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Creating a Taxonomy of Local Boards of Health Based on Local Health Departments' Perspectives

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Abstract

Objectives—To develop a local board of health (LBoH) classification scheme and empirical definitions to provide a coherent framework for describing variation in the LBoHs.

Methods—This study is based on data from the 2015 Local Board of Health Survey, conducted among a nationally representative sample of local health department administrators, with 394 responses. The classification development consisted of the following steps: (1) theoretically guided initial domain development, (2) mapping of the survey variables to the proposed domains, (3) data reduction using principal component analysis and group consensus, and (4) scale development and testing for internal consistency.

Results—The final classification scheme included 60 items across 6 governance function domains and an additional domain—LBoH characteristics and strengths, such as meeting frequency, composition, and diversity of information sources. Application of this classification strongly supports the premise that LBoHs differ in their performance of governance functions and in other characteristics.

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CONTRIBUTORS

G. H. Shah coordinated the development of the article, performed statistical analyses, and participated in writing. G. H. Shah and S. Sotnikov prepared the analysis design for the article. All authors participated in writing various sections, editing and improving the entire article, and outlining content in this article through discussions and consensus.

HUMAN PARTICIPANT PROTECTION

Human participant protection was not required because this research used secondary data.

Conclusions—The LBoH taxonomy provides an empirically tested standardized tool for classifying LBoHs from the viewpoint of local health department administrators. Future studies can use this taxonomy to better characterize the impact of LBoHs.

Local boards of health (LBoHs), a fundamental component of the public health governance structure, have guided public health interventions since the 19th century.¹ Like many other governing bodies, an LBoH is vested with the authority to make decisions, “formulate the policy and direct the affairs of an institution in partnership with the managers ... on a voluntary or part-time basis.”² LBoHs have evolved with the changing public health landscape to address emerging public health threats.¹ Currently, LBoHs govern 7 out of 10 local health departments (LHDs) of all sizes in the United States.³ The National Association of Local Boards of Health (NALBOH) defines an LBoH as

a legally designated body whose members are appointed or elected to provide advisory functions and/or governing oversight for the primary governmental public health agency, and/or public health activities (assessment, assurance, and/or policy development), for the protection and promotion of health in its community.^{4(p609)}

Governance of LHDs in itself is not homogenous.⁵ Hays et al. proposed a 9-category taxonomy of LHD governance based on 3 concepts of governance.⁶ These concepts were (1) the degree to which locus of authority was county government, state government, LBoH, or shared; (2) the extent to which the LBoH was empowered; and (3) whether the LBoH consisted of political appointees or health professionals.⁶ Hays et al.⁶ stressed that LBoHs might differ not only in their composition (whether members represent political interests vs public health interests), but also in their authority compared with that of a state or county or city government. Although the classification by Hays et al. is a step forward in describing variations in LBoH arrangements, it does not fully capture variations across LBoHs.

Local boards of health vary dramatically in their composition, function, and nature of involvement in community health. Wide variation also exists in the degree to which LBoHs are engaged in policy decisions about the community’s health and in administrative or governance decisions. In some cases, LBoHs are nominal bodies without much impact or engagement, whereas other LBoHs have significant impact and recognition for their contributions.^{4,7}

Patton et al. argued that LBoHs are, in general, understudied entities.⁷ A relatively scant body of research literature focuses on detailed functions and responsibilities of LBoHs as governing bodies,^{4,8} which might be attributable to a general lack of detailed data in this area.⁸ Surveys of LBoHs have experienced a number of challenges, including lack of funding to conduct surveys on regular basis between the 1997 National Profile of Local Boards of Health and the 2008 National Association of Local Boards of Health Survey, both conducted by NALBOH.⁷ Other limitations, including low response rates (27% in 2008) and issues with the sampling frame in the 2011 NALBOH survey of LBoHs, have further deterred useful inquiries based on these data sets.^{4,8} Because of the lack of detailed data on LBoHs, numerous studies extracted data about LBoHs from surveys not specifically designed for describing LBoHs. Profile surveys of LHDs conducted in 2005, 2008, 2010, and 2013 by the National Association of County and City Health Officials (NACCHO) are

examples of such studies containing a small number of questions about LBoHs. These surveys give researchers a limited opportunity to examine whether the presence of LBoHs was associated with positive outcomes and events of public health interest.

