

# DELTA RESIDENTS SURVEY

Summary of Results  
October 2023

## Research Team:

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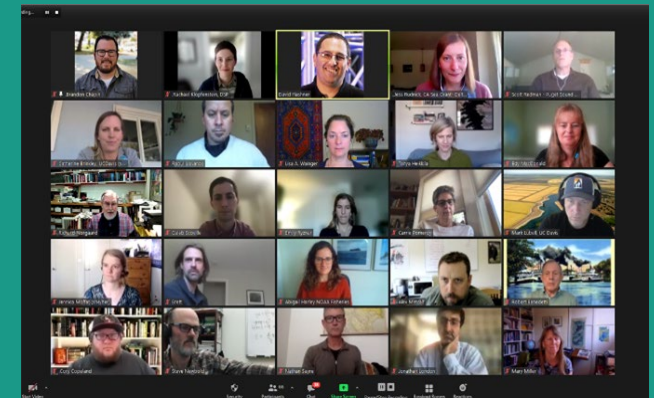
Dr. Julia Tomassilli & Robert Rodriguez – Sacramento State University, Institute for Social Research



# THANK YOU TO OUR PARTNERS

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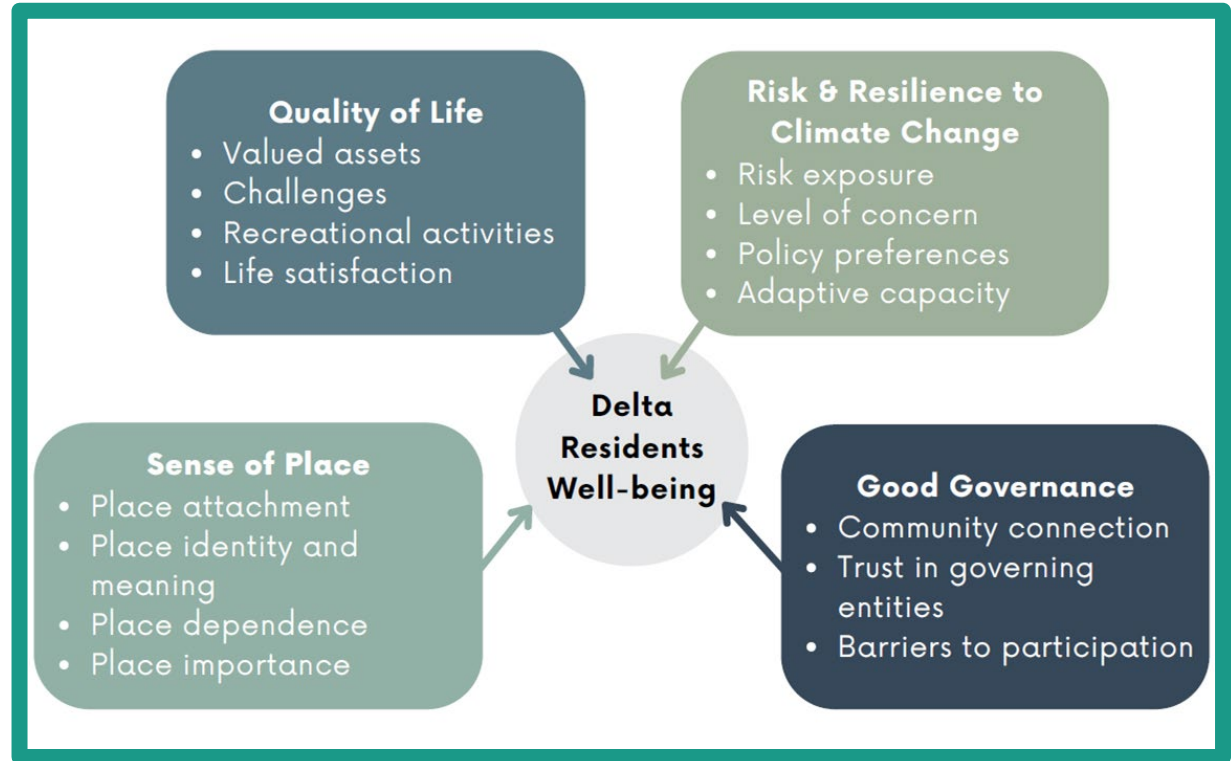
- Delta residents
- Community organization partners
- Survey advisory group
- Sacramento State Institute for Social Research
- Delta Science Program



# OBJECTIVES

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1. Assess Delta residents subjective well-being
1. Pilot-test survey approach for social indicator monitoring
1. Develop capacity and partnerships for monitoring human well-being and social change over time



# KEY FINDINGS (SPOILER ALERT)

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## Commonalities across Delta residents

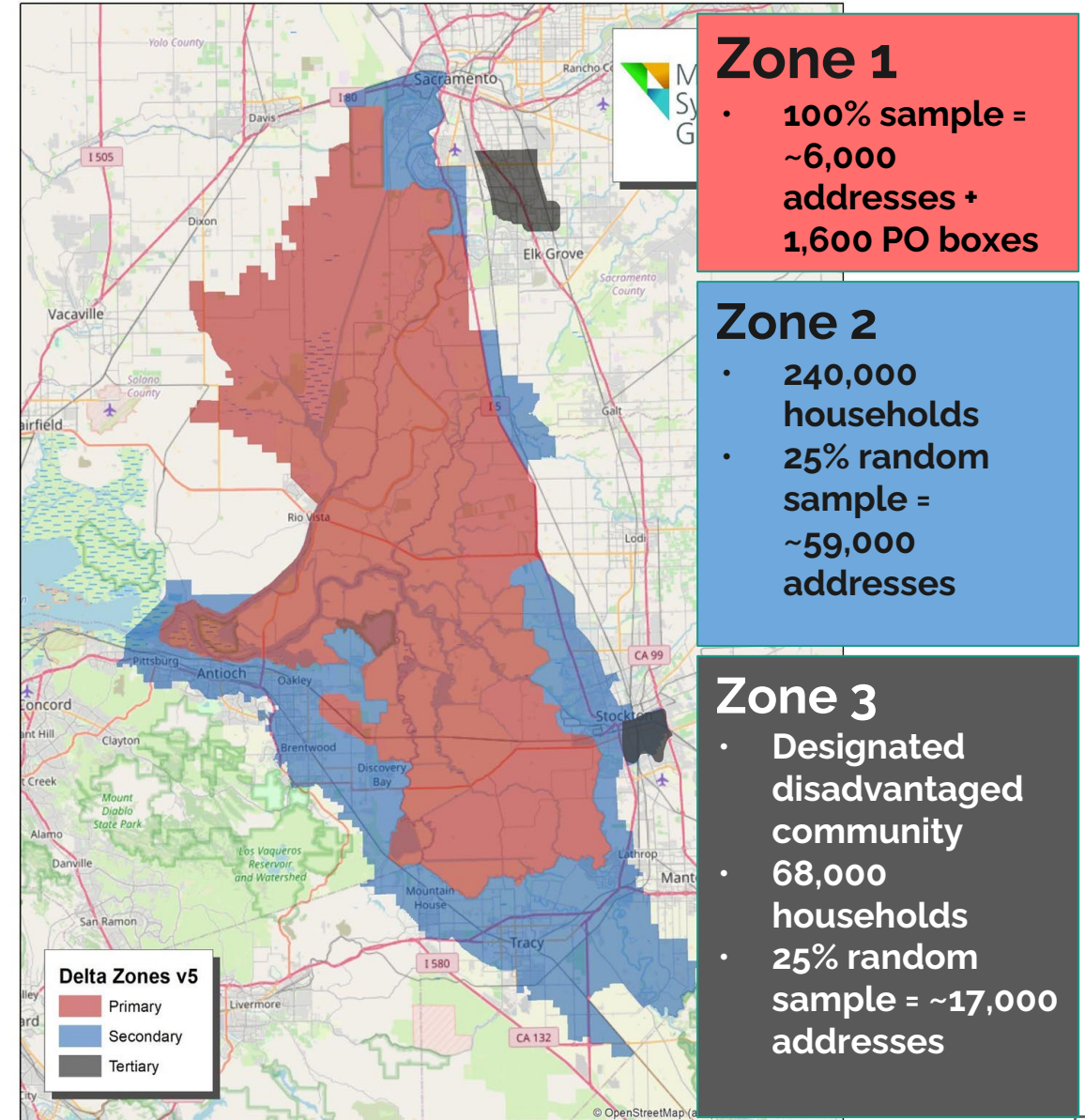
- Agreement on Delta complexity & importance
- Appreciation for beauty, access to outdoors & recreation
- Concern for aging infrastructure and future climate change impacts
- Support action for more sustainable agriculture, habitat restoration, & drought preparation
- Trust in scientists, community advisory groups & residents to act in best interests of Delta

## Differences across Delta residents:

- Place attachment & dependence varies across region and demographics
  - Attachment higher among rural, men, White, higher education, landowners
  - Dependence higher among men, Hispanic/ Latino, younger, lower education, multilingual households
- Urban and rural residents differ on top concerns, recreation modes, life satisfaction, climate change concerns, & community engagement
- Access to basic and adaptive resources differ with demographics

# SURVEY APPROACH

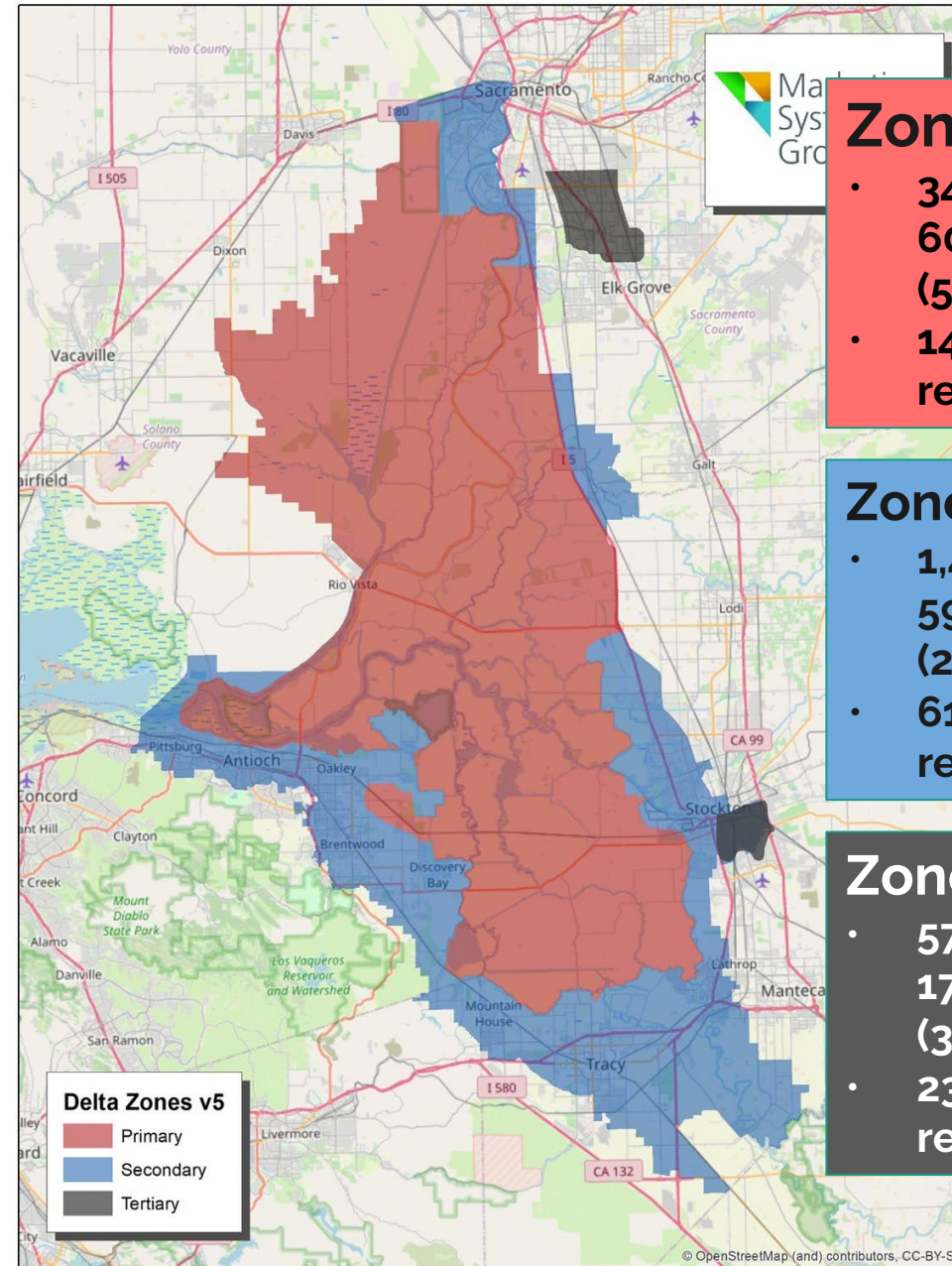
- February - April 2023
- Mailed invitations letters to ~80,000 households
- Random sampling approach to reach more representative sample
- Survey online or hard copy, English & Spanish
- \$5 incentives to participants



