

Who me? Waste food?



Vermont household food waste
perceptions and behaviors

Dr. Meredith T. Niles
Assistant Professor
University of Vermont



The University of Vermont

Recycling Organics and Resources (ROAR)

To guide sustainable materials management while minimizing system costs, maximizing environmental benefits, and considering community perceptions, participation and impacts. We do this through rigorous, transdisciplinary academic research in concert with leading industry professionals, community partners, and policymakers.



MEREDITH NILES

Human perceptions, behavior and policy



DEB NEHER

Organics recycling, microbiology, ecology



ERIC ROY

Engineering, systems science, nutrient management

Presentation Outline

Why households?

What do we know?

Overview of state policies

Household food waste behaviors

Implications for 2020 and beyond



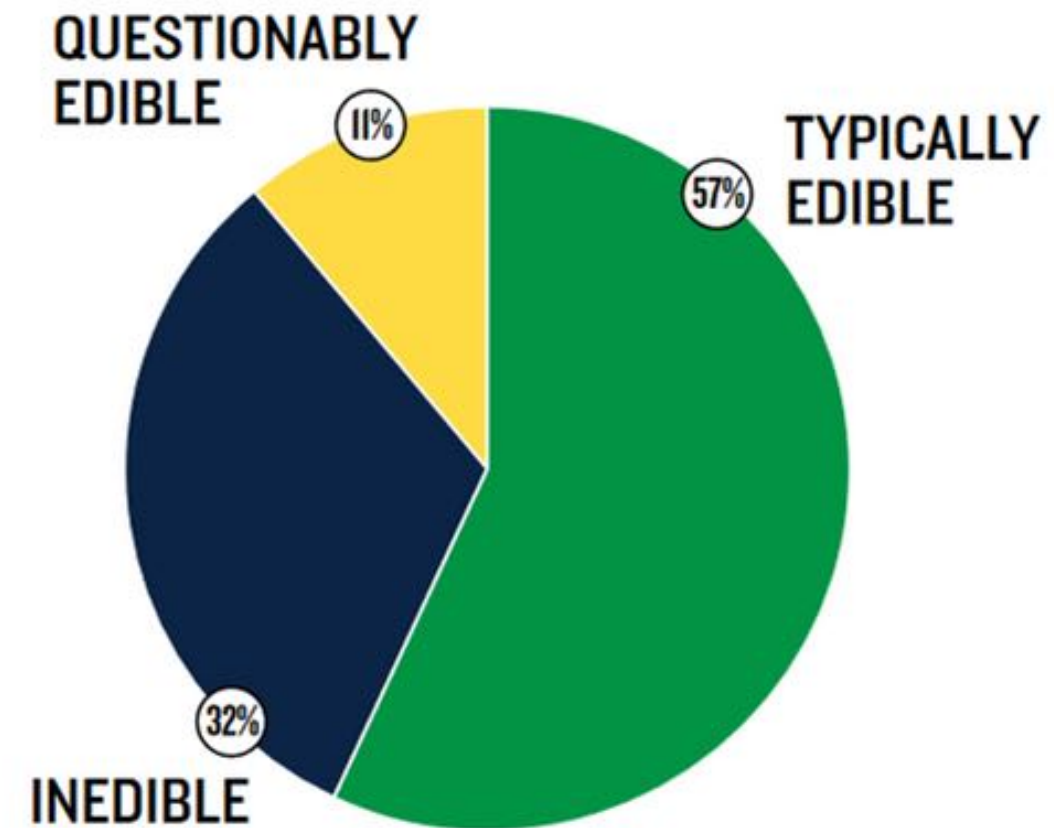
Why the Household?

32%

AVERAGE AMOUNT OF
FOOD A HOUSEHOLD
WASTES ANNUALLY
(Yang and Jaenicke 2020)

30-40% of all US food is wasted
at the household level- and most
of it is potentially edible (NRDC
2017)

FIGURE ES-1: FOOD WASTED BY EDIBILITY BY WEIGHT



Up to 68% of food wasted at a
household level is edible (NRDC
2017)

