Proactive Planning for Resilient and Equitable Communities

Thanks for joining us!
The session will begin shortly.
Thank you to our event collaborators
Widgets are resizable and movable

You can drag the presenter’s video around your screen.

Have a question for presenters? Click the ? icon.
Osamu Kumasaka
Buy-In Community Planning

Sara Meerow
Arizona State University

Linda Shi
Cornell University
Osamu Kumasaka
Program Director, Buy-In Community Planning
@kumasnax

Planning Better Buyouts: Advancing Equitable and Healthy Housing Mobility of Local Climate Migrants
Does Collaboration Improve Resilience Planning? Exploring the Relationship Between Governance Networks, Plan Networks, and Resilience to Flooding in Four Coastal Cities
Does collaboration improve resilience planning? Exploring the relationship between governance networks, plan networks, and flood resilience in four coastal cities

Sara Meerow, Sierra C. Woodruff, Bryce Hannibal, Malini Roy, Philip Gilbertson, Melina Matos
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ISDRS 2021
The high costs of flooding

[Chart: United States Billion-Dollar Disaster Events 1980-2020 (CPI-Adjusted)]

https://www.ncdc.noaa.gov/billions/time-series/US
The rise of urban resilience

Publications in Scopus

Search terms: “urban resilience”, “resilient city”, or “resilient cities” in the title, abstract or keywords

Graph showing publications in Scopus from 2003 to 2020.
Planning for resilience

• Systems approach connecting systems and different stresses and shocks
• Serves as ‘boundary object’ fostering collaboration & breaking down silos

“100 Resilient Cities (100RC) identified the need to transform fundamental public institutions, functions, and operations in city government as its primary strategy to impact how cities mitigate shocks and reduce chronic stressors” (Martin & McTarnaghan, 2018)
Governance networks & resilience

Literature suggests:
• Collaborative governance -> better resilience outcomes
• Participants are important for quality of planning
• Network structures impact resilience outcomes

Limited empirical evidence
Networks of plans & resilience

- Different plans critically shape development patterns and vulnerability
- Plans should be integrated but often aren’t
- Policies in plans should be consistent and all plans should consider hazard risks
What is the relationship between governance networks & the network of plans?

Literature suggests collaboration -> better planning -> resilience

Lack of empirical evidence on the relationship between governance networks, qualities of networks of plans, and resilience
Resilience Planning Networks Project

Collaborative Governance networks → Integrated networks of plans → Enhanced resilience

4 Cities: Baltimore, Boston, Fort Lauderdale, & Seattle

www.resilienceplanningnetworks.com

#1825367 With Sierra Woodruff & Bryce Hannibal
Collaborative governance networks: SNA
Collaborative governance networks: SNA

<table>
<thead>
<tr>
<th>City</th>
<th>Organization</th>
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<td>Seattle Office of Sustainability and Environment</td>
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<td>0.4 (6)</td>
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</table>
Collaborative governance networks:
Survey question

In Boston, how has collaboration around flooding changed as a result of resilience initiatives?
Networks of plans: Plan Quality

Woodruff, Meerow, Hannibal, Matos, Roy, Gilbertson 2021
Networks of plans: Cross-referencing
Networks of plans: Survey question

How aligned (i.e. consistent, in agreement) do you think Boston’s plans are with each other?
Enhanced Resilience: Plan Integration for Resilience Scorecard (PIRS)

Policy Score for Each Plan

Comprehensive Plan
Transportation Plan
Hazard Mitigation Plan
Park and Open Space Plan

Composite Policy Score

\[ \sum \]
Boston PIRS

Woodruff, Meerow, Hannibal, Matos, Roy, Gilbertson 2021
Boston
PIRS

Woodruff, Meerow, Hannibal, Matos, Roy, Gilbertson 2021
Enhanced resilience: Survey question

- How do you think Boston’s plans will affect vulnerability to flooding in the future?
Bringing it all together: Hypotheses

Plan as unit of analysis

• H1: Higher quality plans will have higher PIRS scores
  • Overall quality and PIRS
  • Fact base and PIRS

• H2: Better integrated plans will have higher PIRS scores
  • Plan cross-referencing and PIRS
Results

Plan as unit of analysis
Results

Plan as unit of analysis

- H1: Positive correlation between plan quality (including fact base) and PIRS
- Positive correlation plan quality and references to other plans
Results

Plan as unit of analysis

• H2: No clear relationship between plan cross-referencing and PIRS
Bringing it all together: Hypotheses

City as unit of analysis

• H3: Cities with more collaborative governance networks will have better quality plans

• H4: Cities with more collaborative governance will have higher PIRS scores and plans with more policies that enhance resilience to flooding
## Results

