CLIMATE ADAPTATION RESEARCH SYMPOSIUM

MEASURING & REDUCING SOCIETAL IMPACTS

Proactive Planning for Resilient and Equitable Communities Thanks for joining us! The session will begin shortly.



Thank you to our event collaborators

Atlantic Council







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PARTNERS





Concerned Scientists

Widgets are resizable and movable

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

Have a question for presenters? Click the 🕜 icon.

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Luskin Center for Innovation

Osamu Kumasaka

Buy-In Community Planning

Sara Meerow Arizona State University



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Linda Shi Cornell University



UCLA

Luskin Center for Innovation



Osamu Kumasaka @kumasnax

Local Climate Migrants

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Program Director, Buy-In Community Planning

Planning Better Buyouts: Advancing Equitable and Healthy Housing Mobility of



Luskin Center for Innovation



Sara Meerow Assistant Professor, Arizona State University

Assistant Professor @SaraMeerow

Does Collaboration Improve Resilience Planning? Exploring the Relationship Between Governance Networks, Plan Networks, and Resilience to Flooding in Four Coastal Cities

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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

School of Geographical Sciences & Urban Planning

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The high costs of flooding



https://www.ncdc.noaa.gov/billions/time-series/US

The rise of urban resilience



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



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

www.resilienceplanningnetworks.com



#1825367 With Sierra Woodruff & Bryce Hannibal

Collaborative governance networks: SNA







Seattle



Collaborative governance networks: SNA

Table X: Weekly Network Measure Results									
City	Organization	Degree	Betweenness	Density					
Baltimore	Baltimore Main Streets Coordinating Program	8	212 (2)	0.036 (1)					
	Department of Planning	6	233 (1)	0.133 (2)					
	Downtown Partnership of Baltimore	5	10 (16)						
	Baltimore City Office of Sustainability	4	135 (5)						
	Department of Tranportation	4	113 (7)						
	Mahan Rykiel Associates	4	87 (10)						
Boston	Boston Harbor Now	9	556 (2)	0.069 (4)					
	Boston Environment Department	8	277 (8)	0.089 (5)					
	Chinese Progressive Association	8	336 (5)						
	Mass Office of Coastal Zone Management	8	304 (7)	0.054 (3)					
	Mystic River Watershed Association	8	726 (1)						
	UMass Boston	8	326 (6)	0.035 (1)					
Fort Lauderdale	Miami-Dade County Office of Resilience	10	96 (1)	0.044 (1)					
	Brooks + Scarpa Architects, Inc.	5	24 (4)						
	Broward County Environmental Planning and Community								
	Resilience Division	4	53 (3)						
	City of Fort Lauderdale Public Works Department								
	Sustainability Division	3	13 (9)						
	Florida Department of Environmental Protection	3	15 (6)	0.334 (2)					
	Public Works Sustainability Division	3	19 (5)						
	USACE	3	55 (2)	0.334 (4)					
	Seattle Public Utilities	9	148 (1)	0.167 (1)					
Seattle	City of Seattle	8	80 (2)	0.214 (3)					
	Seattle Department of Neighborhoods	6	36 (8)	0.2 (2)					
	Seattle Office of Emergency Management	6	49 (4)	0.267 (4)					
	Seattle Office of Planning and Community Development	5	36 (8)	0.3 (5)					
	Seattle Office of Sustainability and Environment	5	13 (9)	0.4 (6)					

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



NETWORK

LINE WEIGHT INDICATES NUMBER OF REFERENCES

- 15 2018 Coastal Resilience Solutions for South Boston
- 16 2018-2019 Capital Planning
- 17 2018-2020 Water Sewer Capital Improv Plan

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)



Malecha et al. 2019 http://mitigationguide.org/wp-content/uploads/2018/03/Guidebook-2019.03-Update-v1.pdf

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

Plan as unit of analysis



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



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

		Fort					
		Lauderdale	Boston	Baltimore	Seattle		
Collaborative Governance networks							
SNA	density	0.00	0.03	0.28	1.00		
SNA	avg degree	0.00	0.68	0.38	1.00		
Survey	collaboration increase %	0.83	1.00	0.13	0.00		
Networks of pla	ns						
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



Sara.Meerow@asu.edu @SaraMeerow

- 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

Floodplain Management?

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State and Local Buyout Programs – What Barriers and Lessons for More Equity



Luskin Center for Innovation

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

Hannah Wilson









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



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



Dr. Marci Bortman

Director of Climate

Adaptation TNC - New York

TNC Support Staff



Nate Woiwode **Project Manager** TNC - North America

Anjali Fisher Master's in **Regional Planning** Cornell





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

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?

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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

Pre-disaster Planning (Historic Justice)

- Development and zoning guidelines that sited lower-income housing in at-risk areas
- Infrastructure investment that denied improvements to minority communities

Beneficiary Selection (Distributive Justice)

- Cost-benefit analysis based on property value; not all options available to low-income
- Favors traditional family structures

Buyout Process (Procedural Justice)

- Lack of Transparency
- Reactionary Timeframe
- Low-medium income households wait longer to receive less aid

Post-Buyout (Holistic) Well-Being

- Lack of safe affordable housing
- Surrounding communities gentrify following post-buyout greening or decline with perceptions of vacancy
- No whole community relocation
- Place attachment not addressed

Programmatic responses

Pre-disaster Planning (Historic Justice)

- Development and zoning guidelines that sited lower-income housing in at-risk areas
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- 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

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 "worst first" prioritization scheme

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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

Pre-disaster Planning (Historic Justice)

- Development and zoning guidelines that sited lower-income housing in at-risk areas
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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 \rightarrow integrated planning at all levels

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Thank you!/



KEYNOTE ROUNDTABLE | 12:30-1:30PM PT

Setting the Research Agenda: Upcoming Priorities for Adaptation Researchers

Eleni Myrivili Chief Heat Officer City of Athens, Greece

Jonathan Parfrey

Executive Director, Climate Resolve



MEASURING & REDUCING SOCIETAL IMPACTS



Lauren Sanchez Senior Climate Advisor, Office of CA Governor Newsom





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Thanks for tuning in!



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