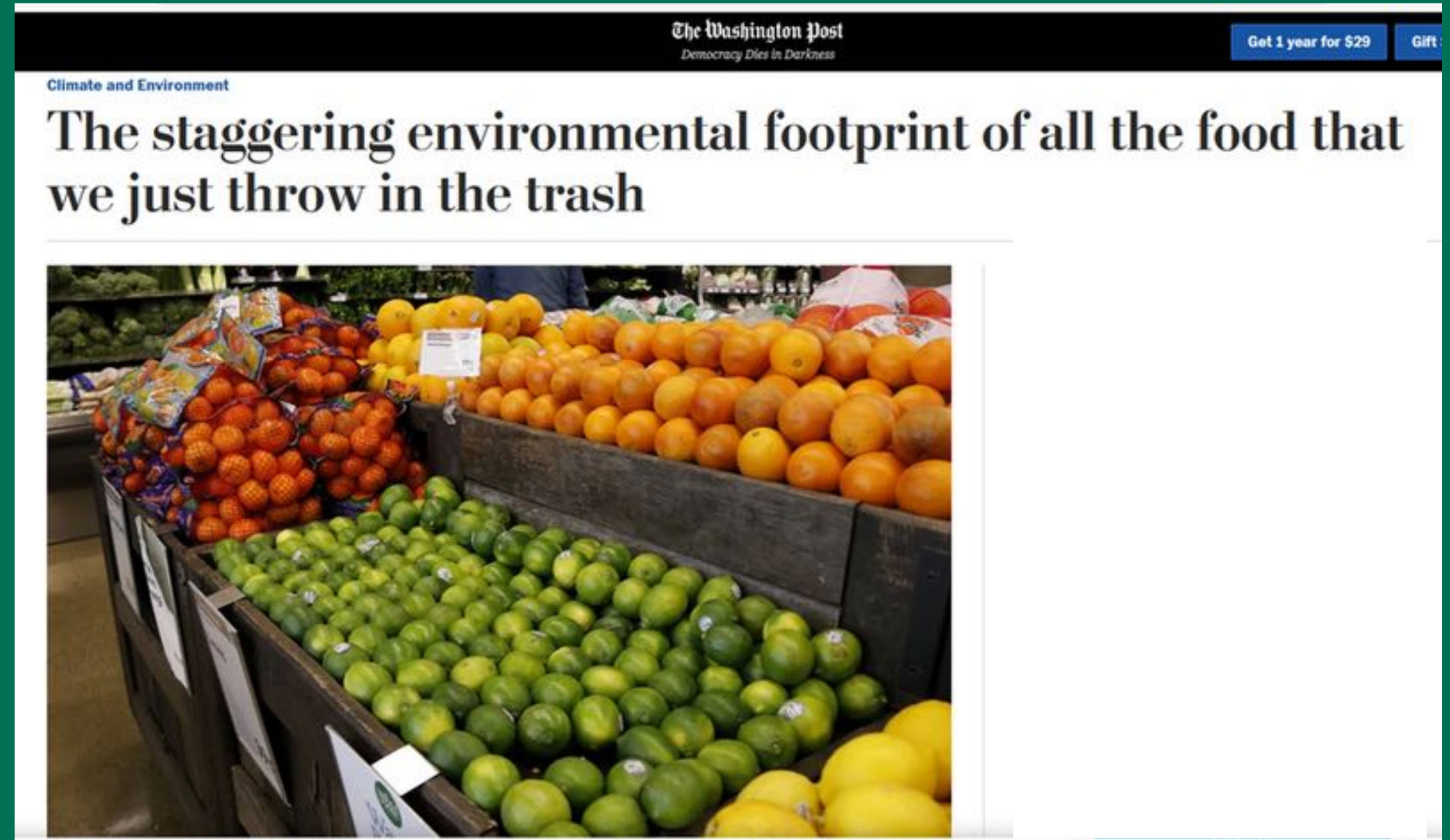
Food waste's environmental impact

1 pound

AVERAGE AMOUNT OF
FOOD A PERSON WASTES
EACH DAY

(Conrad et al. 2018)

30 million acres of cropland
4.2 trillion gallons of water
1.8 billion pounds of fertilizer
...to produce food we never eat



UVM researchers (Niles, Roy, Neher) featured in Washington Post for their food waste study

What do we know about food waste behaviors?

DO PEOPLE THINK IT'S A PROBLEM?



PEOPLE KNOW ITS A PROBLEM

The vast majority of households know that food waste is a problem
(Ableotis et al. 2014)



