Risk, Resilience, and Decision-Making in Urban and Rural Health Networks

Kate Albrecht, Ph.D.
Assistant Professor, Department of Public Policy, Management & Analytics
Chicago Health Networks Project Director, UIC Networks and Governance Lab
University of Illinois Chicago

networks & governance lab
UNIVERSITY OF ILLINOIS CHICAGO

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The Problem

The Gap

PONs coordinate health and social service delivery in VUCA environments, but:

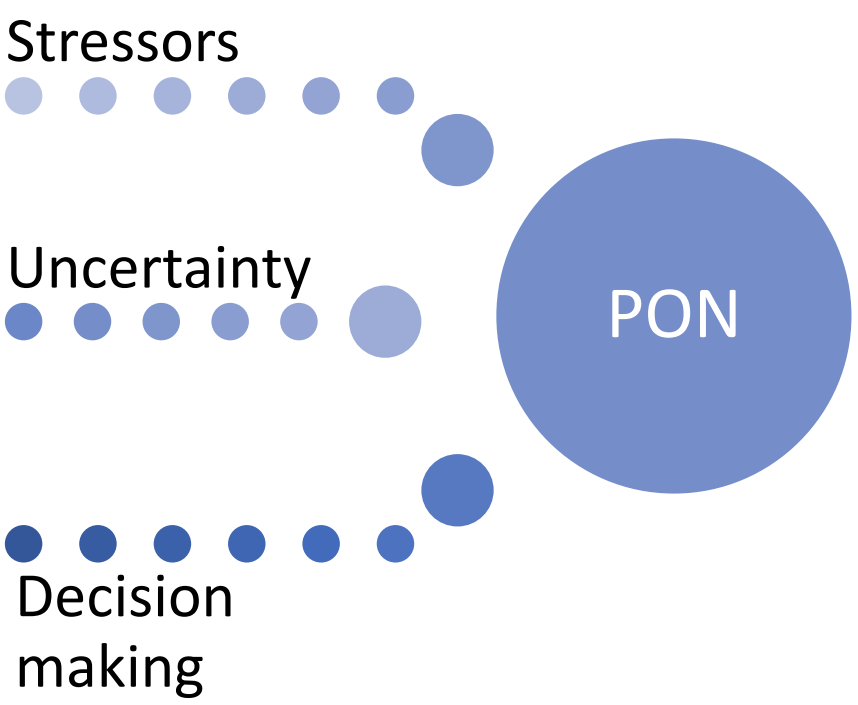
- Most empirical work examines PONs in isolation, ignoring domain-level dynamics of populations of co-existing PONs that generate competitive risk (Nowell et al., 2019; Nowell & Albrecht, 2024)
- No robust framework links collective risk perception to strategic adaptation and network resilience (Berthod et al., 2017; Cooper et al., 2024)
- How decision-making governance structures moderate risk-response dynamics remains undertheorized (Provan & Kenis, 2008; Ansell & Gash, 2008)

RQ1

How do PONs perceive and respond to risks such as resource scarcity, domain competition, and organizational member turnover?

RQ2

How do consensus-based, hierarchical, and hybrid decision-making structures shape adaptive strategies under conditions of uncertainty?



Theoretical Framework

Three interlocking frameworks converge towards adaptive resilience as outcome

01

Network Domain Theory

- Populations of co-existing PONs
- Generate carrying capacity limits, competitive pressure, and saturation dynamics (Nowell & Albrecht, 2024; Hannan & Freeman, 1977)

02

Decision-Making Architecture

- Consensus, hierarchical, and hybrid governance structures
- Shape speed, legitimacy, and durability of adaptive responses to risk (Provan & Kenis, 2008; Ansell & Gash, 2008)

03

HIRV Risk Framework

- Adapted to assess domain-level stressors (Pearce, 2005)
- Resource scarcity, domain competition, and member turnover

PON Resilience = adaptive capacity to read domain dynamics, make decisions under uncertainty, and reconfigure collaborative relationships (Lemaire et al., 2026; Cooper et al., 2024)

Research Design

74 Total PONs (55 urban · 19 rural)

2 Complete Network Domains Compared

3 Data Sources SNA · Survey · Interview

Five-Phase HIRV Analytic Framework (adapted from Pearce, 2005)

