



Applying conservation social science insights to reduce the threats to Atlantic Flyway shorebirds

Ashley A. Dayer, Ph.D.
Carolyn A. Comber
Jillian Everly



COLLEGE OF NATURAL
RESOURCES AND ENVIRONMENT
FISH AND WILDLIFE
CONSERVATION
VIRGINIA TECH.

Human Disturbance



“a **human activity** that causes an individual or group of shorebirds to **alter their normal behavior**, leading to an additional **energy expenditure** by the birds. It can **prevent them from using important habitats** and from conducting the activities of their annual cycle that would otherwise occur in the absence of humans.”

(Mengak & Dayer, 2019, *Environmental Management*)

Human Activities = Disturbance?



Solutions to Disturbance Require...

Changes in human behaviors...

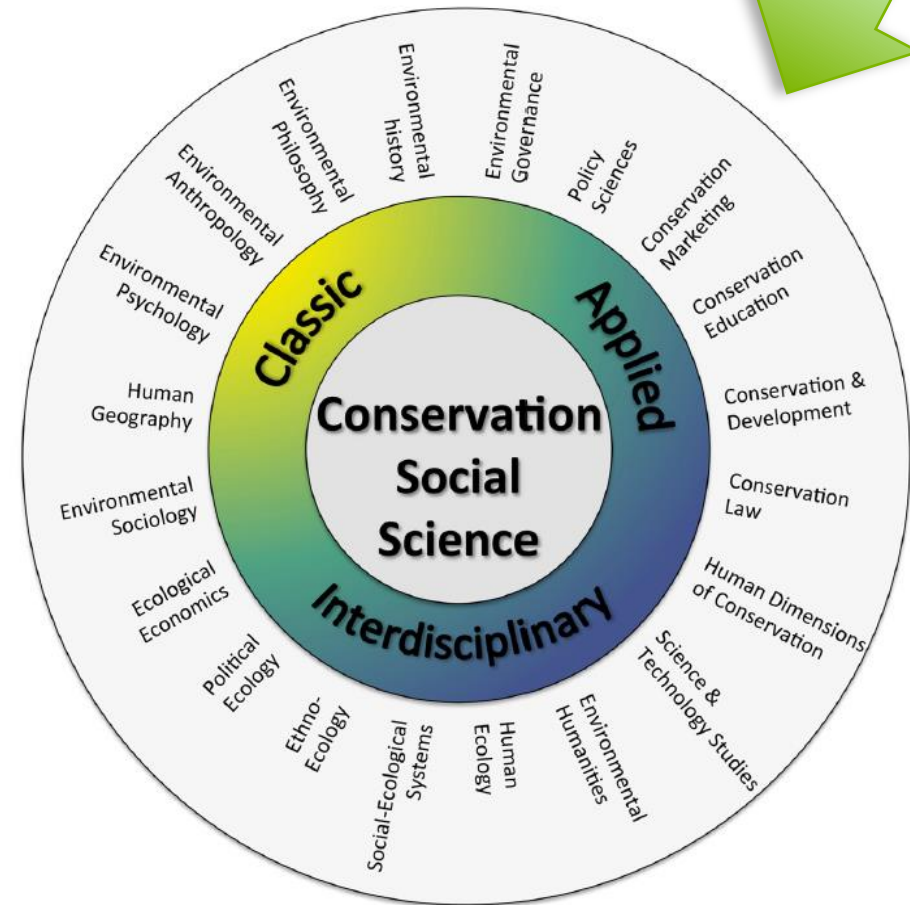
Not changes in bird behaviors



Conservation Social Science

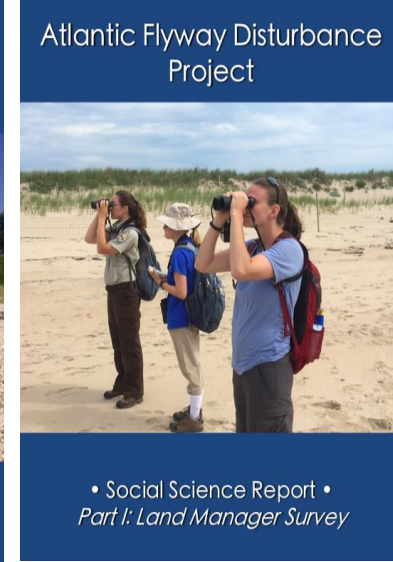
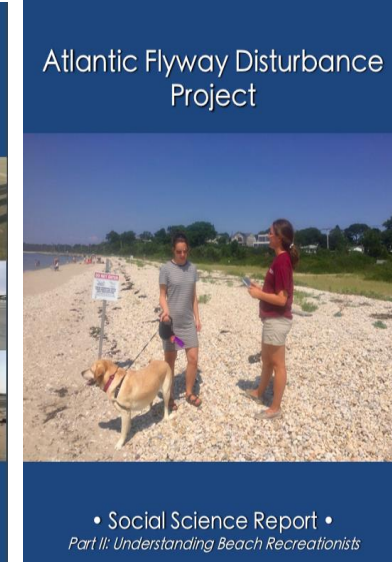
“a subset of the classic and applied social science disciplines that focus particularly on conservation or environmental management”

-Bennett et al. 2017, pg. 98



Collaborative & Transdisciplinary Project

Phase 1



Phase 2

- Land manager interviews
- Surveys of beach walkers
- Biological surveys and monitoring
- Georgia pilot project
- Workshop to co-produce recommendations

Atlantic Flyway Disturbance Project



• Social Science Report •
Part I: Land Manager Survey

Atlantic Flyway Disturbance Project



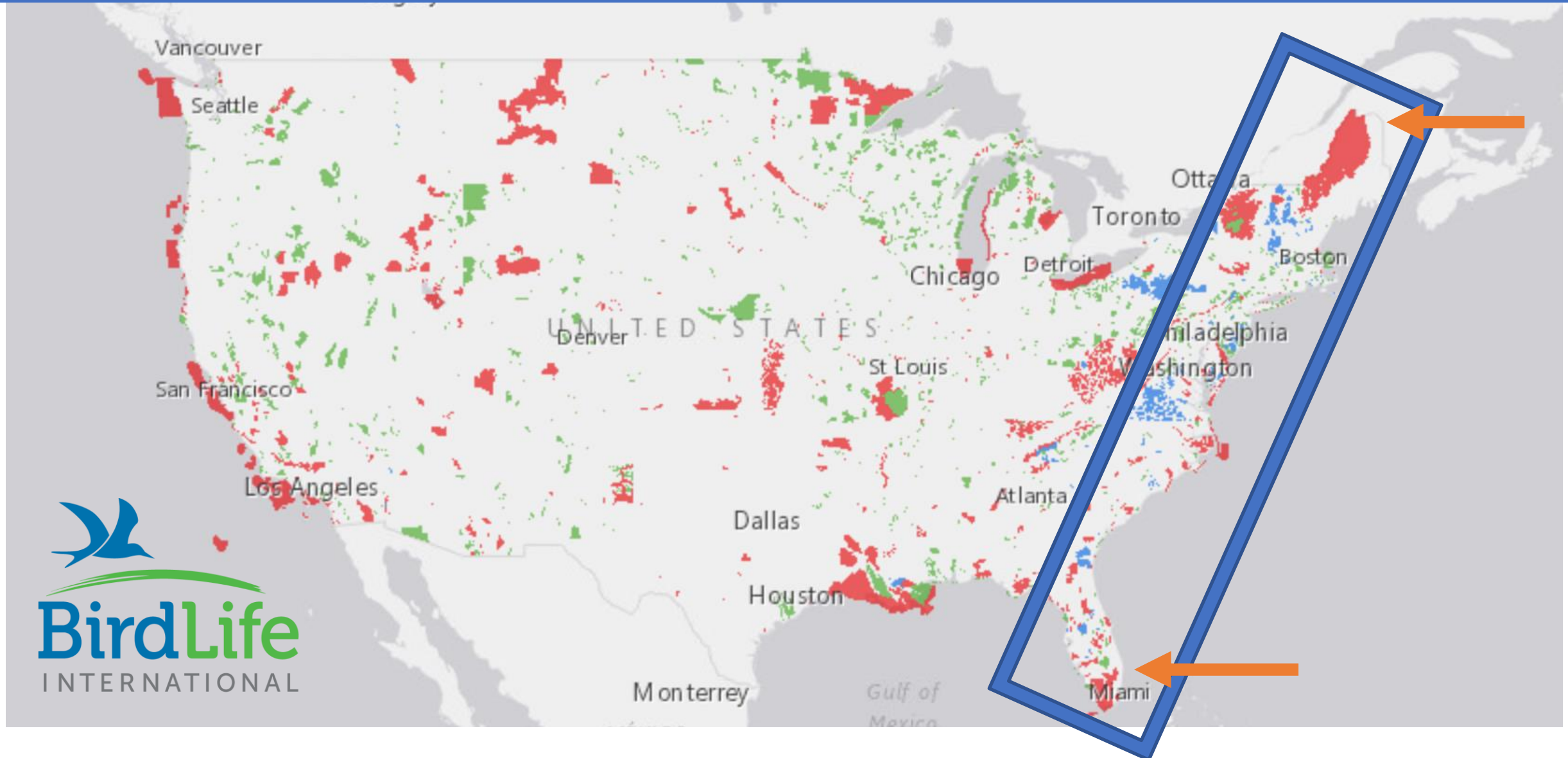
• Social Science Report •
Part III: Dog Zoning and Regulation Development



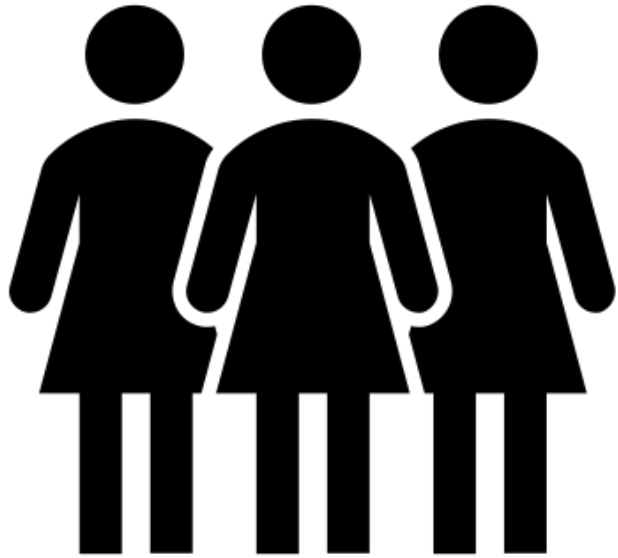
Methods: Survey Sample Frame



Methods: Survey Sampling Frame



Survey Response



111 Responses



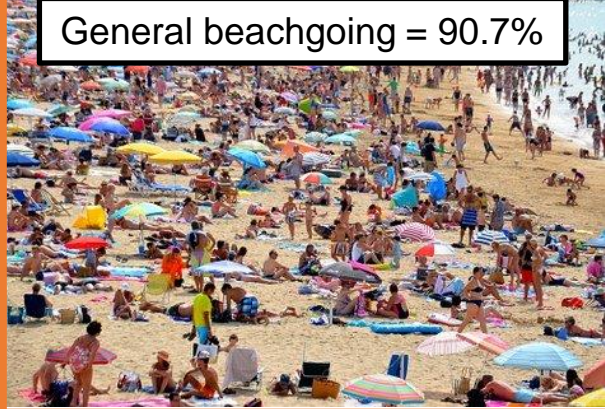
Response Rate = 68%

Methods: Interviews

- 1. INTERVIEW SCRIPT:
Based on land manager and biologist management concerns & questions
- 2. INTERVIEWEES:
27 individuals from the piping plover workshop and past survey participants
- 3. STATE REPRESENTATION:
11 different states along the east coast
- 4. INTERVIEW LENGTH:
19.5-72.5 min (Avg=44.1 min)
- 5. ANALYZED DATA:
Qualitatively for common themes

