

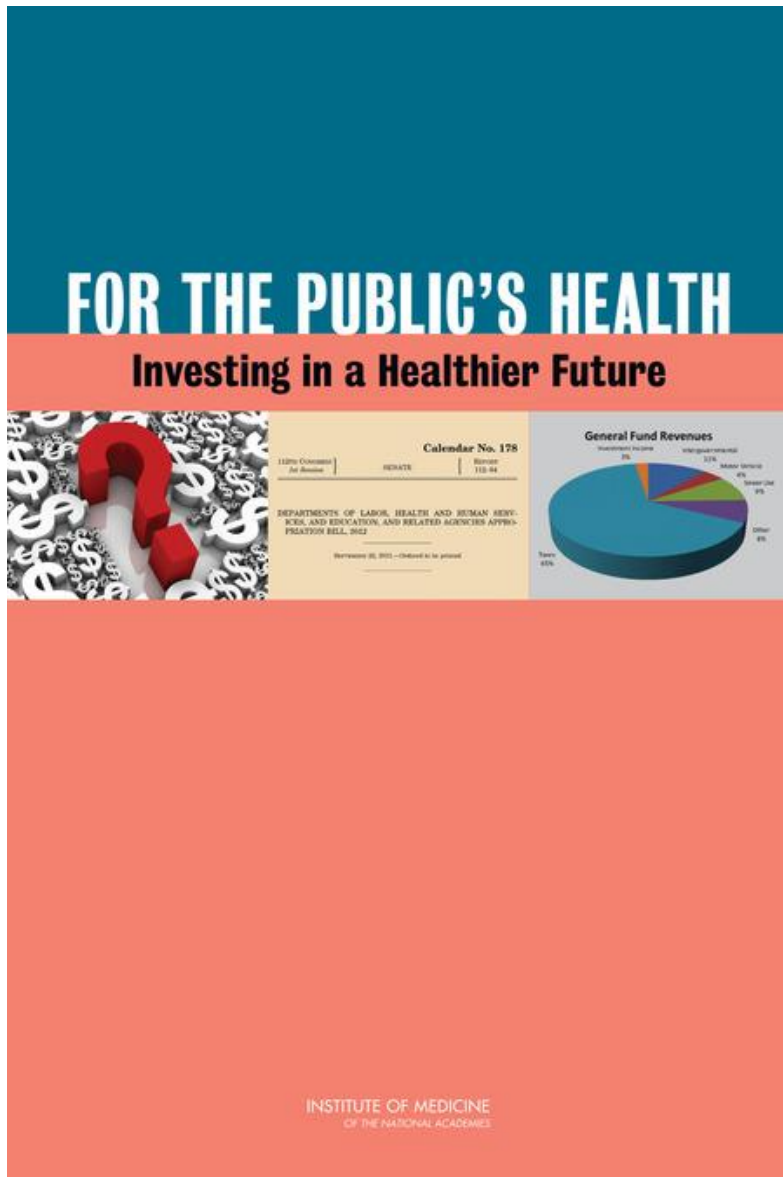
***Variations in the Costs of Delivering
Public Health Services:
An Analysis of Local Health
Departments in Florida***

