

# Planning for Active Living and Resilient Communities: Moving Towards a New Norm

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# Creating a Culture of Resilience

## Resilience –

*The remarkable capacity of communities to bounce back from adversity and thrive in a world of uncertainty and change.*





# Background (1)

- Bicycle and pedestrian plans have been recognized as tools for promoting active living
- Plans may also help raise awareness about the synergies between active living and other social goals:
  - Increasing equity and access to resources
  - Promoting sustainable development
  - Protecting the environment
  - Facilitating adaptation to climate change
  - Supporting emergency preparedness efforts
  - Supporting local economic development

## Background (2)

- These synergies or ‘cobenefits’ are important within collaborative movements to create “resilient communities”.
- Little is known about the extent to which bicycle and pedestrian plan content aligns with the emerging resilience planning movement.

References: RAND. <http://www.rand.org/topics/community-resilience.html>

Rockefeller Foundation: Resilient Cities. <http://www.rockefellerfoundation.org/blog/100-resilient-cities>

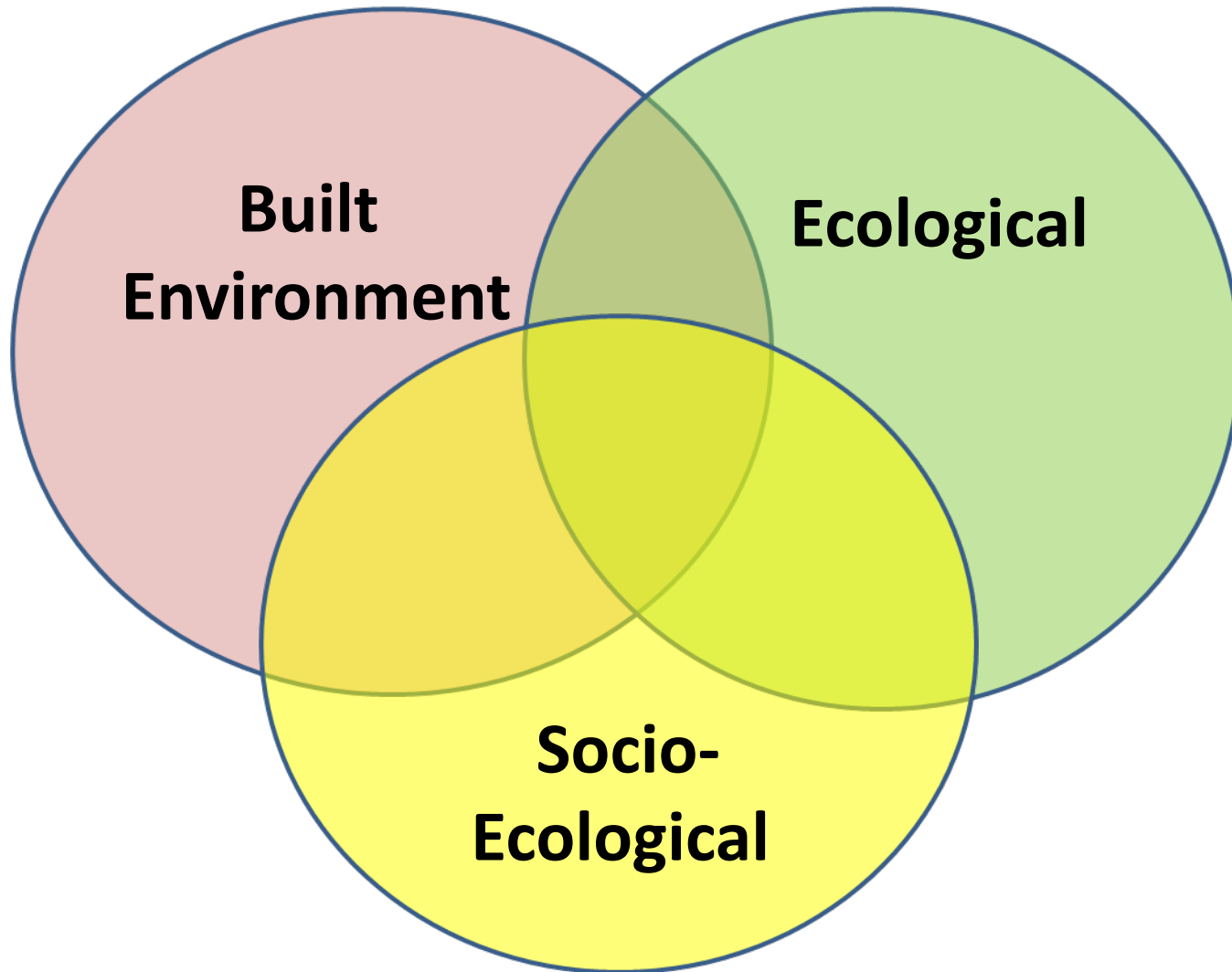


# Resilience Conceptualizations: Defining Resilience (1)

- We identified 3 common conceptualizations of resilience:
  - 1) Built Environment
  - 2) Ecological
  - 3) Socio-Ecological
    - Moving from “niche” to “norm”



# Resilience Conceptualizations: Defining Resilience (2)



# Objectives

- We investigated whether content pertaining to four resilience domains was reflected in North Carolina (NC) municipal bicycle and pedestrian plans:

1. Co-benefits
2. Cross-Sector Collaboration
3. Governance
4. Equity





# Overview of Steps in our Process

1. Defined resilience domains from the literature
2. Developed a “crosswalk” document to code previously derived plan quality elements into resilience domains
3. Derived resilience scores
4. Assessed correlations between resilience domains
5. Explored associations between resilience domains, plan content, and sociodemographics



# Methods: Data Collection

- All NC bicycle (n=25) and pedestrian (n=60) plans were content-analyzed
  - Double coded; discrepancies resolved by consensus
  - Combined bicycle/pedestrian plans (n=9) not analyzed
  - Sociodemographic indicators from the U.S. Census (e.g., percent of the population living in poverty, median population age, percent  $\geq$  high school education, and racial composition) collected for each municipality