Several studies, often based on NACCHO's profile surveys, have reported mixed results about LBoH impact on an LHD's administrative practice, performance of public health services, operations, innovation, and quality of services provided in the jurisdiction. Whereas most of these studies used a single variable to represent LBoHs (having 1 LBoH vs having none), some studies attempted to show that going beyond just absence and presence of LBoHs mattered.^{9,10} It is argued that boards with policymaking authority can vary in exercising authority, oversight, and activism, thus confounding true associations.¹¹ Composition of LBoHs also leads to variations in their effectiveness.^{6,12,13} Members of LBoHs are argued to have invisible and visible influences on other LBoH members and elected officials (e.g., governors).¹⁴

A summary of Public Health Services and Systems Research studies shows mixed results concerning the manner in which presence of LBoHs influences LHD performance (Table A, available as a supplement to the online version of this article at <http://www.ajph.org>).^{6,9-11,13-51} The lack of clarity about influence of LBoHs on public health functioning might be attributable to treatment of LBoHs as uniform bodies, making it imperative to develop a classification or taxonomy of LBoHs. Such a taxonomy might help differentiate between high-performing and low-performing LBoHs, and clarify why some LBoHs are more impactful than others. Attempts to classify the spheres of LBoH influence are limited and narrow in scope.^{4,7} Boulton et al. stated that taxonomy "is the practice of classifying concepts within hierarchic categories that help organize it in meaningful ways."^{52(p315)} Our study offers operational definitions for a taxonomy of LBoHs to provide a coherent framework for describing LBoH variation, thus filling important gaps.^{5,53} The study also uses primary data collected by NACCHO in 2015 from a nationally representative sample of LHDs to provide an empirical assessment of LBoH performance across various domains of the typology, and to describe variation in such performance by relevant LHD characteristics.

METHODS

In this study, we used data from NACCHO's 2015 Local Board of Health Survey. The population of 2048 LHDs governed by 1 or more LBoHs served as the sampling frame. A stratified random sampling design was used to select a statistically representative sample of 685 LHDs with at least 1 LBoH serving their respective jurisdictions. Stratification was based on state of LHD location and the jurisdiction population size categorized into 3 strata: fewer than 50 000 people, 50 000 to 499 999 people, and 500 000 or more people. The survey oversampled LHDs with large populations to ensure a sufficient number of responses for the analysis. The survey was administered via Web-based survey software during July through September 2015, resulting in 394 responses for a response rate of 58%.

Compared with previous LBoH surveys, this survey differs in 3 respects. First, the intended survey respondents in the 2015 Local Board of Health Survey were top executives of LHDs

(or their designees), rather than LBoH members or chairpersons. The most recent NALBOH Profile before this study included mixed responses from LBoH members and LHD staff because, in a majority of (but not all) cases, the LBoH chair sent the survey to the LHD leader to complete. Second, this survey had a clearly defined sampling method designed to be representative of all LHDs with 1 or more LBoH. Finally, the response rate for the survey was much higher than that for previous studies of LBoHs (e.g., 58% for this study compared with 27% for the 2008 NALBOH).^{4,7,8}

Process and Analytics Used in Taxonomy Creation

Because the primary purpose of the 2015 Local Board of Health Survey used in this research was not exclusively to develop the LBoH classification, we applied a mixed methods approach, using both empirical and consensus-building procedures to classify LBoHs. The creation and application of this taxonomy involved 4 steps, as shown in Figure 1: (1) theoretically guided initial development of the domains (or categories); (2) mapping of 2015 LBoH survey variables (or questions) to the proposed domains; (3) data reduction and elimination of duplication of variables across domains to make those domains distinct, which was accomplished by using principal component analysis of the standardized variables reflecting proposed domains; and (4) scale development and testing of the internal consistency of the overall scale and subscales for each of the domains.