Potential Human Disturbances At Sites

General beachgoing = 90.7%



Unleashed dog walking = 84.5%



Recreational fishing = 78.3%



Non-motorized watersports = 75.2%



Leashed dog walking = 73.6%



Motorized watersports = 63.9%



Beach driving = 58.9%



Unmanned aircraft = 43.4%



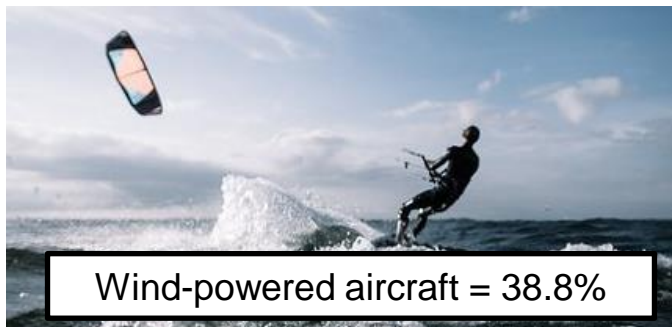
Events = 38.8%



Commercial fishing = 38.8%



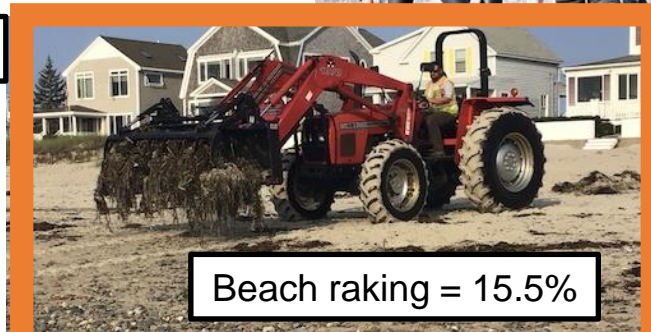
Wind-powered aircraft = 38.8%



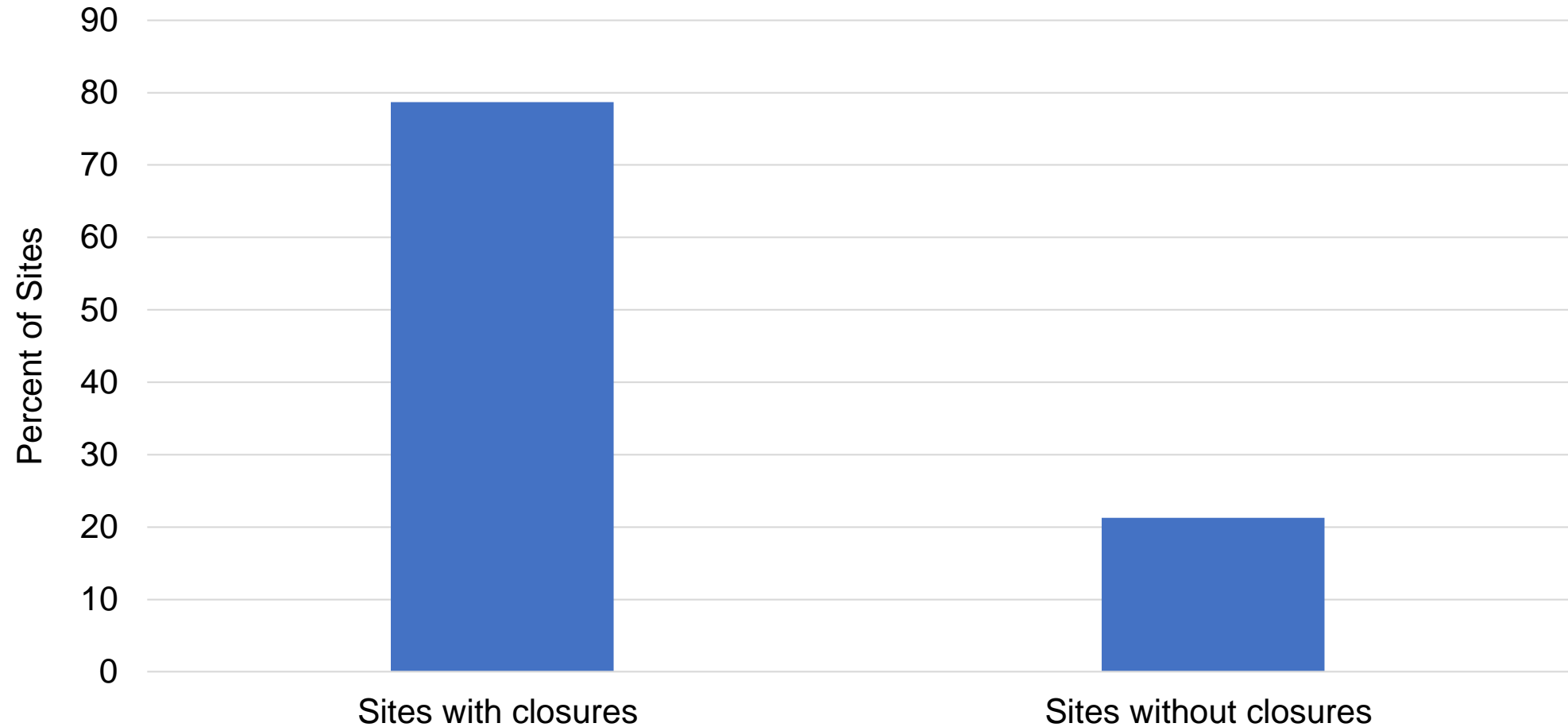
Coastal engineering = 38.8%



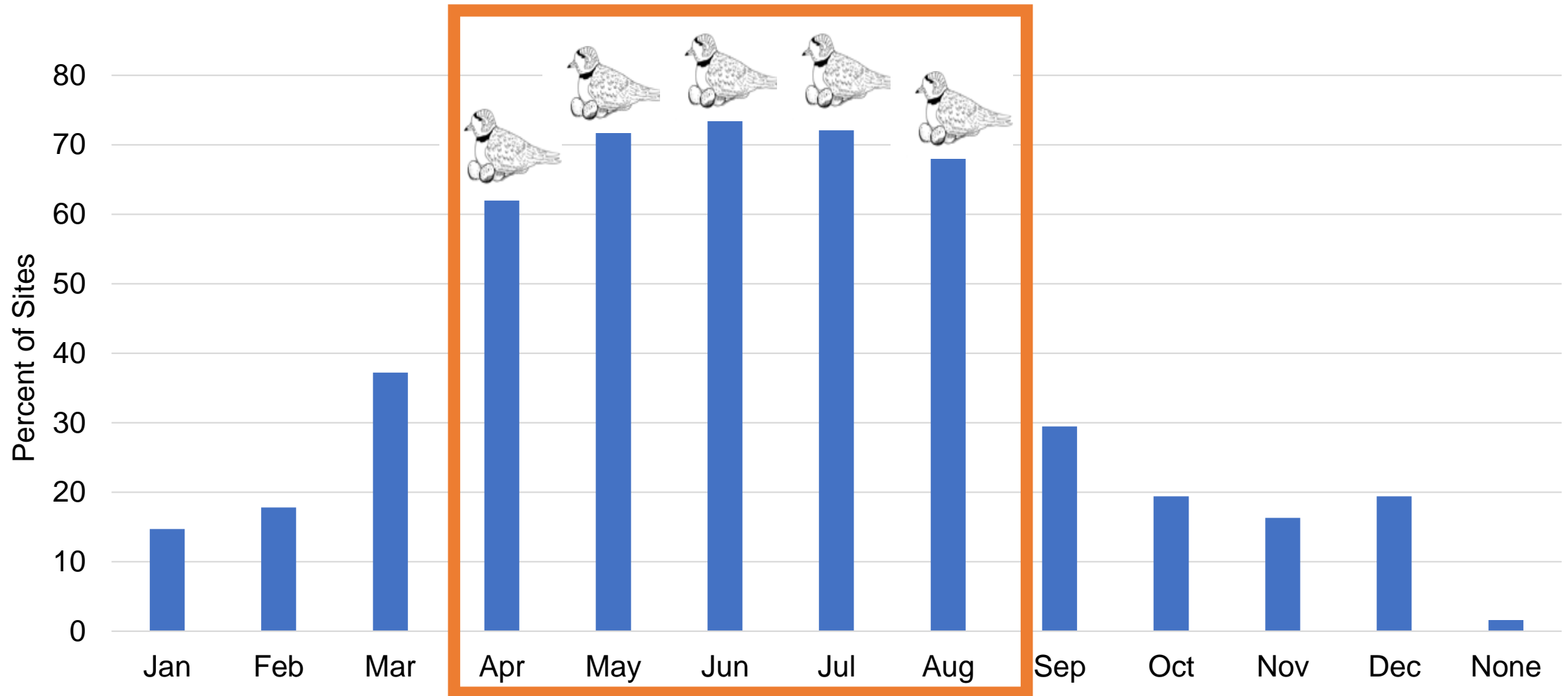
Beach raking = 15.5%



Closures to Reduce Human Disturbance



Management: When

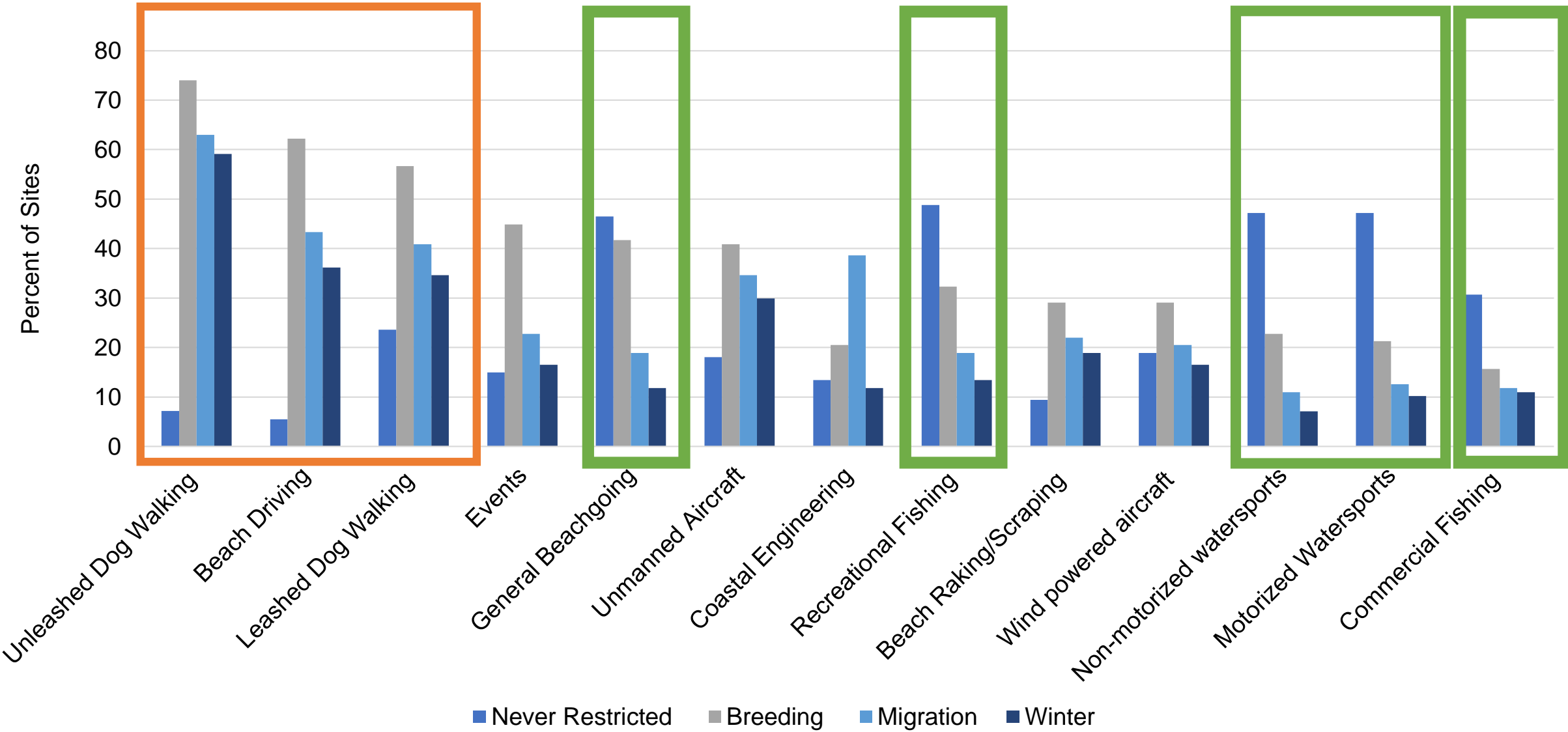


PROTECT YEAR ROUND

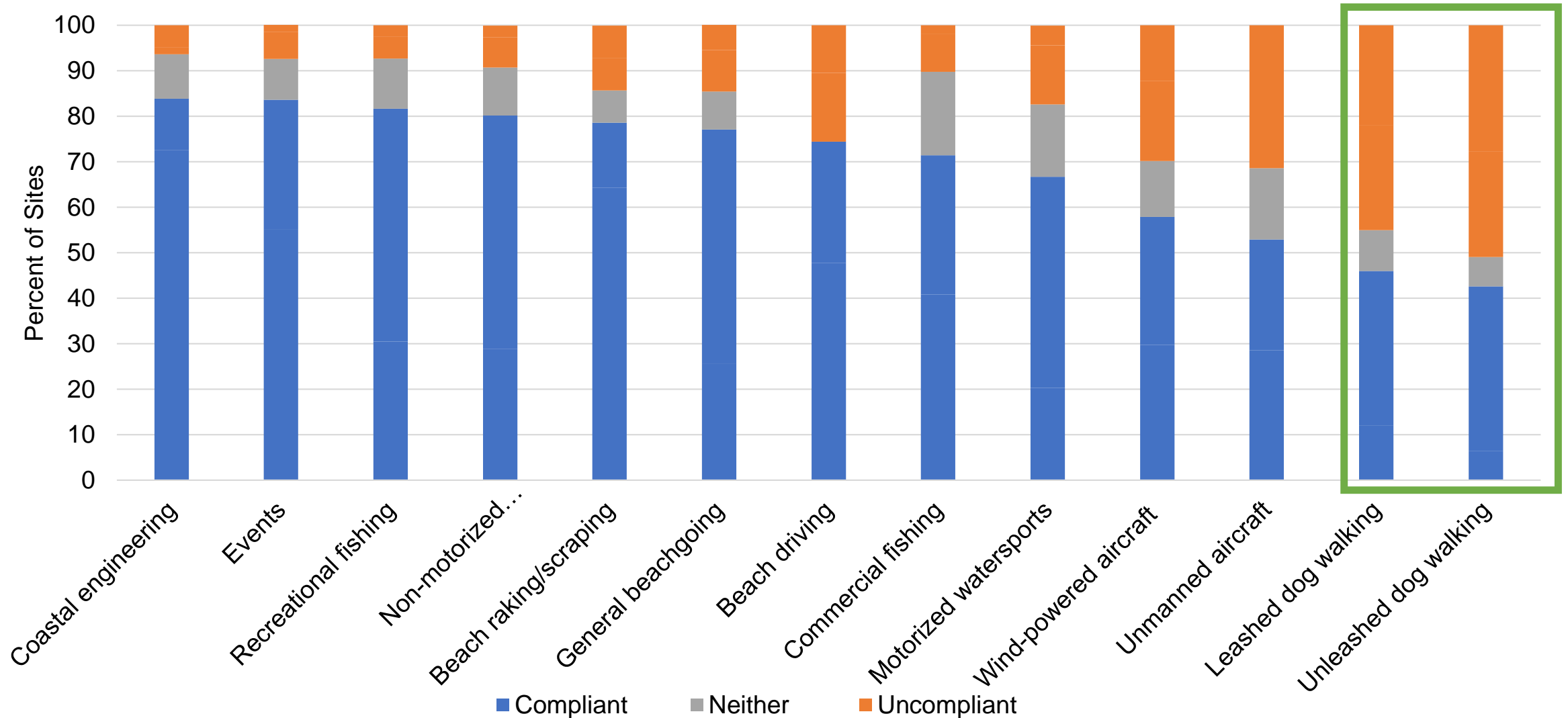
“I think one of the bigger challenges is **protecting those migratory shorebirds that stopover in the spring and the fall and then protecting birds that stay here over the winter and getting that message across on disturbance and providing respite.”**

INTERVIEWEE 25

Management of Human Disturbance: By Activity



Perceptions About Public Compliance



Effectiveness of Management Techniques

Fencing = 96.5%



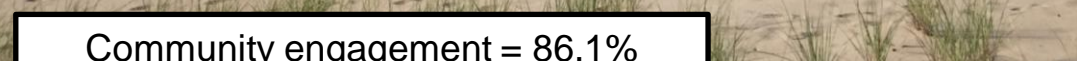
Informal outreach = 91.9%



Signs = 89.1%



Community engagement = 86.1%



Join us for
A Dog's Breakfast

Bring your pooch on a leash to enjoy a **free** Lion's Club breakfast* for **National Bird Week!**

Why? Learn how you and your dog can enjoy the beach while protecting migratory shorebirds and local wildlife.

