

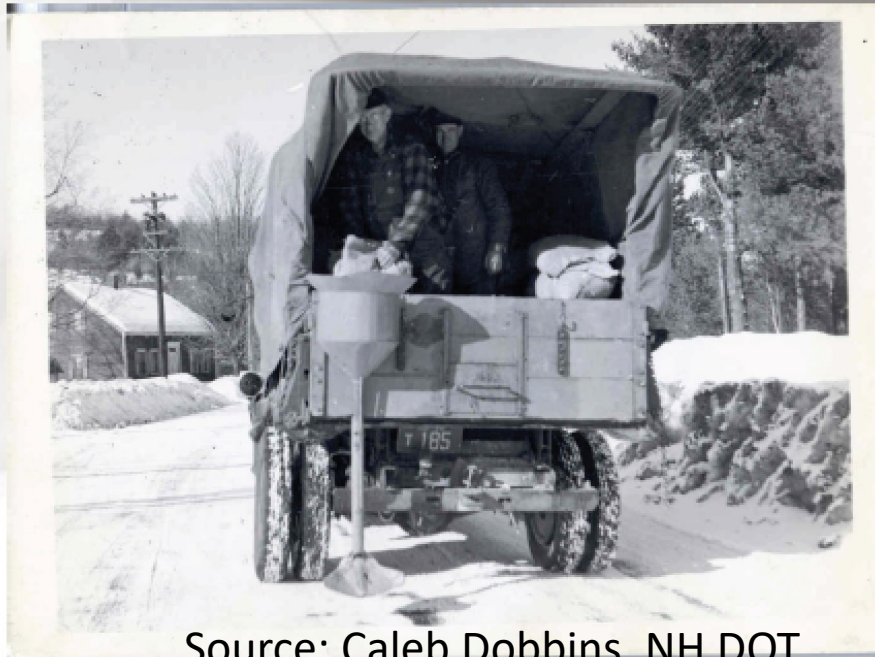


Understanding salt use practices by winter snow and ice management professionals in the Lake Champlain basin

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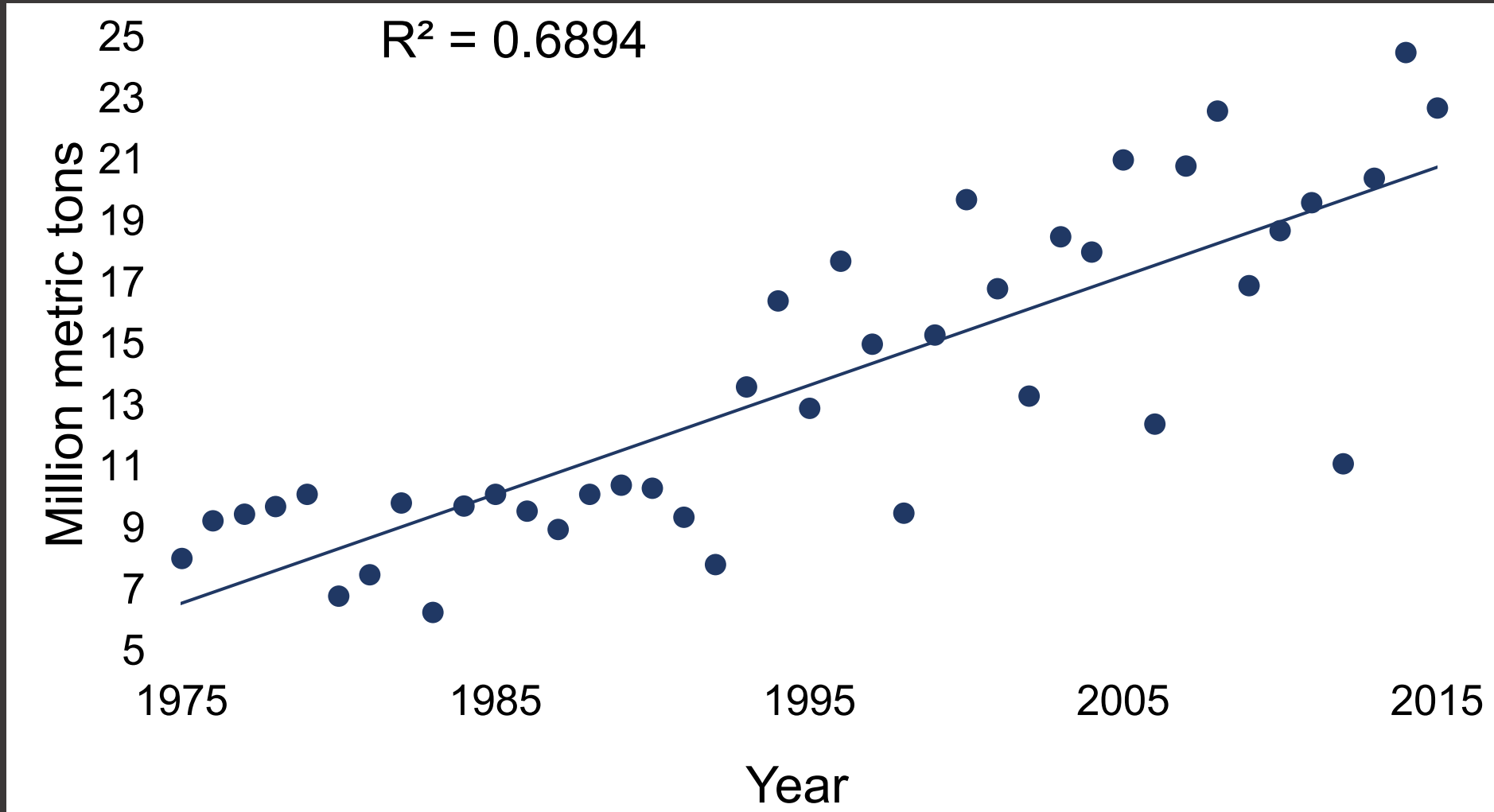
The Good Old Days