# Methods: Creating the Crosswalk Tool

- Links plan quality elements to the four resilience domains
1. **Cross-sector Collaboration:** Involvement of a variety of stakeholder groups in developing the plan
  2. **Co-benefits:** Diverse goals motivating plan development
  3. **Governance:** Specific policies, procedures, and implementation elements
  4. **Equity:** Content pertaining to social justice and the needs of vulnerable populations



# Examples of Resilience Domains in Plan Coding Tool: “Cobenefits”

- Were the following specific goals mentioned in the goals/objectives section or vision/mission statement as motivating the development of this plan?
  - *Encourage physical activity for transportation;*
  - *Protect or preserve the local natural environment (e.g., land conservation, protect open space, improve water quality)*
- Plans documenting multiple goals received higher **COBENEFITS** scores.

# Example of “Cross-Sector Collaboration”

- Who participated in plan development?
  - Engineering/ public works
  - Land use planners
  - Transportation planners (local, regional, state)
  - Parks & Recreation
  - Law enforcement
  - Schools
  - Public health professionals
  - Social justice/civil rights groups
  - Community-based organizations
  - Environmental groups /non-profits
  - Economic development groups
- Plans documenting more groups participating in the process received higher **CROSS-SECTOR** scores.

# Example of “Governance”

- Does the plan discuss specific actions, tasks, or recommendations to motivate implementation of the plan?
  - Did the plan include maps of priority areas or corridors for projects, investments or treatments because of actual or perceived concerns?
- 
- Plans documenting a greater number of policies, proposals, and implementation elements received higher **GOVERNANCE** scores.

# Example of “Equity”

- Does the plan propose policies to address the needs of special populations (e.g., minority groups, lower income groups, persons with disabilities)?
- Plans documenting a greater number of elements specifically mentioning equity, social justice/equal access received higher **EQUITY** scores.

# Methods: Analysis

- Resilience scores derived:
  - Each score ranged from 0 (weakest) to 1 (strongest)
  - Weighted mean of content elements pertaining to each domain
- Descriptive statistics, Pearson correlations, t -tests, and linear regression
  - Assessed relationships between specific plan content elements, resilience scores, and sociodemographics.

