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ABSTRACT OF CAPSTONE

Badr Alnasser

The College of Public Health

University of Kentucky

2017

Validity of the Public Health Accreditation Board's Governance Measures

ABSTRACT OF CAPSTONE

A Capstone project submitted in partial fulfillment of the requirements for the degree of Doctor
of Public Health in the College of Public Health at the University of Kentucky

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ABSTRACT OF CAPSTONE

Validity of the Public Health Accreditation Board's Governance Measures

Background. The dynamics through which governance operates and impacts performance has been the focus of scholars in recent years. This is also true in public health systems, where there is a growing tendency to understand governance mechanisms and dimensions, as illustrated in the Public Health Accreditation Board's (PHAB's) Domain 12, which tends to measure governance engagement in health departments. The development of Domain 12 standards and measures has undergone systematic revisions by subject matters and experts. However, there is still a need for a scientific approach to assess the validity of such measures, or examine whether they measure what they were set to measure.

Objectives. To provide an understanding of how governance, and public health governance in particular, has been operationalized and measured in the literature; what measures offer high degrees of validity; and evidence of the conformity and validity, or the lack thereof, of Domain 12 standards and measures. The project findings will enable accreditation experts in PHAB to improve their understanding and use of the standards and measures.

Methods. This study was divided into three separate papers. First, a systematic review of the literature of public health governance measures and validity studies was conducted. Second, we employed empirical data, using Chi-Square test and *t*-test, of health departments' characteristics and performance in relation to Domain 12 to assess the conformance of Domain 12 measures against the existing governance structure and the type of governing entities. Third, health departments' performance scores in Domain 12 were tested against their performance scores in the other domains (convergent validity).

Results. Surveys and questionnaires were the most commonly used instruments in the literature to evaluate governance. A large number of governance dimensions emerged but few validity studies were performed to assess these dimensions. In terms of governance conformance of PHAB's Domain 12, the resulted associations were statistically insignificant, which indicate that there is no evidence to support the conformity of PHAB's Domain 12 measures. As for the convergent validity study, results showed a lack of meaningful associations (few statistically significant associations) between Domain 12 measures and measures under other PHAB's domains.

Conclusion. Although there seems to be no one particular and valid measure of governance with the various governance measures and few validity studies that the literature yielded, the literature review may assist in identifying appropriate theoretical frameworks for measuring public health governance. Also, despite the fact that the analysis of conformity and the validity study show no evidence of "valid" measures of Domain 12, other attributes must be considered such as data limitations and inadequacies in the data collection process, in addition to conducting more validity studies using different validation approaches.

KEYWORDS: public health governance, health departments, governance dimensions, validity studies, construct validity, criterion validity.

Validity of the Public Health Accreditation Board's Governance Measures

By:

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2017

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Validity of the Public Health Accreditation Board's Governance Measures

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Table of Contents

LIST OF TABLES	I
LIST OF FIGURES	II
ACKNOWLEDGEMENTS	III
CHAPTER 1: BACKGROUND.....	1
Mission and History of the Public Health Accreditation Board	1
Accreditation Process	3
PHAB's Governance Domain	4
Research Question and Rationale	5
Purpose and Structure of the Study	6
CHAPTER 2: CONCEPTUAL APPROACH TO GOVERNANCE AND PUBLIC HEALTH GOVERNANCE	8
The Six Functions of Public Health Governance	10
CHAPTER 3: METHODOLOGY.....	12
Paper 1	12
Paper 2	13
Paper 3	15
CHAPTER 4:.....	16
<i>PAPER 1: GOVERNANCE MEASURES AND VALIDITY STUDIES OF GOVERNANCE INSTRUMENTS: A SYSTEMATIC REVIEW</i>	16
Abstract	16
Introduction	16
Methods	18
Search Strategy	18
Selection Criteria	19
Search and Study Selection	19
Final Result of the Systematic Search	20