PROCEDURAL AND TECHNICAL INFORMATION LACKING

How to do it well, technical information are less understood

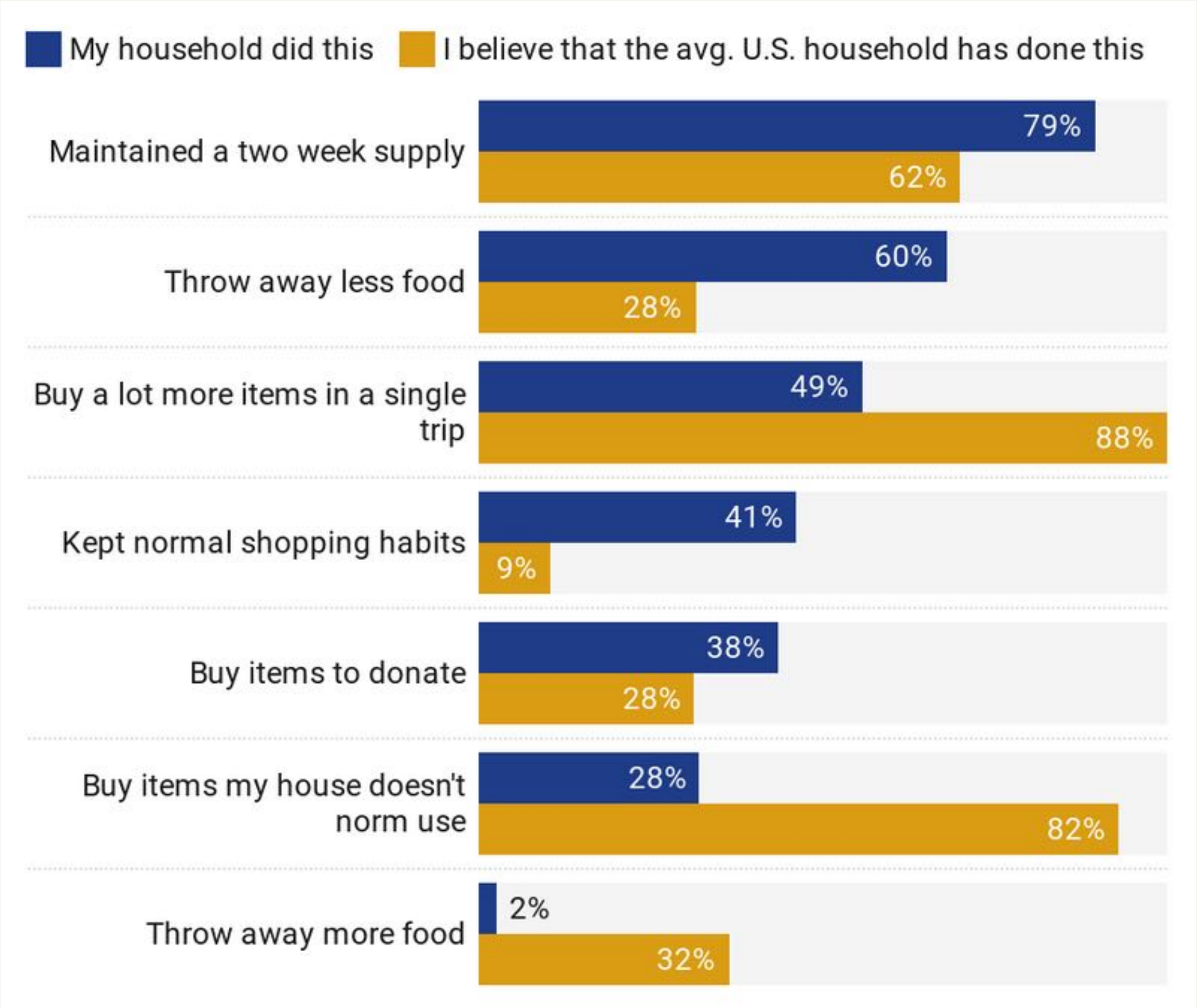
We think we are better than other people (even in a pandemic)

3 out of 4

AMERICANS THINK THEY WASTE LESS FOOD THAN THE AVERAGE AMERICAN (NEFF ET AL. 2015)

60%

OF VERMONTERS THREW AWAY LESS FOOD DURING MARCH 2020, BUT ONLY 28% THINK OTHER VERMONTERS DID SO (NILES ET AL. 2020)



Survey results from March 2020 of 3,210 Vermonters (Niles et al. 2020)

We waste food MORE when we know it will be composted

58% OF PEOPLE FELT LESS GUILTY ABOUT WASTING FOOD IF IT WAS COMPOSTED (NRDC 2017)

85%

REDUCTION IN FOOD
WASTE WHEN INFORMED
ABOUT LANDFILL IMPACTS

0%

REDUCTION IN FOOD
WASTE WHEN SAME
PEOPLE KNOW FOOD
WILL BE COMPOSTED

OSU.EDU

Help BuckeyeLink Map Fi

Jan 03, 2017

Worries about food waste appear to vanish when diners know scraps go to compost

CHICAGO – Diners waste far less food when they're schooled on the harm their leftovers can inflict on the environment. But if they know the food is going to be composted instead of dumped in a landfill, the educational benefit disappears.

When composting enters the picture, educated diners waste just as much as those who haven't learned about shrinking landfill space, dangerous greenhouse gas emissions and water and soil pollution, a new study found.

This presents a tricky situation for policymakers figuring out how to manage food waste, because the top tactics are prevention (through education) and diversion (through composting), said lead researcher [Danyi Qi](#), a graduate student in agricultural economics at The Ohio State University.

Danyi Qi

"When you do both, they cancel each other out – they work at cross purposes," said Qi, who is presenting the findings this week at the annual meeting of the [Allied Social Science Associations](#) in Chicago.

