

Public Opinion on Sea-Level Rise & Inundation

Good news, bad news, & food for thought



Karen Akerlof, Research Asst. Professor, George Mason University

Preparing for the Rising Tide:

Adapting to Climate Change in the Mid-Atlantic

MARCO Climate Change Action Team Workshop

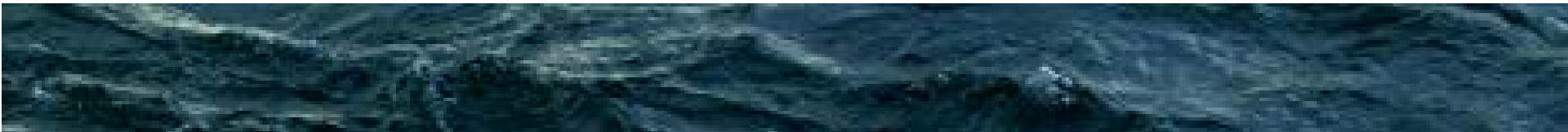
December 11, 2012 | DoubleTree Hotel, Wilmington, DE

Problems in detecting – and acting on – sea-level rise risks

- 1) Slowly “creeping” problem, long-term, largely invisible
- 2) Difficult to isolate from other coastal processes
(erosion, flooding, saltwater intrusion)
- 3) Scientific uncertainty as to magnitude and rate
- 4) Not considered immediate concern
- 5) Uncertainties in policy making context and process

Alsopolitical / “cultural” polarization?

Moser, S. C. (2005). Impact assessments and policy responses to sea-level rise in three US states: An exploration of human-dimension uncertainties. *Global Environmental Change Part A*, 15(4), 353–369.



SLR as a political punch line ...



“President Obama **promised to begin to slow the rise of the oceans and heal the planet.** MY promise...is to help you and your family”

August 30, 2012

1. Determine whether cultural/political polarization influencing public perceptions
2. Develop a deliberative model for public engagement, including a viewer providing the public with household-level SLR impacts data (flooding, inundation, projected damage \$)
3. Assess changes in policy preferences, risk perceptions, knowledge, especially across potentially polarized groups
4. Determine usefulness and replicability of engagement model for other communities

Study Goals

Project Team



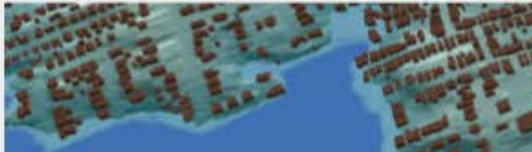
Funder



Sponsors

1. **Pre-survey** of random sample of Anne Arundel County adult residents (n=378)
2. **Post-survey** after daylong deliberative community event, employing sea-level rise and coastal flooding visualization, small-group discussion, and experts Q&A (n=40)
3. **Online sea-level rise viewer** for Anne Arundel County, developed for public use. County, neighborhood, and individual property impact data for three scenarios through year 2100.

FUTURE COAST



Step 1: Find a Location

Search by Street Address or Use the Map to Find a Location:

Search Address Clear Address

Address for Point of Interest (Approximate):
1456 Cedarhurst Rd, Shady Side, MD 20764, USA

Step 2: Choose a Scenario and Year

<p>Choose Scenario <i>(Find out more):</i></p> <p>Historic Trend</p> <p>Low Acceleration</p> <p>Moderate Acceleration</p>	<p>Choose Year:</p> <p>2012</p> <p>2025</p> <p>2050</p> <p>2075</p> <p>2100</p>
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Step 3: View Summary of Estimated Impacts