Source: Caleb Dobbins, NH DOT

Road salt was first used in 1941 to prevent ice build up on highways

Road salt use in the United States has continued to increase over time



1975-2003

- US road surface increased 6%
- Salt use increased 43%

Three surveys conducted

Campuses across
the US

Municipalities/
counties in the
Adirondacks and
Vermont

Private
contractors in
the basin

<https://go.uvm.edu/privatecontractorpaper>



we West Stairs

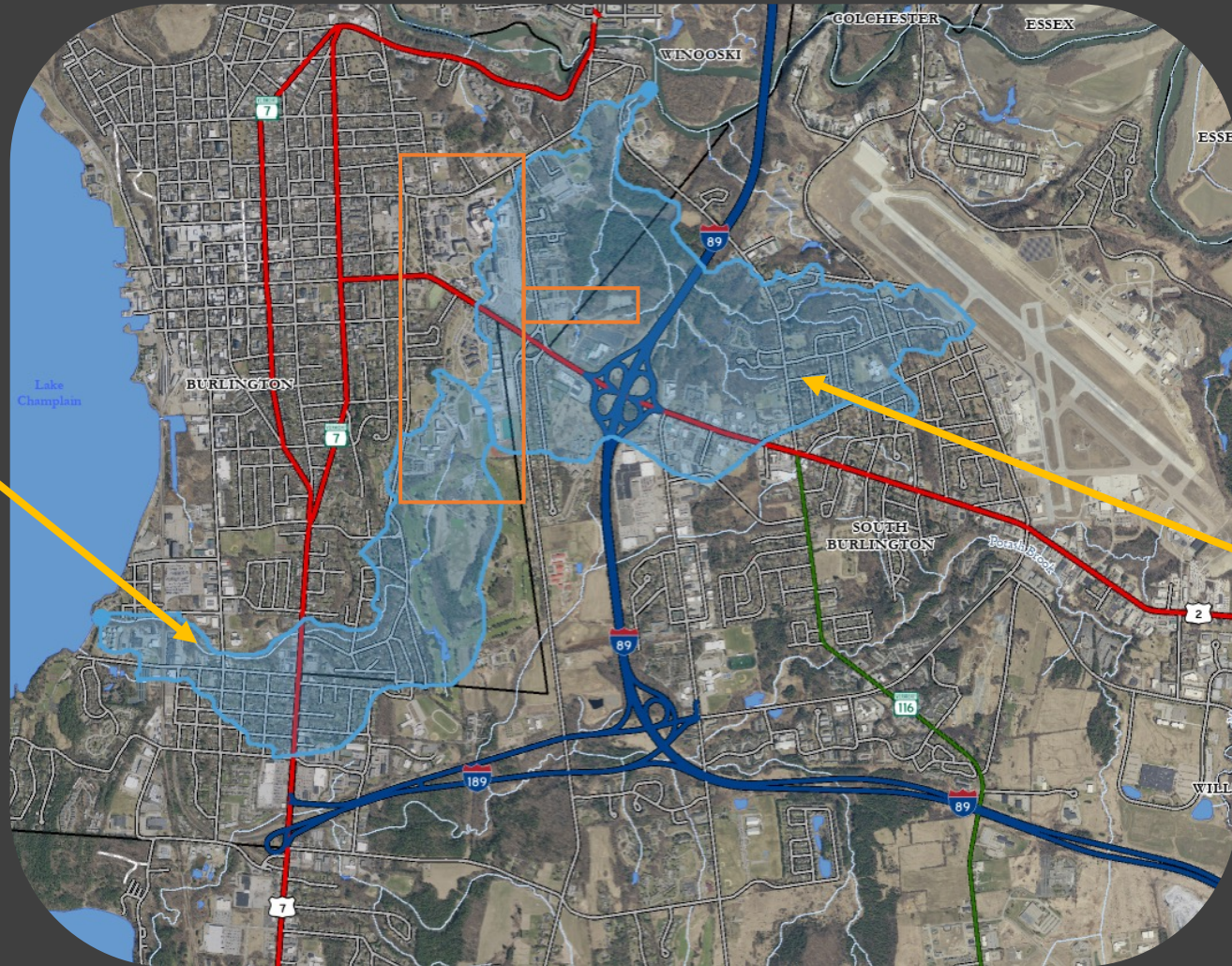


Road salt
impacts both
the
environment
and
infrastructure

Photos: Missouri Department of Conservation, MN CA, Kevin Sweeney, Lyn Wood

Snowmelt from the UVM campus contributes to two streams that are now polluted by road salt.

Englesby Brook watershed



Centennial Brook watershed

Main UVM campus outlined in orange

26 colleges/universities
responded to a fall 2021 survey



- 114 individuals contacted
 - Land Grant universities
 - All campuses in Lake Champlain basin
- 23% response rate

Maintained a variety of types of surfaces

On average, each campus maintained:

- 43 acres of sidewalks
- 106 acres of parking lots
- 55 acres of roads

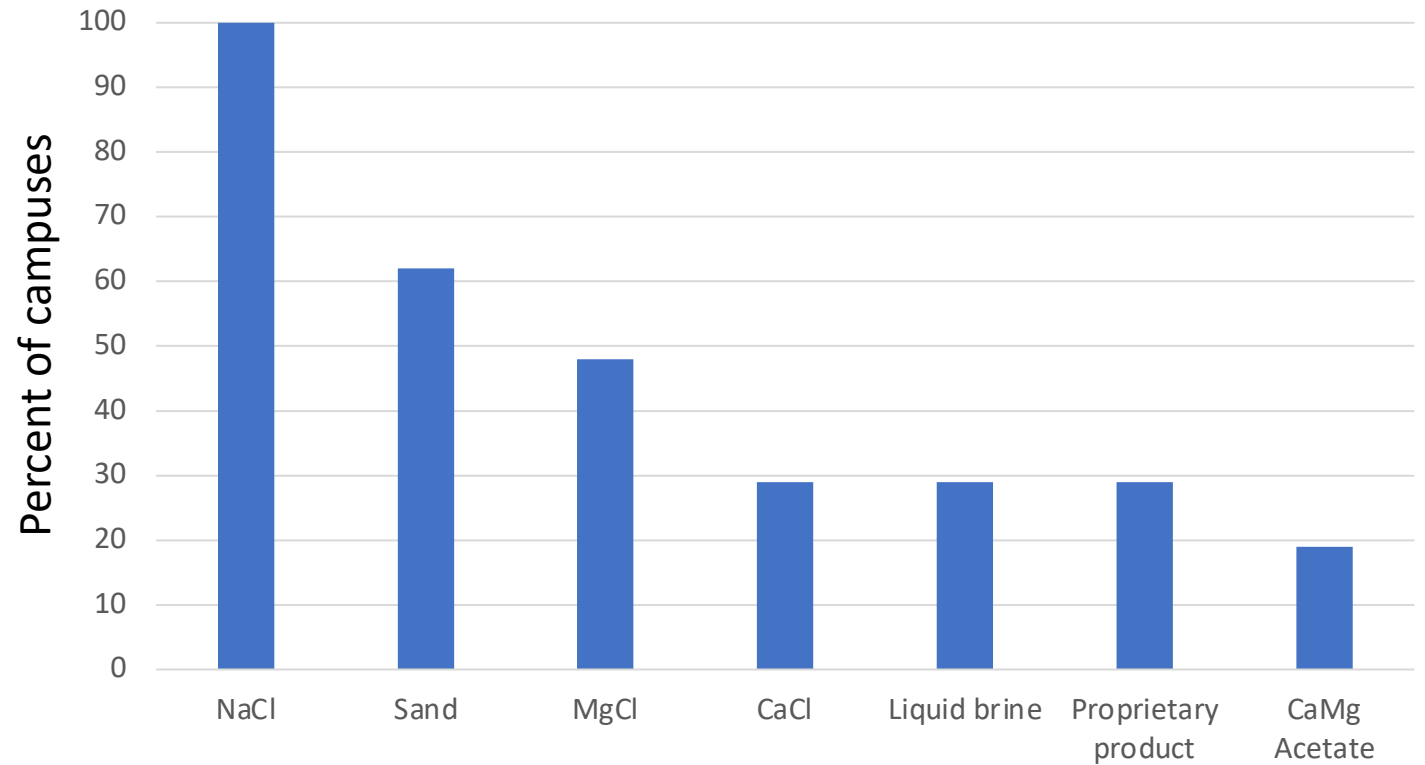
Also maintained:

- Steps
- Parking ramps
- RR crossings
- Bike lanes
- Small driveways
- Turning lanes



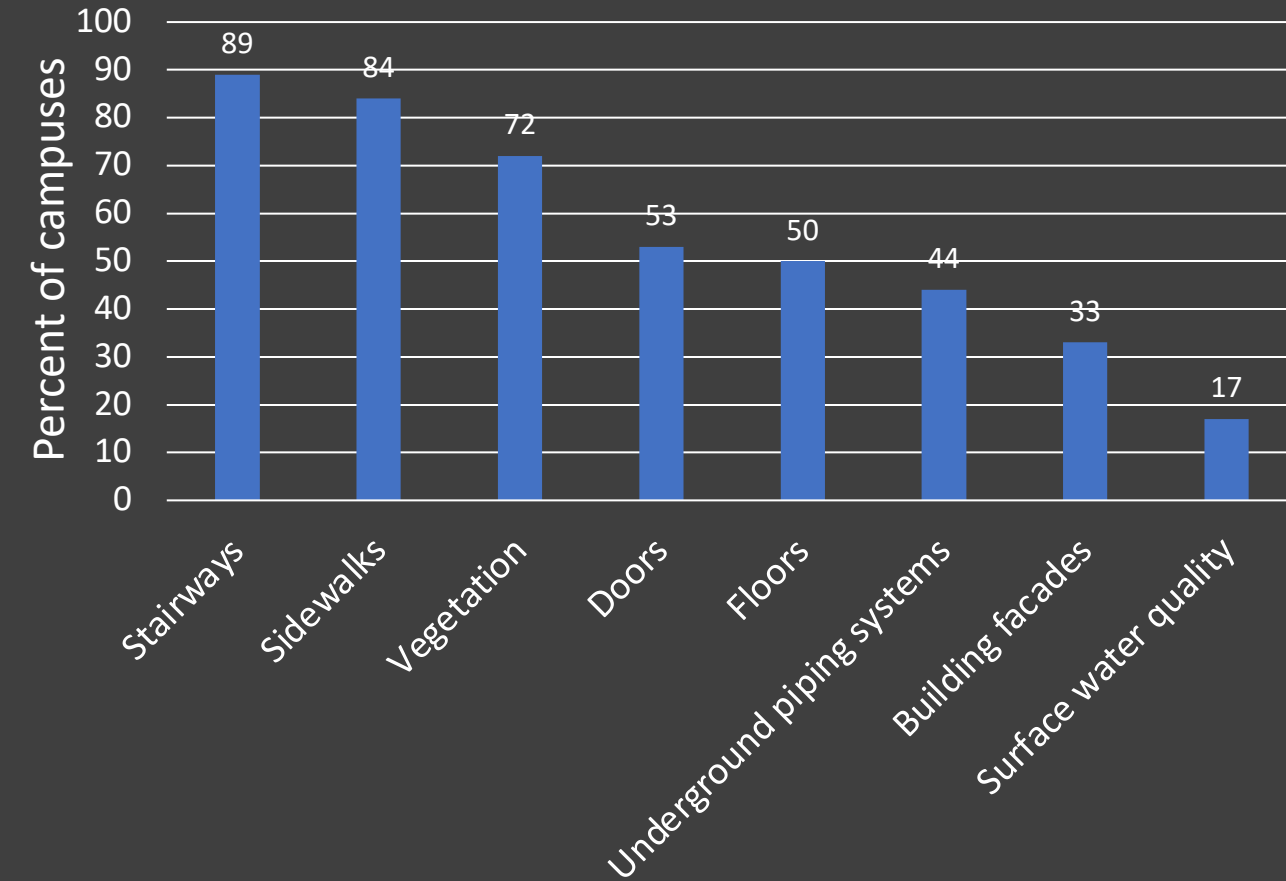


Campuses used a variety of products during winter



n = 21

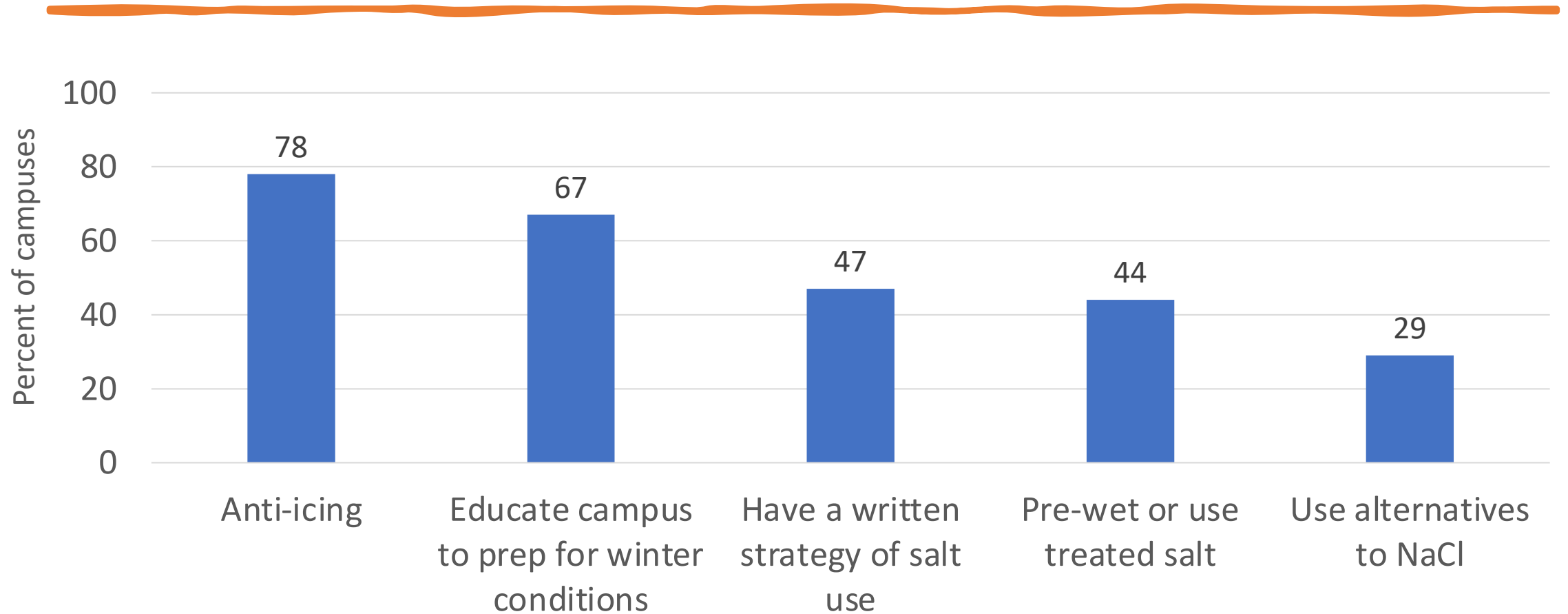
Campus stairways were most often damaged by salt