<table>
<thead>
<tr>
<th>Collaborative Governance networks</th>
<th>Fort Lauderdale</th>
<th>Boston</th>
<th>Baltimore</th>
<th>Seattle</th>
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<tbody>
<tr>
<td>SNA density</td>
<td>0.00</td>
<td>0.03</td>
<td>0.28</td>
<td>1.00</td>
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<tr>
<td>SNA avg degree</td>
<td>0.00</td>
<td>0.68</td>
<td>0.38</td>
<td>1.00</td>
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<tr>
<td>Survey collaboration increase %</td>
<td>0.83</td>
<td>1.00</td>
<td>0.13</td>
<td>0.00</td>
</tr>
</tbody>
</table>

| Networks of plans                              |                  |        |           |         |
| Plan Quality overall plan quality mean         | 0.00            | 1.00   | 0.25      | 0.69    |
| Plan quality median overall plan quality       | 0.67            | 1.00   | 0.00      | 0.86    |
| Plan Quality fact base mean                    | 0.39            | 1.00   | 0.00      | 0.21    |
| Plan cross-referencing percent of plans isolated | 1.00           | 0.73   | 0.00      | 0.18    |
| Plan cross-referencing undirected network density | 0.77            | 1.00   | 0.00      | 0.57    |
| Survey plans aligned (mean)                    | 1.00            | 0.48   | 0.00      | 0.13    |

| Resilience Policies                            |                  |        |           |         |
| Survey plans affect vulnerability (mean)       | 1.00            | 0.85   | 0.00      | 0.31    |
| PIRS percent positive                          | 1.00            | 0.00   | 0.50      | 0.42    |
| PIRS district average FP                       | 0.90            | 0.00   | 1.00      | 0.15    |
| PIRS district Average SLR                      | 1.00            | 0.00   | 0.96      | 0.56    |
Conclusion

• Literature often suggests more collaboration will lead to better planning and enhance resilience with limited empirical evidence

• We find evidence that across 4 cities, higher quality, more integrated networks of plans may better enhance resilience to flooding

• The relationship between collaborative governance networks, overall plan networks, and their impact on flood resilience appears more complex, more research needed!
Linda Shi
Assistant Professor, Cornell University
_lindashi

State and Local Buyout Programs – What Barriers and Lessons for More Equity Floodplain Management?
State + Local Buyout Programs: What Barriers + Lessons for More Equitable Floodplain Management?

Linda Shi, Assistant Professor, Cornell University Department of City + Regional Planning
UCLA Climate Adaptation Research Symposium
September 8, 2021
Primary Investigators

Dr. Linda Shi
Assistant Professor
City and Regional Planning
Cornell

Dr. Chris Shepard
Director of Science
Gulf of Mexico
TNC

Co - Primary Investigators

Jamie Vanucchi
Assistant Professor
Landscape Architecture
Cornell

Dr. Amelia Greiner-Safi
Senior Research Associate
Communications
Cornell

Dr. Rebecca Morgenstern-Brenner
Lecturer
Public Affairs
Cornell

Cornell Student Researchers

Student researchers from City and Regional Planning, Landscape Architecture, and Public Policy: Katherine Ackerman, Paul Corsi, Pedro Fernandez, Grace Lam, Nicole Nomura, Lela Robinson, John Tanis, Audrey Wachs, Hannah Wilson, Wei Wu

TNC Support Staff

Anjali Fisher
Master’s in Regional Planning
Cornell

Mali’o Kodis
(former) TNC Project Manager, now at EDF

Dr. Marci Bortman
Director of Climate Adaptation
TNC - New York

Nate Woiwode
Project Manager
TNC - North America
We want...
We get...
FEMA floodplain buyouts are...

• Too few in number... yet still unsustainable
• Too bureaucratic and inequitable
• Limited in scale by prioritizing property parcels
• Achieve limited ecological gains
We need a bigger and better program.

What should it look like?
LEARNING FROM THE MODELS

- Standing programs
- Dedicated funding streams separate from FEMA
- Lauded

Source: Anjali Fisher
Research Questions

RQ1: To what extent have subnational programs redressed the social equity limitations of FEMA’s buyout program?

RQ2: What ecological benefits have these programs achieved?

RQ3: What is the relationship between social and ecological policies and outcomes? How can programs move towards more socio-ecologically beneficial retreat?
Research Questions

RQ1: To what extent have subnational programs redressed the social equity limitations of FEMA’s buyout program?

RQ2: What ecological benefits have these programs achieved?

