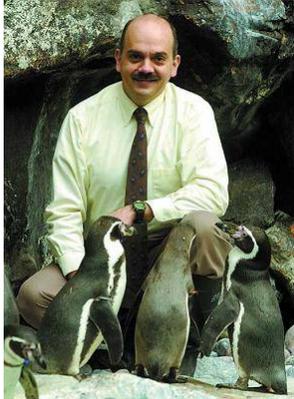


# The Climate Literacy Zoo Education Network (CLiZEN)

*A presentation to the Climate Literacy Network CLN on Feb. 14, 2012*

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Conservation and Education, Chicago Zoological  
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Co-PI: Dr. Michael E. Mann, Director of the Penn  
State University Earth System Science Center.



Co-PI: Dr. Susan R. Goldman, co-director of the  
Learning Sciences Research Institute at the  
University of Illinois at Chicago

# Climate Literacy Zoo Education Network

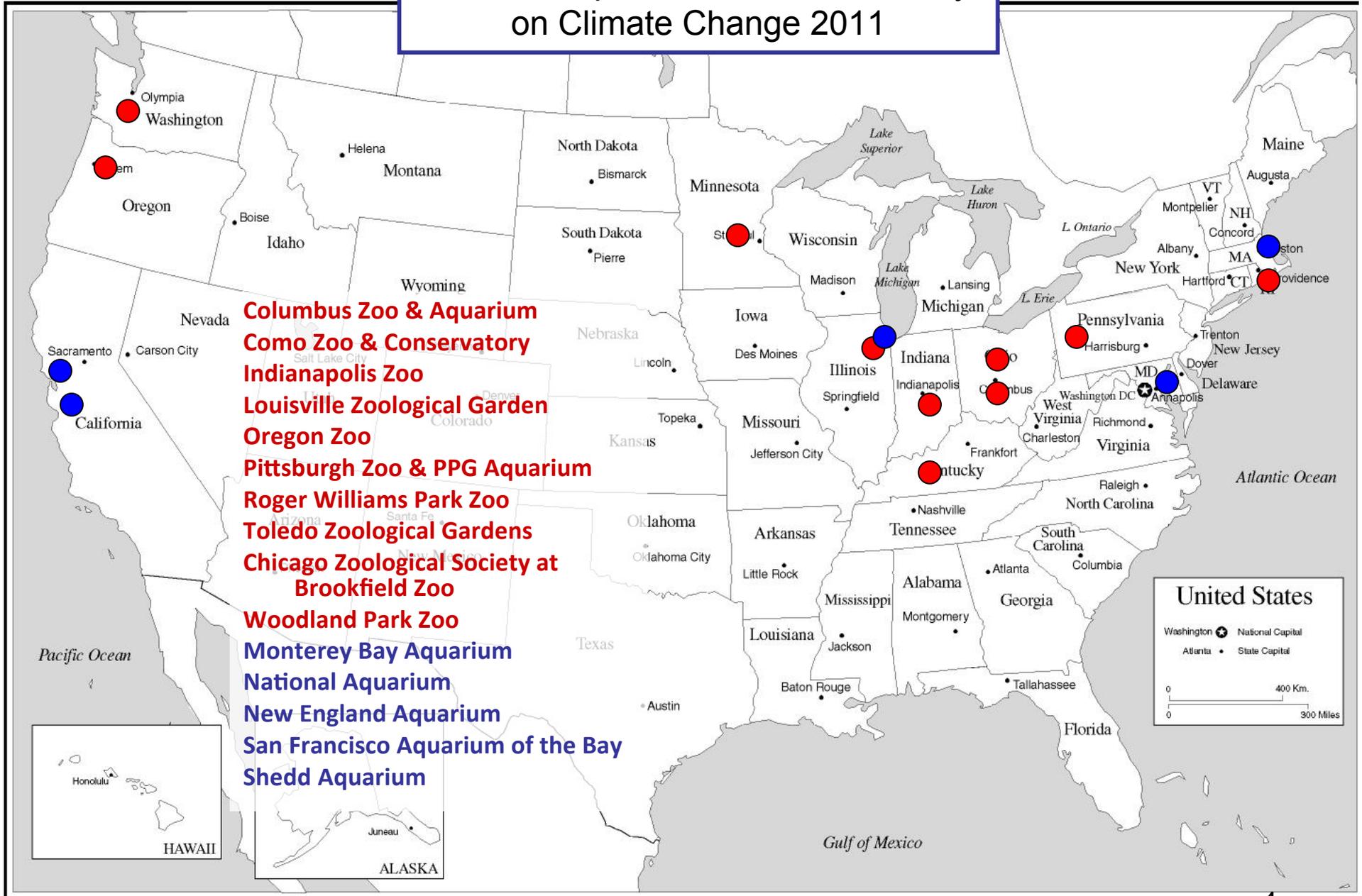
## Participant institutions

- Partnership of nine U.S. zoos & PBI
  - Columbus Zoo & Aquarium, OH
  - Como Zoo & Conservatory, St. Paul, MN
  - Indianapolis Zoo, IN
  - Louisville Zoological Garden, KY
  - Oregon Zoo, Portland, OR
  - Pittsburgh Zoo & PPG Aquarium, PA
  - Roger Williams Park Zoo, Providence, RI
  - Toledo Zoological Gardens, OH



- Earth System Sciences Center at Penn State Univ.
- Learning Sciences Research Institute at Univ. Illinois at Chicago
- Conservation Psychology network (APA)
- Polar Bears International

# Zoo and Aquarium Audience Survey on Climate Change 2011



- Columbus Zoo & Aquarium**
- Como Zoo & Conservatory**
- Indianapolis Zoo**
- Louisville Zoological Garden**
- Oregon Zoo**
- Pittsburgh Zoo & PPG Aquarium**
- Roger Williams Park Zoo**
- Toledo Zoological Gardens**
- Chicago Zoological Society at Brookfield Zoo**
- Woodland Park Zoo**
- Monterey Bay Aquarium**
- National Aquarium**
- New England Aquarium**
- San Francisco Aquarium of the Bay**
- Shedd Aquarium**

# Climate Literacy Zoo Education Network

**Goal:** Inspire people to make personal connections to climate change by creating a sense of caring and concern for animals whose very existence is threatened by climate change



# Climate Literacy Zoo Education Network

- Efforts to educate people about climate change have realized limited success
- Experts relay information to the public via myriad media
- Strong scientific consensus has emerged in recent years

**Yet the proportion of Americans who believe that evidence supports the occurrence of climate change has changed little (Pew Research Center, 2009).**

Why? Climate change education has not taken into consideration the ways people learn and change their behavior.

# Climate Literacy Zoo Education Network

- Develop a new approach to climate change education, that explores the associative and affective pathways known to dominate the decision-making of the general public.
