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Improving Measures of Public Health Activity at Local and State Levels: The Multi-Network Practice and Outcome Variation Examination Study (MPROVE)

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The Multi-Network Practice and Outcome Variation Examination Study (MPROVE)

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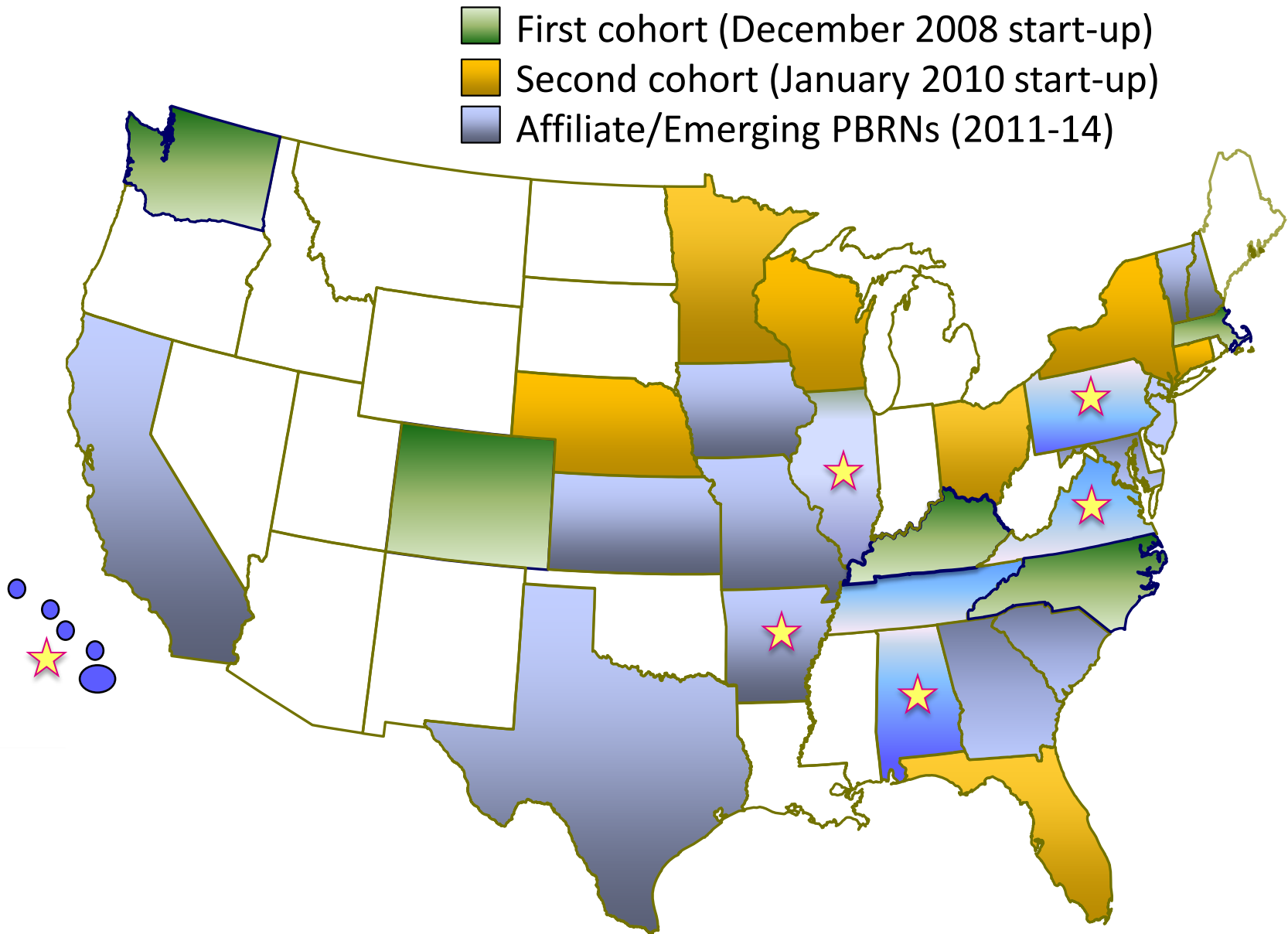
ASTHO Performance Policy Committee

| 2 February 2015

Multi-Network Practice and Outcome Variation Examination Study (MPROVE)

- ◆ Identify implementation measures high-value services:
 - **Chronic disease prevention**
 - **Communicable disease control**
 - **Environmental health protection**
- ◆ Create registry of measures: consistent across communities
- ◆ Profile geographic variation in the delivery of selected public health services across local communities
- ◆ Decompose variation into attributable components:
 - need-sensitive or preference-sensitive factors
 - supply-sensitive factors
- ◆ Examine associations between service delivery & outcomes

