Cross-Jurisdictional Resource Sharing and Scope & Quality of Public Health Services

Research In Progress Webinar
Thursday, May 11, 2017 1:00-2:00pm ET/ 10:00-11:00am PT

Funded by the Robert Wood Johnson Foundation
Agenda

Welcome: Anna G. Hoover, PhD, Assistant Professor, University of Kentucky College of Public Health

Cross-Jurisdictional Resource Sharing and Scope & Quality of Public Health Services [DIRECTIVE]

Presenters: Justeen Hyde, PhD, Research Scientist, Healthcare Organization & Implementation Research, Veterans Affairs Medical Center; Massachusetts Public Health PBRN Justeen.Hyde@va.gov

Debbie Humphries, PhD, MPH, Clinical Instructor in Epidemiology, Yale School of Public Health debbie.humphries@yale.edu

Commentary: Steve Huleatt, MPH, Director of Health, West Hartford-Bloomfield Health District, Connecticut

Ron O’Connor, MPH, Director, Office of Local and Regional Health, Massachusetts Department of Public Health

Questions and Discussion
Presenters

**Justeen Hyde, PhD**
Research Health Scientist, Center for Healthcare Organization & Implementation Research, Veterans Affairs Medical Center
Instructor, Harvard Medical School
Massachusetts Public Health PBRN
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**Debbie Humphries, PhD, MPH**
Clinical Instructor in Epidemiology, Yale School of Public Health
Connecticut Public Health PBRN
[debbie.humphries@yale.edu](mailto:debbie.humphries@yale.edu)
Effects of Cross-Jurisdictional Resource Sharing on the Implementation, Scope and Quality of Public Health Services

Debbie Humphries, PhD, MPH
Clinical Instructor
Yale School of Public Health
Connecticut

Justeen Hyde, PhD
Research Health Scientist
U.S. Veterans Administration, Bedford, Massachusetts

Connecticut Association of Directors of Health

Massachusetts
Connecticut
Acknowledgements

Funder: Robert Wood Johnson Foundation through the Systems for Action National Coordinating Center – DIRECTIVE Grant #72054

Grant Title: The Effects of Cross-Jurisdictional Resource Sharing on the Implementation, Scope, and Quality of Public Health Services
Background

• Connecticut and Massachusetts
  • Both home rule states
  • Municipal responsibility for local public health

• Shared concern with equitable delivery of local public health services

• Mix of service delivery models
  • Independent
  • Partial and Comprehensive shared service
  • Districts
<table>
<thead>
<tr>
<th></th>
<th>Massachusetts</th>
<th>Connecticut</th>
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</thead>
<tbody>
<tr>
<td>Population</td>
<td>6.7 million</td>
<td>3.6 million</td>
</tr>
<tr>
<td>Number of towns/municipalities</td>
<td>351</td>
<td>169</td>
</tr>
<tr>
<td>Number of Health Departments/Boards of Health</td>
<td>351</td>
<td>74</td>
</tr>
<tr>
<td>Type of Departments</td>
<td>Municipal 292 (83.2%)</td>
<td>Municipal 53 (31.4%)</td>
</tr>
</tbody>
</table>
|                          | Multi-jurisdictional 9 (16.8%) | Full time 29
|                          |               | Part-time 24
|                          |               | District 21 (68.6%) |
Key Research Question
How do different organizational models impact the quality, breadth, and cost of local public health services?
# Research Team

<table>
<thead>
<tr>
<th></th>
<th>Connecticut</th>
<th>Massachusetts</th>
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</thead>
<tbody>
<tr>
<td>Principal Investigators</td>
<td>Jennifer Kertanis</td>
<td>Justeen Hyde</td>
</tr>
<tr>
<td>Co-Investigators</td>
<td>Debbie Humphries</td>
<td>Geoff Wilkinson</td>
</tr>
<tr>
<td>Key Team Members</td>
<td>Elaine O’Keefe</td>
<td>Seth Eckhouse</td>
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<tr>
<td></td>
<td>Steve Huleatt</td>
<td>Erin Cathcart</td>
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<td></td>
<td>Ashika Brinkley</td>
<td>Sam Wong</td>
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<td></td>
<td>Andrea Boissevain</td>
<td>Kelly Washburn</td>
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<td></td>
<td>Ethan Hahn</td>
<td>Kate Khanna</td>
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Collaborating Partner: Adam Atherly, Colorado PBRN
Methodology

Mixed Method Study

• Census data
  • Municipal characteristics
• State (and local) reported data
  • Retail food inspections
• In-person semi-structured interviews, conducted \textit{separately} in MA and CT
  • Health Directors or their designees