# Results



# Results: Descriptive Statistics

Variable	Mean	Std Dev
Governance	0.48	0.09
Co-benefits <sup>1</sup>	0.47	0.11
Cross-sector	0.43	0.16
Equity <sup>1</sup>	0.32	0.14

<sup>1</sup>Scores differed significantly by plan type (pedestrian plans scored higher than bike plans)

# Results: Correlations

Variable1	Variable2	<i>r</i>	95% Confidence Limits	
Cobenefits	Cross-Sectoral	-0.03	-0.24	0.18
<b>Cobenefits</b>	<b>Governance</b>	<b>0.46</b>	<b>0.27</b>	<b>0.61**</b>
<b>Cobenefits</b>	<b>Equity</b>	<b>0.36</b>	<b>0.16</b>	<b>0.53**</b>
Cross-Sectoral	Governance	0.11	-0.11	0.31
Cross-Sectoral	Equity	0.06	-0.15	0.27
<b>Governance</b>	<b>Equity</b>	<b>0.32</b>	<b>0.11</b>	<b>0.50*</b>

**\*\* p<0.01; \*\*\*p<0.001**



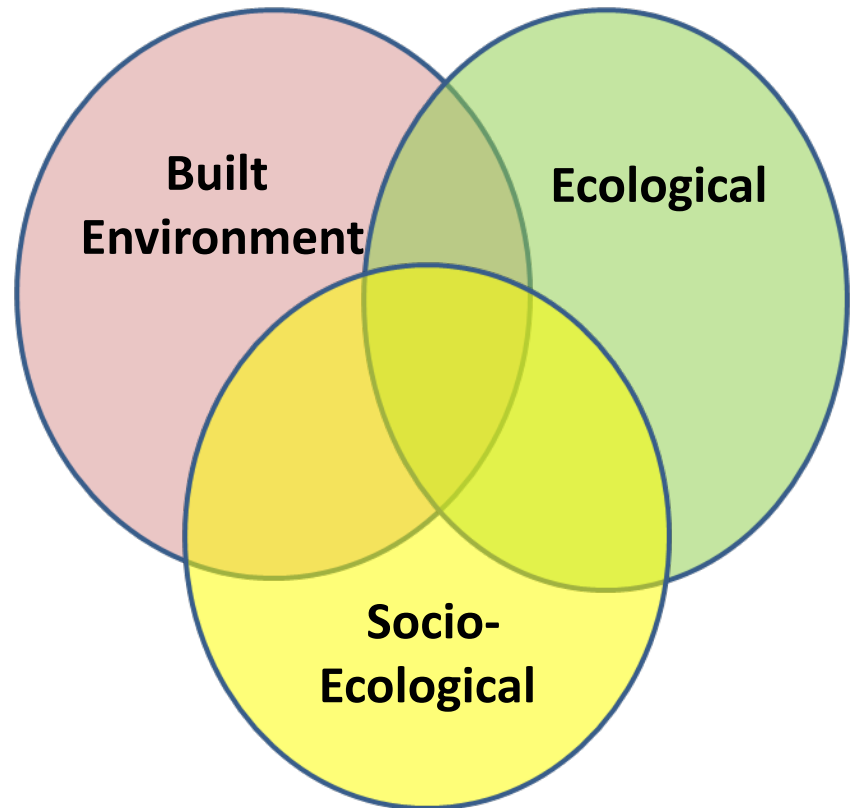
## Results: Correlations

- Higher Equity scores were correlated with goals of *increasing transportation-related physical activity* ( $r=0.34^{**}$ )
- Area sociodemographics (e.g., age, race (white/nonwhite), education, and poverty) were generally not associated with resilience scores

\* $p<0.05$ ; \*\*  $p<0.01$

# Conclusions

- Local plans, specifically NC bicycle and pedestrian plans, appear to be helpful in their integrative approach.
- However, these plans may be under-utilized in terms of their potential to promote integration of active living content with elements supportive of resilient communities.



# Implications for Practice and Policy (1)

- Resilience requires the ability to adapt not only to large-scale perturbations and disasters, but also to slow changes, aligning with a public health prevention perspective.



# Implications for Practice and Policy (2)

- An opportunity exists to explore resilience planning as a process through which to raise awareness about co-benefits, strengthen commitments to equity, and create resilient communities.