Diffusion of Public Health PBRNs



Participating MPROVE networks

Network	State Agencies	Local Agencies*	Academic Units	Other	Total	Lead Institution
CO	1	55	2	15	73	Association
FL	1	67	3	3	74	Local agency
MN	1	75	1	1	78	State agency
WA	1	36	2	1	40	Local agency
NJ	1	100	2	1	104	Academic
TN	1	2	2	1	20	Academic
Total	6	337	12	22	371	

MPROVE measurement dimensions

- ***Availability/Scope:*** specific activities produced
- ***Volume/Intensity:*** Frequency of producing activity over period of time
- ***Capacity:*** Labor and capital inputs assigned to an activity
- ***Reach:*** Proportion of target population reached by activity
- ***Quality:*** effectiveness, timeliness, equity of activity
- ***Efficiency:*** resources required to produce given volume of activity

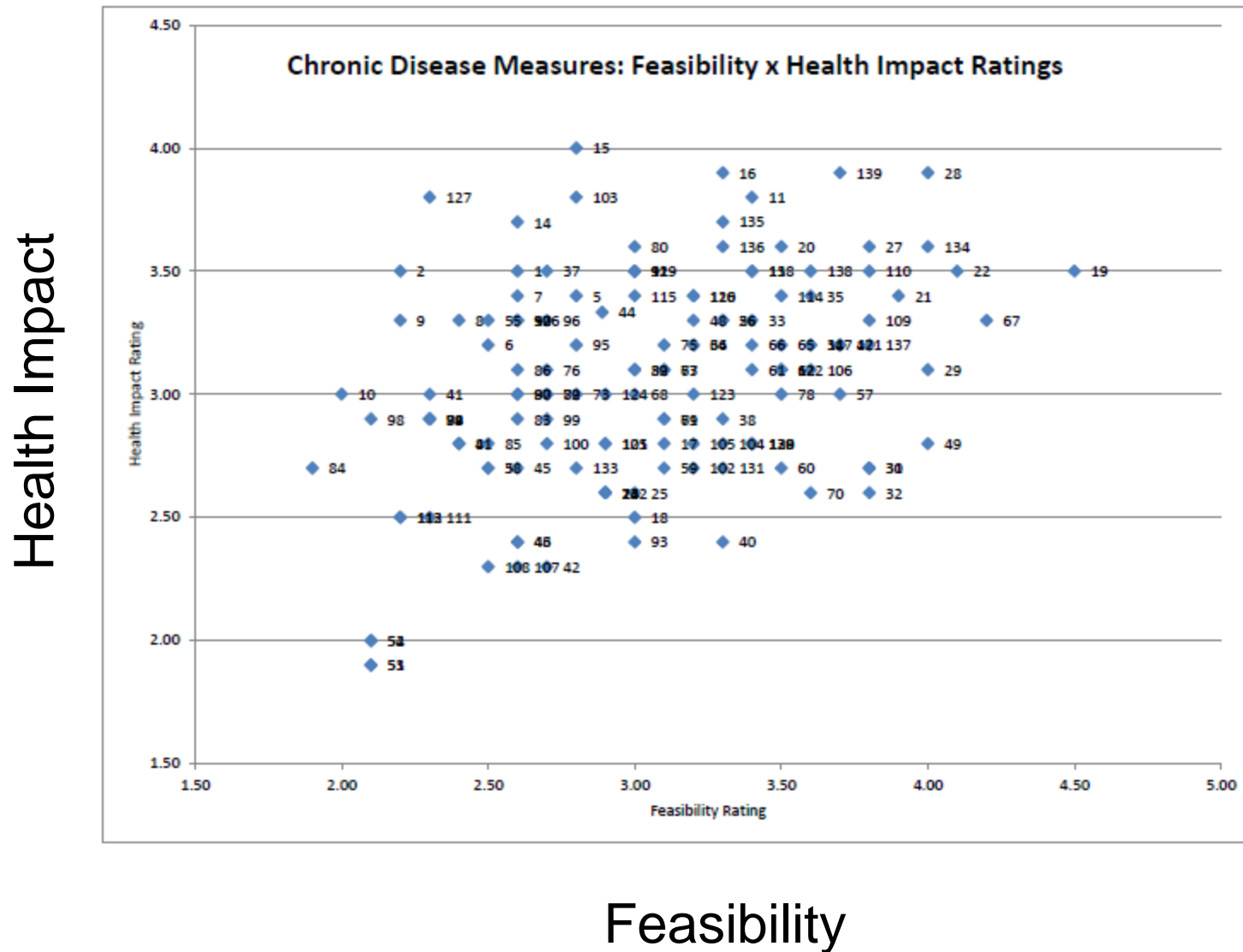
Levels of Measurement

- ◆ **Community Level:** Includes services/activities regardless of who performs/contributes
- ◆ **Agency Level:** Focuses on activities directly contributed by governmental public health agency

Measure Selection Criteria

- ◆ Expected health impact
- ◆ Expected economic impact
- ◆ Control/influence by local public health agencies and their partners
- ◆ Pre-existing evidence of validity and reliability
- ◆ Feasibility of obtaining data

