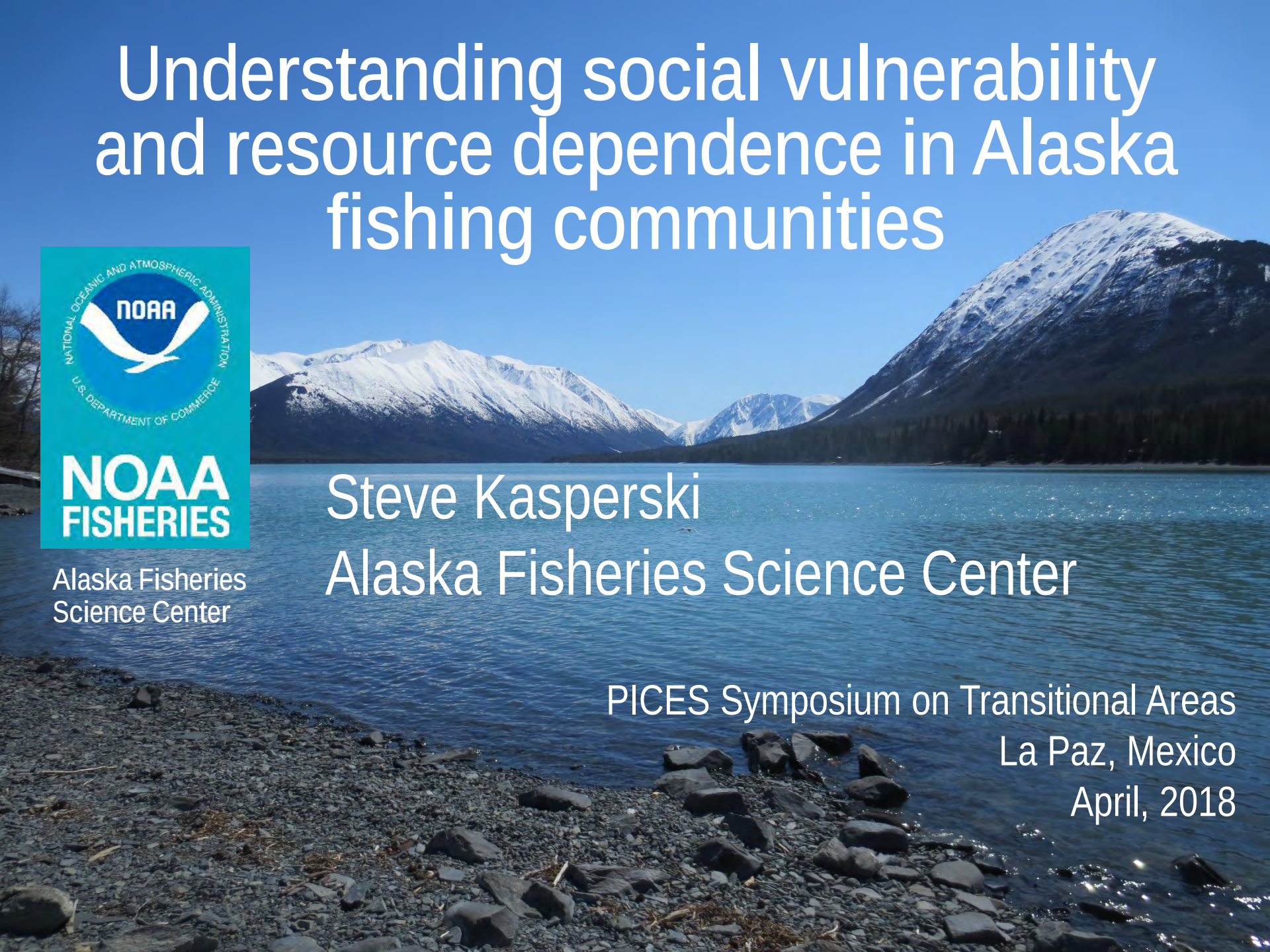
Understanding social vulnerability and resource dependence in Alaska fishing communities



