

Building Evidence to Improve the
Infrastructure of Local Public Health: A
Study of the Effects of Resource Sharing
Among Local Public Health Jurisdictions by
the CT and MA Public Health Practice Based
Research Networks

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Public Health Practice-Based Research Network

Public health agencies and partners engaged in ongoing collaboration with academic researchers to conduct applied studies of strategies for *organizing, financing and delivering* public health services in real world community settings.

PHPBRN National Coordinating Center Overview Document

Public Health Services and Systems Research (PHSSR)

A field of study that examines the **organization, financing and delivery of public health services** within communities, and the impact of these services on public health.

2009, PHSSR interest Group of Academy Health

Why PBRNs are Important to Local Health Departments

Policy makers are making decisions about local public health structure and financing

PHSSR is the only field focusing on local public health practice-driven needs

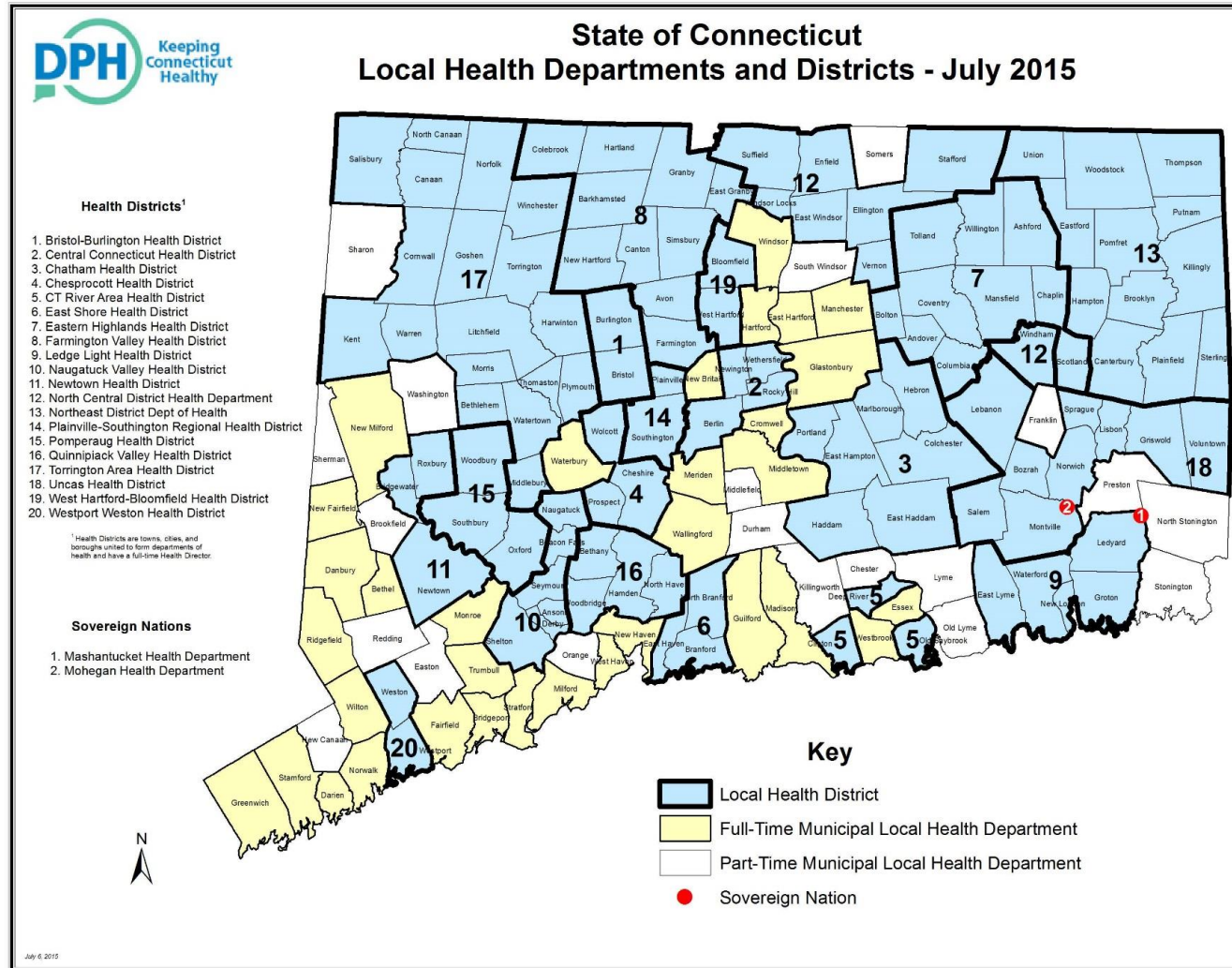
Resources are diminishing, with increasing demands to be efficient and effective