Example: Delphi Rating of Measures



Final MPROVE Measures

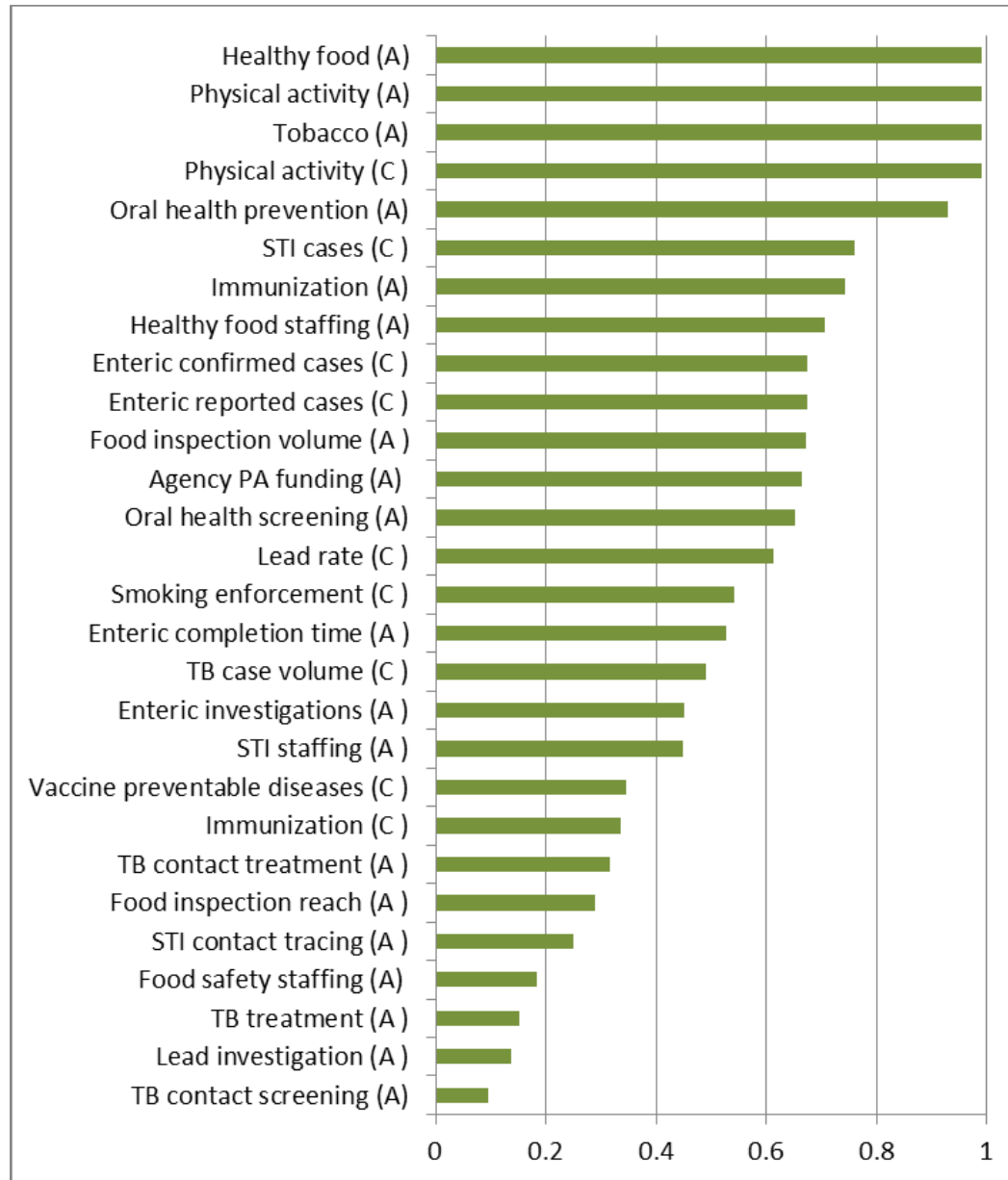
- ◆ Chronic disease prevention (8 measures)
 - Tobacco prevention
 - Obesity prevention
- ◆ Communicable disease control (14 measures)
 - Immunization
 - Enteric disease control
 - STI control
 - Tuberculosis control
- ◆ Environmental health protection (5 measures)
 - Lead exposure protection
 - Food safety protection

http://works.bepress.com/glen_mays/82/

Analytic Methods

- MPROVE data linked with 2013 NACCHO Profile data on agency characteristics, and 2013 ARF data on community characteristics
- Hierarchical random and fixed effects models to identify patterns and correlates of variation
- Variance decomposition analysis to identify relative strength of institutional and community factors in explaining local variation