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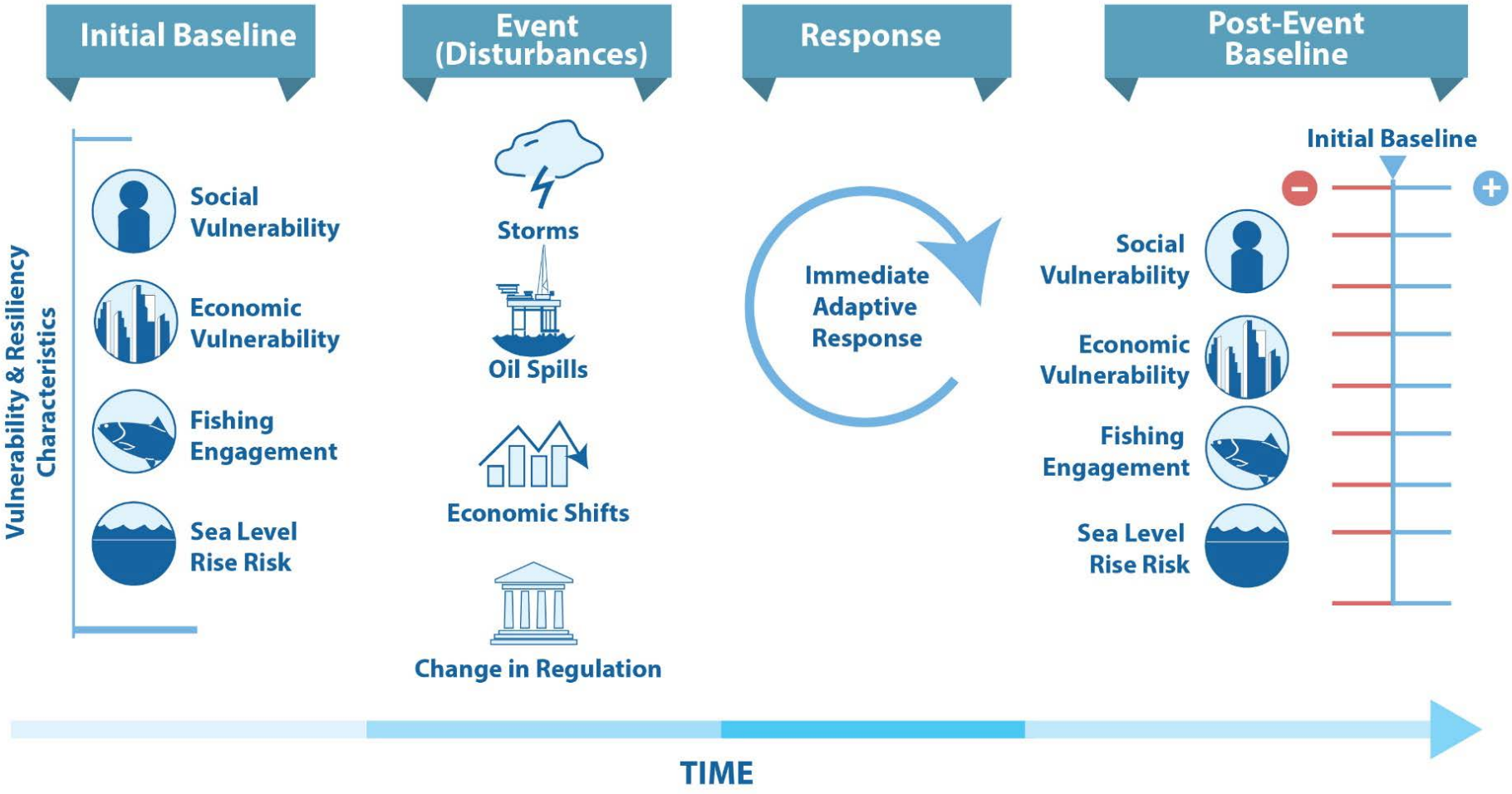
PICES Symposium on Transitional Areas
La Paz, Mexico
April, 2018

Outline

- Define community vulnerability and resilience
- Describe social indicators and their generality
- Groundtruth social indicators
- Provide examples of management applications

Vulnerability and Resilience Time Series Conceptual Model



Community Indicators

- Principal component factor analysis (PCFA)
- 14 indices created

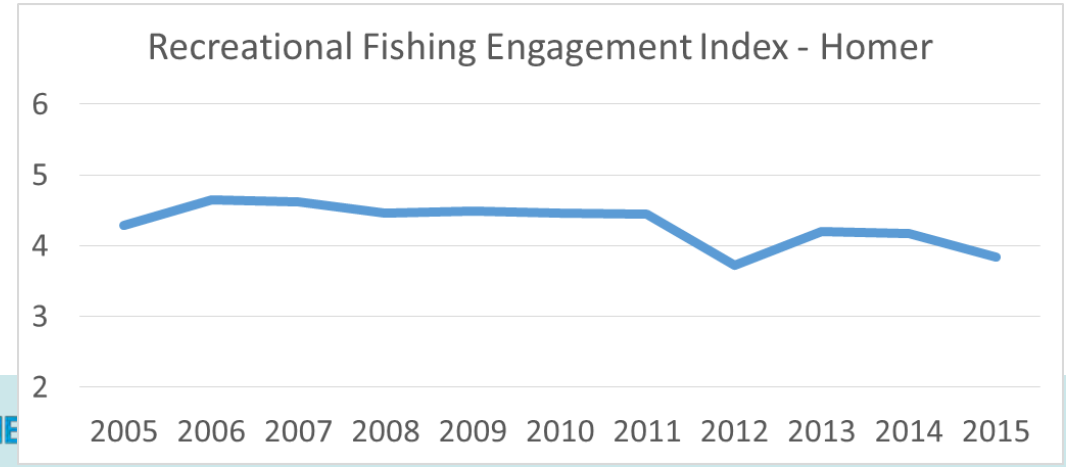
Social indices	Fisheries participation indices
Personal disruption	Commercial fishing engagement
Poverty	Commercial fishing reliance
Labor force structure	Recreational fishing engagement
Housing characteristics	Recreational fishing reliance
Housing disruption	Subsistence fishing involvement
Population composition	Commercial processing engagement
Status of schools	Commercial processing reliance

Himes-Cornell, A., Kasperski, S., 2016. Using Socioeconomic and Fisheries Involvement Indices to Understand Alaska Fishing Community Well-Being. Coastal Management 44 (1), 36-70.

