

PUBLIC HEALTH SYSTEM PARTNERSHIPS ASSOCIATION WITH INFANT MORTALITY

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Presentation Outline

- Background and Significance
- Approach
- Conceptual Framework
- Data
- Analysis
- Results
- Conclusions/Implications



BACKGROUND

A

- **Infant Mortality**

B

- **Public Health System Partnerships**



PROBLEM STATEMENT

- LHDs are charged with addressing IMRs
- The economic recession has forced state budget cuts.
- LHDs have been forced to cut or eliminate services and programs.
- Maternal and child services and programs were most often cut.
- Thus LHDs will have to find a way to address IMR with restricted funding



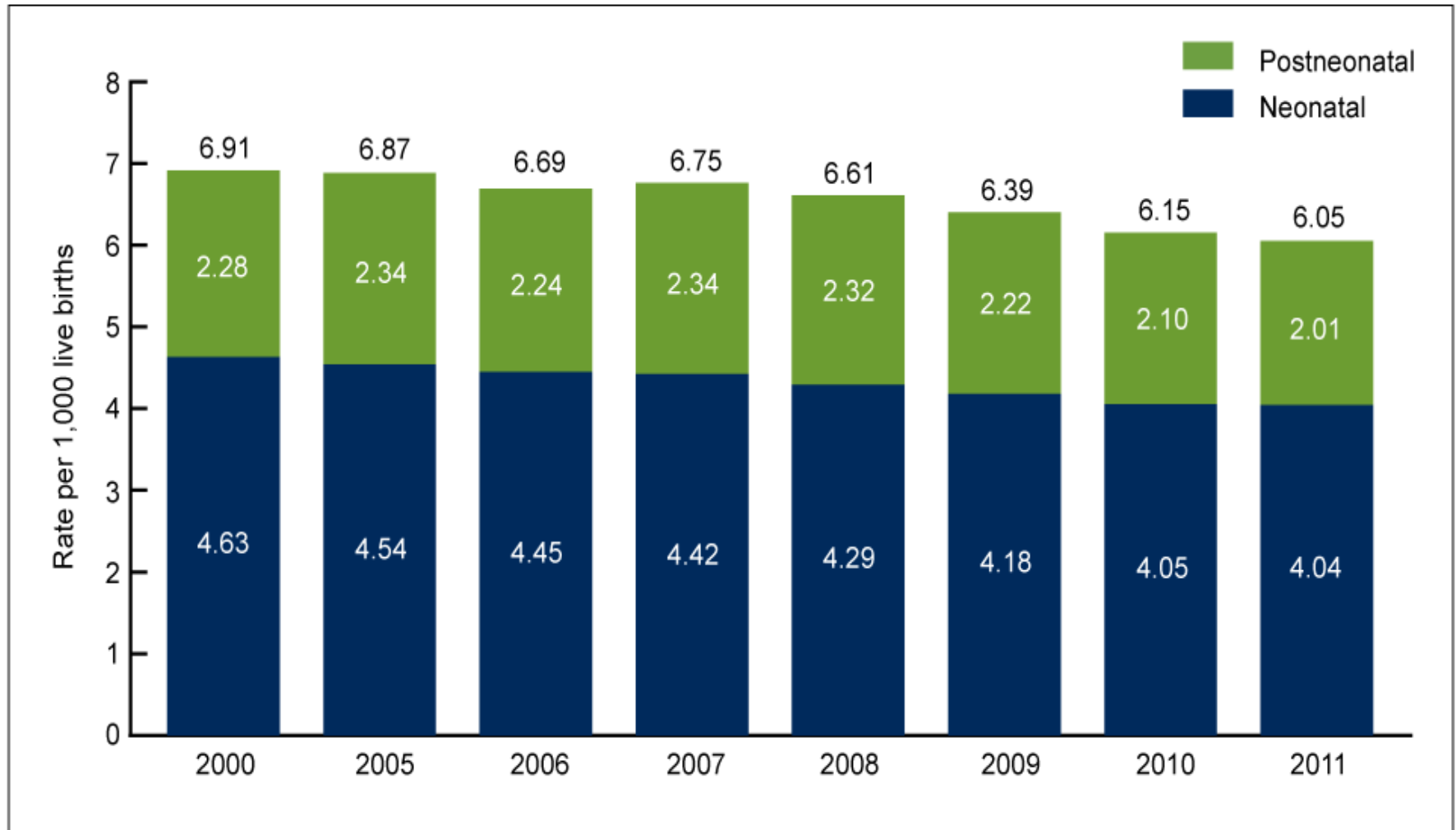
INFANT MORTALITY

- Infant mortality is a critical public health measure.
- The Infant Mortality Rate (IMR) is the number of deaths of children less than one year of age per 1,000 live births.
- The US IMR is among the highest in 40 industrialized countries.
- The infant mortality rate in the United States is more than twice that of countries like Japan and Sweden.