When? 29 October 2017, 9 – 11.30am.

Where? Bob Davis Park, Point Moore Geraldton.

Special Guests & Support
Birdlife Midwest, Parks & Wildlife, Geraldton Dog Rescue, Central Regional TAFE, Tracking Dogs Geraldton, Dirty Dog Busters, Geraldton Pet Meat Supplies, Empawrium & more.

More info: Vanessa.McGuinness@nacc.com.au or 9938 0108

*Free brekkie for dogs and owners until supplies run out. Please make sure your dog is vaccinated!

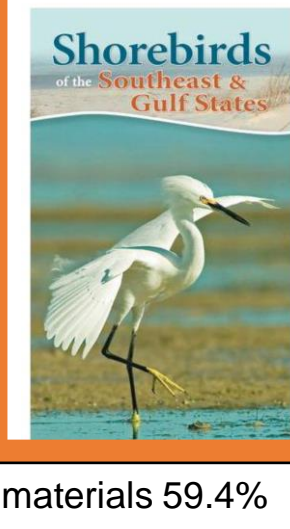
This is a dogs on leash, birds on beach event!

This project is supported by the Northern Agricultural Catchments Council and Birdlife Midwest-Geraldton, through funding from the Australian Government's National Landcare Programme.



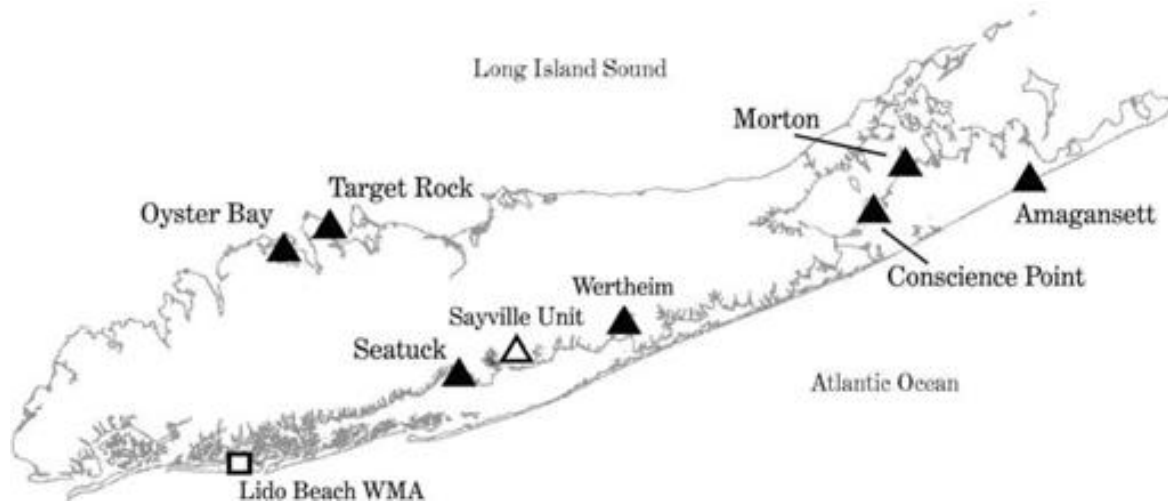
Formal outreach = 85%

Law enforcement = 75%



Informational materials 59.4%

Thoughts on Ineffectiveness



“Law enforcement are so spread out they aren’t effective, but when present they are.”

- Survey Participant



STEWARDS AND VOLUNTEERS:

“Face to face conversational protection that the volunteers [and] stewards provide is way more valuable than a guy with a gun in my opinion.”

INTERVIEWEE 11

Greatest Resource Needs



More staff



More volunteers

Greatest Resource Needs

“Managing shorebirds along the coast is a balance between providing and protecting habitat and reducing disturbance while allowing people to enjoy recreating responsibly at the beach. The biggest asset is the commitment of resource managers and volunteers who work daily in these areas and interact with the public, educating them as to why some areas/activities are restricted. More funding for hiring people to do this work is critical now more than ever...”

- Survey Participant

Atlantic Flyway Disturbance Project



- Social Science Report •
- Part II: Understanding Beach Recreationists*

Atlantic Flyway Disturbance Project



- Social Science Report •
- Part IV: Understanding Beach Walkers*

Typical Approach

Provide knowledge and stats...

“Predators now wipe out 70 percent of shorebird nests in the far north, a shift in historical patterns that scientists pin on climate change.” – (Audubon)

“Migratory shorebird populations are in steep decline. The Eastern Curlew has declined by 80 percent in 30 years.” – (BirdLife International)

“Wader populations are a particular cause for concern, with nearly half the world’s known populations in decline.” – (International Union for Conservation of Nature)

Community Based Social Marketing: An Alternative Approach

Third Edition

FOSTERING SUSTAINABLE BEHAVIOR

An Introduction to Community-Based Social Marketing

Doug McKenzie-Mohr



www.cbsm.com



What is CBSM?

Select a behavior to promote

Identify barriers and benefits

Develop a strategy to reduce benefits and barriers

Pilot the strategy

Implement broadly and evaluate

Step 1: Selecting a Behavior to Promote

- Choose a behavior that you would like to promote
- Make sure the behavior has a **clear end state**
- Make sure the **behavior is framed in a positive way** rather than saying “don’t do xyz...” or “keep out”



Behavior	Impact _a	Probability _b	Inverse Penetration _c	Mean Composite _d
Walking or running around shorebirds				
Leashing dogs on the beach				
Riding bikes around shorebirds				
Filling in holes dug in the sand				
Lowering vehicle speed				
Driving on the wet sand				
Lowering boat speed				
Driving on the soft sand				
Filling in tire ruts				
Using boat ramps				

Step 2: Identifying Benefits and Barriers to the Behavior



Voluntarily leashing dogs on beaches



Voluntarily walking around shorebird flocks

Identifying Barriers and Benefits



Barriers

Disadvantages that recreationists face when leashing dogs on beaches



Benefits

Advantages that recreationists receive from leashing dogs on beaches

Methods: Observational Study



Indian Wells Beach – East Hampton, NY



Recorded behaviors of dog walkers on beaches

Methods: Dog Walker Interviews



- Indian Wells Beach, NY
- Interviewed 20 dog walkers
- Benefits and barriers to leashing

Dog Walker Interview Results

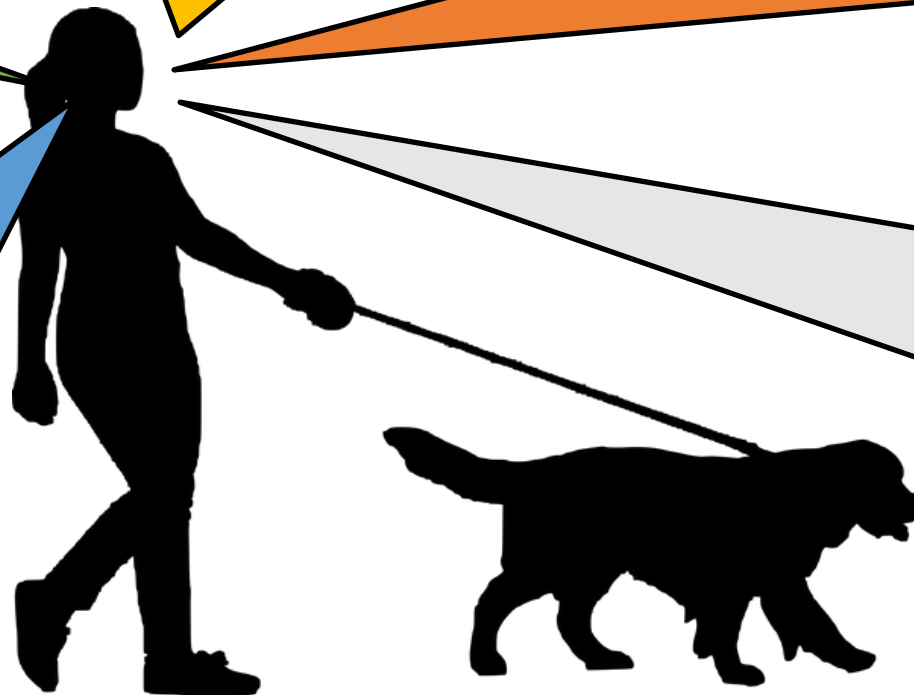
I like being unleashed because it lets my dog run free, and exercise with freedom. I do like leashing in order to deal with other dogs and people. I don't want her jumping on people.

The benefit to leashing is that I have the assurance that she will be in my control because she doesn't get along with every dog. It also gives me peace of mind for her safety.

When he is off leash he can explore and run at his natural speed and play in the water. However, being unleashed means sometimes he runs after wildlife which I do not like. He also can get into trash that people leave near the parking lot when he is unleashed.

I leash my dog because it provides an increase in control, and I can prevent my dog from jumping on other people or even running away from me. I enjoy unleashing my dog to allow her to run and play, exercise, have fun, and socialize.

I like to leash near the parking lot because of the garbage thrown out of cars. I let her go to the bathroom while still on leash because then it is easier to clean up after her. I take her off leash after we are farther onto the beach.



Onsite-Surveys of Dog Walkers



- Two researchers
- July through October
- 6 days a week
- Maine, New York, South Carolina
- 6:30 to 10:30 a.m. and 4:00 to 8:00 p.m.
- Generally walked with dog walkers