Index Creation

Recreational Fishing Engagement
Number of charter businesses located in a community
Number of sportfishing licenses
Number of sportfishing guide businesses
Number of sportfishing guide licenses

Principal Component Factor Analysis

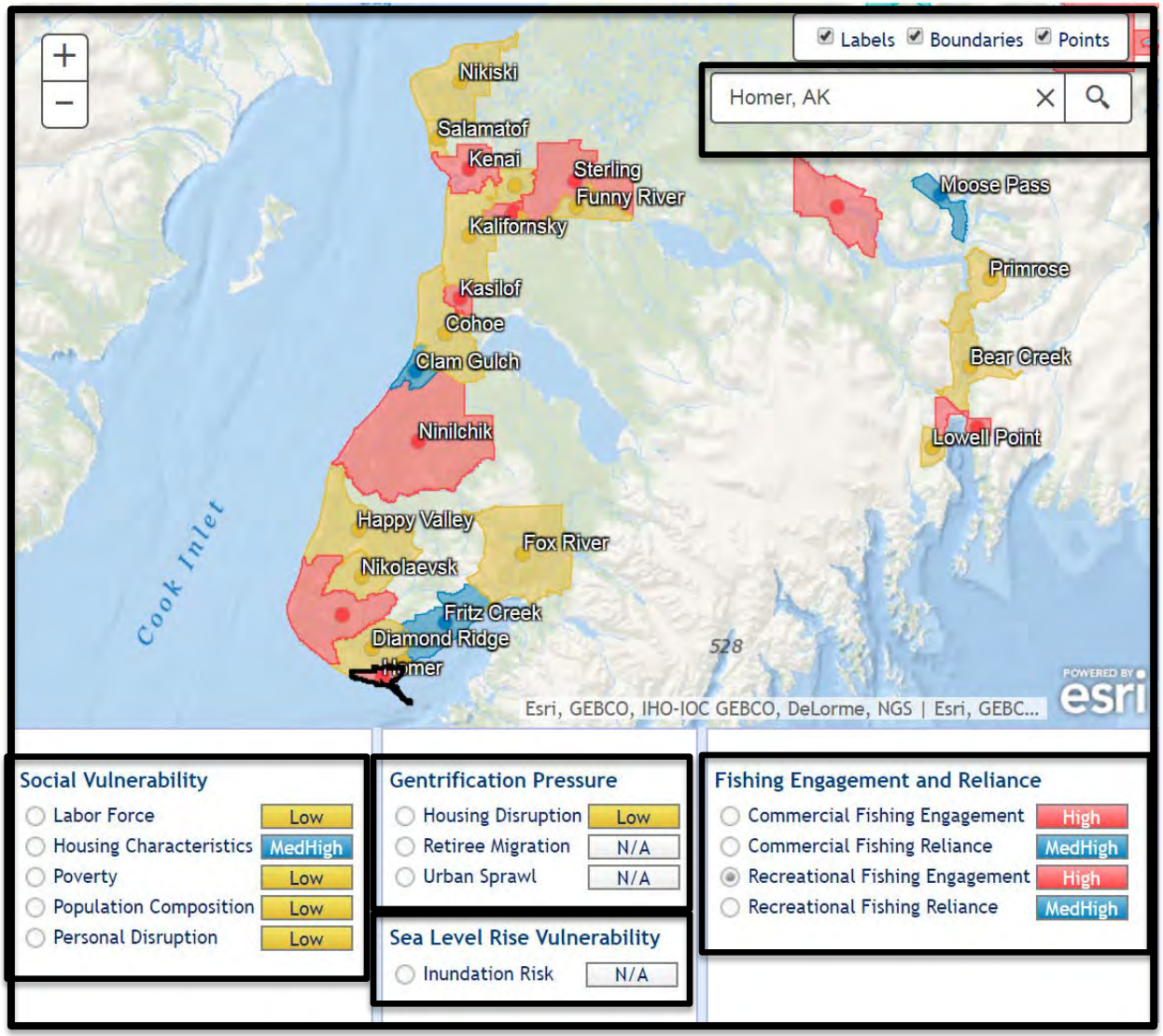


Social Indicators Website

- 3,800 communities
- 24 states
- 75 variables
- 7 secondary data sources
- 13 Indices - PCFA
- commercial and recreational fishing