Building Neighborhood County

Neighborhood Level Summary

Map data ©2012 Google - Terms of Use Report a map error

Reset ALL



Visualize Sea-Level Rise Impacts



Take the Surveys, Compare your Results to Others



Host a Discussion



Citizens' Discussion April 28th

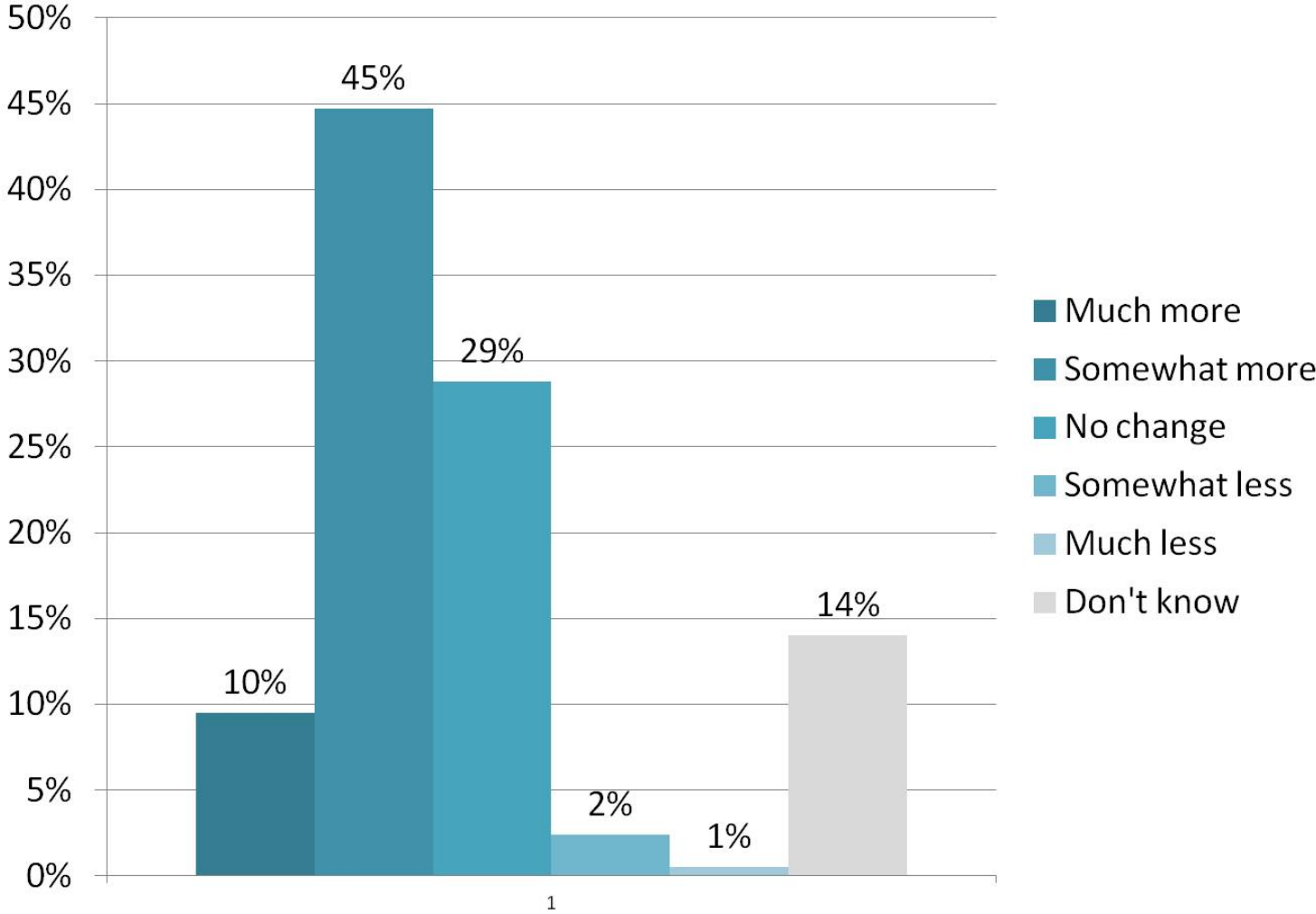


Good News



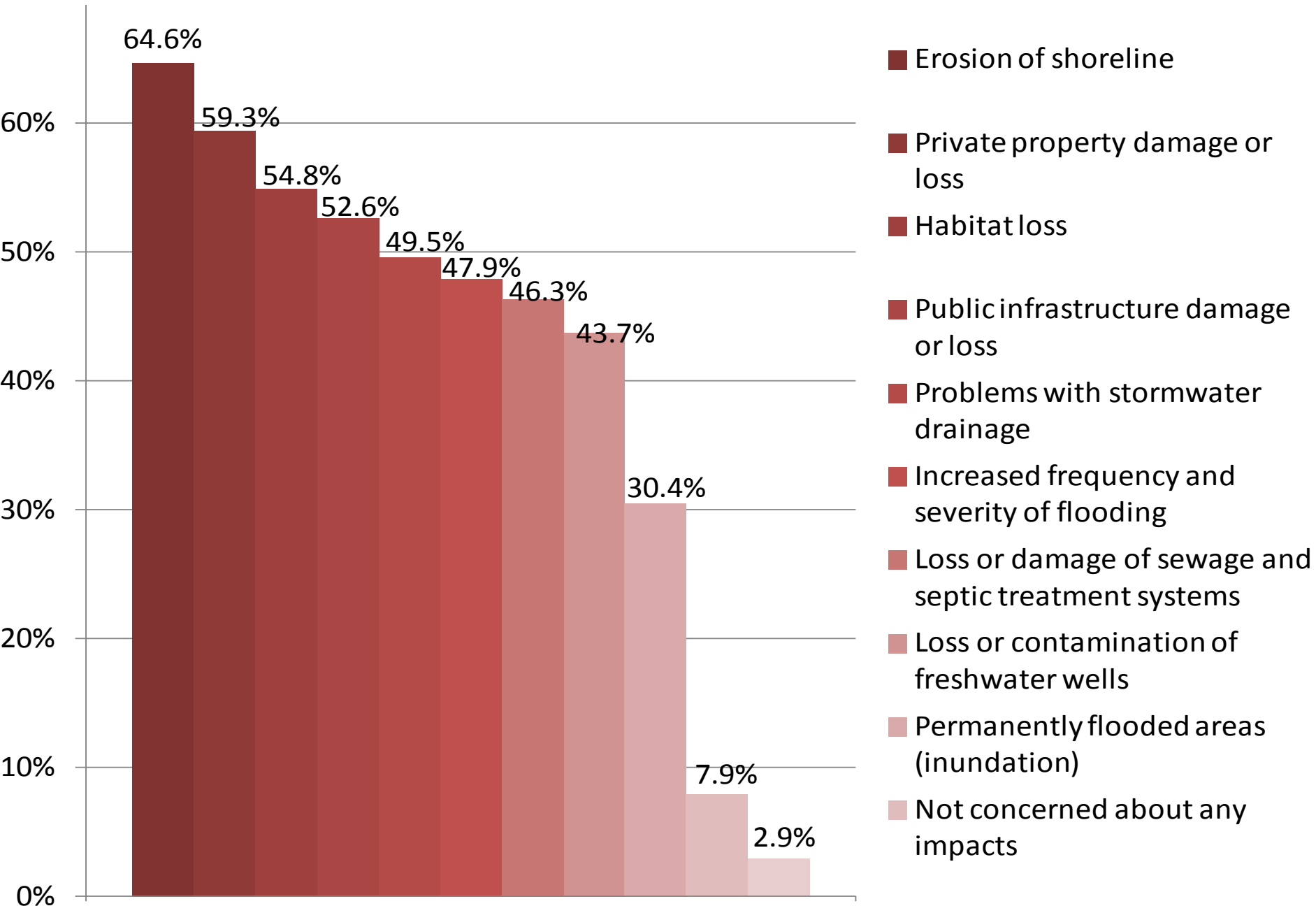


In your opinion, has coastal flooding become more or less of a problem in the county in recent years? *n*=376