# WHO RESPONDED?

**2,208** usable responses from residents across the Delta

**(2.9% response rate)**



### Zone 1

- 344 responses / 6000 invitations (5.7% RR)
- 14.8% overall respondents

### Zone 2

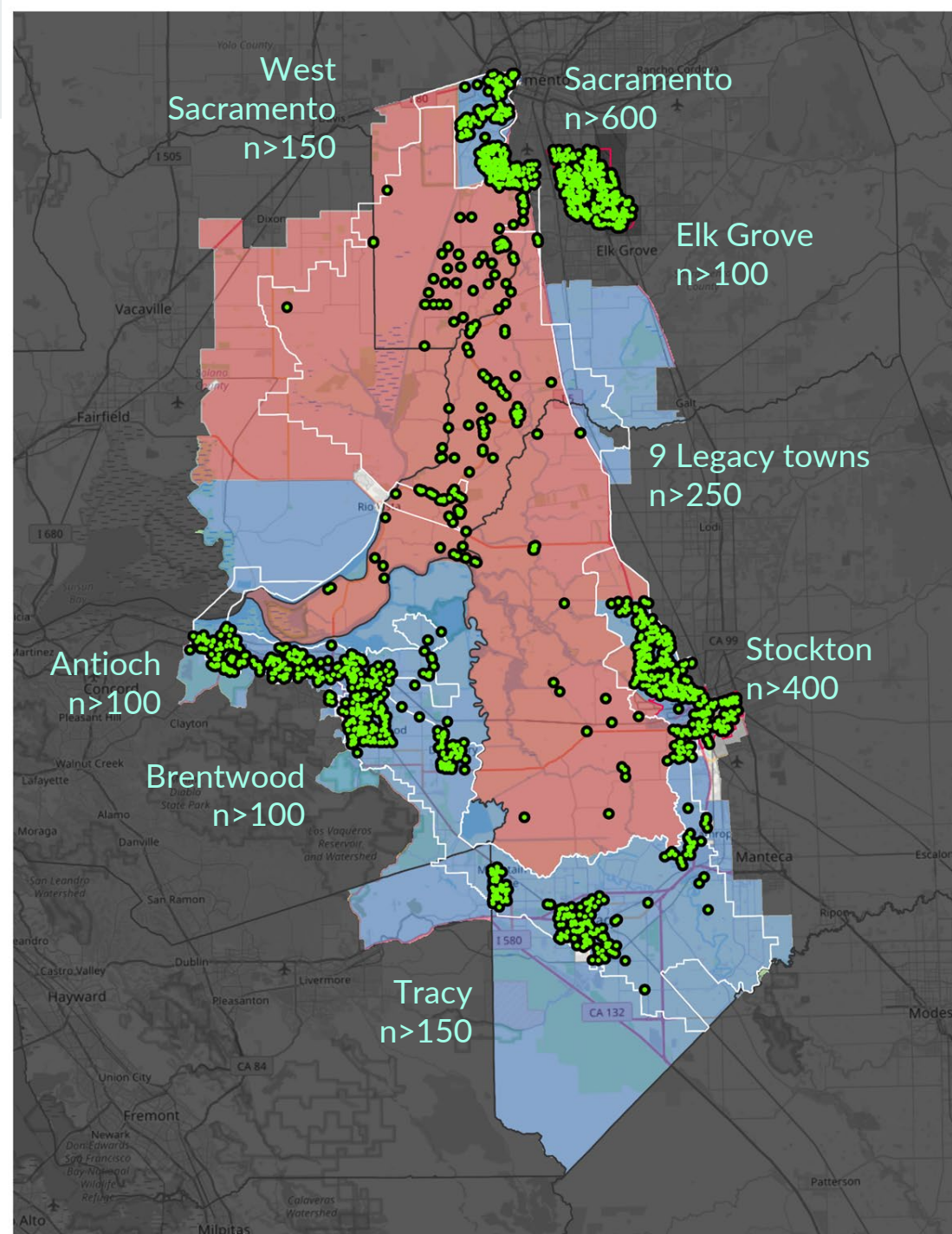
- 1,462 responses / 59,000 invitations (2.5% RR)
- 61.7% overall respondents

### Zone 3

- 575 responses / 17,000 invitations (3.4% RR)
- 23.5% overall responses

# WHO RESPONDED?

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# WHO ARE THE RESPONDENTS?



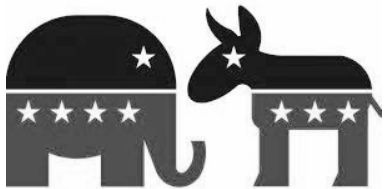
- **Gender:** 56% female, 43% male, <1% non-binary
- **Age:** ~50% 50+ years
- **Race & Ethnicity:** 55% White, 22% Hispanic/Latino, 18% Asian or Asian American, 9% Black, 3% Native American, 2% Native Hawaiian or Pacific Islander, 1% other



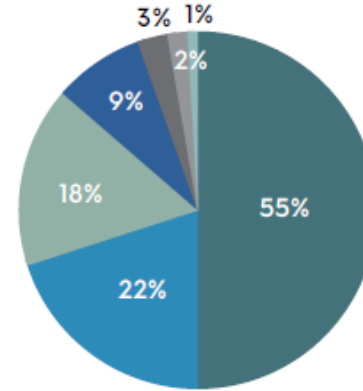
- **Languages spoken:** 93.5% speak English in households, 6.5% report NOT speaking English at home



- **Education:** >55% Bachelor's degree+
- **Income:** 56% make <\$100K in household
- **Home ownership:** 77% own residence



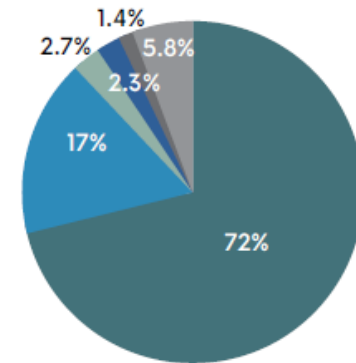
- **Political ideology:** 9% very liberal, 26% liberal, 38% moderate, 15% conservative, 4% very conservative; 8% do not identify with this spectrum



## Race & Ethnicity

Respondents permitted to select all that apply; numbers do not add to 100%.

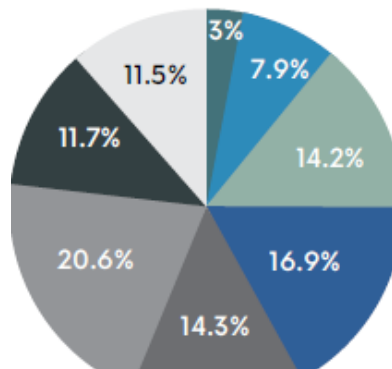
- White
- Hispanic or Latino/a
- Asian or Asian American
- Black or African American
- Native American or Native Alaskan
- Native Hawaiian or Pacific Islander
- Other



## Languages spoken

93.5% of respondents report speaking English in their households; 29% speak an additional language.

- English only
- Spanish
- Chinese
- Tagalog
- Vietnamese
- Other



## Income

Average income is ~\$105,000.

- Less than \$10,000
- \$10,000-\$24,999
- \$25,000-\$49,999
- \$50,000-\$74,999
- \$75,000-\$99,999
- \$100,000-\$149,999
- \$150,000-\$200,000
- Greater than \$200,000



# SURVEY RESULTS

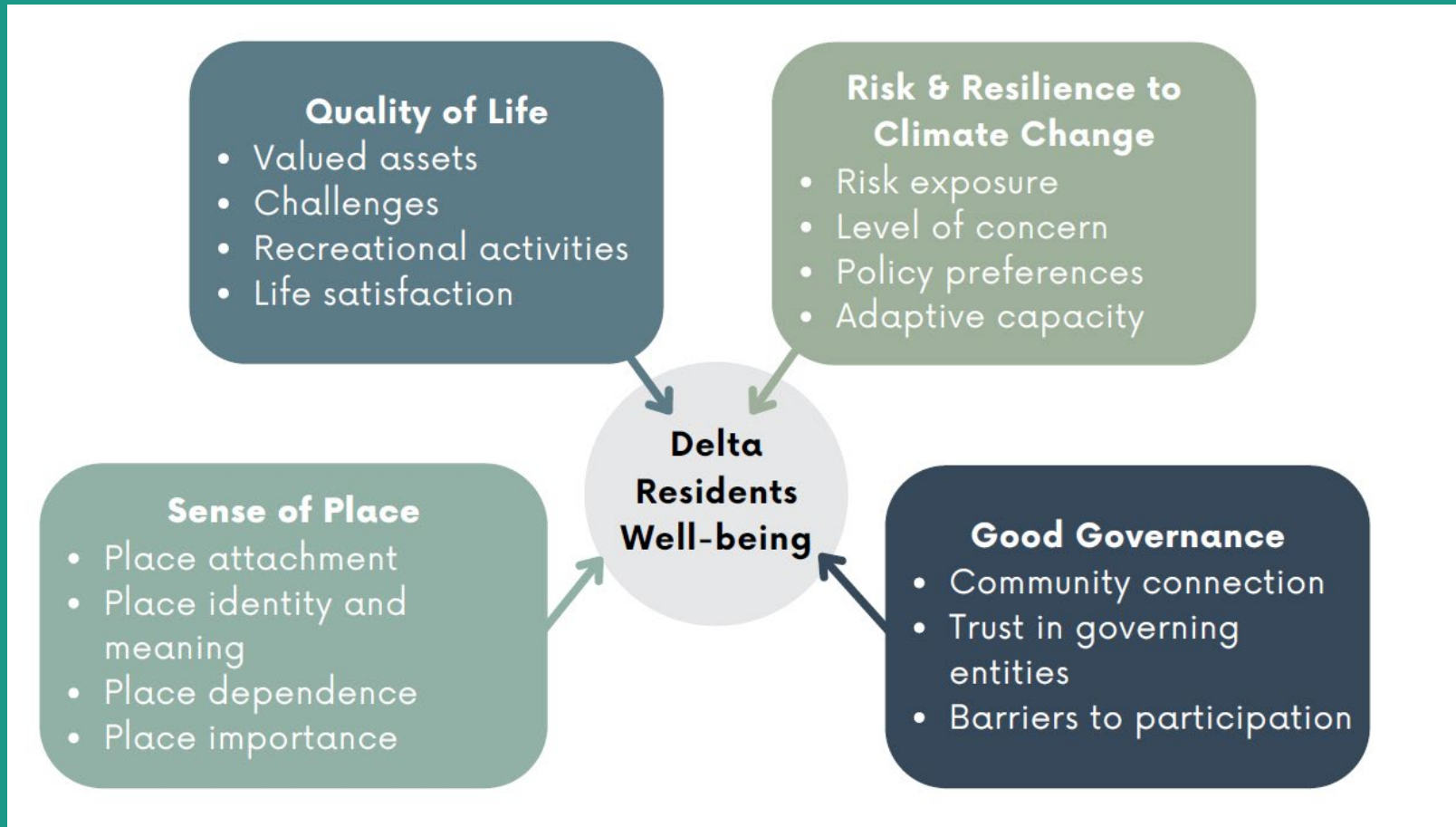
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## Section II