On the basis of available literature about LBoH governance and functions, we initially proposed a set of 7 building blocks to help meaningfully explain variation in LBoHs.^{5,6,54–62} Theoretical principles of governing boards in other industries guided our conceptual framework.^{5,55–62} Although 10 additional characteristics of LBoHs forming the seventh domain were included in the taxonomy, 6 governance functions as defined by Carlson et al.⁵ were the centerpiece. The 6 functions were

1. policy development,
2. resource stewardship,
3. legal authority,
4. partner engagement,
5. continuous improvement, and
6. oversight.

Carlson et al.⁵ defined the 6 functions of public health governance (applicable to LBoHs) through a field-driven and collaborative project of NALBOH and Centers for Disease Control and Prevention.⁵⁵ NALBOH noted that all 6 functions were equally important.⁵⁵ Carlson et al.⁵ have provided definitions for these governance functions. These definitions were used to understand the scope and intent behind each of the 6 governance function domains and to inform the mapping of survey questions. The seventh domain consisted of additional LBoH characteristics not reflected in the 6 governance function domains. Detailed operationalization of these functions for this study is presented in Table B, available as a supplement to the online version of this article at <http://www.ajph.org>.

The 2015 survey of LBoHs was constructed to capture information about LBoH characteristics and practices. Therefore, determining which of the questions appropriately measured which of the proposed domains was our next step in the process. Through discussion and consensus building, we proposed a schema for mapping the 60 variables in the survey to 7 proposed domains.

Some survey questions could arguably be assigned to more than 1 of the domains. To address this, we used categorical principal components analysis with optimal scaling option (SPSS version 23.0, IBM, Somers, NY)⁵⁶ for data reduction and determining which of the variables loaded better on axes reflecting certain domains. To standardize the variables, we first recoded all of the 60 variables that were candidates for the taxonomy into dichotomous variables in a direction with 1 indicating the more desirable response and 0 otherwise. This allowed us to simply sum the “1” responses to calculate our scale score value. A total of 19 components were extracted by the model (Eigenvalues between 1.0 and 9.6), collectively explaining 68.4% of variation. The highest variation explained was by the first component (extraction = 15.48%; rotated = 6.43%), whereas 5 additional components explained between 4.20% and 5.58% of variance for the rotated loadings.

We used principal components analysis results and subject matter expert consensus to eliminate duplication of the variables across domains and to make each of the finally selected 7 domains distinct (Figure 2). The variables representing each of the domains are presented in Table 1. The list of variables and questions used to measure the variables is presented in Table B.

Scale Development and Testing of Internal Consistency

To compute the individual scales for all 7 domains, a summary scale for all 7 domains combined, and another summary scale for all 6 governance domains together, we coded each of the variables in the domains as 1 or 0. We computed the Cronbach α for the scales and subscales. The Cronbach α for the overall scale based on standardized items was 0.893, showing a high level of internal consistency and indicating that the set of items included in the scale were closely related as a group. In addition to the overall scale that includes all 60 scale items, we computed subscales representing each of the domains for the taxonomy. The Cronbach α for the governance subscale was 0.882, which also indicates a high level of internal consistency. For the subscale comprising items other than the governance scale, the Cronbach α was 0.624, showing relatively low internal consistency. The Cronbach α for subscales representing individual domains ranged from 0.837 to 0.372 (Table 2).

Analytic methods used in application of taxonomy included descriptive statistics for individual items contained in the domains of the taxonomy. To show how LBoHs scored against the taxonomy, we calculated arithmetic means and mean percentage of scores (relative to maximum possible score) for the scales and subscales. The maximum possible score reflects the sum of the number of items constituting the scale, each coded as 1 or 0. We defined scoring thresholds for designation as “superior” for each of the domain on taxonomy as an individual domain score being greater than the arithmetic mean for that domain (Figure 2). For examining variation in LBoH performance by population size of LHD jurisdiction and by governance category, we used analysis of variance and post hoc multiple

comparisons. We used sampling weights to account for 3 factors: (1) disproportionate response rate by population size, (2) over sampling of LHDs with larger population sizes, and (3) sampling rather than the census approach.