1 — Hazard Identification

Catalogue domain-level threats: resource competition & saturation

2 — Risk Analysis

Probability & impact assessment; carrying capacity modeling

3 — Vulnerability Analysis

Structural, resource & governance vulnerabilities per PON

4 — Impact Analysis

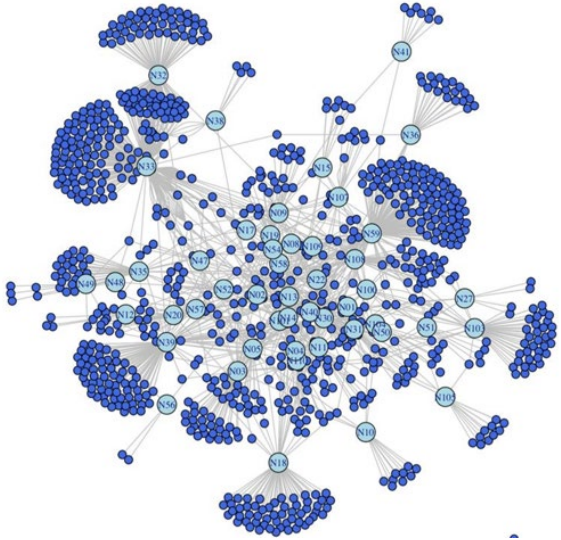
System-wide effects on collaborative capacity & resilience

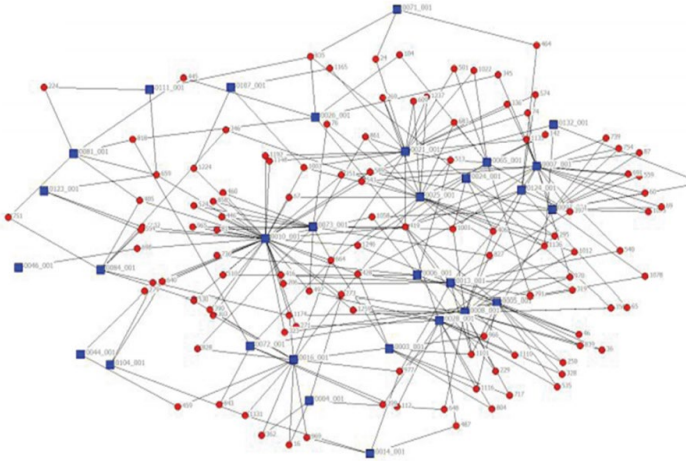
5 — Risk Management

Evidence-based resilience strategies with practitioner partners

Participatory research principles (CBPR) integrated across all phases — community partners contribute to problem framing and interpretive validity

Findings I: Network Domain Structural Characteristics





Urban network domain reveals siloed membership: most organizations belong to discrete, bounded networks with a dense but narrow core

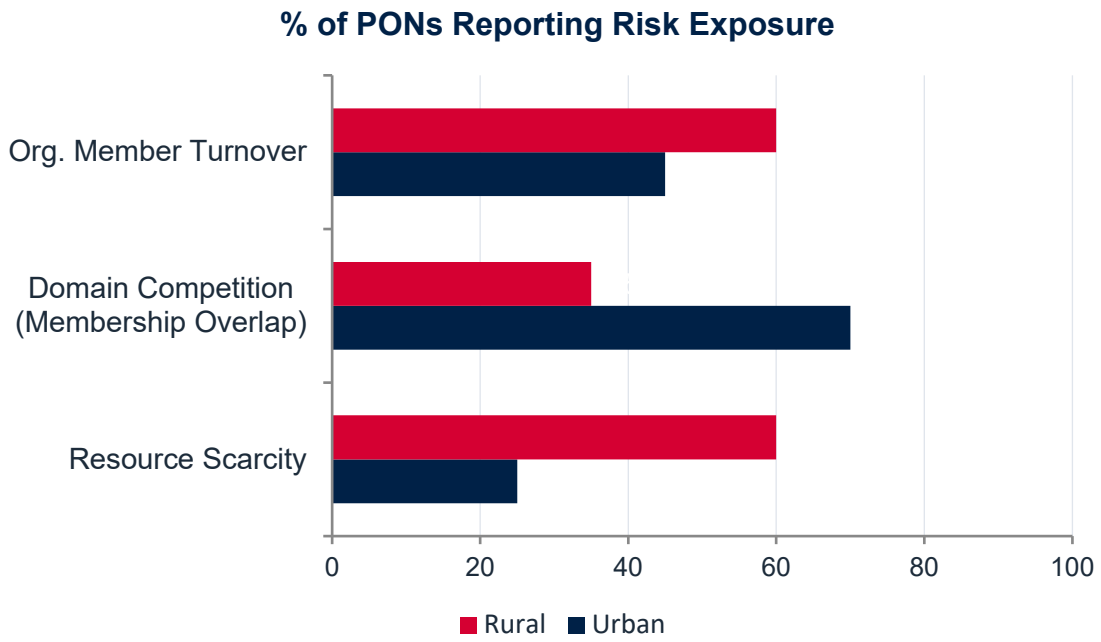
Rural network domain shows integration: organizations connect across multiple networks, producing a flatter, more interwoven landscape