Sampling

• Stratified to identify independent jurisdictions that had similar population sizes to sharing jurisdictions
  • MA: All comprehensive shared service departments were recruited for participation
  • CT: Randomly selected eight districts covering 39 municipalities
Four focus areas for presentation

Highlight similarities and differences by service delivery model
  • Administration and governance
  • Staff and Services
  • Costs by sharing status
    • Obesity
    • Enteric Disease
    • Food Safety Inspections
<table>
<thead>
<tr>
<th>Demographics, mean (SD)</th>
<th>Sharing (n=15)</th>
<th>Independent (n=54)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty rate</td>
<td>5.76 (0.89)</td>
<td>5.32 (0.66)</td>
<td>0.79</td>
</tr>
<tr>
<td>Unemployment</td>
<td>7.17 (0.35)</td>
<td>7.61 (0.35)</td>
<td>0.52</td>
</tr>
<tr>
<td>Population</td>
<td>15586 (22637)</td>
<td>14729 (12240)</td>
<td>0.8</td>
</tr>
<tr>
<td>Pop per sq mile</td>
<td>937 (270)</td>
<td>615 (60)</td>
<td>0.08</td>
</tr>
<tr>
<td>Municipal budget per 1000 population</td>
<td>2.92M (240,400)</td>
<td>3.25M (377,403)</td>
<td>0.6</td>
</tr>
<tr>
<td>Public Health budget per 1000 population</td>
<td>15,170 (1630)</td>
<td>16,340 (1800)</td>
<td>0.74</td>
</tr>
<tr>
<td>Race &amp; Ethnicity, mean % (SD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>3.8% (1.2)</td>
<td>5.9% (3.7)</td>
<td>0.59</td>
</tr>
<tr>
<td>Hispanic</td>
<td>5.6% (0.011)</td>
<td>4.4% (0.55)</td>
<td>0.31</td>
</tr>
</tbody>
</table>

1 Proportions are with respect to the total number of sharing or non-sharing municipalities in that size range in both Connecticut and Massachusetts.

2 Proportions are compared with a chi square analysis; means with t-test.
No significant differences in local legislative structure or municipality type (rural/suburban/urban) between independent and shared health departments.

Service sharing departments were significantly more likely to have an appointed administrator.

<table>
<thead>
<tr>
<th>Executive structure, % (n)</th>
<th>Shared (76)</th>
<th>Independent (54)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elected (mayor/selectman)</td>
<td>32% (24)</td>
<td>53.9% (28)</td>
<td>0.012</td>
</tr>
<tr>
<td>Appointed (manager/administrator)</td>
<td>60% (45)</td>
<td>46.2% (24)</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>8.0% (6)</td>
<td>0%</td>
<td></td>
</tr>
</tbody>
</table>
**Administration and Governance (1)**

<table>
<thead>
<tr>
<th>Understanding of Public Health</th>
<th>Shared n=76</th>
<th>Independent n=54</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excellent or Good</td>
<td>Fair or Poor</td>
</tr>
<tr>
<td>Alderman/Councilors</td>
<td>30% (22)</td>
<td>49% (36)</td>
</tr>
<tr>
<td>Finance Committee</td>
<td>10% (7)</td>
<td>65% (47)</td>
</tr>
</tbody>
</table>

- Independent health departments reported their Aldermen/Councilors and Finance Committees had a better knowledge of the roles and responsibilities of a local health department than Service Sharing departments.
- No differences between the two models in BOH or Chief Executives’ understanding.
• Service sharing departments all had BOH representation.

• Service sharing departments had a larger average number of BOH members.

Independent departments reported more meetings with the chief executive.

Independent departments reported fewer BOH meetings.

<table>
<thead>
<tr>
<th></th>
<th>Shared (n=15)</th>
<th>Independent (n=54)</th>
<th>p value¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board of Health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No BOH Rep</td>
<td>0 (0%)</td>
<td>18 (33%)</td>
<td>0.001</td>
</tr>
<tr>
<td>Appointed BOH</td>
<td>8 (53.3%)</td>
<td>14 (26%)</td>
<td></td>
</tr>
<tr>
<td>Elected BOH</td>
<td>4 (27%)</td>
<td>22 (41%)</td>
<td></td>
</tr>
<tr>
<td>Other BOH process</td>
<td>3 (20%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>Average BOH members</td>
<td>15.1 (3.1)</td>
<td>2.5 (0.28)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

¹Frequency of meetings is not available at the municipal level for multi-municipality health departments.
Public Health Staff

Sharing departments have lower public health staff FTE/1000 population than independent departments

- Shared 0.14 FTE/1000;
- Independent 0.22 FTE/1000; p value 0.07).