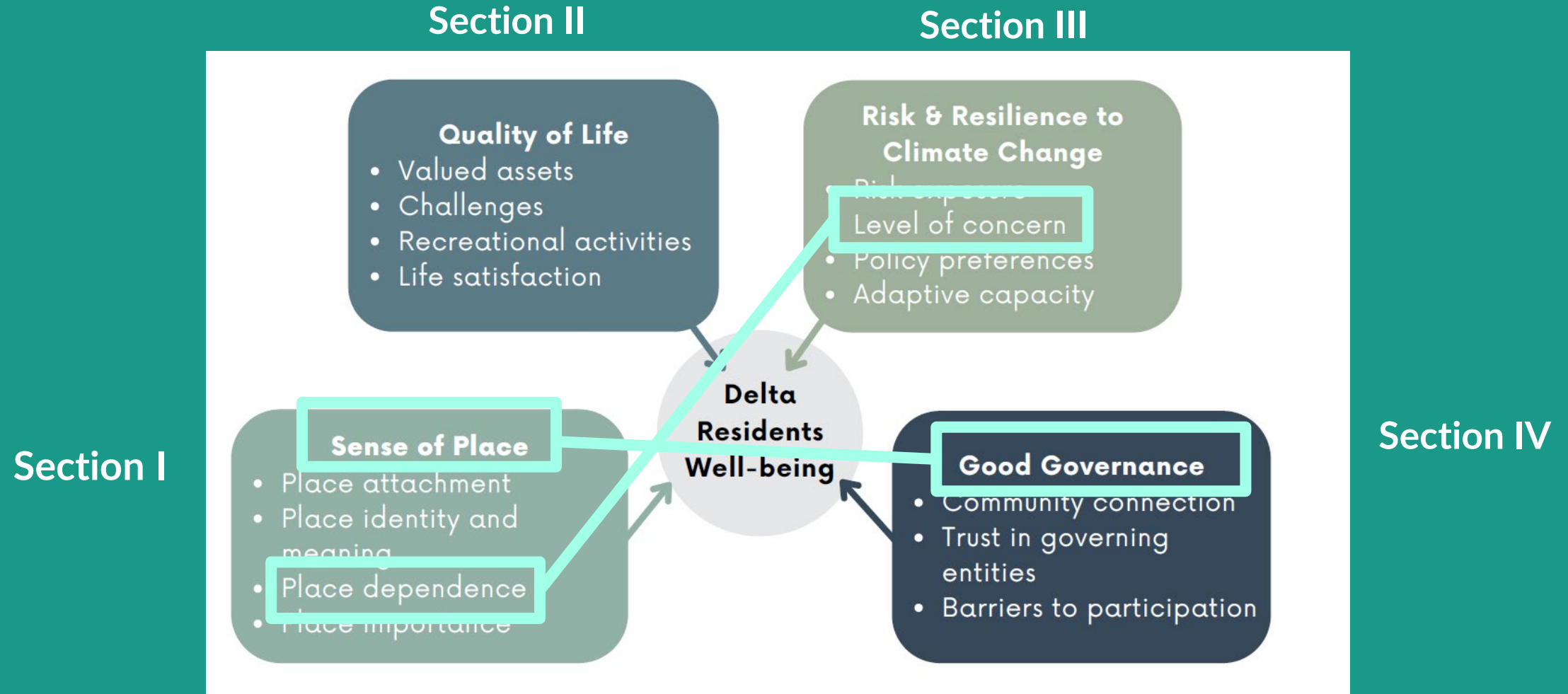
## Section III

## Section I

## Section IV



# SURVEY RESULTS



# SECTION I SENSE OF PLACE

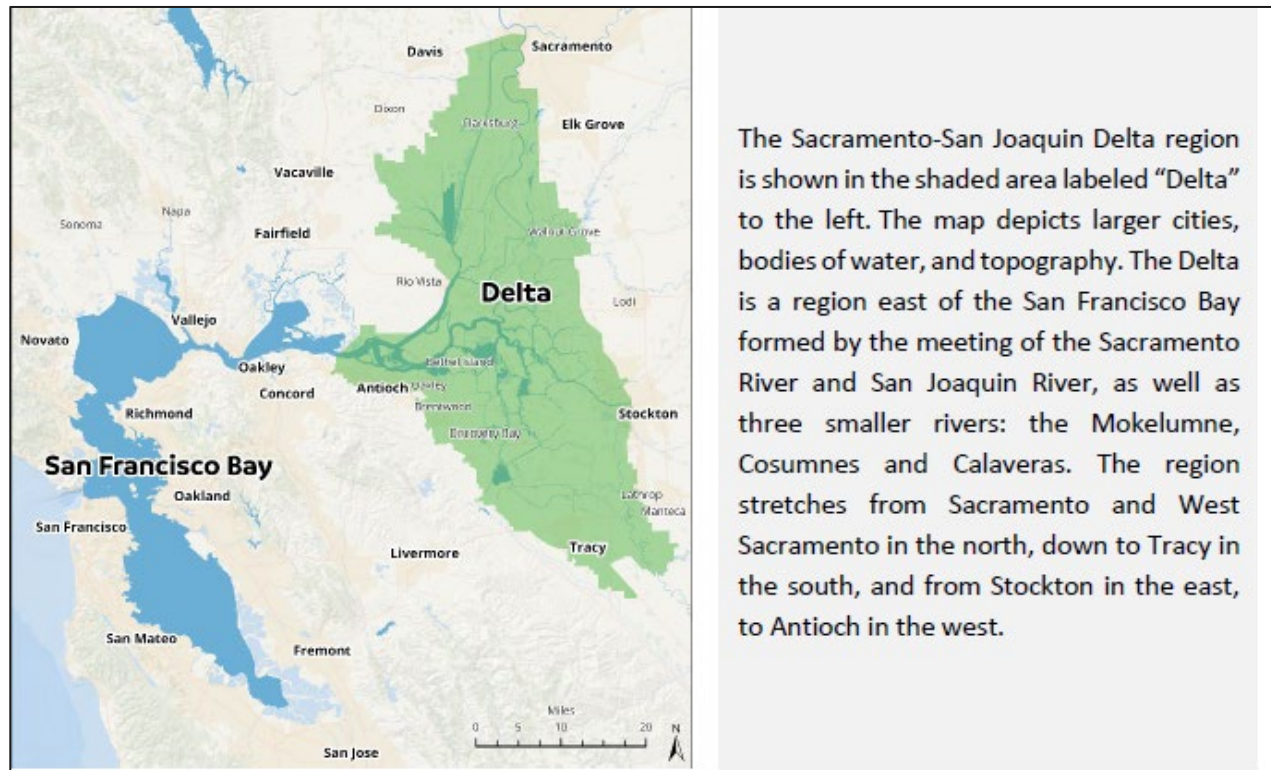
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Discovery Bay neighborhoods  
(Photo credit: CA DWR)

# DO RESPONDENTS CONSIDER THEMSELVES “DELTA RESIDENTS”?

“Do you currently live in or near the Delta region?”



The Sacramento-San Joaquin Delta region is shown in the shaded area labeled “Delta” to the left. The map depicts larger cities, bodies of water, and topography. The Delta is a region east of the San Francisco Bay formed by the meeting of the Sacramento River and San Joaquin River, as well as three smaller rivers: the Mokelumne, Cosumnes and Calaveras. The region stretches from Sacramento and West Sacramento in the north, down to Tracy in the south, and from Stockton in the east, to Antioch in the west.

**87%** overall respondents say they “live in or near the Delta region”

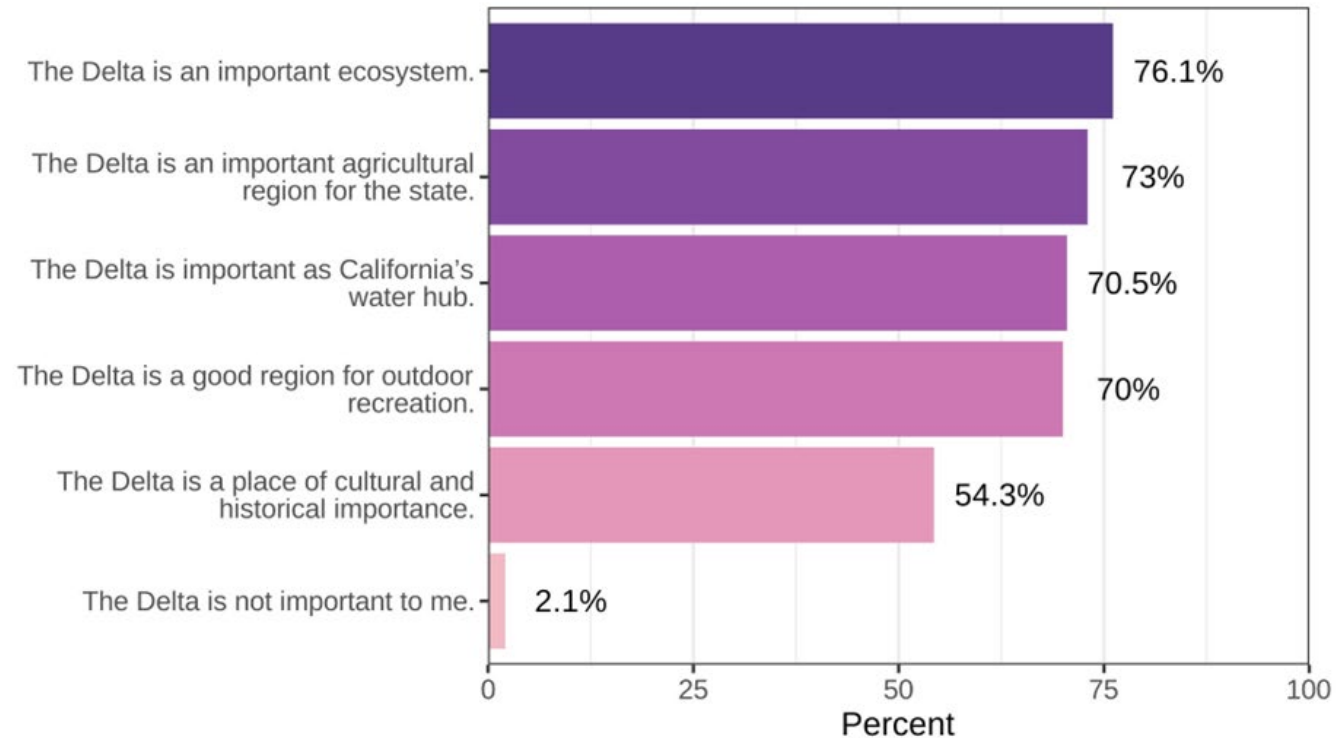
**93%** of Zone 1 respondents

**89%** of Zone 2 respondents

**75%** of Zone 3 respondents

# MAJORITY OF RESPONDENTS AGREE ON MULTIFACETED IMPORTANCE OF DELTA

“Which of the following describe why you feel the Delta is important?”

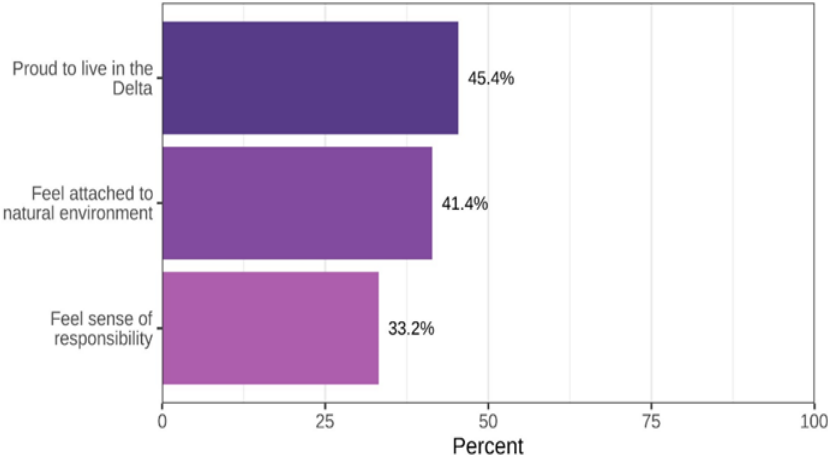


Q4 prompts users to, "Select all that apply". 2113 survey respondents. Data are weighted.

# PLACE ATTACHMENT AND PLACE DEPENDENCE VARY GREATLY

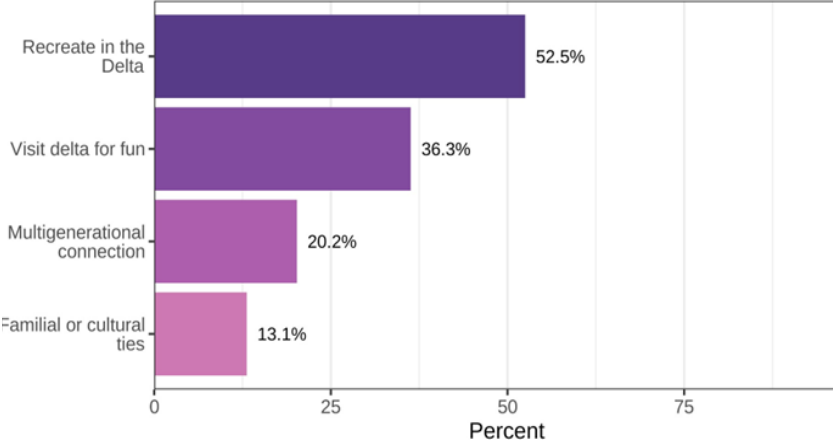
“Which of the following statements describe your relationship to the Delta?”

Ia. Place Attachment



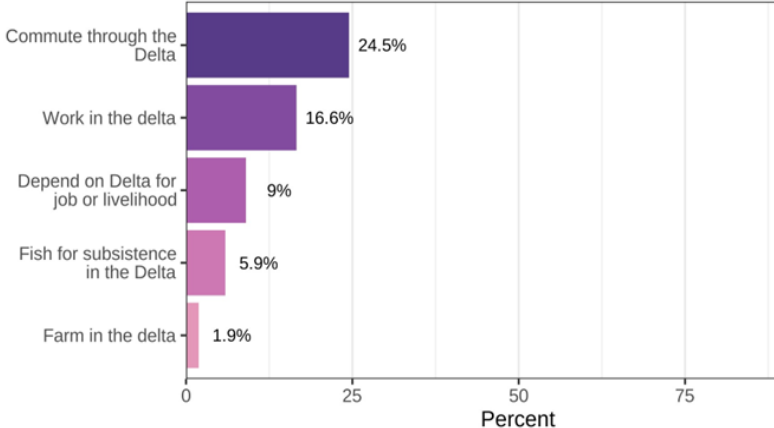
2208 survey respondents. Question type was "Select all of the above."

Place Identity & Meaning



2206 survey respondents. Question type was "Select all of the above."

Ic. Place dependence



2206 survey respondents. Question type was "Select all of the above."

**Average Sense of place score for Delta residents = 3.9 out of 12**

Compare to Puget Sound (WA) residents who report average sense of place score of 5.5 on scale of 1-7, equivalent to ~ 9.5/ 12 on Delta scale

(Puget Sound Human Wellbeing Vital Signs, 2022 survey)

# SENSE OF PLACE TAKEAWAYS

“Fairly flat low-lying region with rich agricultural soils and a long, rich history as old as (and older than) the state of California. It is also an economically-challenged area with limited educational and job opportunities with accompanying crime and sociological issues. It is a key nexus for limited critical resources (farmland, water) that many wish to exploit for financial reasons despite the irreversible damage that would be done to this key, mediating ecosystem.”

– Delta resident

# SECTION II QUALITY OF LIFE

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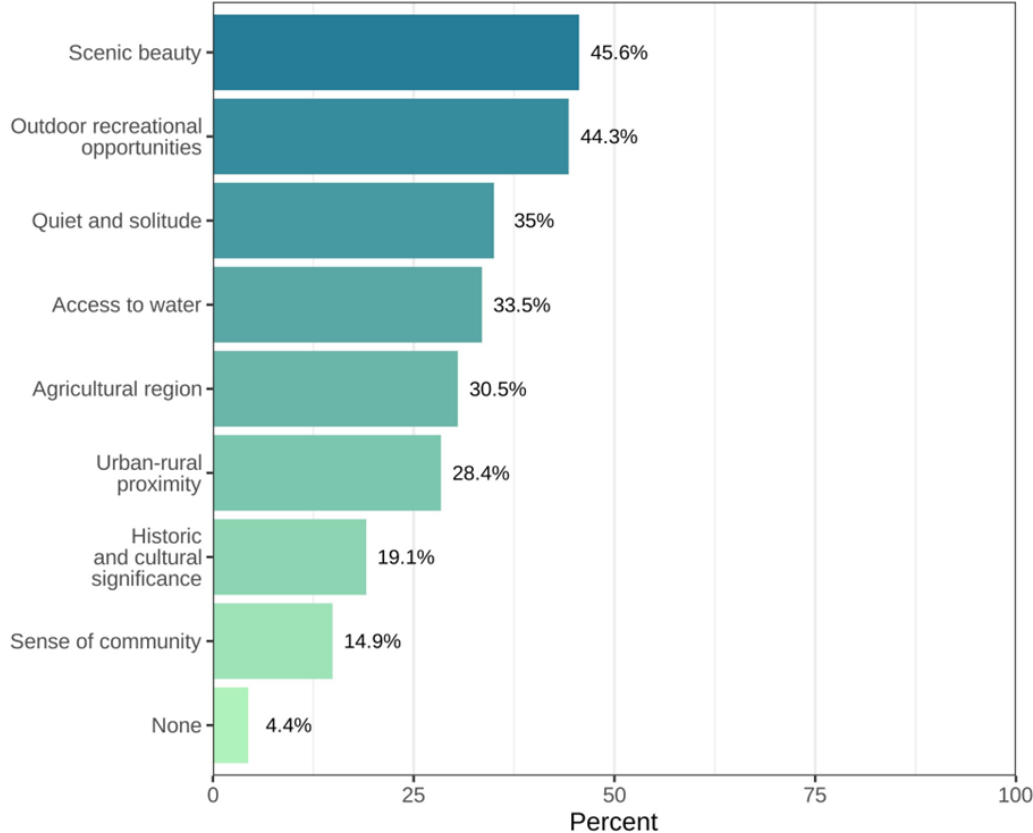
Historic legacy town of Locke  
(Photo credit: J. Rudnick)



# FACTORS INFLUENCING QUALITY OF LIFE VARY HIGHLY

“Which factors, if any, do you value most about living in the Delta?”