- Different from the common approaches to climate change education which are largely didactic in nature

## **Planning Phase Goals**

1. Research preconceptions, attitudes, beliefs, and learning modes of zoo visitors regarding climate change
2. Prototype innovative learning environments and tools
3. Develop a viable partnership



- Affective connections drive behavioral decisions
- Scientific evidence has limited effect
- Zoos establish personal connections to animals threatened by climate change

# CLiZEN Vision

- “...development of a network of U.S. zoos, in partnership with climate change domain scientists, learning scientists, conservation psychologists, and other stakeholders, serving as a sustainable infrastructure to investigate strategies designed to foster changes in public attitudes, understandings, and behavior surrounding climate change.”

# CLiZEN Conceptual Framework

## Core Assumptions

- Behavior change can be fostered through understanding and empathetic responses to the impacts, causes, and remediation strategies for animal species who live in habitats already “at the edge” of climate change
- The resources of U.S. zoos, which host over 120 million visitors per year, can effect significant impact on fostering understanding and empathetic responses surrounding those impacts, causes, and remediation strategies

# Climate Literacy Zoo Education Network

## Early deliverables:

- Literature Review (e-Book)
- Prototype education interventions
  - youth interpreters
  - video game
- Survey of Zoo and Aquarium audiences regarding Climate Change
- Partnership viability

# Climate Change Education: A primer for Zoos and Aquariums

## E-Book Table of Contents

- **Preface.** Grajal
- **Climate Change Science: A Summary, Recent Updates, and Resources:** Mann
- **Polar animals and Climate Change:** Armstrup, Nielsen
- **Teaching about Climate Change: The Roles of Formal and Informal Science Education.** Pellegrino
- **Psychological Barriers and the role of emotions to Understanding and Responding to Climate Change.** Clayton Goldman, Celio
- **Applying Psychology Zoo Messaging about Climate Change.** Saunders
- **Zoo Audiences and Climate Change.** Luebke, Owens
- **How Technology Can Help Foster Environmentally-Friendly Behaviors and Enhance the Zoo Experience.** Moher, Lyons, Slattery
- **What Roles can Online Social Information Networks Play in Climate Literacy?** Hood
- **Zoo Experiences in Climate Change Education.** Stanoss
- **Aquarium Experiences in Climate Change Education.** Spitzer
- **Climate Change Education at Zoos and Aquariums: Where do we go from here?.** Grajal, Goldman, Mann