Changing role of local public health under the Affordable Care Act

Building Evidence to Improve the Infrastructure of Local Public Health Through Practice-Based Research Networks

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Connecticut PBRN



Connecticut's Practice-Driven Research Agenda

➤ What factors strengthen the ability of local health departments (LHDs) to provide public health services within a changing political and economic environment?

➤ What is the existing local public health structure?

➤ Are there variations in cost, effectiveness and quality of services across different types of LHDs?

➤ What challenges, best practices and opportunities exist in financing of LHDs?

➤ What are the characteristics of the existing local public health workforce?

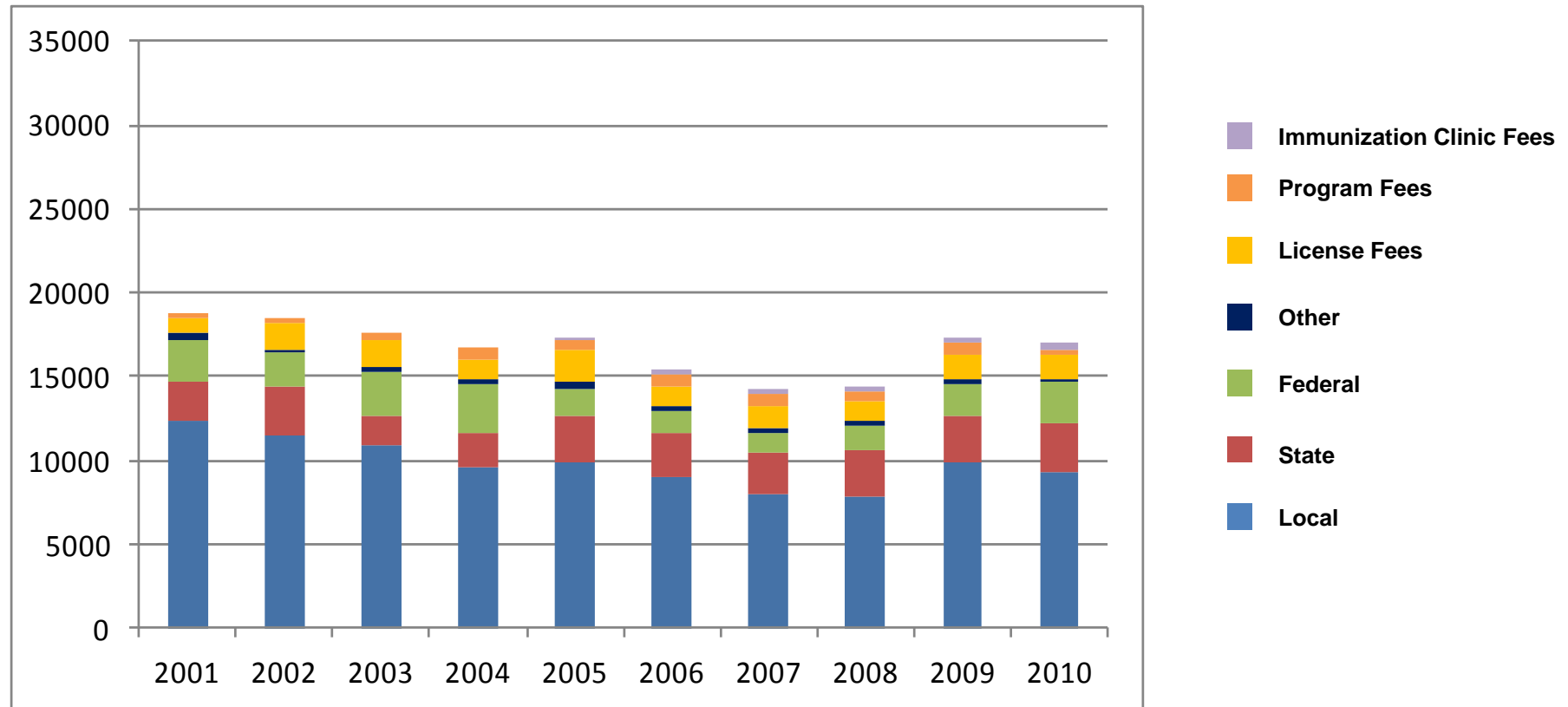
CT PBRN Studies

1. Influence of state per capita funding cuts on local health services, workforce and regionalization
2. Local economic conditions and their effect on revenues and services for LHDs
3. Characteristics of LHDs that support the use of the Health Equity Index to address the social determinants of health
4. Quality measures of local public health services: An exploration in the H1N1 response
5. Efficiency and cost-effectiveness of local environmental health inspection services.