# Moving from Risk to Resilience: A Public Health Prevention Perspective



## Primary Prevention

**Planning Decisions** (e.g., Smart Growth; open space conservation);



## Secondary Prevention

**Low Impact Development**



## Tertiary Prevention

**Emergency Response Strategies**

# References

1. Rockefeller Foundation: Resilient Cities.  
<http://www.rockefellerfoundation.org/blog/100-resilient-cities>
2. Davoudi, S.(2012): Resilience: A Bridging Concept or a Dead End? “Reframing” Resilience: Challenges for Planning Theory and Practice. *Planning Theory & Practice*, 13:2, 299-333
3. Folke, C., J. Colding, et al. Synthesis: Building resilience and adaptive capacity in social-ecological systems. *Ecology & Society*, 2003.
4. RAND. <http://www.rand.org/topics/community-resilience.html>
5. Prevention Institute- THRIVE.  
<http://thrive.preventioninstitute.org/thrive.html>



# Acknowledgements

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**Questions?**

# Extra Slides



# Resilience Conceptualizations (1)

Resilience Conceptualization	Focus	Planning Functions	Content Reflected in Bike/Pedestrian Plans
<b>Engineering/ built environment resilience</b>	Recovery, constancy, predictability	<p>Planning functions to return the system to the "status quo" or steady state after a disturbance.</p> <p>Focuses on building infrastructure to protect the system from threats;</p> <p>Planning functions as a mechanism to direct infrastructure investments.</p>	<p>Content focused on the development, design, and maintenance of bicycle/pedestrian infrastructure.</p> <p><b>Emphasizes physical design</b></p>

# Resilience Conceptualizations (2)

Resilience Conceptualization	Focus	Planning Functions	Content Reflected in Bike/Pedestrian Plans
<b>Ecological/ ecosystem</b>	Development of a “new normal”	<p>Planning functions to enable a system to adapt to a new equilibrium state or a 'new normal'</p> <p>Historically focused on natural ecosystems more than social systems</p>	<p>Content focused on integrating physical infrastructure (built environment) with the natural environment and social dimensions related to active living (e.g., health promotion, active travel).</p> <p><b>Emphasizes connections</b> between the built environment and environmental or social benefits (e.g., quality of life, health promotion).</p>

# Resilience Conceptualizations (3)

Resilience Conceptualization	Focus	Planning Functions	Content Reflected in Bike/Pedestrian Plans
<b>Socio-ecological resilience</b>	Adaptive capacity; transformability; flexibility; learning and innovation; integrated system feedback, cross-scale dynamic interactions	<p>Planning functions to enhance <i>adaptive capacity</i> by providing a forum for communities to develop governance structures enabling self-organization; consideration of dynamic interactions across multiple scales and timeframes.</p> <p>Draws from integrated planning theory to meet the needs of a specific social context while recognizing inherent change.</p>	<p>Content focused on <b>integrating physical, social, environmental, and economic dimensions</b>; co-benefits; cross-sectoral collaboration.</p> <p>Content pertaining to governance, institutional structures, policy, power and equity issues.</p>

# Other Resilience Definitions

- *“Resilience is the remarkable capacity of individuals and communities to bounce back from adversity and even thrive in a world of turmoil and change.” Arizona Health Futures, 2003.*  
[http://slhi.org/pdfs/issue\\_briefs/ib-03fall.pdf](http://slhi.org/pdfs/issue_briefs/ib-03fall.pdf)
- *“Resilience is a capability to anticipate, prepare for, respond to, and recover from significant threats with minimum damage to social well-being, the economy, and the environment.”*
- EPA <http://epa.gov/climatechange/glossary.html> \*Used by the Portsmouth , NH, Coastal Resilience Initiative
- NH Hazard Vulnerability Assessment Tool. *“Vulnerability is a description of the potential impact (high, medium, or low) a hazard could have on the State of New Hampshire.” The relative threat (vulnerability) is based on an assessment of five elements, including 1) the human impact, 2) property impact, 3) business impact, plus the 4) probability and 5) severity of an event. NH Multi-Hazard Mitigation Plan, 2013*
- <http://www.nh.gov/safety/divisions/hsem/HazardMitigation/planning.html>

# Public Health Co-Benefits of Planning Resilient Communities Include:

- Increased physical activity levels (associated with protection of open space and recreational areas); lower rates of obesity, diabetes, and CVD; improved mental health
- Lower exposure to environmental toxins
- Fewer lives affected by the stress associated with floods, property damage, and disruption of the local economy.





# Elements of High Quality Plans

Planning scholars have identified elements of high-quality plans, irrespective of topic area.

High quality plans:

- Identify **objectives and goals** that will assist and measure progress in achieving a community's vision for the future
- Reflect community input and feedback through **public participation**
- **Analysis of current and future conditions and trends**
- Prioritize **proposals** for infrastructure investments
- Recommend programmatic and policy changes to support **implementation**
- Propose **evaluation** strategies