# Climate Literacy Zoo Education Network

## A Mile in my Paws (video game):

<http://www.youtube.com/watch?v=fQXwYpUJGMY>

- Using movement and pressure sensors, zoo visitors participate in a virtual game that simulates a polar bear trying to walk and swim between ice floes to reach a destination and capture a seal
- Users walk and swim “in the paws” of the animal they have just seen at the zoo, a polar bear.
- Interactive, participatory, embodied simulation activity
- Explores how to affect the public’s conceptions of change over large temporal and spatial scales

# Climate Literacy Zoo Education Network

## *Youth Interpreters: Inquiry-based interpretation*

- Collaboration between Woodland Park Zoo and Brookfield Zoo (Boeing Corp. funding)
- No significant changes in audiences in Climate Literacy (due to large variability- *more later*).
- Significant growth in scientific identity about youth's ability to deliver climate change messages in an inquiry-driven activity
- Significant depth in STEM indicators of youth interpreters.

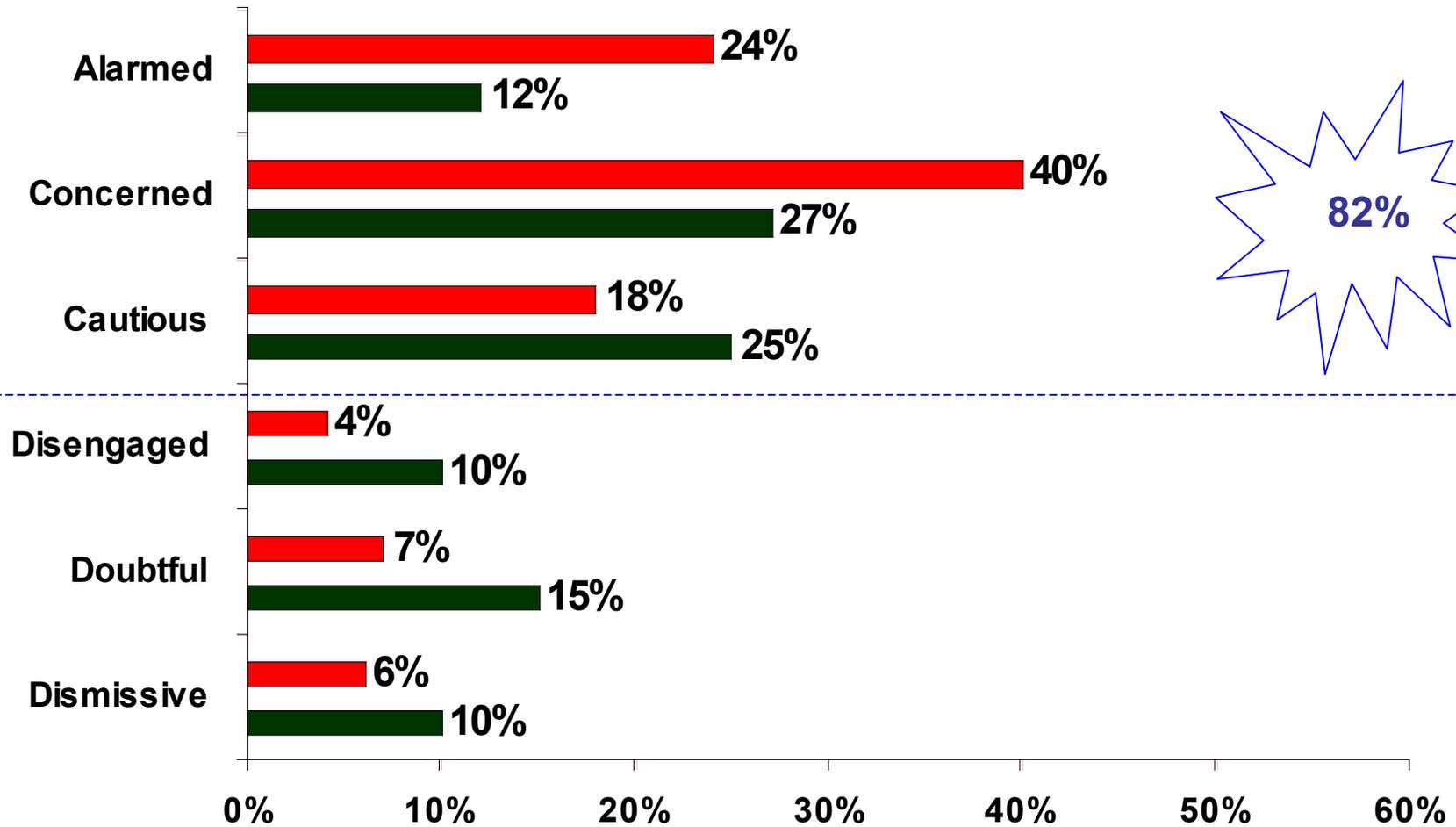
# Climate Literacy Zoo Education Network

