Using Cluster Analysis to Characterize Responses of LHD MCAH Effort to the Economic Downturn

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College of Health and Human Services

L. Michele Issel, PhD, RN
Allyson Holbrook, PhD at UIC
Carolyn Leep, MS, MPH at NACCHO
Arden Handler, DrPH at UIC

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GENERAL INFORMATION

Funders

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Researchers:

Issel, Handler, Holbrook, Snebold, Leep

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NACCHO
National Association of County & City Health Officials
The National Connection for Local Public Health

UIC SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF ILLINOIS AT CHICAGO

Partners

citymatch
The National Organization of Urban MCH Leaders

AMCHP
ASSOCIATION OF MATERNAL & CHILD HEALTH PROGRAMS

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LOCAL PUBLIC HEALTH: RECENT CLIMATE

- Decreased fiscal and political resources

- Reductions in MCAH budgets

- Shift towards systems, life course, and population public health

- Implementation of the Affordable Care Act

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Background

Historically, the

population size of the LHD jurisdiction

has been used as a key variable

in understanding local differences in LHD
organizational structure and activities.

We sought an alternative approach to grouping
LHDs for comparative analyses

Conducted to identify MCAH best practices in "hard times"

Best Practices:
      Services/Programs Delivery
      EPHS Performance
➢   Financial Strategies

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HOW WE DEVELOPED THE SURVEY

- Partners provided guidance and input

- NACCHO's members pilot tested the survey

- Feedback used to:

    ➢ Refine list of 7 financial strategies

    ➢ Refine wording and sequence of questions
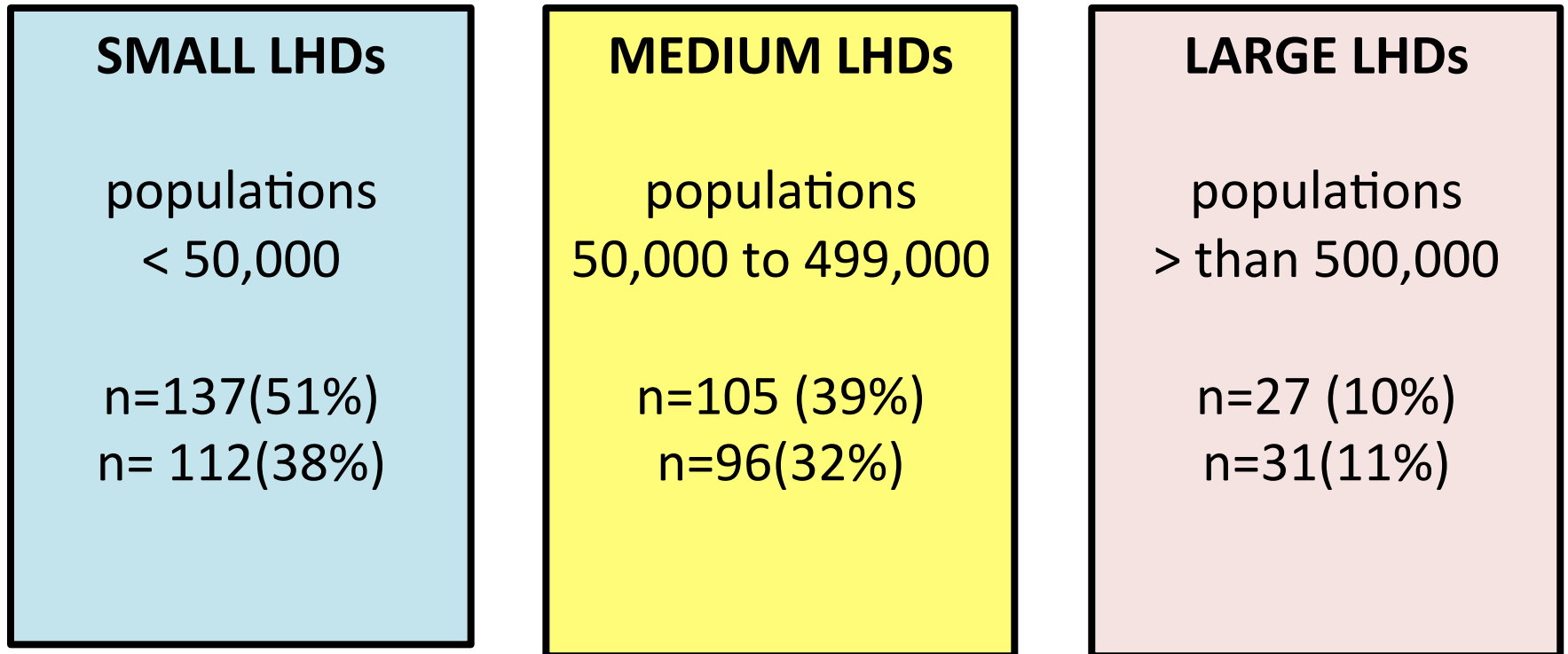
How we conducted the survey