RESULTS

Table 1 shows descriptive statistics of LBoH performance scores across various domains and variation with respect to important characteristics, organized according to the domains shown in Figure 2. Figure 2 also shows a classification schema to mark LBoH as “superior” in overall governance as well as “superior” in specific dimensions of governance, such as in policy, resource stewardship, and oversight. Figure 2 also shows scoring thresholds for each of the domains in the taxonomy (e.g., policy development score > 2.22 results in a designation of “superior” performance in this domain). The final taxonomy comprised the 6 governance functions defined by Carlson et al.,⁵ as well as an additional domain reflecting characteristics and strengths of LBoHs—board composition and member qualifications, diversity of information sources used by the board to seek community perspectives, and meeting frequency of the LBoH.

For all 60 items comprised by our taxonomy, the average number of “yes” responses among all LHDs was 19.72, or 32.87% of the maximum possible score of 60. The average for the 50 governance functions items was 14.65, or 29.29%. For the 10 items not included in the governance scale (i.e., the items concerning characteristics and strengths), the LBoH average score was 50.76%, indicating higher scores for aspects other than governance functions (Table 2).

Comparison of the scores for each of the 6 governance function domains showed that the LBoHs had their highest scores for oversight (38.16%) and resource stewardship (37.30%) and lowest for partner engagement (12.83%). Relative scores for these functions imply that LBoHs across the country have better performance of some governance functions such as resource stewardship, but had lower performance of partner engagement function.

Significant variation existed by the type of LHD governance (i.e., local, shared, or state governance of LHDs) in scores of LBoHs on scales for the overall taxonomy, overall governance functions, and characteristics or strengths, and on 5 of the 6 sub-scales for governance functions (Table 2). The state-governed LHDs with an LBoH meant that these LHDs were units of the state government, but also had a functional LBoH serving as the governing body. No significant variation by LHD governance existed in the partner engagement function. The post hoc analysis showed that LBoHs serving LHDs with local and shared governance had significantly higher ($P < .001$) scores when compared with state-governed LHDs, with overall scale averages of 34.66% for locally governed LHDs and 34.35% for LHDs under shared governance versus 14.17% for those under state governance. Significant variation also existed in LBoH scores on the governance function subscale by LHD governance category, as LBoHs serving LHDs with local and shared governance had significantly higher ($P < .001$) scores than those serving the state-governed LHDs. Significant variation by type of LHD governance existed in most of the governance subscale scores (policy development, resource stewardship, legal authority, continuous improvement,

oversight) and the characteristics or strengths domain. No significant differences across governance types existed in the partner engagement subscale scores.

Comparatively less variation in taxonomy scores existed by size of LHD population. There were no significant differences by population size in LBoH scores in the overall taxonomy or governance functions scales. Significant differences existed in some scores for individual governance functions. Scores for the governance function “continuous improvement” were significantly higher for the LBoHs governing larger LHDs than for those governing medium or smaller LHDs. The LBoHs governing the medium and large LHDs had significantly higher scores for oversight compared with LBoHs for smaller LHDs. We observed significantly higher scores for LBoHs governing large LHDs compared with medium and small LHDs for the characteristics and strengths (non-governance) scale.

DISCUSSION

This study was triggered by the substantial variations reported in the existing literature concerning the nature of LBoHs’ influence on the functioning of LHDs and on the health of communities. The treatment of LBoH influence as a binary variable (LBoH present or absent) might be a source of the observed inconsistencies. Our theoretically guided and empirically modified taxonomy of LBoHs offers more nuanced characterizations of LBoHs in future policy, research, and public health practice decisions.

The final taxonomy included 6 governance functions—policy development, resource stewardship, legal authority, partner engagement, continuous improvement, and oversight—plus an additional domain signifying characteristics and strengths of LBoHs, including LBoH composition and member qualifications, diversity of information sources used by the LBoH to seek community perspectives, and meeting frequency of the LBoH.

