

# Staff characteristics associated with changes in public health employment from 2008-2010.

Are staffing characteristics at the beginning of the Great Recession associated with changes in staffing levels between 2008-2010?

Change in FTEs (2008-2010) ~

- LHD characteristics
- Population demographics
- Service coverage
- Staffing characteristics

Presented to the 9th Annual Public Health Finance Roundtable  
November 3, 2013, Boston Massachusetts

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Project funded by a grant from the Robert Wood Johnson Foundation.  
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# Data - NACCHO

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- 2008 and 2010 NACCHO surveys of local health departments.
  - 2,523 unique LHDs in one year or the other.
  - 1,231 remaining LHDs = 63 percent of the US population.
- LHD characteristics from the 2008 survey
  - Jurisdictional type
  - LHD administrator was a doctor or nurse
  - Board of health
  - Local governance
  - Local revenue
  - Breadth of functions fulfilled by LHDs (clinical, medical, specialty, population, regulatory or environmental)

# Data - Population

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- Population
  - Poverty
  - Uninsured
  - Hispanic
  - Race
  - Education
  - Urban-rural
  - Accessibility of primary care physicians
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- Source: American Community Survey and community health status indicators (CHSI).
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- LHD FIPS codes used to align LHDs to demographics

# Data - Staffing

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- Average spending per FTE
  - Total expenditures / Total FTEs
- FTEs per 100,000 population
  - Total FTEs / Population
- Proportion of staff working full-time
  - Total FTEs / Total employees
- Source: NACCHO and demographics

# Data - Percent change in FTEs

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- Percent change in full-time equivalent employees
  - FTEs 2010 / FTEs 2008
- LHDs classified according to resilience
  - Predicted 2010 staffing ~
    - 2008 staffing
    - population size
    - other demographics
  - If actual FTEs < predicted FTEs, non-resilient.
  - If actual FTEs < predicted FTEs, resilient.

# Means

	All	Non-resilient	Resilient	Sig.
<b>Change in FTEs</b>	1.00	0.85	1.11	***
<b>LHD characteristics</b>				
Board of Health	0.76	0.75	0.77	
Agency Type: City/Town	0.24	0.25	0.23	
Agency Type: Multi-county	0.13	0.13	0.12	
Administrator is MD, DO or RN	0.43	0.38	0.47	***
Local governance	0.19	0.24	0.16	***
Revenue % from local sources	0.24	0.22	0.25	*

# Means

	All	Non-resilient	Resilient	Sig.
<b>Change in FTEs</b>	1.00	0.85	1.11	***
<b>Population characteristics</b>				
Population (logged)	10.99	11.15	10.86	***
Geography: % population urban	0.41	0.42	0.40	
Geography: % population rural	0.39	0.37	0.40	
Race: White	87.38	86.35	88.20	***
Education: % college graduates	21.38	21.07	21.63	
Hispanic	6.97	7.13	6.85	
Age 65+	15.01	15.42	14.68	***
Poverty	13.56	13.95	13.25	***
Uninsured	21.84	23.48	20.52	
Primary Care Availability	69.37	71.08	68.00	**

# Means

	All	Non-resilient	Resilient	Sig.
<b>Change in FTEs</b>	1.00	0.85	1.11	***
<b>Staff characteristics (2008)</b>				
Cost per FTE	77,619	74,502	80,133	***
FTEs per 100k population	86.09	85.56	86.51	
Percent of workers full-time	0.84	0.85	0.83	***
N	1,663	740	923	
Significance. ***=.01; **=.05; *=.10				