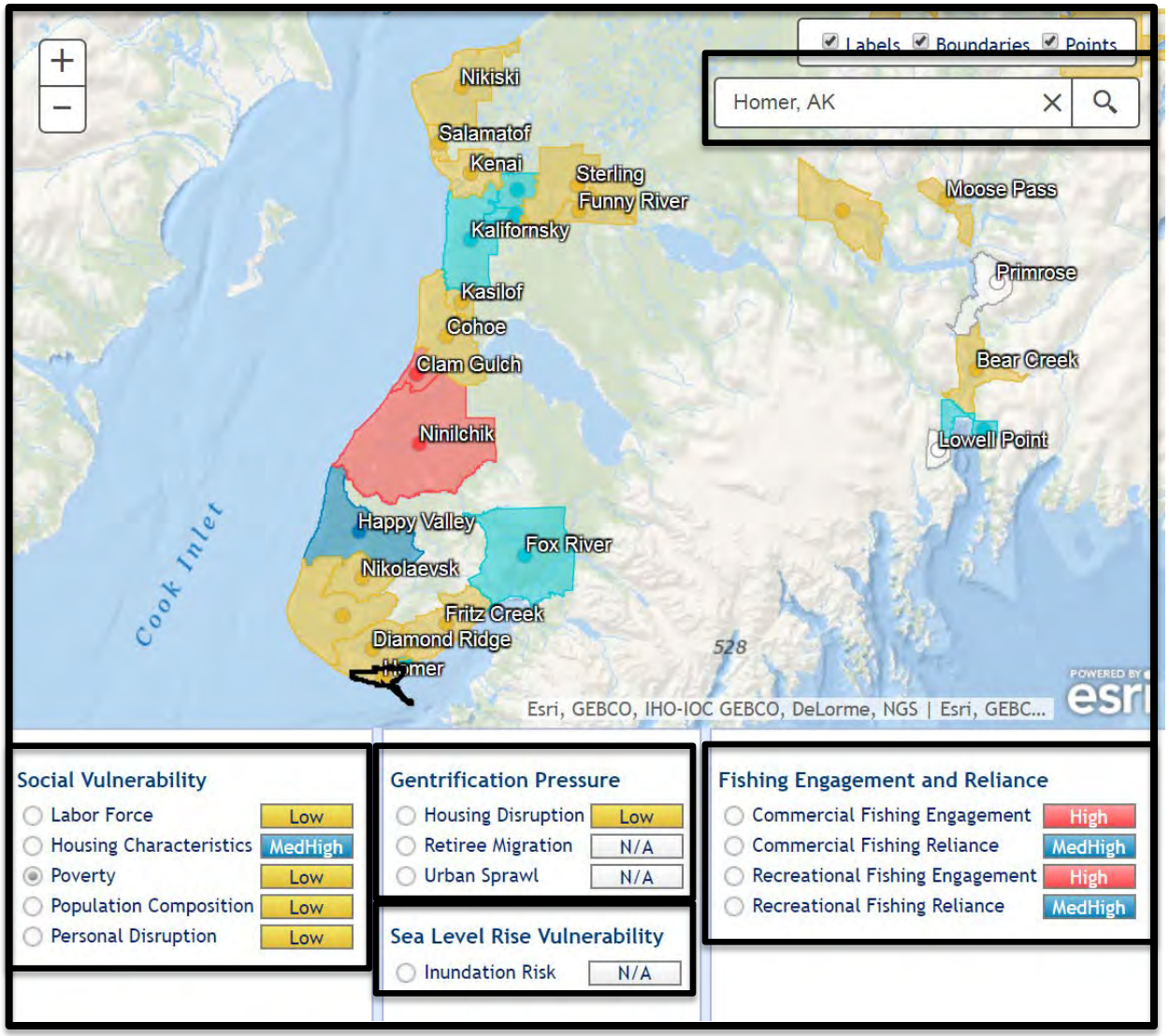
http://www.st.nmfs.noaa.gov/humandimensions/social-indicators/index