- Online survey using Qualtrics

- Sent to participants in April–July 2012

- Random sample of NACCHO members

  - LHDs were selected within size strata

  - Respondents were responsible for MCAH outcomes

- Survey in 2 Parts: Same LHD

- Used STATA for data analyses

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SAMPLE

546 invited to participate

- Part 1- MCAH Director, n=269 (49%)

- Part 2-Health Administrator, n=295 (48%)

SMALL LHDs	**MEDIUM LHDs**	**LARGE LHDs**
populations < 50,000	populations 50,000 to 499,000	populations > than 500,000
n=137(51%) n= 112(38%)	n=105 (39%) n=96(32%)	n=27 (10%) n=31(11%)

- Merged 1 & 2, n=192 (35%)

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Items in Financial Strategies Scale

7 Strategies:

- **Revenue increase**
- **Capacity maximize**
- **Decrease expense**
- **Innovative change**
- **External consolidation**
- **Internal consolidation**
- **Cut services**

Examples given of each strategy

Lickert scale based on steps taken to implement that strategy:

1=no steps, 2=few, 3=moderate, 4=numerous steps

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CLUSTER ANALYSES

Cluster analysis to develop a typology of financial strategies used by LHDs:

– Used Ward's statistic to determine cluster similarity

– Assessed the extent to which each solution yielded differences on key variables (e.g., population size, number of FTEs)

3 cluster solution:

– meaningful distinctions

– decent n per group

Group variation assessed with ANOVA or chi square

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STRENGTHS OF THE MCAH SURVEY

Strengths:

+ Administered to a large, nationally representative sample of LHDs

+ Reviewed and tested by MCAH practitioners to strengthen its face validity

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LIMITATIONS OF THE MCAH SURVEY

Limitations:

- Cross-sectional survey

- Data were self-reported by LHDs

- Survey response rate of 49% (typical of NACCHO surveys of this type)