6. The Effects of Cross-jurisdictional Resource Sharing on the Scope, Quality, and Cost of Public Health Services

Financing of Local Public Health

- On average, **local revenues** are the largest single revenue source across all department types
- **State** per capita investment did not change during the 2001-2010 study period
- **Political support** from local government officials is an important determinant of local health revenue
- Districts have more **diffuse political influence** and lower revenue from municipalities

Revenues per 1000 population from each revenue source: annual average across all LHJs (inflation-adjusted 2001 dollars)

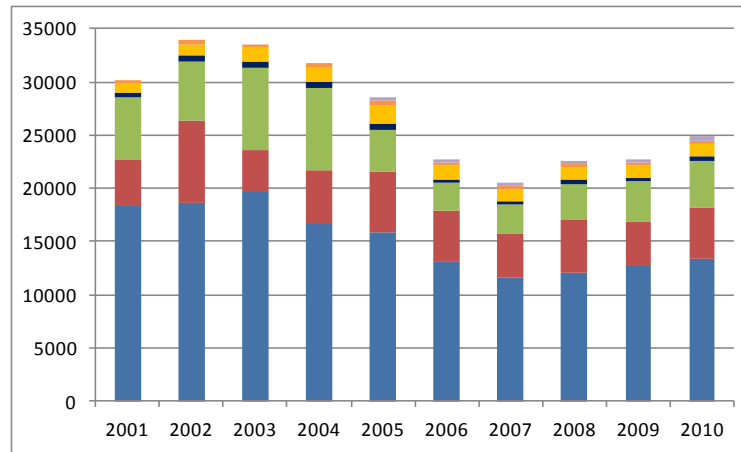


All LHJs: revenues of \$14-\$18 per capita

Financing of Local Public Health

- **Revenue sources** are different across department type
- Full-time municipal departments have **greater variation** in revenue sources compared to part-time and district departments
- District and part-time departments have similar **per capita revenues**
- Full-time municipal departments have **higher per capita revenues**
- Health directors employ a range of options for changing service mix and revenue streams to **maintain essential services**

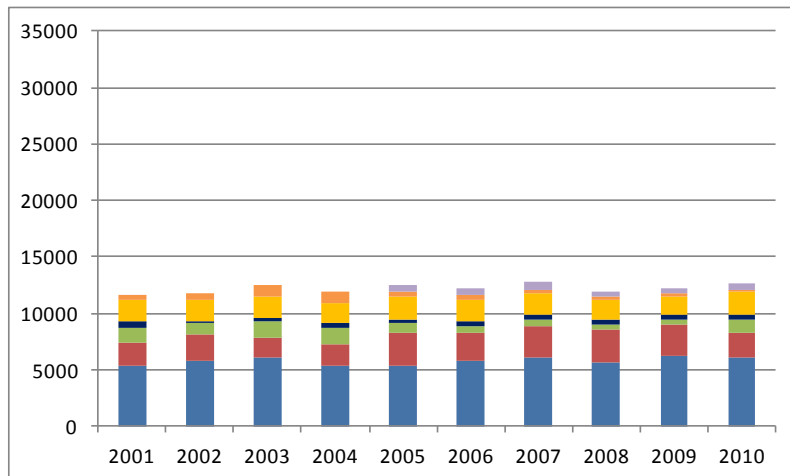
Full time LHJs had large variation in revenue sources