Mapping Tool – Recreational Engagement



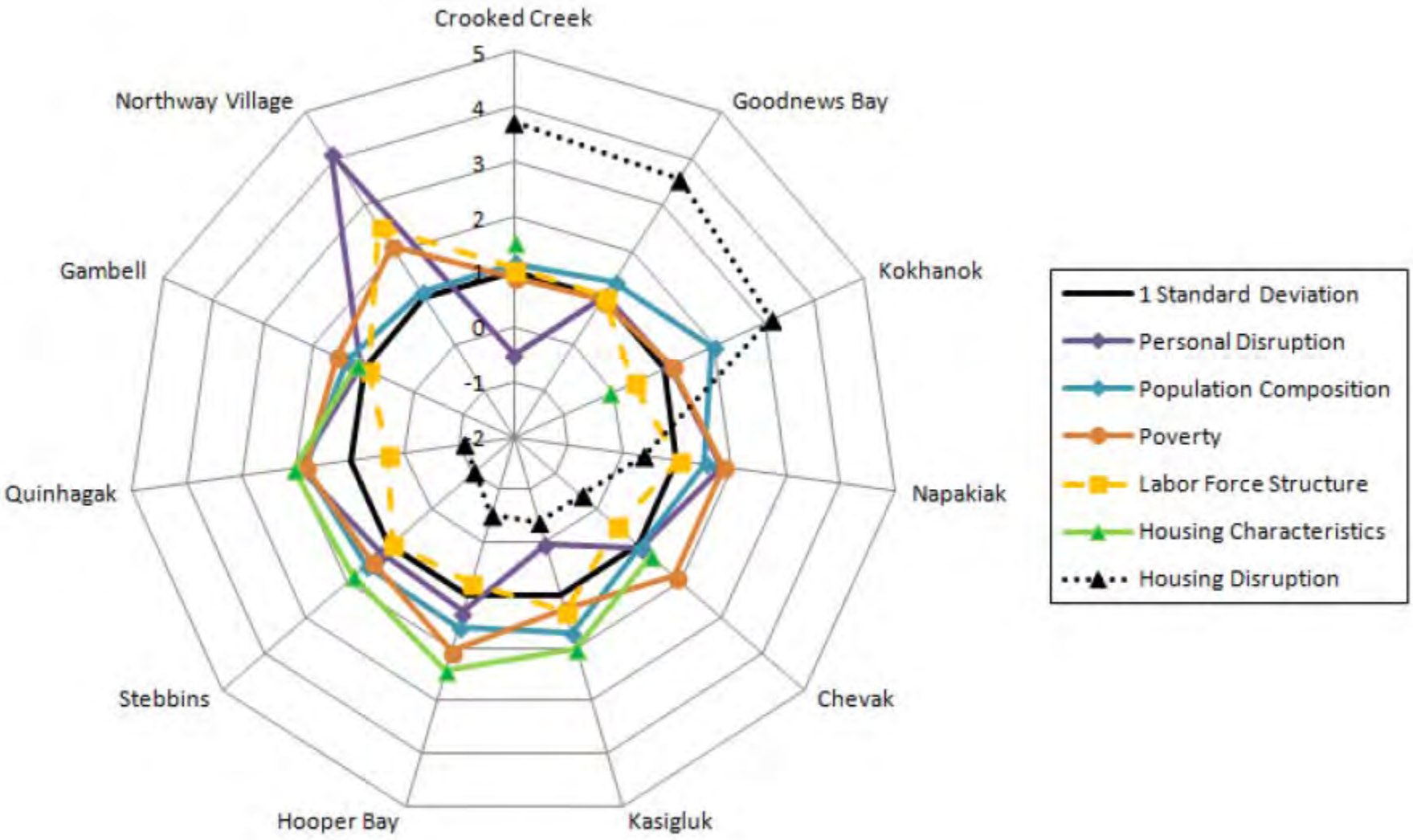
Vulnerability Level

Mapping Tool – Poverty Vulnerability



Vulnerability Level

Social indices for top scoring communities



From Himes-Cornell and Kasperski, 2016 “Using Socio-Economic and Fisheries Involvement Indices to Understand Alaska Fishing Community Well-Being”, *Coastal Management* 44(1): 36-70.

Can we believe this?