## *National Zoo and Aquarium Survey*

- Developed two independent paper-based visitor surveys
  - Form A contained 15 survey items from “Six Americas” survey
  - Form B contained other items concerning climate change beliefs, perceptions, and behaviors
- Administered between June and August 2011 to +7,200 zoo and aquarium visitors at 15 locations across the United States
- Utilized the SPSS syntax from the Six Americas study to categorize zoo and aquarium visitors into the six segments

# Zoo & Aquarium Visitors are Receptive Audiences for Climate Change Education

## Six Americas Segmentation Results

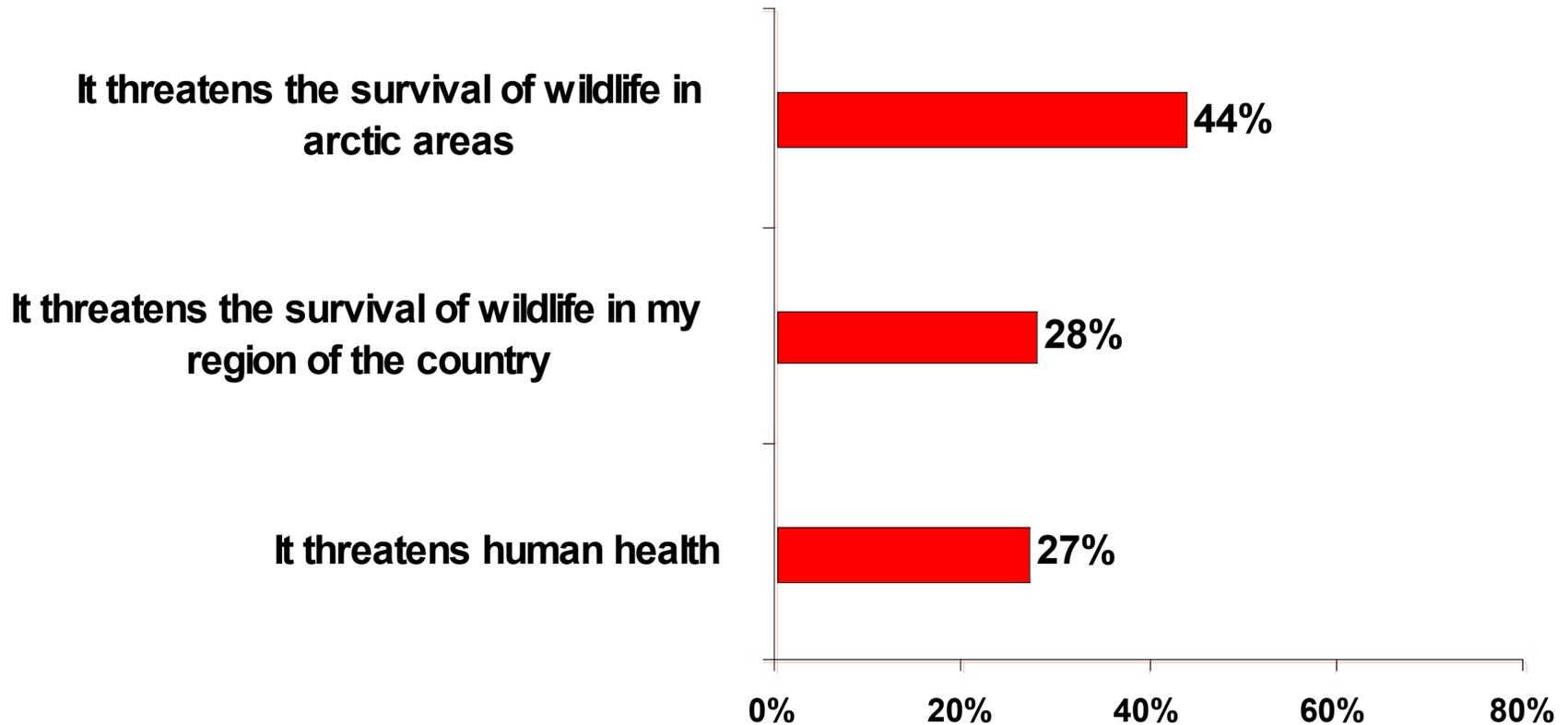


■ Zoo/Aquarium Visitors Summer 2011 (N = 3,558)