- Immunization
- Clinic Fees
- Program Fees
- License Fees
- Other
- Federal
- State
- Local

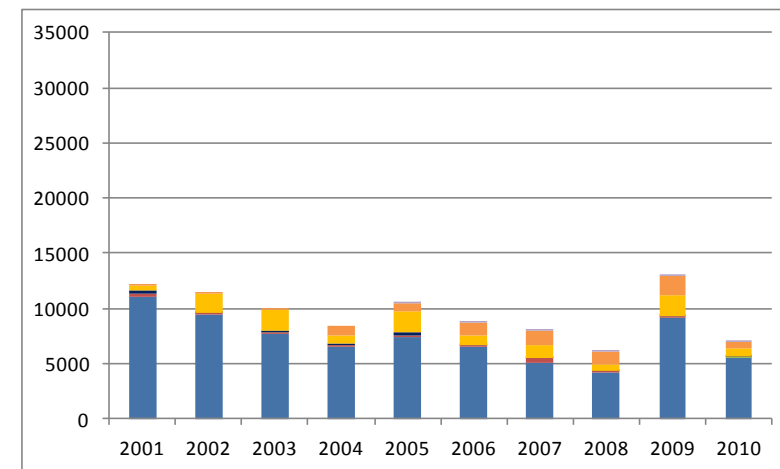
Full Time LHJs: revenues of \$20-\$34 per capita

District LHJs had variation in revenue sources and relatively stable funding from 2001-2010.



District LHJs: revenues of \$11-\$13 per capita

The largest revenue source for part time LHJs came from local funding.



Part Time LHJs: revenues of \$5-\$13 per capita

Local Public Health Structure (size, organization, department type)

- District health departments experienced less fluctuation in revenue than municipal departments during the 2001-2010 time period.
- Rural/urban location and type of LHJ (district, full time, or part time) are more important predictors of revenues and services than local economic conditions
- FT LHJs received roughly double the average revenue of district and PT LHJs.

Health Equity

- Use of the Health Equity Index to assess and monitor health disparities is associated with:
 - Departments with higher proportion of MPH-level staff
 - Longer serving administrators
 - Local health jurisdictions serving racially diverse populations
- Timely local data about community conditions results in more effective, resource efficient method to address health inequities

Cost Effectiveness

- Findings related to costs and economies of scale for environmental health services:
 - Most Connecticut departments are too small to achieve economies of scale.
 - Districts are more efficient than full-time departments.
 - Part-time departments are most inefficient.
- Process to measure service unit costs in local health jurisdictions are lacking and should be developed

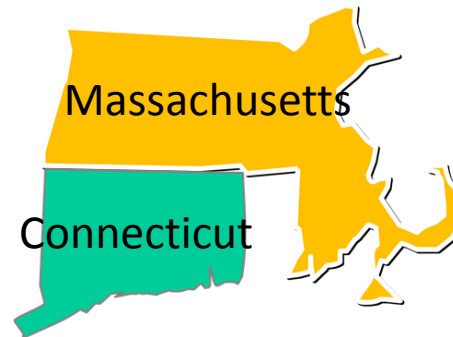
Local Public Health Workforce

- In the year following the 2010 state funding cuts 26% of affected departments and 47% of unaffected departments experienced workforce reductions in two or more job categories
- District department more likely to make adjustments to staffing patterns (reduced hours, furloughs) to avoid lay-offs or program cuts

Implications of CT PBRN studies:

- Size and structure has implications for revenue, cost, scope and efficiency.
- Funding sources and overall investments vary significantly depending on department type.
- Political support can influence funding, range of services and delivery models.
- Reductions in funding for LHDs with small jurisdictions may not be a critical driver of shared service arrangements/districts.
- Local health departments employ a range of coping mechanisms when faced with resource reductions.
- Existing data systems can be improved to provide better and more meaningful data for research endeavors.

