



Let's Recycle Better, Together.

CHANGING BEHAVIOUR

CASE STUDIES & BEST PRACTICES
TO INFLUENCE ZERO WASTE BEHAVIOUR

WEDNESDAY, SEPTEMBER 3RD, 2025



Today's Panelists



Jennifer Tabanico

President

Action Research



Gretchen Engbring

Social Scientist,

Office of Sustainability

Stanford University

Join the Discussion

From your toolbar:



Share your experience & opinions

Look for links to resources

Type direct questions for panelists



Beyond Awareness *Sparking Recycling and Waste Reduction Behavior with Community- Based Social Marketing*

September 3, 2025

Jennifer Tabanico

PRESIDENT

tabanico@actionresearch-inc.com



action
R E S E A R C H



Action Research

Applying **behavioral** and **social science** research to outreach programs that promote **safe, healthy, and sustainable** communities.



sparkling behavior **changes** for **good**

Behavior Matters

Environmental Problems are Behavior Problems

✘ Sorting Behavior

✘ Waste Reduction



Behavior Matters

Solutions Involve Behavior



Technology



Infrastructure



Policy

Information-Intensive



Knowledge


*If people know
what to do,
they will do it.*

*Knowledge ≠
Behavior
Change*

Attitude

*If people
believe, they
will change.*

*Attitude ≠
Behavior
Change*

A blue recycling bin is the central focus, positioned on a paved surface. The bin is a standard curbside recycling container with a lid and a wheel. In the background, there are various green trees and a clear sky. A white text box with a green border is overlaid on the image, containing the text: "While knowledge and attitudes are important foundations, people do not act solely on what they know or believe."

While knowledge and attitudes are important foundations, people do not act solely on what they know or believe.

Community-Based Social Marketing

Process not Tactic

- ✦ Origins in Social and Environmental Psychology
- ✦ Community-based
- ✦ Removes barriers
- ✦ Behavior-based



Community-Based Social Marketing

Select Behavior

Barriers & Benefits

Develop Strategy

Pilot Test

Implement Broadly & Evaluate

Residential Recycling

Step 1: Select Behaviors

✘ Waste Characterization Study

- ✘ 415 Households
- ✘ Mixed Paper in 87% of Garbage Carts
- ✘ 8% of Weight

A vertical stack of numerous white papers, some with colored edges, is shown on the left side of the slide. The papers are slightly blurred, suggesting depth.

Residential Recycling

Step 2: Identify Barriers & Benefits

✘ In-Person Surveys (N=261)

✘ Barriers

- ✘ Privacy concerns

- ✘ Confusion about shiny paper, plastic windows

✘ Benefits

- ✘ Environment

- ✘ Right thing to do

Residential Recycling

Step 3: Develop Strategy

✂ Social Norms

✂ *87% of Fort Worth residents stated that recycling at home was very important...*

✂ Address Barriers

✂ *You can recycle...junk mail, envelopes with windows, magazines, and glossy paper.*

✂ Prompt

✂ **Black marker**



If you're concerned about your privacy use the enclosed marker to mark out your information before you recycle.



You can recycle all types of paper in your blue recycling cart, including junk mail, envelopes with windows, magazines and glossy paper.

In a recent survey, 87% of Fort Worth residents stated that recycling at home was very important to them. However, some residents were unsure about recycling items that contained their name or personal information.

The City of Fort Worth would like to make it easier for residents to recycle all types of paper.

Let's keep junk mail, envelopes, magazines and glossy paper out of our landfill.