- Differential response rate by jurisdiction size

- Data collected in April-May 2012

- Cluster analysis had no a priori or theoretical groups

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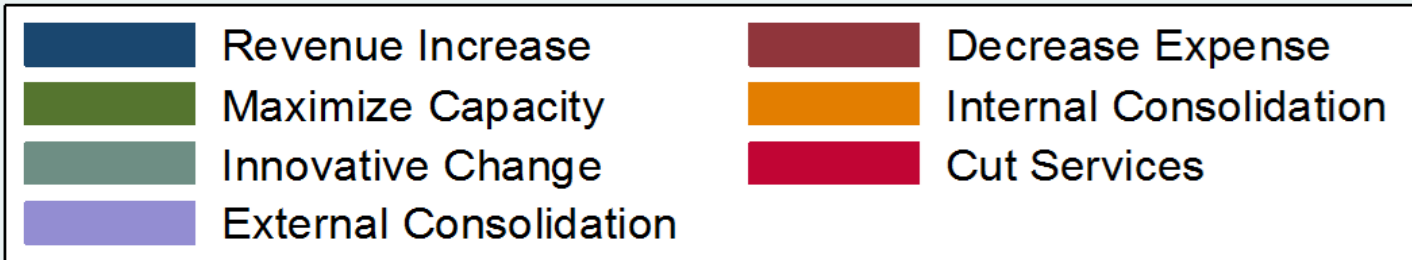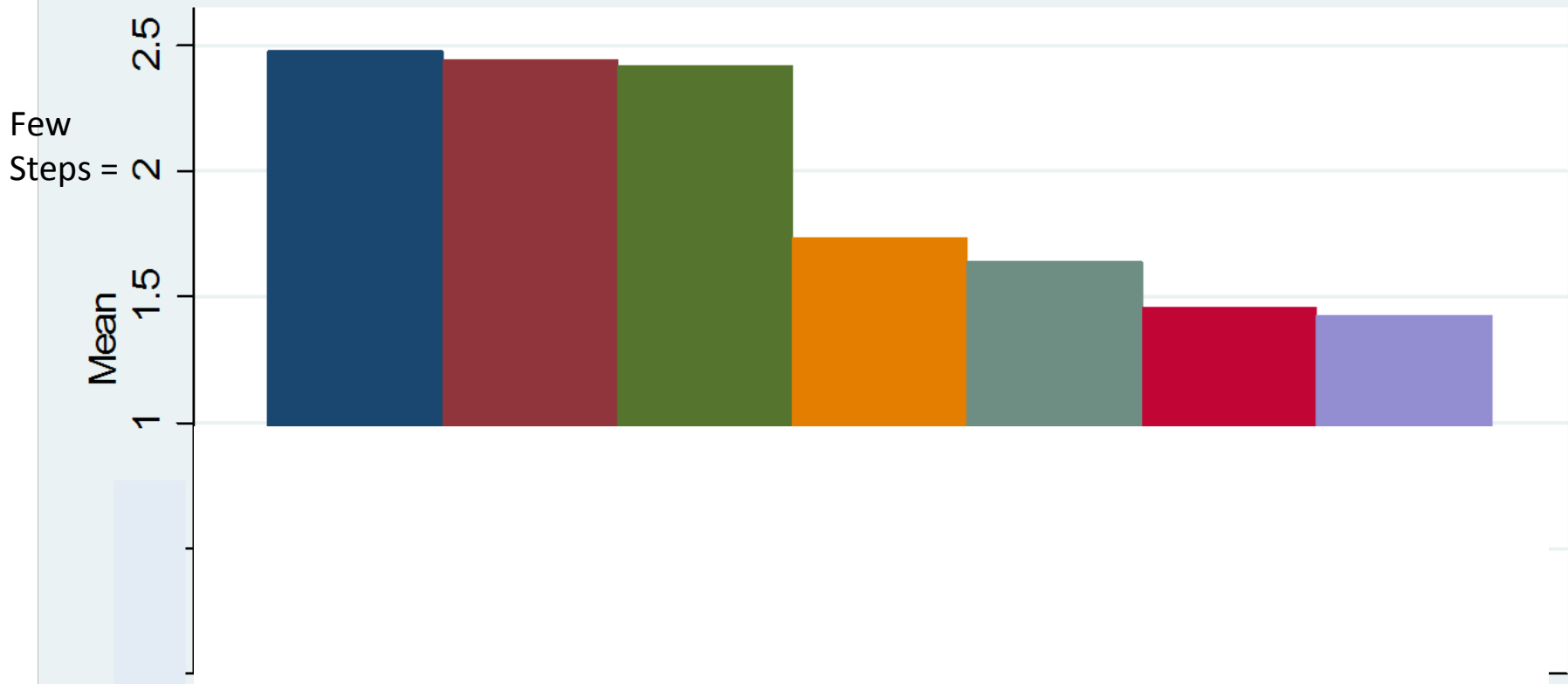# FINDINGS - FOCUS

Financial Strategies Used

Variations by Financial Strategies Cluster

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7 Financial Strategies (n=239)