Effects of Cross-Jurisdictional Resource Sharing on the Implementation, Scope and Quality of Public Health Services



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CADH

Connecticut Association
of Directors of Health

Overview

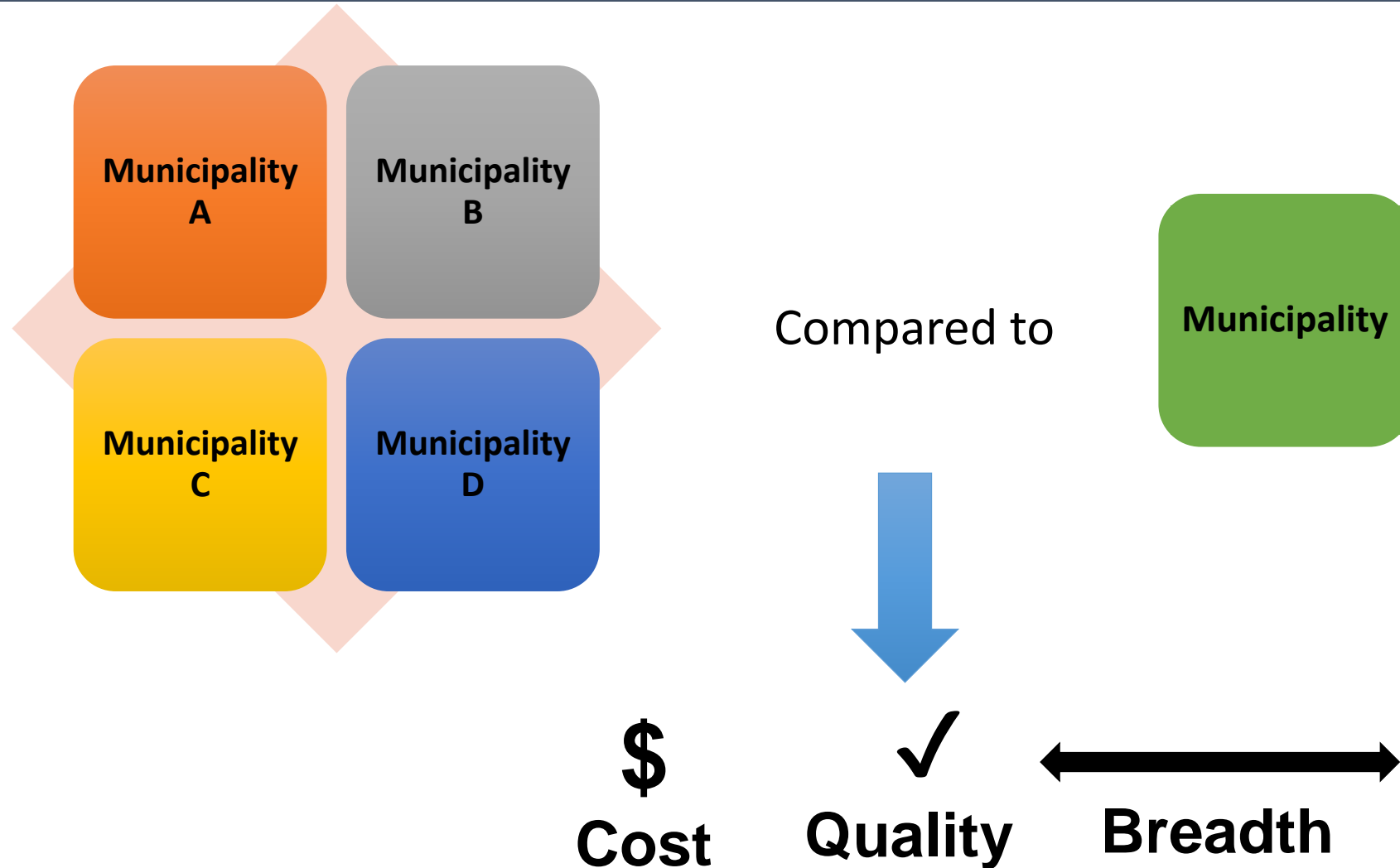
- Connecticut and Massachusetts
 - Both home rule states
 - Municipal responsibility for local public health
- Shared concern with equitable delivery of local public health services
- Mix of service delivery models
 - Independent
 - Partial and Comprehensive shared service
 - Districts

CT and MA at a glance:

	Massachusetts	Connecticut
Population	6.7 million	3.6 million
Number of towns/municipalities	351	169
Number of Health Departments/ Boards of Health	351	74
Type of Departments	Municipal 292 (83.2%) Multi-jurisdictional 9 (16.8%)	Municipal 53 (31.4%) 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?