CODE COMPLIANCE
SOLID WASTE SERVICES



City of Fort Worth, TX

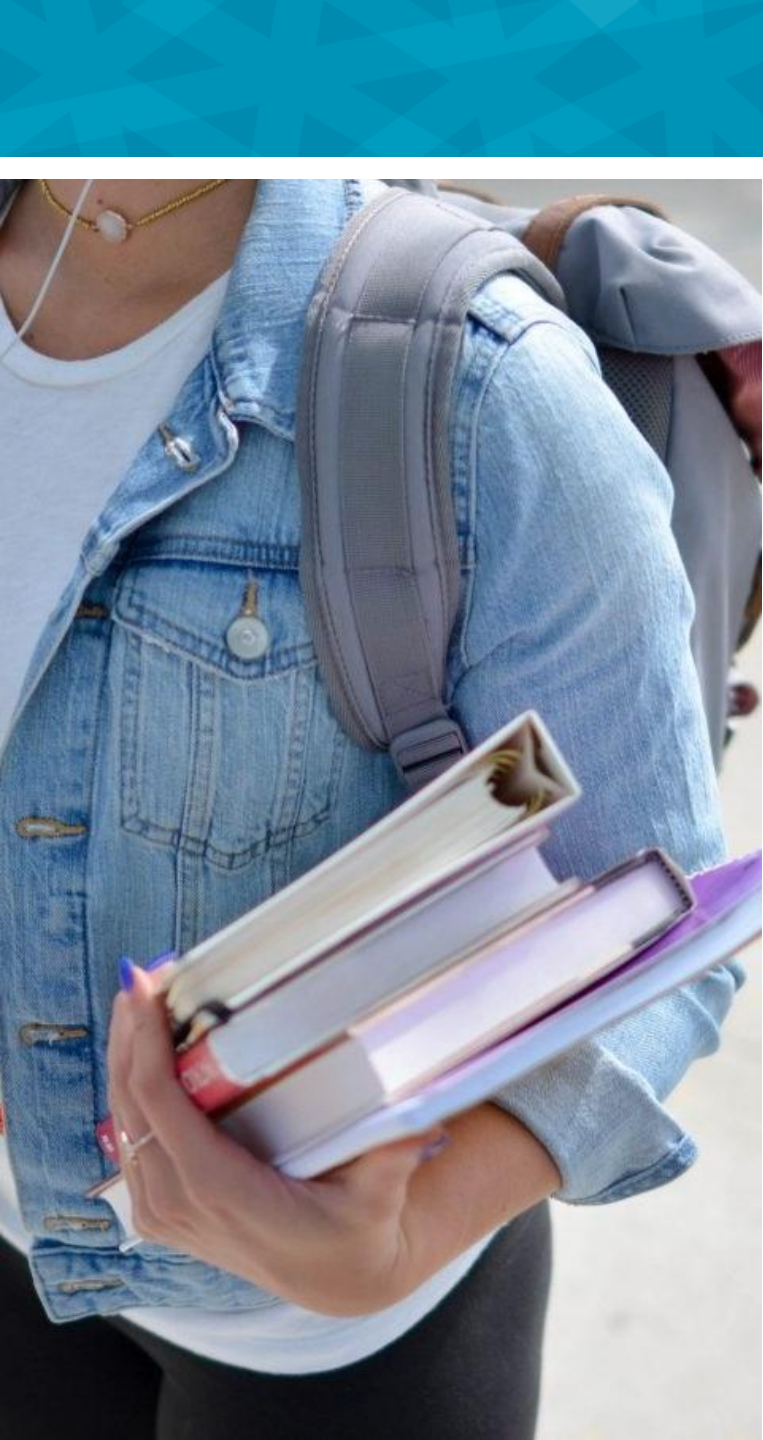
Campus Recycling (Contamination)

Step 1: Select Behaviors

✂ Campuswide Waste Audits

- ✂ Residence halls highest contamination
- ✂ 95% of the student body





Campus Recycling (Contamination)

Step 2: Identify Barriers & Benefits

✘ Intercept Surveys

✘ Barriers

- ✘ Knowledge barriers tied to specific items
- ✘ Competition with other signage

✘ Benefits

- ✘ Motivated to be correct
- ✘ Environment and community

Campus Recycling (Contamination)

Step 3: Develop Strategy (Bin Signage)

- ✖ **Address Barriers**
 - ✖ Focus on “problem” items
- ✖ **Social Norms**
 - ✖ Most do the right thing
- ✖ **Prompt**
 - ✖ 3-D signage to stand out
- ✖ **Highlight Benefits**

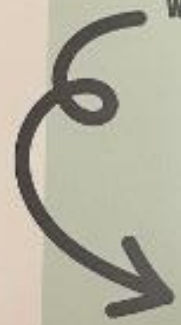
SORT SMART SPOTLIGHT

Swarthmore students are smart about sorting waste for our community and the environment, but some items can be confusing.



SORT SMART SPOTLIGHT

Swarthmore students are smart about sorting waste for our community and the environment, but some items can be confusing.



Please clean up your own MESS
Food does not go in the Restrooms.
Please throw all food and containers in the bottom Kitchen trash.
Please clean your hand dishes do not leave dirty dishes on the sinks and counters.

FIRE HAZARD
PLEASE REMOVE ALL OF YOUR PERSONAL BELONGINGS
OUT OF THE HALL!!!
PLEASE DONATE
SO THAT EVS DOES NOT HAVE TO ENTER YOUR ROOM AND PLACE ALL OF YOUR PERSONAL BELONGINGS ON THE FLOOR.



Campus Recycling (Contamination)

Step 3: Develop Strategy (Sorting Game)

✂ In-Person Communication

✂ Feedback

✂ *Info barriers*

✂ *Practice new habits*

✂ Commitment

✂ *Leverage self-perception*

✂ *Enhance social norms*



Swarthmore College, PA

Community-Based Social Marketing

Select Behavior

Barriers & Benefits

Develop Strategy

Pilot Test

Implement Broadly & Evaluate

Residential Organics Collection

Testing Different Strategy Options



Give Your **Food Scraps** New Life by Placing Them in Your Green Cart

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.

Food Scraps Come From:

- Unwanted trimmings from meal prep
- Those last bits after a meal
- Food that's been in the fridge too long

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.

Salinas Valley Recycles

How to Collect Your Food Scraps

- #1** Choose a container like a bowl or pail. Put it in a convenient place in the kitchen.
- #2** Collect your food scraps from meal prep, after a meal, and cleaning out the fridge.
- #3** Place food scraps in your green cart. (Plastic bag liners cannot be placed in green cart.)

If it Grows, it Goes!

What Goes: ✓

- Fruit, including pits, rinds, and seeds.
- Vegetables, including seeds.
- Dairy and eggshells.
- Cooked meat and seafood, including bones and shells.
- Bread, grains, pasta, and nut shells.
- Tea bags and coffee grounds.
- Spilled food and uneaten food from a meal.

What Doesn't: ✗



- Raw meat
- Liquids
- Fats, oils, and grease
- Plastic and plastic bags
- Paper and cardboard
- Glass
- Metal
- Food stickers
- Rubber bands
- Twist ties

(*Keep our compost clean - put diapers, pet waste, & trash in the trash cart.)

