

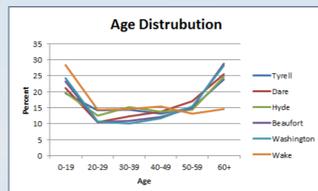
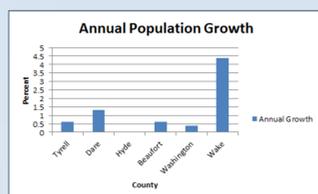
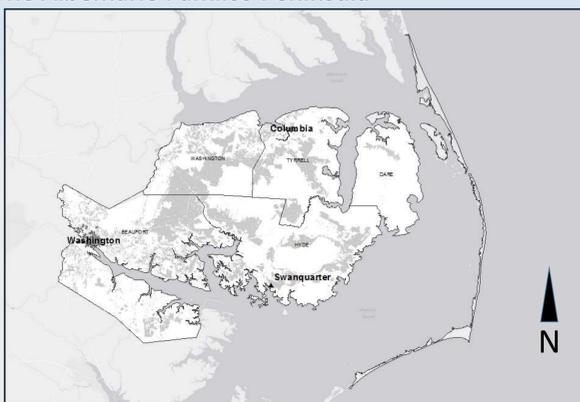
Rural Coastal Communities: Adapting to Sea Level Rise with a Changing Economy

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Introduction

Climate change and sea level rise (SLR) will threaten coastal cities, rural communities, ecosystems, and agricultural systems globally (Lane et al., 2013). Resilience research addresses climate readiness and adaptation to changing environmental conditions (Adger, 2005). The majority of coastal resilience work conducted concerns tourism destinations and larger urban centers along the coast (Tang, 2008). To build adaptive capacity for climate change, this research proposes frameworks for conceptualizing risk and modeling potential impacts (IPCC, 2014). Rural communities have largely been left out of the adaptation dialogue despite experiencing the same physical climate change impacts (Davies et al., 2009). Here we present the rural coastal community resilience framework to specifically address the Albemarle Pamlico Peninsula.

The Albemarle Pamlico Peninsula



Risk in Rural Low Lying Coastal Areas

- Salt water intrusion
- Sea level rise
- Flooding

Dominant Local Industries

- Agriculture
- Commercial fishing
- Timber production
- Ecotourism

Focus Groups and Local Perceptions

Pre and Post Survey

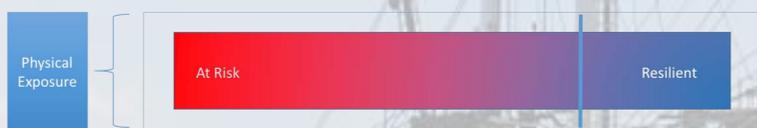
Questionnaire Item	Pre-survey Mean (SD)	Post-Survey Mean (SD)	Test Statistic	p- value	Cohen's D
Sea level rise is a threat to my community					
Sea level rise	3.31 (1.32)	4.00 (1.08)	t(12)= 2.92	.013	.81
Flooding	3.75 (.97)	4.31 (.65)	t(11)= 1.87	.089	.54
Salt water intrusion	3.08 (.79)	3.67 (1.16)	t(11)= 2.55	.027	.73
My community is vulnerable to					
Sea level rise	4.08 (.86)	4.08 (.86)	t(12)= 0	1	0
Flooding	4.31 (.63)	4.31 (.63)	t(12)= 0	1	0
Salt water intrusion	3.92 (.76)	3.92 (.76)	t(12)= 0	1	0
My community is prepared for					
Sea level rise	2.25 (1.06)	2.33 (.78)	t(11)= .56	.586	.16
Flooding	2.75 (1.22)	2.43 (.89)	t(11)= 1.6	.137	.46
Salt water intrusion	2.42 (.67)	2.67 (1.16)	t(11)= .9	.389	.26
My community has access to the resources need to plan for climate change impacts.	2.83 (1.03)	2.25 (.87)	t(11)= 1.9	.089	.54
My community would benefit from adaptation planning workshops.	4.31 (.75)	4.31 (.63)	t(12)= 0	1	0

Nominal Group Process

	Average (SD)
Resilience/ Risk (Before)	2.9 (1.2)
Livelihood Diversity/ Livelihood Dependency	3 (1)
Prosperity/ Inequality	2.1 (1.3)
Ecosystem Services/ Unsustainable Development	4.3 (.5)
Community Cohesion/ Community Disengagement	5 (.9)
Agency/ Rigidity	3.7 (1.2)
Resilience/ Risk (After)	4.4 (1.1)
Resilience Change	T (13)=1.7857, p< .004, d=.941



Rural Coastal Community Resilience Framework



Stressor	Definition	Indicator	Definition
Risk	Your community's assets (infrastructure, population, businesses, land, natural resources) are likely to be negatively impacted from hazardous events and over extended periods of time.	Resilience	Your community is well prepared for hazardous events, and can recover from hazardous events in a timely and efficient manner.
Livelihood Dependency	Your community relies on a single resource or industry to generate most jobs.	Livelihood Diversity	Your community has many different industries that provide jobs for its residents.
Inequality	Your community has groups of individuals (subpopulations) who are more at risk to natural hazards, experience economic strain, or are leaving the area to seek jobs elsewhere (rural flight).	Prosperity	Your community is successful in terms of its employment rates, job opportunities, and tax base, and has affordable education, health care, and housing.
Unsustainable Development	Your community <u>does not have</u> land use policies, has policies that <u>do not</u> promote well-being or natural resource conservation, or allows development to occur anywhere, including high risk areas.	Ecosystem Services	Your community has land use policies that promote well-being, such as conserving wetlands for clean water and storm surge protection or providing natural areas for recreational and spiritual enjoyment.
Community Disengagement	Your community is experiencing reduced participation in local government, churches, schools, and community social events.	Community Cohesion	Your community values people from different backgrounds, is quick to lend a helping hand, and has a shared vision for the future.
Rigidity	Your community lacks trust in its leaders or has regulations that limit the ability of the community to change or adapt to new situations.	Agency	Your community has leaders with the power or ability to manage problems or situations and effectively plan for the future.

Conclusions

The scales for risk and resilience proved trustworthy in the communities where the focus groups were conducted. People understood and related to the indicators. Agency caused some difficulty, as it was confused with state agencies, but it was clarified it provided good discussion on the ability to adapt.

Take away messages

- "We have always been adapting here."
- Climate change is too political
- "Our communities are strong."
- It was agreed that planning and workshops would benefit the communities

Next Steps

- Quantitative Analysis
- Residential Survey
- Community Resilience Analysis
- Mixed methods



References

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