Other damaged areas: retaining walls, site furniture, and pavers



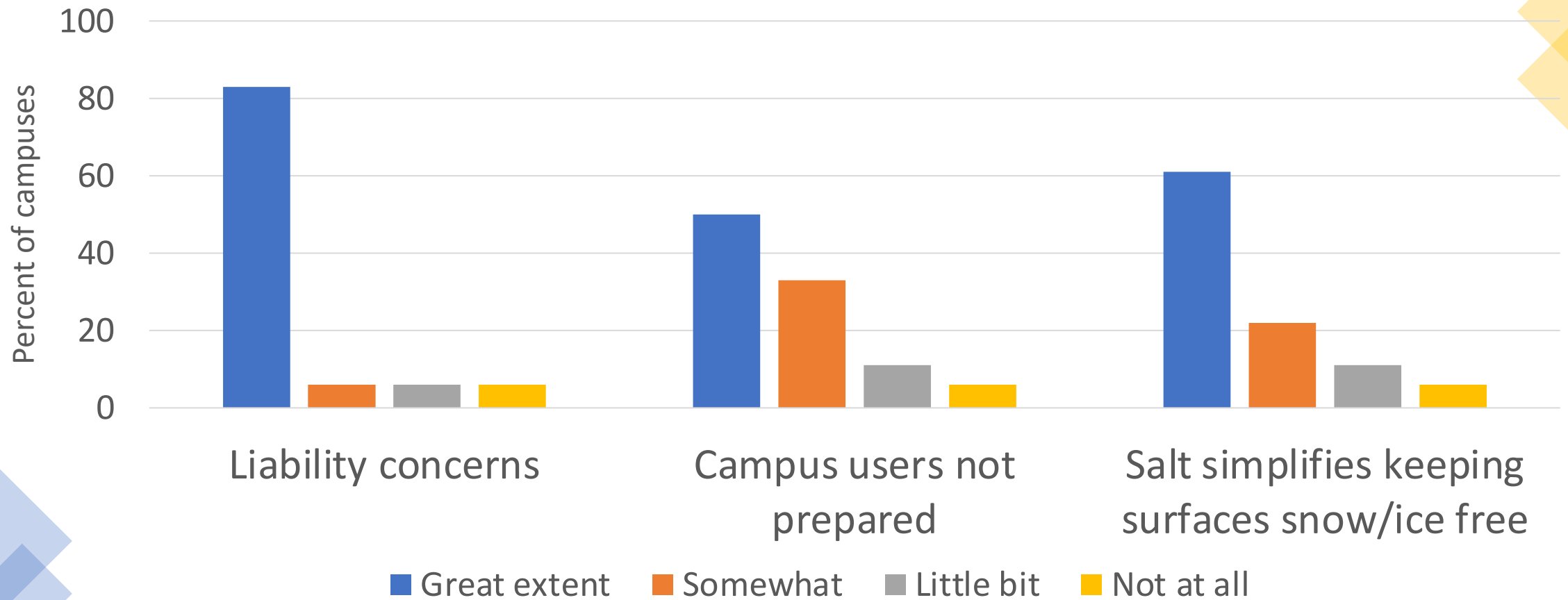
More than 3/4 of campuses engaged in anti-icing