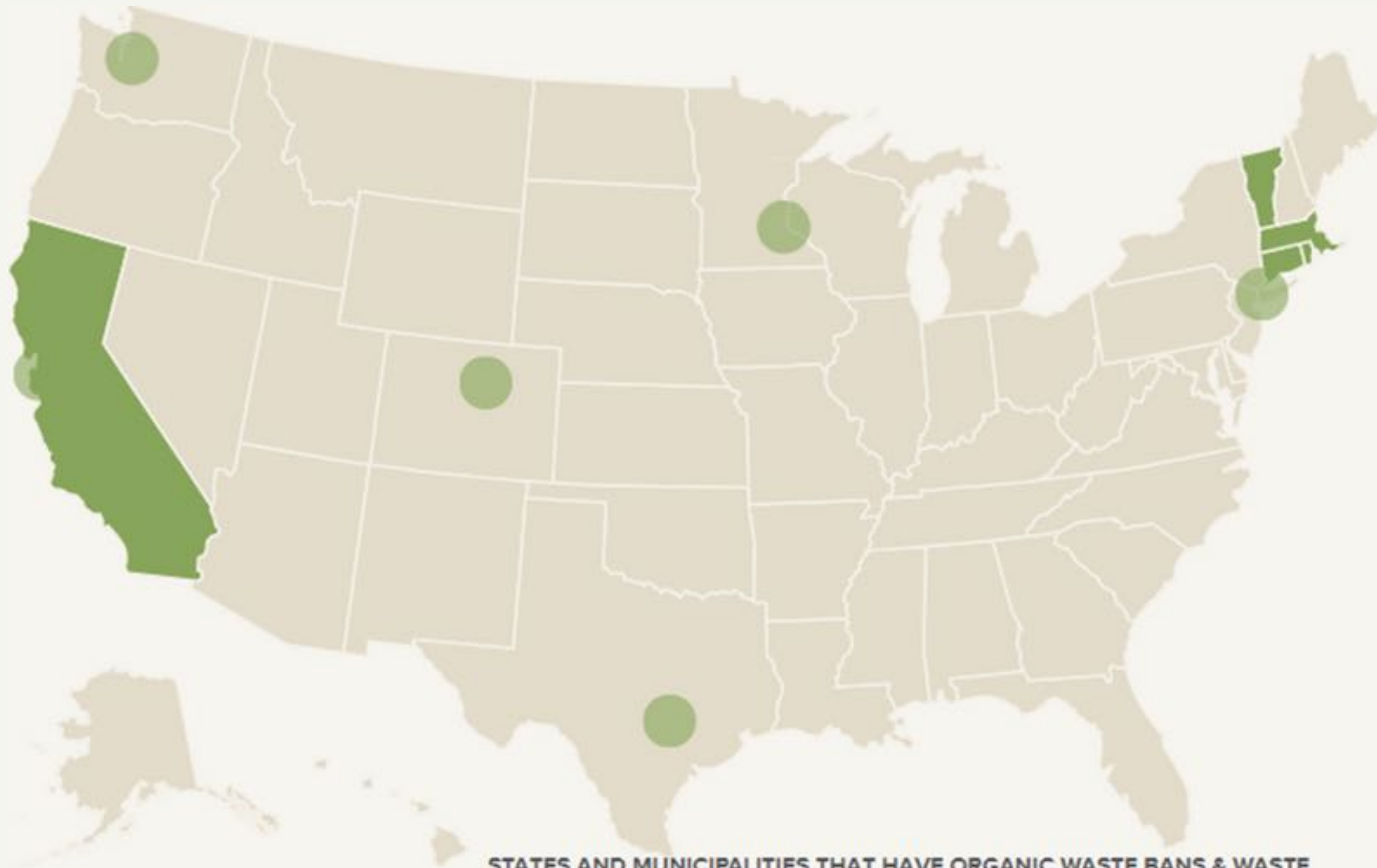
The discovery could help shape decisions by government, businesses and others looking to chip away at the vast amount of food that lands in trashcans instead of on the tables of those in need, said Qi and co-author [Brian Roe](#), a professor of [agricultural, environmental and developmental economics](#) and a member of Ohio State's [Food Waste Collaborative](#), which is exploring ways to reduce waste and create a more sustainable food system.



If the goal is to waste less food, how do we do that?

WHAT POLICIES OR OTHER STRATEGIES ARE NECESSARY?

Changing Laws



MUNICIPALITIES

- AUSTIN
- BOULDER
- MINNEAPOLIS
- NEW YORK CITY
- SAN FRANCISCO
- SEATTLE

STATES

- CALIFORNIA
- CONNECTICUT
- MASSACHUSETTS
- NEW JERSEY
- RHODE ISLAND
- VERMONT

STATES AND MUNICIPALITIES THAT HAVE ORGANIC WASTE BANS & WASTE RECYCLING LAWS

■ STATES ● MUNICIPALITIES

State Level Policies



California

- Any business
- 8 cubic yards a week (2016), 4 cubic yards a week (2017), and 2 cubic yards a week (2020) if statewide organic waste disposal not reduced 50% below 2014



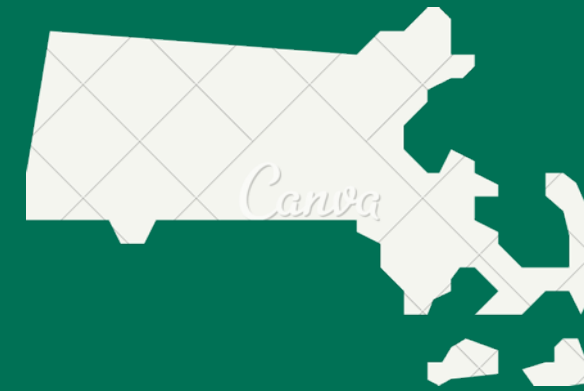
Connecticut

- Commercial food wholesaler, industrial food manufacturers, supermarkets, resorts
- 104 tons/year (2014), 52 tons/year (2020) within 20 miles of organic processing



New Jersey

- Large scale generators- 52 tons/year within 25 miles of organic processing



Massachusetts

- Any individual, business or public municipality
- 1 ton/week, generators only covered for weeks they meet the threshold



Rhode Island

- Large scale facilities
- 104 tons/year (2016), 52 tons/year (2018) for educational facilities within 15 miles of organic processing

Vermont Universal Recycling Law

Composting 101: What You Need To Know About Vermont's Food Scrap Ban
By JANE LINDHOLM, EMILY AIKEN & ABAGAEIL GILES & EMMA PINEZICH • JUL 5, 2020

PROGRAM Vermont Edition

Share Tweet Email

What you need to know about Vermont composting law



Vermont legislation banning food waste, single-use plastics takes effect



VERMONT IS
IN A GRAND
EXPERIMENT



Motivating Questions

○ VERMONT IS A UNIQUE STATE

- Second most rural state- hauling distance, but capacity for disposal?
- Policy at the household level

○ How are Vermont households managing food waste and how might this change in the future?