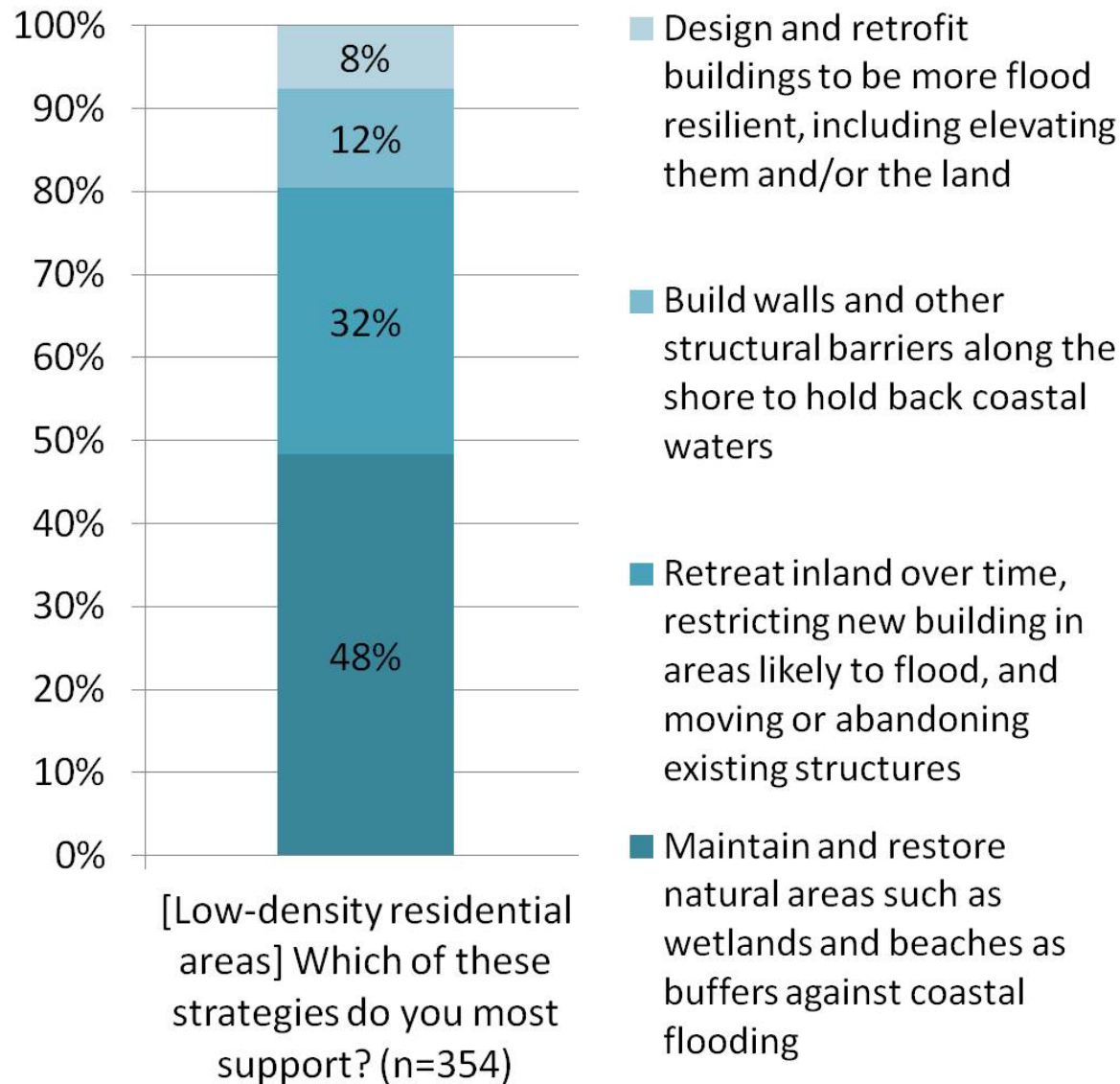


Problem recognition

Which impacts from sea-level rise, if any, are you most concerned about within the county? *n=378* *Multiple responses accepted*



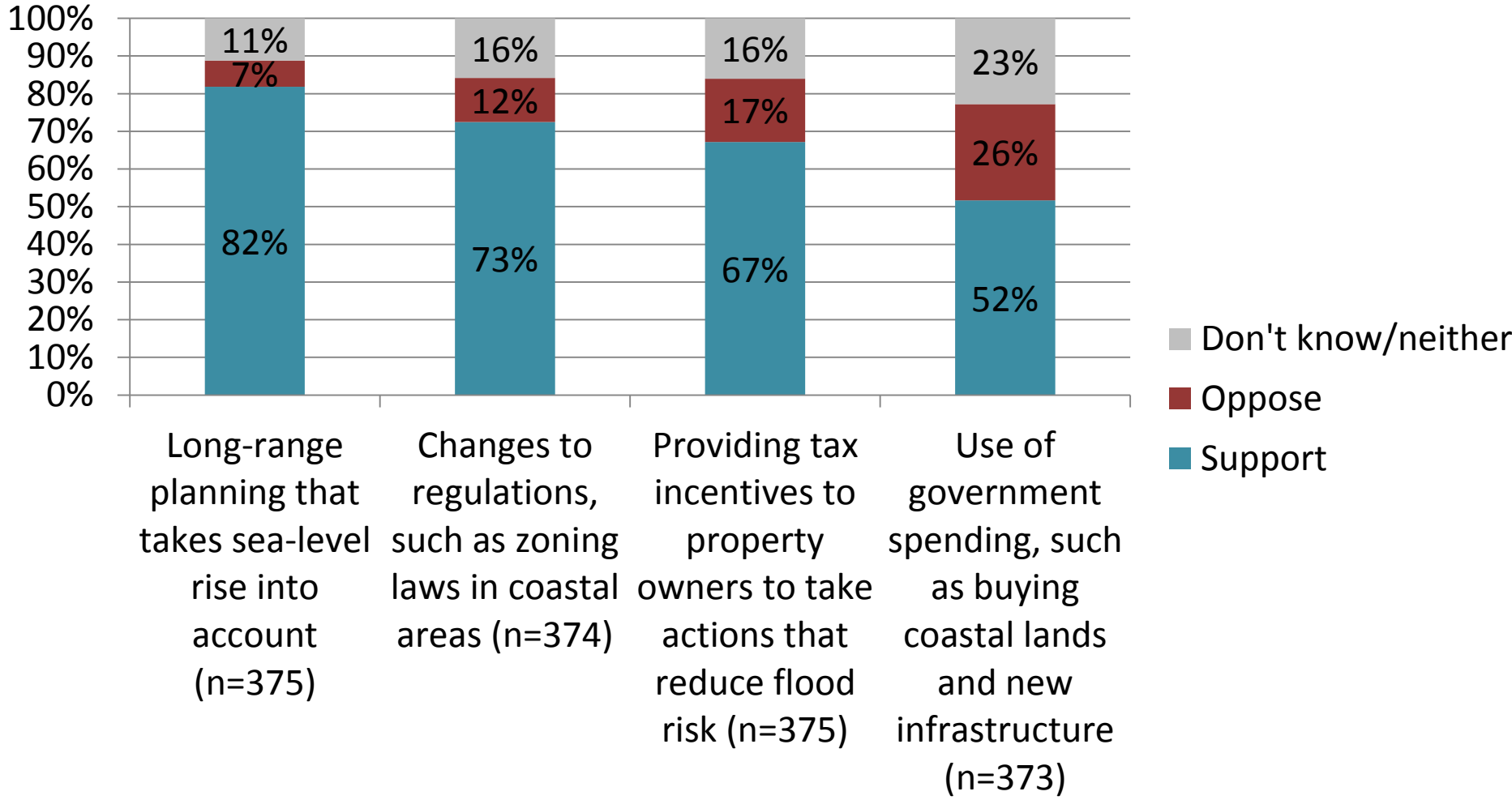
Policy preferences for built areas



Support for natural buffers over structural barriers



Local governments have different types of policy tools they can use. How much do you support or oppose their use of these types to limit the impacts of coastal flooding due to sea-level rise?