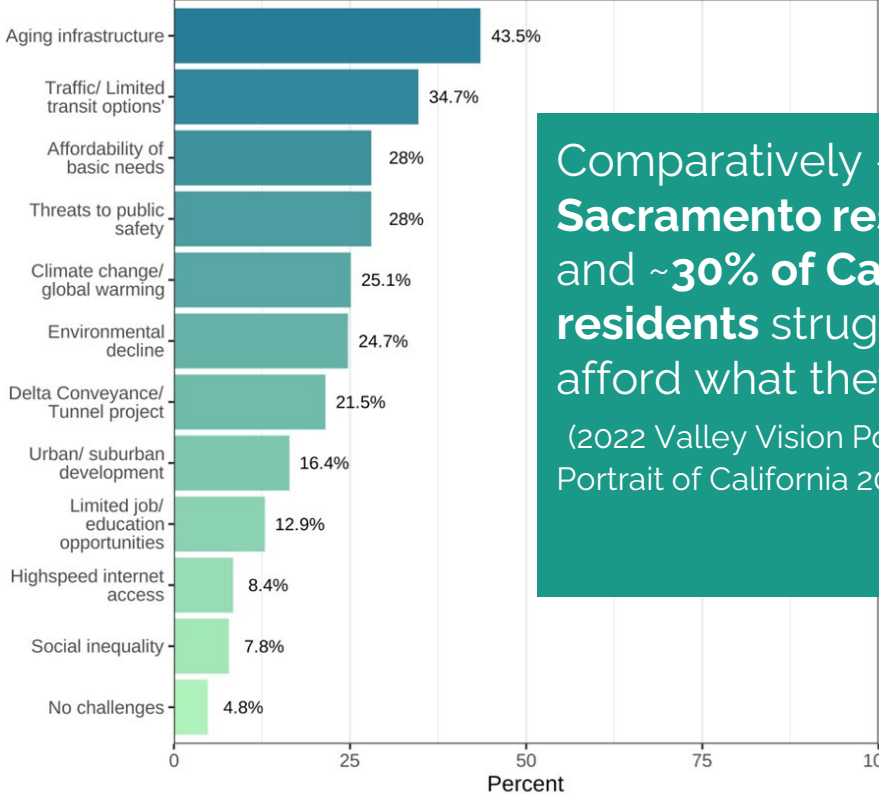
## 6. Valued assets to Delta life



2171 survey respondents. Question type was "Select up to 3."

“Which factors, if any, present the largest challenges to your well-being living in the Delta?”

## 7. Challenges to life in Delta



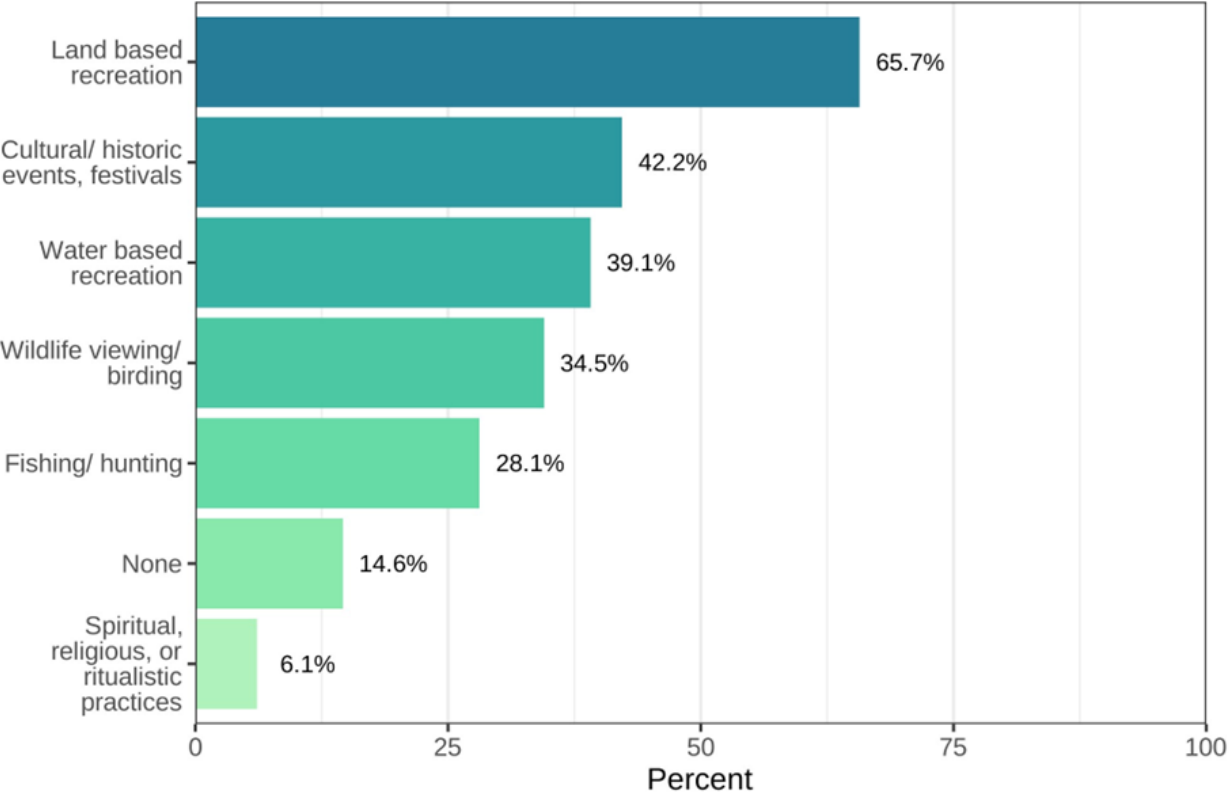
2185 survey respondents. Question type was "Select up to 3."

Comparatively ~33% Sacramento residents and ~30% of California residents struggle to afford what they need (2022 Valley Vision Poll; A Portrait of California 2021-22)

# MAJORITY RECREATE ON LAND

“Which of the following activities do you engage in in the Delta?”

## 8. Activities in the Delta



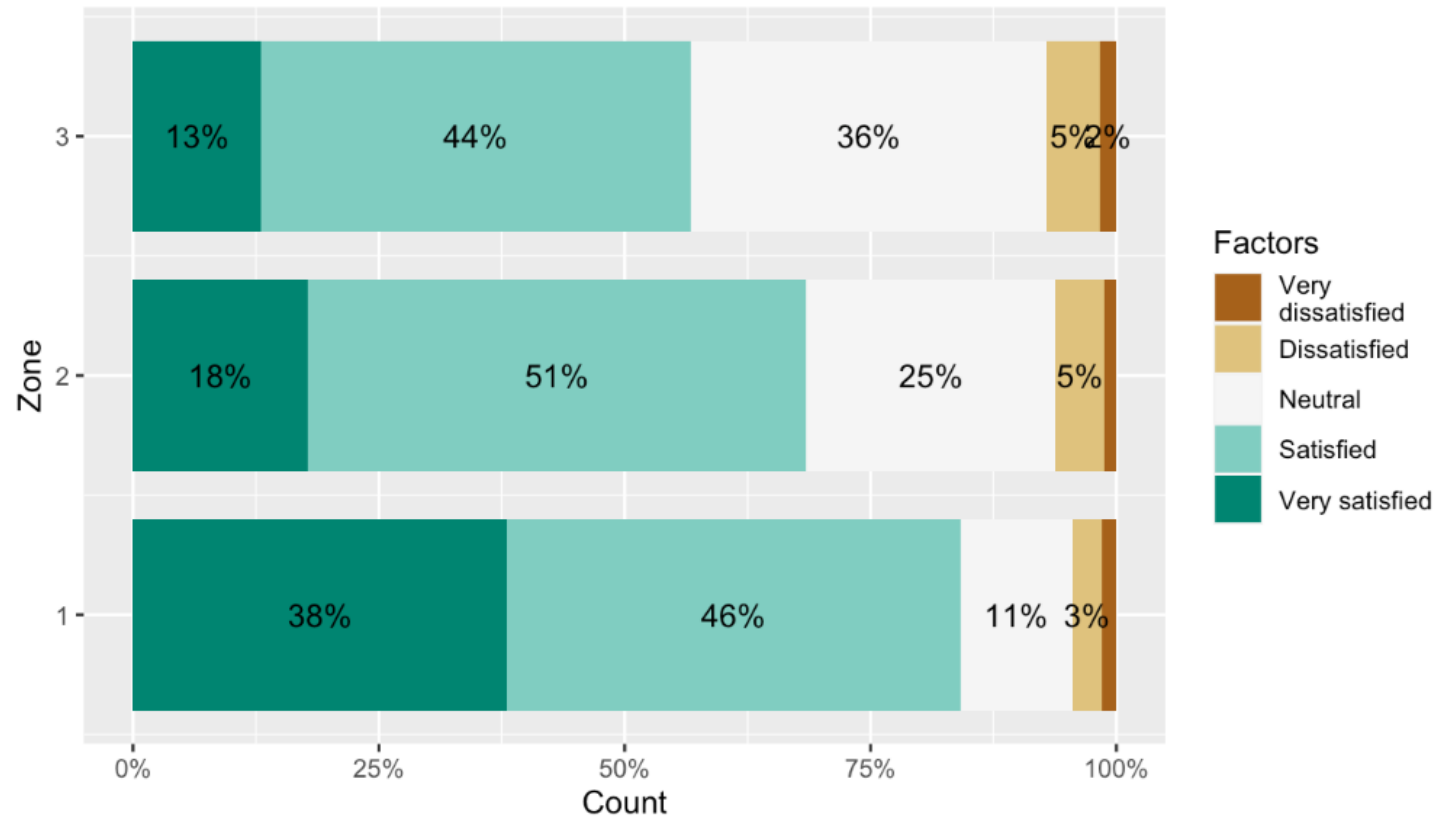
- **2 out of 3** residents enjoy land-based activities
- Primary zone (rural) residents enjoy **wildlife viewing & water-based activities** significantly more
- Men enjoy **fishing and hunting** more
- Older respondents enjoy **wildlife viewing/ birding** more

2205 survey respondents. Question type was "Select all of the above."

# MAJORITY SATISFIED WITH QUALITY OF LIFE, THOUGH SATISFACTION LOWER THAN NATIONAL AVERAGE

- Overall, 59% respondents are satisfied or very satisfied with the quality of their life in the Delta, equivalent to average life satisfaction score of 2.4 out of 5
- Significantly higher among White, older, higher income & Zone 1 residents
- Compare to average life satisfaction score of U.S. population 3.5 out of 5 (Gallop World Poll 2022)

“Rate your overall level of satisfaction with your quality of life in the Delta”



2265 (n) total respondents.  
 Respondents by Zone:  
 1. n = 334.  
 2. n = 1393.  
 3. n = 538.

# QUALITY OF LIFE TAKEAWAYS

“The Delta is the forgotten waterfront of California that is used and abused by many with only a few folks caring about the impact that has on the communities near it. Wealthy families can access it with watercraft, but most view it as dirty, neglected, or don't even know it is there.”

- Delta resident

# SECTION III RISK AND RESILIENCE TO ENVIRONMENTAL AND CLIMATE CHANGE

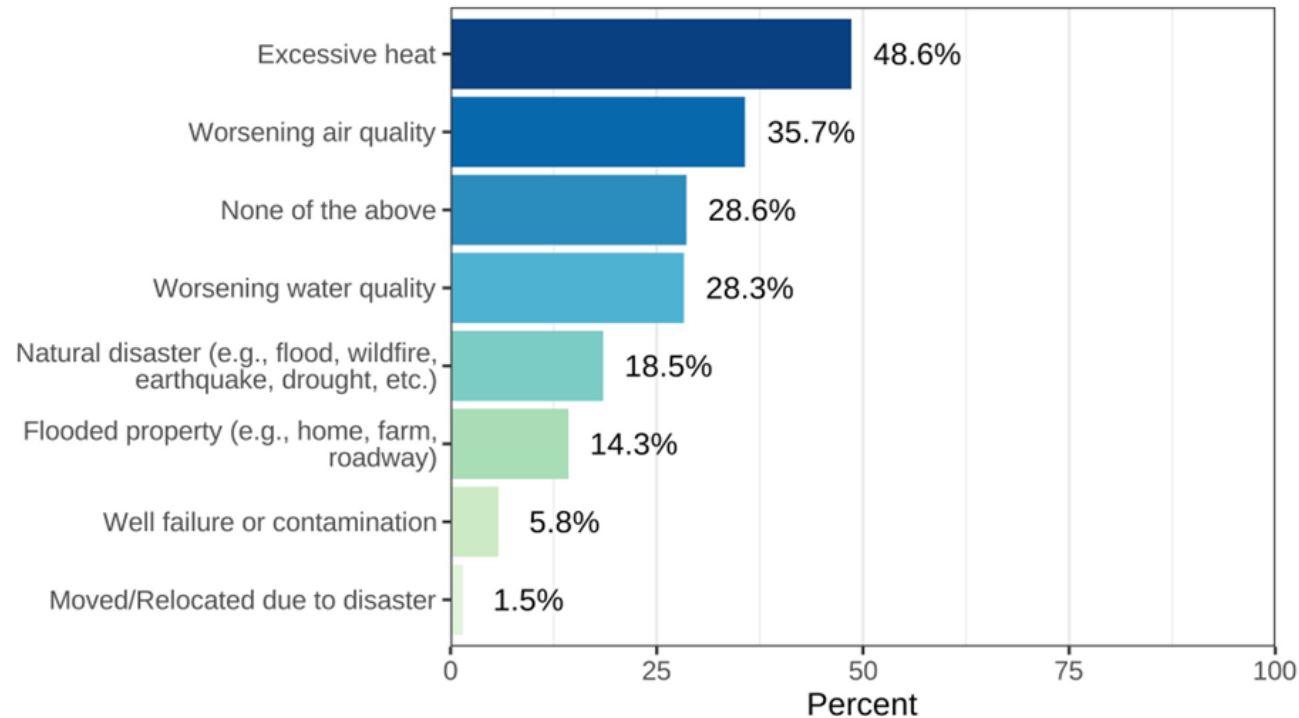
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Salinity barrier installation at West False River  
(Photo credit: CA DWR)

# RESIDENTS HAVE EXPERIENCED 2 OF 7 ENVIRONMENTAL IMPACTS ON AVERAGE

“Have you or anyone in your home experienced any of the following impacts while living in the Delta?”