The most often mentioned barrier to reducing use of salt was expectations

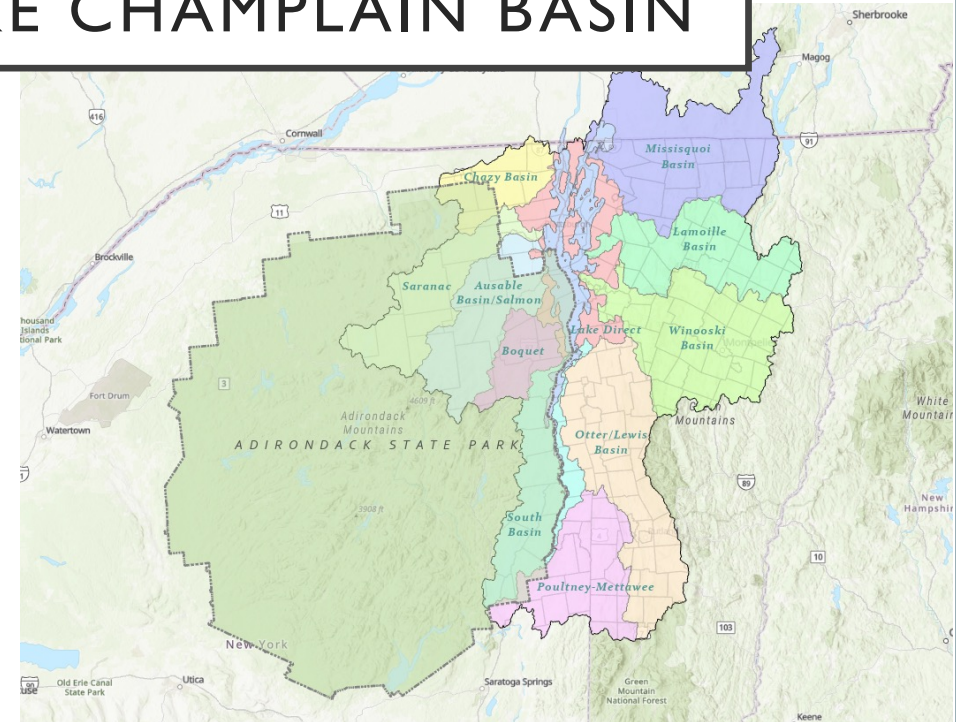


Liability concerns were top driver of use of salt in winter

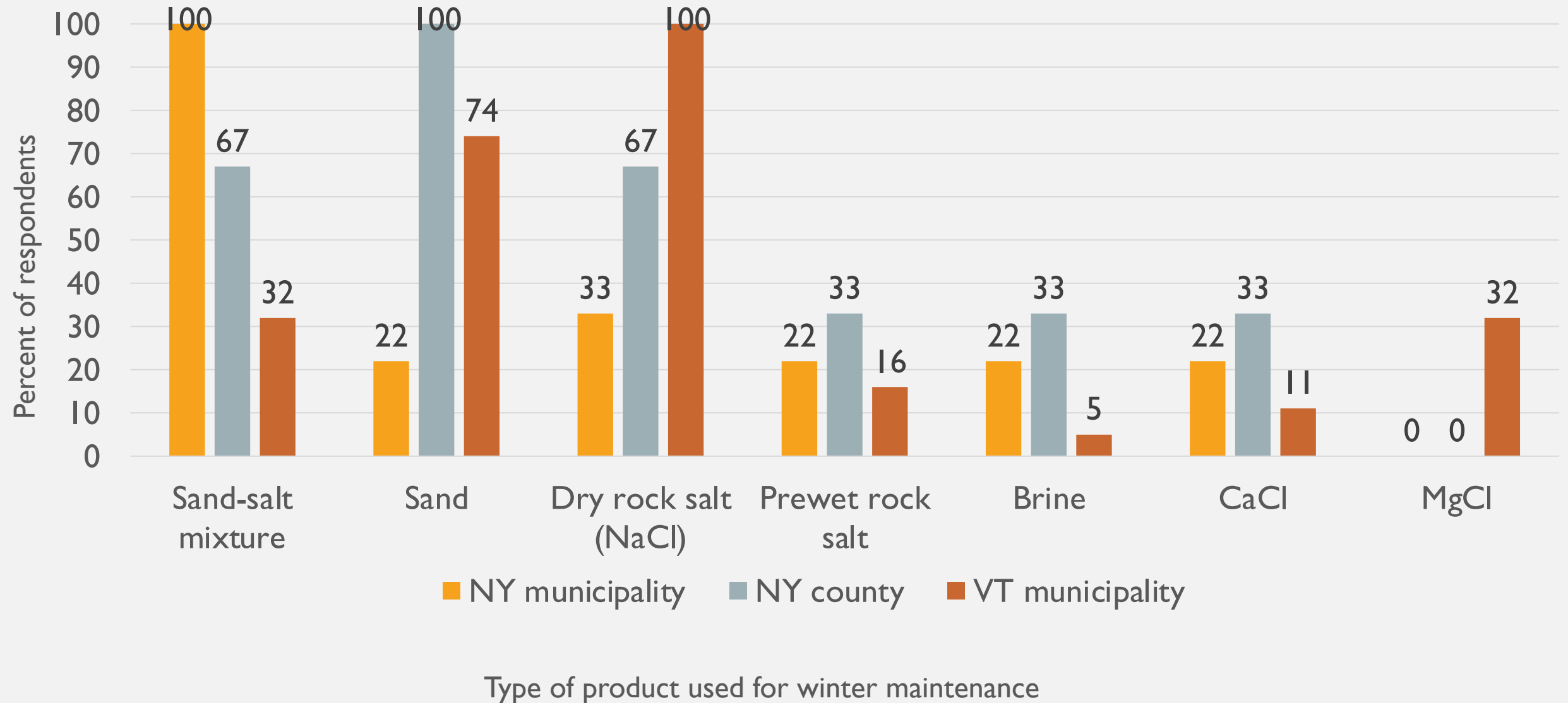



ASSESSED MUNICIPAL AND COUNTY SNOW AND ICE MANAGEMENT PRACTICES IN THE ADIRONDACKS AND LAKE CHAMPLAIN BASIN

- 230 people contacted
 - 9 NY counties – 3 responded (33%)
 - 92 NY municipalities – 9 responded (10%)
 - 129 Vermont municipalities – 19 responded (15%)



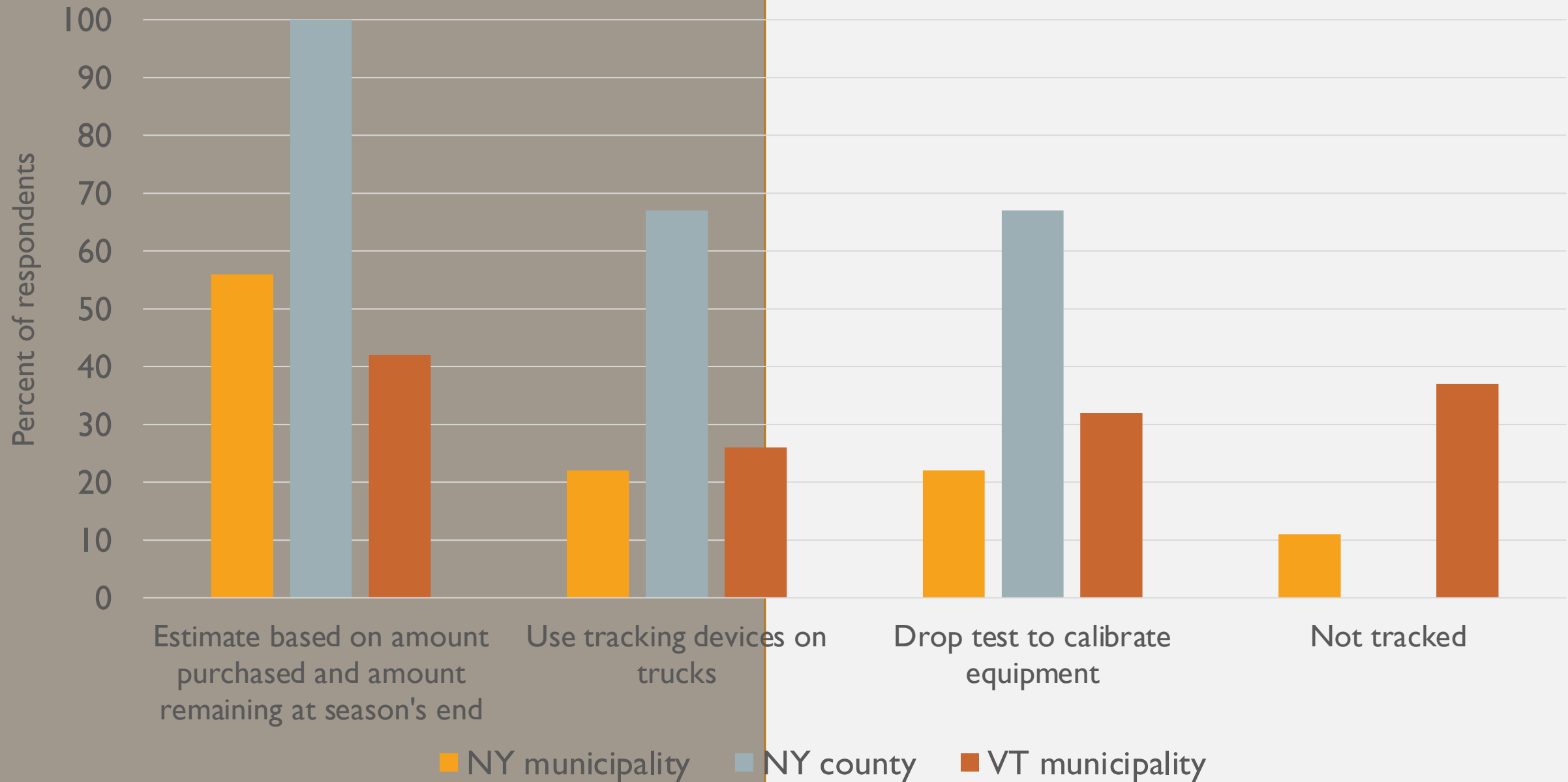
MOST USED PRODUCT FOR SNOW/ICE MANAGEMENT VARIED ACROSS STATES AND BETWEEN GOV'T BODIES