Patrick M. Bernet and Simone R. Singh

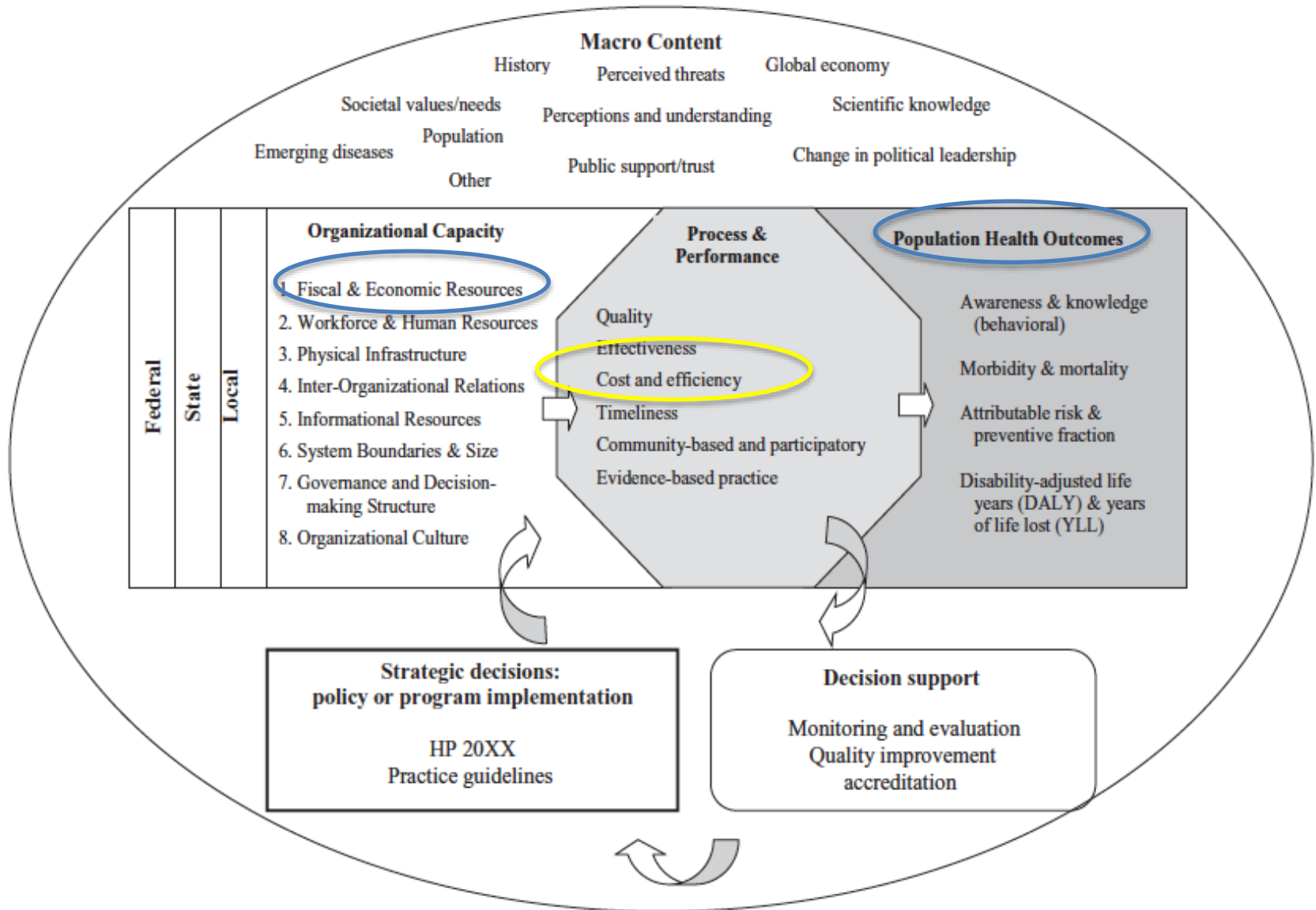
Acknowledgements

- Data for this study was made available by the Florida Department of Health.
- Funding for this research was provided by Grant Number N016299 from the Robert Wood Johnson Foundation.

Context



Recommendation:
Increase federal funding for public health to ensure that public health agencies have the resources to invest in healthier communities.



Research Questions

1. How much does it cost LHDs to provide select core public health services? How do costs vary across LHDS?
2. What factors drive LHDs' costs of service provision focusing on the importance of economies of scale and scope?

Core public health services analyzed:

- Communicable disease surveillance and investigation
- Chronic disease prevention
- Food hygiene services
- Onsite sewage treatment and disposal services
- Vital records services

Data and Sample

- Data came from three sources:
 - Florida Department of Health (Expenditures, number of services, number of clients served)
 - NACCHO Profile Study (LHD characteristics, scope of services)
 - Area Resource File (Community characteristics)
- Sample included all 67 Florida county LHDs for the years 2008 and 2010.