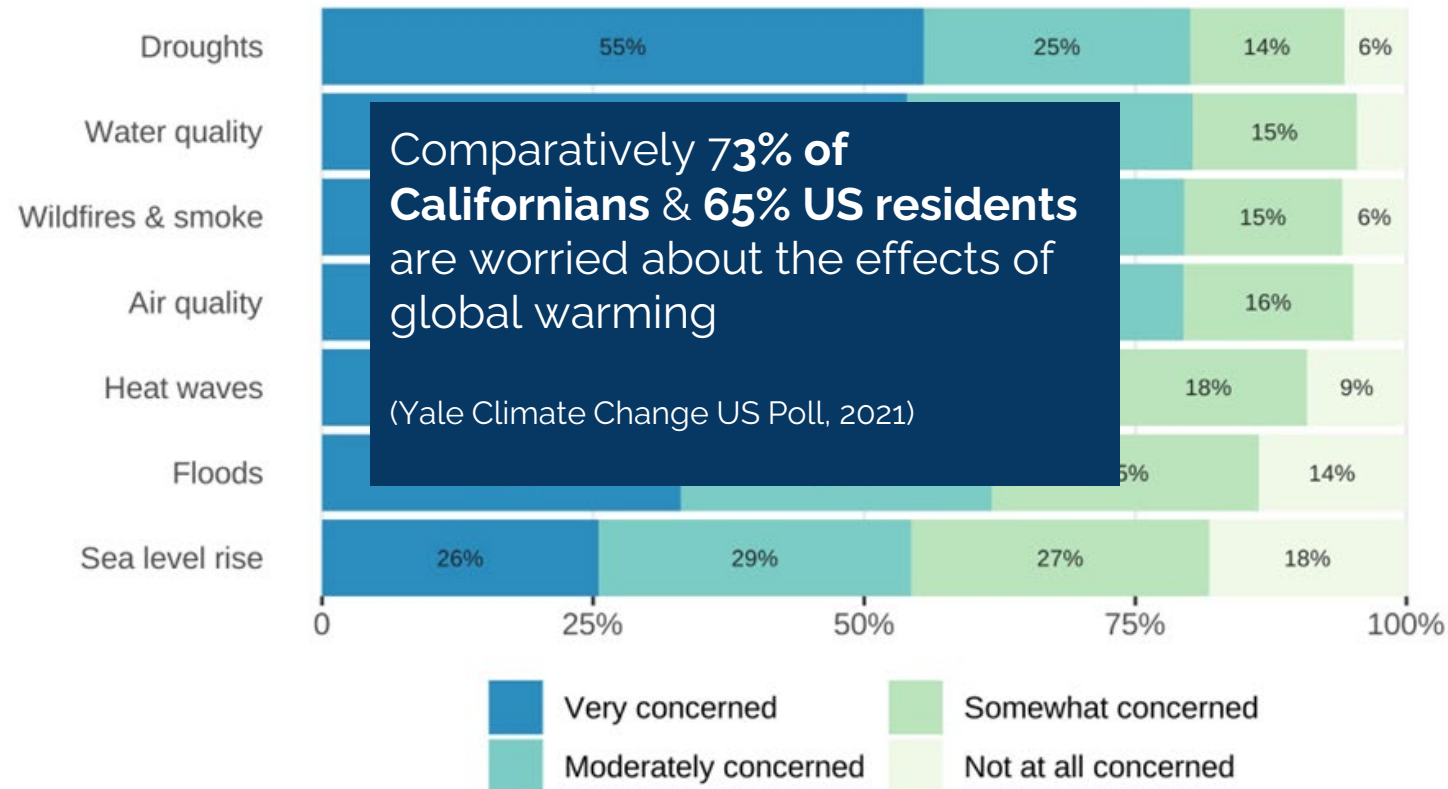
Q12 prompts users to, "Select all that apply". 2204 survey respondents. Data are weighted.

Comparatively, **53% Californians & 46% of US residents** report having personally experienced the effects of global warming

(Yale Climate Change US Poll, 2021)

# MAJORITY CONCERNED ABOUT CLIMATE CHANGE THREATS

“How concerned are you about each of the following environmental changes affecting the Delta over the next 25 years?”



**>3 out of 4** respondents are concerned about **drought, water quality, wildfire & smoke, air quality**

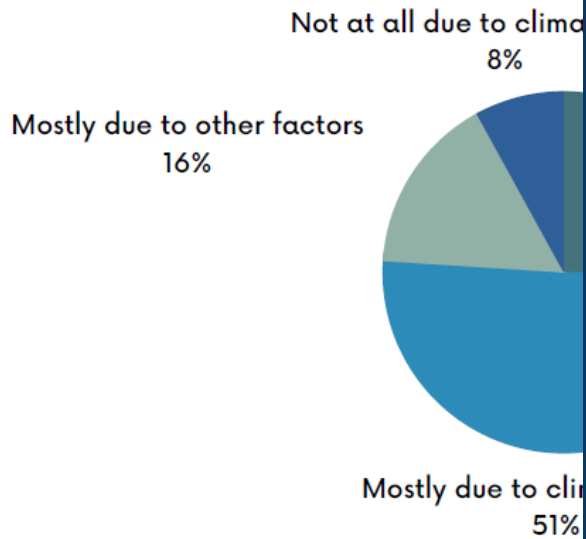
Overall concern is greater among:

- Women
- Respondents identifying as politically liberal
- Zone 2 & 3 residents

2089 survey respondents. Data are weighted.

# MAJORITY BELIEVE IN CLIMATE CHANGE

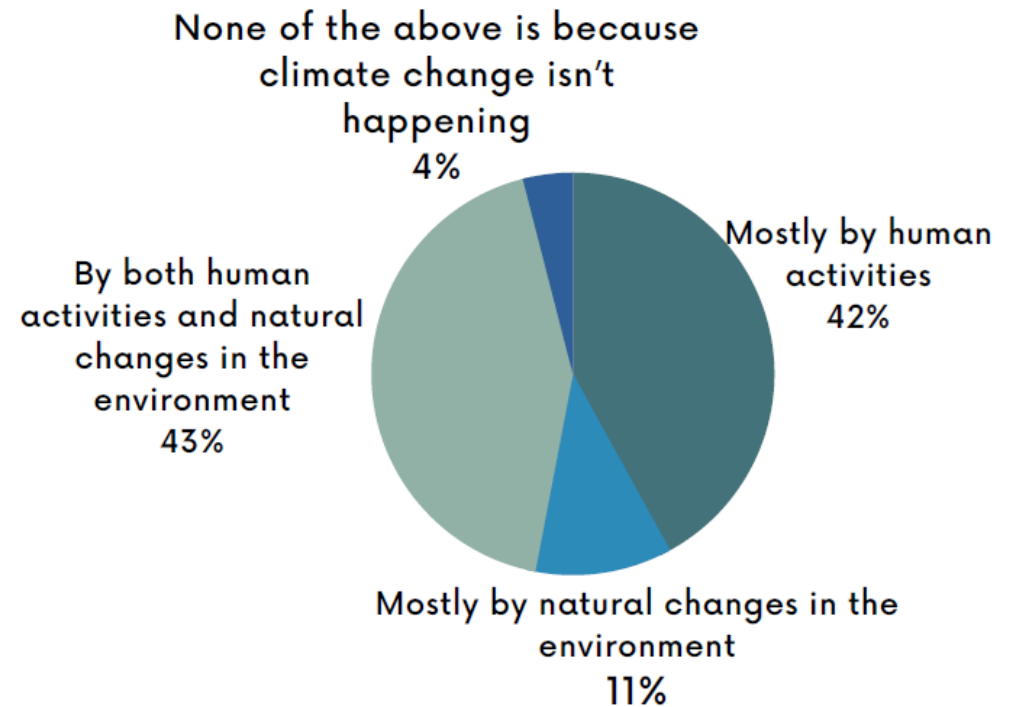
“How much do you think the environmental changes mentioned above are a result of climate change?”



Comparatively, **63% of California residents & 57% of U.S. residents** believe climate change is mostly caused by human activities

(Yale Climate Change US Poll, 2021)

“Do you believe climate change is caused by...”



2026 survey respondents. The data are weighted.

2139 survey respondents. The data are weighted.



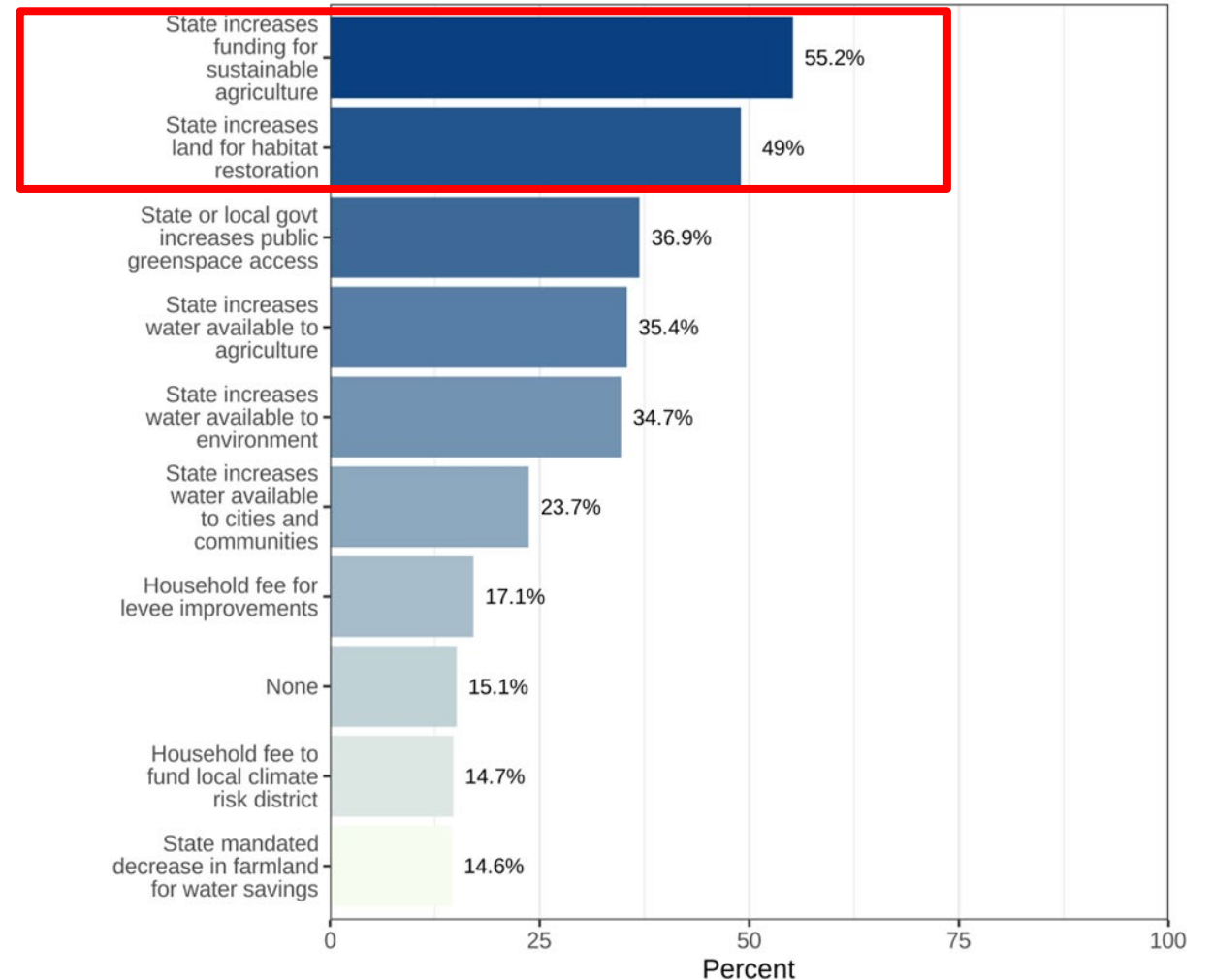
# MAJORITY SUPPORT ADAPTATION ACTIONS ON SUSTAINABLE AGRICULTURE, HABITAT RESTORATION & DROUGHT PREPARATION

Support for nearly all policy approaches higher among:

- Higher education respondents
- Politically liberal respondents

“To prepare for possible environmental and climate change impacts in the Delta, would you support any of the following policy approaches?”