Results	21
How Governance was Measured	22
Instruments and Tools	22
Domains and Dimensions	23
Validity Studies	26
Face Validity	27
Content and Criterion Validity	28
Construct Validity	29
Dimensionality	29
Discussion	30
 <i>PAPER 2: ASSESSING THE VALIDITY OF DOMAIN 12 MEASURES AGAINST THE GOVERNING ENTITY: A CONSTRUCT VALIDITY</i>	 36
Abstract	36
Introduction	36
Methods	39
Study Sample and Instrument	39
Data Collection Process	41
Study Design	41
Composite Measures for the Type of Governing Entity	44
Composite Measures for Site Visit Scores	44
Data Analysis	45
Results	45
Discussion	50
 <i>PAPER 3: ASSESSING THE VALIDITY OF DOMAIN 12 MEASURES AGAINST THE OTHER DOMAINS MEASURES: A CRITERION VALIDITY</i>	 53
Abstract	53
Introduction	53
Methods	56
Study Sample and Instrument	56
Data Collection Process	58
Study Design and Data Analysis	58
Results	60

Discussion	62
CHAPTER 5: SUMMARY AND RECOMMENDATIONS	65
Summary	65
Recommendations	66
REFERENCES	68
APPENDICES	72
Appendix A	72
Standard 12.1 Maintain current operational definitions and statements of public health roles, responsibilities, and authorities	72
Standard 12.2 Provide information to the governing entity regarding public health and the official responsibilities of the health department and of the governing entity	73
Standard 12.3 Encourage the governing entity’s engagement in the public health department’s overall obligations and responsibilities	74
Appendix B	76
Studies and reports involving governance measures, with the area of study, type of instrument, and purpose of using the measure	76
Appendix C	82
Studies and reports involving validity analysis, with the area of study, validation approach, and resulting governance dimensions	82

List of Tables

TABLE 1.1. DOMAINS FOR PUBLIC HEALTH ACCREDITATION STANDARDS DEVELOPMENT	3
TABLE 4.1.1. INSTRUMENTS/TOOLS AND THE NUMBER OF TIMES EACH IS USED IN THE LITERATURE TO MEASURE GOVERNANCE	23
TABLE 4.1.2. DOMAINS/DIMENSIONS OF GOVERNANCE AND THE NUMBER OF TIMES EACH IS USED IN THE LITERATURE	24
TABLE 4.1.3. TYPE OF VALIDITY STUDIES PERFORMED ON DIFFERENT INSTRUMENTS AND THEIR RESULTING GOVERNANCE DIMENSIONS	26
TABLE 4.2.1. DESCRIPTIVE STATISTICS (FREQUENCIES AND PERCENTAGES) OF THE PARTICIPATING HEALTH DEPARTMENTS (N = 147).....	46
TABLE 4.2.2. CHI-SQUARE TEST OF ASSOCIATION BETWEEN SITE-VISIT SCORES FOR EACH MEASURE AND GOVERNING ENTITIES (COMPOSITE MEASURE A X COMPOSITE MEASURE B)	49
TABLE 4.2.3. CHI-SQUARE TEST OF ASSOCIATION AND T-TEST BETWEEN COMPOSITE MEASURE A ON ONE HAND AND COMPOSITE MEASURES C AND D ON THE OTHER	49
TABLE 4.3.1. DOMAINS FOR PUBLIC HEALTH ACCREDITATION STANDARDS DEVELOPMENT	54
TABLE 4.3.2. PHAB'S DOMAINS AND THE CORRESPONDING NUMBERS OF MEASURES	57
TABLE 4.3.3. MEASURES UNDER OTHER DOMAINS THAT INVOLVED GOVERNANCE.....	59
TABLE 4.3.4. CHI-SQUARE TEST OF ASSOCIATION BETWEEN SITE-VISIT SCORES FOR DOMAIN 12 AND SITE-VISIT SCORES FOR OTHER DOMAINS	60
TABLE 4.3.5. CHI-SQUARE TEST OF ASSOCIATION BETWEEN DOMAIN 12 MEASURES AND OTHER MEASURES INVOLVING GOVERNANCE	62