To show relative performance of LBoHs on the taxonomy domains from the perspectives of LHD administrators and managers, we analyzed the 2015 LBoH survey. Our study provides strong evidence that LBoHs differ significantly in their performance of governance functions and in other crucial characteristics. This evidence supported our hypothesis that varying findings about LBoH influence on various public health activities and outcomes might have been attributable (at least in part) to researchers’ treatment of LBoHs as a homogenous group of entities. Most studies examined the influence of presence or absence of LHDs^{32–39} without more thoroughly exploring the specific functions and characteristics highlighted in our taxonomy.

The results of taxonomic analysis show that, on average, LBoHs scored lower on the governance functions scale than on the characteristics or strengths scale. The LBoHs scored lowest on 2 governance functions—community partner engagement and policy development—considered important⁵⁴ in key programmatic areas. The lower partner engagement may reflect the notion that, until most recently, health departments have traditionally been less active in collaborating with partners to do community-based work. We observed relatively higher scores for characteristics and strengths such as board composition and member

qualifications, diversity of information sources used by the board to seek community perspectives, and LBoH meeting frequency.

The LBoHs overseeing state-governed LHDs lag significantly behind those overseeing LHDs in shared and local governance arrangements in performing 5 out of 6 governance functions. The LBoHs for LHDs under state governance also scored lower in the “other characteristics or strengths” domain. Further research is warranted to shed light on this finding. Overall scores of LBoHs did not differ significantly by LHD population size, with a few exceptions such as for resource stewardship and LHD oversight. This is an important finding, given that studies on LHDs repeatedly show that size of the jurisdictional population is one of the strongest correlates of LHD performance.^{9,16,38,43,47,49} The uneven distribution of LHDs by governance type might have been a limitation of this analysis.³

This proposed taxonomy of the LBoHs is based on descriptive data about LBoH characteristics as perceived by the LHD executive director, a health officer, or another designee completing the survey. This approach presents potential strengths and weaknesses. The perspective of LHD leaders might be more relevant, objective, and informative for evaluating LBoH impact on public health than the mixed perspective (responses from both LBoH members and LHD leaders) in data from previous LBoH surveys.^{4,6,7} On the other hand, LHD leaders’ perspectives could include their own biases and rely on the leaders’ possibly incomplete knowledge of LBoH activities. However, NACCHO’s postpilot cognitive interviews indicated that LHD leaders could easily answer the questions in the survey, and “do not know” options were provided for most questions to prevent the leaders from responding to items on which they had no opinion or inadequate information.

Limitations

Our findings are subject to the following limitations. A limitation of this taxonomy is that the domains and constructs used in the typology were given equal weight, following the NALBOH statement that all governance functions are equally important.⁵⁵ In reality, the importance of LBoH functions to individual LHDs and communities might vary according to their needs. For example, for LHDs facing repeated budget cuts and staff reductions, resource stewardship might be much more important than the LBoH oversight function.

Another noteworthy limitation is that the manner in which we assigned different questions to different domains involved some unavoidable subjectivity. However, we used appropriate statistical techniques, our best judgment, and input from others involved in this work, including some of the authors of the Carlson et al. study.⁵ In addition, for our taxonomy to be used for future research, a researcher would have to implement the same survey instrument we used, as our taxonomy scores rely on the measures included in our survey. Finally, the data used in this research were self-reported and were not independently verified.

Conclusions

This LBoH taxonomy provides a standardized tool for classifying LBoHs from the viewpoint of LHD administrators and professionals. This tool allows individual LBoHs or their LHD to take an individual LHD’s own response from the 2015 survey and determine

whether the LBoH is a slightly functioning LBoH or a highly functioning one. Pertinent conclusions include the following:

1. The empirical evidence from our taxonomy supports the classification of governance functions endorsed by NALBOH.
2. Our classification suggests that, in addition to the 6 governance functions endorsed by NALBOH, additional characteristics may capture positive features of an LBoH, such as board composition and member qualifications, diversity of information sources used by the board to seek community perspectives, and LBoH meeting frequency.
3. The variation in LBoH scores across domains by type of LHD governance with respect to state health department authority leads us to conclude that the governance variable could be used for stratification or as an interaction term in future analyses to examine LBoH influences on LHDs. However, as only 16% of LHDs nationwide are state-governed, stratification by governance might present a small cell size issue, making estimates unsound.
4. The size of an LHD's jurisdiction plays a minor role in further differentiating LBoHs in taxonomy domains.
5. Contributions and functioning of LBoHs are more diverse than generally assumed in the previous research. Our study provides a foundation for more sophisticated future analyses and a more generalizable future taxonomy of LBoH.