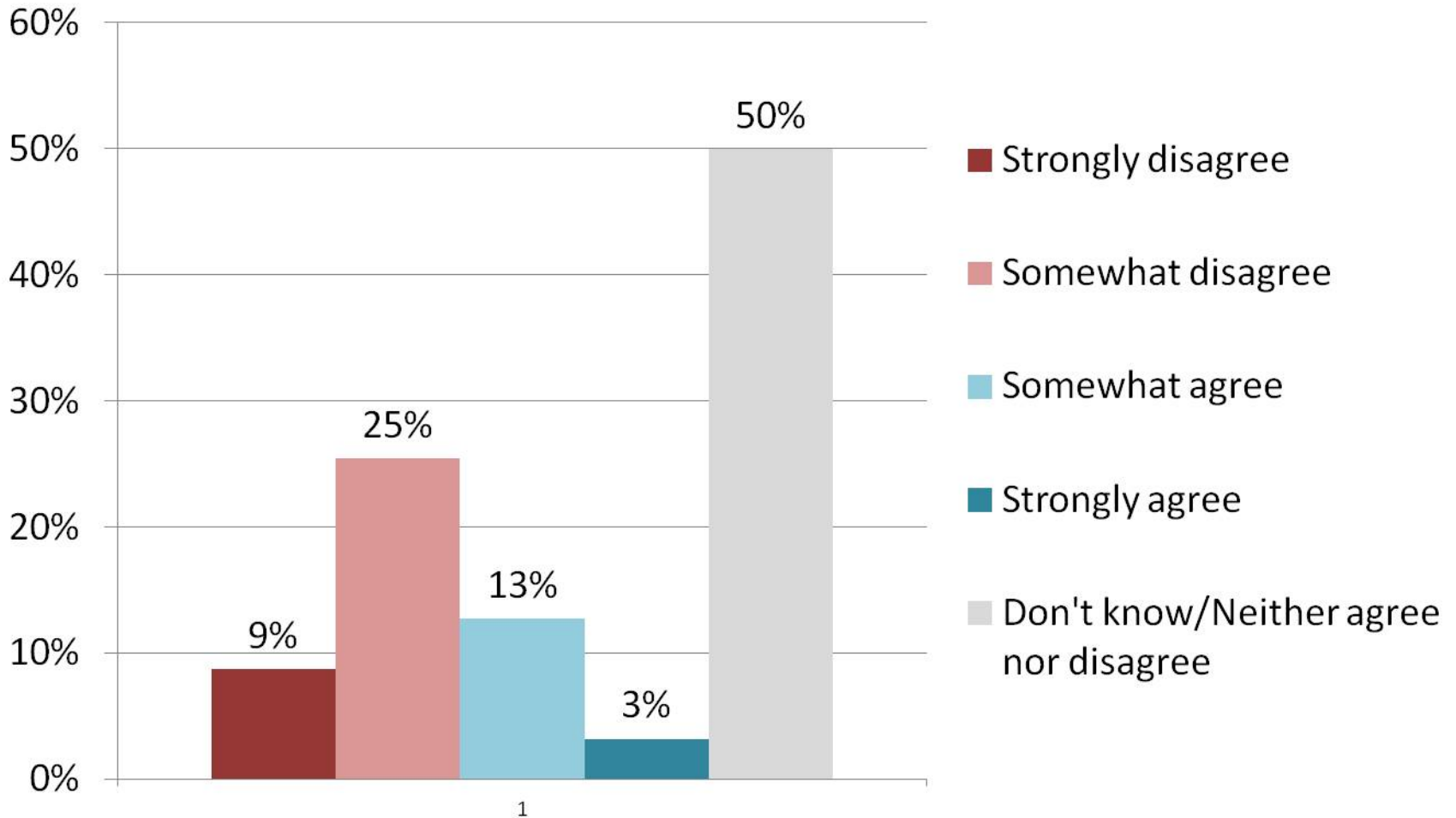
Majority support for multiple types of policy mechanisms, including government spending



Bad News

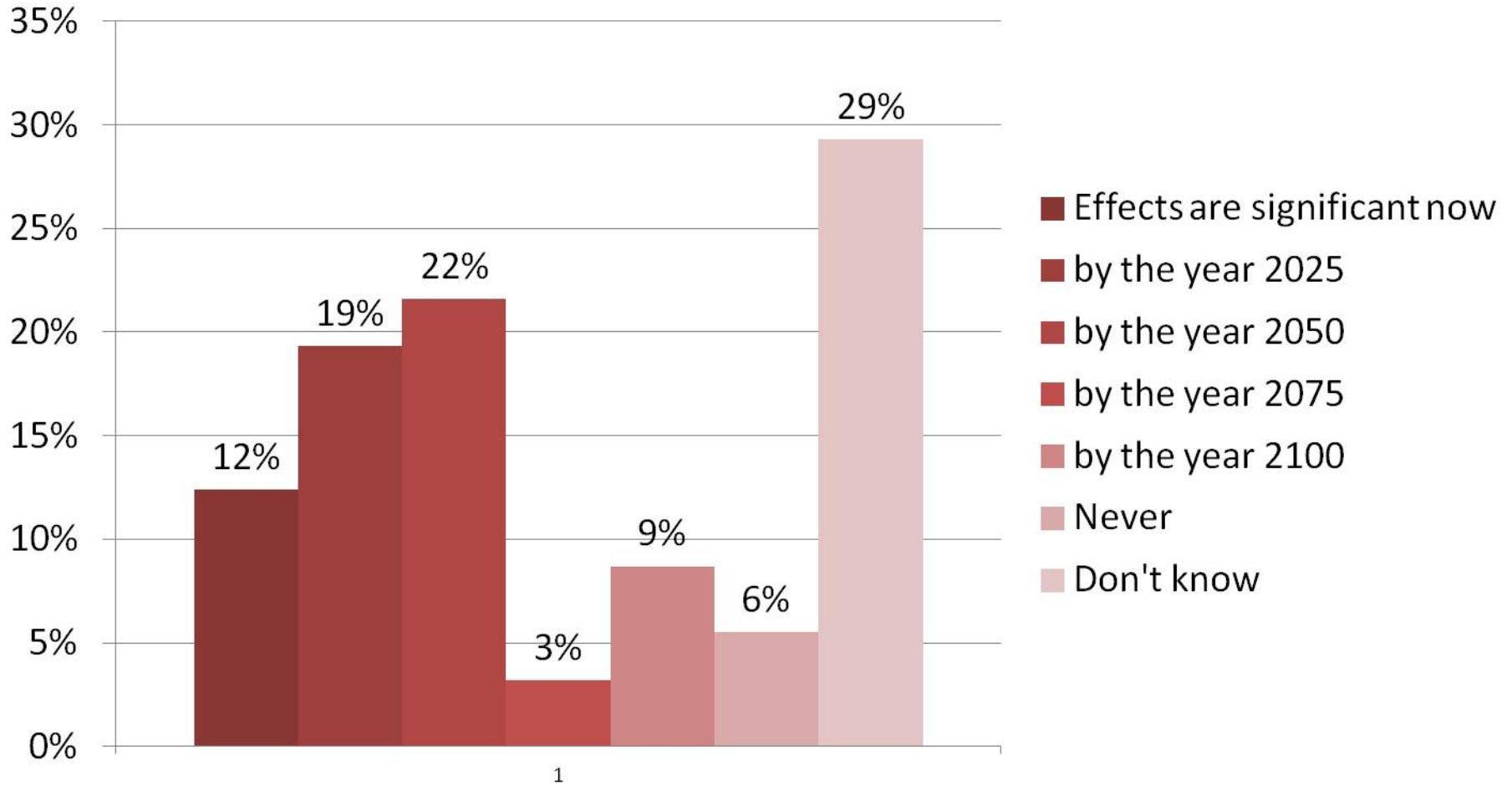


Would you agree or disagree that your local government's policies are adequate for addressing coastal flooding over the long term (e.g., over a decade or more)? *n*=376