List of Figures

FIGURES 2.1. AN ILLUSTRATION OF FACTORS THAT DEFINE GOOD GOVERNANCE BY THE UNDP	9
FIGURES 3.1. VISUALIZATION OF THE HYPOTHESIZED CORRELATIONS BETWEEN THE TYPES AND ROLES OF GOVERNING ENTITIES AND DOMAIN 12 STANDARDS AND MEASURES	14
FIGURES 4.1.1. FLOW DIAGRAM OF STUDY SELECTION PROCEDURE AND FINAL RESULTS	21
FIGURES 4.2.1. VISUALIZATION OF THE HYPOTHESIZED CORRELATIONS BETWEEN THE TYPES AND ROLES OF GOVERNING ENTITIES AND DOMAIN 12 STANDARDS AND MEASURES	43
FIGURES 4.2.2. THE PERCENTAGES OF HEALTH DEPARTMENTS THAT REPORTED THE EXISTENCE AND ABSENCE OF DIFFERENT TYPES OF GOVERNING BOARDS ..	47
FIGURES 4.2.3. THE PERCENTAGES OF HEALTH DEPARTMENTS CATEGORIZED ACCORDING TO THE SITE-VISIT SCORES	48

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CHAPTER 1

BACKGROUND

Mission and History of the Public Health Accreditation Board.

The Public Health Accreditation Board (PHAB) was established in 2007 as “*a nonprofit organization dedicated to advancing the continuous quality improvement of Tribal, state, local, and territorial public health departments*”¹, with the mission to develop and implement a voluntary national accreditation program using standards and measures reflective of the Ten Essential Public Health Services to ensure the fulfillment of health department’s roles and responsibilities in improving public health practice.²

Early efforts of focusing on the performance and quality of public health practice dates back to the 1970s with the development of model standards for public health.³ However, these attempts to distinguish public health practices from other health-related practices were still primitive in nature,³ and not until two and a half decades later did serious efforts in advancing the quality of public health practices take place. Specifically, these efforts were triggered after the 2003 Institute of Medicine’s report, entitled ‘*The Future of the Public’s Health in the 21st Century*’, stated that “*public health was in disarray*”.^{4 (p1),5(p145)}

In December 2004, the Robert Wood Johnson Foundation (RWJF) convened a meeting that included multiple public health stakeholders, such as the Centers for Disease Control and Prevention (CDC), and other agencies and representatives. The aim of that meeting was primarily to build consensus around the importance of developing an agency accreditation system.⁵ In the summer of 2005, the same organizations came together with the American Public Health Association (APHA), the Association of State and Territorial Health Officials (ASTHO),

the National Association of County and City Health Officials (NACCHO), and the National Association of Local Boards of Health (NALBOH) to form and support the Exploring Accreditation Project.^{3,5} Through this project, a Steering Committee was formulated with representatives from different organizations in which decisions were based on the outcomes of four subcommittees focusing on governance and implementation, finance and incentives, research and evaluation, and standards development.³ For more details on the Exploring Accreditation Project processes and outcomes, see the '*Final Recommendations for a Voluntary National Accreditation Program for State & Local Public Health Departments.*'⁶

The development of standards for a voluntary national public health accreditation program was initiated by the Steering Committee as recommendations of the essential principles that can be the basis surrounding the formulation of standards, rather than setting particular standards.⁷ Thus, the Ten Essential Public Health Services were the agreed upon framework on which standards may be organized and developed, in addition to two domains concerning management and governance (see Table 1.1). Later, a number of think tanks on specific topics were formed and brought together academic experts and public health practitioners to discuss and provide inputs that would help formulate the accreditation standards and measures.⁸

Table 1.1. *Domains for public health accreditation standards development.*

-
1. Monitor health status and understand health issues
 2. Protect people from health problems and health hazards
 3. Give people information they need to make healthy choices
 4. Engage the community to identify and solve problems
 5. Develop public health policies and plans
 6. Enforce public health laws and regulations
 7. Help people receive health services
 8. Maintain a competent public health workforce
 9. Use continuous quality improvement tools to evaluate and improve the quality of programs and interventions
 10. Contribute to and apply the evidence base of public health
 11. Govern and manage health department resources (including financial and human resources, facilities, and information systems)
-