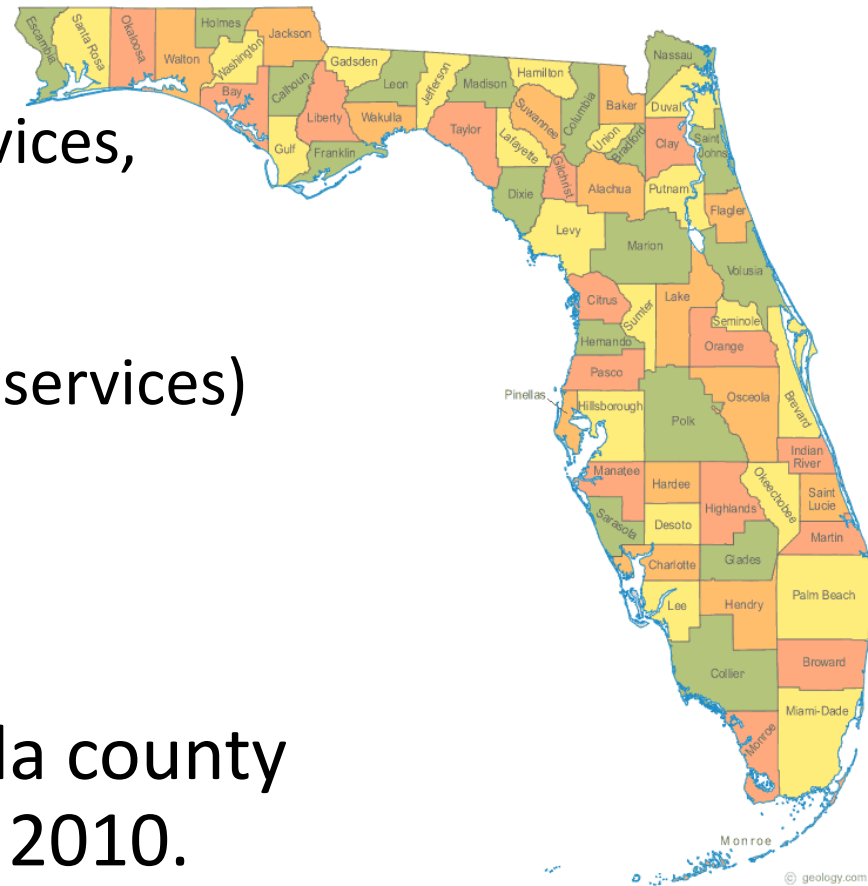


Table 2. Total cost and cost per service for five select public health services, 2010

Public health activity	Total cost	Cost per service			
	Mean (SD)	Median	25 th percentile	75 th percentile	75 th /25 th percentile ratio
Communicable disease surveillance and investigation	\$177,640 (\$296,456)	\$128	\$74	\$503	5.8
Chronic disease prevention	\$187,911 (\$295,105)	\$470	\$290	\$1,446	4.0
Food hygiene	\$107,910 (\$151,103)	\$104	\$74	\$133	0.8
Onsite sewage treatment and disposal	\$329,423 (\$291,648)	\$141	\$101	\$209	1.1
Vital records	\$181,276 (\$274,017)	\$6.37	\$5.18	\$9.73	0.9