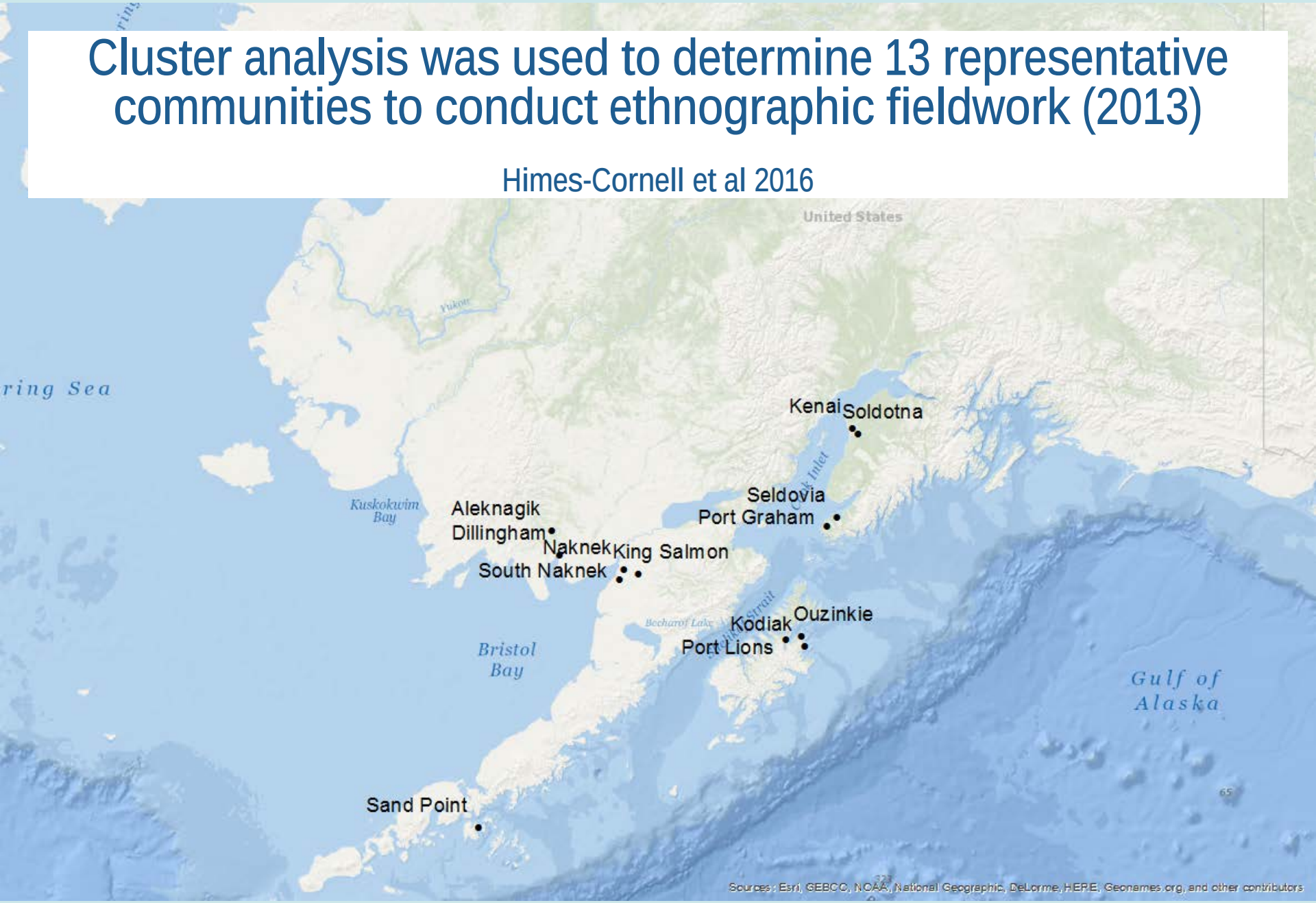
Groundtruthing the indices

- Purpose of groundtruthing is to independently verify the output of the indices
- Groundtruthing is necessary given that indices are generated with secondary data that may be incomplete, incorrect and/or outdated.
- Agreement between ethnographic assessments and quantitative indicators can ensure validity and reliability

From Lavoie et al. 2018 “Groundtruthing social vulnerability indices of Alaska fishing communities” *Under review*

Cluster analysis was used to determine 13 representative communities to conduct ethnographic fieldwork (2013)

Himes-Cornell et al 2016



Capital Asset Framework

- Modified grounded Theory
- Inductive Coding process
- Interviews analyzed by community

Capitals	Example metrics
Financial	Sources of income; level of economic diversity; investment and savings
Human	Population composition; available labor force; quality of education; health; quality of life
Natural	Access to natural resources; quality/health of natural resources; dependence on natural resources
Physical	Infrastructure including housing; water; transportation; access to goods and services
Social	Social cohesion; networks and connectedness; shared culture; rules and norms
Political	Policy that supports or constrains livelihoods and access to natural resources; ability to participate in political process; gov't leadership that supports or detracts from growth and development.

Indices	
Personal disruption	Commercial fishing engagement
Poverty	Commercial fishing reliance
Labor force structure	Recreational fishing engagement
Housing characteristics	Recreational fishing reliance
Housing disruption	Subsistence fishing involvement

Level of Agreement

- Commercial and recreational fishing indices were the most consistent, particularly with commercial fishing engagement and reliance
- Subsistence fishing least robust
- The labor force structure and housing characteristics indices appear to be relatively robust, while personal disruption, poverty and housing disruption may be less reliable

Applications to Management

- Social Impact Assessments (SIA)
- Contributing to our achievement of Natl Std 8
- Helping to describe Optimum Yield