Source: Adapted from Bender *et al* (2007)⁷

Accreditation Process

There are seven steps that health departments need to undergo in order to be accredited. First, a pre-application phase takes place in which the health department evaluates its capacity to apply and submits a *statement of intent* to PHAB. Then, an application is sent together with the department's descriptive information, a community health assessment, a community health improvement plan, and a strategic plan. After receiving the application, PHAB provides training session for the department accreditation coordinator. Next, the health department submits examples of documents identified by PHAB for each measure through an electronic system called e-PHAB. After reviewing the documents, a team of public health professionals makes a site visit to the department and assesses its conformity with the measures through a Site Visit Report. This report is then reviewed by the PHAB Accreditation Committee to make a decision. The health department is either accredited for meeting all requirements or asked to formulate an action plan to meet specific requirements. Those accredited need to write annual reports on the progress of addressing certain identified areas for improvement. Finally, reaccreditation is required every five years for health departments.^{9,10}

PHAB's Governance Domain

Since the early efforts of developing an agency accreditation system, governance was pushed for as “*a core, fundamental factor in accreditation*”^{11(p15)} by NALBOH's 2004 resolution, which unanimously supported efforts of accreditation and suggested a provision of agency governance to be considered in the development of an accreditation system.¹¹ Subsequently, one of the many think tanks formed to help develop PHAB's standards and measures was focused on governance. The Governance Engagement in National Voluntary Public Health Accreditation Think Tank Report illustrates in detail the meetings and discussions that were held concerning governing entities and their effectiveness as well as the various experts and organizations involved in these meetings and discussions.¹² A number of recommendations emerged from this think tank which included, among others, the need for governing entities to improve their roles in leadership and advocacy, support and understand the importance of accreditation, facilitate the health department effort in the accreditation process, provide the required documents and actions in order to meet the accreditation standards and measures, and ensure continuity of the department's quality improvement.¹³

Thus, the think tank recommendations enabled PHAB to draw a specified governance domain (i.e., Domain 12) which states that health department must “*maintain capacity to engage the public health governing entity,*” and to outline three main standards and seven measures (Version 1.0).^{14(p242)} Details regarding the description, purpose, significance, and required documents for each measure are outlined in Appendix A.

However, it was taken into account that as there is no uniformity regarding the type and functions of governing bodies, requirements must be tailored to consider such variations and to allow departments to identify their governing entities and describe the involvement of such

entities. For instance, during the accreditation process, the health department is required to provide a letter of support from the governing entity. Wallace¹³ shows that of the 69 local health departments that applied for accreditation throughout the year and a half after the launch of PHAB, 32% of them provided letters of support from local elected officials along with their applications; 16% from supervising government officials; and 52% from a board of health, of which 26 departments indicated a governing role for their boards, two selected a policymaking role, and eight stated a mixture of governing, policymaking, and advisory roles.

Research Question and Rationale

Despite the extensive and well-designed efforts and processes in developing PHAB's standards and measures, the question of validity remains legitimate and important: to what extent do PHAB's standards and measures measure what they are purported to measure? In a 1998 paper entitled '*Roundtable on Accrediting Local Health Agencies*,' and long before actions toward establishing a public health agency accreditation system began to take place, Richards¹⁵ pointed out, reflecting on lessons derived from accreditation in the education sector, that "*Valid and reliable standards will be among the most important challenges in establishing a widely accepted accreditation process for local public health units.*"^{15(p3)} Hence, since the early phases of developing PHAB, the *Exploring Accreditation* report on the *Final Recommendations for a Voluntary National Accreditation Program* included the following question: "*Are the standards and measures reliable and valid?*"^{6(p37)} Moreover, the question of validity was also set at the top of the research agenda for the national public health department accreditation by Riley and others.¹⁶ However, even after 10 years since the launch of PHAB, validity studies of PHAB's standards and measures are still lacking, and the call for filling such important knowledge gap

remains a priority, as a 2015 study by Kronstadt *et al*⁸ highlighted a number of validity questions to be some of the current research priorities.