Salinas Valley Recycles

118 Sun St, Suite 115, Salinas, CA 93901
Phone: (831) 775-5000

Printed on 100% postconsumer recycled paper.

January 2022

Dear Soledad Resident,

In 2022 all residents in the State of California will be required to recycle their food scraps instead of disposing of them in the trash. Landfills are the third largest source of methane in the United States. Food scraps and yard trimmings make up half of the material in our landfill, so by reducing food and landscaping waste we can reduce harmful greenhouse gases.

In the Salinas Valley region, food scraps will go in our green carts so they can be turned into compost. To make it easier to participate in the food scraps recycling program Salinas Valley Recycles, your local Solid Waste Authority, has partnered with the City of Soledad and Tri-Cities Deposit & Recycling, your hauler, to provide you with the enclosed informational flyer.

You can pick up a FREE kitchen food scraps pail from City Hall between January 3rd and January 17th by presenting the coupon below. Pick up your pail at the City Hall front desk Monday-Friday, 8am-5pm. One kitchen food scraps pail per household.

When you place food scraps in the right place you save space in your trash cart and produce a valuable resource for our farms and home gardens. Simply collect food scraps from meal prep, the end of a meal, and even food that has gone bad in your refrigerator and place it in your green cart. The enclosed flyer provides instructions on how to collect food scraps and a list of acceptable food items. Thank you for your participation.

For questions about this program, please visit the Salinas Valley Recycles website: www.svwa.org.

Sincerely,
City of Soledad

FREE KITCHEN FOOD SCRAPS PAIL
Cubeta de Sobras de Comida GRATIS

Soledad City Hall
243 Main Street
Soledad, CA 93960
Monday-Friday
8am-5pm

[INSERT RESIDENT ADDRESS HERE]

348 Main Street, P.O. Box 116, Soledad, CA 93960 • Phone (831) 233-5000 • Fax (831) 676-8995 • CityofSoledad.com

Printed on 100% postconsumer recycled paper.

Residential Organics Collection

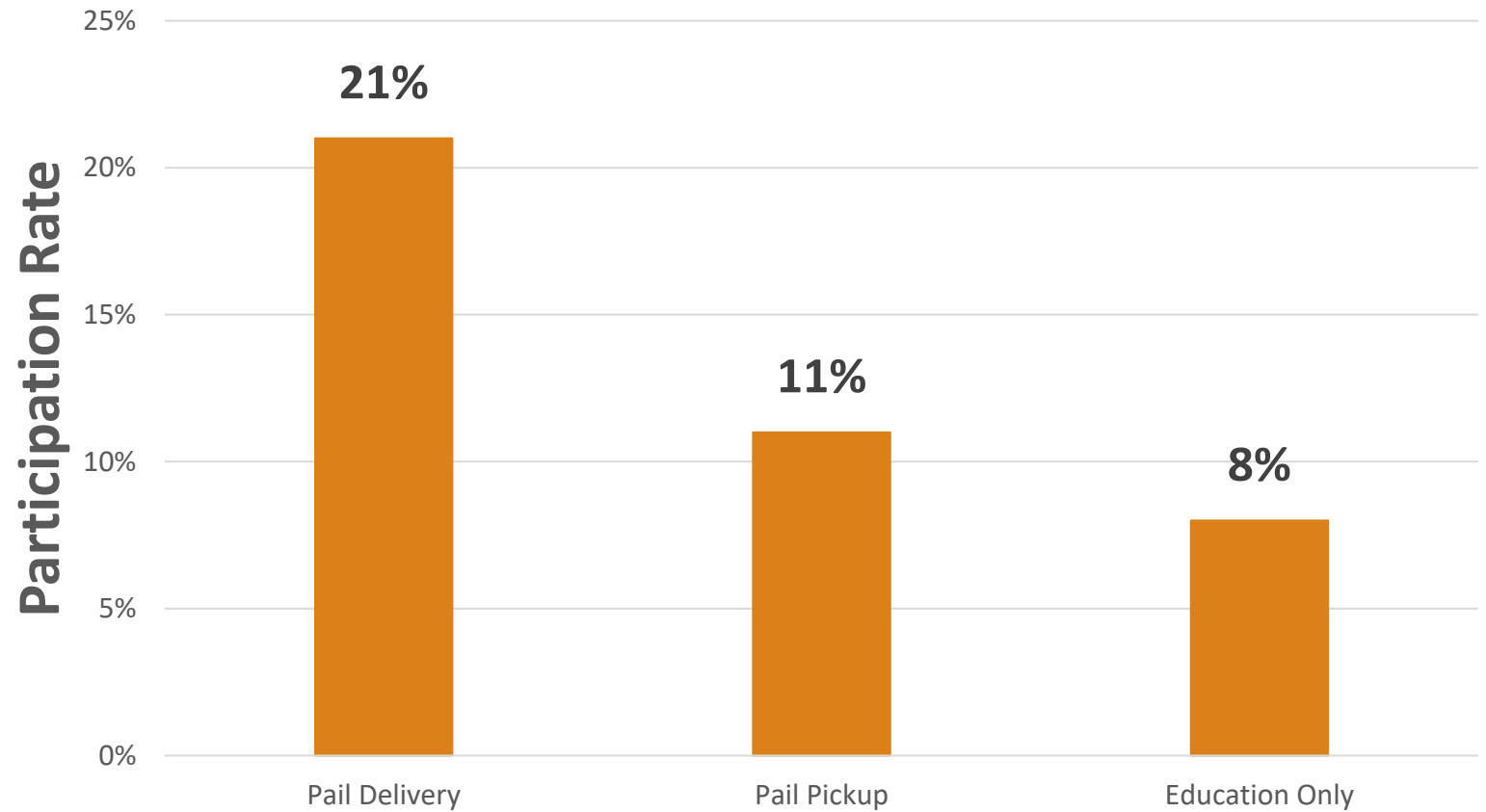


\$ per behavior

\$33.43

\$71.45

\$52.00



Give Your Food Scraps New Life
by Placing Them in Your Green Cart

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

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.