Results: Response



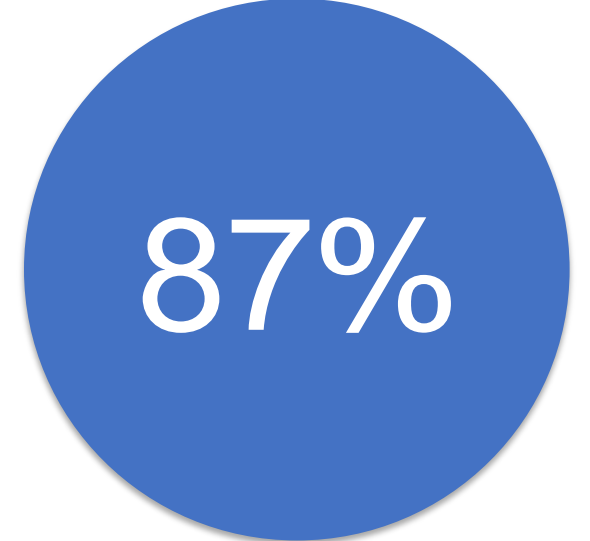
Approached 1,020
dog walkers



130 declined



890 participated

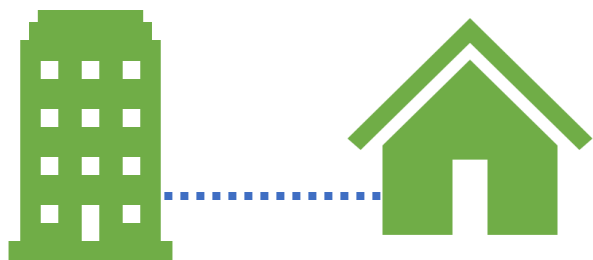


Response rate

Results: Demographics



Full-Time = 56%



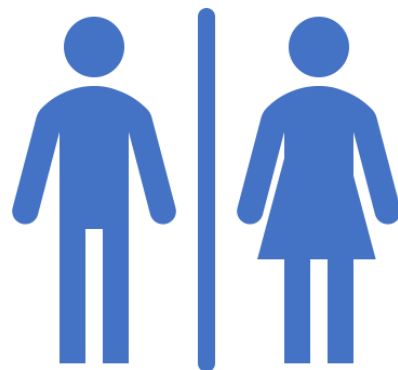
Part-time = 27%



Vacation = 17%

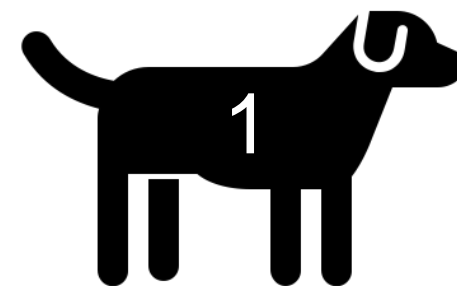
Average Age = 51

Age Range 18-84

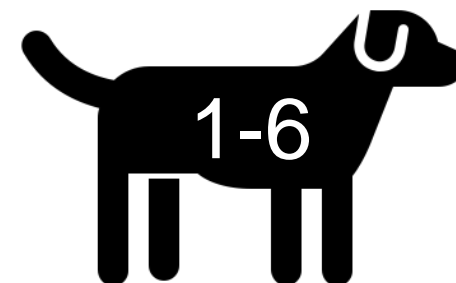


42:58

Average Number of Dogs



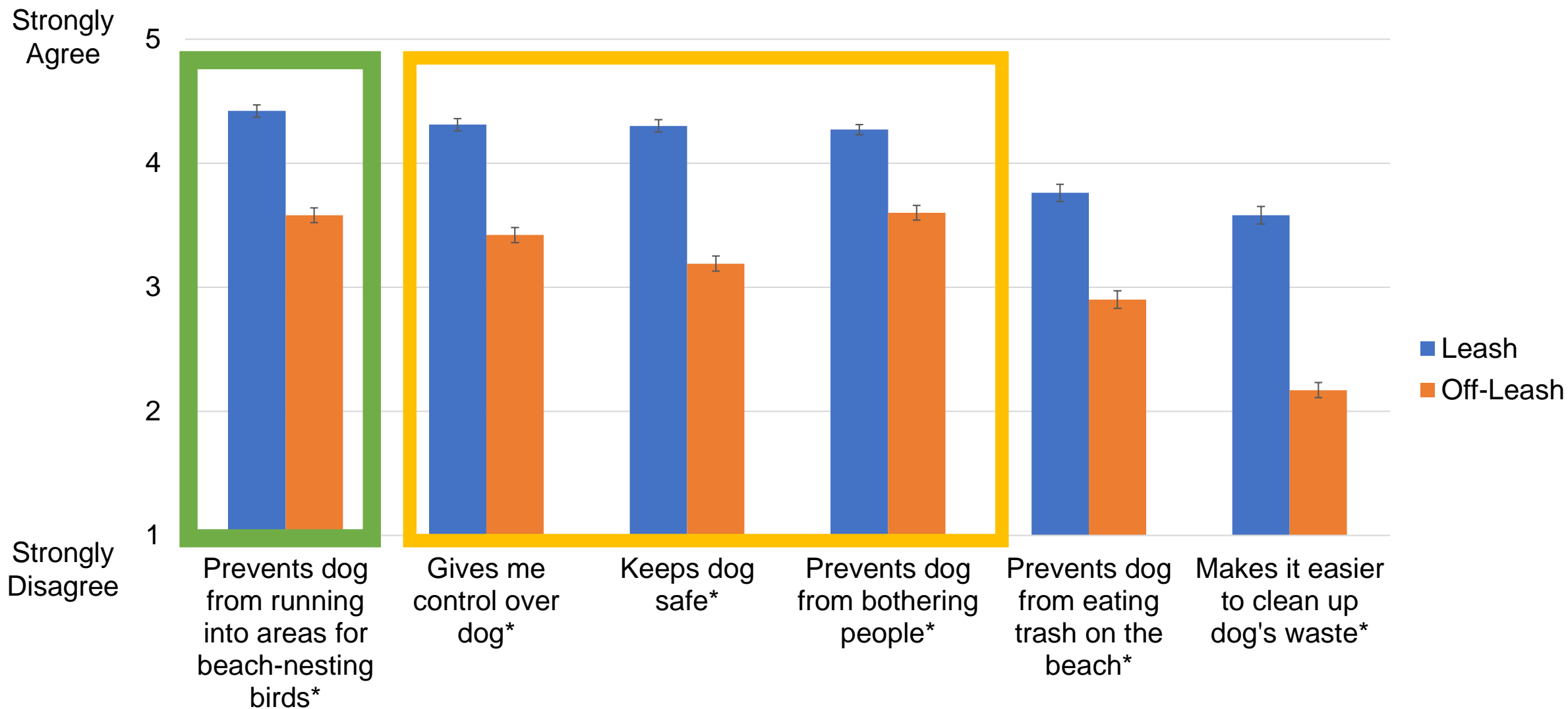
Range of # of Dogs



Leashed or Not Leashed

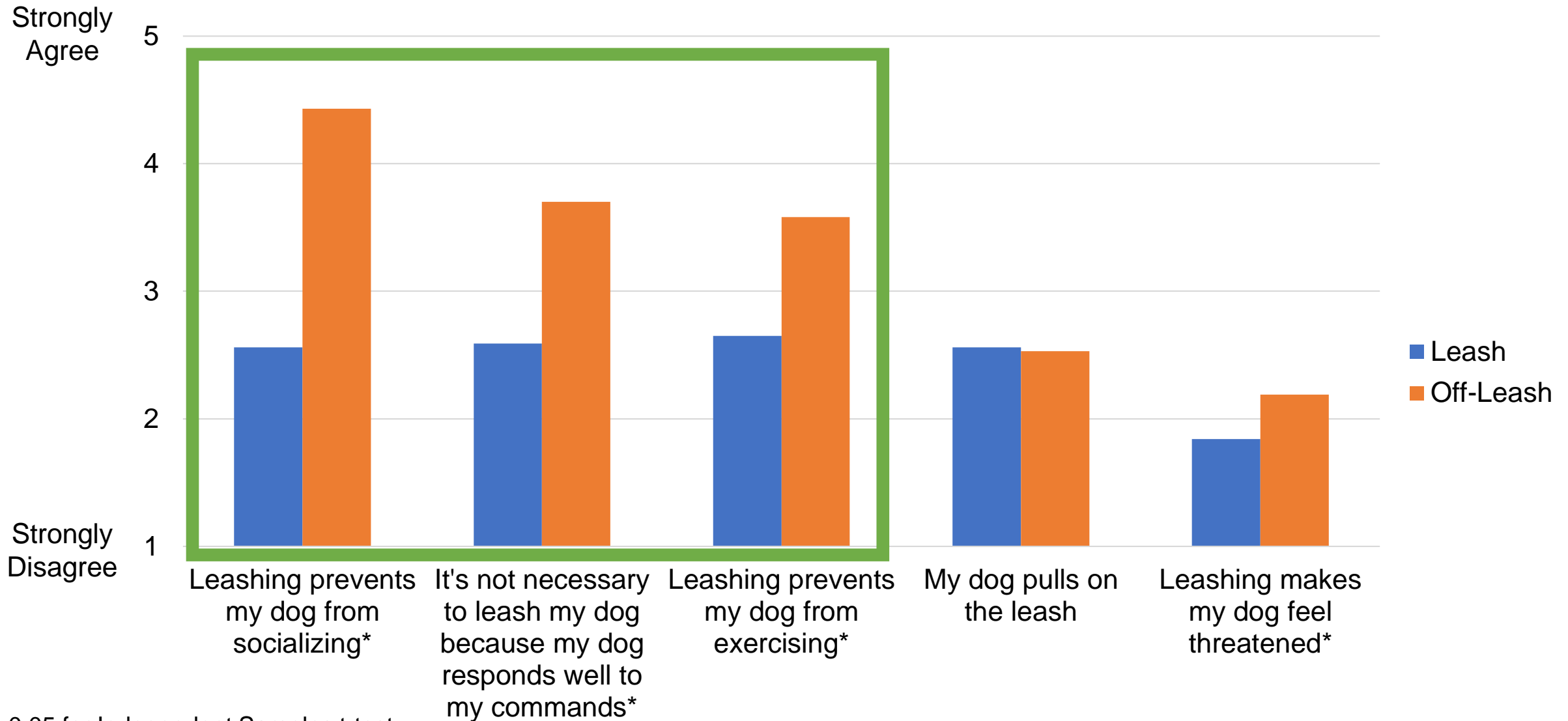


Results: Benefits of Leashing

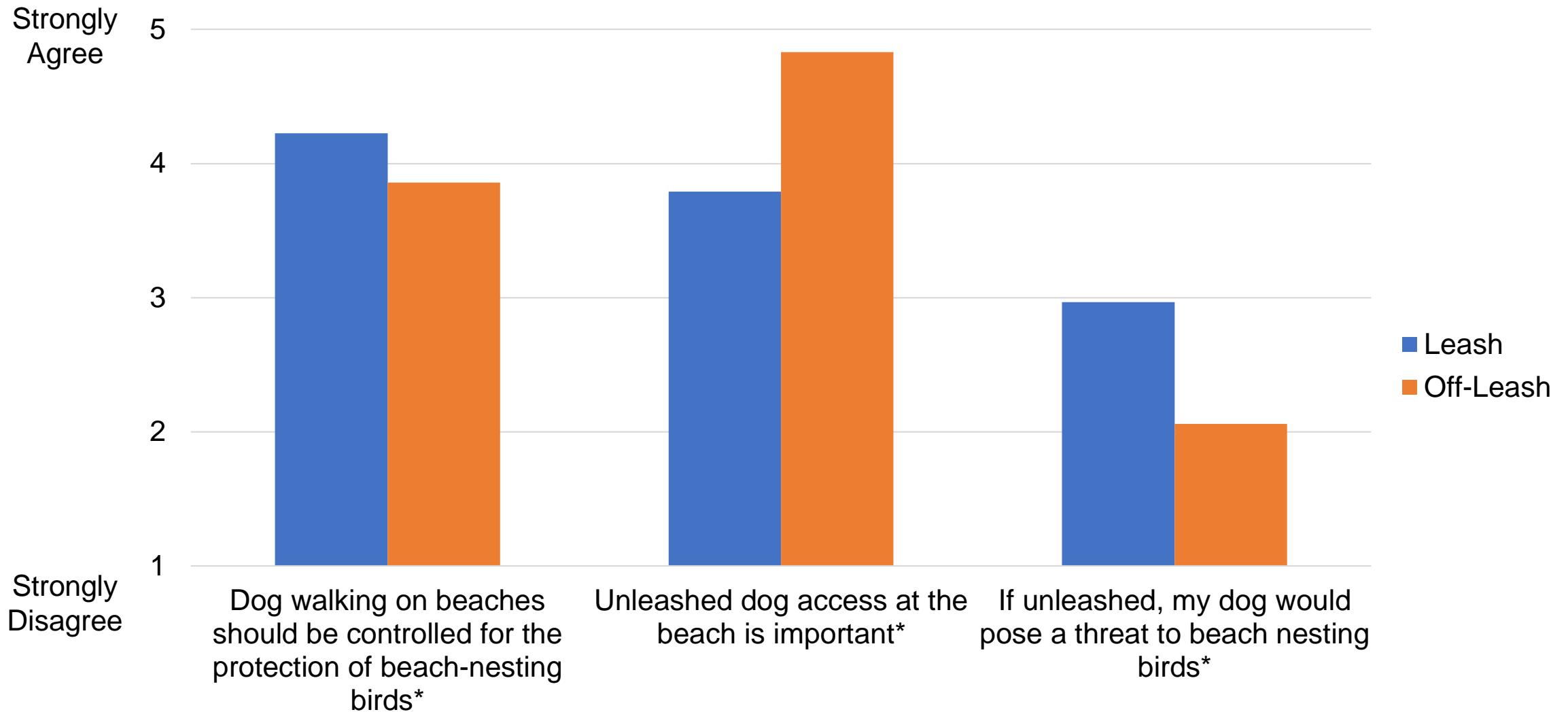


* $p < 0.05$ for Independent Samples t-test

Results: Barriers to Leashing

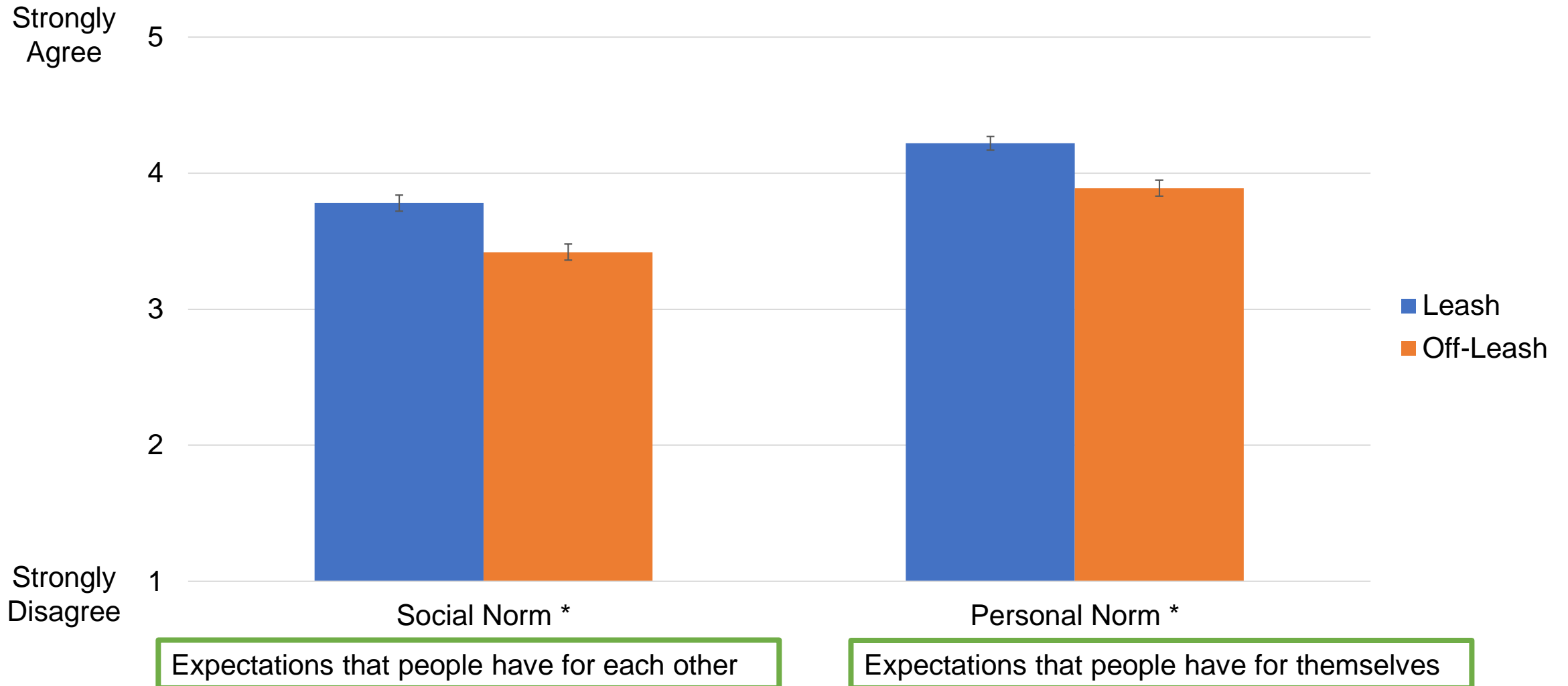


Results: Attitudes About Dogs and Shorebirds



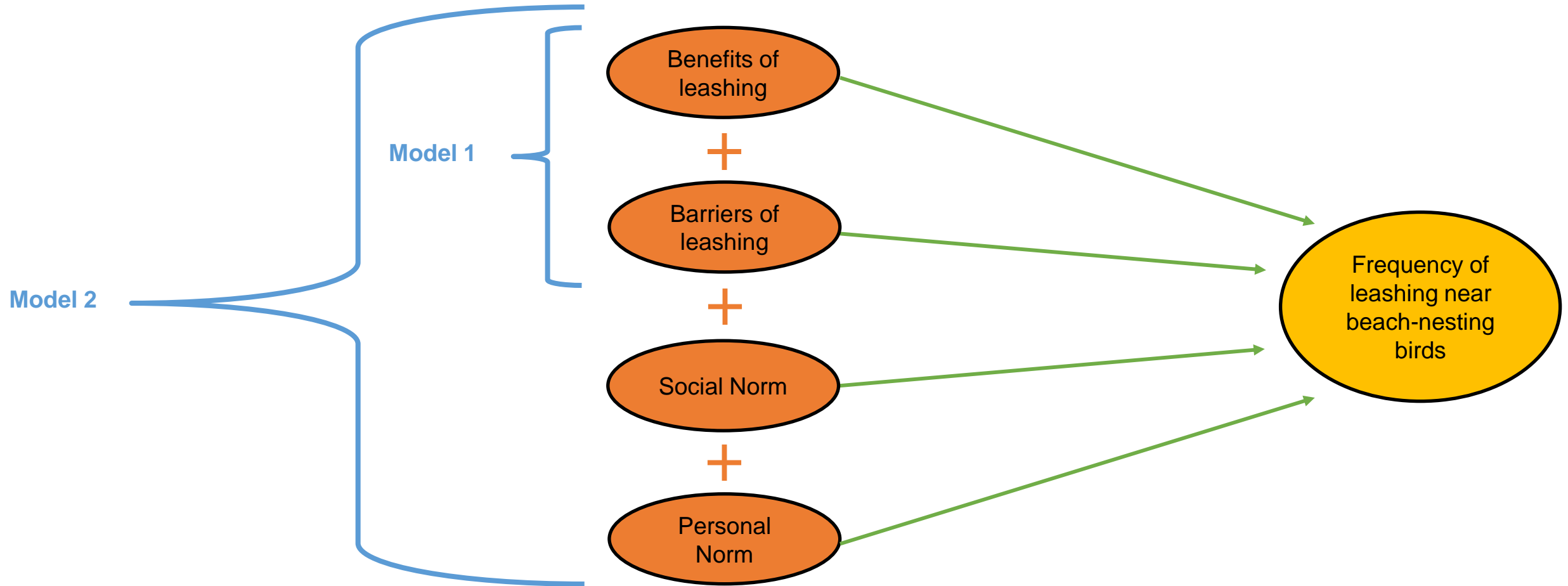
* $p < 0.05$ for Independent Samples t-test

Results: Norms



* $p < 0.05$ for Independent Samples t-test

Results: Predicting Leashing Behavior



Next Step

1. Select a behavior to change

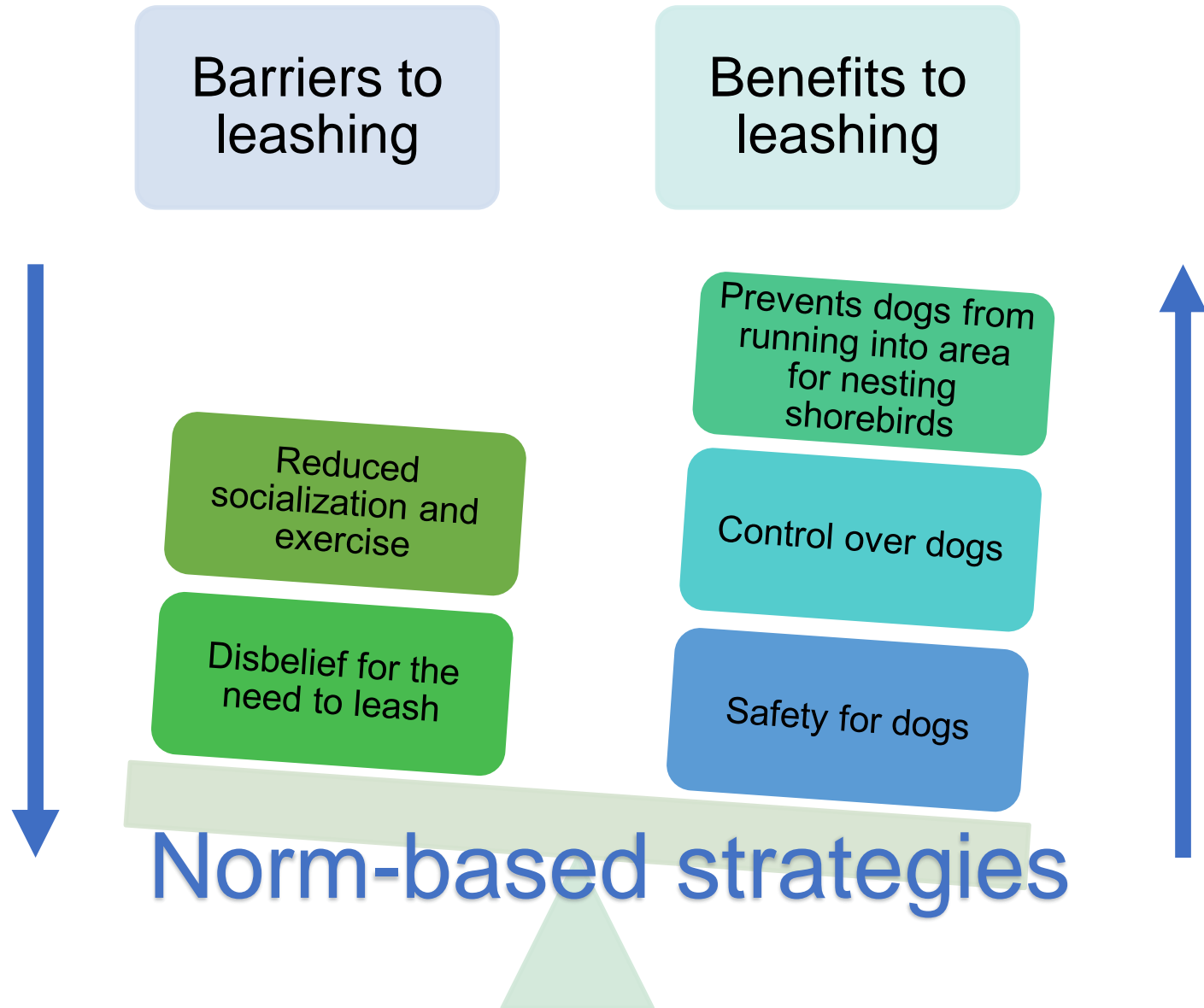
2. Identify barriers and benefits

3. Develop a strategy

4. Pilot the strategy

5. Implement broadly and evaluate

