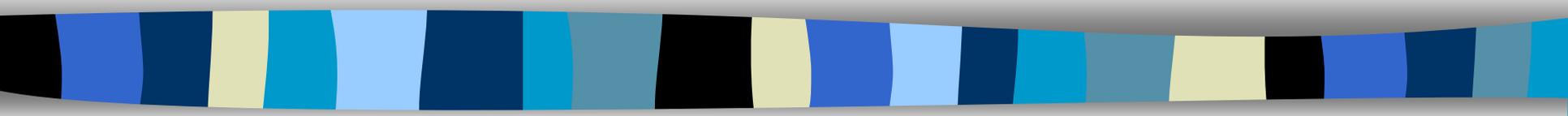


# **Community resilience, subjective well-being, and vulnerability**



## **2016 Social Coast Forum**

**Kreg Lindberg, Oregon State University**

**[kreg.lindberg@osucascades.edu](mailto:kreg.lindberg@osucascades.edu)**

**Beth Marino, Oregon State University**

**Chris Wolsko, Oregon State University**

**Tommy Swearingen, Oregon Department of Fish and Wildlife**

# Introduction

- Pilot project, funded by Oregon Sea Grant.
- Content: primarily perceived individual and community resilience, subjective-well being (SWB).
- Included evaluation of stressors and affective forecasting of SWB in response to their occurrence. Focus here on:
  1. Scale of outcome-oriented community resilience.
  2. Predictors of community resilience.
  3. Relationships between average community rating for community resilience, individual resilience, evaluative well-being, eudaimonic well-being, and NOAA measure of vulnerability based on secondary data.



# Methods

- General population survey, random sample of households based on DMV records.
- Two rounds; current results primarily for Round 2:
  - Depoe Bay, Newport, Florence, Port Orford, Gold Beach
- Mail recruitment, internet preference.
- 69% completed online, median online completion time = 23 minutes.
- N = 253, 24% response rate.



# 1. Community Resilience Scale

- Multiple survey-based resilience scales exist, but most mix outcome-oriented resilience with potential antecedents.
  - Connor-Davidson scale of individual resilience, from “not true at all” to “true nearly all the time” in past month
    - “Close and secure relationships” (antecedent)
    - “Can deal with whatever comes” (outcome)
- We developed outcome-oriented scale that is not conflated with antecedents (Kulig et al. 2013).
- Separation allows assessment of relative role across antecedents
  - Is “personal relationships” or “financial resources” a stronger predictor of resilience?
  - Question 2.



# 1. Community Resilience Scale

- Likert, 7-point, strongly disagree to agree, PC, Varimax.
- Fact. 1 Cronbach  $\alpha=0.875$ , explained 40% variance.
- Suggests generalized resilience for environmental and economic disturbance, but distinct for demographic.

Item	Factor 1	Factor 2
When a problem occurs, people in my community are able to deal with it	0.731	
We'll be able to recover and sustain our community if there's an earthquake and / or tsunami here	0.755	
We'll be able to recover and sustain our community if there's extensive flooding here	0.762	
During emergencies, my community will be able to provide key services, such as police and fire protection	0.664	
If climate does change over time, people in my community can adapt	0.611	
My community is able to "bounce back" from downturns in the local economy	0.763	
Our local fishing sector can adapt (for example, sell a new seafood) if there's a decline in current fisheries	0.628	
Our local tourism sector will be able to adapt (for example, develop new attractions) if there's a decline in our current tourism markets	0.627	
If there is a decline in our local fishing and/or tourism sectors, we'll be able to develop businesses in new industries	0.684	
We'll be able to maintain the current character of our community if there's a significant increase in the number of second-home owners (live elsewhere, own houses here)		0.832
We'll be able to maintain the current character of our community if there's a significant increase in the number new residents (moving here from elsewhere)		0.861



## 2. Predictors of Resilience

- Evaluations of antecedents may inform
  - weighting across sub-indices within indices of resilience antecedents, such as BRIC (Cutter, Ash, and Emrich 2014)
  - decisions about interventions
- Community resilience scale (item sum) regressed on initial set of variables:
  - scale of place attachment, Cronbach  $\alpha=0.869$
  - elements of social capital, mini-scale, Cronbach  $\alpha=0.770$ 
    1. People in my community cooperate for the common good, even when it's not in their own self-interest
    2. People in my community have similar values and ideas
    3. People in my community help one another out
  - evaluations of other community characteristics
  - community socio-economic variables were not included at this stage

# 2. Predictors of Resilience

- OLS,  $R^2=0.544$ , Round 2. \*\*\* indicates coefficient significance at  $\alpha=.01$ , \*\* at  $\alpha=.05$ .
- “Resources” strongest predictor (magnitude + significance).