INFANT MORTALITY

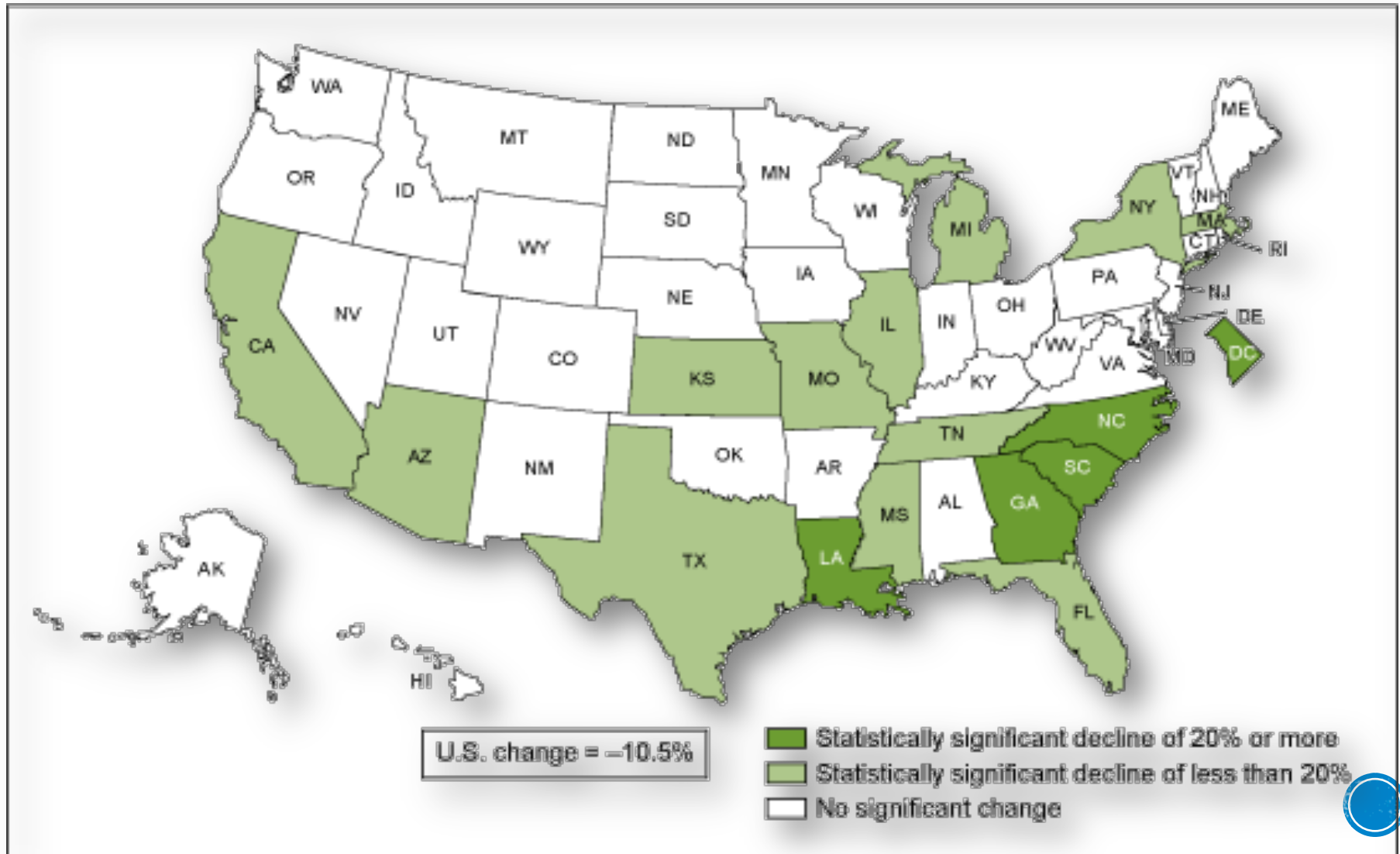
Figure 1. Infant, neonatal, and postneonatal mortality rates: United States, 2000 and 2005–2011



NOTE: Data for 2011 are preliminary.

SOURCE: CDC/NCHS, National Vital Statistics System, mortality data set.