○ What kinds of households are most likely to utilize certain strategies?

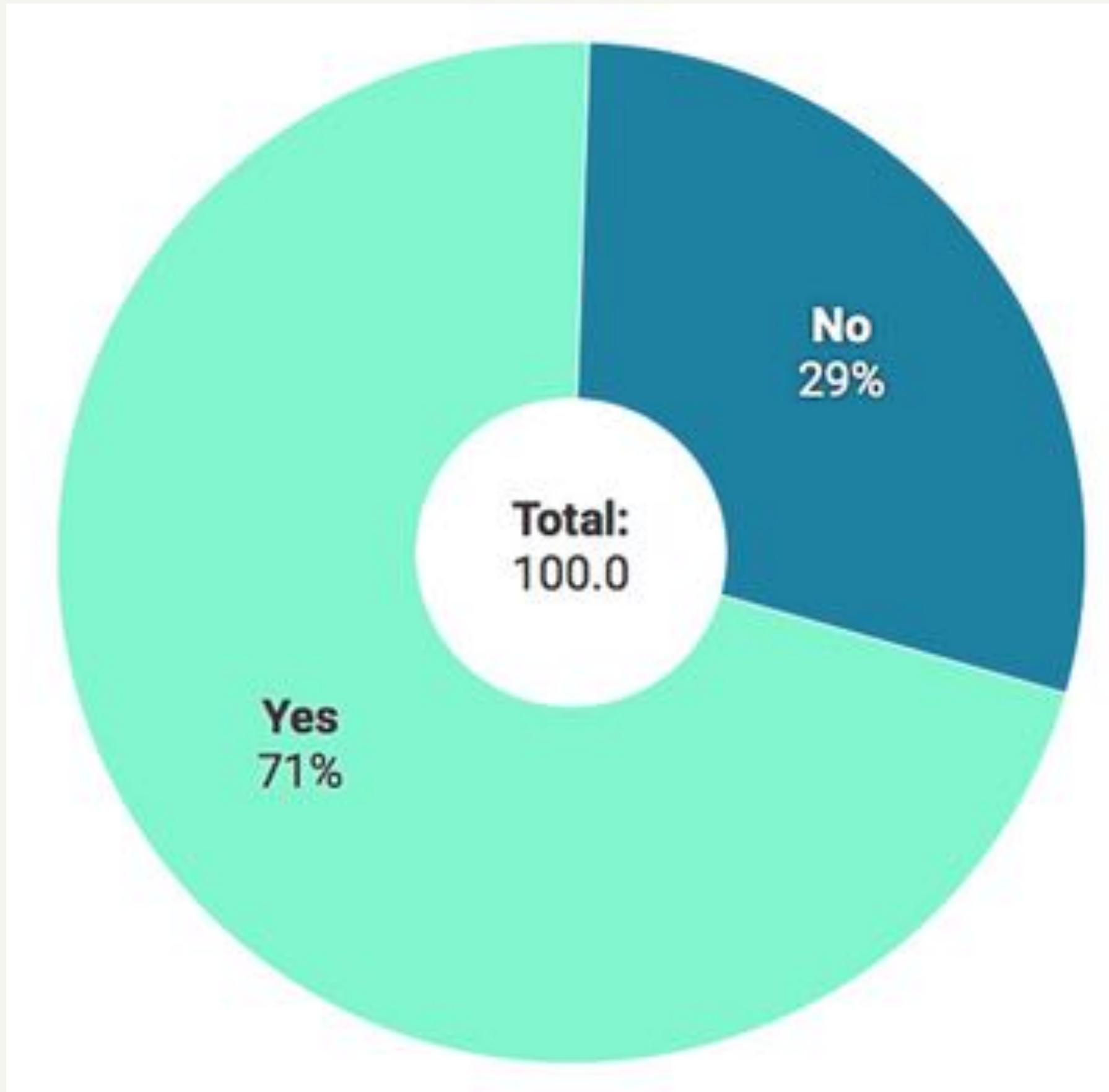
○ What is the future demand for composting pickup and what are Vermont households willing to pay?



Knowledge

HAVE YOU HEARD ABOUT VERMONT'S FOOD WASTE LAW BEFORE TODAY?