■ National Sample May 2011 (N = 981)

# Visitors Perceive Climate Change as a Geographically Distant Threat

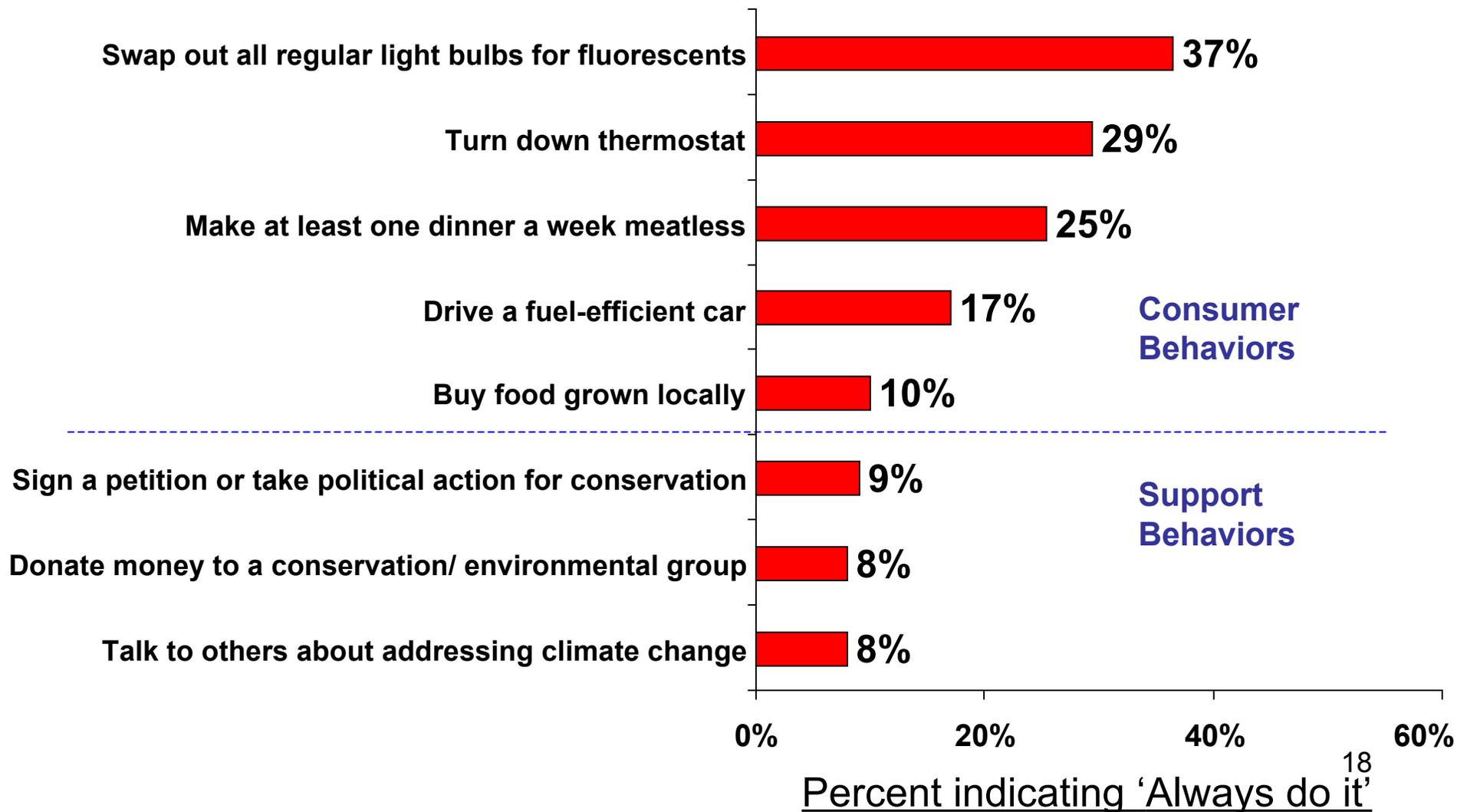
How much do you agree with the following statements regarding climate change?