Validation studies are especially important for the governance domain since it was (together with domain 11) constructed as a separate domain that was not based on the Ten Essential Services; the underlying framework that forms the basis of the first 10 domains.⁷ This is in addition to the challenges facing the conceptualization of the governance construct itself, and the difficulties that would arise when trying to quantify the extent of governance engagement in health agencies. This was recognized by both Beckett *et al*¹⁷ and Scutchfield *et al*¹⁸ with respect to the governance instrument of the National Public Health Performance Standards Program (NPHPSP), to which both pointed out the lack of validity testing of this instrument as one of the main criticisms and challenges facing the measurement of governance in health agencies.

Purpose and Structure of the Study

The purpose and goal of this study is to tackle the question of the validity of PHAB's Domain 12 standards and measures and to contribute to the research gap needed regarding this important issue. This will be accomplished by *first*, exploring the literature on governance measures and validity studies of these measures in order to build a clear understanding and a theoretical basis for assessing the validity of PHAB's Domain 12; *second*, by employing empirical data of health departments' characteristics and performance in relation to Domain 12 to assess the conformance of Domain 12 measures against the existing governance structure and the type of governing entities; and *third*, by utilizing health departments' performance scores in Domain 12 against their performance scores in the other domains (convergent validity).

This study will be structured, following this introduction, to include (1) a background chapter that discusses the definition and evolution of the governance concept; (2) a methodology chapter that describes the design and approach adopted to answer the research question; (3) a chapter that presents the conduct and results of three studies (i.e., one systematic literature review study, one study evaluating the conformity of Domain 12 measures, and one convergent validity study) which all follow the conventional organization of scientific research papers (i.e., introduction, methods, results, and discussion sections); and (4) a conclusion chapter that highlights the major findings and recommendations.

CHAPTER 2

CONCEPTUAL APPROACH TO GOVERNANCE AND PUBLIC HEALTH GOVERNANCE

In an attempt to construct a theoretical framework for the concept of governance, Stoker¹⁹ outlines five propositions to be considered in conceptualizing governance. These propositions can be summarized as: (1) a set of institutions and actors from and beyond government; (2) identifying and incorporating social and economic factors in dealing with problems; (3) recognizing power dependency in relationships between institutions; (4) the existence of autonomous and self-governing networks of actors; and (5) acting as an enabler rather than a commander to accomplish outcomes. However, Stoker argues that given the complexity of such concept, the outlined proposition must not be taken as a governance framework or the basis of a comprehensive theory of governance, but rather an attempt to draw one of multiple maps of governance that tries to capture a perspective of governance and its elements.

In health systems, governance has also been the focus of many scholars and organizations. For example, the World Health Organization's health system framework consists of several 'building blocks,' one of which is leadership and governance, and it defines this block as "*ensuring strategic policy frameworks exist and are combined with effective oversight, coalition building, the provision of appropriate regulations and incentives, attention to system-design, and accountability.*"^{20 (pvi)} Although the focus of the report is on health systems from the global or macro perspective, it may still be valuable in understanding the different elements of organizational or agency governance and in identifying its dynamics and dimensions. This is especially true since a WHO report²¹ refers to a number of factors, developed by the United

Nations Development Programme (UNDP), that define ‘good governance’ as accountable, transparent, responsive, equitable and inclusive, effective and efficient, participatory, consensus-oriented and follows the rule of law (see Figure 2.1), which appear to be plausible for application at organizational levels.

Figure 2.1. An illustration of factors that define good governance by the UNDP.



Source: Adapted from Kickbusch & Gleicher (2012)²¹

Furthermore, governance constructs mostly relies on theories from other disciplines, such as sociology, political science, economics, organizational and developmental theories.²² For instance, Pyone *et al.*²³ identify, through a systematic review of the literature, 16 frameworks of health systems governance with different underlying theories; which include, among others, the principal–agent theory, theory of common pool resources, North’s institutional analysis and the cybernetics theory. These frameworks yield a number of governance dimensions that include accountability, multi-level governance, trust and legitimacy, interactions with stakeholders,

strategic vision, participation, consensus orientation, transparency, control of corruption, responsiveness, equity and efficiency. Moreover, in extensive review of the literature, Chambers *et al.*²² explore different frameworks of public, non-profit, and healthcare boards, and suggest three major elements that emerge from boards' theory and practice: composition, focus, and dynamics of governing boards. They highlight a number of governing boards' functions based on a range of different disciplinary theories. These functions include accountability, policy formulation, supervision, and strategic thinking.²²