Greater awareness among:
Younger Vermonters
Homeowners (74.9% compared to renters (43.8%*))



71% aware of the law in 2018

METHODS



VERMONTNER POLL

Statewide telephone
survey in February 2018

RELIABLE

Margin of error +/-
4.1% with 95%
confidence

583 VERMONTNERS

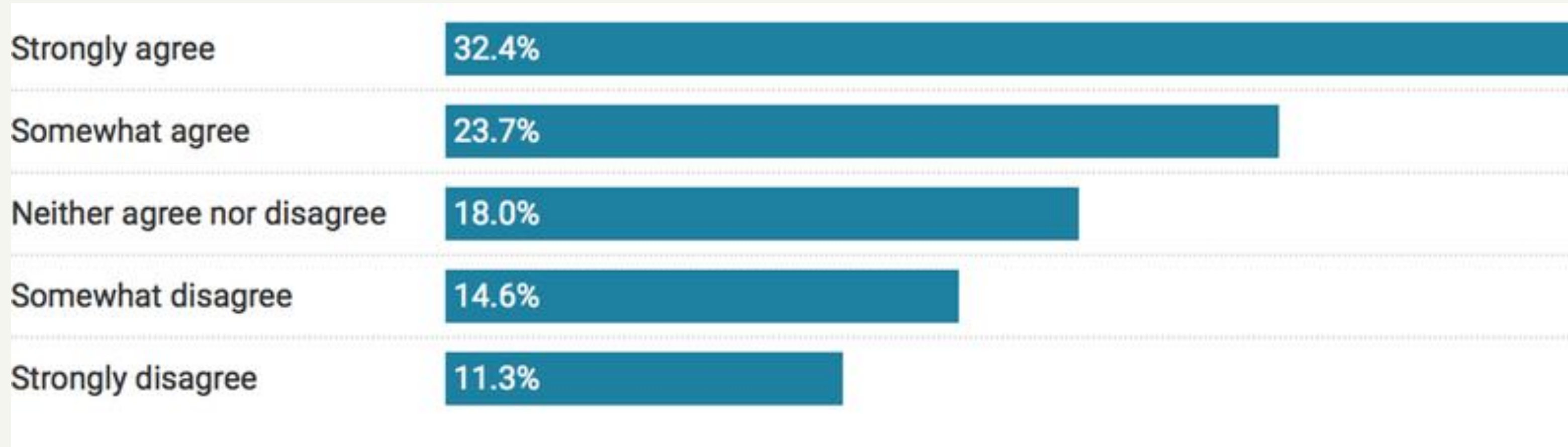
18+
Random sample

URBAN COUNTIES

Chittenden, Franklin,
Grand Isle

Support

FOOD WASTE SHOULD BE BANNED FROM THE LANDFILL



56% of respondents agree that food waste should be banned from the landfill

Higher agreement associated with:

- Higher levels of education
- Women compared to men
- Households currently composting
- Households not using garbage

Current Waste Strategies (2018)

Manage your own food waste with backyard composting, or by feeding to pets or livestock

72.4%

Throw your food waste into the garbage

43.1%

Dispose of food waste in your garbage disposal

22.0%

Drive to a drop off station with your food waste

18.8%

Subscribe to a curbside pickup program for food waste, similar to recycling

10.7%

- Most respondents use only one (45.9%) or two (37.7%) food waste disposal strategies
- The use of compost and garbage together is the most common among households using two strategies

Who's Backyard Composting?

- Rural households more likely (76.4% compared to 62.7% in urban)
- Younger households more likely
- Homeowners more likely (73.7% compared to 59.6%)



Who's Using Garbage?

- Renters more likely (57.1% compared to 41.2% of homeowners)
- Households without knowledge of Act 148