Key Insights



Beach Activity Near Shorebirds



Active beach activities lead
to **MORE** disturbance

Passive activities lead
to **LESS** disturbance

Community-based Social Marketing

1. Select a behavior to change

2. Identify barriers and benefits

3. Develop a strategy

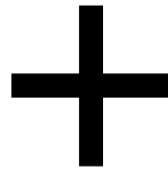
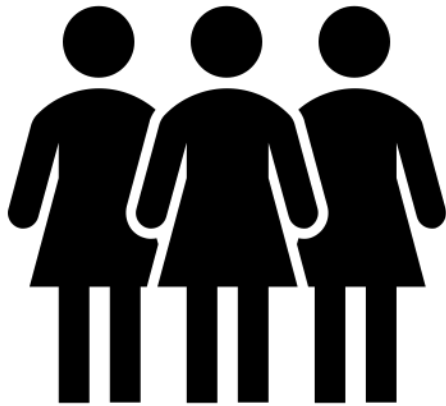
4. Pilot the strategy

5. Implement broadly and evaluate

Community-based Social Marketing

1. Select a behavior to change

2. Identify barriers and benefits



Identify

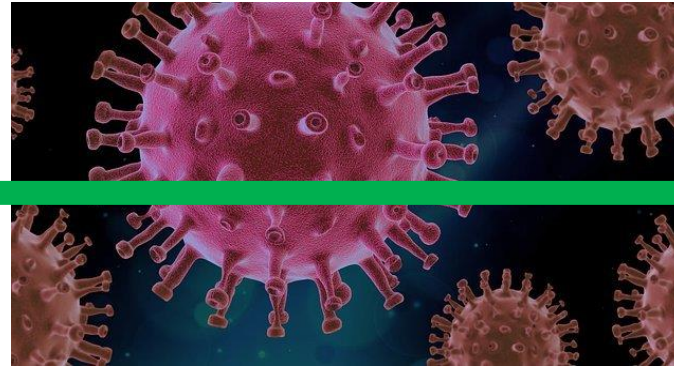
Norms or expectations of oneself and other people

Awareness of consequences that behaviors have on shorebirds

Methods

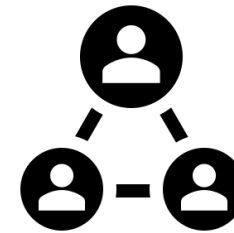
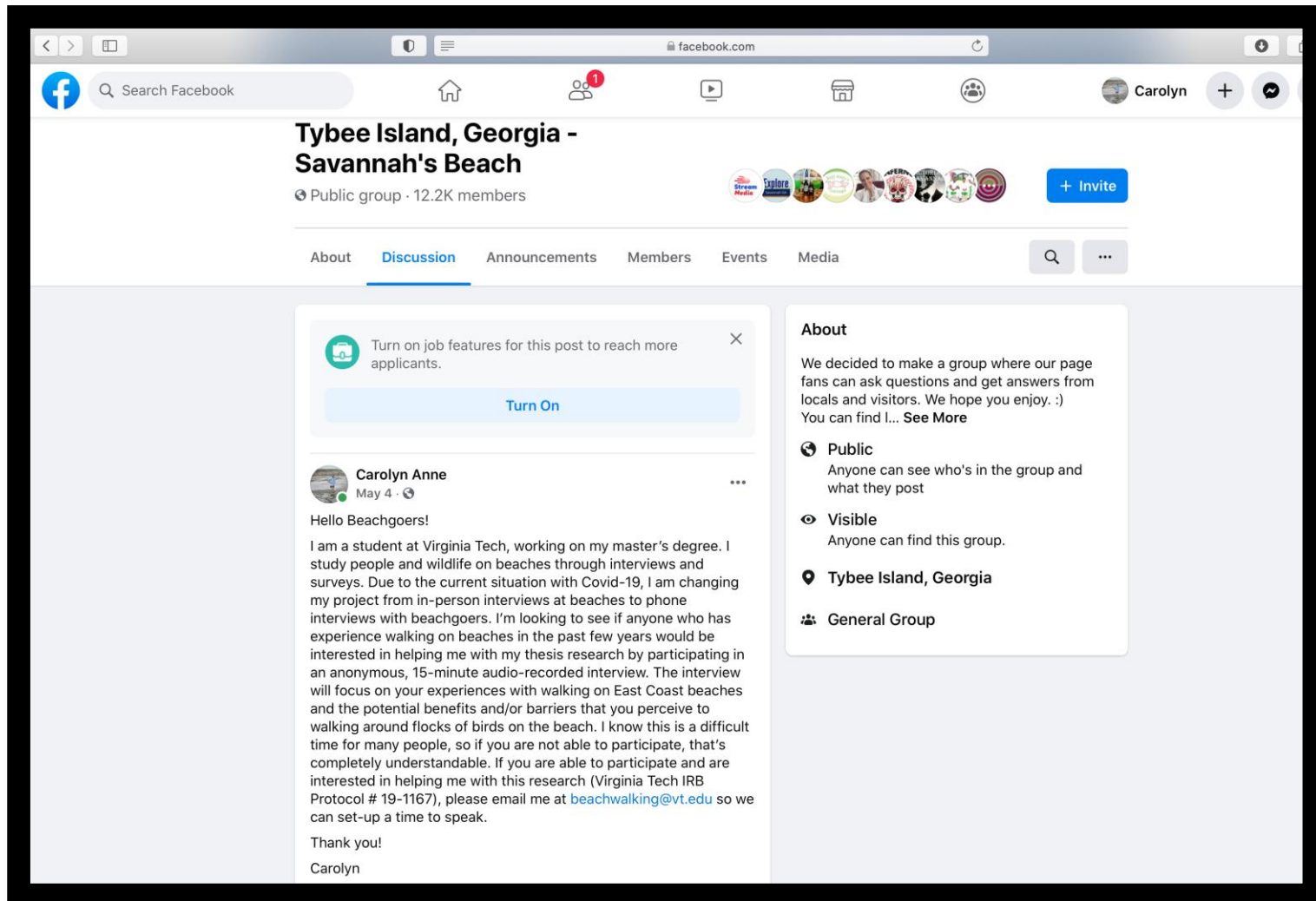


In-person interviews and surveys



Physically distanced approach

Methods: Phone Interview



20 public Facebook group



Beach recreationists with experience walking on East Coast beaches in the last few years



27 phone interviews

Interview Results

It would also be a **benefit for the birds to be able to continue whatever they happen to be doing** at the time. Whether it be eating, or mating, or whatever they happen to do.