Findings I: Network Domain Structural Characteristics

Characteristic	Urban Domain	Rural Domain
Number of PONs	**55**	**17**
Total Member Organizations	**812**	**198**
Ties in Network Domain	**1,435**	**834**
Avg. PON Size (orgs.)	**32**	**19**
Bipartite Domain Density	**0.38**	**0.29**
Dominant Governance Structure	Hybrid (75%) Hierarchical (20%) Consensus (5%)	Hybrid (60%) Consensus (30%) Hierarchical (10%)

Urban domains favor hierarchical/hybrid structures enabling faster adaptive response; rural domains sustain more consensus-based governance reflecting relational embeddedness, consistent with Provan & Kenis (2008)

Findings II: Risk Profiles Across Urban and Rural Domains



Observed Response Patterns

Resource Scarcity

Diversification vs. consolidation of funder & partner ties

Domain Competition

Niche specialization vs. broader service positioning

Member Turnover

Relationship strengthening vs. active member replacement

Urban–rural inversion: Urban PONs face domain competition as the primary stressor; rural PONs face acute funding pressure and membership instability, with each demanding distinct adaptive repertoires (Nowell & Albrecht, 2024; Brown & Schafft, 2019)

Findings III: Governance Structure as Moderating Condition

Hierarchical

Urban: 20% **Rural:** 10%

Strengths

Fastest risk response; decisive resource reallocation under competitive pressure

Tensions

Lower member buy-in; adaptive strategies perceived as less collectively legitimate

Hybrid

Urban: 75% **Rural:** 60%

Strengths

Enables speed + participation. Urban: backbone + advisory roles vs. Rural: anchor leaders & consensus elements

Tensions

'Hybrid' masks meaningful variation in authority-participation configurations

Consensus

Urban: 5% **Rural:** 30%

Strengths

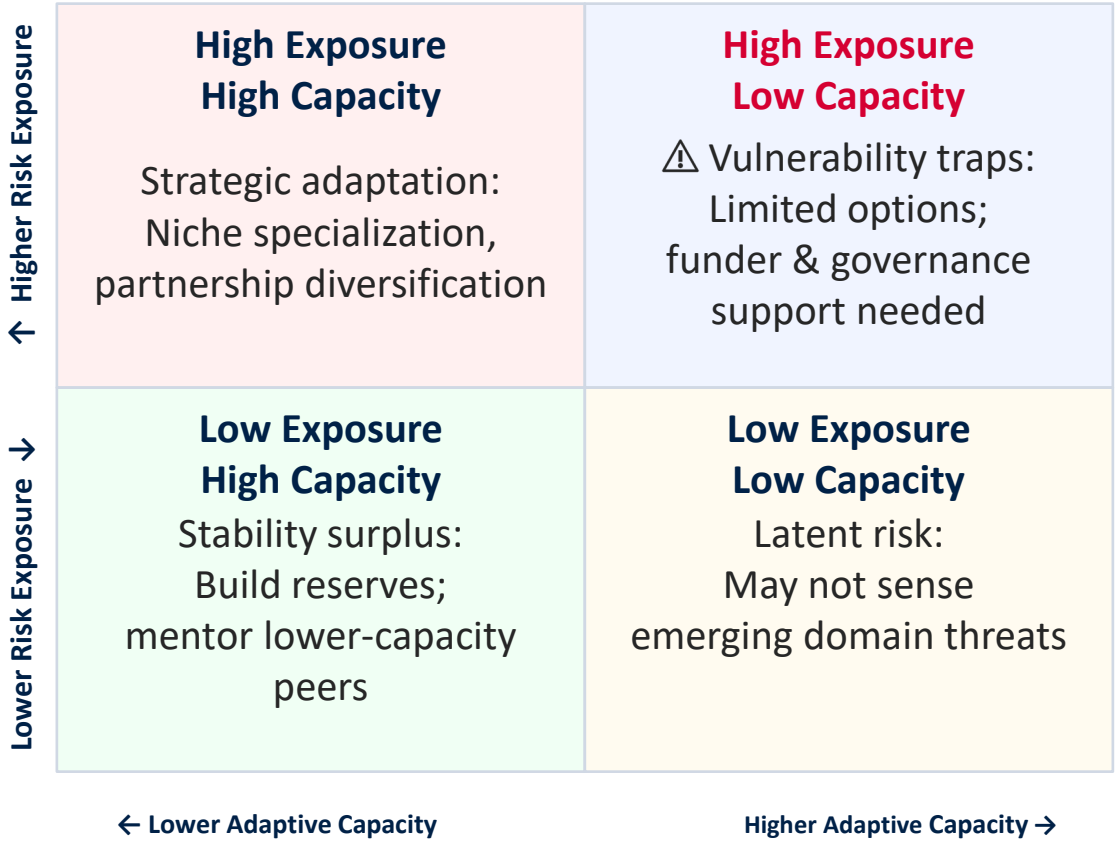
Slower, lasting adopted adaptations; members report high ownership of strategic decisions