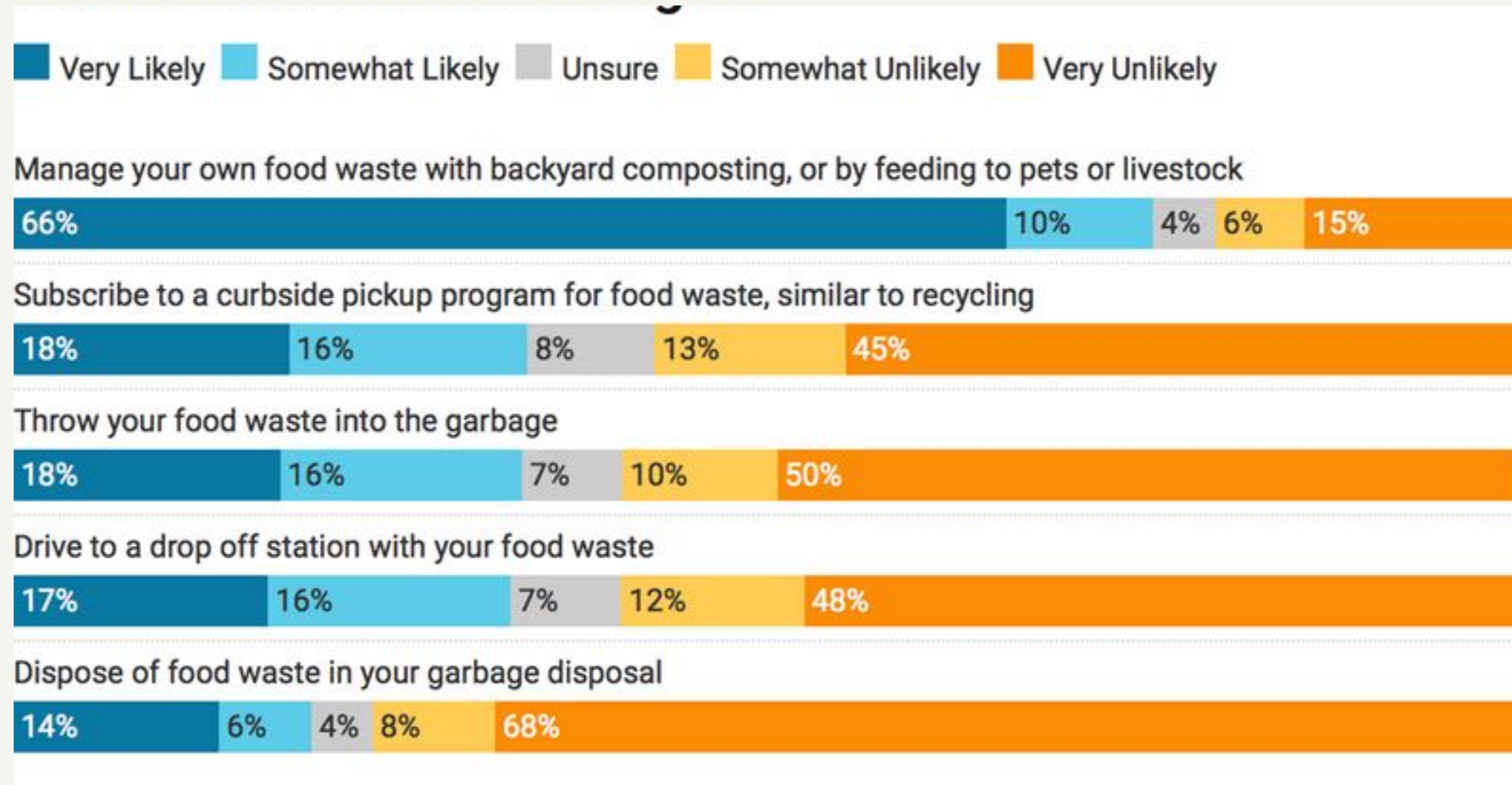


Who's Using Curbside Pickup?

- Larger households more likely
- Households without knowledge of Act 148



Current Waste Strategies (2018)



Same percent of people likely to use curbside compost as continue to throw food in the garbage

Who's **LIKELY** to Compost in the future?

- Rural households more likely
- Younger households more likely
- Homeowners more likely
- Larger households and those with 1-2 children





Who's **LIKELY** to use curbside pickup in the future?

- Urban households more likely
- Renter households more likely



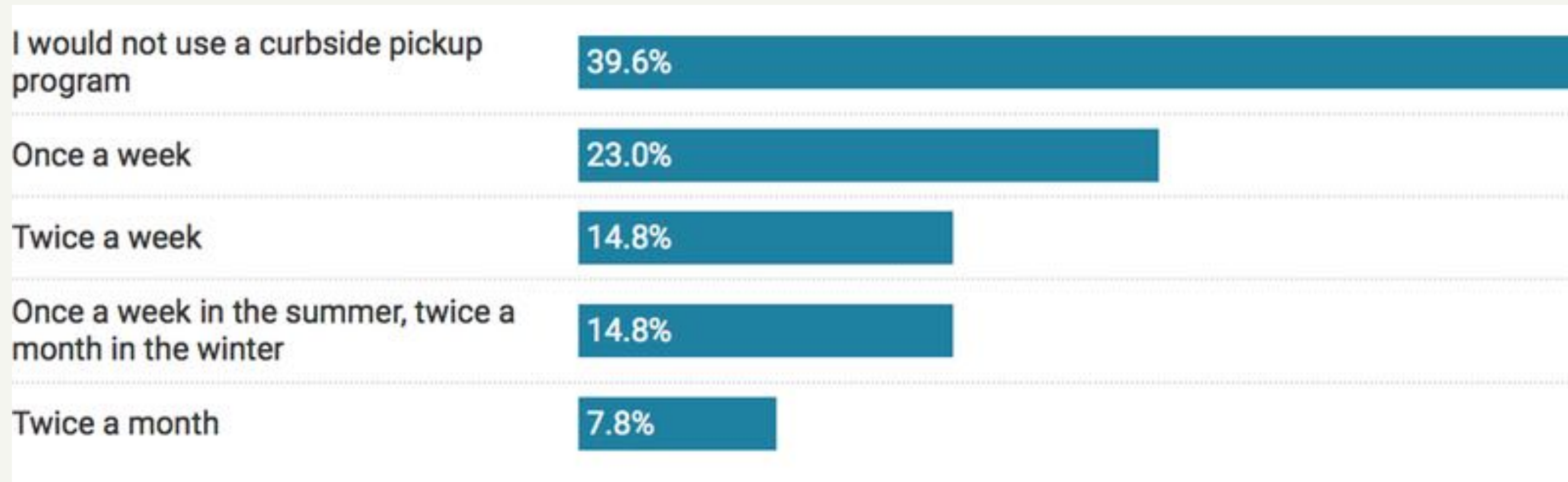


**In general,
people stick
with what they
know.**

PEOPLE WILL CONTINUE TO USE
THEIR CURRENT STRATEGY, WITH THE
EXCEPTION OF GARBAGE

Frequency

IF CURBSIDE FOOD WASTE PICKUP WAS AVAILABLE... HOW FREQUENTLY WOULD YOU WANT THE PICKUP?