Educational background of Directors varies significantly (p=0.01):

- Directors of shared service models more likely to have public health training and MPH degrees (93.3% vs. 50%);
- Directors in independent models more likely to have a bachelor’s degree (33.3% vs. 6.7%) or
- MD/PhD (16.7% vs. 0%) – note this is mostly in small towns with Board of Health Chair serving as Director
Core Public Health Services

Higher in Independent

- Animal control (93% vs. 74%; p=0.07)
- Mosquito control (67% vs. 39%; p=0.002)
- Public health nursing (74% vs. 58%; p=0.06, CT specific)

Higher in Shared

- Lead inspections (97% vs. 81%, p=0.004)
- Natural bathing water testing (87% vs. 70%; p=0.02)
- Nail salon inspections (82% vs. 65%; p=0.03)
- Public pool inspections (99% vs. 85%; p=0.004)
## Community Health Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Shared (76 municipalities)</th>
<th>Independent (54 municipalities)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic Disease Prevention</td>
<td>66%</td>
<td>43%</td>
</tr>
<tr>
<td>Obesity Prevention</td>
<td>58%</td>
<td>44%</td>
</tr>
<tr>
<td>Healthy Aging</td>
<td>53%</td>
<td>57%</td>
</tr>
<tr>
<td>Tobacco Control/Prevention</td>
<td>32%</td>
<td>43%</td>
</tr>
<tr>
<td>Injury Prevention</td>
<td>42%</td>
<td>35%</td>
</tr>
<tr>
<td>Asthma Education and Prevention</td>
<td>39%</td>
<td>37%</td>
</tr>
<tr>
<td>Substance use Education and Prevention</td>
<td>39%</td>
<td>59%</td>
</tr>
<tr>
<td>Mental Health Education and Awareness</td>
<td>33%</td>
<td>26%</td>
</tr>
<tr>
<td>Domestic Violence Prevention</td>
<td>12%</td>
<td>26%</td>
</tr>
<tr>
<td>HIV/AIDS Education and Prevention</td>
<td>16%</td>
<td>15%</td>
</tr>
</tbody>
</table>
# CHA and CHIP Completion (last 3 years)

<table>
<thead>
<tr>
<th></th>
<th>CHA completion</th>
<th>CHIP completion</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>frequency</td>
<td>%</td>
</tr>
<tr>
<td><strong>Shared Service</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(includes 76 municipalities)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Major/Co-lead/Lead</strong></td>
<td>23</td>
<td>83.87%</td>
</tr>
<tr>
<td><strong>Minor/No role</strong></td>
<td>5</td>
<td>16.13%</td>
</tr>
<tr>
<td><strong>Independent</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(54 municipalities)</td>
<td>19</td>
<td>35%</td>
</tr>
<tr>
<td><strong>Major/Co-lead/Lead</strong></td>
<td>13</td>
<td>72.20%</td>
</tr>
<tr>
<td><strong>Minor/No role</strong></td>
<td>5</td>
<td>27.80%</td>
</tr>
</tbody>
</table>
Grocery store and school-based healthy food initiatives are most common in both independent and sharing departments, followed by community gardens.
Obesity Prevention & Enteric Disease Expenditures

- Shared service departments invested more on activities that promote access to healthy food.
- There are no significant differences in enteric disease investigation costs between independent and resource sharing departments in Connecticut.

<table>
<thead>
<tr>
<th>Obesity Expenditures* (per 1K population)</th>
<th>Independent</th>
<th>Resource Sharing</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Activity</td>
<td>46.7 (0.3,93.0)</td>
<td>136.2 (33.9,238.5)</td>
<td>0.14</td>
</tr>
<tr>
<td>Healthy Foods</td>
<td>20.3 (-14.9,55.4)</td>
<td>120.0 (42.4,197.6)</td>
<td>0.04</td>
</tr>
<tr>
<td>Overall</td>
<td>69.5 (0.9,138.0)</td>
<td>180.7 (29.3,332.1)</td>
<td>0.22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ED Investigation Costs*</th>
<th></th>
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<tbody>
<tr>
<td>Cost per ED Investigation</td>
<td>1352 (685,2019)</td>
<td>2321 (1006,3637)</td>
<td>0.24</td>
</tr>
<tr>
<td>ED Cost per 1K population</td>
<td>461 (298,625)</td>
<td>463 (102,824)</td>
<td>0.99</td>
</tr>
</tbody>
</table>

*adjusted for unemployment and square miles
Food Service Cost Model

- Questions asked:
  - Staff Costs
  - Indirect Rate
  - Overhead Rate
- Answered by all respondents:
  - Staff costs

✓ The total number of inspections for Sharing and Independent departments is significantly different (p<0.001).
✓ The cost per FSI is not significantly different for Sharing and Independent departments.

