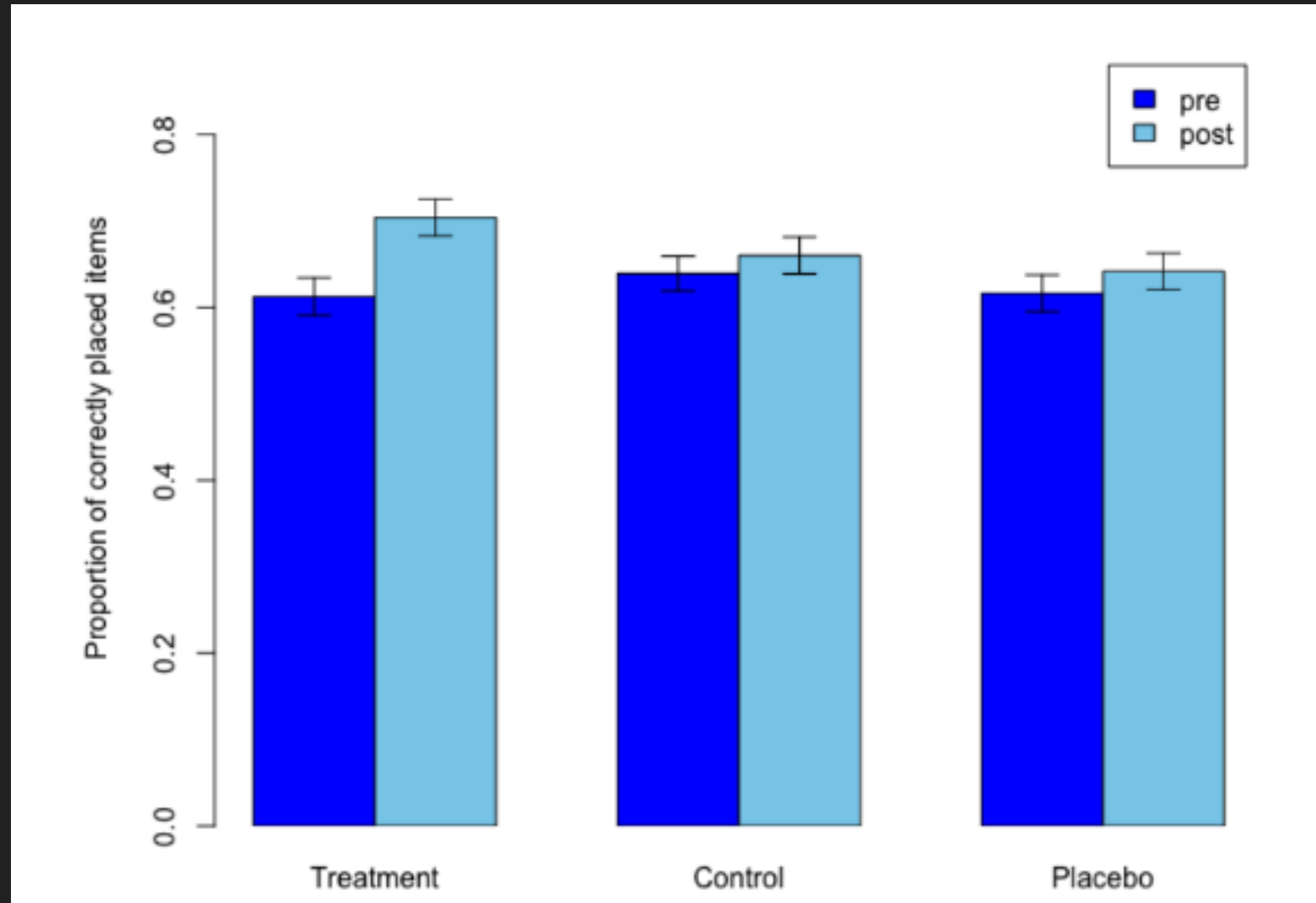


So we designed one based on some of the behavioral design principles you'll encounter.

With help from existing campaigns like this one featuring Kristen Bell

Tested improvement in the quiz, relative to a control (no info) and a placebo (climate info)

Results on the quiz, over a week after the intervention was delivered.



Questions? Suggestions?

eyoeli@mit.edu