Methodology

Mixed Method Study

- Census data
 - Municipal characteristics
- State (and local) reported data
 - Retail food inspections
- In-person semi-structured interviews, conducted **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

Demographics

	Sharing	Independent	p value
Demographics, mean (SD)	(n=15)	(n=54)	
Poverty rate	5.76 (0.89)	5.32 (0.66)	0.79
Unemployment	7.17 (0.35)	7.61 (0.35)	0.52
Population	15586 (22637)	14729 (12240)	0.8
Pop per sq mile	937 (270)	615 (60)	0.08
Municipal budget per 1000 population	2.92M (240,400)	3.25M (377,403)	0.6
Public Health budget per 1000 population	15,170 (1630)	16,340 (1800)	0.74
Race & Ethnicity, mean % (SD)			
Black	3.8% (1.2)	5.9% (3.7)	0.59
Hispanic	5.6% (0.011)	4.4% (0.55)	0.31

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

²Proportions are compared with a chi square analysis; means with t-test.

Three focus areas for presentation

Highlight similarities and differences by service delivery model

- Core Public Health Services
- Public Health staff
- Retail Food Safety (standard required service)

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)

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)

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).

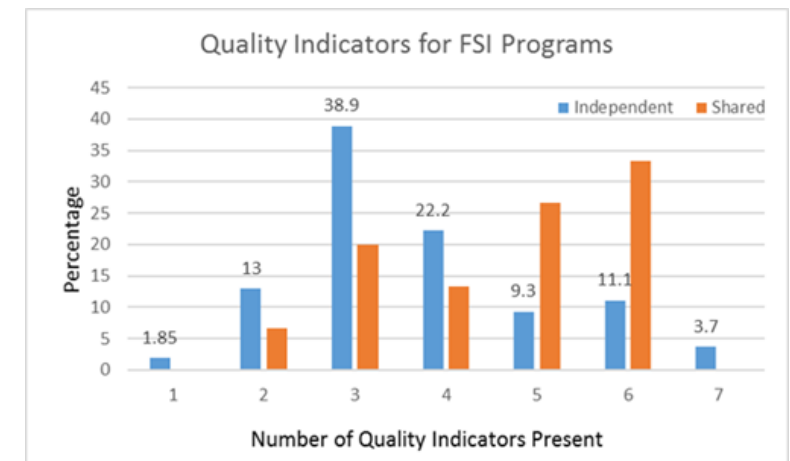
Training varies significantly (p=0.01):

- 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%).

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

Sharing departments are more likely to have 5 or more of the quality indicators ($p= 0.064$) (73% vs. 46%)

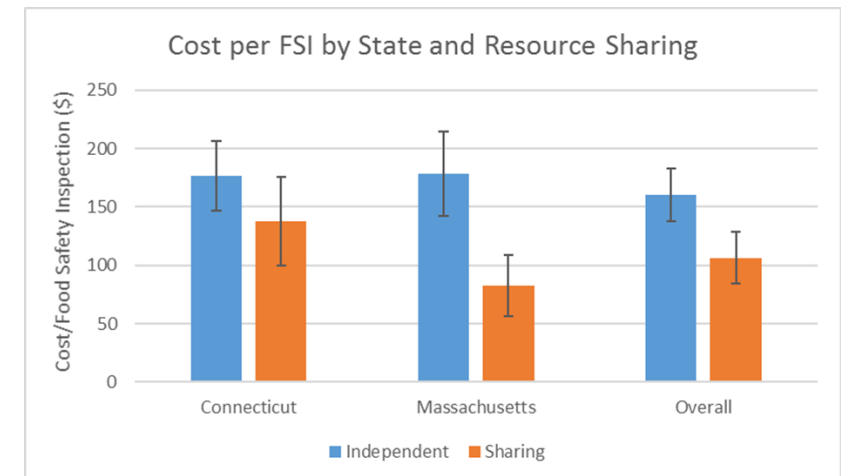


Food Service Cost Model

- 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.