I've seen beaches so packed that the only option in the summer is to walk through [shorebird flocks] because there really is no other space to go around...**when you're walking and there's just a flock of birds, you just kinda have to walk through because there's no other option.**

For a lot of birds, at least from my understanding, **if you get too close to their nesting habitat, sometimes the parents will actually abandon the eggs**, and a lot of shorebirds are species with concern, so it's pretty good to just kinda avoid them, and overall it's just a good philosophy to not really insert yourself into nature.

[The shorebirds] are across the whole beach and your only option tends to be to go into the water. It can be difficult to actually get around them.

As far as just flocks on the beach, I **don't know why I would walk around.**



Methods: Online Survey



Online survey



Beach recreationists with experiences walking on East Coast beaches in the last 12 months.

The most sophisticated online survey platform on the planet.

REQUEST DEMO

Over 11,000 brands and 99 of the top 100 business schools use Qualtrics



1. As mentioned before, when we say ocean or bay beaches on the "East Coast," we mean sandy and/or rocky areas along the Atlantic Coast of the United States.
2. When we say "shorebirds," we mean coastal birds that belong to these four categories below:

Oystercatchers



Stilts and Avocets



Plovers



Sandpipers



There are other types of birds that can be seen at beaches such as gulls, pelicans, egrets, and terns. Below are photos of these other types of birds. Although these birds are seen near coastal areas, they are **not** considered shorebirds for the purpose of this survey.

Gulls



Egrets



Pelicans



Terns



We define a **flock of shorebird** as three or more individual shorebirds (from any of the four shorebird categories shown earlier in the survey) that are gathered in a group on land (e.g., eating, resting) or flying together.

Here are some common scenes of shorebird flocks:



Now that we shared with you what we consider to be shorebirds, could you please tell us which image shows shorebirds?

☐

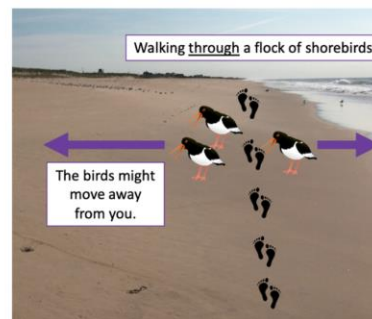


☐



Beach recreationists have diverse perspectives about shorebirds. We would like to learn more about **your** thoughts about walking on beaches where shorebird flocks are present. There are no right or wrong responses.

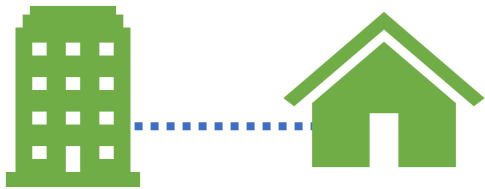
We provide these images to help you understand what we mean by walking around and walking through a flock of shorebirds.