INFANT MORTALITY DECLINES FROM 2005-2010



PUBLIC HEALTH SYSTEM PARTNERSHIPS

- Defined as: “Collaborative, synergistic alliances that include the LHD and one or more other public health system partners, which work to improve health and/or health care services in an identified need or problem area and in an identified geographic area.”
Zahner S, 2012
- Partnership is defined in this study as a formal long or short term relationship between two organizations that pools funds, skills and/or resources together to achieve a public health goal.



SIGNIFICANCE

- Economic constraints are likely to continue to impact LHDs budget, staff ,and programs.
- Healthy People 2020, recommend LHDs and COs develop partnerships to jointly engage in programs to improve population health.
- Partnerships may allow for sharing of information and expertise and more effective use of limited resources to address public health problems.



RESEARCH GAPS

- The association between public health system partnerships and population outcomes

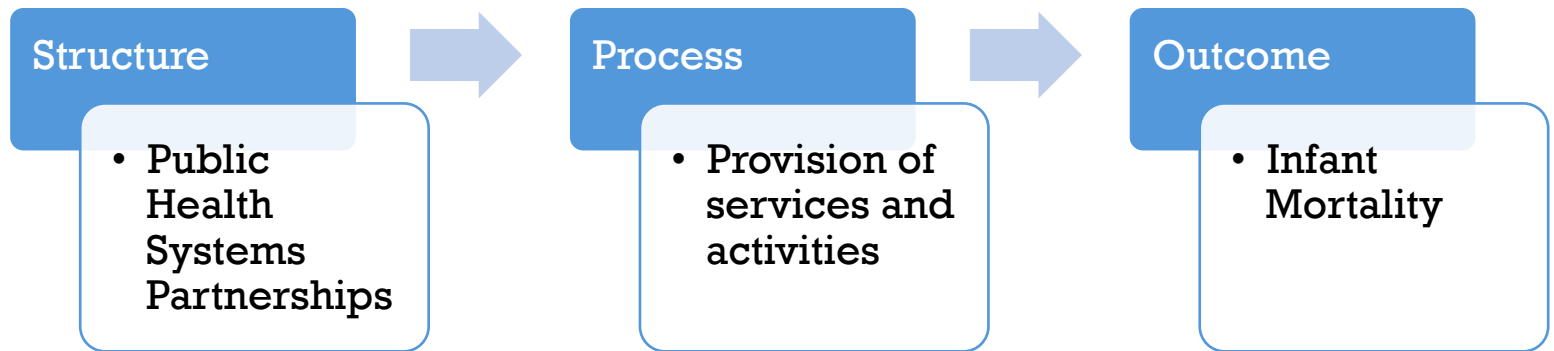


FRAMEWORK

- This research will apply Wholey et al conceptual framework which explains service delivery, public health system partnerships density and organizational centrality impact on health status.



THE RESEARCH APPROACH



SPECIFIC AIM AND HYPOTHESIS

- Specific Aim:
 - Evaluate whether public health system partnerships are associated with changes in MCH outcomes
- Hypothesis:
 - PHSPs that are dense and centralized are more likely to decrease infant mortality than PHSPs that are sparse and decentralized PHSPs



DATA

- National Longitudinal Study of Public Health Agencies (NLSPHA) survey data (1998, 2006, and 2012) coupled with NACCHO national public health agency profile and CDC wonder mortality data.



VARIABLES OF INTEREST

Dependent Variables: Infant mortality rate

Variables of Interest: Organizational Centrality and PHSPs Density

Agency characteristics: board of health

Community characteristics: population size, race (non-white)
income per capita, college graduate, unemployment rate
insurance status, and poverty



METHODS

- A multivariate panel analysis were conducted to test the association between PHSPs density and centrality and infant mortality.
- Methods
 - Fixed and Random Effect Model
 - Hausman Test
 - Instrumental Variable Analysis (2SLS)



HOW DID WE MEASURE PARTNERSHIPS?

- Social Network Analysis
 - Density
 - Centrality



DENSITY AND CENTRALITY

- Density
 - density is simply the number of connections divided by the number of possible connections in PHSPs.
 - Organizational Centrality
 - Centralization is the degree to which a LHD is centrally located within the PHSPs.
 - Centralization measures the position of an organization in a partnership.
- Wholey et al, 2009