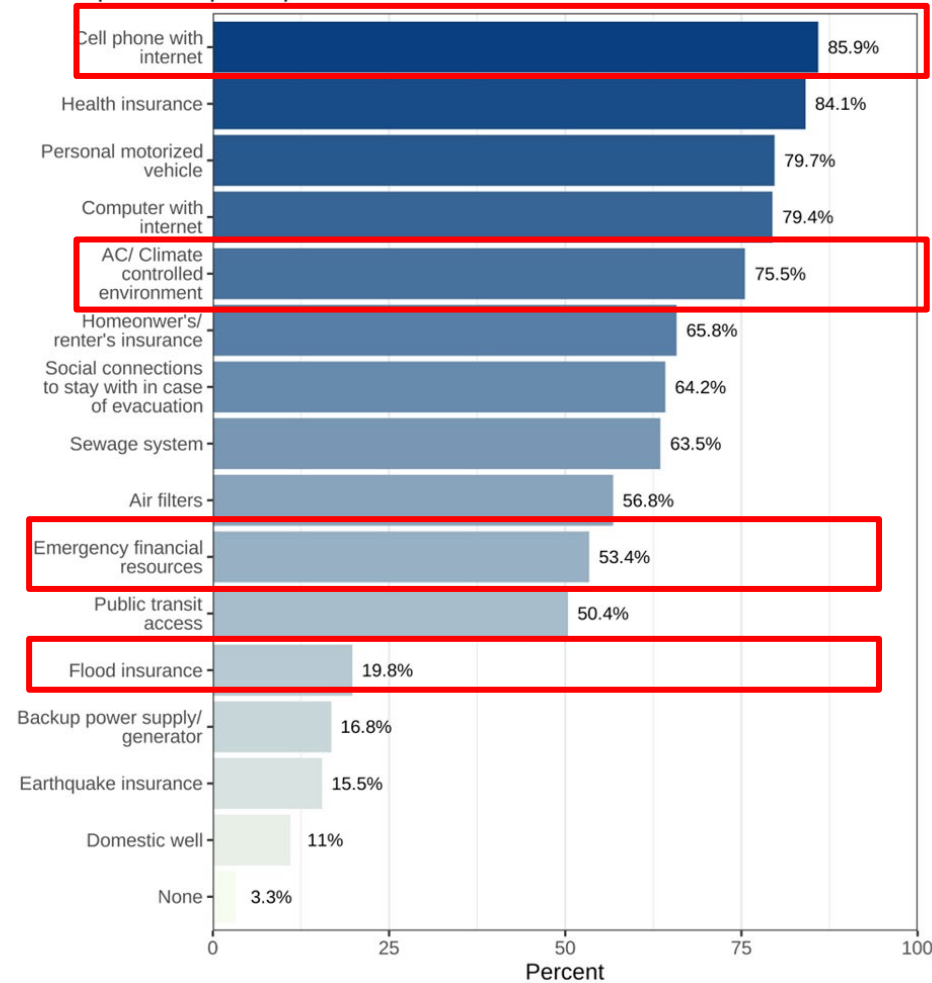
## 17. Adaptation Policy Support



# ADAPTIVE CAPACITY VARIES ACROSS DEMOGRAPHICS & GEOGRAPHY

“Which of the following resources do you currently have access to?”

## 24. Adaptive capacity



2196 survey respondents. Question type was "Select all of the above."

# ENVIRONMENTAL & CLIMATE CHANGE TAKEAWAYS

“I worry that with the declining economy, income inequality, lack of affordable housing, and continued gentrification of the entire state... the Delta as we know(or knew it... once upon a time I could eat fish out of certain waterways I no longer can) will be nearly non-existent due to overuse and climate change.”

- Delta resident

# SECTION IV CIVIC ENGAGEMENT & GOOD GOVERNANCE

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Delta Tour Water Education for  
Latino Leaders, May 2023  
(Photo: J. Rudnick)

## Community Involvement

40. Are you involved with any of the following groups or communities in the Delta? Select all that apply.

# COMMUNITY INVOLVEMENT IS LOW

Majority of respondents do **NOT** report being involved with any community groups

Group membership is higher among:

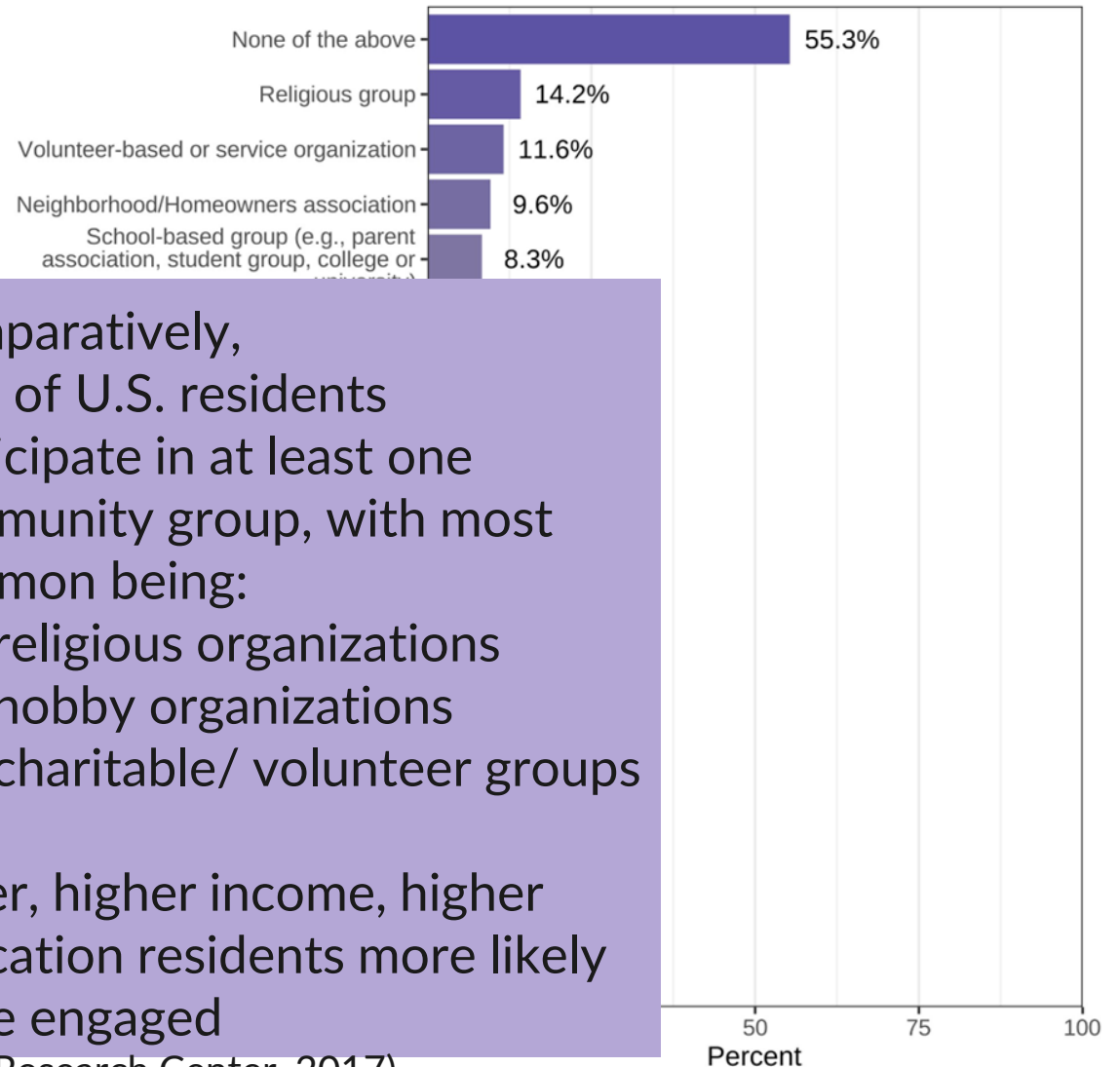
- Rural (primary zone) residents
- Older residents
- Men
- Higher education

Comparatively, 57% of U.S. residents participate in at least one community group, with most common being:

- religious organizations
- hobby organizations
- charitable/ volunteer groups

Older, higher income, higher education residents more likely to be engaged

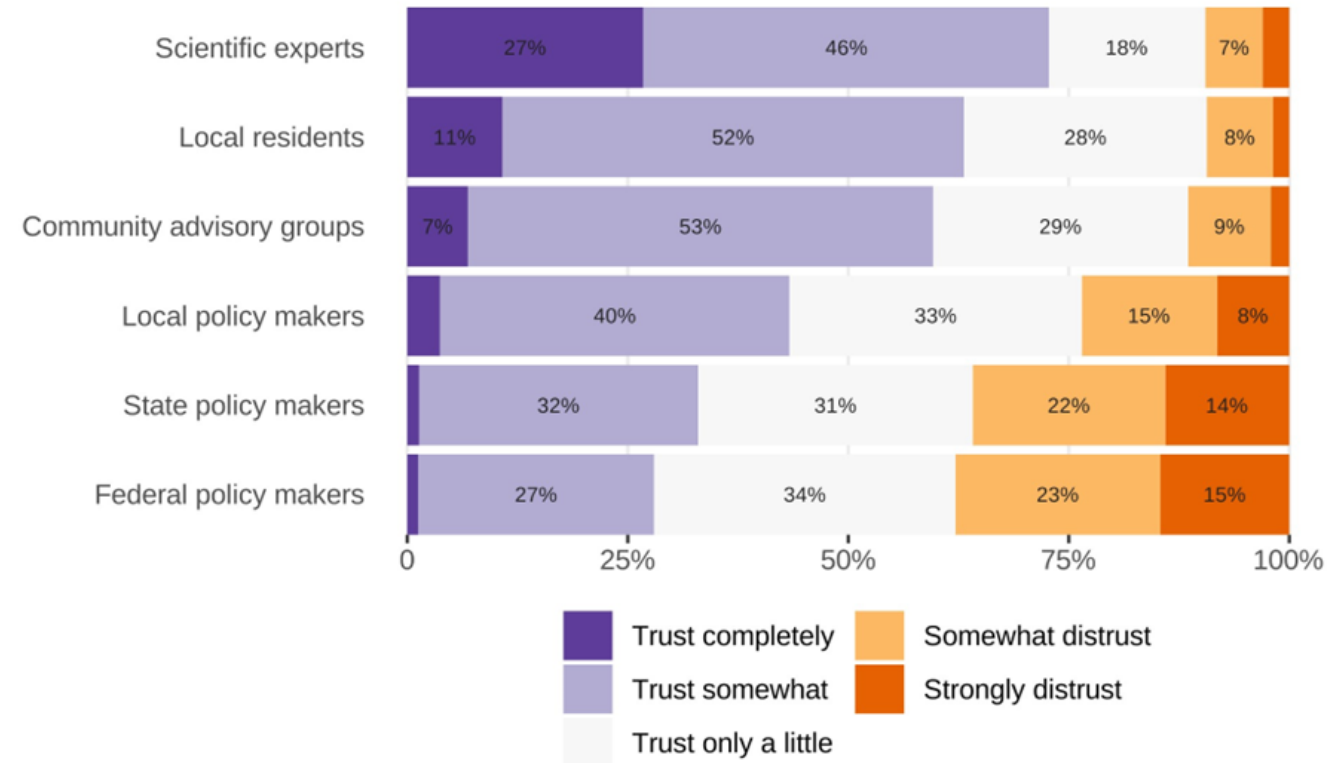
(Pew Research Center, 2017)



# SCIENTISTS, COMMUNITY ADVISORY GROUPS AND LOCAL RESIDENTS ARE TRUSTED TO ACT IN BEST INTERESTS OF DELTA

## Q41. Trust in Social Groups

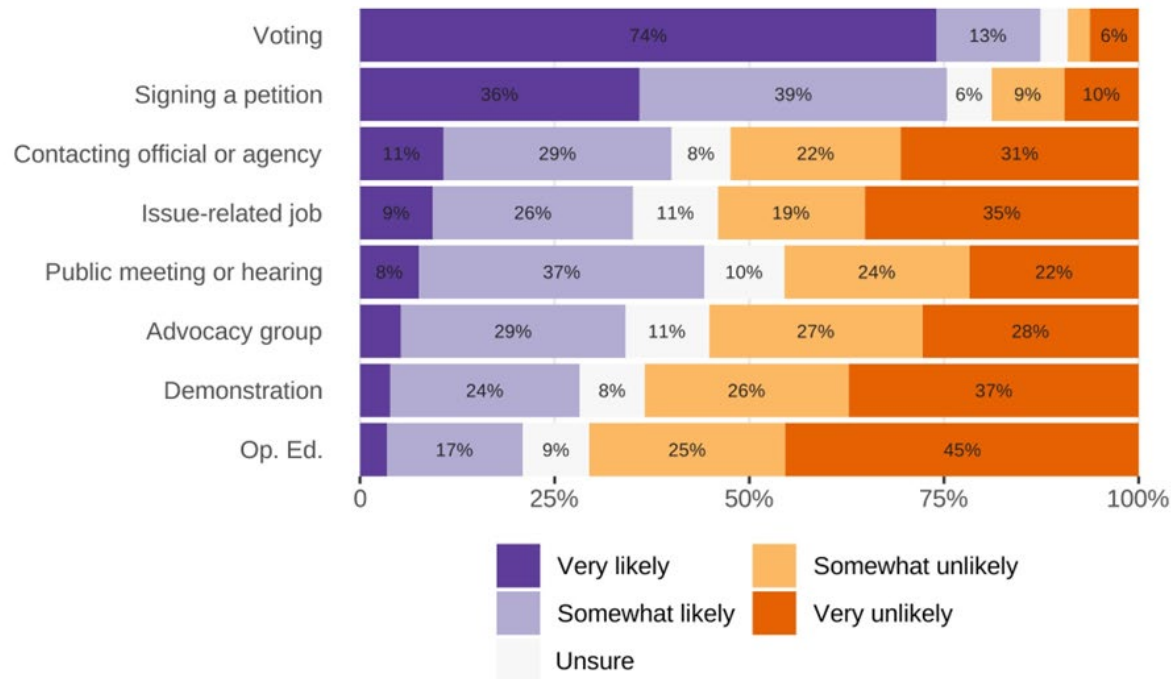
Please rate the following entities on how much you trust them to act in the best interests of the Delta.



# CIVIC ENGAGEMENT BEYOND VOTING AND PETITIONING IS LOW

## Q42. Involvement in Delta Issues

How likely are you to get involved in any of the following ways for a Delta issue that is important to you?



1307 survey respondents. Data are weighted.