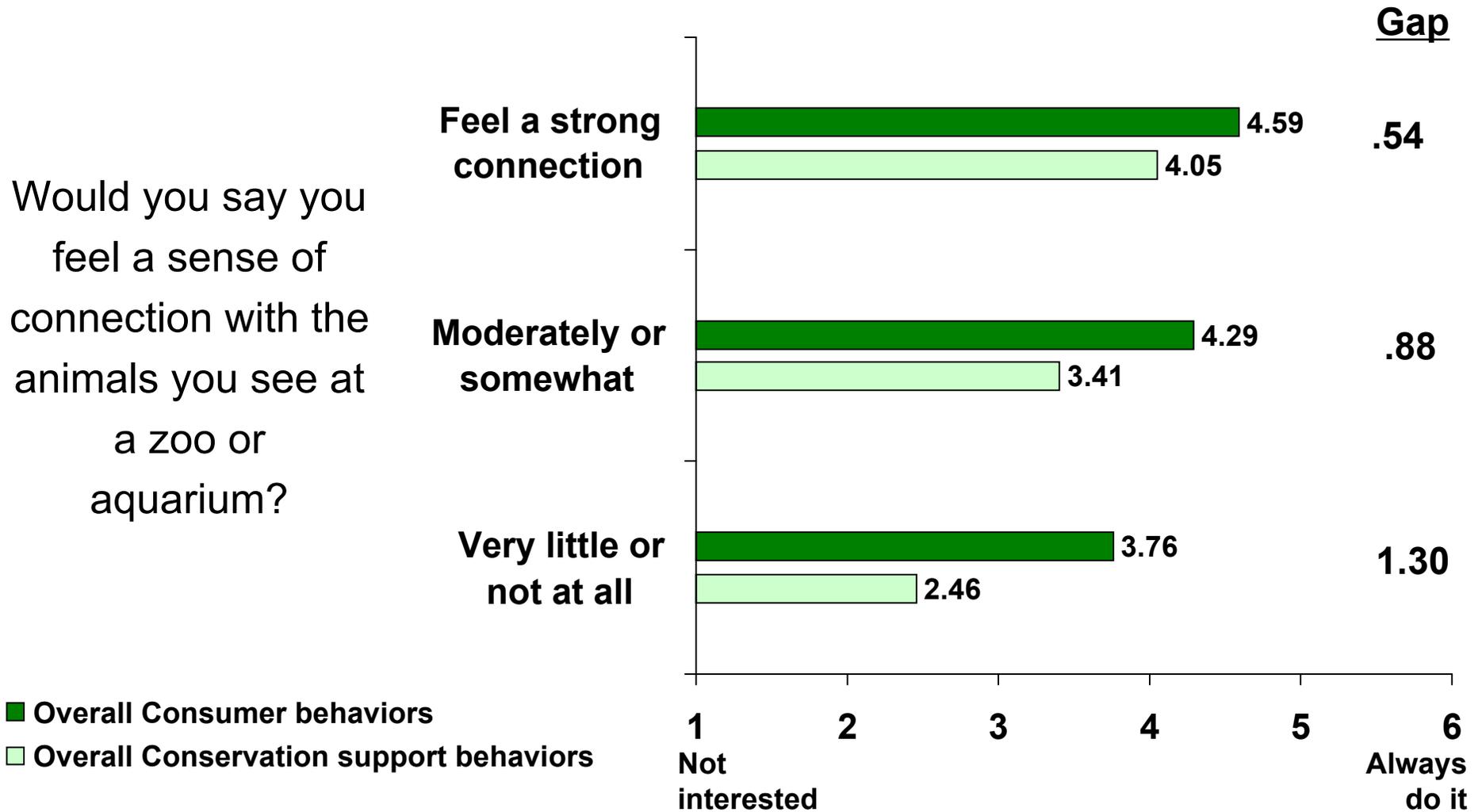
Percent indicating 'Very much so' <sup>17</sup>