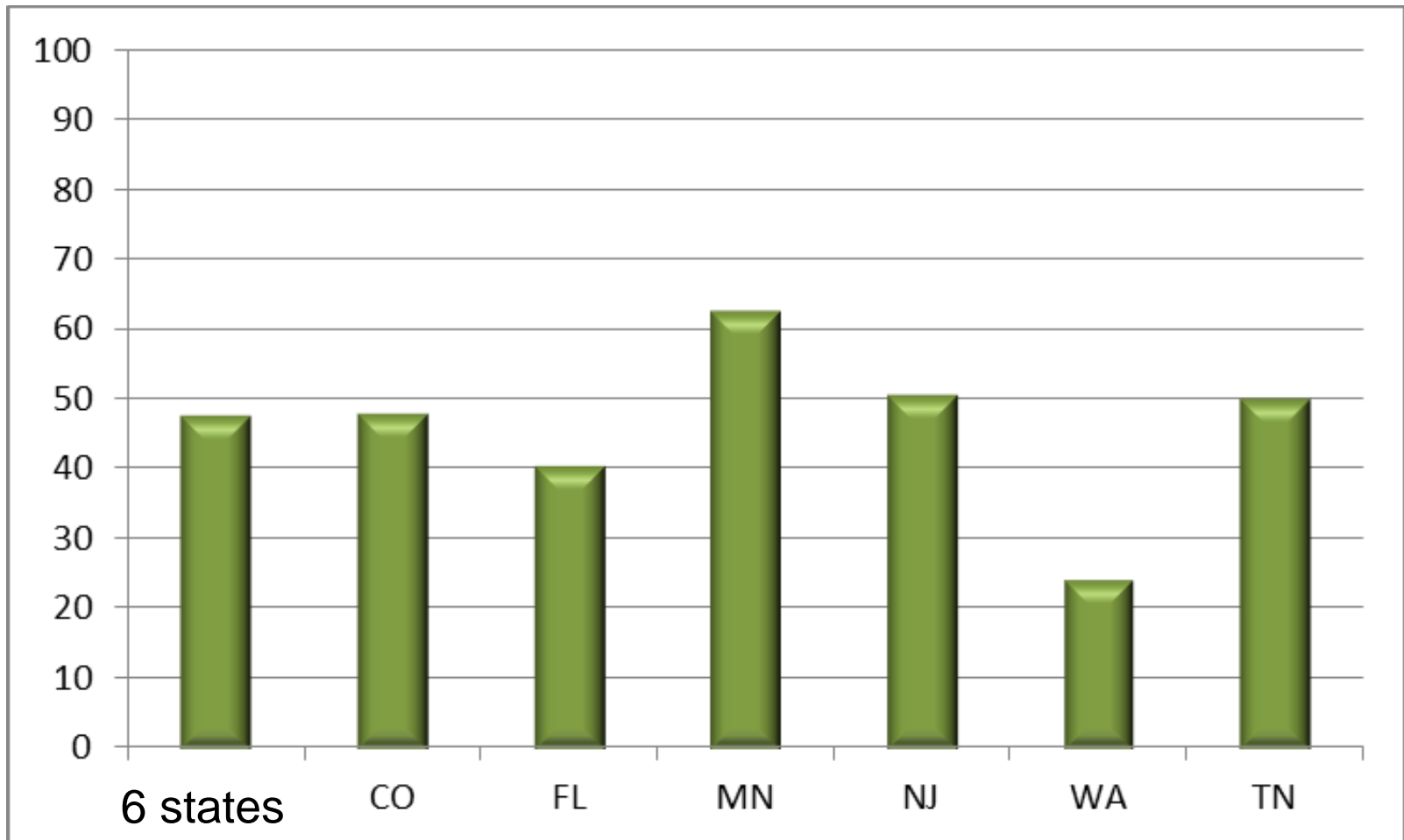
Proportion of local settings reporting MPROVE measures