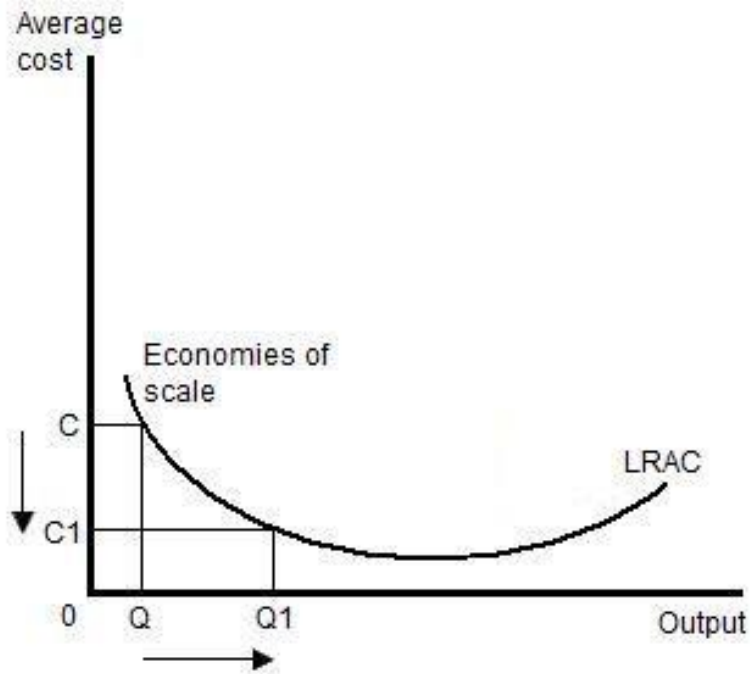
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Economies of Scale and Scope

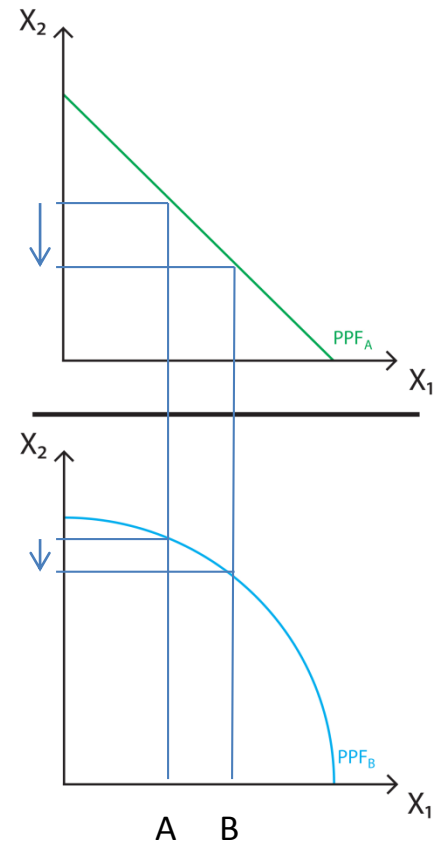
Economies of scale

Cost per unit decreases as more units are produced



Economies of scope

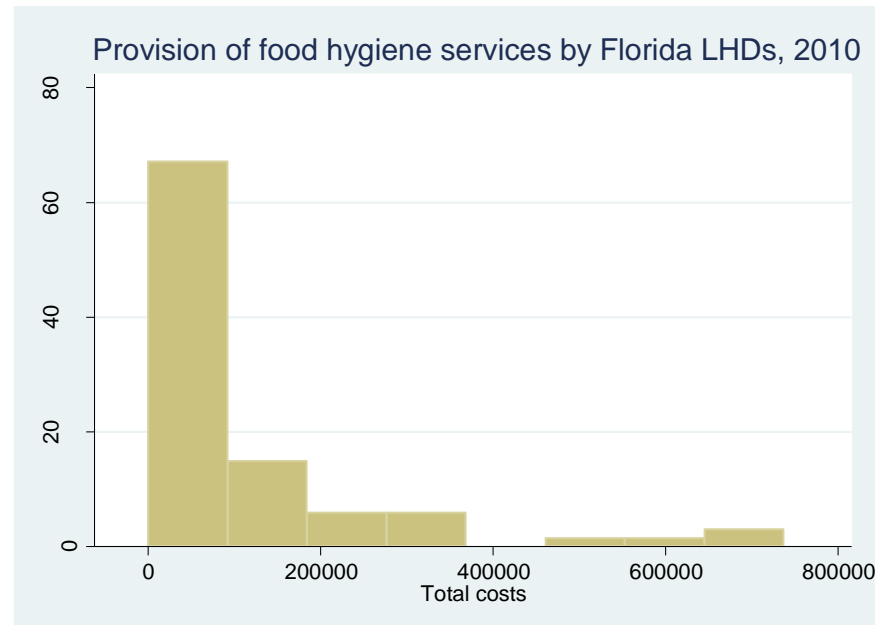
Cost per unit decreases as more different services are produced