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.

Need More Space in Your Trash Cart?

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

Food Scraps Come From:

- Washed leftovers from your prep
- Food that's left after a meal
- Food that's been in the fridge too long
- Wee bags and coffee grounds
- Spilled food and uneaten food from a meal.

What Doesn't Go!

- Stem meat
- Liquids
- Fats, oils, and grease
- Plastic and plastic bags
- Paper and cardboard
- Glass
- Metal
- Food stickers
- Rubber bands
- Twist ties

Food Scraps #3

Place food scraps from the green cart, after a meal, and bag out the fridge.

Place food scraps in your green cart. (Plastic bag liners cannot be placed in green cart.)

Mind Doesn't

Together, we are reducing the bill on farms and in home gardens throughout our valley.

Together, we are reducing the bill on farms and in home gardens throughout our valley.

Food Scraps Come From:

Washed leftovers from your prep

Food that's left after a meal

Food that's been in the fridge too long

Wee bags and coffee grounds

Spilled food and uneaten food from a meal.

Salinas Valley Resource Center
1500 San Juan Suite 101, Salinas, CA 94763
Phone: (831) 774-3030

Community-Based Social Marketing

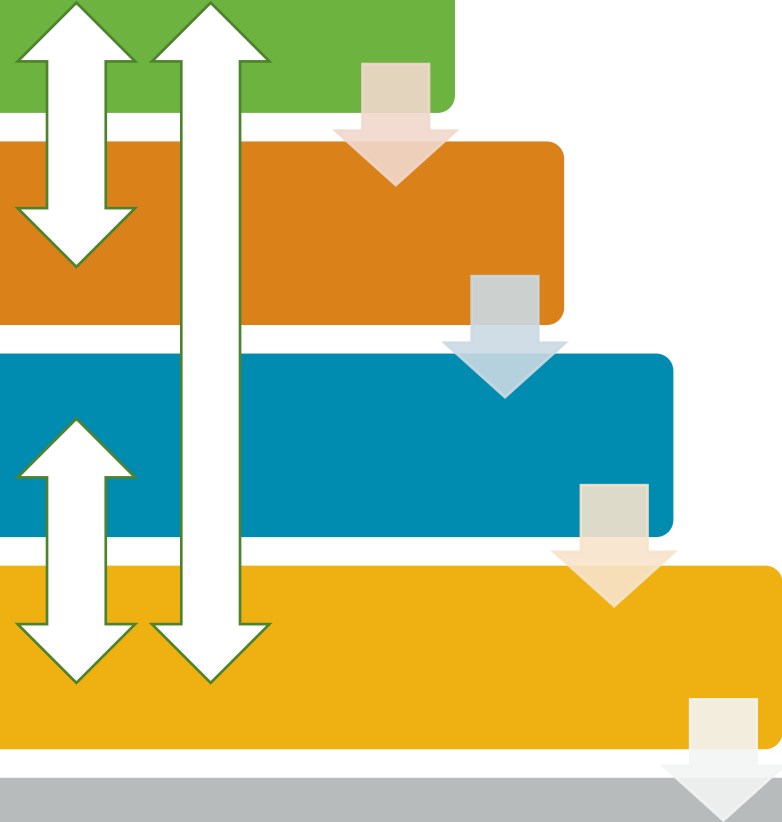
Select Behavior

Barriers & Benefits

Develop Strategy

Pilot Test

Implement Broadly & Evaluate



CBSM for Recycling & Waste Reduction

Key Messages

- ✘ Behavior matters.
- ✘ Barriers vary at the level of individual actions.
- ✘ CBSM provides a structured, data-driven framework for developing strategies.
- ✘ Scale up cost-effective strategies.



Thank you!

Learn More

- ✕ www.cbsm.com
- ✕ www.toolsofchange.com
- ✕ *UCSD Extension: Behavior Change Strategies for Sustainability*
- ✕ Fostering Sustainable Behavior, 4th edition (2025)

Contact

Jennifer Tabanico

PRESIDENT

tabanico@actionresearch-inc.com



FOURTH EDITION

Doug McKenzie-Mohr & Jennifer Tabanico

FOSTERING SUSTAINABLE BEHAVIOR

An Introduction to
Community-Based Social Marketing



billy

Live Poll #1

Has your organization implemented a Behavior Change campaign(s)?