<table>
<thead>
<tr>
<th>Food Inspection Costs*</th>
<th>Independent</th>
<th>Sharing</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>135.7</td>
<td>93.6</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td>(95.8, 175.6)</td>
<td>(5.4, 181.8)</td>
<td></td>
</tr>
<tr>
<td>Cost per Food Inspection</td>
<td>155.1</td>
<td>123.5</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td>(109.7, 200.4)</td>
<td>(25.2, 221.8)</td>
<td></td>
</tr>
<tr>
<td>Cost per Food Establishment</td>
<td>1468</td>
<td>1018</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>(1070, 1870)</td>
<td>(128, 1909)</td>
<td></td>
</tr>
<tr>
<td>Cost per 1K population</td>
<td>1468</td>
<td>1018</td>
<td>0.4</td>
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<td>(1070, 1870)</td>
<td>(128, 1909)</td>
<td></td>
</tr>
</tbody>
</table>

*adjusted for unemployment and square miles
Drivers of cost per inspection

• Ordinary Least Squares regression with staff cost per food safety inspection (FSI) as dependent variable.
• State, resource sharing, unemployment and having more than 5 FSI quality indicators were insignificant in the model
• Other significant control variables included population density ($p=0.064$)
• The total cost of inspections increases at a decreasing rate. The cost per inspection declines.
Food Safety Inspections

• No significant differences in number of inspections per 1000 population in either CT or MA
  • More food service establishments (FSE) per 1000 population in MA

• In CT, independent jurisdictions have a higher proportion of required inspections conducted (97% vs. 67%)

• In MA, no differences in the number of required inspections conducted
Food Safety Inspections

Quality indicators for food inspections
(adopted from FDA Voluntary Retail Food Safety Program):
• Formally trained food safety inspectors*
• Opportunities for and requirements to take part in ongoing training on food inspections;
• Use of a standard inspection reporting form*
• Written standard operating procedures
• Designated supervisor to oversee food inspections
• Written policies for responding to complaints
• Equipment needed for food inspections*
• Annual evaluation of food inspection program

* Most commonly reported across both models
Sharing departments are more likely to have 5 or more of the quality indicators (73% vs. 46%) (p= 0.064)
Observations of Qualitative Responses

Most commonly reported indicators:
• Formally trained food safety inspectors
  • CT requires standard training of all food inspectors and on-going training
  • MA varied widely in reports of formal training
• Use of a standard inspection reporting form
  • Nearly all (both states) using their state’s inspection form
• Equipment needed for food inspections
  • Nearly all (both states) reported this was not a challenge for their department
Observations of Qualitative Responses

• **Written** standard operating procedures and procedures for responding to complaints were not commonly reported, but those who did were likely to report:
  • working towards or had achieved public health accreditation
  • enrollment in the FDA’s Voluntary Retail Food Safety Program

• Having a designated **supervisor** to oversee the inspectional service more likely to be found in:
  • Shared service departments
  • Independent health departments in urban or suburban communities
Observations of Qualitative Responses

• Very few reported performing an annual **evaluation** of retail food inspection program

• Those who did conceptualized evaluation in different ways
  • Review of past inspections to identify trends in violation types and/or repeat violators
  • Regular or annual review of food inspection forms to assess quality
  • Formal to informal conversations with inspectors to identify strengths, challenges, and areas in need of improvement

• Development of **annual report** on food inspection services most often entailed a count of inspections and re-inspections to the state and/or Board of Health
Observations about similarities and differences between CT and MA

Single municipality
• Smaller independent municipalities in CT tend to be wealthier than in MA
  • Difference in reported capacity to hire qualified staff

Multi-municipality
• CT districts are stand alone entities
  • Affects day-to-day involvement in municipal decisions
  • Affects relationships across towns
  • Allows for some distance from political fluctuations

Cross-cutting
Health directors from both service delivery models and states reported challenges with variable understanding of the roles and responsibilities of local health departments among key stakeholders
Conclusions (1)

• Independent health departments report that their governing bodies have greater understanding of roles and responsibilities of local public health.

• In both models, state mandates drive the provision of public health services:
  • Those that are mandated are most likely to be provided.

• Shared service departments have fewer staff per 1000 population.