Because simple use of presence or absence of the LBoH has historically resulted in varied and sometimes conflicting conclusions regarding the influence of LBoHs, we recommend that future studies consider the mechanisms by which an LBoH could influence the outcome of interest and use appropriate domains developed in this study to measure the LBoH's influence on local public health practice or outcomes.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Note. The conclusions, findings, and opinions expressed in this study by authors do not necessarily reflect the official position of the Centers for Disease Control and Prevention.

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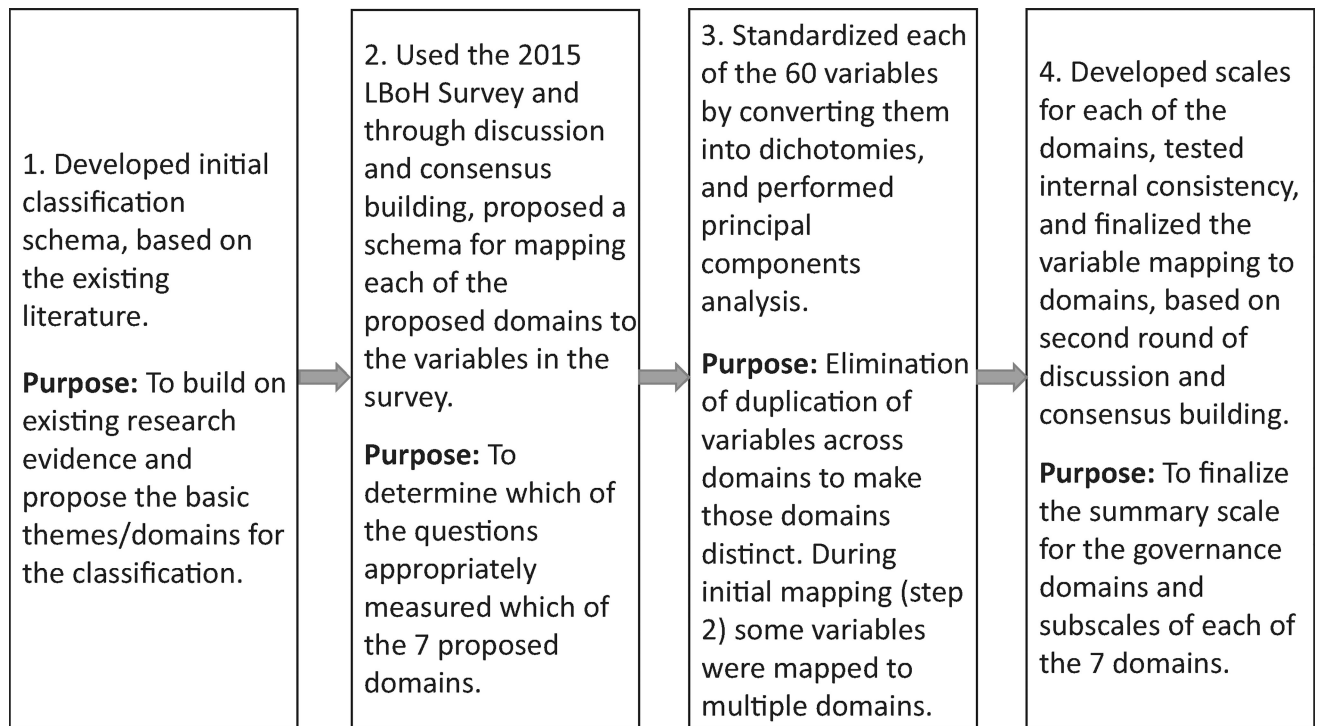


FIGURE 1. Steps Involved in Creation and Application of Taxonomy of Local Boards of Health, Their Sequence and Purposes

Note. LBoH =local board of health.