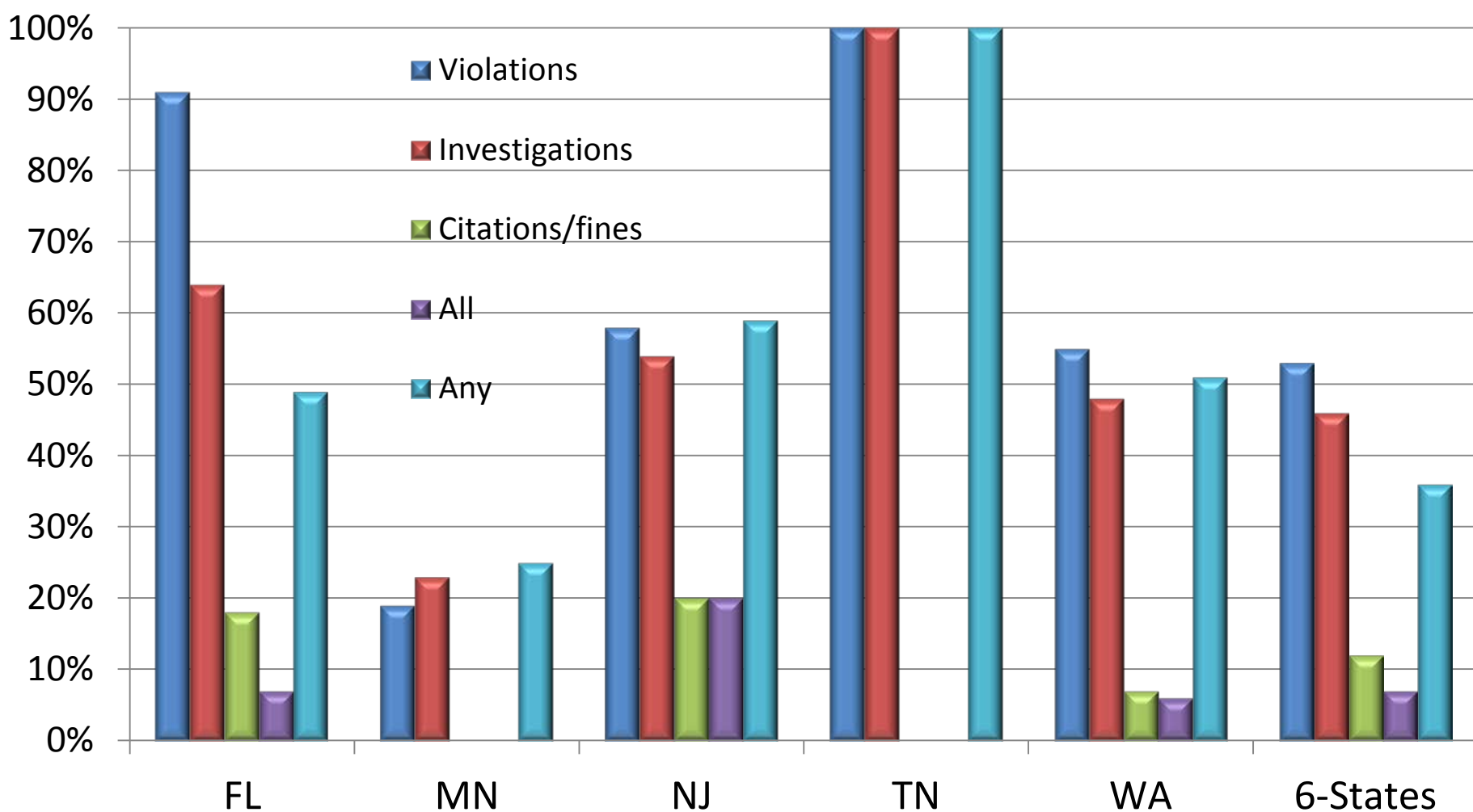
Local Health Department Resources Allocated to Promoting Physical Activity, Per Capita

	CO	FL	MN	NJ	TN	WA	6-States
Any	29%	35%	53%	52%	100%	67%	46%
If >0							
Minimum	0.07	0.03	0.00	0.00	0.17	0.10	0.00
25th pctl	0.10	0.05	0.13	0.04	0.17	0.16	0.08
50th pctl	0.47	0.24	0.33	0.08	0.17	0.31	0.19
Mean	5.30	0.80	1.30	0.54	0.17	0.57	1.52
75th pctl	1.94	0.43	0.95	0.19	0.17	0.62	0.48
Maximum	47.11	5.29	18.37	8.96	0.17	2.27	47.11

Implementation of community-wide health education campaigns to promote physical activity



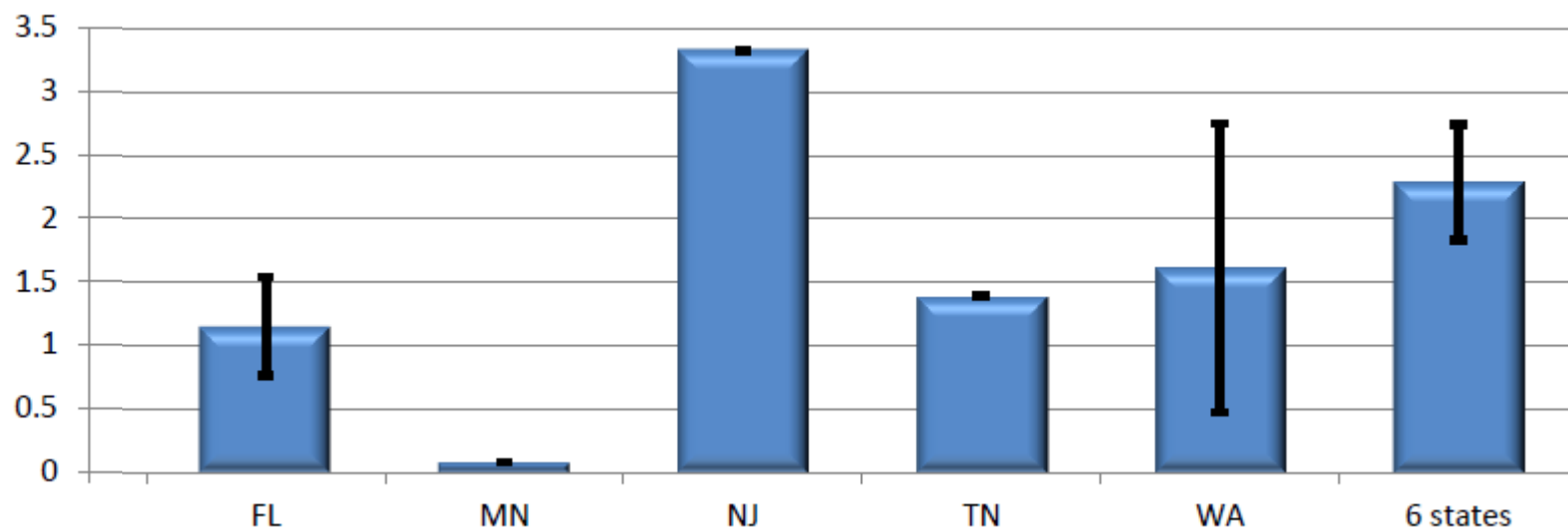
Implementation of clean indoor air policy enforcement activities