	Standardized coefficient	Significance
Constant		0.000***
Community attachment scale (self reference)	-0.071	0.293
Elements of social capital mini scale	-0.114	0.149
People in my community have the resources (such as financial savings) to "weather" an economic downturn	0.244	0.000***
People in my community are willing to make sacrifices -- such as accepting land use restrictions -- to increase our resilience to natural disasters	0.142	0.021**
People in my community have creative ideas for dealing with challenges and enhancing community quality of life	0.175	0.010***
People in my community have a strong work ethic	0.088	0.148
People in my community are open to new ideas	0.132	0.033**
Leaders in my community listen to and help residents	0.098	0.178
My community has strong community leadership	0.181	0.015**
My community actively prepares for natural disasters, such as an earthquake and tsunami	0.139	0.008***
People in my community believe that our future mostly depends on our local decisions and actions	0.087	0.116

# 3. Resilience, SWB, Vulnerability

- Explore relationship between rank on resilience (primary data), SWB (primary), and vulnerability (secondary).
- Cutter, Ash, and Emrich (2014): resilience and vulnerability related, but not opposite ends of continuous spectrum
  - some negative relationships between their measures of resilience (BRIC) and individual factors within vulnerability (SoVI)
  - BRIC: large number of indicators across diverse groupings (e.g., employment rate, percent of population below 65 years of age)
  - SoVI (e.g., Latino/Hispanic ethnicity, elderly residents)



# 3. Resilience, SWB, Vulnerability

- Community resilience per above.
- Individual resilience, similar but at individual level, alpha = .784, sum of seven items.
- Evaluative well-being, rating for life overall
  - online scale was 0 to 100, mail converted that scale

8. Please indicate how satisfied you have been with your life overall – and with various aspects of your life – over the past year, not just how you feel right now. For each aspect, please circle one number on a scale from 0 = Not at all satisfied to 10 = Completely satisfied.

Aspect	Not at all satisfied <span style="float: right;">Completely satisfied</span>										
Your life overall	0	1	2	3	4	5	6	7	8	9	10
Your family life	0	1	2	3	4	5	6	7	8	9	10
Your social life (beyond family)	0	1	2	3	4	5	6	7	8	9	10
The community in which you live	0	1	2	3	4	5	6	7	8	9	10
The recreation opportunities in the region	0	1	2	3	4	5	6	7	8	9	10
The health of the natural environment in the region	0	1	2	3	4	5	6	7	8	9	10
Your physical well-being (health)	0	1	2	3	4	5	6	7	8	9	10
Your mental / emotional well-being	0	1	2	3	4	5	6	7	8	9	10
Your job	0	1	2	3	4	5	6	7	8	9	10
Your financial situation	0	1	2	3	4	5	6	7	8	9	10