If (overall score for all 60 items in classification ≤ 11) then LBoH is slightly functional.

If (overall score > 11 but score ≤ 19) then LBoH is moderately functional.

If (overall score > 19 but score ≤ 26) then LBoH is largely functional.

If (overall score > 26) then LBoH is highly functional.

If (overall score for governance functions > 29.29) then LBoH is superior in governance



FIGURE 2.

Conceptual Framework for Local Board of Health Taxonomy, Proposed Theoretically and Guided by Empirical Analyses: United States, 2015

Note. LBoH = local board of health. This taxonomy and the scores are proposed for studies that use the variables (and questions) used in this study. Studies using different survey items may follow our methodology to develop revised taxonomy scores. “Superior” is defined as an individual domain score greater than the arithmetic mean for that domain.

^aStrengths of LBoHs reflect composition and member qualifications, diversity of information sources, and meeting frequency of the LBoH.

TABLE 1

Description of Domains, Subdomains, and Individual Items in the Local Board of Health Taxonomy, Based on the 2015 Survey of Local Boards of Health: United States

Themes and Items Used for Measuring Those Themes	% (Weighted) ^d
Policy development (governance function; n = 379–382)	
LBoH is involved in adopting public health regulations	80.30
LBoH major involvement in policy-related activities in the following specific strategies or activities:	
Tobacco, alcohol, or other drugs	28.20
Food safety	24.90
Waste, water, or sanitation	24.80
Emergency preparedness and response	20.40
Infectious disease control	19.70
Obesity or chronic disease prevention	10.40
Access to health care services	10.30
Resource stewardship (governance function; n = 380–382)	
LBoH involvement in the following in the past 2 y:	
Setting or imposing fees	73.60
Developing LHD budget	54.50
Requesting public health levy	33.20
Long-range LHD fiscal planning	25.60
Advocating for necessary funding to support public health activities	25.50
Imposing public health taxes	15.70
Legal authority (governance function; n = 254–301)	
Board has final authority to	
Impose or enforce quarantine or isolation orders	81.60
Hire or fire agency top executive	76.90
Set and impose fees	74.40
Impose taxes for public health	73.80
Adopt public health regulations	68.90
Request a public health levy	52.20
Approve LHD budget	51.70
LBoHs have had major (rather than minor) involvement in the past 2 y in assessing current provision of public health services against legal requirements	13.20
Partner engagement (governance function; n = 372–379)	
LBoH serves as a linkage between LHD and following entities to “great extent”	
Local government agencies	19.50
Hospitals	17.30
Other health care providers	14.50

Themes and Items Used for Measuring Those Themes	% (Weighted) ^d
Community nonprofit organizations	13.30
Community businesses or business-oriented organizations	9.40
Faith-based organizations	5.90
Continuous improvement (governance function; n = 361–385)	
New member orientation training was offered to LBoH in past 2 y	66.50
Formal ongoing training program for members in past 2 y	21.50
Ad hoc training was offered to LBoH on public health topics in past 2 y	60.70
Ad hoc training was offered to LBoH on governance in past 2 y	35.30
LBoH developed or updated LBoH bylaws in past 2 y	36.90
LBoH evaluated own effectiveness in past 2 y	13.10
LBoH did QI on LHD processes in past 2 y	33.40
LBoH did QI on its own processes in past 2 y	22.00
LBoH has bylaws	64.50
LBoH developed or updated BOH vision or mission statement in the past 2 y	32.30
LBoH developed or updated BOH strategic plan	30.00
LBoH developed or updated BOH goals or objectives in the past 2 y	30.00
LBoH developed or updated LBoH bylaws in past 2 y	36.90
LBoHs have had major (rather than minor or no) involvement in the past 2 y in	
Developing LHD strategic plan	28.50
Developing or implementing a community health improvement plan	19.10
Developing or using a community health assessment	18.50
LBoH supporting LHD's PHAB accreditation activities	16.00
Evaluating progress against community health improvement plan goals and objectives	12.50
Oversight (governance function; n = 144–384)	
LBoH is involved in hiring or firing top agency executive	61.50
LBoH performs formal evaluation of the top executive	28.93
LBoH directed, encouraged, or supported LHD's PHAB accreditation program	33.16
LBoH serves as a linkage between LHD and local elected officials to "great extent"	32.00
LBoH characteristics and strengths (n = 333–373)	
LBoH composition or member qualifications	
LBoH size is appropriate (no. of LBoH members within percentiles 10 and 90)	89.40