# Visitors are More Likely to Engage in Consumer than Support Behaviors

Visitors' current behaviors to help address climate change



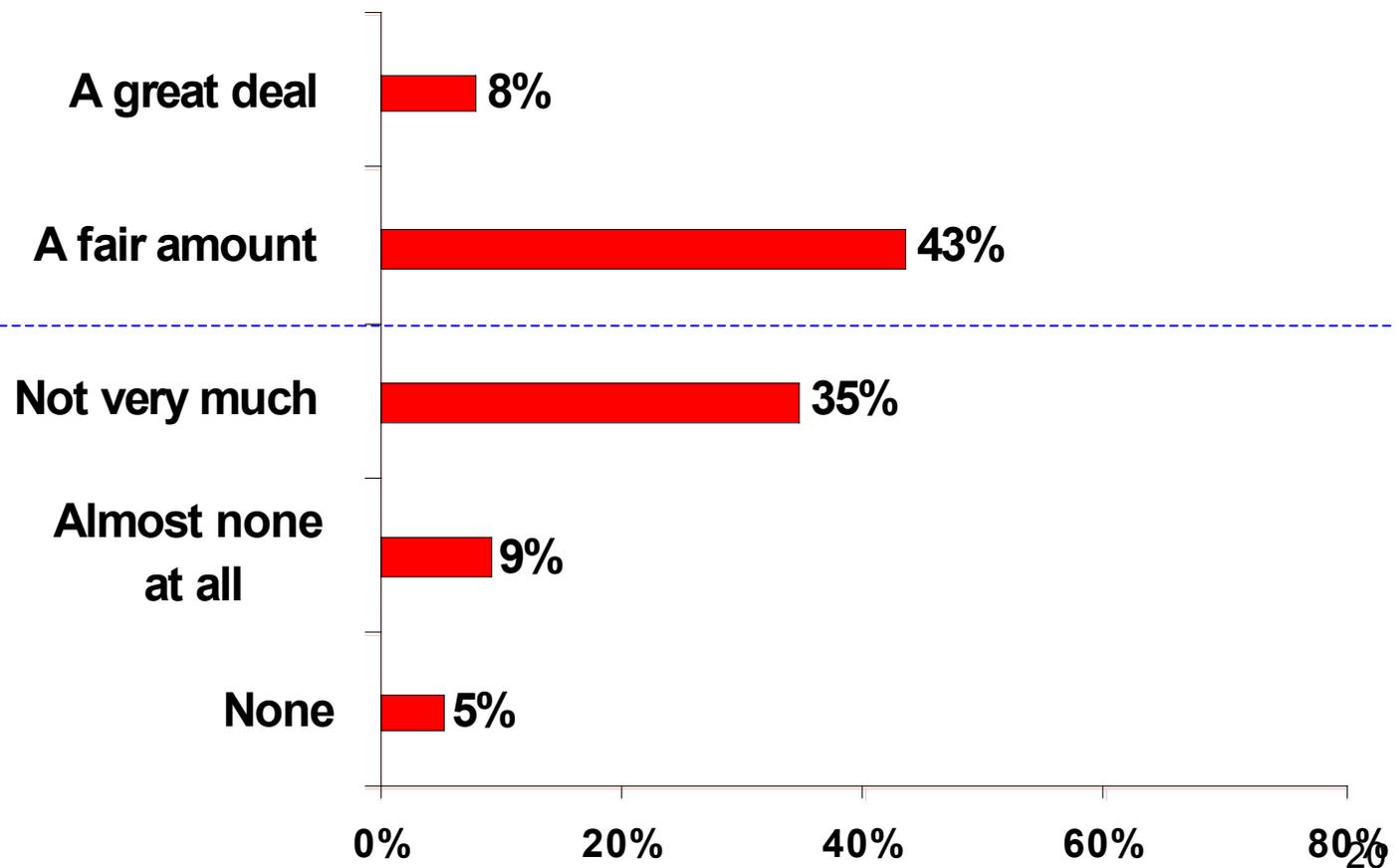
# The Gap Between Consumer and Support Behaviors Varies With Strength of Animal Connection