### Greatest barriers to engagement reported:

- Too busy with other obligations (43%)
- I feel like my input will not affect decision making (31%)
- I don't know how or when to engage (28%)
- I am unfamiliar with the issues (27%)

# CIVIC ENGAGEMENT & GOVERNANCE TAKEAWAYS

“The public, not specialists, have more heads and untapped brainpower. Real democracy must include their story”

- Delta resident



# WHAT HAVE WE LEARNED?



# KEY TAKEAWAYS & REFLECTIONS

I	Delta holds different meanings to different communities	<ul style="list-style-type: none"><li>• What assumptions do we hold about residents' values &amp; concerns that should be re-evaluated?</li><li>• Who is typically represented in decision-making processes?</li><li>• How to encourage and ensure more representative participation?</li></ul>
II	Priorities and concerns for region reflect varied needs and resources	<ul style="list-style-type: none"><li>• How do management and policy decisions address residents' needs? Which residents' needs?</li><li>• How do environmental agencies impact quality of life, directly and indirectly?</li></ul>
III	Climate change concern & need for adaptation is high	<ul style="list-style-type: none"><li>• How can adaptation efforts prioritize those most impacted?</li><li>• How can communication and collaboration (re)build trust and support for adaptation?</li></ul>
IV	Participation and community engagement is low	<ul style="list-style-type: none"><li>• How to (re)engage and (re)motivate residents to participate in decisions that affect their lives and communities?</li><li>• How to build social capital to support regional resilience?</li></ul>

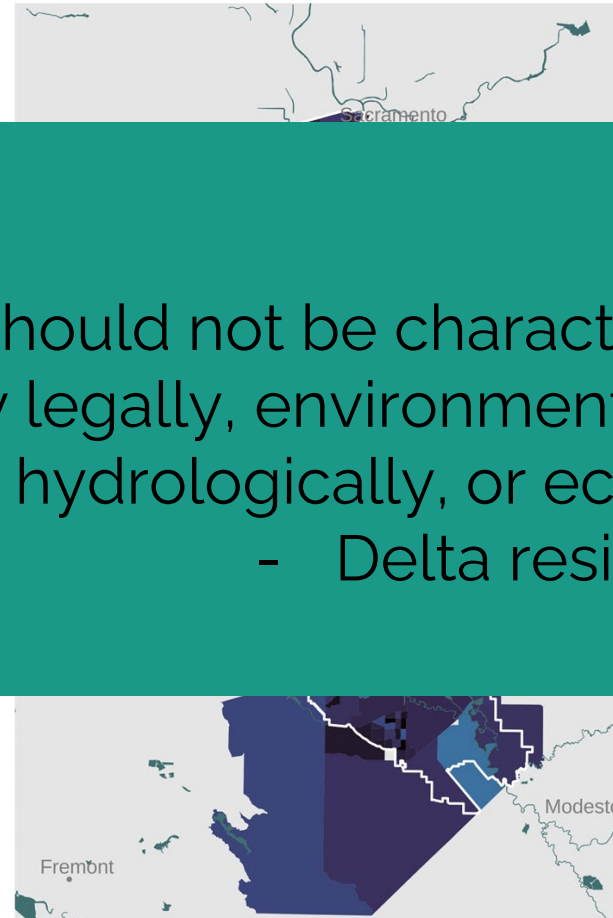
# RECOGNIZING HIGH DIVERSITY ACROSS THE REGION

Sense of Place Index



Regions are US Census Tracts (US TIGER, 2020). CRS: EPSG 3310. All data are weighted.

Environmental Impacts Experienced Index



Regions are US Census Tracts (US TIGER, 2020). CRS: EPSG 3310. All data are weighted.

Adaptive Capacity Index



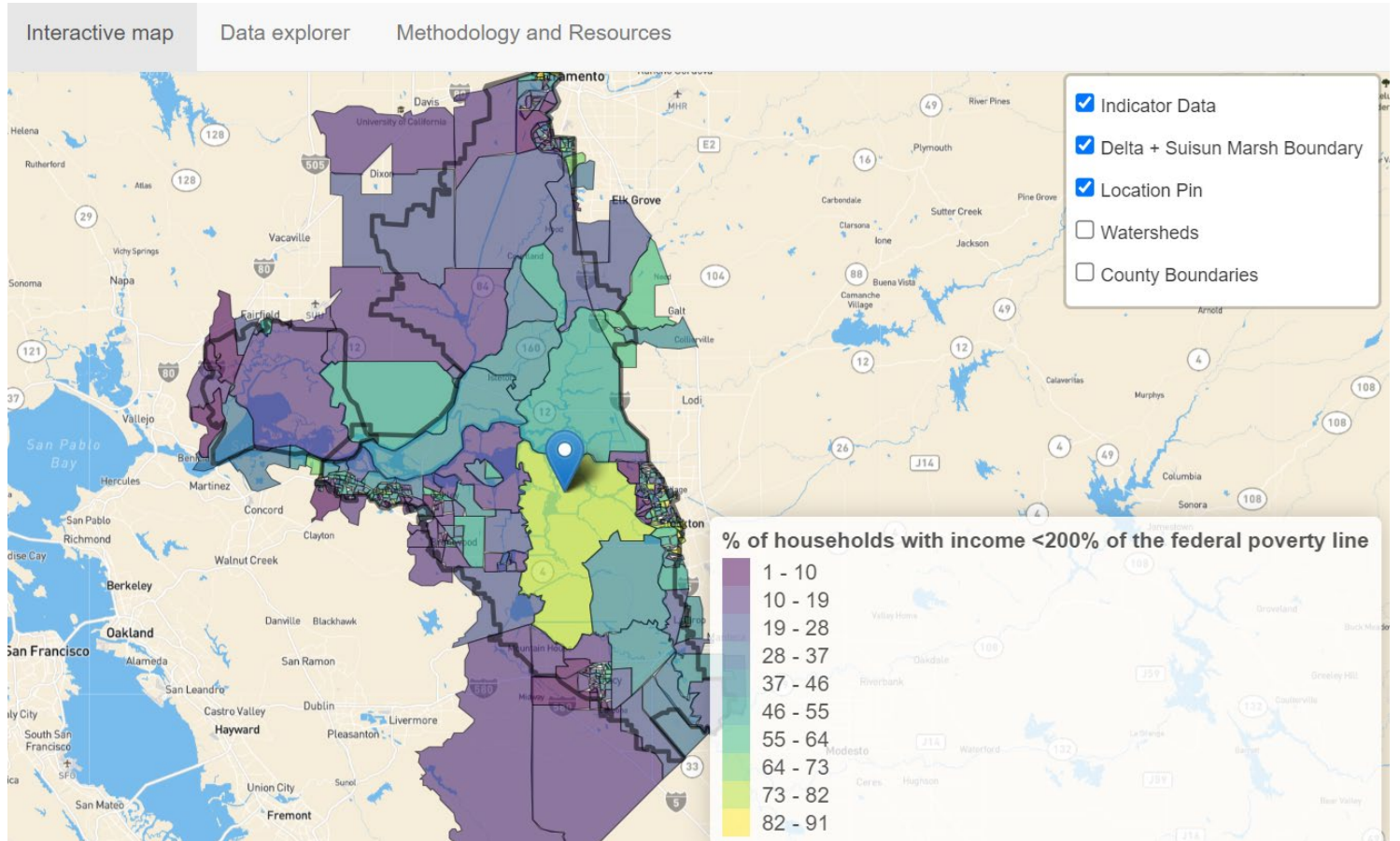
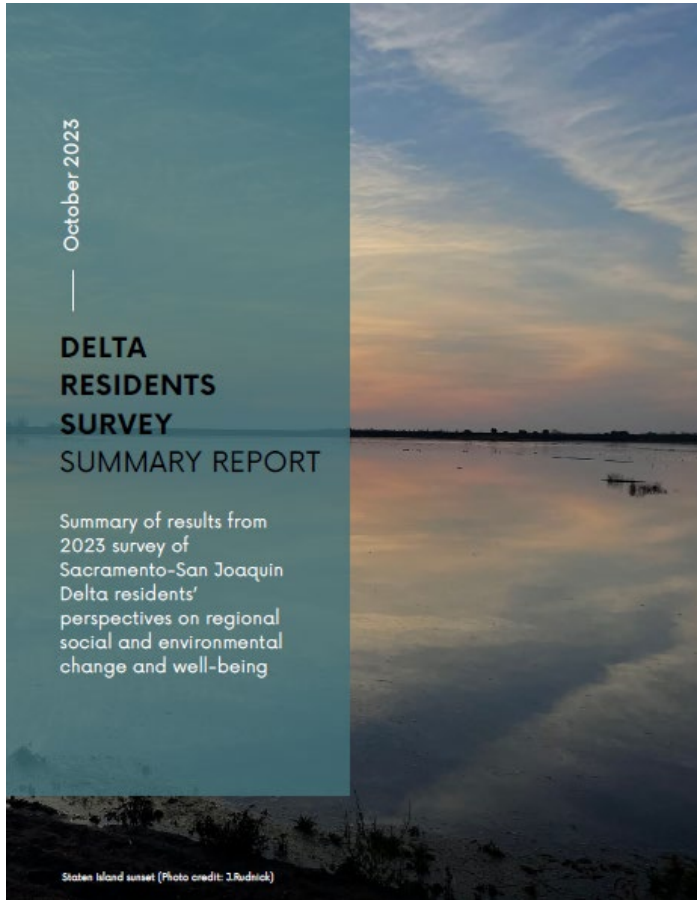
Regions are US Census Tracts (US TIGER, 2020). CRS: EPSG 3310. All data are weighted.

“The Delta should not be characterized as a homogenous community legally, environmentally, socially, politically, hydrologically, or economically.”

- Delta resident

Water  
Index (0-15)  
15  
11.25  
7.5  
3.75  
0

# SHARING RESULTS AND NEXT STEPS



Visit website to find report, publicly available data, data viewer tools and further results: <https://ktomari.github.io/DeltaResidentsSurvey/>

# WHERE TO GO FROM HERE

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# Thank you!

Questions? Send to [jrudnick@ucsd.edu](mailto:jrudnick@ucsd.edu)

Find Summary Report, anonymized data, and tools to explore the data at:  
<https://ktomari.github.io/DeltaResidentsSurvey/>



# EXTRA SLIDES

# Why do we need a survey?

## Social Science Task Force recommendation

**A Social Science Strategy for the Sacramento-San Joaquin Delta**

Delta Social Science Task Force  
 Kelly Biedenweg, Ph.D.  
 James N. Sanchirior (Chair), Ph.D.  
 Holly Doremus, Ph.D., J.D.  
 Robert Johnston, Ph.D.  
 Josue Medellin-Azuara, Ph.D.  
 Christopher M. Weible, Ph.D.

March 2020

**UC DAVIS**  
 Coastal and Marine Sciences Institute

**DELTA STEWARDSHIP COUNCIL**

## Large gap in existing data



**Delta Visitor Survey**

SACRAMENTO | SAN JOAQUIN  
**DELTA**

Please type the web address below into your browser  
**DeltaVisitorSurvey.com**

Thank you for your participation!

Let us know what you think!

**The Economic Impact of Recreational Boating and Fishing in the Delta**

George Goldman □ Bruce McWilliams □ Vijay Pradhan □ Cheryl Brown

Department of Agricultural and Resource Economics  
 University of California at Berkeley

November 1998

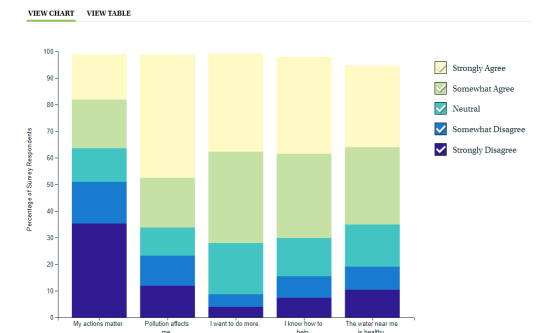
## Important to meeting coequal goals



## Growing efforts to assess social indicators to inform estuary management



## Individual Engagement in the Chesapeake Bay Watershed (2017)





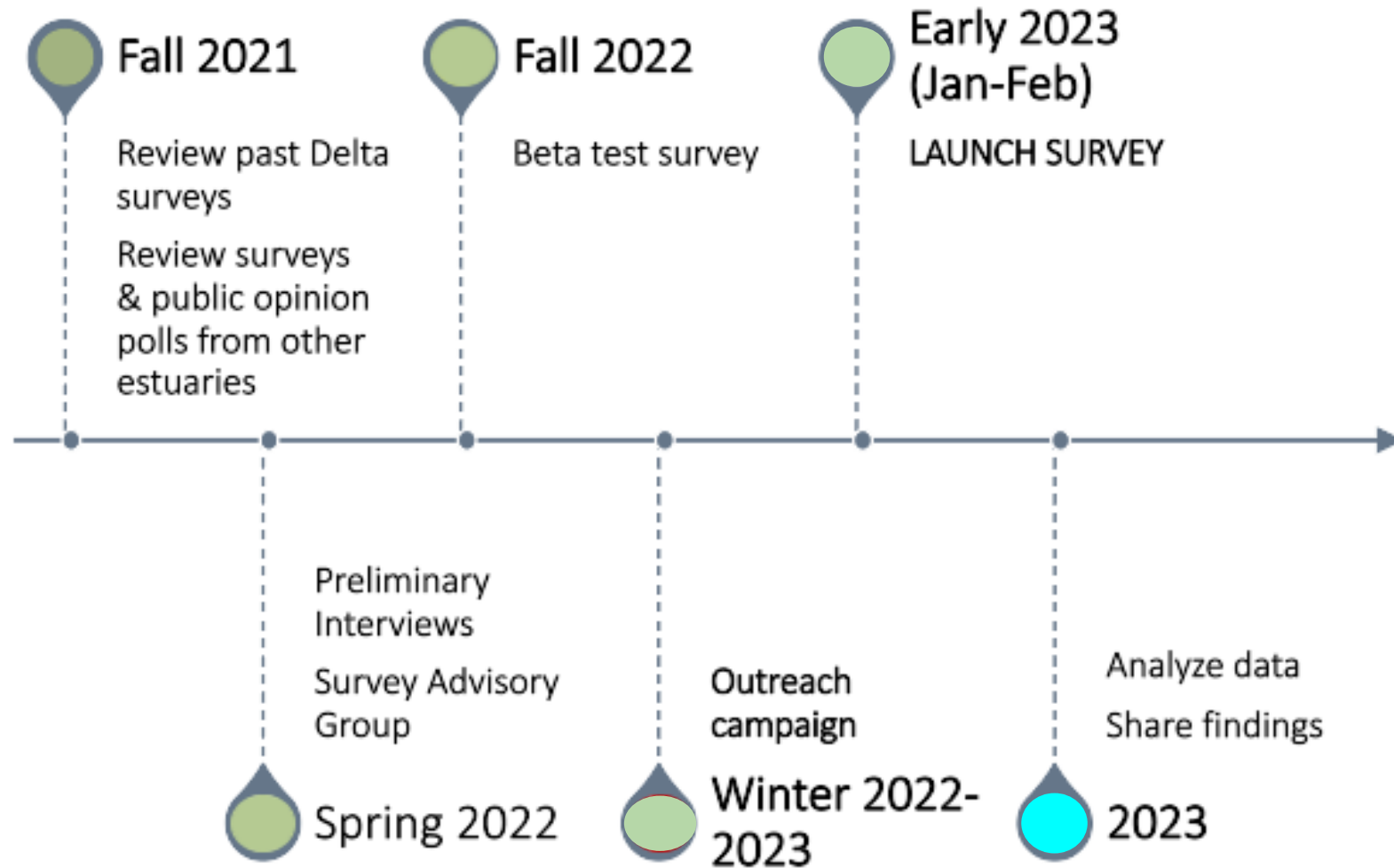


Delta road signs (Photo: CA DWR)

## Motivation for project

- **Addressing data gap:** Lack of data on human dimensions of Delta & little to no social monitoring, equivalent in scale or robustness to ecological and biophysical monitoring
- **Meeting policy mandate:** Delta is impacted by and deeply impacts residents well-being... understanding the people who live, work, play and depend on the estuary is essential for meeting coequal goals
- **Improving lives:** Assessing regional population's well-being can inform needed improvements to management and policy approaches to achieve more equitable and sustainable outcomes

# Timeline



# Research Questions

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## **Sense of Place :**

1. How do Delta residents identify with region? (place attachment, meaning, dependency)
2. What do residents value and want to see prioritized in Delta?
3. How do residents' sense of place, priorities, concerns, and demographics relate to their management & policy preferences?
4. Assessment of Delta residents' well-being wrt to environmental issues: basic needs, adaptive capacity, social capital, overall life satisfaction

## **Climate change perceptions and experiences:**

1. How do Delta residents perceive local climate change risks?
2. How do climate risk perceptions and level of concern vary across demographic, socio-behavioral, cultural, and political characteristics, experience with climate change impacts, or exposure to physical risks (as predicted by biophysical climate risk models)?
3. What are Delta residents' policy and management preferences related to climate change adaptation? What are key drivers of residents' preferences?