(Click all that apply)

- Traditional “how-to” recycling education
- Full CBSM-style campaign – Recycling focus
- Full CBSM-style campaign – Food/ compost focus
- Full CBSM-style campaign – Waste prevention focus
- Less formal behavior change messaging

Share details in the chat

Some Steps for Saving the World, One Behavior at a Time

(no pressure)

Dr. Gretchen Engbring | Sustainability Social Scientist
Stanford Office of Sustainability, LBRE

Note: This presentation is not an endorsement of any products or services

I support campus sustainability through social science



Research & analysis



Methodological support



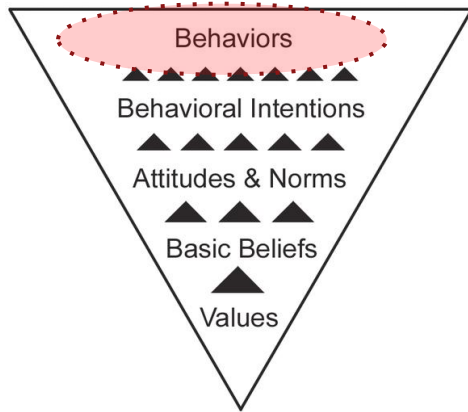
Incorporation of best practices into programs -
including behavioral intervention design



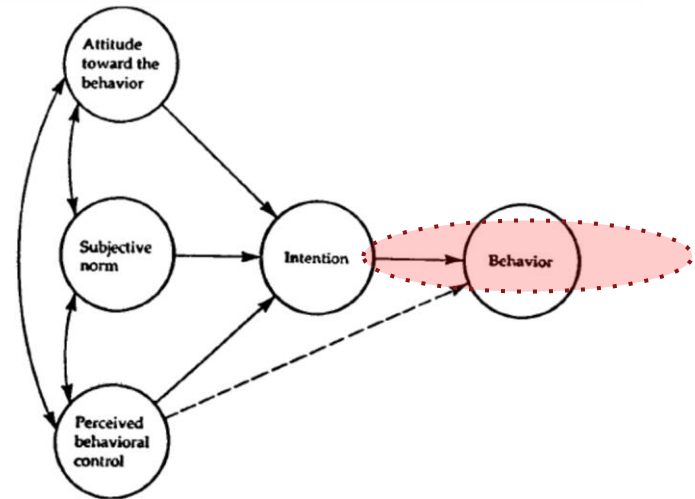
Knowledge sharing/training

Today, I'm focusing on the tip of the iceberg

Cognitive Hierarchy Model



The Theory of Planned Behavior



An expanded checklist for behavioral interventions

1

Describe the problem

2

Diagnose the behavior

3

Define clear outcomes

4

Design the intervention

5

Develop the study design

6

Draft supporting materials

7

Pilot the intervention

8

Implement & monitor

9

Collect & analyze data

10

Evaluate & interpret results

11

Iterate & improve

12

Scale, disseminate, & sustain

Describe the problem

- A. What is the issue you're trying to address?
→ *High levels of recyclable materials landfilled from campus labs*
- A. How is the target behavior* contributing to this issue?
→ *Placement of recyclable items into lab landfill bins*
- A. How would a change in this behavior address the issue?
→ *Sorting can increase diversion & decrease contamination*
- A. Who is your target population?
→ *Laboratory personnel (students, staff, & faculty)*
- A. What is the context in which they're performing the behavior?
→ *While conducting experiments in campus labs*



Diagnose the behavior

A. What discourages or encourages the target behavior?

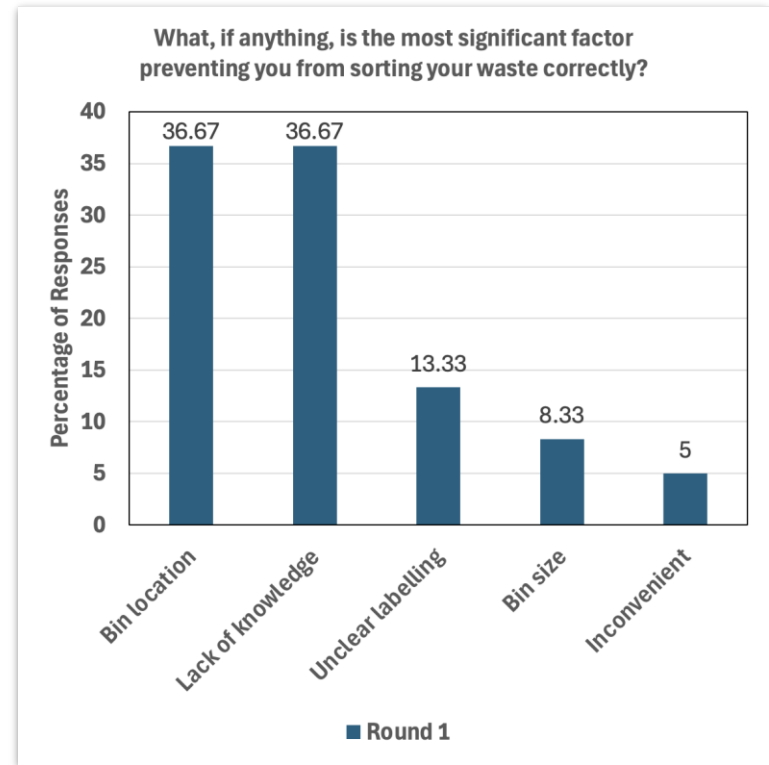
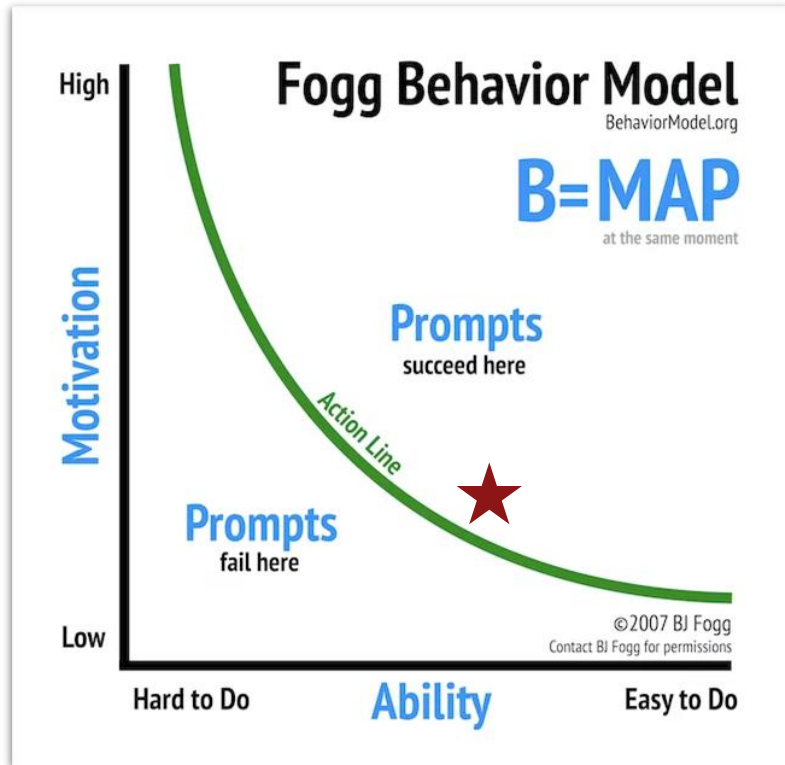
Barriers { *Waste sorting less salient in labs, lack of time, strong sorting norms or knowledge, inaccessible or full bins*