LHD Financial Strategy Mean Scores

Financial Strategy Scores by Financial Cluster

ANOVA p-value<0.001 across groups for each strategy

Clusters	Stay the Course	Modest Changes	Action Oriented	ALL
N per cluster **STRATEGY**	56 (25%)	118 (49%)	65 (27%)	239 (100%)
Revenue increase	**1.60**	**2.70**	3.03	2.49
Capacity maximize	**1.53**	2.46	**3.25**	2.41
Decrease expense	1.41	**2.49**	**3.51**	2.45
Innovative change	1.09	1.56	2.36	1.63
External consolidation	1.08	1.36	1.96	1.43
Internal consolidation	1.04	1.50	3.06	1.75
Cut services	1.00	1.36	2.15	1.45
Overall Score	1.25	1.92	2.76	1.94

LHD Size Variation by Financial Cluster

STRATEGY TYPE	Stay the Course	Modest Changes	Action Oriented	ALL
Pop Category	56 (23%)	118 (49%)	65 (27%)	239 (100%)
<50,000	**37 (66%)**	3 (3%)	22 (34%)	112
50,000-499,999	15 (27%)	**53 (45%)**	28 (43%)	96
>500,000	4 (7%)	12 (10%)	15 (23%)	31
Recent Year Expenditures (mean)	$1,703,935	$4,634,938	$9,610,534	174

LHD Population size category X^2 =17.5, p=.002;
ANOVA on expenditures F=3.38, p<.04

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Budget Variations by Financial Cluster

ANOVA on mean number of FTEs F=5.49, p=.005; chi sq=.006 for add FTEs

STRATEGY TYPES	Stay the Course	Modest Changes	Action Oriented	ALL
Number FTEs (mean)	21.9	49.9	93.8	n=225
Regain/Add FTES				n=149
No	51	88	44	183
Yes (mean=4.9 FTEs)	4 (7%)	27 (23%)	20 (31%)	51 (22%)
Current Budget 1=less, 2=same, 3=more than last year	1.9	1.7	1.6	

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QI Project Variation by Financial Cluster

ANOVA F=6.90, p<.000

STRATEGY TYPE	Stay the Course	Modest Changes	Action Oriented	N
Number of QI Projects	n=41	n=102	n=60	
0	15	23	7	45
1	10	11	7	28
2	11	27	7	45
3	3	14	10	27
4	0	12	14	26
5	0	5	4	9
6 or more	2	10	11	23
Mean Number	1.40	2.38	3.38	203

EPHS Performance by Financial Cluster

ANOVA * p<0.05;   ** p<0.01; ***p<.001; n=154 in merged dataset

	Stay the Course	Modest Changes	Action Oriented	Overall Score
Inform	2.92	2.54	2.76	2.66
Workforce	2.95	2.44	2.72	2.60*
Assure Access	2.85	2.49	2.57	2.58
Evaluate	2.87	2.20	2.54	2.41**
Diagnose	2.85	2.16	2.56	2.39***
Mobilize	2.67	2.20	2.53	2.37*
Monitor	2.65	2.11	2.35	2.27**
Evidence/Research	2.63	2.06	2.36	2.24**
Develop Policy	2.48	1.99	2.17	2.13*
Enforcement	2.37	1.73	1.70	1.84***
OVERALL SCORE	**2.72**	**2.19**	**2.43**	**2.35****

Summary of Financial Group Differences

	Stay the Course	Modest Changes	Action Oriented
Jurisdiction Size	Small	Medium	Mixed
Most often used Financial Strategy	Increase Revenue	Increase Revenue	Decrease Expenses
Least often used Financial Strategy	Cut Services	Cut Services	External Consolidation
Regain FTEs?	Very few	Few	Some
EPHS Strengths	Workforce Inform Evaluation	Inform Assure Access Workforce	Inform Workforce Assure Access
Number of QI Projects (mode)	0	3	4

Conclusions & Implications

New analytic approach yielded nuanced insights
- What LHDs in groups did differently

Note ~ Data not shown for group comparisons using LHD jurisdiction size
- Overall, size gave less distinctions between groups and different distribution pattern, but also mostly statistically significant

Useful to identify LHDs exemplars in performance of the essential public health services

Policy implications for tailoring support of LHDs in different clusters

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PHSSR Implications

A) Characterization challenges

B) Complexity of connecting organizational processes with outcomes

C) Atheoretical explorations and dependent variable choice

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Thank You!

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