Households more likely:

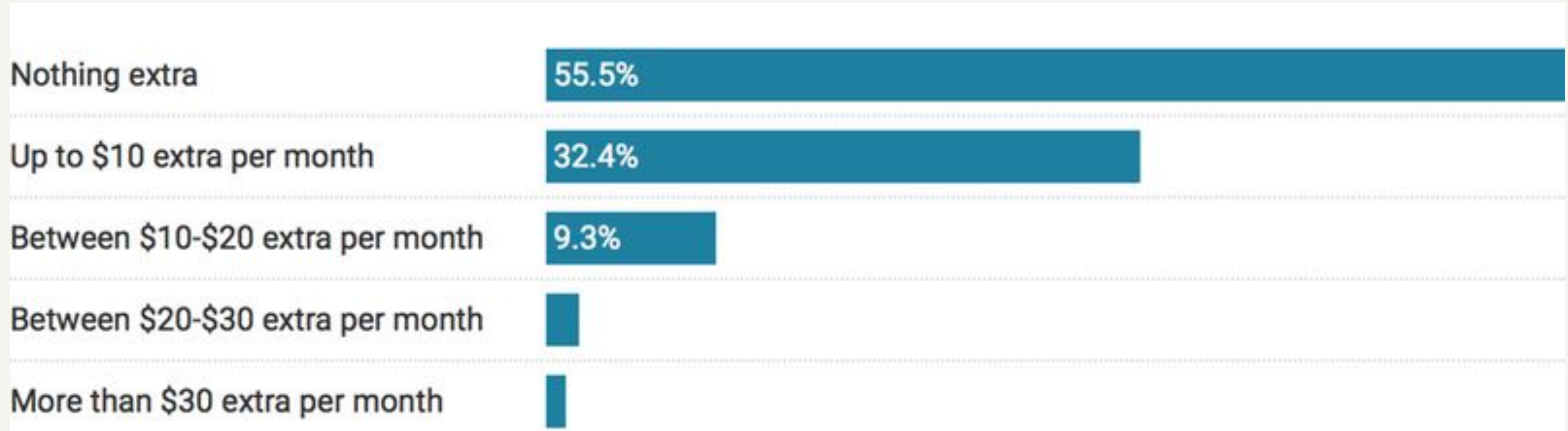
- Currently using garbage, garbage disposal*
- Urban households*
- Households with children**
- Households already using the service*

Households less likely:

- Currently using compost*
- Homeowners want service less frequently*

Willingness to Pay

HOW MUCH ADDITIONAL COST WOULD YOU BE WILLING TO PAY FOR SERVICE?



Higher willingness to pay associated with:

- Higher rates of education*
- Households with two children*
- Younger households*
- Households already using curbside compost*

Summarizing Key Results

- MOST RESPONDENTS KNOW ABOUT THE LAW AND SUPPORT BANNING FOOD WASTE FROM LANDFILLS

- Significant gap in awareness of older Vermonters and renters

- MOST RESPONDENTS ARE ALREADY COMPOSTING AND INTEND TO DO SO IN THE FUTURE

- Potential to increase this capacity, provide educational programs

- THE MAJORITY (55%) OF RESPONDENTS WANT A CURBSIDE PICKUP PROGRAM, BUT WON'T PAY

Most likely in urban counties, with renters, households with children, using garbage
Higher willingness to pay in younger, more educated, child households



Broader Implications

VARYING TRADEOFFS

RURAL STATES

Have capacity to
compost in many areas

EFFICIENCIES OF SCALE

Major challenge,
especially for haulers
and price sensitive
customers

ENVIRONMENTAL

Breakeven points for
greenhouse gas
emissions, fuel, etc.





Broader Implications

COSTS AND WHO PAYS?

SOME HOUSEHOLDS
WILL PAY

Higher educated,
children, urban areas

RENTERS VERSUS
OWNERS

Renters want pickup, who
will pay?

LOW INCOME
HOUSEHOLDS

Unforeseen impacts if
garbage and other costs
increase





NOW WHAT?

2020 and Beyond

- Will People Actually Do It? And, Do It Well?
- Technology or behavior change?
- Does the policy actually make people waste less food? Still need to prioritize wasting less, not just composting



NOW WHAT?

2020 and Beyond

- Understanding tradeoffs in curbside pickup (especially in rural areas) versus benefits
 - Economic and environmental tradeoffs
 - Quality not just quantity.
- What are the barriers to quality participation in recycling and composting



NOW WHAT?

2020 and Beyond

- What are we going to do with all this compost?
- Markets and farmer needs



NOW WHAT?

2020 and Beyond

- Compost quality with varying “recipes” and end uses
- Designer compost?
- Unanticipated impacts of more compost on the landscape- is it a substitution for other nutrients, or an addition?
- Compromising water quality?



Questions and Discussion

Thank you to:

- My colleagues Dr. Deb Neher and Dr. Eric Roy
 - Center for Rural Studies for the data collection and survey implementation
 - Casella Waste Systems for funding
- Vermont Agency of Natural Resources, especially Josh Kelley, for their continued engagement in the research results

mtniles@uvm.edu 802-656-4337 Twitter: @MeredithNiles1