Facilitating factors { *Reminders, embedded cues, sorting norms, training, instructional signage, conveniently placed & serviced bins*



Use literature reviews, observations, interviews, surveys, & focus groups, as well as established frameworks (e.g., FBM) & theories (e.g., TPB, NAM) to better understand target behaviors

Use theories, surveys, & more to understand your audience



Limited understanding of the behavior = limited impact



OPEN ACCESS [Freely available online](#)

Values Determine the (In)Effectiveness of Informational Interventions in Promoting Pro-Environmental Behavior

Jan Willem Bolderdijk^{1*}, Madelijne Gorsira², Kees Keizer², Linda Steg²

¹ Department of Marketing, University of Groningen, Groningen, The Netherlands, ² Department of Psychology, University of Groningen, Groningen, The Netherlands

PLOS ONE

Define clear outcomes

What is the **impact** you want your intervention to have on...

A. The issue you're trying to address?

→ *Decrease in the amount of recyclable material landfilled from campus labs*

*Watch for disconnects
between the behavior & issue*

A. The target behavior you're trying to change?

→ *Decrease in the placement of recyclable items into laboratory landfill bins*

*Sometimes it's the drivers
behind the behavior that
you may want to change*

Design the intervention

Consider:

A. Feasibility

→ *High-risk research environment, limited space*

A. Delivery method

→ *Signage (cues)*

A. Behavior change techniques

→ *Normative messaging, information*

WE'RE SCIENTISTS WHO CARE!

Join the growing number of ChEM-H / Neuro residents taking action to reduce lab waste. Let's work together to reduce, reuse, and recycle metal, glass, paper, and plastic!



PLAN

your experiment to reduce unnecessary waste



PRACTICE

techniques that avoid using unnecessary plastic



REPLACE

disposables with reusable alternatives



NO RECYCLING



**YES
RECYCLING**

SCAN TO
LEARN MORE



WE'RE SCIENTISTS WHO CARE!

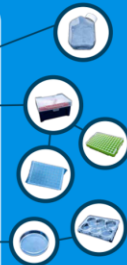
Join the growing number of Clark Center residents taking action to reduce lab waste. Let's work together to reduce, reuse, and recycle metal, glass, paper, and plastic!

YES RECYCLING

NO RECYCLING

PLASTICS

- ✓ EMPTY Rigid Containers (decontaminated + defaced + dried plastic reagent bottles, as well as standard PET containers, such as soda bottles)
- ✓ Pipette tip boxes + trays (loose tips must be gathered in clear plastic bag)
- ✓ Clean, empty, 50mL centrifuge tubes and larger (cap on; smaller tubes must be gathered in clear plastic bag)
- ✓ Plastic tube racks
- ✓ Clean film plastic, plastic bags, bubble wrap and air pillows (bundled)
- ✓ Polystyrene (#6) including clean weigh boats, clean petri dishes, well plates or containers, etc.



- ✗ NO Styrofoam (coolers or packing peanuts, etc.)
- ✗ NO ice packs
- ✗ NO ceramics
- ✗ NO batteries or electronic waste
- ✗ NO gloves



METAL, PAPER, & GLASS

- ✓ Aluminum foil
- ✓ Scrap metal (hardware, tubing, fittings, machine parts, etc.)
- ✓ Metal containers (decontaminated + defaced + dried)

- ✓ Cardboard
- ✓ Any clean and dry paper that tears

- ✓ EMPTY Containers (decontaminated + defaced + dried clear or brown reagent bottles)



- ✗ NO sharps of ANY kind
- ✗ NO syringe needles
- ✗ NO blades

- ✗ NO paper towels or KimWipes
- ✗ NO weigh papers (coated)

- ✗ NO lab glassware (borosilicate/Pyrex), including glass pipettes, grad cylinders, test tubes, scintillation vials, beakers, flasks, watch glass, glass funnels, burets, glass petri dishes or baths, etc.