Overall behaviors to help address climate change: Average Ratings

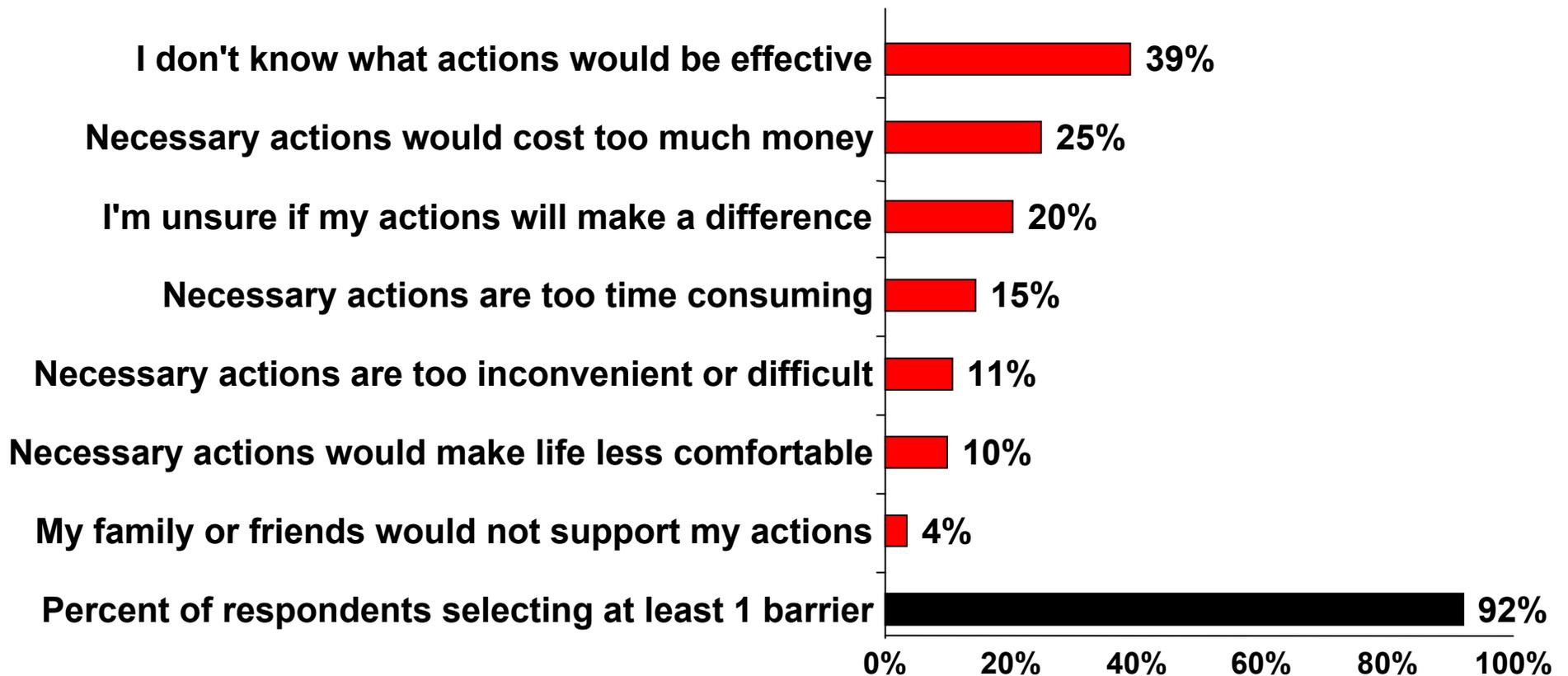
# Almost One-Half of Visitors Believe They Can Have Little to No Impact on Climate Change

How much of an impact do you believe you can have personally on addressing climate change?



# Most Visitors Report at Least One Barrier to Doing More

Would you like to do more to address climate change?  
If yes, what is standing in your way of doing more to address climate change?  
(select all that apply)



Percent Identifying a Barrier

## **Big finding: Even the Most Certain and Motivated Visitors Perceive Barriers**

Barriers are high even among visitors who highly believe climate change is happening and want to do more to address climate change

The effect of the zoo experience on climate change behaviors is mediated by three main factors:

- Instrumentality (ability do be effective)
- Concern (for animals, human health)
- Certainty (that Climate Change is happening)

# Zoo and Aquarium Visitor Survey Results: Summary

- Visitors are receptive audiences for climate change education
- Visitors perceive climate change as a geographically distant threat
- Visitors are more likely to engage in consumer than environmental support behaviors
- Visitors with a strong sense of connection with animals are more likely to engage in desired behaviors
- Almost one-half of visitors believe they can have little to no impact on climate change
- Even the most certain and motivated visitors perceive barriers to doing more to address climate change

# Climate Literacy Zoo Education Network

## *Working hypothesis for Phase II Implementation*

- Youth Interpreters offer powerful interventions: intergenerational, apolitical, social context
- General communication strategies focused on providing deeper information about climate change are not likely to have significant effects in climate literacy for all audiences
- Audiences are diverse and effects of education interventions are hard to measure due to great variability in response variables. *A segmentation design is needed.*
- Favorable audiences still face significant barriers to climate literacy and mitigation behaviors

# Climate Literacy Zoo Education Network

## *Project focus for Phase II Implementation*

- Youth Interpreters affecting visitor's climate literacy and increasing self-efficacy
- Social Learning Circles over several years: adaptive design with longitudinal interventions
- Top 2 audience categories: addressing barriers for 'alarmed' and 'concerned'
- Survey zoo and aquarium audiences at regular 2-yr. intervals

# Climate Literacy Zoo Education Network

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