# Model

Change in FTEs	Model 1. Base	Model 2. Staff Character	Model 2.A Non- Resilient	Model 2.B Resilient
<b>LHD characteristics</b>				
Board of Health	-0.0152	-0.0031	0.0246	-0.0174
Agency Type: City/Town	0.0488 **	0.0549 ***	0.0489 **	0.0294
Agency Type: Multi-county	0.0292	0.0401	0.0556 **	-0.0391
Administrator is MD, DO or RN	0.0285 *	0.0234 *	-0.0135	0.0230
Local governance	-0.0195	-0.0369 *	-0.0116	0.0200
Revenue % from local sources	0.0650 *	0.0404	0.1101 ***	-0.0548
<b>Population characteristics</b>				
Population (logged)	-0.0339 ***	-0.0468 ***	0.0110	-0.0507 ***
Geography: % population urban	0.0009	-0.0013	-0.0395 *	0.0161
Geography: % population rural	-0.0183	-0.0328 *	-0.0205	-0.0374
Race: White	-0.0013 *	-0.0021 ***	-0.0017 **	-0.0014 *
Education: % college graduates	0.0001	-0.0008	-0.0002	-0.0006
Hispanic	0.0011	0.0015 *	0.0004	0.0017 *
Age 65+	0.0047 **	0.0041 *	0.0059 **	0.0095 ***
Poverty	-0.0020	-0.0020	0.0014	-0.0017
Uninsured	-0.0008 ***	-0.0003	-0.0007 **	0.0003
Primary Care Availability	0.0003	0.0001	0.0001	0.0000
<b>Service coverage</b>				
Clinical	0.0098	0.0828 **	0.0475	0.0548
Medical	0.0003	0.0025	-0.0217	-0.0372
Specialty	-0.0056	0.0312	-0.0019	0.0213
Population	-0.0272	-0.0644 *	-0.0378	-0.0509
Regulatory	-0.0216	0.0043	-0.0012	0.0312
Environmental	0.1902	0.0529	-0.1275	0.1015
<b>Staff characteristics (2008)</b>				
Cost per FTE (\$100k)		0.1910 ***	0.0964 ***	0.1940 ***
FTEs per 100k population		-0.0004 ***	-0.0001	-0.0003 ***
Percent of workers full-time		-0.3291 ***	-0.0623	-0.3959 ***
<b>Model</b>				
Constant	1.42 ***	1.77 ***	0.73 ***	1.86 ***
F	2.49 ***	9.13 ***	3.87 ***	9.51 ***
r <sup>2</sup>	0.04	0.16	0.16	0.27
r <sup>2</sup> <sub>a</sub>	0.03	0.14	0.12	0.24
N	1,229	1,209	536	673
Significance. ***=.01; **=.05; *=.10				

# Results - LHD Characteristics

Change in FTEs		Model 1. Base	Model 2. Staff Character	Model 2.A Non- Resilient	Model 2.B Resilient
<b>LHD characteristics</b>					
	Board of Health	-0.0152	-0.0031	0.0246	-0.0174
	Agency Type: City/Town	0.0488 **	0.0549 ***	0.0489 **	0.0294
	Agency Type: Multi-county	0.0292	0.0401	0.0556 **	-0.0391
	Administrator is MD, DO or RN	0.0285 *	0.0234 *	-0.0135	0.0230
	Local governance	-0.0195	-0.0369 *	-0.0116	0.0200
	Revenue % from local sources	0.0650 *	0.0404	0.1101 ***	-0.0548

# Results - Demographics

Change in FTEs		Model 1. Base	Model 2. Staff Character	Model 2.A Non- Resilient	Model 2.B Resilient
<b>Population characteristics</b>					
Population (logged)		-0.0339 ***	-0.0468 ***	0.0110	-0.0507 ***
Geography: % population urban		0.0009	-0.0013	-0.0395 *	0.0161
Geography: % population rural		-0.0183	-0.0328 *	-0.0205	-0.0374
Race: White		-0.0013 *	-0.0021 ***	-0.0017 **	-0.0014 *
Education: % college graduates		0.0001	-0.0008	-0.0002	-0.0006
Hispanic		0.0011	0.0015 *	0.0004	0.0017 *
Age 65+		0.0047 **	0.0041 *	0.0059 **	0.0095 ***
Poverty		-0.0020	-0.0020	0.0014	-0.0017
Uninsured		-0.0008 ***	-0.0003	-0.0007 **	0.0003
Primary Care Availability		0.0003	0.0001	0.0001	0.0000

- FTE changes +0.53% per additional 10,000 lives
- FTE changes -0.13% per 1 percent increase in white,
- FTE changes +0.47% per 1 percent increase in elderly
- FTE changes -0.08% per 1 percent increase in uninsured.