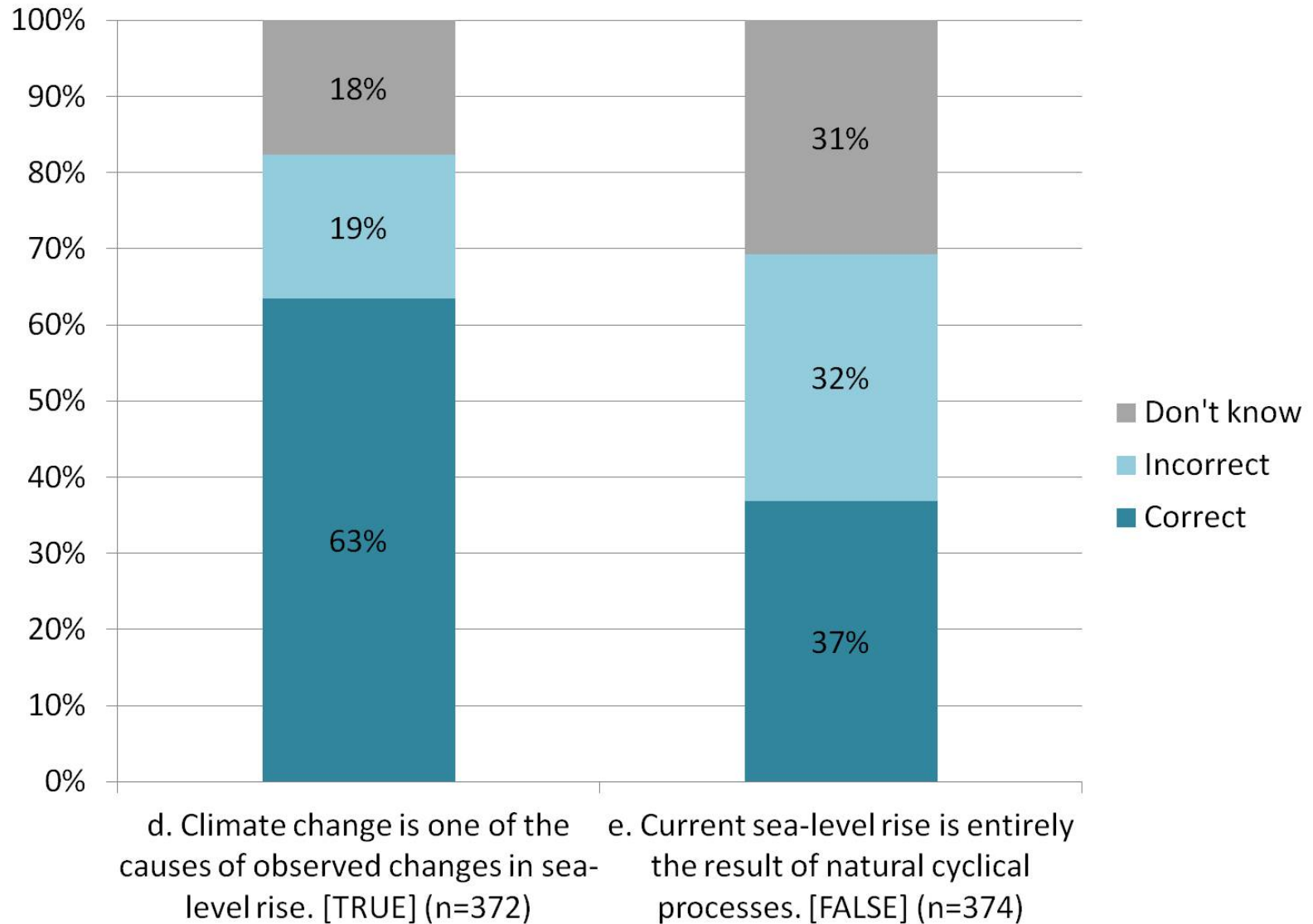
Uncertainty about whether policies are adequate

When do you believe the effects of sea-level rise will significantly impact the county, if ever? *n=377*



Uncertainty about timing of impacts

Knowledge about Sea-Level Rise



Majority think SLR caused by climate change, but almost half of those think it is also “natural”



The opposing tribes

GRID

Hierarchist

Hierarchical individualists

- *Individuals should be free from societal constraints to pursue their own interests*
- *Some people in society should have more power than others due to status*

Hierarchical Communitarianism

GROUP

Individualist

Communitarian

Egalitarian solidarists

- *People in society should work together collectively for the common good*
- *There should be little difference in the amount of power of any person*

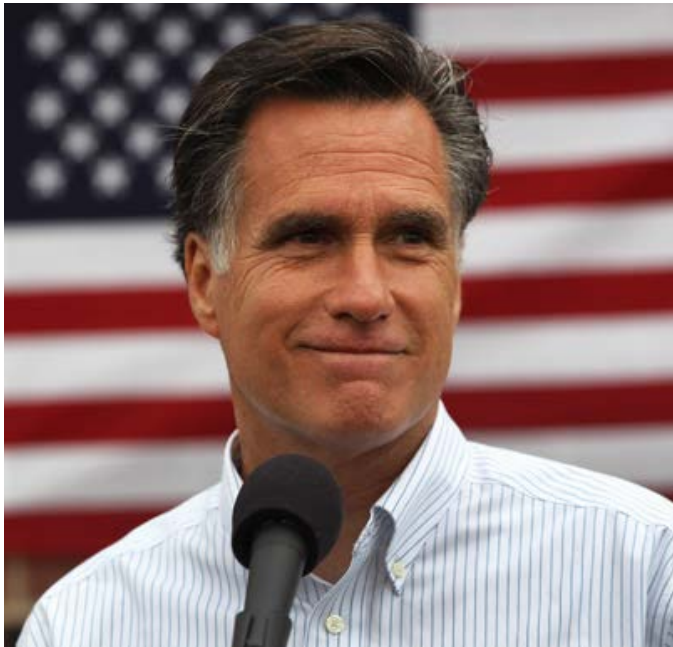
Egalitarian Individualism

Egalitarian

Cultural Cognition Project
 Dan Kahan, Yale Law School
www.culturalcognition.net/



What influences public perceptions of SLR risk?

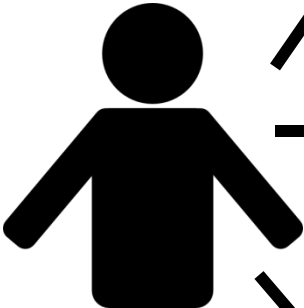


“Tribal” beliefs?



or proximity to risk?