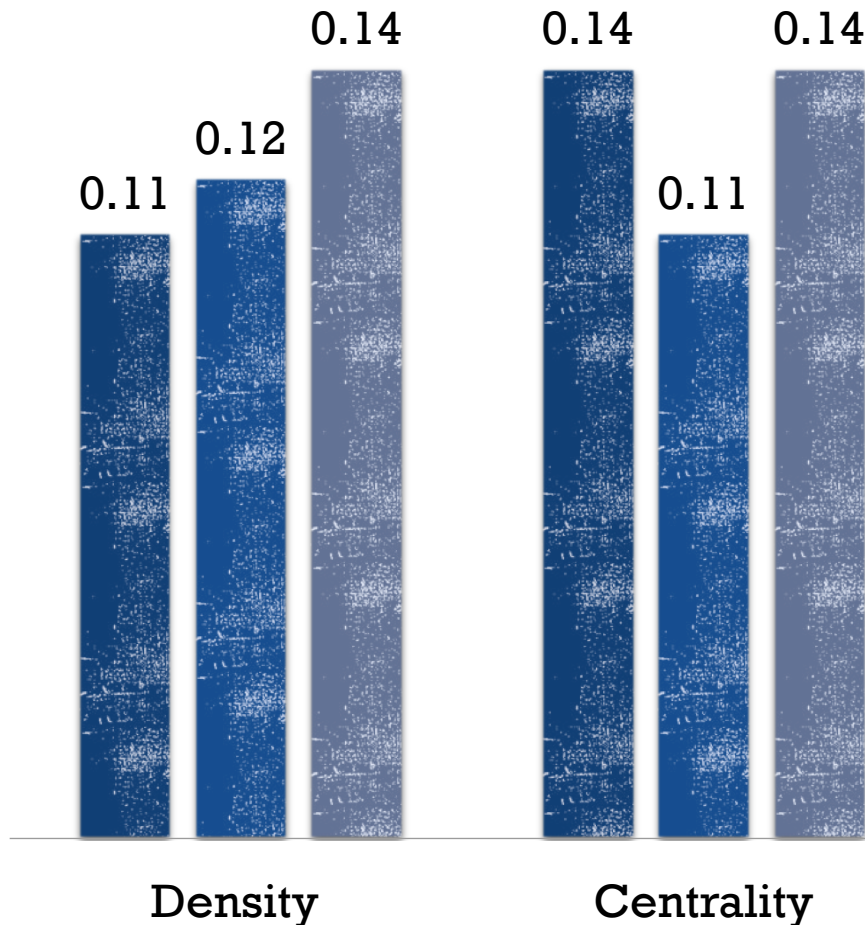
PARTNERSHIPS

Types of Organization	1998 (351)		2006(232)		2012(239)	
	Means	St.Dev	Means	St.Dev	Means	St.Dev
Community Health Clinics	0.12	0.18	0.29	0.22	0.27	0.21
Employers/Business Group	0.17	0.16	0.17	0.16	0.13	0.16
Faith Based Organization	0.19	0.17	0.19	0.17	0.16	0.15
Federal Government Agency	0.07	0.12	0.12	0.15	0.09	0.14
Health Insurance Agency	0.09	0.14	0.10	0.14	0.10	0.15
Hospital	0.37	0.21	0.41	0.19	0.39	0.21
Local Government Agency	0.32	0.22	0.51	0.25	0.26	0.21
None	N/A	N/A	N/A	N/A	0.02	0.20
Other	0.09	0.14	0.09	0.14	0.05	0.10
Other State Health	0.45	0.21	0.45	0.21	0.36	0.21
Physician Agency	0.20	0.18	0.24	0.18	0.19	0.17
State Agencies (Other)	0.16	0.18	0.16	0.18	0.13	0.17
Schools (K-12)	0.28	0.20	0.28	0.20	0.25	0.18
State Health Agency	0.37	0.21	0.47	0.21	0.39	0.22
University/College	13.40	4.09	13.18	3.83	N/A	N/A