• Shared service departments are more likely to have directors with public health training.
Conclusions (2)

• Shared service departments report providing more community health programs and services
• Shared service departments invested more on activities that promote access to healthy food
• There are no significant differences in enteric disease investigation costs between independent and sharing departments in Connecticut.
• Sharing departments have more indicators of higher quality food safety inspections.

• Primary driver of food safety inspection staffing costs is the total number of inspections being conducted
  • There is a non-linear relationship between cost per inspection and number of inspections;
  • Minimum cost per inspection is reached above the total number of inspections conducted by all but one of jurisdictions sampled
  • Service sharing status is not significant other than as a contributor to total number of inspections.
Contributions to the Field

• This study adds to limited research on effective and efficient service delivery models for small and mid-size jurisdictions

• Incorporation of quality measures into services adds more nuanced understanding of service provision and cost
  • More work is needed on quality measures that are meaningful and reliable

• This study extends previous research on cost of local public health services by exploring potential variations in cost by jurisdiction size and service delivery model
Implications

• Trade-offs with each model
• Size of jurisdiction served matters
  • Local independent health departments serving small jurisdictions have most limited resources but strong local knowledge
  • Multi-jurisdictional models have more resources but require more time and investment in governance and decision-making
• When making decisions about the right service delivery model for a given jurisdiction, careful consideration should be given to local culture and values
Project Updates

Commentary

Steve Huleatt, MPH  
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Office of Local and Regional Health  
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Questions and Discussion
### Upcoming Webinars

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>Wednesday, June 14</td>
<td>1-2pm ET/ 10-11am PT</td>
<td><strong>CROSS-JURISDICTIONAL SHARING ARRANGEMENTS BETWEEN TRIBES AND COUNTIES FOR EMERGENCY READINESS</strong></td>
<td>Maureen Wimsatt, PhD, MSW, California Tribal Epidemiology Center, California Rural Indian Health Board</td>
</tr>
<tr>
<td>Wednesday, June 21</td>
<td>12-1pm ET/ 9-10am PT</td>
<td><strong>ACCOUNTABLE COMMUNITY OF HEALTH STRUCTURES AND CROSS-SECTOR COORDINATION</strong></td>
<td>Eli Kern, MPH, Public Health - Seattle and King County</td>
</tr>
</tbody>
</table>
Thank you for participating in today’s webinar!

Twitter: @Systems4Action
#Sys4Act

www.systemsforaction.org

For more information about the webinars, contact:
Ann Kelly, Project Manager  Ann.Kelly@uky.edu  859.218.2317
111 Washington Avenue #201, Lexington, KY 40536
Acknowledgements

*Systems for Action* is a National Program Office of the Robert Wood Johnson Foundation and a collaborative effort of the Center for Public Health Systems and Services Research in the College of Public Health, and the Center for Poverty Research in the Gatton College of Business and Economics, administered by the University of Kentucky, Lexington, Ky.
Speaker Bios

Dr. Hyde is a Research Health Scientist at the Center for Healthcare Organization and Implementation Research, Bedford/Boston VA. For many years she has worked with local and state public health departments to develop and implement research and evaluation studies focusing on public health programs, services, and organization. Since 2008, she has also co-directed the Massachusetts Practice Based Research Network for Public Health, a group that has focused on the study of cross-jurisdictional service sharing as a strategy for improving the equity and quality of local public health services.

Dr. Humphries is a Clinical Instructor in Epidemiology at the Yale School of Public Health, and has a broad background in public health research and practice. Dr. Humphries’ research addresses programmatic approaches to improving public health as well as interactions between nutrition and infectious disease, as well as intersections between nutrition and infectious disease.

Mr. Huleatt is the Director of Health for the West Hartford-Bloomfield Health District in Central Connecticut. Mr. Huleatt’s public health career began in Environmental Health in 1979. He was appointed the Health Director for the Town of West Hartford, CT in 1989. He was appointed Health Director of the West Hartford-Bloomfield Health District upon formation in 1995.

Mr. O’Connor is the Director, Office of Local and Regional Health (OLRH) for the Massachusetts Department of Public Health (MDPH). In this role, he leads the OLRH team and collaborates with external stakeholders (including the Massachusetts Coalition for Local Public Health) and an intra-agency local public health working group to strengthen local public health capacity through workforce development, regular communication, intra-agency collaboration, and support for inter-municipal collaboration in the delivery of local public health services. Ron joined the Massachusetts Department of Public Health in 1988 as the Southeast Regional Health Promotion Coordinator and has held other DPH management positions at the regional level prior to his current statewide assignment in 2015. He is also playing a leadership role in a new Special Commission on Local and Regional Public Health that is chaired by the MDPH Commissioner and was enacted by the Massachusetts Legislature in 2016.