# How representative are the respondents of the full population in each zone?

Overall, respondents **OVER** represented...

- Zone 1
- Females (esp. so in Zone 1 & 3)
- Older folks (esp. 55+ years)
- Non-Hispanic folks (esp. in Zone 1 & 2)
- White folks
- Higher education (bachelors & graduate degrees)
- Higher income (esp. in Zone 1 & 2)

Accounted for these differences by weighting data, standard procedure in survey research to produce unbiased estimates representative of population

- Respondents from underrepresented identities get assigned relatively higher weights; respondents from overrepresented identities get assigned relatively lower weights
- WgtAdj by SUDAAN (*SUDAAN Language Manual, Release 11.0*. RTI International)
- Extreme weights trimmed

# Differences in respondents between zones

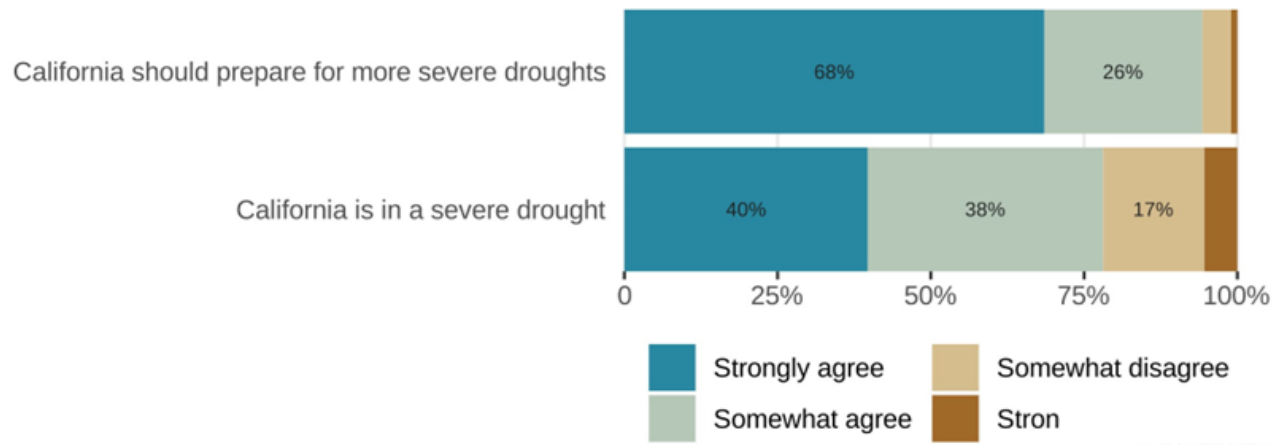
Demographics/ Characteristics	Primary Zone	Secondary Zone	Tertiary Zone
Gender			More female respondents
Age	Greater prop. older respondents		Greater prop. younger respondents
Race & ethnicity	More white respondents		More black and Latino respondents
Education			More respondents with lower levels of education
Income			More low and extremely low income respondents
Home ownership			Less home ownership
Political ideology	Slightly higher proportion conservative		

# ADDITIONAL RESULTS



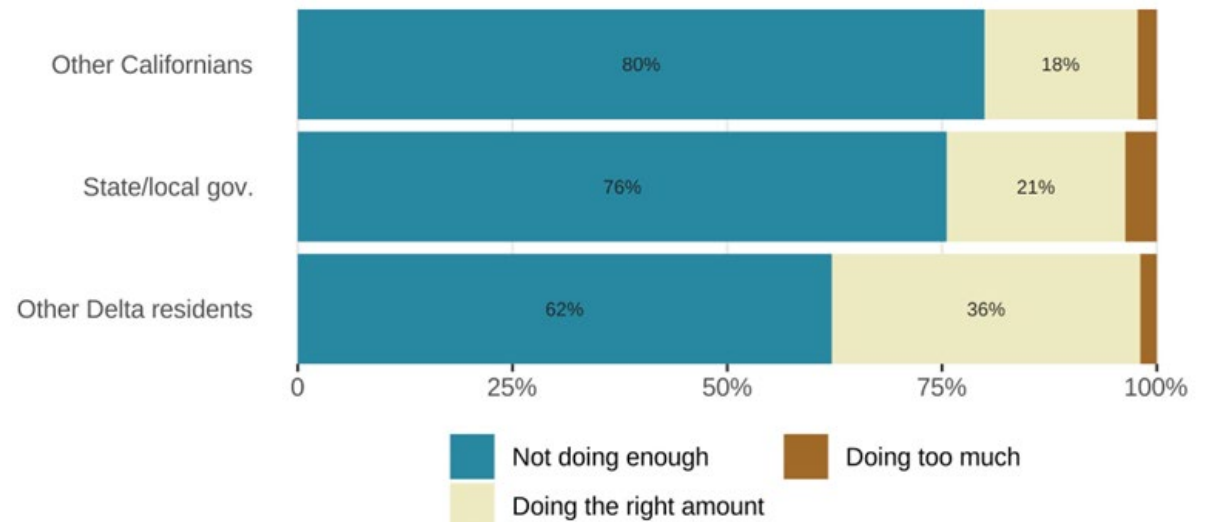
# Majority of residents support more action on drought

“Rate your level of agreement with the following statements on the current state of drought in California”



2146 survey respondents

“How would you rate the level of response the following entities are doing in response to drought?”



1777 survey respondents. Data are weighted.



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# “Who do you feel best advocates for your interests in the Delta?”

## State government:

California Department of Natural Resources (3)  
California Environmental Protection Agency (2)  
Delta Protection Commission (13)  
Delta Stewardship Council/ Science Program (5)  
Department of Water Resources (9)  
Fish and Game/ CDFW (10)  
Sacramento San Joaquin Delta Conservancy (4)

## Local government:

East Bay Regional Parks (8)  
Sacramento City Council (2)  
West Sacramento City Government (2)

## Non-governmental organizations:

Audubon Society (5)  
California Striped Bass Association (2)  
California Farm Bureau (3)  
Recreational Boaters of California (4)  
Sierra Club (10)  
The Nature Conservancy (2)

## Community-based organizations:

Consumnes River Preserve (2)  
Delta Counties Coalition (5)  
Delta Keepers (9)  
Friends of the Library (2)

Locke Foundation (2)  
North Delta Cares (6)  
Pocket-Greenhaven Community Association (2)  
Reclamation Districts (9)  
Restore the Delta (47)  
Save the Delta (18)  
Stop the Tunnels (10)  
Volunteer Fire Districts (3)  
Rotary Clubs (3)

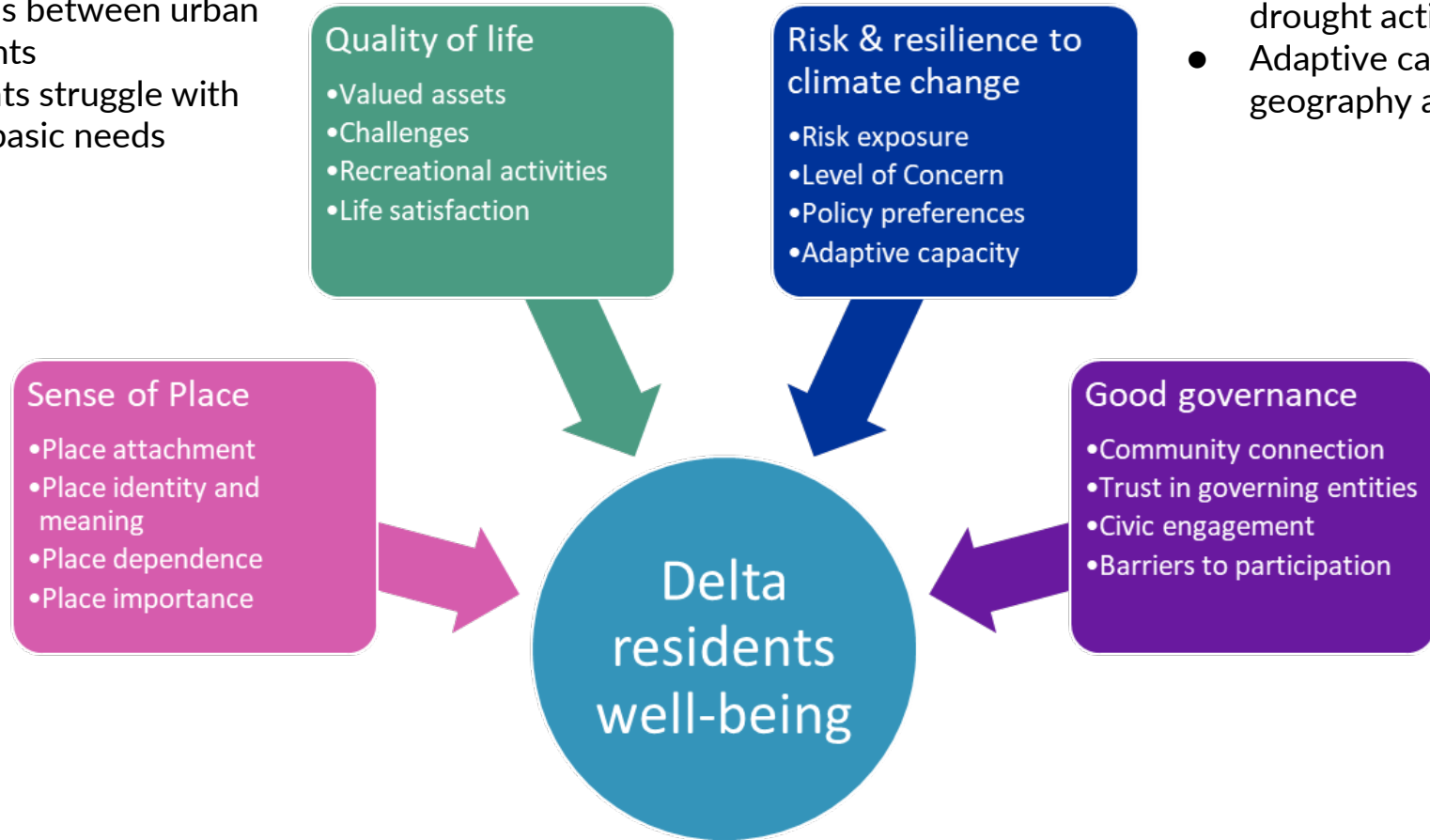
## Elected Officials:

Contra Costa County Supervisor (3)  
Sacramento County Supervisor (7)  
Yolo County Supervisor (2)  
1 State Assembly Member (5)  
CA Governor (6)  
3 U.S. House Representatives (23)

# Recap of key results

- Majority value scenic beauty & outdoor recreation Delta provides
- Varying concerns between urban and rural residents
- >25% of residents struggle with affordability of basic needs

- Shared sense of place importance
- Multiple place meanings and attachments across diverse population
- Place dependence highest among Latino/Hispanic, younger, males, with lower education and in non-English speaking households



- Majority residents concerned about climate change impacts
- Majority of residents believe climate change is happening and human-caused
- Majority of residents support increased drought action
- Adaptive capacity varies across geography and demographics

- Civic engagement is low
- Residents place higher trust in scientists, community advisory committees and local residents over policymakers
- Barriers to engagement include time, believing input will have impact, and knowing where/ how to get involved

# More research to do

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Many, many more questions to investigate in data

- How does residency time in Delta influence...
  - Sense of place
  - Perceptions of environmental and climate change
  - Adaptation policy preferences
- How do sense of place and life satisfaction relate?
- How do climate change experiences and perceptions vary across geography with physical risk?
- Understanding well-being of residents...
  - Summarizing all contributing factors together
  - What are key contributing factors to overall well-being?
  - How does overall well-being vary across demographics and geography?

# Planned next steps

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## **Outreach on results**

- Summary report & tailored research briefs for community partners
- Community outreach network & survey respondents

## **Data availability and accessibility:**

- Publishing anonymized, aggregate data version
- Interactive data explorer

## **Continued data analysis:**

- Research collaborations
- NCEAS synthesis effort

## **Applying & implementing learnings:**

- Informing Council-led efforts: Delta Adapts and EJ Issue Paper
- Integrating with updates to Socioeconomic Indicators Report
- Consideration of human well-being indicators for long term social-ecological monitoring