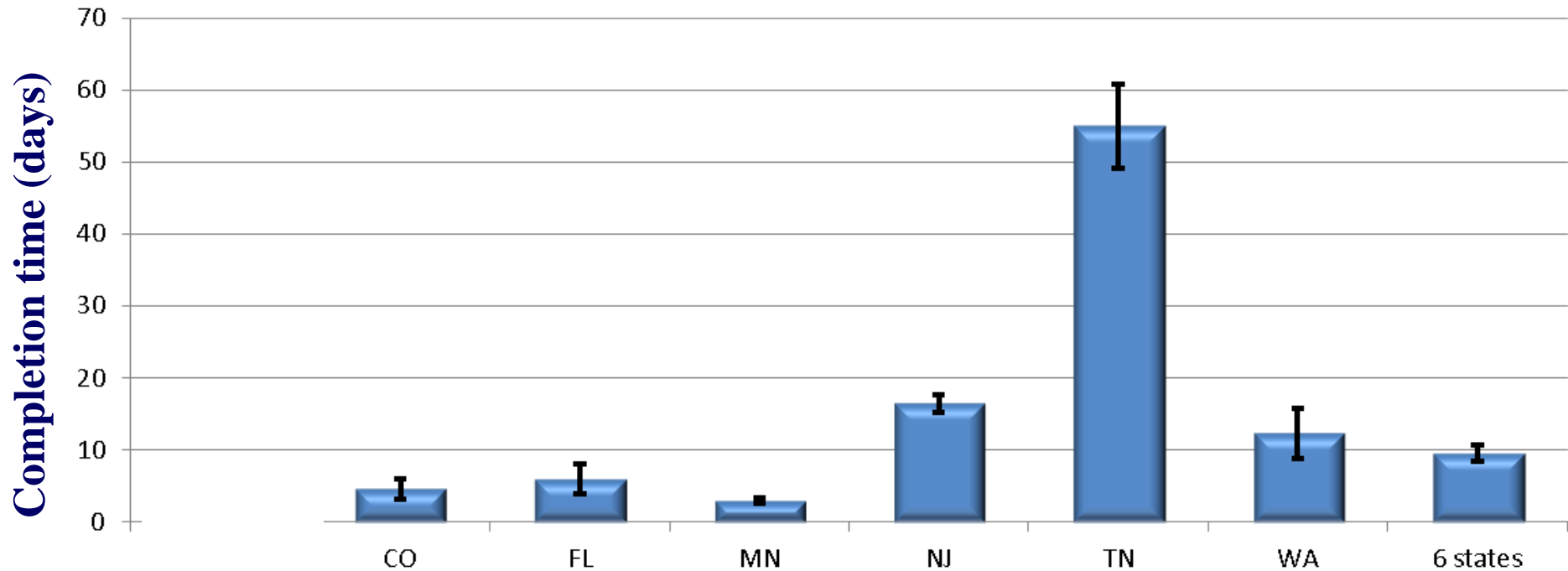
Agency implementation of services/supports to reduce tobacco use and/or exposure

Activity	CO	FL	MN	NJ	TN	WA	6-States
Agencies providing tobacco services & supports (%):							
1 Educational materials	90%	89%	73%	80%	100%	83%	83%
2 Educational media	56%	66%	40%	17%	100%	28%	41%
3 Cultural/linguistic specific materials	60%	62%	25%	41%	0%	31%	44%
4 Cultural/linguistic specific programs	60%	81%	48%	38%	100%	28%	52%
5 Educational/training programs	42%	45%	8%	16%	0%	10%	24%
6 Community development	37%	81%	48%	41%	100%	52%	51%
7 Policy development	44%	79%	56%	46%	50%	41%	53%
8 Policy implementation	44%	30%	--	45%	100%	41%	41%
9 Tobacco cessation programs	--	32%	--	9%	50%	17%	18%
10 Adult tobacco use surveillance	--	57%	--	13%	50%	28%	31%
11 Youth tobacco use surveillance	--	--	79%	12%	--	--	40%
Agencies providing all services/supports (%)	0%	0%	0%	1%	0%	0%	0%
Agencies providing any of the services/supports (%)	94%	96%	96%	87%	100%	90%	92%
Average number of services/supports offered (mean)	4.33	6.21	3.77	3.57	6.50	3.59	4.29