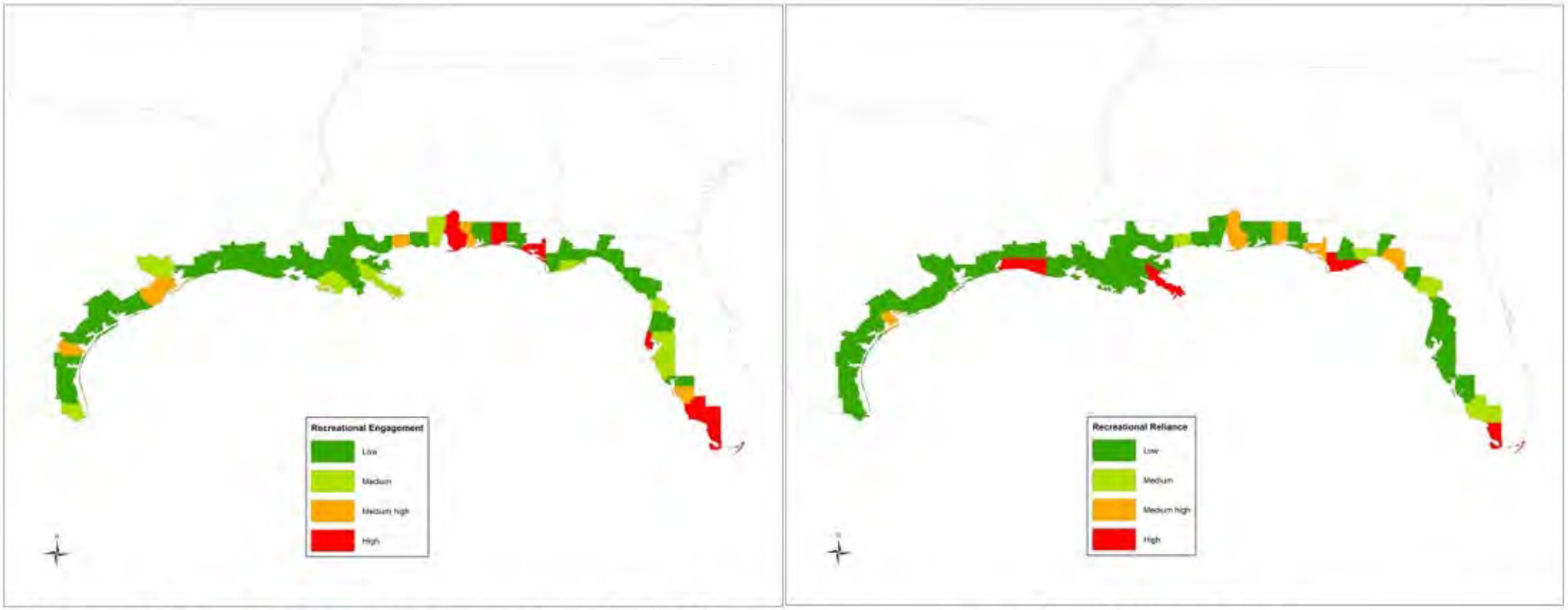


Figure 3.5.1.4. County recreational fishing engagement and reliance 2014.

Source: GoMFMC, Options Paper to Define Status Determination Criteria and Optimum Yield for Reef Fish and Red Drum, September 2017