Themes and Items Used for Measuring Those Themes	% (Weighted) ^a
At least 1 LBoH member is a health care professional	87.60
At least 1 LBoH member is currently an elected official	72.40
At least 1 LBoH member has public health training or experience	61.10
Diversity of information sources used by the board to seek community perspectives (n = 337): in the past 2 y, LBoH used to actively seek community input on public health issues or initiatives from	
Elected officials	53.80
Print or broadcast media	38.10
Web site and social media	36.80
Public forums	33.30
Hearings	23.40
No. of meetings in 2014 (mode 1= 4; mode 2= 12); board met at least once every 2 mo (had ‡6 meetings per y)	39.00

Note. BOH = board of health; LBoH = local board of health; LHD = local health department; PHAB = Public Health Accreditation Board; QI = quality improvement. Some variables across these domains have similar wording, but they differ in other ways (e.g., engagement vs having final authority).

^aWeighted estimates refer to the use of sampling weights.

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TABLE 2

Local Board of Health Average (Arithmetic Mean) Scores for Overall Scale and Subscales, by Local Health Department Governance Category and Jurisdictional Population Size: United States, 2015

Constructs in Conceptual Framework	Cronbach α	All LHDs		LHD Governance Category, ^a Mean Percentage of Max Possible ^b			Jurisdictional Population Size, Mean Percentage of Max Possible ^b			<i>p</i> ^b	
		Mean Percentage of Max Possible ^c	Mean (SD)	Local	Shared	State	<i>p</i> ^c	<50000	50 000–499 999		500 000
Overall scale (60 items)	0.893	32.87	19.72 (15.75)	34.66	34.35	14.17	< .001	31.84	34.26	36.24	.25
Governance function scale (50 items)	0.882	29.29	14.65 (16.16)	31.08	31.59	9.96	< .001	28.74	30.09	30.67	.70
Governance functions											
Policy development (8 items)	0.756	27.71	2.22 (23.87)	29.79	26.86	8.14	< .001	28.42	25.76	33.78	.34
Resource stewardship (6 items)	0.546	37.30	2.24 (24.48)	38.64	47.55	15.65	< .001	38.49	36.37	27.85	.20
Legal authority (8 items)	0.710	32.06	2.57 (25.04)	33.86	42.48	5.81	< .001	33.50	30.57	23.77	.22
Partner engagement (6 items)	0.837	12.83	0.77 (24.65)	13.24	16.19	6.12	.21	13.25	12.57	9.01	.79
Continuous improvement (18 items)	0.802	29.62	5.33 (20.41)	31.95	23.18	12.20	< .001	27.31	32.70	37.12	.015
Oversight (4 items)	0.372	38.16	1.53 (27.59)	39.59	56.29	9.13	< .001	34.91	42.84	45.97	.014
LBoH characteristics and strengths (10 items)	0.624	50.76	5.08 (21.60)	52.57	48.14	35.22	< .001	47.32	55.10	64.10	< .001

Note. LBoH = local board of health; LHD = local health department.

^a“Local” means LHDs are units of local governance (or decentralized); “Shared” means that LHDs have shared responsibility in governance by local and state authority; and “State” means that the LHD is a unit of the state government (centralized).

^bMean of LBoH score as percentage of maximum possible = (LHD score/maximum possible score reflecting the sum of the no. of items constituting the scale, each item coded 1 or 0) * 100).

^c*P* values (level of significance) are for the *F*-statistics from analysis of variance.