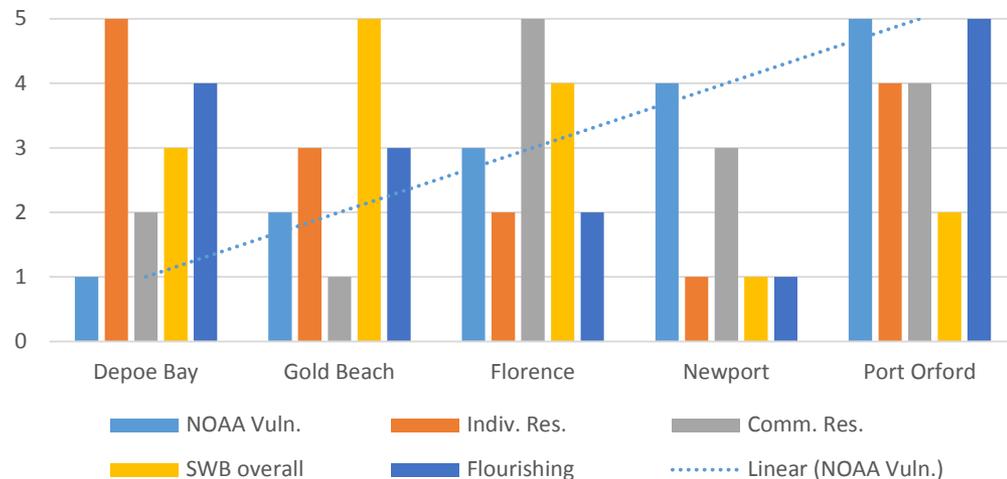
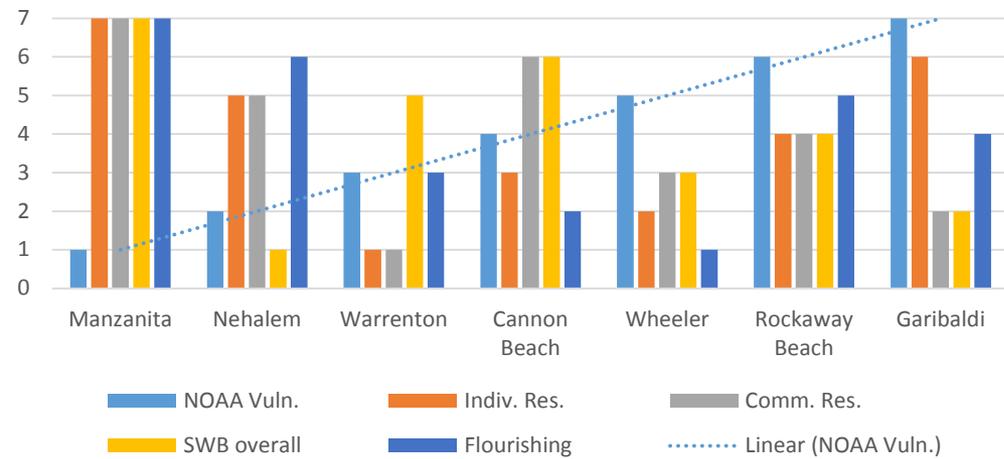


# 3. Resilience, SWB, Vulnerability

- Eudaimonic well-being (aka flourishing). Likert, 1 to 7 scale, sum of items, Cronbach  $\alpha=0.888$  (Round 1) and 0.915 (Round 2).
  1. I lead a purposeful and meaningful life
  2. My social relationships are supportive and rewarding
  3. I am engaged and interested in my daily activities
  4. I actively contribute to the happiness and well-being of others
  5. I am competent and capable in the activities that are important to me
  6. I am a good person and live a good life
  7. I am optimistic about my future
  8. People respect me
  
- Community level vulnerability rankings from NOAA social vulnerability index
  - based on multiple indices (e.g., poverty index)
  - <http://www.nwfsc.noaa.gov/research/divisions/cb/ecosystem/humandim/analyses.cfm>, extension of Jepson and Colburn (2013)

# 3. Resilience, SWB, Vulnerability

- Focus on Round 2 results (lower figure). Better scales and larger N than Round 1 (upper figure). Still consider as pilot results due to small sample.



# Conclusions

- Question 1
  - illustrates scale of outcome-oriented community resilience with good psychometric properties
  - diverse stressors in first factor; “gentrification” in second
  - “starter scale” that can be further developed, as well as adapted to different contexts
- Question 2
  - access to resources was best predictor of community resilience (reminder: these are respondent perceptions)
  - social capital linked to resilience in other studies; current results merit further evaluation, but may reflect
    - complexity of social capital (current scale limited in scope)
    - diverse forms of resilience
    - lack of resident awareness of link
    - other factors





# Conclusions

- Question 3.
  - Jepson and Colburn (2013:2): “[w]hile we recognize the importance of individual well-being in fisheries management relatively little data exists at this level.”
  - pilot analysis, too limited to make conclusions, but it illustrates one approach for understanding the relationship between resilience, well-being, and vulnerability (and between primary and secondary measures)
- Overall
  - this was a pilot project leading to exploratory analysis; larger survey effort is the goal, across more communities / counties
- Questions, comments, input for future work?



# References

- Connor, K.M. & Davidson, J.R.T. (2003). Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depression and Anxiety*, 18, 76–82.
- Cutter, S.L., Ash, K.D., & Emrich, C.T. (2014). The geographies of community disaster resilience. *Global Environmental Change*, 29, 65-77.
- Jepson, M. & Colburn, L. (2013). Development of social indicators of fishing community vulnerability and resilience in the U.S. southeast and northeast regions. U.S. Dept. of Commerce, NOAA Technical Memorandum NMFS-F/SPO-129, 64 p.
- Kulig, J., Edge, D., et al. (2013). Community resiliency: Emerging theoretical insights. *Journal of Community Psychology*, 41(6), 758-775.