Predictors of Total FSI Staff Cost

- Ordinary Least Squares regression with total staff cost for food safety inspections (FSI) as dependent variable

	Coefficient	p value	95% CI	
# of FSI	79.3	<0.0001	41.3	117.2
(# of FSI) ²	-0.0201	0.001	-0.032	-0.008

- State and resource sharing were insignificant in the model
- Other significant control variables included unemployment and population density

Conclusions (1)

- Independent departments report providing slightly more core public health services
- Sharing departments have fewer staff 1000 population, and are more likely to have directors with public health training

Conclusions (2)

- Sharing departments have more indicators of higher quality inspections.
- Primary driver of 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
- 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

Perceived Strengths and Challenges of Different Service Delivery Models



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Method

- Open-ended questions asked during interview
 - What do you think are the strengths of your service delivery model?
 - What do you think are the challenges of your service delivery model?
- All responses audio-recorded and transcribed
- Transcripts reviewed by team and codes developed
- Presentation of most commonly reported themes

Perceptions of Service Delivery Model

Single Municipality Departments

Strengths	
Deep knowledge of local community	<p><i>“One of the strengths is that we are a local health department. We are in touch with the municipality, meaning that we are in the same town, we are part of the local government. (Single – CT)”</i></p>
Ability to be responsive to stakeholders within the municipality	<p>Limited (Single – CT) to provide services that are mandated</p>
Infrastructure to support interoperability across municipal departments	<p>Difficult to coordinate staff, especially if they are not full-time</p>
Freedom to make decisions without getting “bogged down” in bureaucracy	<p>As being a standalone, we’re able to make decisions without having to involve too many people so we need to make these major decisions nothing gets bogged down. (Single – MA)</p>
	<p>Small number of staff who are responsible for services in multiple areas</p>

Perceptions of Service Delivery Model

Single Municipality Departments

Well challenges, we have far too many responsibilities and this office is way understaffed to really do an exemplary job on all of our mandates. So, there are some state mandates that we almost never get to unless there is a crisis and there are other mandates that we kind of do a moderate job. In other mandates, we do exemplary job. P...

We have a lack of funding to really expand the services that I think we need in the community. We are pretty much limited based on our current funding. (CT)

Challenges

Lack of capacity to fulfill responsibilities

Limited budgets

Lack of resources to provide non-mandated community programs

Difficulty hiring and retaining qualified staff

Political environments within towns change with election cycles

Small number of staff who are responsible for services in multiple areas

Perceptions of Service Delivery Model

Multi-Jurisdictional Departments

Strengths	
Ability to hire expert, qualified staff	Balance
Greater capacity to provide community health programs/services	Ge
Ability to focus upstream on prevention and policies	de
Nimbleness in staffing that allows municipalities to get what they need	M
Consistency in service delivery across neighboring municipalities	I
	Residen... plan regionally

Expertise is a big one. We have full time epidemiologists on staff, a full-time communicable disease coordinator, and administrative and finance team. We

Our strengths is that we're providing more than just environmental health... On their own, these towns very rarely get to provide community health programs, education, community health assessments...they just don't get to it. So they are getting the full spectrum of public health services that they normally would not have on a regular basis. (Multi-MA)

think or

Perceptions of Service Delivery Model

Multi-Jurisdictional Departments

Strengths	Challenges
<p>Ability to...</p>	<p>Balancing good customer service with efficiencies in service delivery</p>
<p>Great pro...</p>	<p>Geographic spread of municipalities</p>
<p>Ability to...</p>	<p>Splitting time across municipalities and developing working relationships</p>
<p>Multi-municipalities</p>	<p>Navigating political differences across municipalities</p>
<p>Complex municipal...</p>	<p>Municipalities have different populations and needs</p>
	<p>Residents and political leaders do not think or plan regionally</p>

I would say a challenge, it's not so much our model but the rural nature of our district is it's just a challenge geographically driving...

We serve six municipalities, so we serve six elected officials, six building inspectors and six social agencies. There is a huge volume of personnel that we deal with which is very distinct from a part-time health department or when serving one municipality. (Multi-CT)

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

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

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

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