CENTRALITY AND DENSITY MEASURES FOR 1998, 2006 & 2012

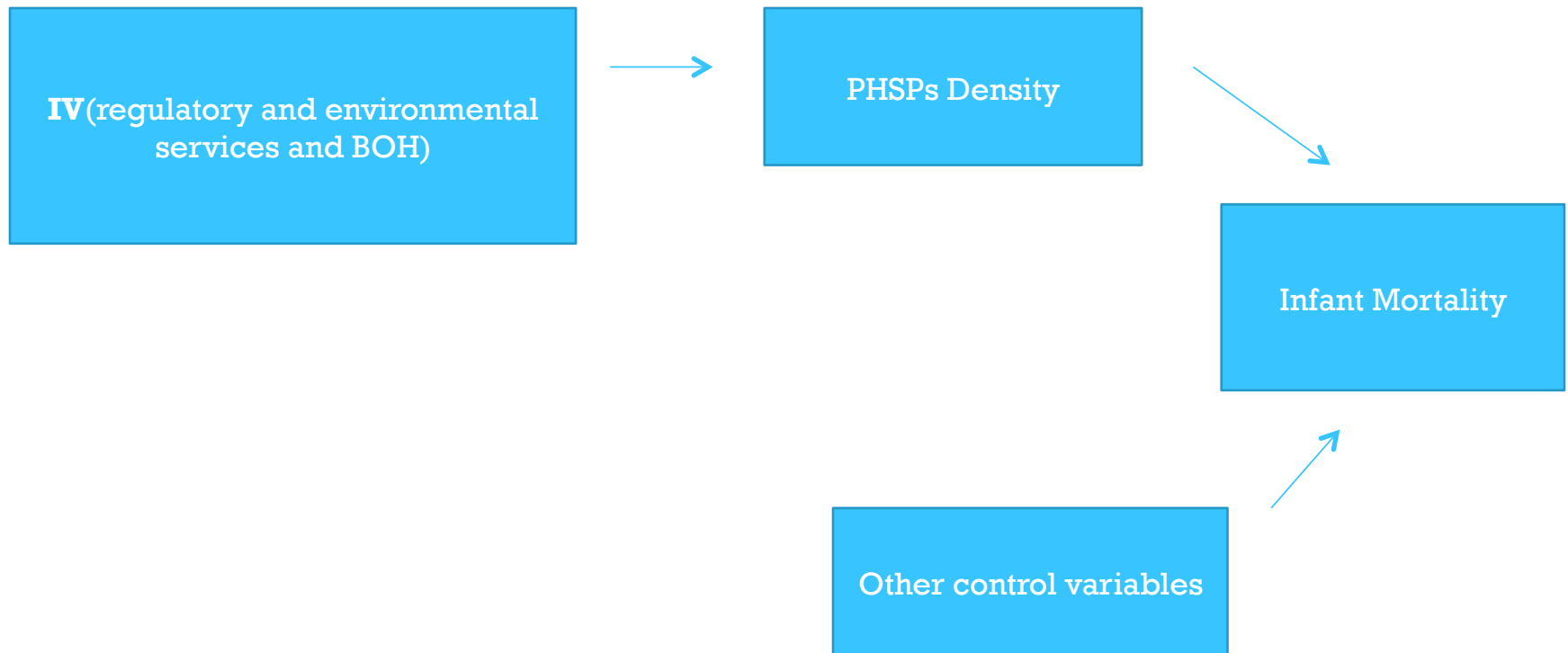
■ 1998 ■ 2006 ■ 2012



Variable	1998 N=351		2006 N=232		2012 N=239
	Mean (SE)	Difference (1998-2006)	Mean (SE)	Difference (2006-2012)	Mean (SE)
Infant Mortality	7.78	0	7.31 (.14)**	0	7.14 (.34)**
Partnership Type					
Partnership Density	0.11	+1	.17 (.11)	-3	.14 (.11)**
Organizational Centrality	0.14	0	.14 (.05)*	0	.14 (.05)
LHD characteristics					
Board of Health (%)	0.36	+12	.48(.03)**	+13	.61 (.04)**
Community Characteristics					
Population	405,188.6	+88,664	493,853	-11,066	482787
Non-Whites (%)	22.81	+4	27.14(1.16)**	+1	28(.01)***
College Graduates (%)	24.68	0	24.69 (.62)	-4	20.21(.81)***
Income Per capita	22669.36	+8,021	30690.5***	+4,000	34611.2***
Unemployment	5.37	0.15	5.40 (.14)	+3	8.53(.24)***
Uninsured (%)	13.40	0.22	13.17 (.26)	+2	15.47 (.24)***
Poverty (%)	12.47	0.31	10.69 (.27)***	+5	15.91 (.46)***

MODEL

- 2 SLS IV Random Effect Model
 - PHSPs Density



FACTORS ASSOCIATED WITH INFANT MORTALITY

	RE	RE-IV
	Coefficient (SE)	Coefficient (SE)
PHSPs Density (log)	0.0583 [0.0148]**	0.1200 [0.1418]
Non-Whites (%)	0.0043 [0.0006]***	-0.0048 [0.0022]**
College Graduates (%)	-0.0066 [0.0016]***	-0.0058 [0.022]***