RQ3: What is the relationship between social and ecological policies and outcomes? How can programs move towards more socio-ecologically beneficial retreat?
Methods

• Case studies of 5 programs
• Literature review of FEMA buyout program limitations
• Interviews with buyout program managers and staff
• Policy review and comparison
• Focus group discussions with buyout program managers, planners, housing authorities
## Known inequities of buyout programs

<table>
<thead>
<tr>
<th>Pre-disaster Planning (Historic Justice)</th>
<th>Beneficiary Selection (Distributive Justice)</th>
<th>Buyout Process (Procedural Justice)</th>
<th>Post-Buyout (Holistic) Well-Being</th>
</tr>
</thead>
</table>
| • Development and zoning guidelines that sited lower-income housing in at-risk areas | • Cost-benefit analysis based on property value; not all options available to low-income | • Lack of Transparency  
• Reactionary Timeframe  
• Low-medium income households wait longer to receive less aid | • Lack of safe affordable housing  
• Surrounding communities gentrify following post-buyout greening or decline with perceptions of vacancy |
| • Infrastructure investment that denied improvements to minority communities | • Favors traditional family structures | | • No whole community relocation  
• Place attachment not addressed |
Programmatic responses

<table>
<thead>
<tr>
<th>Pre-disaster Planning (Historic Justice)</th>
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| • Development and zoning guidelines that sited lower-income housing in at-risk areas | • Cost-benefit analysis based on property value; not all options available to low-income  
  ➢ Charlotte-Meck + Austin offer alternatives to diversify CBA  
  • Favors traditional family structures  
  ➢ Austin extends benefits for landlords  
  ➢ NJ hires experts to help families  
  ➢ Harris County’s CDBG-DR program helps undocumented households | • Lack of Transparency  
  • Reactionary Timeframe  
  ➢ All programs respond to these challenges  
  • Low-medium income households wait longer to receive less aid  
  ➢ Harris County adopts “worst first” prioritization scheme | • Lack of safe affordable housing  
  ➢ Austin devotes funds for local relocation |
| • Infrastructure investment that denied improvements to minority communities | | | • Surrounding communities gentrify following post-buyout greening or decline with perceptions of vacancy |
| | | | • No whole community relocation |
| | | | • Place attachment not addressed |
Institutional Enablers + Barriers

• Independent sources of funding
  (no constraints on timing of use, cost benefit ratio, beneficiaries)

• Standing operations + ongoing programs
  (develop capacity at scale, over time, including at state agencies)

• Lack of “social capacity”
  (staff at engineering-based buyout programs lack capacity for social + engaged dimensions of buyouts)
“We being engineers, we went straight to the solution. We said, ‘what number can we plug in here, how about the change score?’ As we talked more about it, it came up that it may work for this one purpose, but we’re not so sure [it should be universally applied]. So, we said okay, stop. **We can make the math work, we can make numbers do anything.** But is the change score what we should be using, or is it something else? And isn’t it better to have the conversation about should there be something else with people who know more about racial inequity and inclusion? We don’t have that expertise.”

“After some really honest conversations with our African American staff, we decided we needed outside resources, because we were looking at statistical stuff – [like] where we’ve worked in the past, where we need to work in the future, driving toward residual risk. They basically said ‘You white people don’t know what you’re doing. You are in way over your head.’”

Charlotte-Mecklenburg Stormwater Services, Division Director
## Programmatic gaps

<table>
<thead>
<tr>
<th>Pre-disaster Planning (Historic Justice)</th>
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“A lot of people are looking to us to learn, it’s left us scrambling who to talk to [for us to learn from]. I think we need to branch out beyond floodplain managers. Our culture of buyouts, it’s tied into affordable housing, racial equity that goes beyond flood risk.”

City of Austin buyout manager

“We are not helping the situation. Yes, we’re making people safer, and taking out dangerous housing stock, but in doing so we’re driving prices up...it’s a net decrease in the housing stock”

Real estate expert for the City of Austin’s buyout program
Institutional Silos

• Buyouts are a narrow slice of the vulnerability picture
• Development planning sometimes continue to site in floodplains
• City housing policies do not account for resettlement housing demand
• Barriers to intergovernmental coordination exist at all levels of government
Subnational Lessons for Federal Reforms

• Subnational programs offer lessons for distributive and procedural equity, but not relational equity (time, space)
• Importance of standing programs and flexibility of local innovation in use of funding
• Improving buyout equity = making chairs on Titanic floatable?
• Need to address holistic equity of land use planning and housing production → integrated planning at all levels
Thank you!

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Twitter @_lindashi
www.lindashi.net
Setting the Research Agenda: Upcoming Priorities for Adaptation Researchers

Eleni Myrivili
Chief Heat Officer
City of Athens, Greece

Jonathan Parfrey
Executive Director,
Climate Resolve

Lauren Sanchez
Senior Climate Advisor, Office of CA Governor Newsom
Thanks for joining us!
The session will begin shortly.

Thanks for tuning in!