Results: Demographics



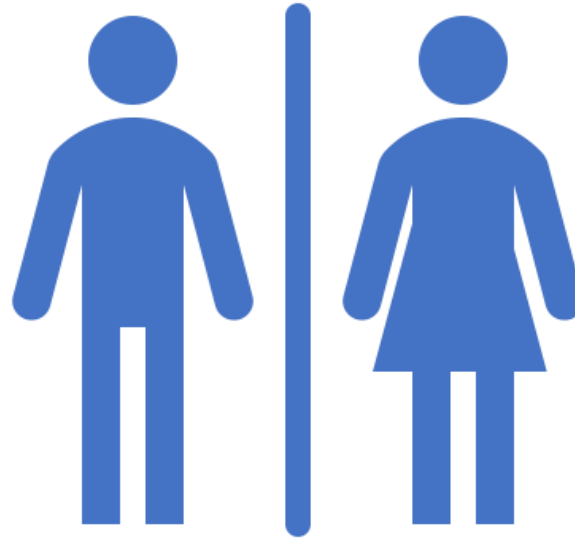
Full-Time = 22%



Part-time = 18%



Vacation = 60%

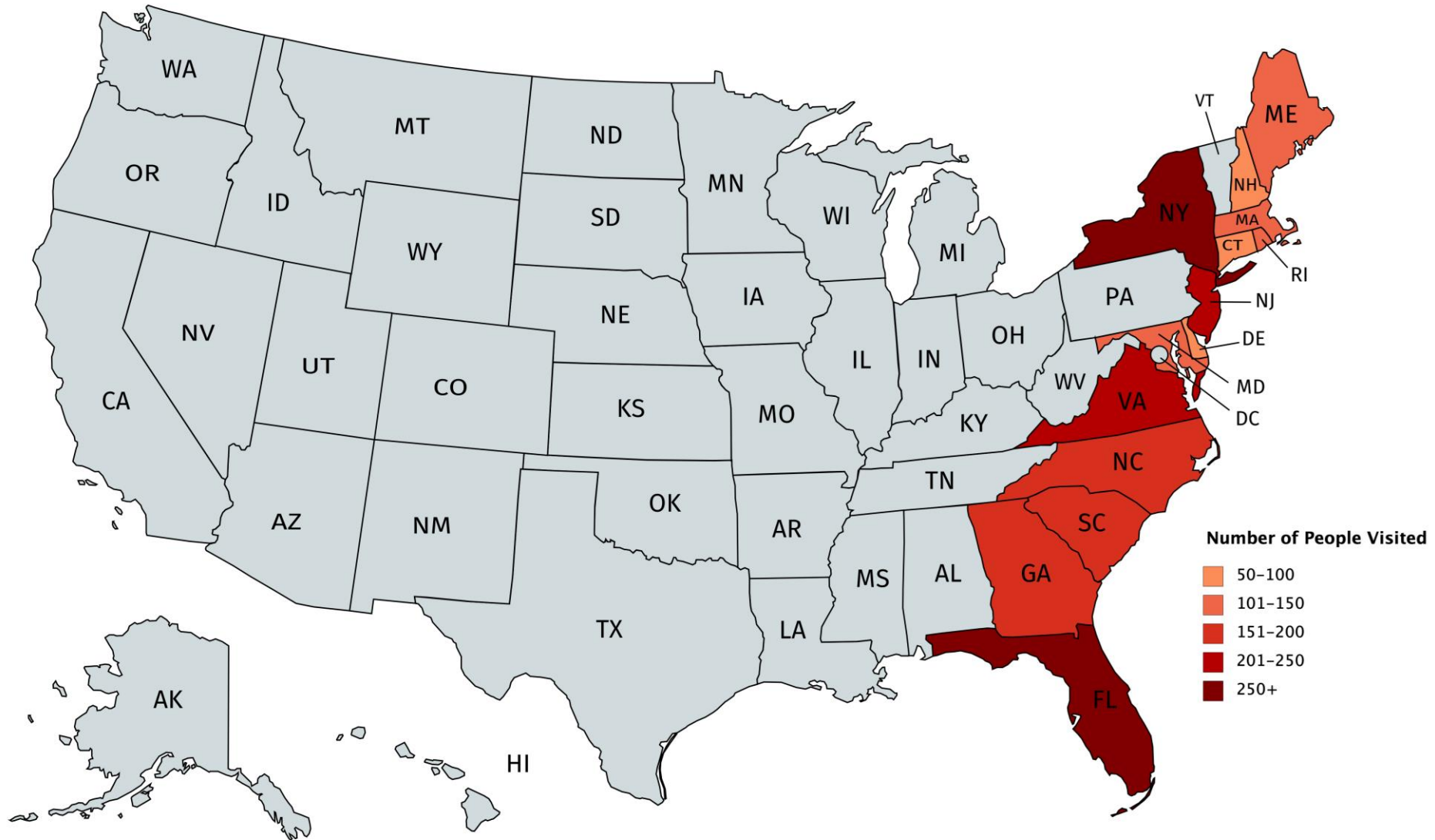


50:50

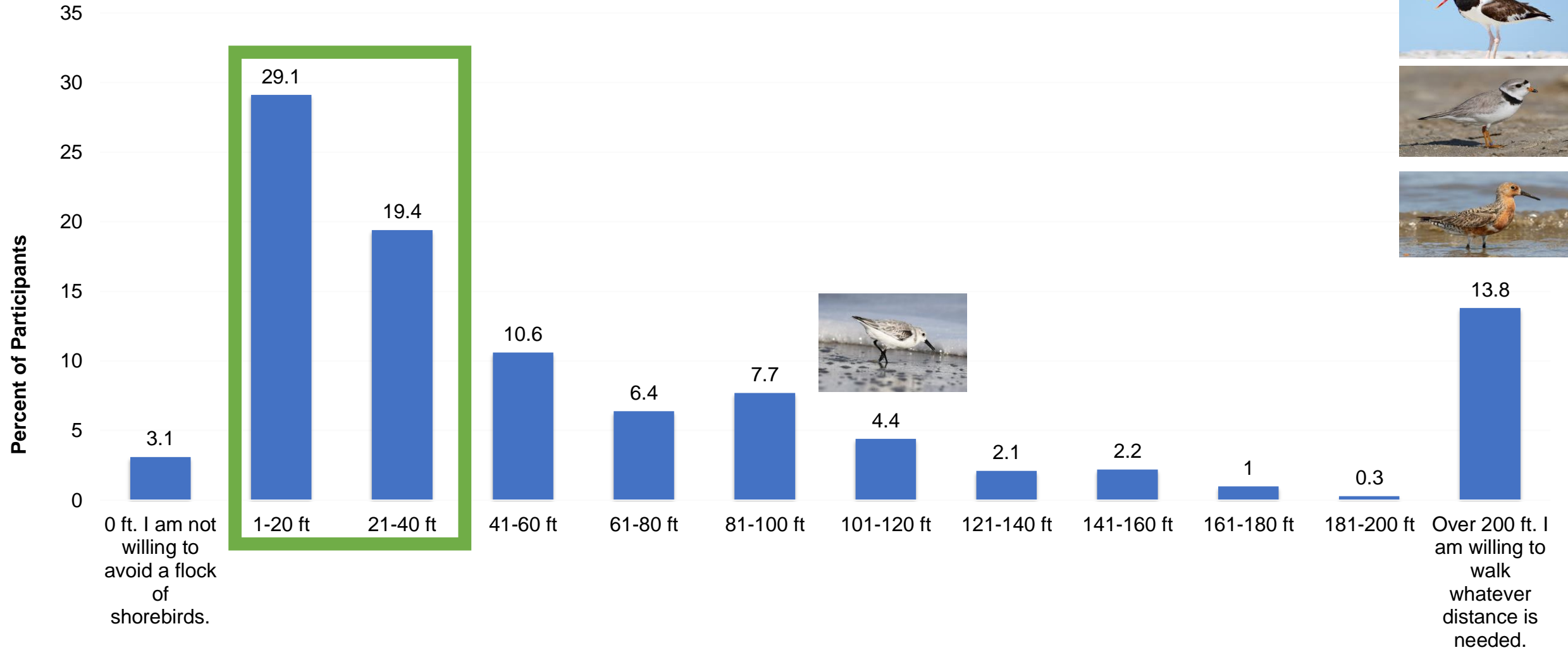
Age Range
18-90

Average
Age 35

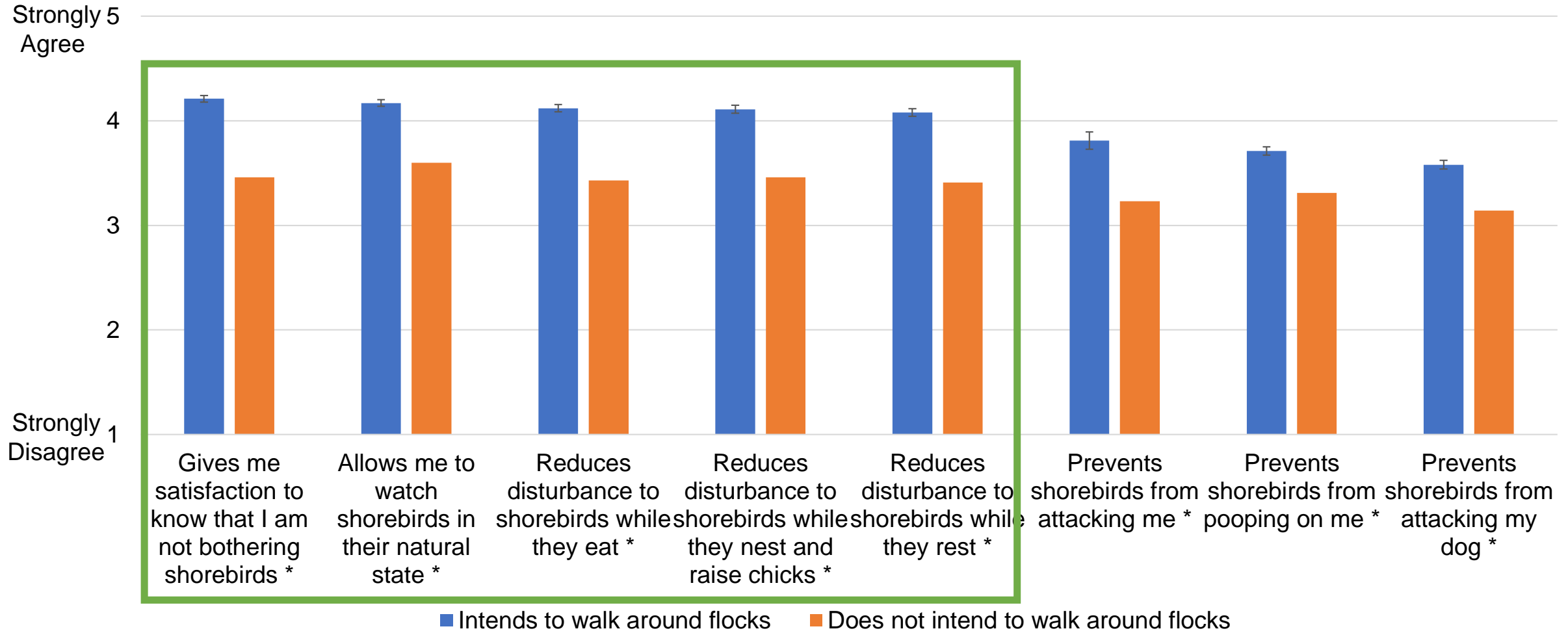
Results: Beaches Visited



Distance Willing to Walk Around A Flock

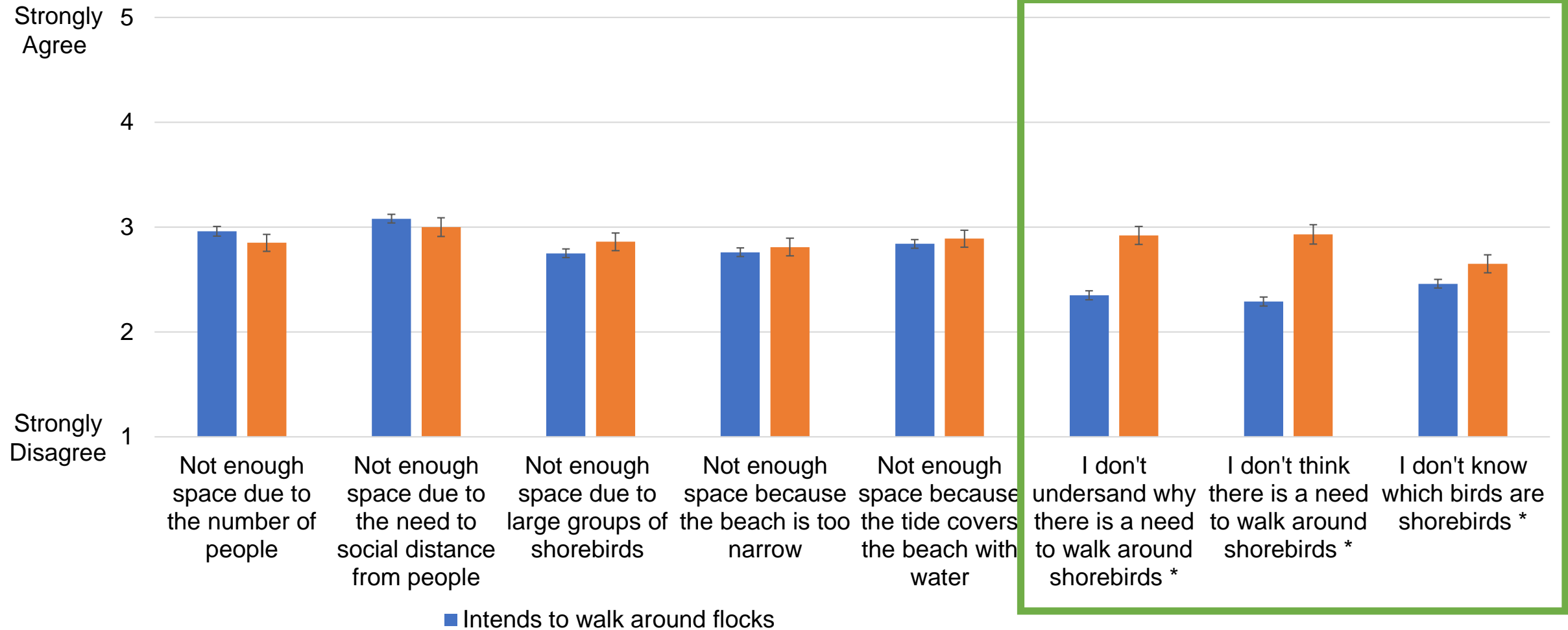


Benefits to Walking Around A Flock



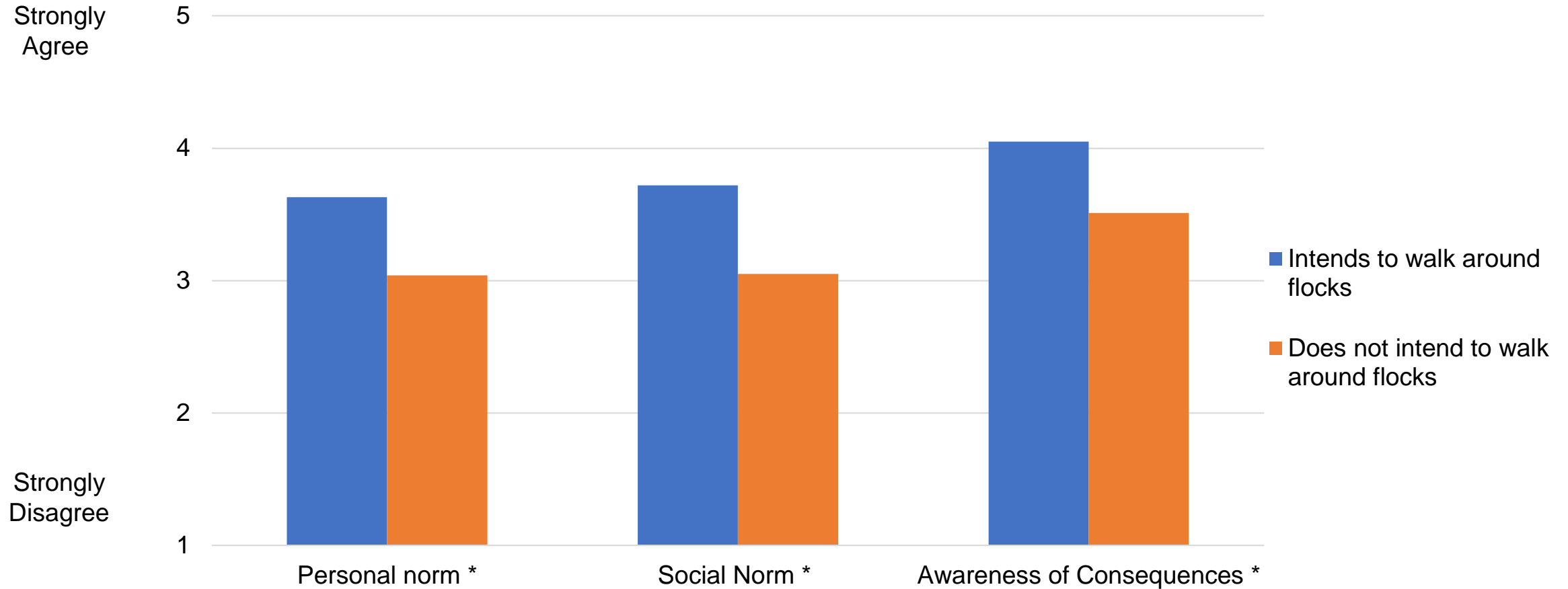
* $p < 0.001$ for Independent Samples T-test