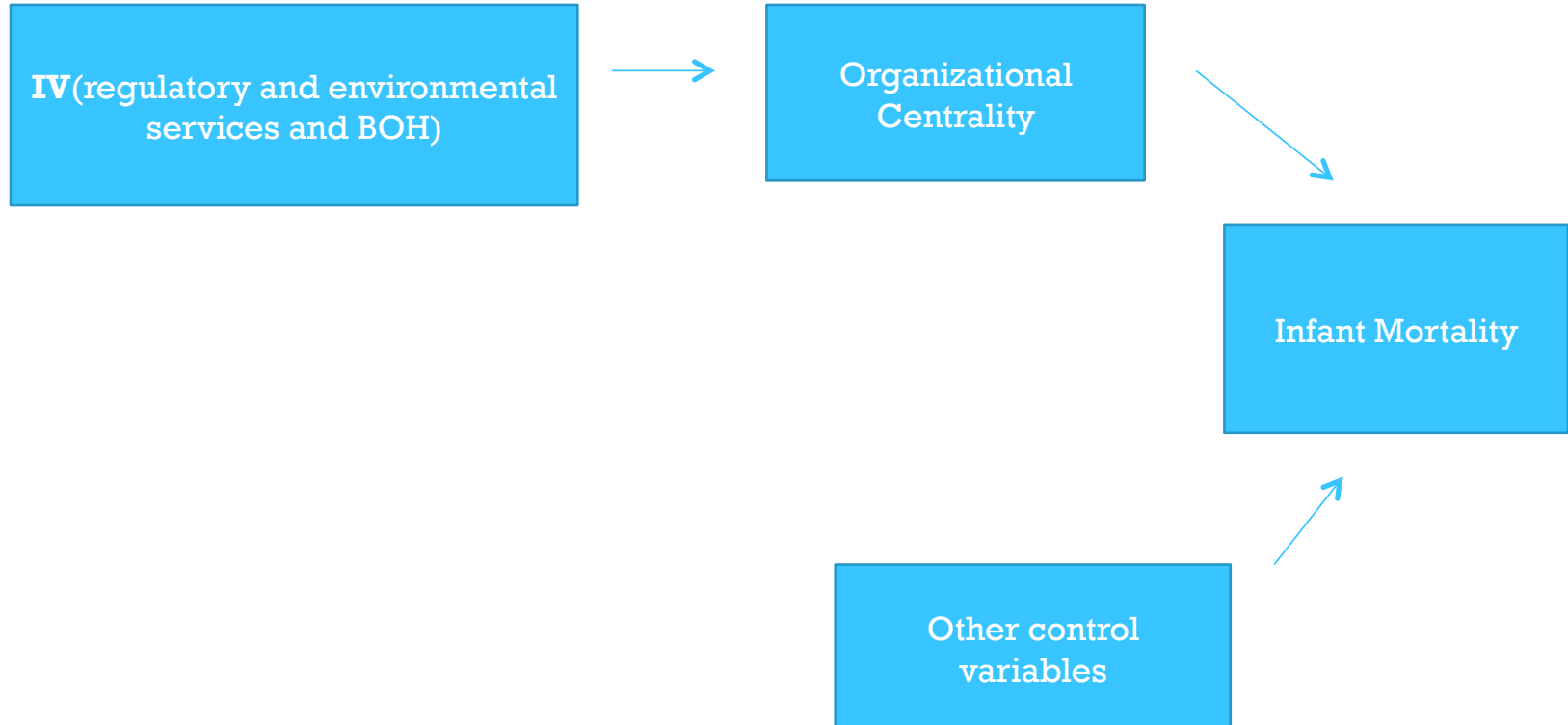
**p<0.05

***p<0.01



MODEL

- 2 SLS IV Random Effect Model
 - Organizational Centrality



FACTORS ASSOCIATED WITH INFANT MORTALITY

	RE	RE-IV
	Coefficient (SE)	Coefficient (SE)
Organizational Centrality (log)	0.0291 [0.0148]**	0.2205 [0.2006]
Non-Whites (%)	0.0032 [0.0006]***	0.0053 [0.0008]***
Uninsured (%)	-0.0131 [0.0043]***	-0.0138 [0.0045]***
Unemployment	-0.0213 [0.0049]***	-0.0245[0.0059]***

**p<0.05

***p<0.01



CONCLUSIONS

- PHSPs density and organizational centrality is associated with an increase in infant mortality rate
 - How can I explain these findings:
 - Public Health Practitioners
 - Future research



POLICY AND PRACTICE IMPLICATIONS

- Policy Implications
 - Policies should be flexible at the local level and not create additional barriers to establish and maintain PHSPs.
 - Policies should be directed at linking families to needed resources in the community that foster reducing IMR.

- Practice Implications
 - Plans to evaluate the impact of partnership efforts early and often
 - Realigning the goals and practices concerning addressing IMR



STRENGTHS AND LIMITATIONS

- Strengths
 - Three waves of NLSPHA data
 - Econometric methods: two stage least square random effect IV models
 - Results were discussed with local health practitioners in Arkansas
- Limitations
 - Ego network
 - Instrumental variable methods
 - Additional instruments are needed to estimate the association between infant mortality and public health system partnership density and centrality



THANK YOU!