A photograph of a snowplow operating on a snowy road. The plow is in the center, spreading material. To the right, a yellow diamond-shaped sign reads "SPEED HUMP". The scene is winter, with snow on the ground and trees in the background. A white car is partially visible on the left. The text is overlaid in a white box in the center.

ON AVERAGE, MUNICIPALITIES IN THE
ADIRONDACKS AND VERMONT EACH
SPREAD 957 TONS OF SALT PER YEAR

TRACKING OF AMOUNTS OF PRODUCT USED WAS MOST OFTEN ESTIMATED



ADJUSTING APPLICATION RATES FOR CONDITIONS AND COVERING STORED SALT WERE MOST OFTEN USED

	Percent		
	NY M*	NY C	VT
Adjust type or amount of product based on conditions	78	100	90
Cover stored product	88	100	94
Use equipment that allows product application rates to be adjusted	78	67	95
Use detailed weather information	67	67	84
Use equipment that clears snow more effectively	67	33	37
Pre-wet salt at the spinner	11	67	32
Have a winter snow/ice management plan	44	67	42
Measure pavement temperatures	33	33	37
Anti-icing	33	33	42
Pre-treat salt piles	0	0	16

* M = Municipal C = County

POSSIBLE
MOTIVATIONS FOR
MUNICIPALITIES/
COUNTIES TO
REDUCE SALT USE
DURING WINTER
MAINTENANCE



To reduce costs



To reduce impacts to infrastructure



To reduce impacts to the environment

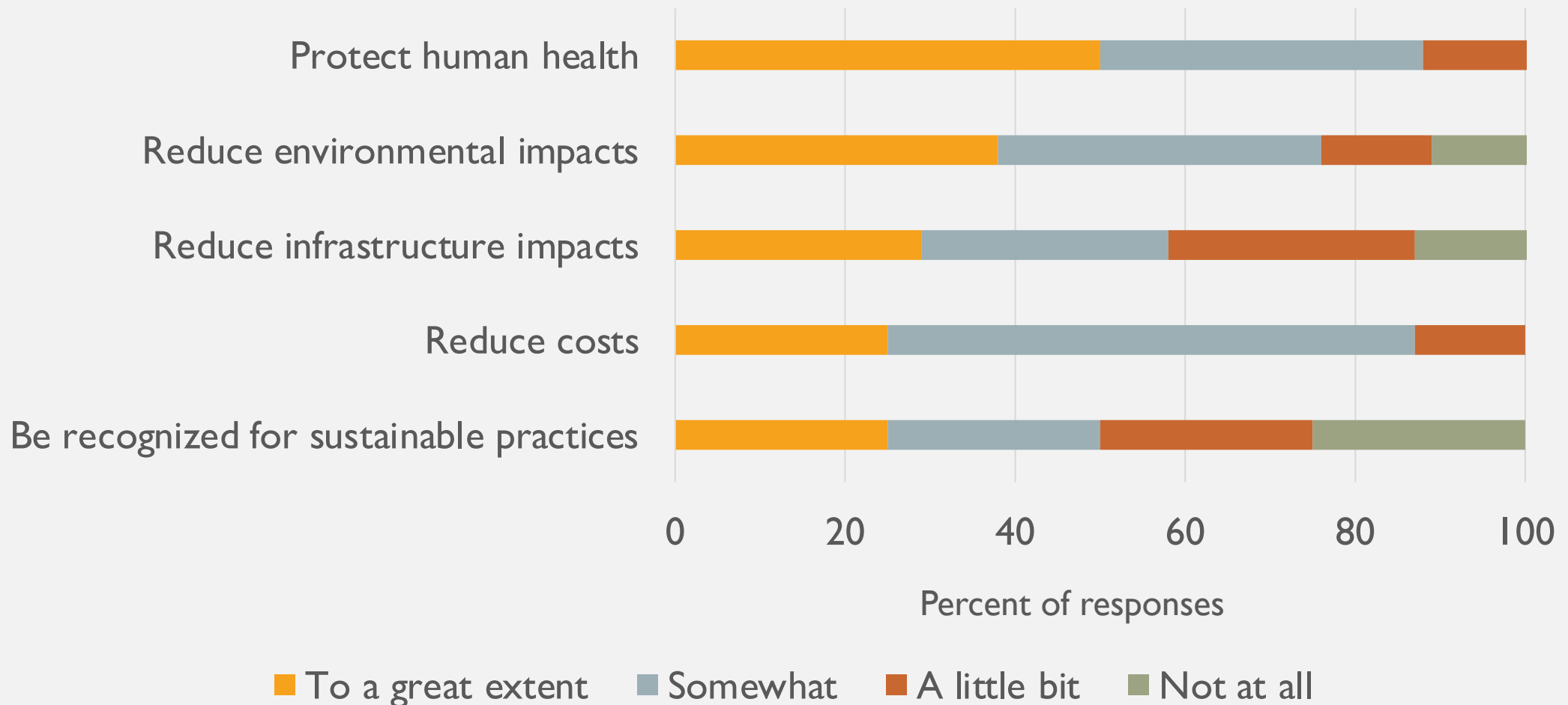


To protect human health

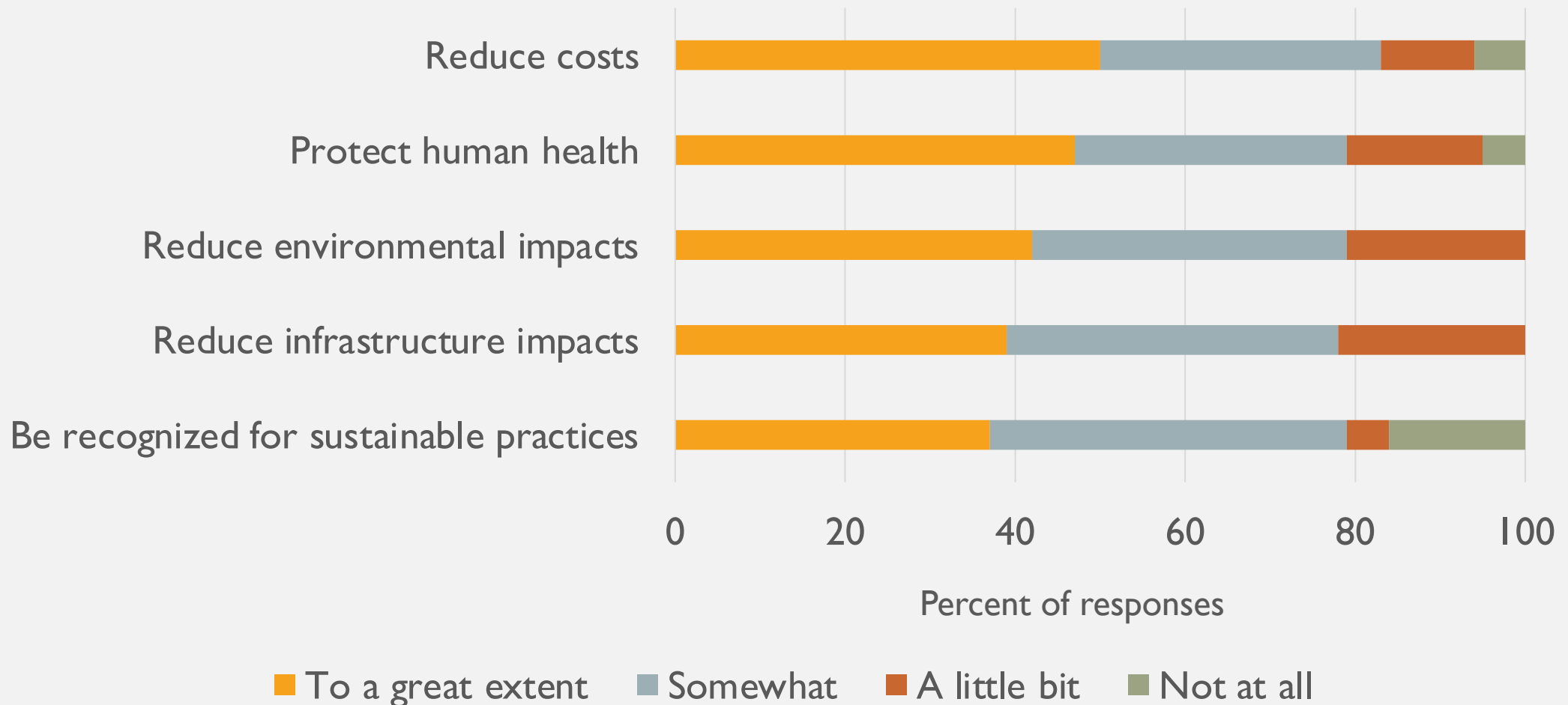


To be recognized for using sustainable practices

NY MUNICIPALITIES WERE MOST MOTIVATED TO REDUCE SALT TO PROTECT HUMAN HEALTH



VT MUNICIPALITIES WERE MOST MOTIVATED TO REDUCE SALT TO SAVE MONEY



POSSIBLE
BARRIERS THAT
PREVENT
MUNICIPALITIES
AND COUNTIES
FROM REDUCING
SALT USE



Public opinion



Liability concerns



Salt makes the job easier

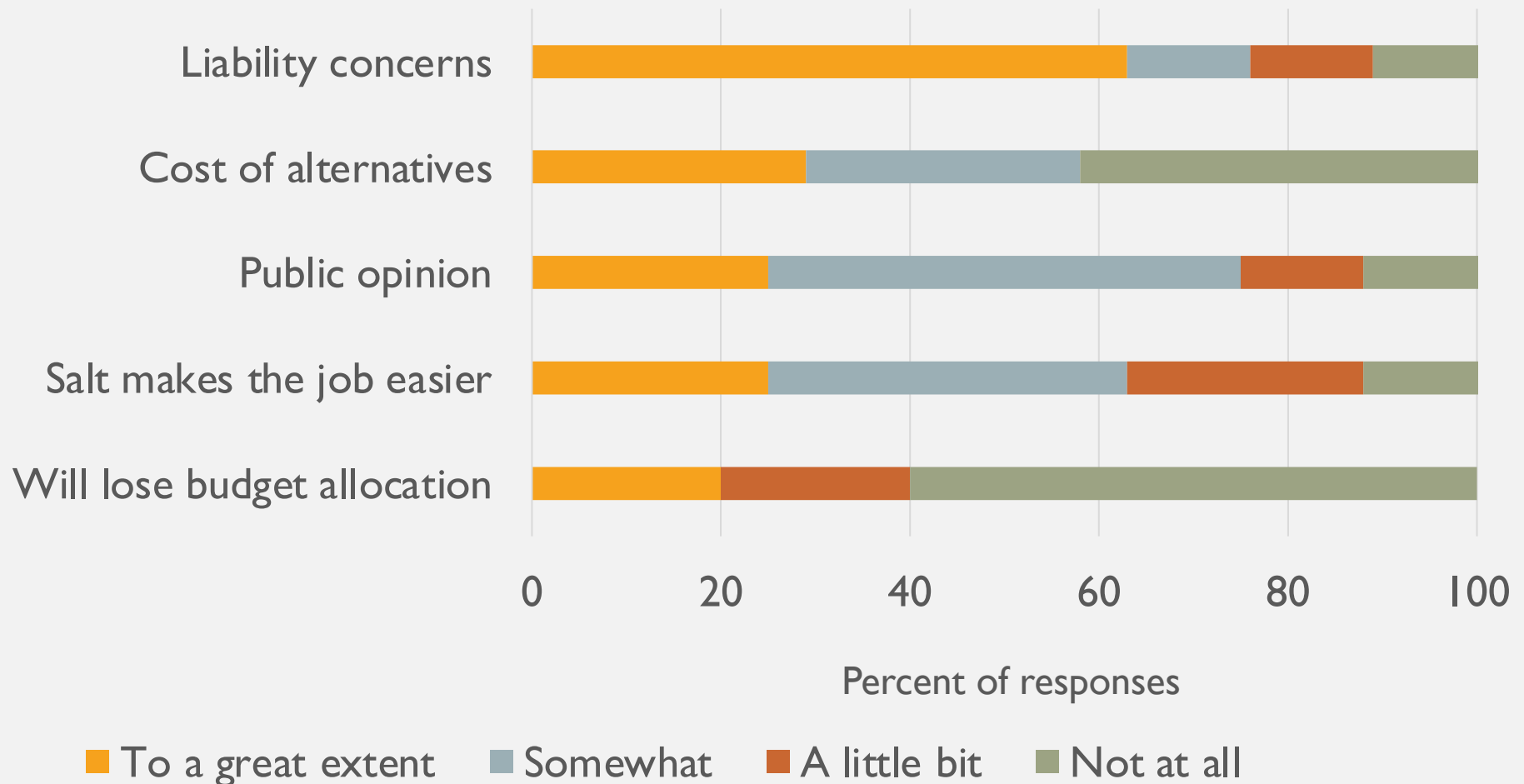


Cost of alternatives

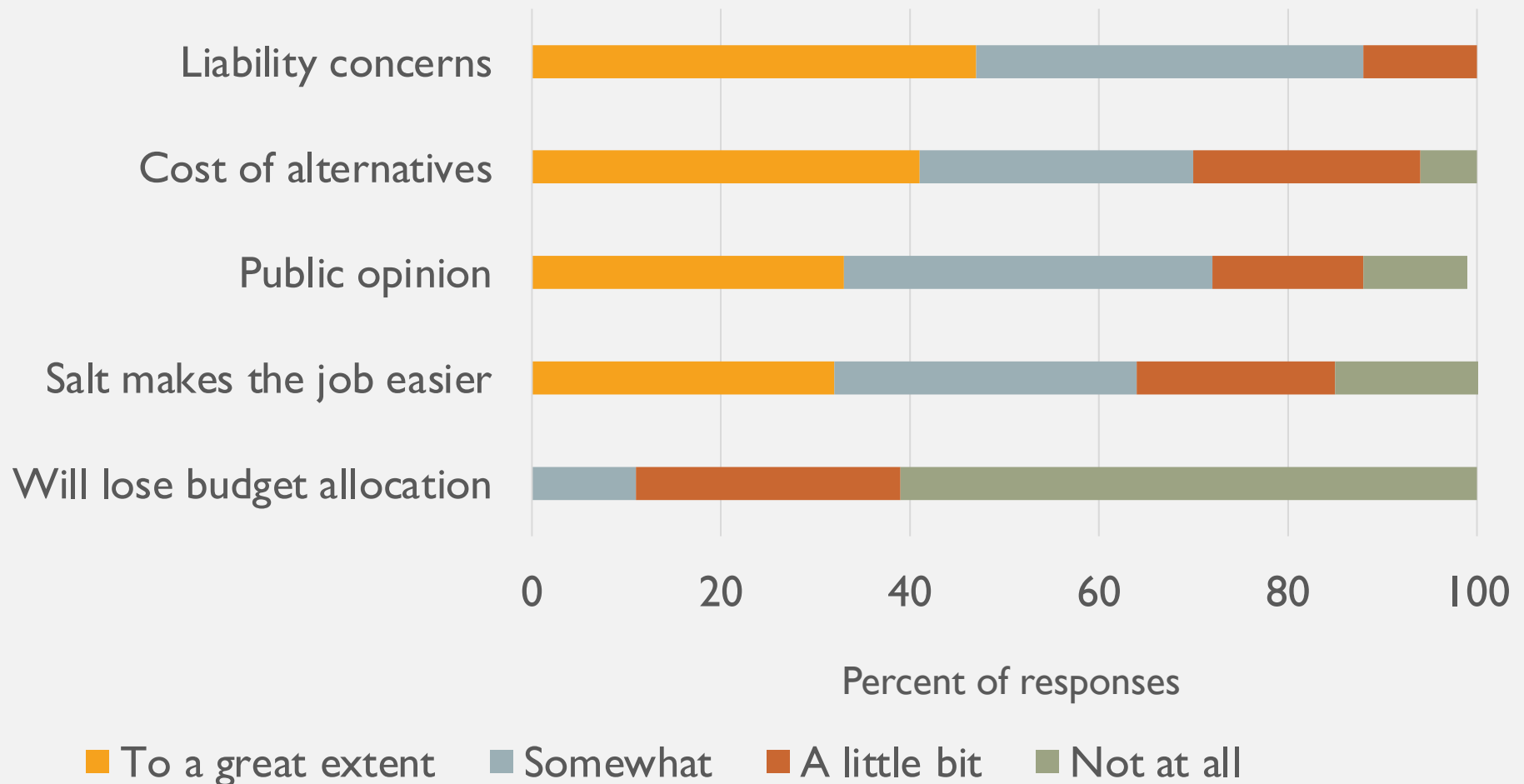


Will lose budget allocation

LIABILITY CONCERNS WERE THE BIGGEST BARRIER FOR NY MUNICIPALITIES TO REDUCE SALT USE



LIABILITY CONCERNS WERE ALSO THE BIGGEST BARRIER FOR VT MUNICIPALITIES TO REDUCE SALT USE



OPTIONS THAT COULD AID COUNTIES/MUNICIPALITIES IN REDUCING SALT USE



TRAINING
FOR STAFF



ASSISTANCE TO
DEVELOP
MANAGEMENT
PLAN



FUNDING
FOR
UPDATED
EQUIPMENT



ADDITIONAL
WEATHER
MONITORING
SITES



SUPPORT OF
LOCAL
LEADERS



MORE STAFF



PUBLIC
EDUCATION
CAMPAIGN



MOST COMMON “VERY USEFUL” RESPONSES TO ENCOURAGE SALT REDUCTION:

- Funding to purchase updated equipment (70%)
- A public education campaign to change expectations (66%)
- More staff to share the workload (54%)



Lots of room to educate/promote use of brine or pre-wetted salt



Tracking of salt used was limited; interest to obtain funding for updated equipment



Differences in motivations to reduce salt across target audiences



Public education campaign desired by professionals

KEY TAKEAWAYS