Barriers to Walking Around A Flock



* $p < 0.001$ for Independent Samples T-test

Norms and Awareness



* $p < 0.001$ for
Independent
Samples T-test

Expectations that people
have for themselves

Expectations that people
have for each other

The extent that people understand
how their behavior impacts shorebirds

Next Step

1. Select a behavior to change

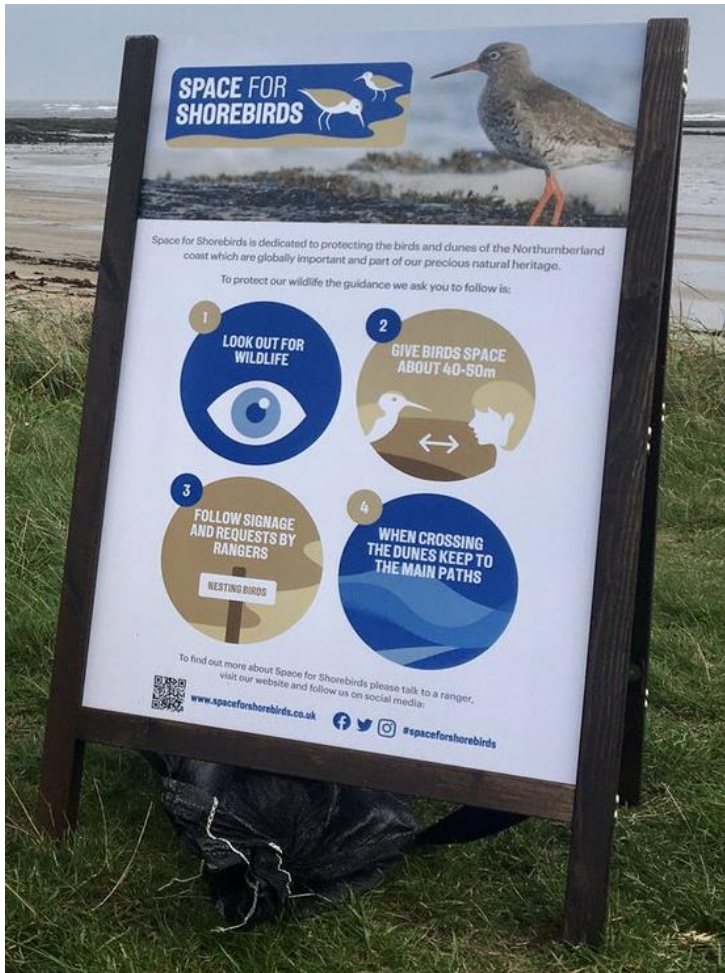
2. Identify barriers and benefits

3. Develop a strategy

4. Pilot the strategy

5. Implement broadly and evaluate

Convincing People to Walk Far Enough

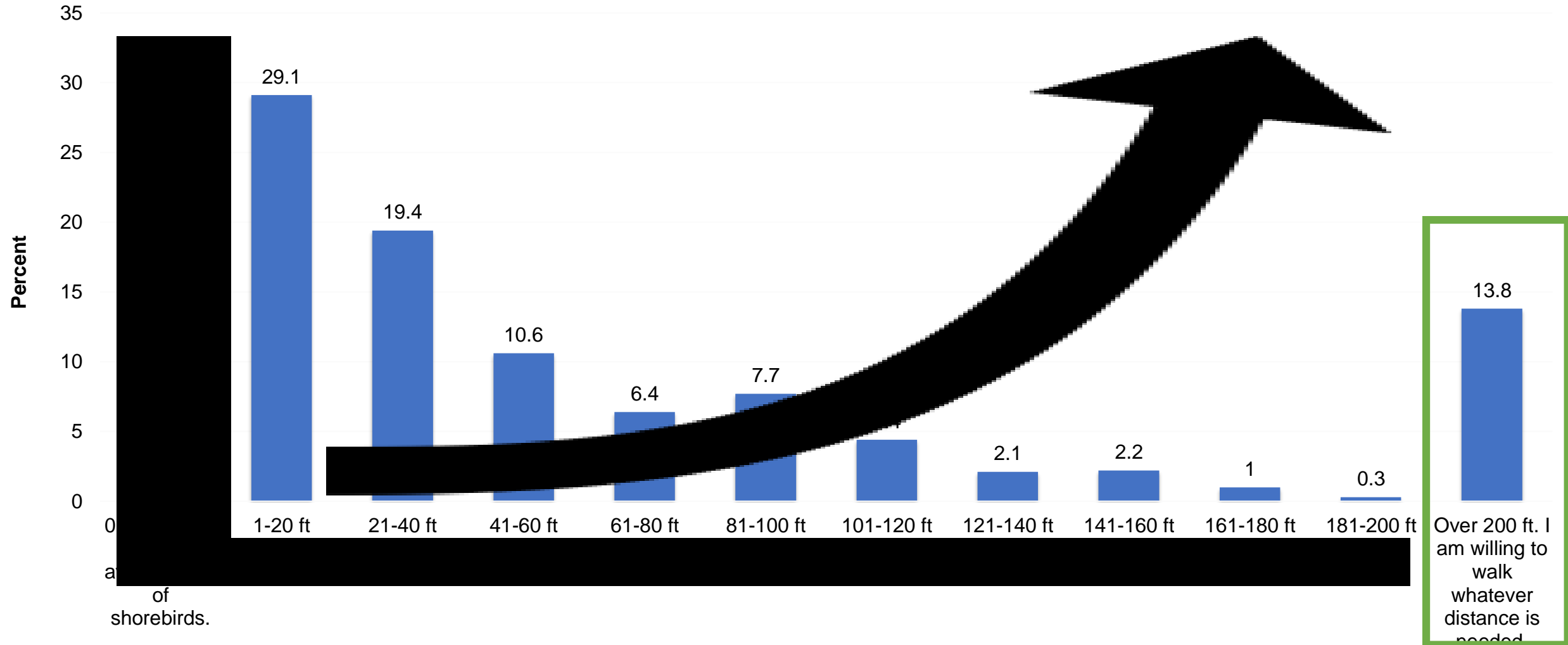


Education-based approach

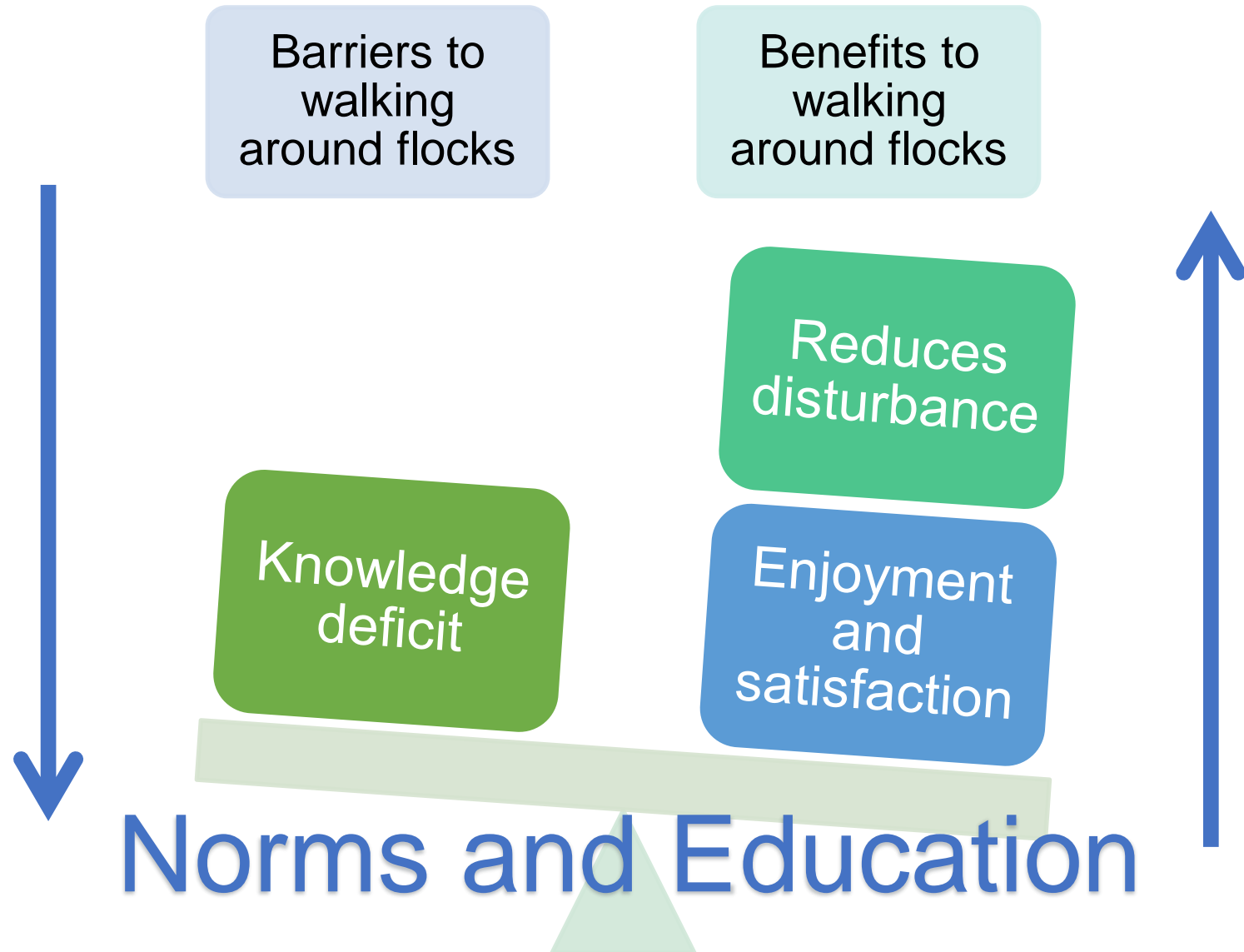


Norm-based approach that models ideal behavior

Management Implications



Key Insights



Developing Strategies: Workshop on Addressing Disturbance

Pride for our birds! (Walk around 1)

1. Emphasis of campaign/strategy
 - a. Establish appreciation of birds/pride in the community as a social norm
 - b. Establish viewing areas (& programs) where people can see but do not disturb birds
 - c. Educating families/schoolkids on the importance of the beach
2. Strategies employing (social norm, comms)



Workshop Outcomes



DOCUMENT THAT BRINGS
TOGETHER DATA FROM THE
SOCIAL AND BIOLOGICAL
STUDIES

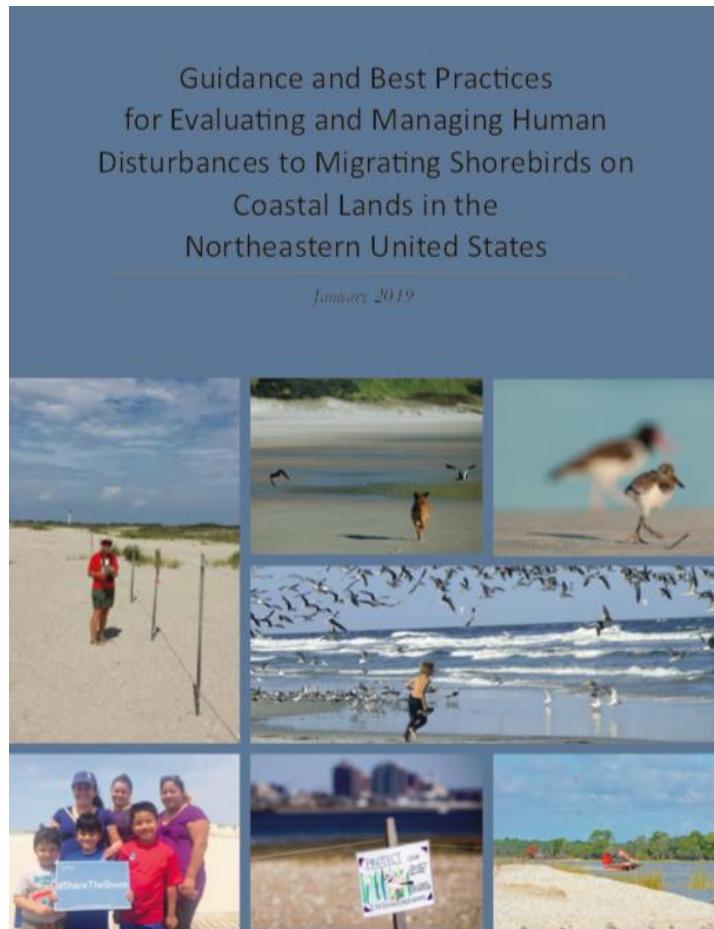


CO-PRODUCED STRATEGIES
FROM THE WORKSHOP

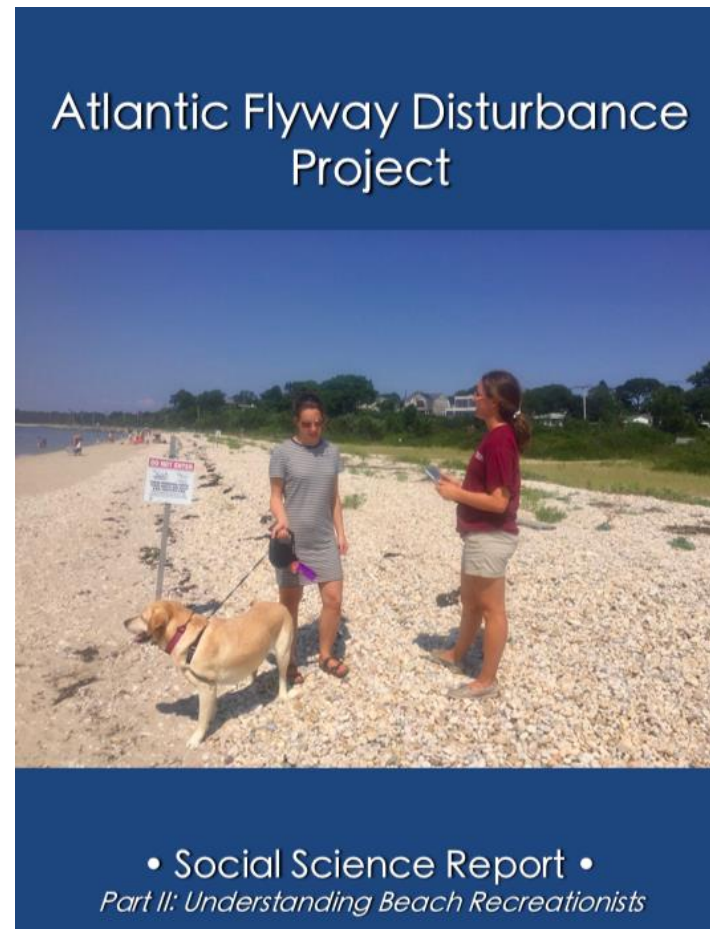


PROVIDE A “MENU” OF
OPTIONS TO ADDRESS HUMAN
USE ON BEACHES AND DOGS
ON BEACHES

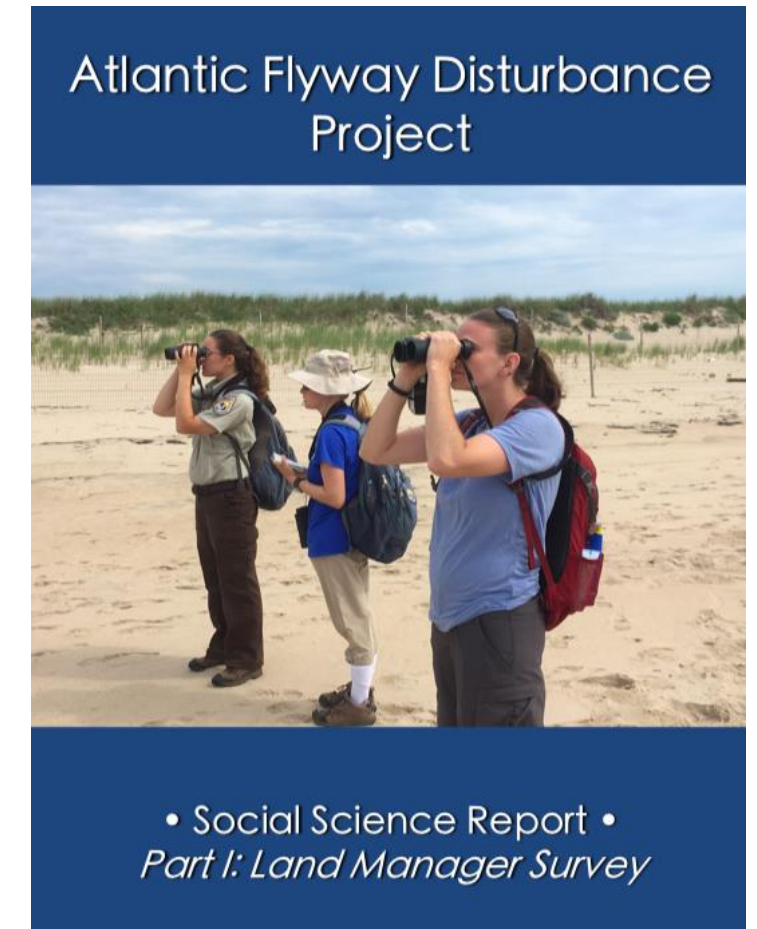
Learn more here...



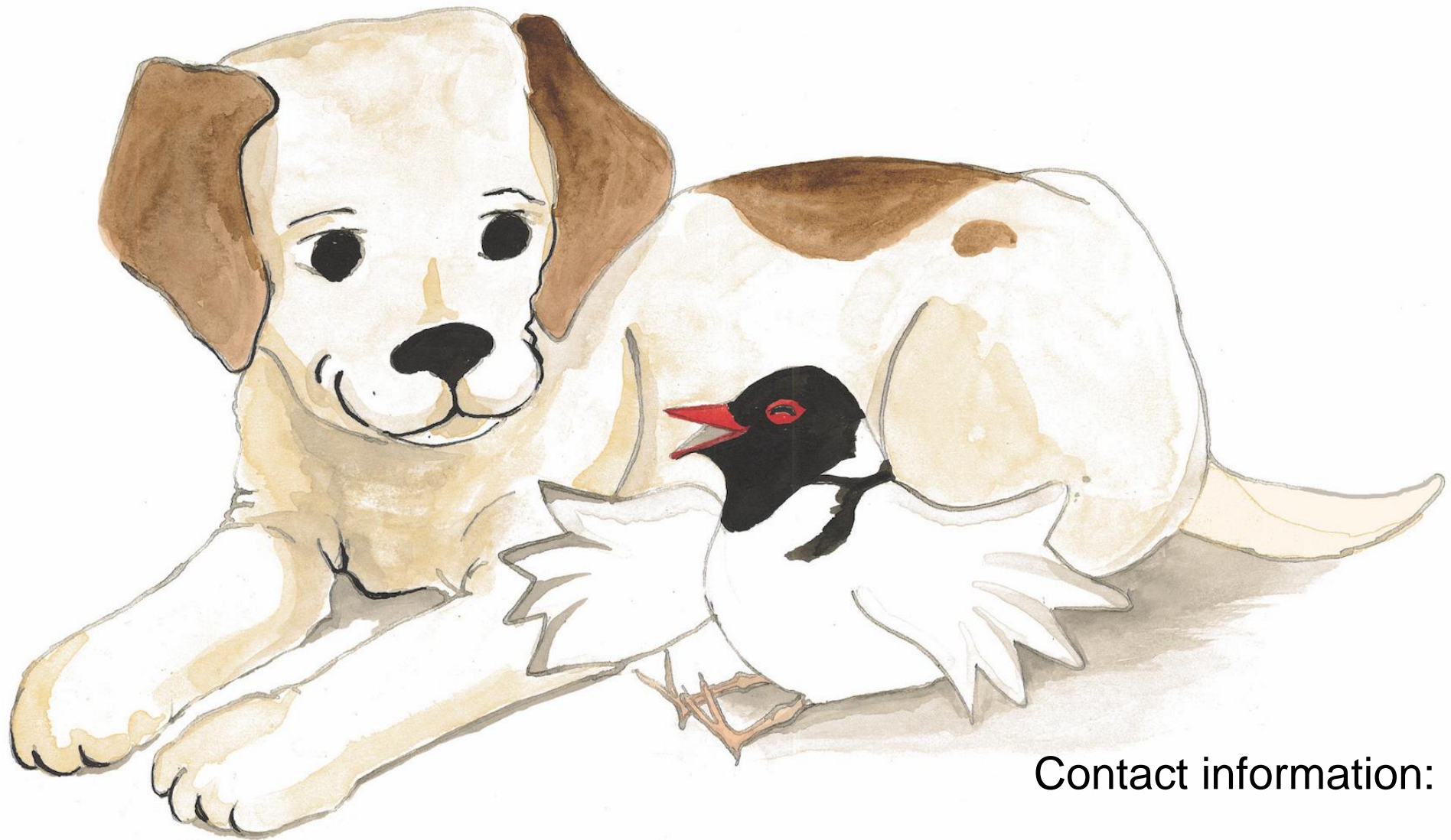
<https://tinyurl.com/migration-bmp>



<https://tinyurl.com/shorebird-CBSM>



<https://tinyurl.com/land-manager-survey>



Contact information:

Ashley Dayer: dayer@vt.edu

twitter.com/dayerlab