QUESTION SLIDES



NEXT STEPS

- Identifying additional dataset that may have good instruments
- Examine the relationship between stable PHSPs and infant mortality



PUBLIC HEALTH SYSTEMS

- The public health system is comprised of public-sector agencies (such as schools, Medicaid and environmental protection agencies, and land-use agencies) and private-sector organizations whose actions have significant consequences for the health of the public.

■ HHS, 2010

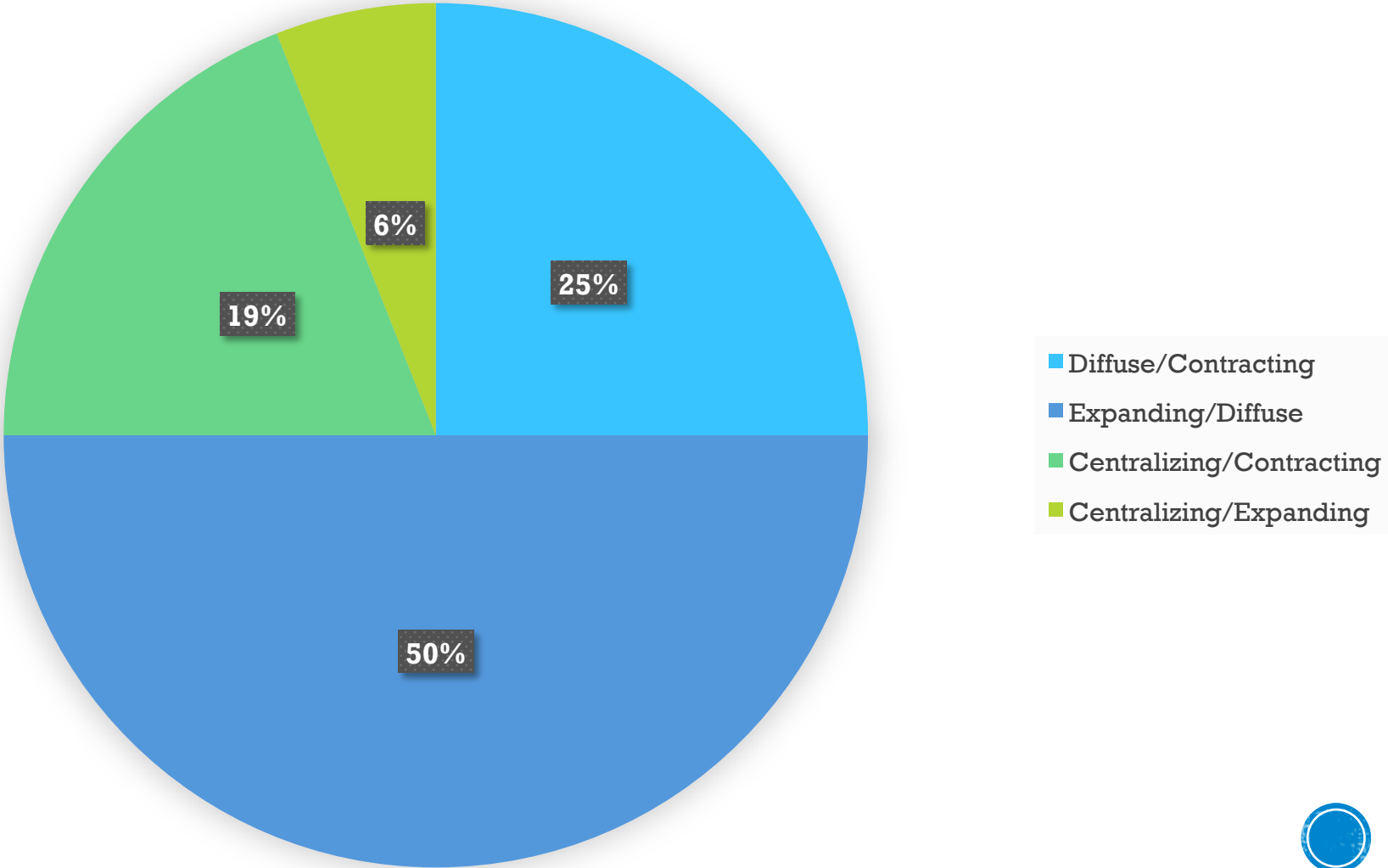