Tensions

Slower response adaptation in high-competition, time-sensitive contexts

Cross-cutting: PONs with high internal trust and stable partnership histories show greater adaptive capacity across all three risk types ***(Ansell & Gash, 2008; Cooper et al., 2024)***

Findings IV: Risk Assessment and Response Matrix



What the matrix reveals

- ▲ Urban PONs cluster high-exposure, high-capacity, competitive but adaptive
- ▼ Rural PONs concentrate in high-exposure, low-capacity, 'vulnerability traps'
- ◆ Hybrid governance expands adaptive capacity
- ● High trust + stable membership shift PONs toward higher adaptive capacity regardless of exposure

Discussion: Preliminary Theoretical Contributions

Ecologically Situated Resilience

- Urban and rural domains constitute qualitatively distinct risk environments
- Challenges context-independent treatments of network resilience
- Supports calls for ecologically situated theories of collaborative network adaptation (Nowell & Albrecht, 2024; Brown & Schafft, 2019)

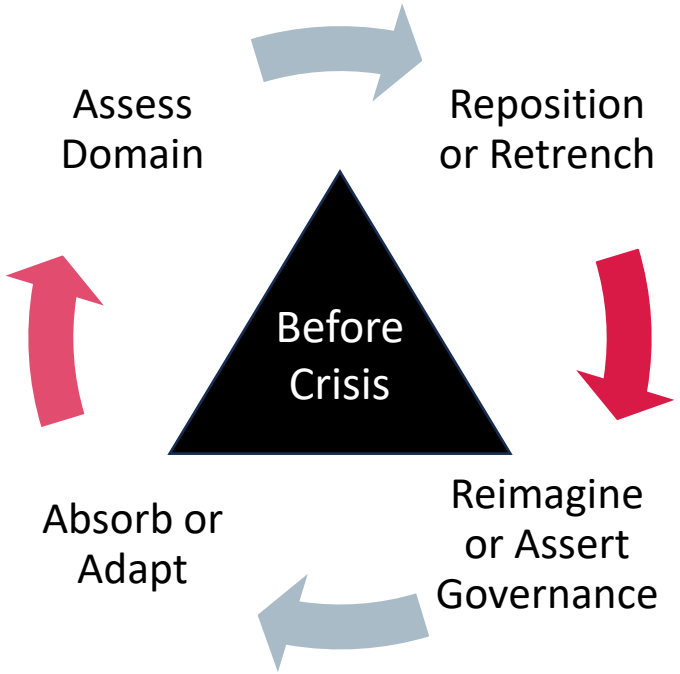
Governance Structure as Moderating Condition

- Decision-making style shapes speed, depth, & legitimacy of risk responses
- But distinctions among governance forms may be less telling than the specific authority-participation configurations hybrid structures enable
- Variation within the hybrid category demands closer analytic attention

Discussion: Preliminary Theoretical Contributions

Chronic Risk and Adaptive Resilience

- Beyond episodic resilience to chronic, domain-generated stressors
- Adaptive resilience for PONs: the ongoing capacity to read domain dynamics and reconfigure collaborative relationships before crises materialize (Kapucu et al., 2017; Lemaire et al., 2026)



Limitations & Next Steps

Current Limitations

- Cross-sectional data prevent causal claims about whether governance structures produce adaptive responses or whether networks self-select based on risk exposure
- Two network domain contexts (one urban, one rural); generalization beyond these specific domains warrants caution
- Survey data may not fully capture micro-level deliberative processes; process-tracing approaches needed (Cooper et al., 2024)

Project Roadmap

- Additional longitudinal network data collection to examine how decision processes evolve over time
- Semi-structured interviews fsQCA to identify configurational conditions associated with differential resilience outcomes

Implications

Policymakers
Framework anticipates where domain-level risks will concentrate across urban and rural network ecologies

Health System Administrators
Invest in hybrid governance arrangements that enable speed without sacrificing member legitimacy

Philanthropic Funders
Identify high-exposure, low-capacity PONs before crises materialize; target capacity building for vulnerability traps

Network Managers
Relational infrastructure — trust, partnership history — is a resilience resource; invest in it continuously

Thank you!

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