Multivariate Model

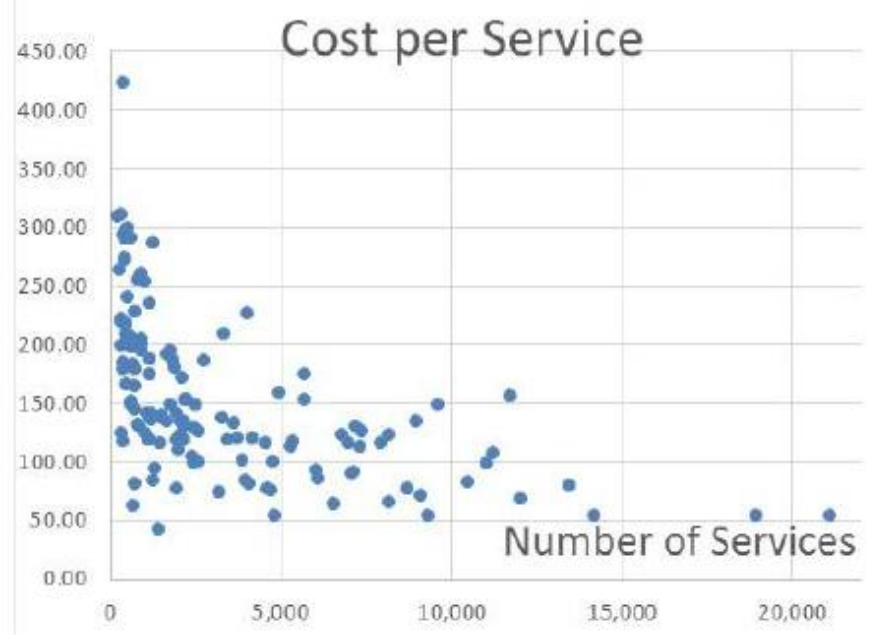
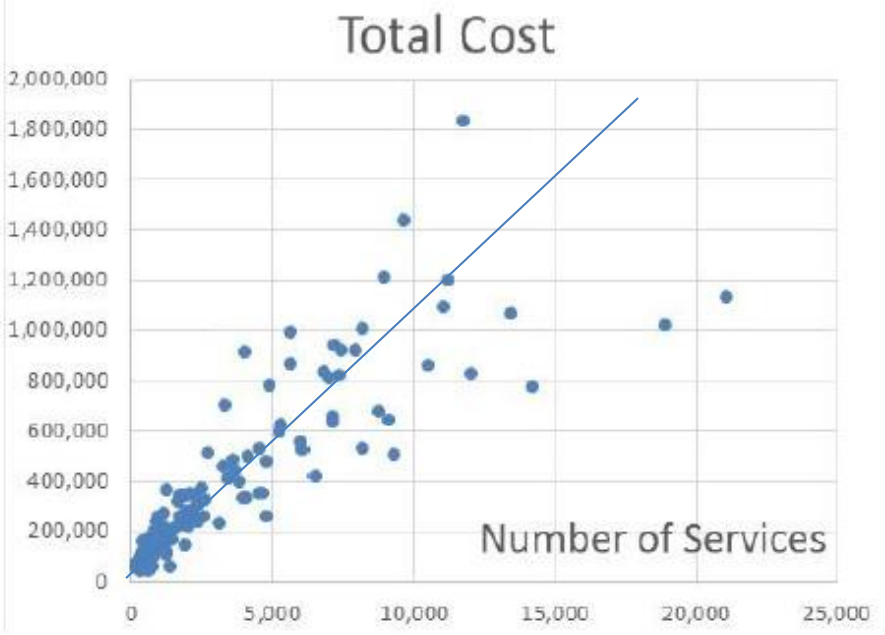
$\text{Log}(\text{Cost}) = f(\text{Economies of scale, economies of scope, agency, population, community characteristics})$