Categorizing Public Health System Partnerships

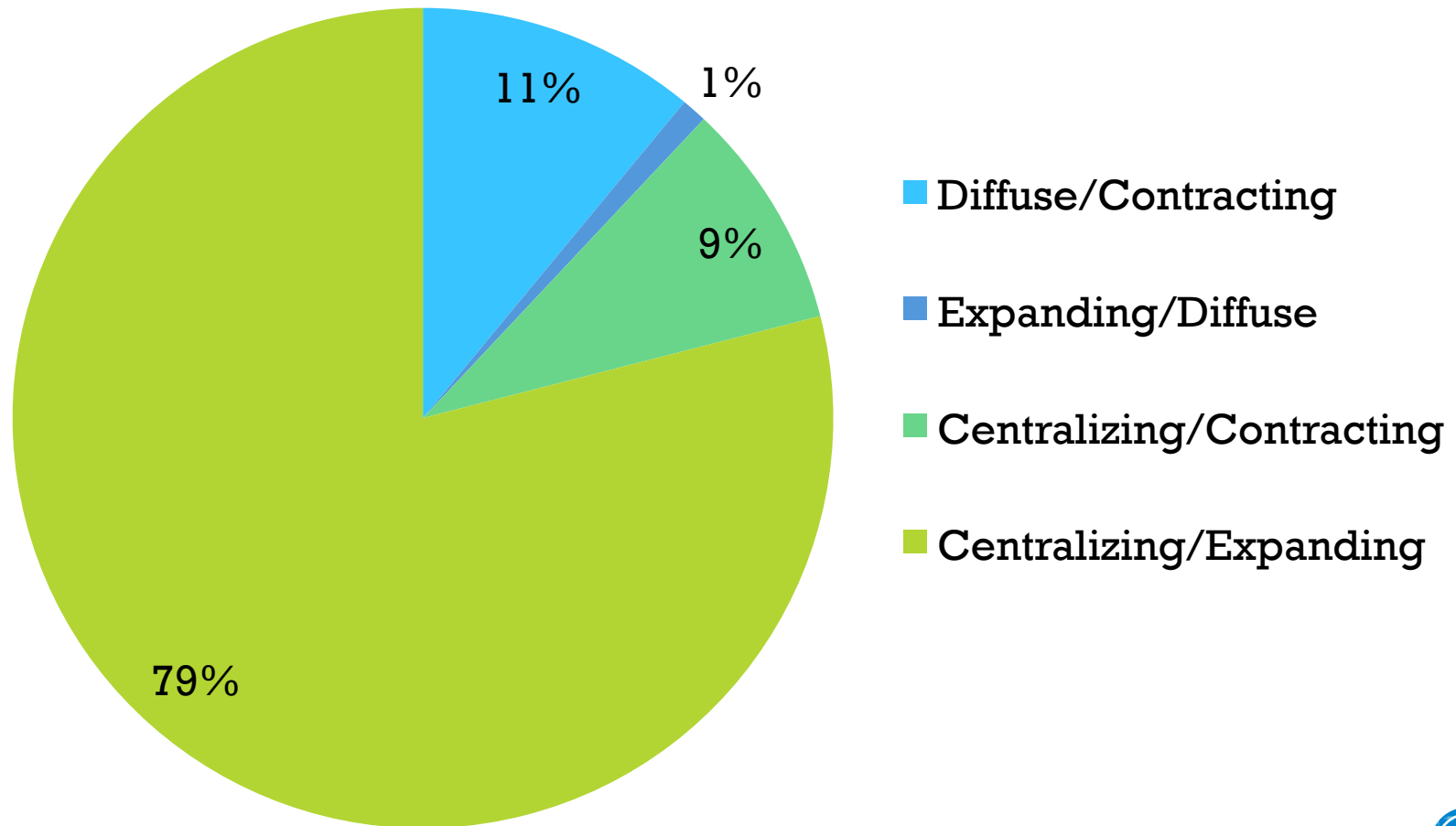
		CENTRALITY	
		-	+
DENSITY	-	Diffuse/Contracting	Centralizing/Contracting
	+	Expanding/Diffuse	Centralizing/Expanding



PUBLIC HEALTH SYSTEMS NETWORKS ORGANIZATIONAL DENSITY BY ORGANIZATIONAL CENTRALITY FROM 1998-2006



PUBLIC HEALTH SYSTEMS NETWORKS ORGANIZATIONAL DENSITY BY ORGANIZATIONAL CENTRALITY FROM 2006-2012



PUBLIC HEALTH SYSTEMS NETWORKS ORGANIZATIONAL DENSITY BY ORGANIZATIONAL CENTRALITY FROM 1998-2012