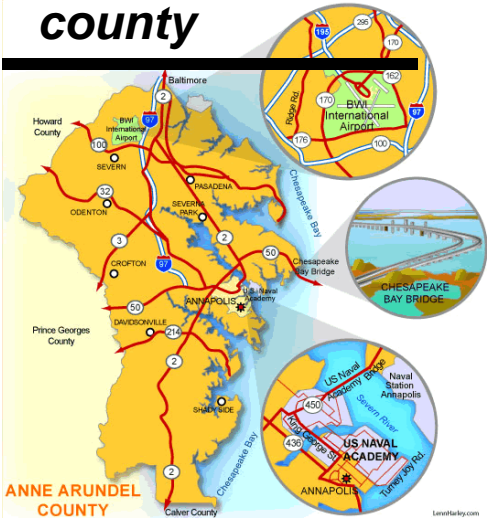
Largest decision-making factors in assessing sea-level rise risks to my ...



What do my political and cultural values tell me?

How close is my neighborhood to coastal and flood-prone areas?

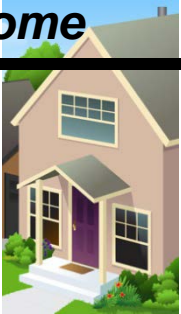
How close is my house to coastal and flood-prone areas?