- Cross-sectional analysis using OLS regressions
- Separate models for each public health service
- Dependent variable logged as costs were highly skewed



Cost and Volume of Services

Onsite sewage treatment and disposal



Multivariate Findings

Dep. Variable: Log (Cost)

	Commun disease	Chronic disease	Food hygiene	Onsite sewage	Vital records
Scale of services					
Services (1,000)	0.48**	0.23	1.95**	3.50**	0.074**
Services ² (1,000,000)	-0.19**	-0.09	-0.31**	-0.013**	-0.00034**
Scope of services					
Clinical preventive	-0.76	0.95	0.59	-0.07	-1.35
Medical care	-0.67	0.32	-0.35	-0.15	0.12
Specialty	0.13	-0.30	-0.22	0.22	-0.25
Population-based	1.46	1.53*	0.14	-0.31	-0.78
Reg and licencing	0.87	0.34	0.52	0.10	0.67
Environ health	0.04	-0.82	-0.31	-0.10	0.46
Adjusted R-squared	0.68	0.56	0.84	0.86	0.71

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Multivariate Findings

Example: Food hygiene services

	Cost per service	Cost per capita
Scale of services		
Services (1,000)	-35.49*	-0.17*
Services ² (1,000,000)	9.66*	0.045*
Scope of services		
Clinical preventive	67.14	0.16
Medical care	48.60	-0.26
Specialty services	-43.36*	-0.14
Population	7.18	0.12
Reg and licencing	10.24	0.034
Environ health	-44.76	-0.16
Adjusted R-squared	0.32	0.27

* p<.05 ** p<0.01

Key Findings

- **Evidence of economies of scale:**

Although larger numbers of services were generally associated with higher total costs, the negative coefficient on services squared indicates that costs increased less than proportionally.

- **No evidence of economies of scope:**

Producing a greater range of services was generally not associated with lower costs.

Discussion

- Findings of economies of scale are hardly surprising, yet have implications for organization of public health at the local level.
- Scale economies also pose challenges, esp. for smaller LHDs which may need to rely on contracted services or partnerships more than larger LHDs.
- Scope was not associated with variations in costs; finding is encouraging as many LHDs are expected to provide a minimum package of core services.

Limitations

- Data from only one state (Florida) and two years (2008 and 2010)
- Focus on only five services
- Variation in costs may be due to factors not controlled for in analysis, e.g., variation in types and quality of services provided

Thank You

Additional Multivariate Results

	Communicable disease surveillance and investigation	Chronic disease prevention	Food hygiene	Onsite sewage treatment and disposal	Vital records
Public health agency characteristics					
Revenue from local sources (%)	-3.47	-1.56	2.39	-0.20	-0.15
Revenue from state sources (%)	-3.23	2.10	-0.47	-0.79	-2.70
Revenue from federal sources (%)	-3.16	2.88	1.55	-1.37*	-4.91
Revenue from clinical services (%)	-3.90*	1.12	-0.46	-0.79	-0.74
Population and community characteristics					
Population per square mile (1,000)	-0.02	0.88**	0.26	0.08	-0.05
Percent population nonwhite (%)	-0.01	0.01	0.020*	0.00	-0.01
Percent with college education (%)	11.31*	2.27	4.79	1.78	8.34*
Percent 65+ years old (%)	0.85	-0.24	2.39	-1.02	-0.96
Income per capita (log)	1.26	1.20	0.30	0.10	-0.68
Percent uninsured (%)	0.00	0.02	0.02	-0.02	0.04
Year 2008 (reference = 2010)	0.22	0.72**	0.14	0.16	-0.04
Model					
Constant	-2.14	-5.62	3.39	11.71**	18.10*
Adjusted R2	0.68	0.56	0.84	0.86	0.71
N	111	115	115	115	115