University of Wisconsin Milwaukee Institute for Urban Health Partnerships Network Complexity Analysis

Systems-based Network Analysis of the Relationship between Partner Connectivity and Resilience for Nurse-Managed Health Centers in Milwaukee

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The Institute for Urban Health Partnership (IUHP)

- Established in 1996
- Mission
  - increase access to health care,
  - reduce health disparities and promote health
- Integrates educational, research, and service missions through
  - nurse-managed health centers,
  - faculty practice,
  - student clinical experiences, and
  - practice-based research initiatives.
Project Goals

- Use the Stockholm’s resilience principles to conduct a systems based approach.
- Explore the relationship between network connectivity, resilience, and the capacity of UWM IUHP.
- Identify the evolution of emergent patterns and trends.
- Address gaps of understanding.
- Recommend a more sustainable model to meet the changing needs of the community.
Stockholm Resilience Principles

- Principle 1: Maintain Diversity and Redundancy
- Principle 2: Manage Connectivity
- Principle 3: Manage Slow Variables and Feedbacks
- Principle 4: Foster an Understanding of Social-Ecological Systems as Complex Adaptive Systems
- Principle 5: Encourage Learning and Experimentation
- Principle 6: Broaden Participation
- Principle 7: Promote Polycentric Governance Systems

(Chapin et al., 2009)
Evolution of Partnerships

Legend:

Operated by IUHP

Tier 1: Active formal partnership agreements with IUHP

Tier 2: Formal discussions/proposals

Tier 3: IUHP staff attendance, coalition membership
The Process

- Interviews with network stakeholders.
- On-site visits.
- Partnership and staff meetings.
- Literary research.
- Photo archive review.
- Facilitate Group Participatory Exercise-Historical timeline analysis: “What Affects Healthcare”.
- Social-ecological based systems mapping.
Historical Time Line Analysis
Systems Based Mapping
Social-Ecological Systems Based Mapping

• **Key Factors:**
  – Level of Communication
  – Availability of Funding
  – Access to Health Care
  – Diversity of Economy
  – Connectivity of Network Partnerships

• **Contributing factors:**
  – Capacity of Community
  – Paradigm Shift of Defining “Sustainable Health”
  – Urban Pollution/Legacy of Pollutants
  – Success of Projects

• **Driver:**
  – Quality of Life
  – Turnover of Key Actors

• **Enablers:**
  – Community Participation
  – IUHP Teamwork
  – Sustained Engagement/Presence in the Community
  – Advocacy of Patients
  – Polycentric Governance
  – Innovative Programming

• **Inhibitor:**
  – Racism/Classism/Segregation
  – “Brain Drain”
  – Environmental Degradation
  – Mistrust
  – Infrastructure Gaps
  – Top-Down Government
SES Map of UW-Milwaukee IUHP Nurse-managed Health Centers
Infrastructure Gaps

- Environmental Degredation
- Urban Pollution/Legacy of Pollutants
- Racism/Classism & Segregation
- Advocacy of Patients
- Quality of Life
- Brain Drain
- Turnover of Key Actors

Social Ecological Systems Map of UWM IUHP Nurse-managed

- Adds to / same direction
- Subtracts from / opposite direction
- Factor
- Key Factor
- Enabler
- Inhibitor
Findings

• Principle 1: Maintain Diversity and Redundancy
• Principle 2: Manage Connectivity
• Principle 3: Polycentric Governance Systems
Findings

• Strengthen partnership development and encourage redundancy.
• Innovative programming
  – Emerge from community input and continuous engagement.
• Empower residents to move up and out of the community
  – Focus on improving quality of life.
• Work to meet the community’s needs
  – Understand constraints and key factors
• Change how we define and think about “sustainable health.”
Direction of Our Project

• Conduct research using bioinformatics, geographical and health data
  – using an Artificial Neural Network (ANN) for analysis and Remote Sensing GIS.
• Continue interviews and facilitations
• Continuously adapt the SES map
• Build a timeline narrative from the analysis with dates and digital imagery.
Questions?