# Results - Staffing Characteristics.

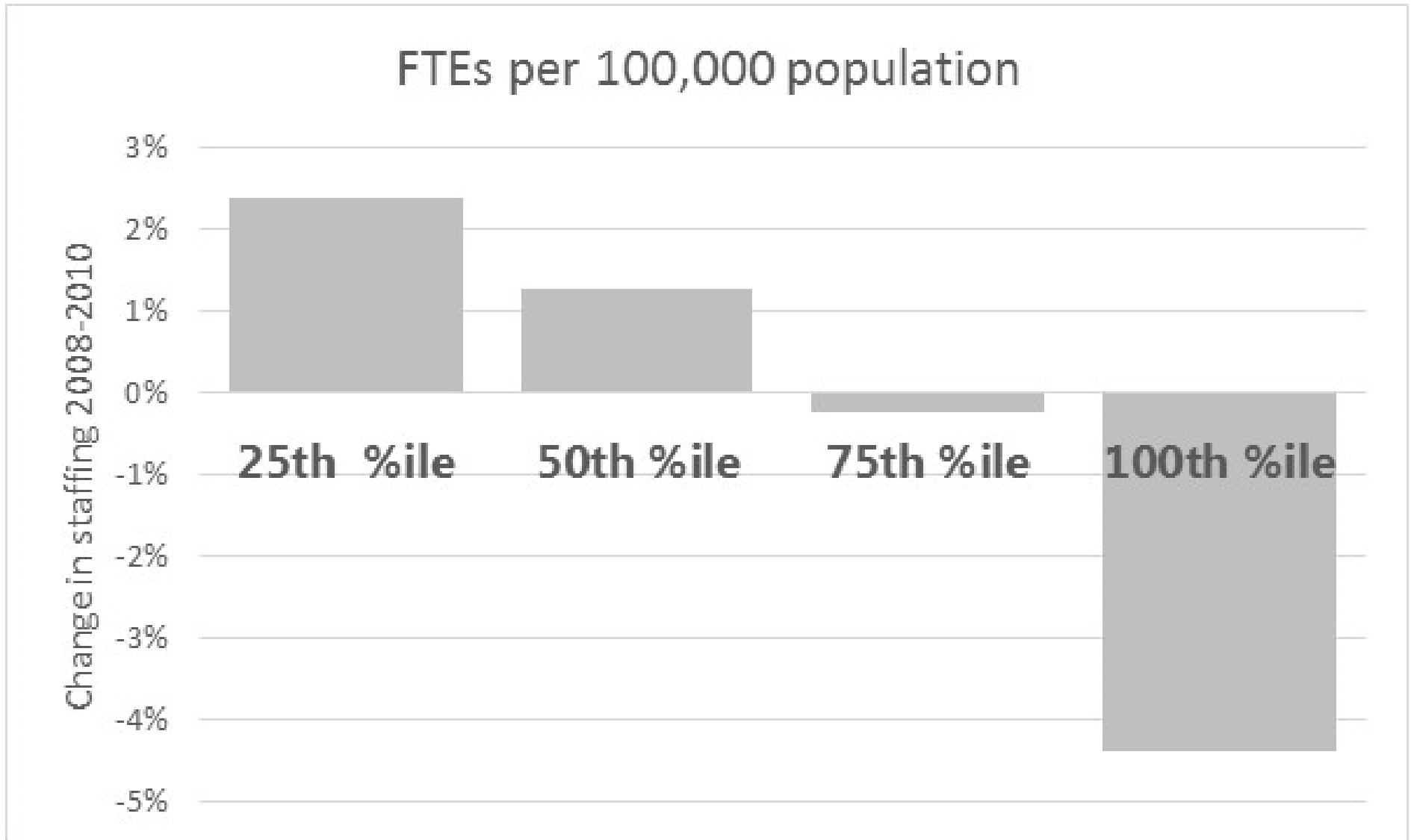
Change in FTEs	Model 1. Base	Model 2. Staff Character	Model 2.A Non- Resilient	Model 2.B Resilient
<b>Staff characteristics (2008)</b>				
Cost per FTE (\$100k)		0.1910 ***	0.0964 ***	0.1940 ***
FTEs per 100k population		-0.0004 ***	-0.0001	-0.0003 ***
Percent of workers full-time		-0.3291 ***	-0.0623	-0.3959 ***
<b>Model</b>				
Constant	1.42 ***	1.77 ***	0.73 ***	1.86 ***
r2_a	0.03	0.14	0.12	0.24
N	1,229	1,209	536	673

- +2.00% in FTEs / each \$10,000 in **spending per FTE**
- - 0.36% in FTEs / 10 **FTEs per 100,000 population**
- - 0.33% in FTEs / 1% increase in **proportion full-time**