neighborhood



own home

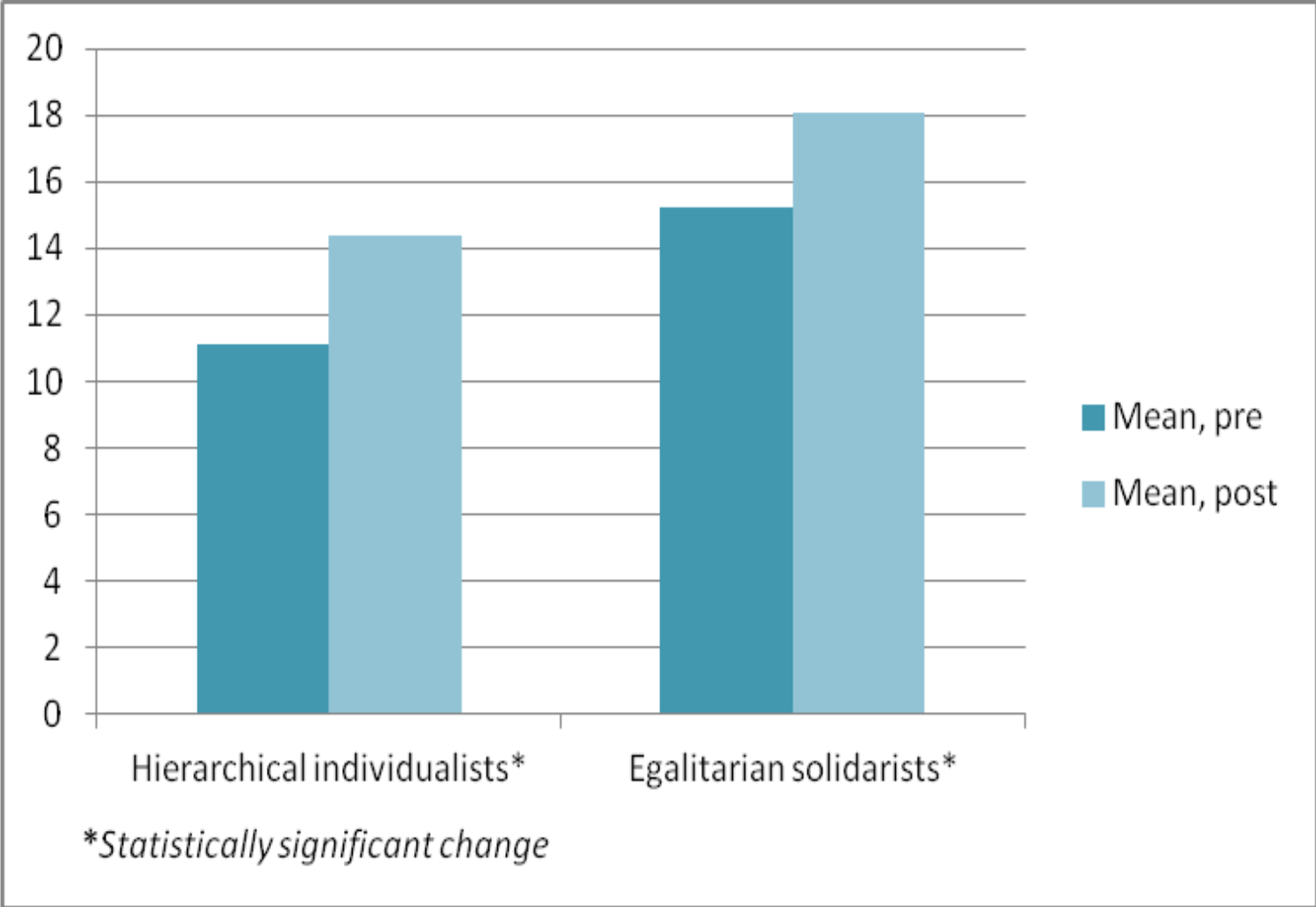




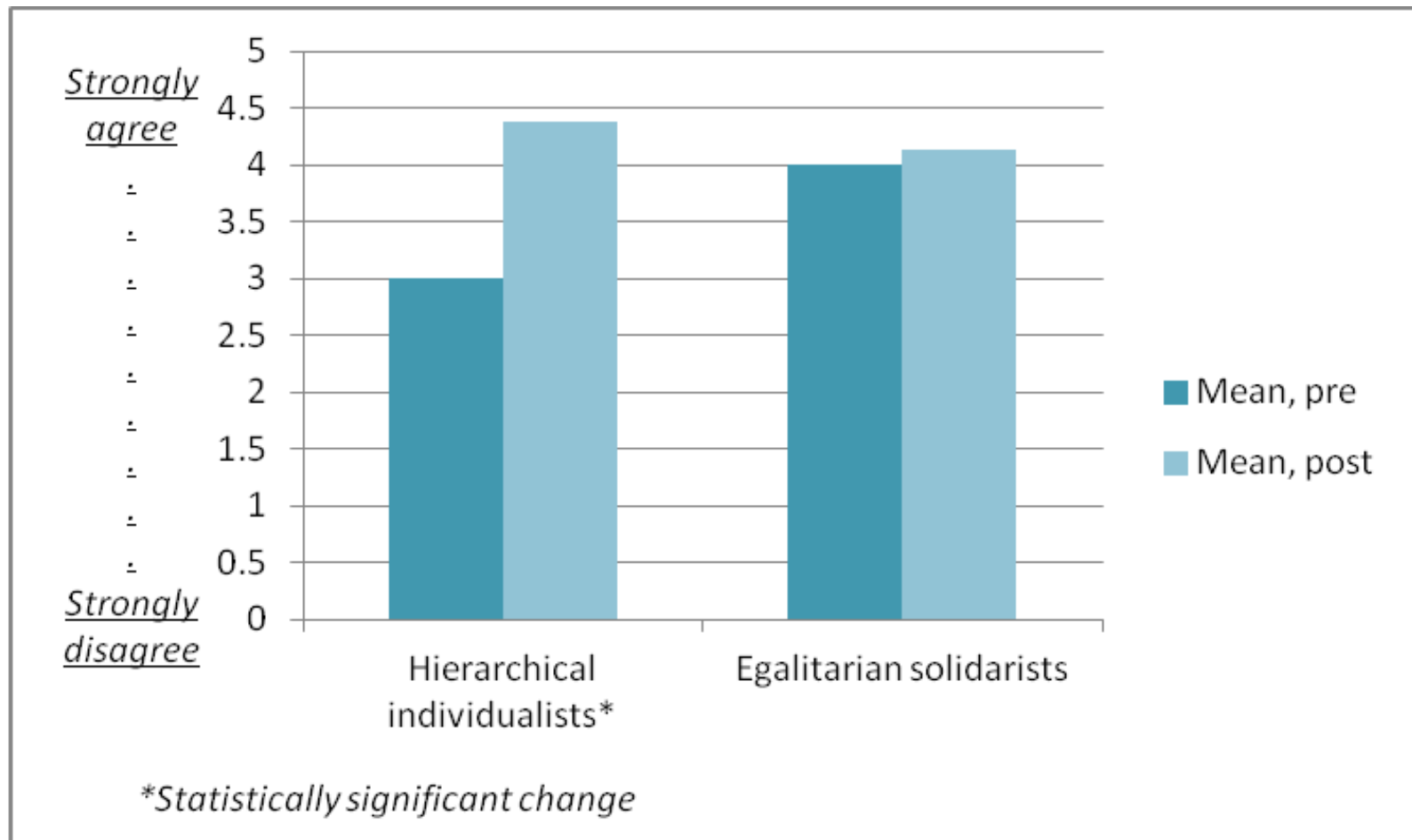
Food for Thought



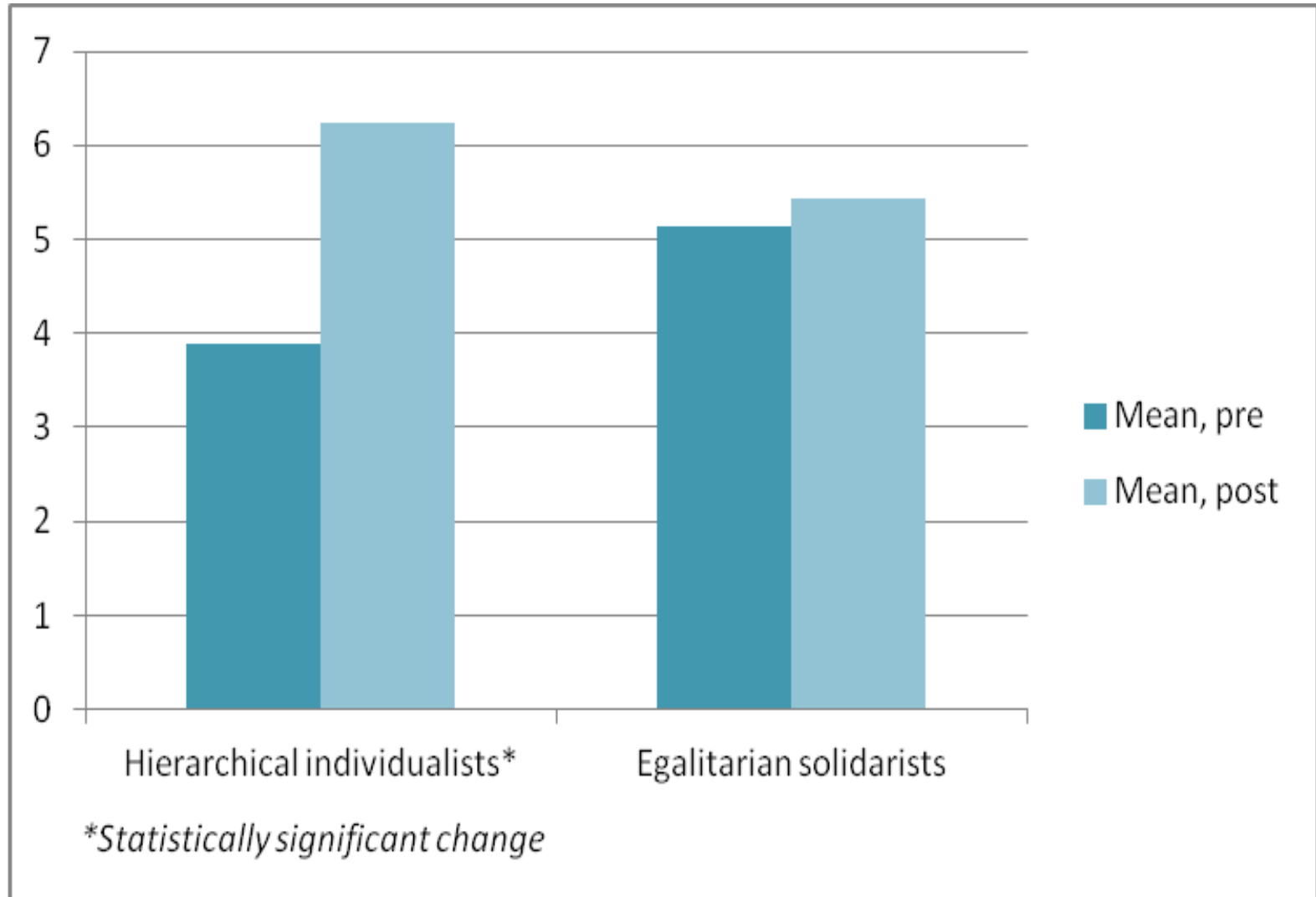
Change in means on knowledge scale. Derived from 5 measures, each with range 1 to 5, correct responses coded high. Hierarchical individualists (n=8); egalitarian solidarists (n=13).



Change in means on sea-level rise beliefs. “Sea-level rise is an issue some coastal communities have been discussing recently. Sea-level rise refers to increases in the average height of water relative to the land over the course of the year. What do you think? Do you agree or disagree that sea-level rise is occurring?” Hierarchical individualists (n=8); egalitarian solidarists (n=14).



Change in means on impact concern scale. Derived from a total of 9 possible measures each coded (1,0). Hierarchical individualists (n=8); egalitarian solidarists (n=14).