Understanding changes in landings in the Bering Sea Crab Fisheries

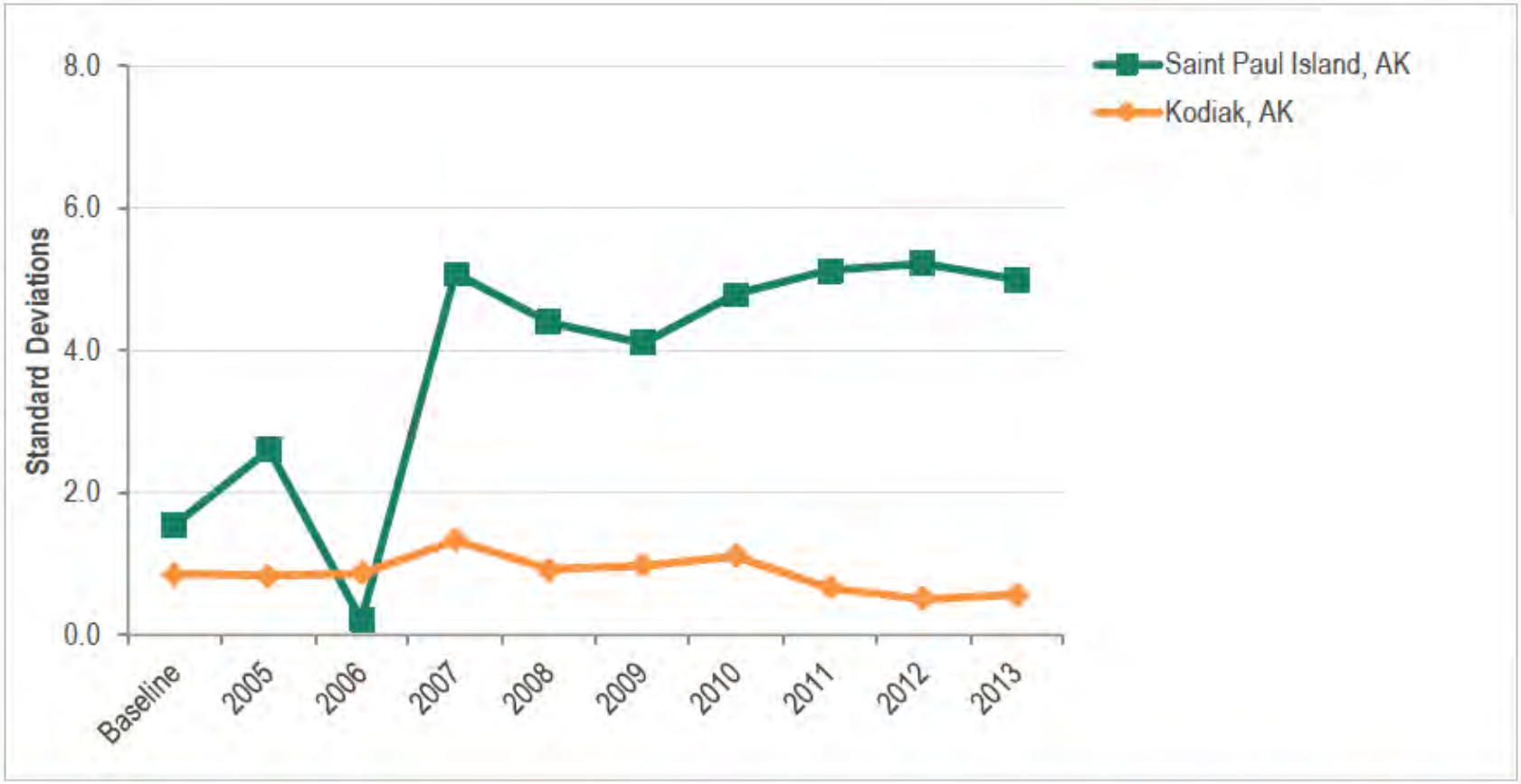
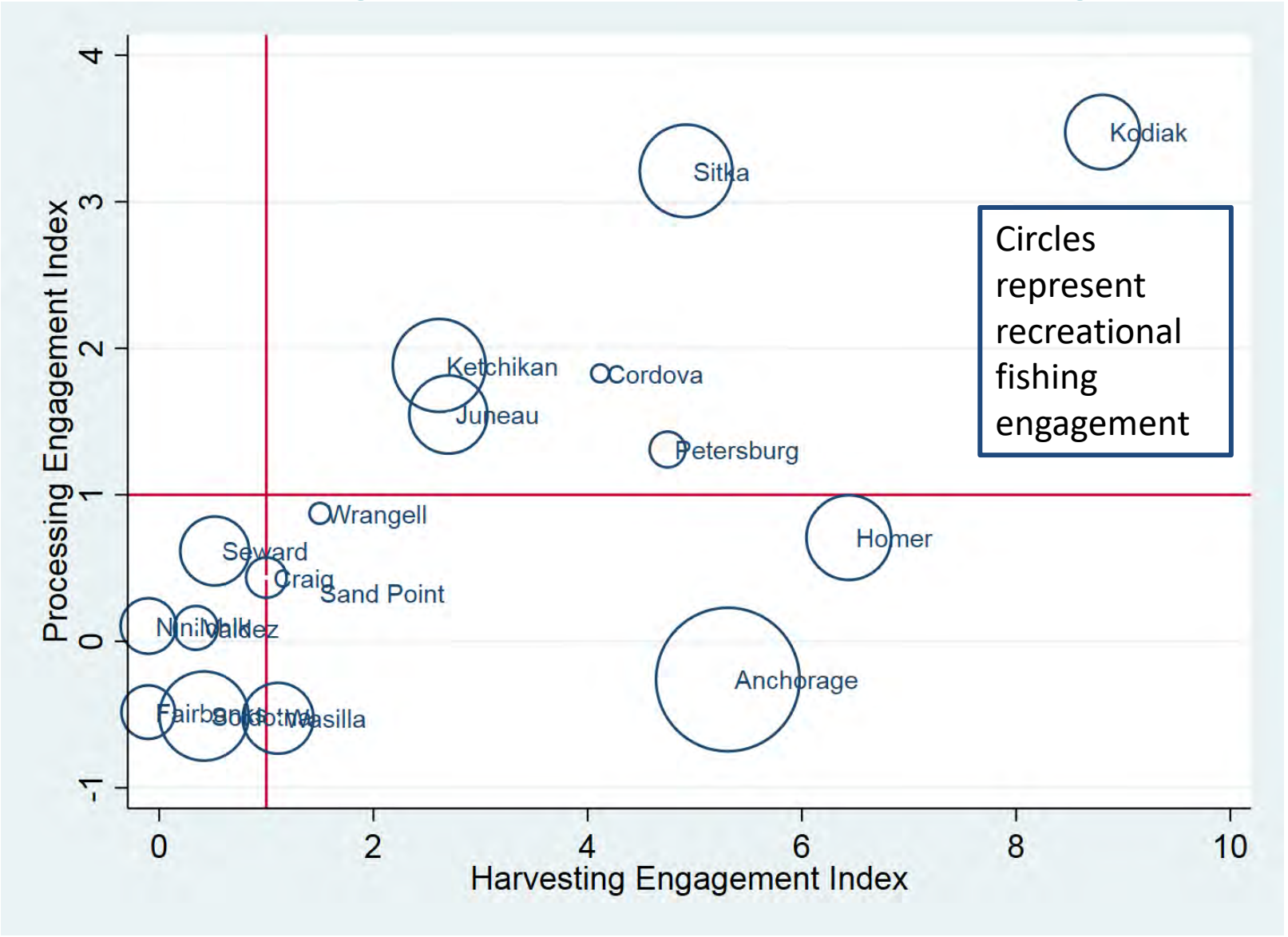


Figure 5.26. Fishing Engagement Index scores of communities highly engaged in the Bering Sea and Aleutian Islands Crab Rationalization Program for fewer than all crab seasons from the Baseline (2002/2003-2004/2005) through 2013/2014.

NOAA FISHERIES

From Colburn et al. 2018 "Community Participation in U.S. Catch Share Programs" *Under review*

Understanding the Interactions Among Sectors



Challenges

- The capital assets framework highlights the fact that the indices do not measure social or political capital
- The social indices appear to be more accurate in larger and more economically diverse communities
- The quantitative approach is only as good as the data used in the analysis
- Don’t quite assess community dependence on fisheries

Summary of Social Indicators

- Social indicators describe the relative social vulnerability among coastal communities and relative involvement in different fishing sectors
- Help managers better understand and anticipate the potential social and economic impacts across alternative choices

- Very flexible tool – can be done across spatial scales, species, and specific to management actions

- Much more work to be done!

Thank you!

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