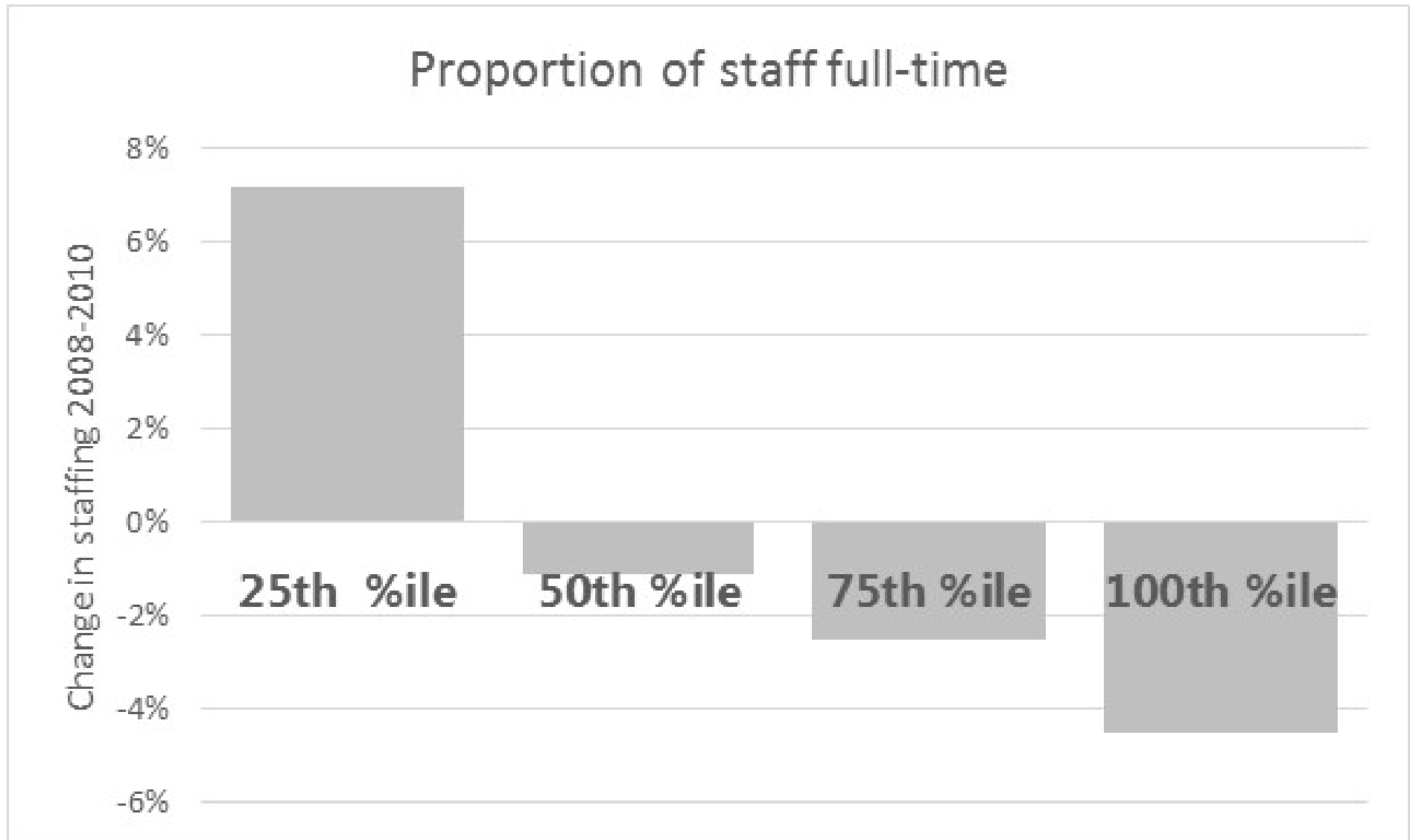
# Spending per FTE



# FTEs per 100,000 Population



# Proportion Full-time



# Conclusion

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- Staffing characteristics were most associated with distinguishing among levels of FTE gains, but not particularly helpful in estimating depth of FTE losses.
- Local revenue a hedge against further staff reductions
- Staffing cuts are less likely in LHDs that are:
  - Leaner (fewer FTEs per 100,000 population)
  - Less full-time workers
  - Higher-salaried and/or higher-capitalized employees