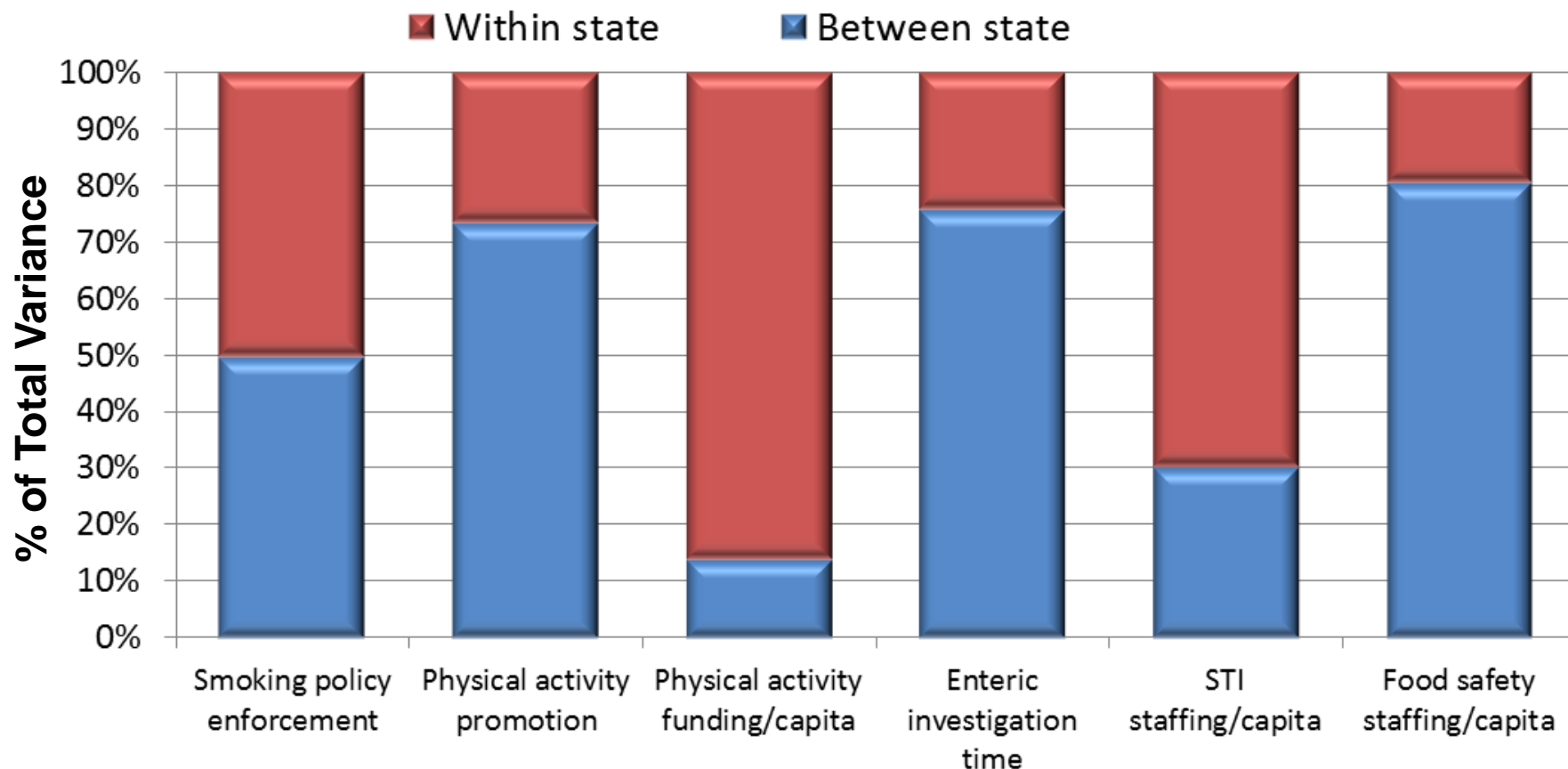
Average FTE staffing for communicable disease intervention specialists per 100,000 population