SCAN
TO LEARN
MORE

Interventions can take many forms

Events

Social media posts

Apps



FREE

SUSTAINABLE STANFORD & Stanford Presents

BIG SWAP

CLOTHING ITEMS

APRIL 18 4-7PM

Drop off items: 11am-7pm
Give items you no longer need!
Get new items for free!
Share with your Stanford community!

BRING YOUR OWN BAG!

RSVP @ bit.ly/BIGSWAPS25

ARGUELLO FIELD

Follow us on Instagram for more info and updates:
@BigSwapperStanford

On average, LBRE employees at Stanford Redwood City recycle & compost less* than employees at 560 Fremont.

*Proportionate to the amount of waste generated

SRWC 560 Fremont

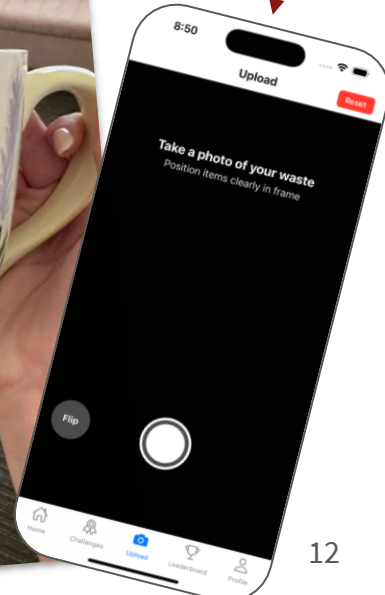
Scan to take the 3 minute survey & win a \$20 gift card!

Proportion of material recycled & composted

Join us in reducing our waste at SRWC by:

- Properly sorting recycling, compost, & landfill waste
- Eliminating single-use utensils & bringing reusables

This message is part of a Stanford student study.



In-person interactions

Scorecards/feedback

Develop the study design

How are you going to measure the impact of your intervention?

- A. Consider different research designs (e.g., RCT, pre/post)
- B. Select data collection methods (e.g., surveys, interviews)
- C. Evaluate ethical implications

- *“Simple” signs in Building A, “detailed” signs in Building B*
- *Assess pre & post-intervention data*
- *Collect data on waste generation & contamination through weighing building waste & conducting lab-level audits*
- *Gather self-reported data from building occupants through surveys responses*



Time to shift from planning to doing

1

Describe the problem

2

Diagnose the problem

3

Develop the study design

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7

Pilot the intervention

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Evaluate & interpret results