Some of participants' preferences for response strategies did change

Participants became more opposed to building walls and other structural barriers to hold back waters in publicly owned natural areas (+14.1 pct pts), and more opposed to retreating inland from high-density commercial and residential areas (+17.4 pct pts).



Summary



- 1. Good news:** Most people think that coastal flooding is a problem, are concerned about SLR, and support policies to address it
- 2. Bad news:** People are uncertain about the timing of the risk, what is already being done to address it, and whether it is just natural; viewpoints toward local policies likely to be more driven by “tribes” than risk proximity
- 3. Food for thought:** Preliminary evidence suggests when bring people together in deliberative events, emphasizing community decision-making, there are coherent changes in policy preferences, and declines in the effects of “tribalism”


The image is a full-page background featuring an aerial view of a dark blue ocean with white-capped waves. The text is centered in a dark grey horizontal band.

Conclusions for Policy

**Generically,
there is public
support for
SLR policy**



**Uncertainty in public opinion
combined with potential for
polarization threatens that support**

- 
- 1. Providing the public with tailored information (risk levels, policies) may reduce uncertainties**
 - 2. Creating opportunities to build community identity and shared decision-making in pursuit of larger group goals may reduce impacts of polarization**
 - 3. Ignoring public opinion risky (example, North Carolina)**



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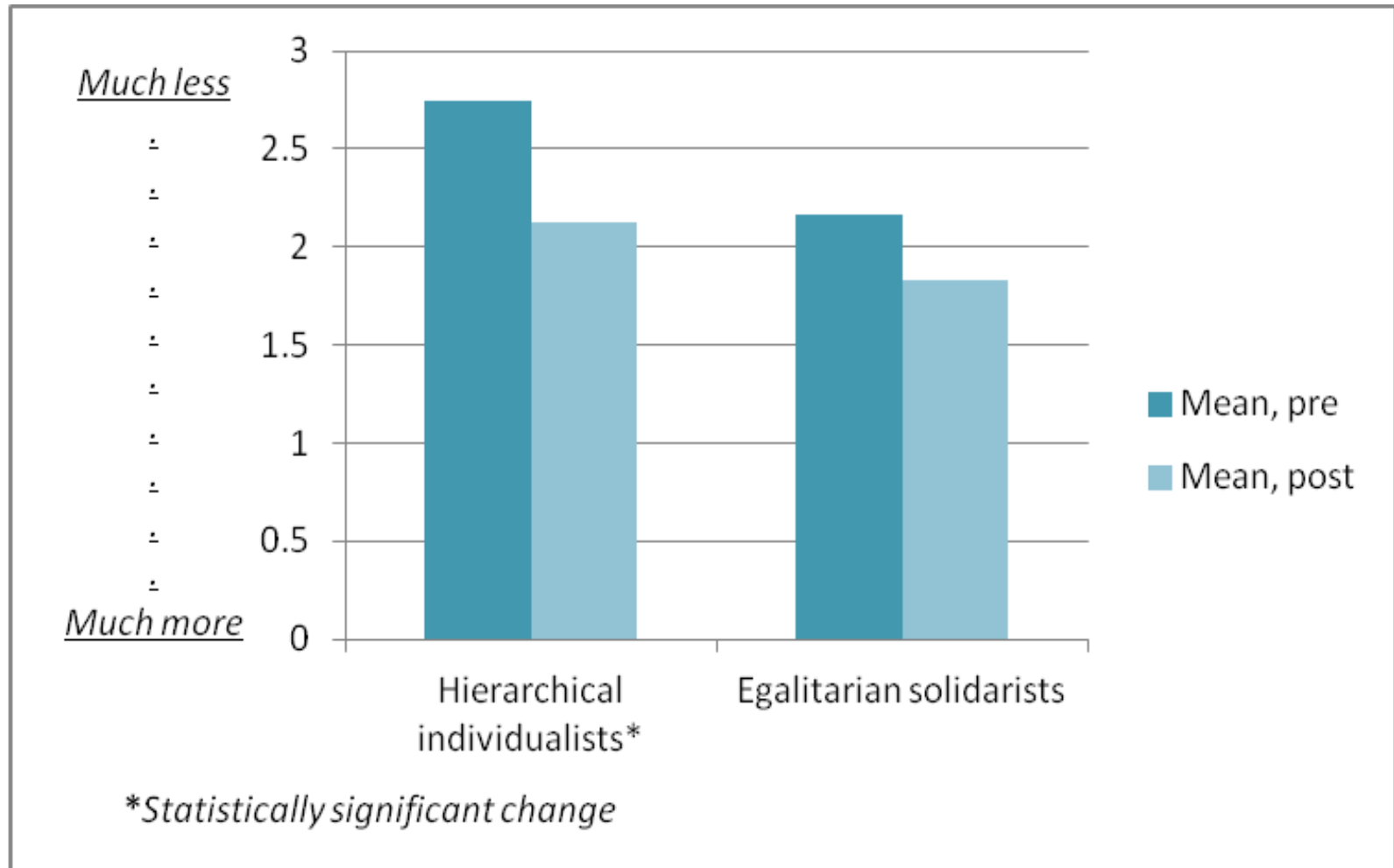
Prediction of Sea-Level Rise Risk Perceptions at Different Geographic Scales

<i>DV=SLR Risks</i>			
<i>Standardized coefficients</i>	County	Neighborhood	Own Home or Property
<i>Gender</i>	.075	.052	.082
<i>Age</i>	.033	-.090*	-.080
<i>Education</i>	-.020	.002	-.023
<i>Income</i>	.031	-.091	-.069
<i>White</i> <i>(v. Black)</i>	.020	-.004	-.083
<i>Non-white</i> <i>(v. Black)</i>	-.032	-.044	-.086
<i>Risk Proximity</i>	-.035	-.382***	-.319***
<i>Democrat</i> <i>(v. Othr/ Indepen)</i>	-.062	.033	.012
<i>Republican</i> <i>(v. Othr/ Indepen)</i>	-.007	.004	-.024
<i>Political Ideology</i>	-.049	.061	.071
<i>Hierarchy Scale</i>	-.272***	-.180**	-.155**
<i>Individualism Scale</i>	-.228***	-.227***	-.186***
<i>Hierarchy x Individualism</i>	-.045	-.025	-.046
Model explains X% of individuals' risk perceptions	29%	29%	23%

Grey shaded areas= statistically significant variable, p<.05

n=345, 351, 348

Change in means on problem identification. “In your opinion, has coastal flooding become more or less of a problem in the county in recent years?”
Hierarchical individualists (n=8); egalitarian solidarists (n=12).



Change in means on local government policy adequacy.

“Would you agree or disagree that your local government’s policies are adequate for addressing coastal flooding over the long term (e.g., over a decade or more)?” Hierarchical individualists (n=8); egalitarian solidarists (n=14), $p=0.315$.