Average completion time for enteric disease investigations

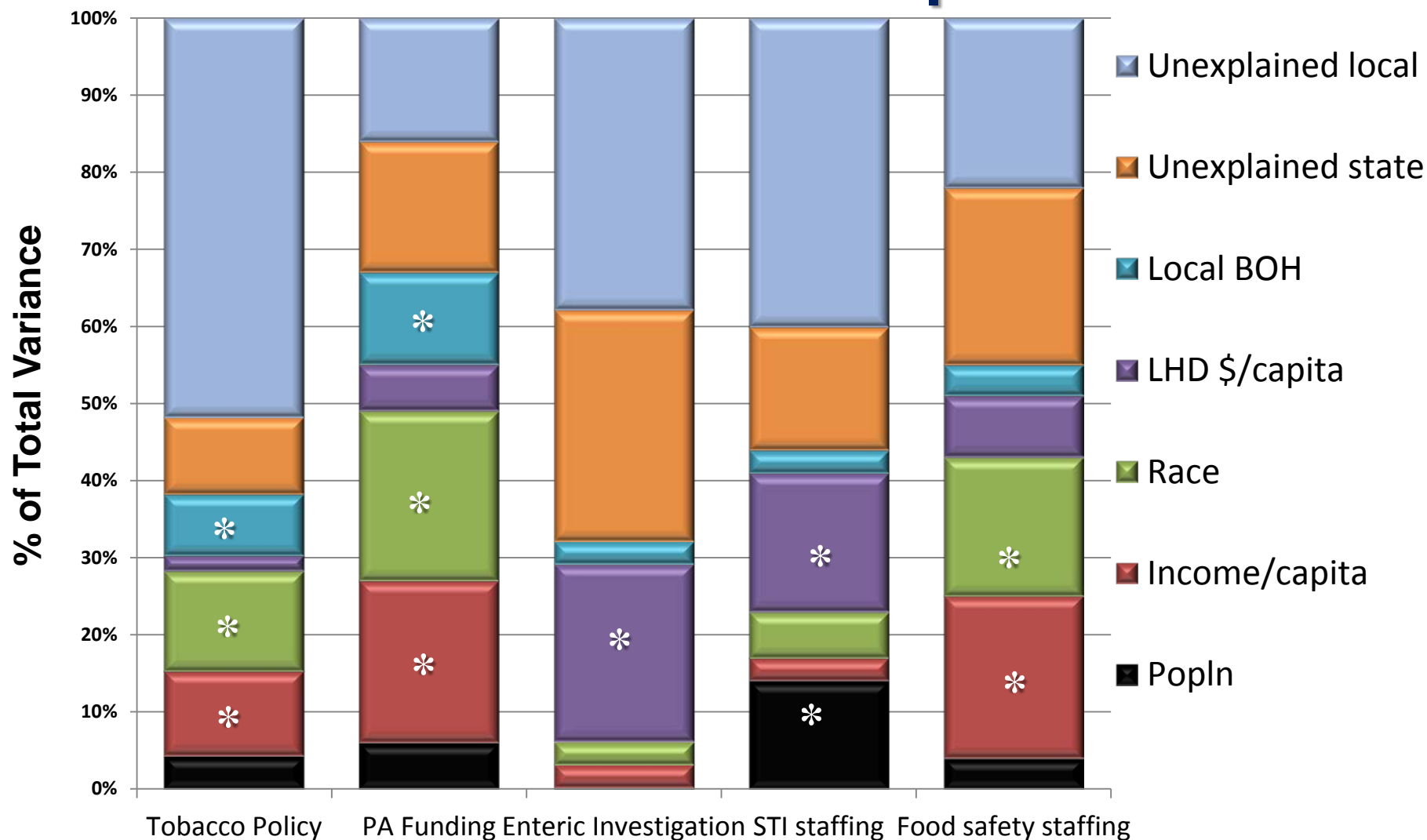


Overall Patterns of Variation in Local Public Health Implementation



Estimates from random effects regression models

Correlates of Variation in Local Public Health Implementation



Preliminary Conclusions

- Wide variation in local availability of public health implementation measures
- Considerable within-state and between-state variation in implementation
- Patterns of variation are specific to domain & activity
- Institutional and community characteristics explain 30-50% of this variation
 - Harmful?
 - Wasteful?
 - Inequitable?

Additional Measure Validation

- Strong convergent and discriminant validity in 22 of 27 measures
- Moderate to strong predictive validity in 19 of 27 measures
- Problematic measures in tobacco, nutrition, physical activity are being revised and retested through follow-on study

Ongoing cross-state analyses

- Refining patterns & determinants of variation
 - Disentangling demand (need) from supply
 - System structure
 - Geospatial
 - Within and across domains of activity:
composite measures
- Identifying population health correlates of variation

More information on the MPROVE Measures

[MPROVE Final Measure Set](#)

[MPROVE Measure Specifications](#)

[MPROVE Research Protocol](#)

[MPROVE Data Acquisition Plan](#)

[MPROVE Measure Selection: Delphi Results](#)

[MPROVE Candidate Measure Inventory](#)

[MPROVE Measure Selection Criteria](#)

[MPROVE Comparative Report of Results](#)

For More Information



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