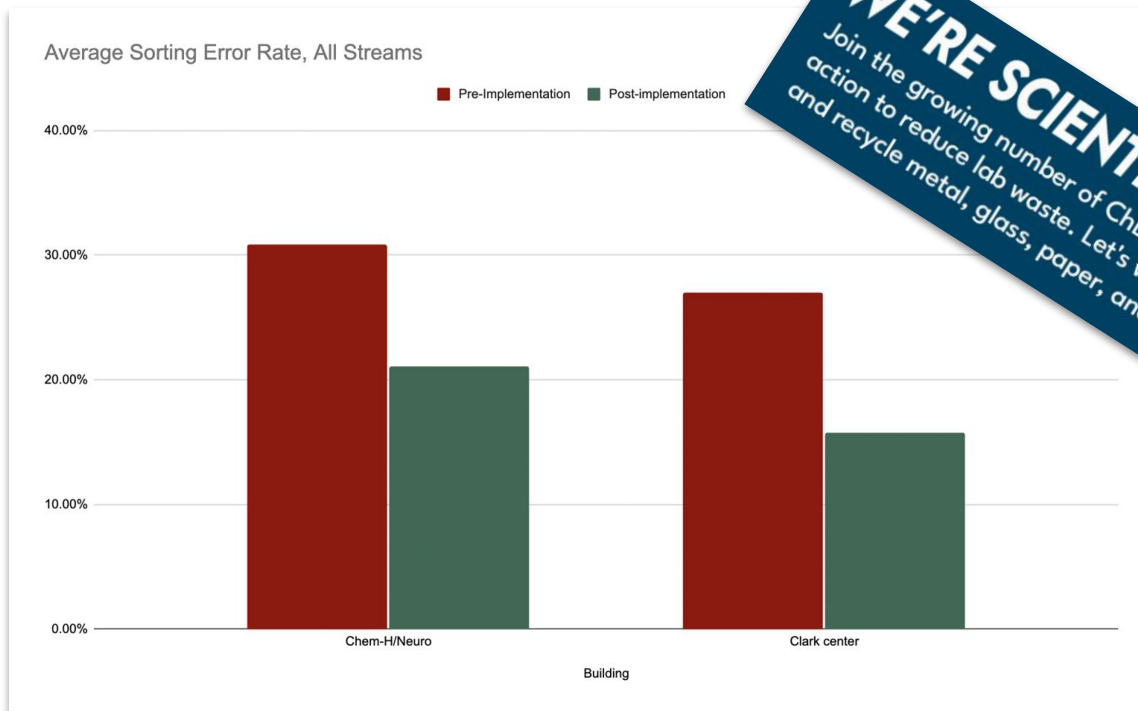
11

Iterate & improve

12

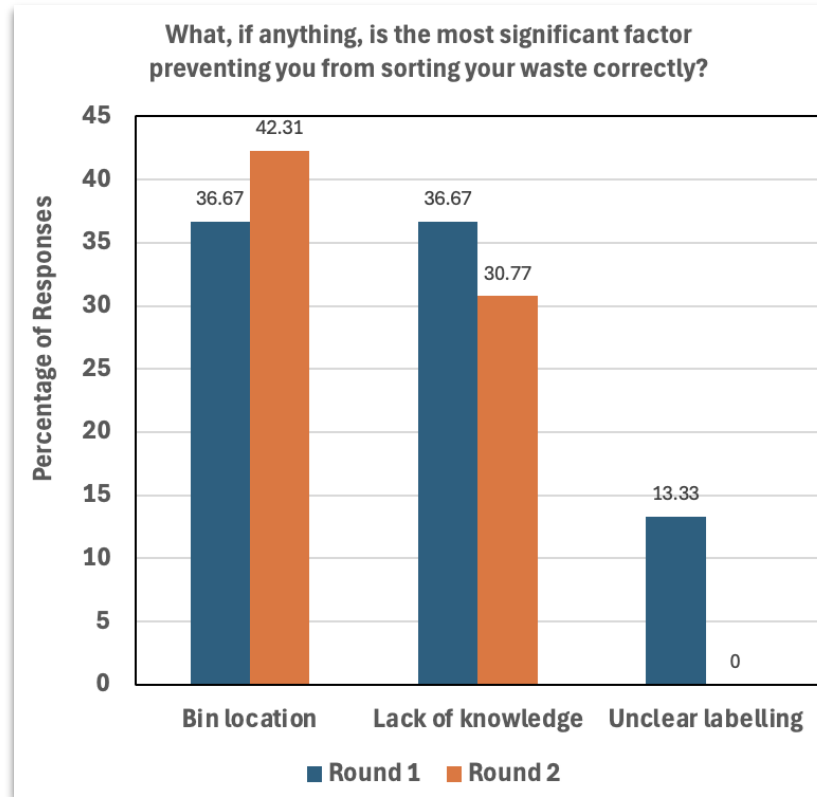
Scale, disseminate, & sustain

Both signs improved waste sorting at the same rate



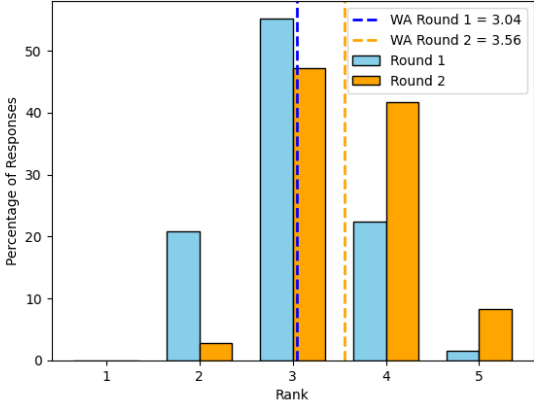
WE'RE SCIENTISTS WHO CARE!
Join the growing number of ChEM-H / Neuro residents taking action to reduce lab waste. Let's work together to reduce, reuse, and recycle metal, glass, paper, and plastic!

Signage decreased sorting confusion in both buildings

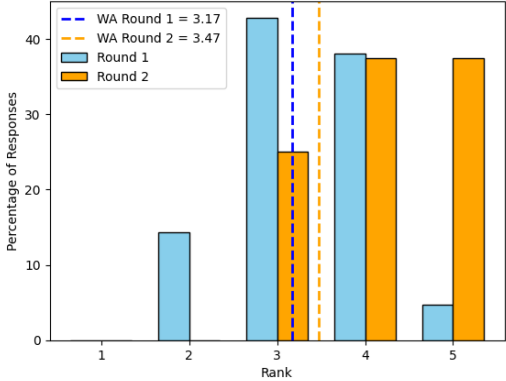


Signage established a stronger perception of sorting norms

On average, approximately how frequently do you think others at Stanford sort their waste properly?



On a scale of 1 to 5, how much do you agree with the following statement? My colleagues and peers at Stanford believe it is important to sort lab recyclables.



Three ways we're addressing what's behind the behavior

A Public communication campaigns



B Sustainable community interns



C Sustainability culture & literacy assessment



Additional resources to build your toolbox



engbring@stanford.edu

Dr. Gretchen Engbring | Sustainability Social Scientist
Stanford Office of Sustainability, LBRE

Q&A



Jennifer Tabanico
Action Research



Gretchen Engbring
Stanford University

Today's Program Online



- Recording
- Presentation slides
- Resources
- Chatlog

Link will be emailed in coming days

Archive of Past Programs



- Labels & Signage
- Rebuilding Confidence in Recycling
- Developing Bin Standards
- Reuse programs

+ More



Upcoming Conference Presentations



September 30
Santa Fe, NM



October 23
Minneapolis, MN



October 29
Jekyll Island, GA



**New York State Association for
Reduction, Reuse and Recycling**

November 13
Cooperstown, NY



Thank You to Our Panelists!



Jennifer Tabanico

President

Action Research



Gretchen Engbring

Social Scientist,

Office of Sustainability

Stanford University

Share Feedback with Presenters



Post-Webinar Survey:

- Prompt at end of program, or
- Look for Email tomorrow

Stick Around For....



Product demo with:

Sarah Hawthorne

Business Development Manager