A Comparison of System-Level D&I Strategies on Local Health Department Quality Improvement Maturity

Melanie Whittington, PhD Student, MS
Adam Atherly, PhD
Lisa VanRaemdonck, MSW MPH

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Research Team Members

COLORADO PBRN
• Adam Atherly, PhD
• Lisa VanRaemdonck, MPH MSW
• Julie Marshall, PhD
• Danielle Varda, PhD
• Rachel Hogg, DrPH
• Melanie Whittington, MS

NEBRASKA PBRN
• Li-Wu Chen, PhD, MHSA
• David Palm, PhD
• Anh Nguyen, PhD
• Abbey Gregg, MPH
• Niodita Gupta, MD, MPH
• Sarbinaz Bekmuratova, MS

KANSAS PBRN
• Gianfranco Pezzino, MD, MPH
• Shawna Chapman, PhD, MPH, MA
• Sarah Hartsig, MS
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D&I of Quality Improvement

- Quality Improvement (QI): a structured approach to assess performance followed by the implementation of efforts to improve it
- Heterogeneity in how local health departments (LHDs) disseminate and implement QI
- LHDs are encouraged to do QI
- Best practices to disseminate and implement QI still unknown
System-Level D&I Movements

• A variety of approaches to disseminate and implement QI exist
• Implement system-level initiatives
  – Training
  – Technical Assistance
  – Funding
  – Learning Community Facilitation
• Leverage national funding
  – Preventive Block Grant
  – National Public Health Improvement Initiative (NPHII)
  – NACCHO Accreditation Initiative
  – Multi State Learning Collaboratives
Research Question

Do health departments in states with more system-level investments and initiatives for QI have higher QI maturity and less heterogeneity between populations?
Measuring Quality Improvement

• QI efforts can be measured by a validated measure of QI maturity
  – Survey previously developed to evaluate the Robert Wood Johnson Foundation Multi-State Learning Collaborative

• Domains of QI Maturity:
  – **Organizational Culture**: values and norms of an agency
  – **Capacity and Competence**: skills and approaches
  – **Alignment and Spread**: diffusion of QI
Data Collection

- **Survey**: Organizational QI Maturity Survey
- **Participants**: Local Health Departments (LHDs) in Colorado, Kansas, and Nebraska
  - Colorado: 36 LHDs (67% response rate)
  - Kansas: 100 LHDs (100% response rate)
  - Nebraska: 20 LHDs (100% response rate)
  - Total Sample Size: 156
- **Time Period**: January to March 2015
Analytical Approach

• Analyze differences (between states and population sizes) in overall QI Maturity and QI Maturity domains
  – ANOVA
  – OLS Regression
    • QI Score= $\beta_0 + \beta_1 \text{Population} + \beta_2 \text{NE} + \beta_3 \text{KS} + \beta_4 \text{Population*KS} + \beta_5 \text{Population*NE} + \epsilon$
    • 4 Dependent Variables
      – Overall QI Maturity
      – Organizational Culture
      – Capacity and Competence
      – Alignment and Spread

• Hypothesis: LHDs in states with higher levels of system-level investments in QI will have higher QI maturity scores and less heterogeneity across different population sizes.
## Results: Descriptive Statistics

<table>
<thead>
<tr>
<th>BY STATE</th>
<th>QI Maturity</th>
<th>Organizational Culture</th>
<th>Capacity and Competence</th>
<th>Alignment and Spread</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado</td>
<td>3.51</td>
<td>4.11</td>
<td>2.72</td>
<td>3.14</td>
</tr>
<tr>
<td>Nebraska</td>
<td>3.8</td>
<td>4.10</td>
<td>3.35</td>
<td>3.65</td>
</tr>
<tr>
<td>Kansas</td>
<td>3.73</td>
<td>4.19</td>
<td>2.99</td>
<td>3.43</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BY POPULATION</th>
<th>QI Maturity</th>
<th>Organizational Culture</th>
<th>Capacity and Competence</th>
<th>Alignment and Spread</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-24,999</td>
<td>3.65</td>
<td>4.19</td>
<td>2.83</td>
<td>3.34</td>
</tr>
<tr>
<td>25,000-99,999</td>
<td>3.68</td>
<td>4.08</td>
<td>2.96</td>
<td>3.39</td>
</tr>
<tr>
<td>100,000-499,999</td>
<td>4</td>
<td>4.06</td>
<td>4.33</td>
<td>3.56</td>
</tr>
<tr>
<td>500,000+</td>
<td>3.71</td>
<td>4.36</td>
<td>3.14</td>
<td>3.71</td>
</tr>
</tbody>
</table>

Boldface indicates statistical significance from ANOVAs.

1=Lowest       2=Low       3=Medium      4=High       5=Highest
## Results: OLS Regression

<table>
<thead>
<tr>
<th>Population Coefficients</th>
<th>QI Maturity</th>
<th>Organizational Culture</th>
<th>Capacity and Competence</th>
<th>Alignment and Spread</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>0.006</td>
<td>0.03</td>
<td>0.03</td>
<td>0.06</td>
</tr>
<tr>
<td>NE</td>
<td>0.293</td>
<td>0.183</td>
<td>0.803</td>
<td>0.557</td>
</tr>
<tr>
<td>KS</td>
<td>0.169</td>
<td>0.099</td>
<td>0.164</td>
<td>0.319</td>
</tr>
<tr>
<td>KS*Population</td>
<td>0.2</td>
<td>0.04</td>
<td>0.5</td>
<td>0.1</td>
</tr>
<tr>
<td>NE*Population</td>
<td>-0.004</td>
<td>-0.2</td>
<td>-0.2</td>
<td>-0.01</td>
</tr>
</tbody>
</table>

Boldface indicates statistical significance.
Population coefficients are per 10,000 people.
Limitations

• ENDOGENEITY!
  – There is a potential for the estimates to be biased due to omitted variables
  – Could there be other state-level factors that affect QI scores?
• Potential for selection bias in Colorado
Conclusions & Implications

- Significantly higher scores for QI Capacity and Competence in Nebraska
- Potentially lower heterogeneity across population sizes in Nebraska

- System-level investments and initiatives likely increase QI maturity AND reduce heterogeneity across LHDs, mostly in the Capacity and Competence domain
- Fruitful area of further research to quantify these investments/initiatives and expand the observation of impact to accreditation readiness
- System-level efforts to improve QI in LHDs could improve the dissemination and implementation of QI at the local level and reduce heterogeneity
Next Steps

- Conduct interviews with state-level partners to understand the environment for QI and AR
- Collect quantitative data on the amount of each system-level initiative dispersed to LHDs
- Collect and score accreditation readiness (AR) data
- Collect data on potential confounding variables
  - Network analysis of connections among LHDs and state-level partners
Questions?

Thank you!

Melanie D. Whittington, PhD Student, M.S.
Colorado Public Health Practice-Based Research Network
Melanie.Whittington@UCDenver.edu