The Six Functions of Public Health Governance

The Local Public Health Governance Assessment - a tool developed as part of the National Public Health Performance Standards (NPHPS) - was the result of early attempts to define and develop governance dimensions in public health systems. It was developed in 2002 after a collaboration between CDC and NALBOH, and was designed to reflect the Ten Essential Public Health Services in addition to the following governance functions: ensure authority; ensure resources; policy development; ensure continuous evaluation and improvement; and ensure collaboration.^{24,25}

With more accumulated knowledge about the functions of governing bodies in public health systems and after the introduction of the national voluntary public health accreditation program, the CDC and NALBOH updated the public health governance functions to result in the following six functions: policy development; resource stewardship; continuous improvement; partner engagement; legal authority; and oversight.^{13,24}

Despite the variation between those governance functions and other governance dimensions found in the literature, the six functions of public health governance have largely

become the framework on which recent governance assessment initiatives were established. This is especially true in the case of the national voluntary accreditation program.²⁴ However, it seems imperative to re-examine these functions in terms of their comprehensiveness and ability to be operationalized and empirically captured. One way of doing so is through the examination of how ‘governance’ has been measured in the literature and whether or not those measures express high degrees of validity.

CHAPTER 3

METHODOLOGY

To tackle the issue related to the validation of PHAB's Domain 12 measures, this study will adopt a strategic approach that reflects an overall hypothesis which assumes that governance is an identifiable construct with specific underlying components and dimensions, and that governance measures, such as PHAB's Domain 12, can be validated through theoretical and empirical testing. Thus, the strategic approach follows three steps: the first step is to build a theoretical basis of public health agency governance, which would identify the conceptual components and the quantifiable elements of governance. This will be attained by conducting a systematic literature review of governance dimensions. The second step is to apply association analysis approach to evaluate the conformance of PHAB Domain 12 measures. The last step is to employ a validity testing approach to further examine the status of the measures and the consistency of results found previously. These three steps will be presented as three different papers. The following are descriptions of the methods and hypotheses of each paper:

Paper 1.

A systematic literature review will be conducted where the research questions, on which the systematic search will be based, will primarily be formulated around two notions: *measurements* of governance and *validation* of governance measures. These notions generate the following two questions: (1) how has governance and engagement of governing entities been measured in previous studies, both in public health and in other fields? and (2) what validity studies of governance instruments and measures exist in the literature? By specifying these two questions, the literature review will provide a contextual understanding of governance, how it

has been measured, and to what extents these measures have been valid. Hence, these questions will entail the choice of the search strategy, selection criteria, and type of data.

Paper 2.

In this paper, an analytical approach using empirical data will be employed in order to assess the conformity of Domain 12 measures. Analysis of associations will be employed, using Chi-Square test of independence and independent sample *t*-test, to assess the adequacy and conformity of Domain 12 in measuring the health department's '*capacity to engage the public health governing entity*'. These associations will be between the existing governing entity reported by the health department and their corresponding site-visit scores in order to evaluate the conformance of Domain 12 measures with the health departments' governance structure.

The underlying hypothesis is that health departments that reported having governing bodies with legal authorities and active roles and responsibilities (e.g., developing policies and setting agenda) will demonstrate higher scores in the seven measures, while those that reported having governing entities with consultative roles only and/or with less or no legal powers will demonstrate lower scores in the seven measures. (see Figure 3.1).

Figure 3.1. *Visualization of the hypothesized correlations between the types and roles of governing entities and Domain 12 Standards and Measures.*



Source: Data are adapted from PHAB's Standards and Measures Version 1.5.²⁶

This, however, will require a clear definition and a distinguishable classification of governing entities and their supposed roles and responsibilities. It will also entail the need to treat site visit scores with caution, especially that there is a lack of sufficient variation in most of these variables. Therefore, a decision to construct composite measures of those variables will be taken in order to capture more variation that would allow for more statistical power and, hence, support conducting the analysis. But since there will be numerous ways to construct composite measures of these variables, it will become necessary to adopt a valid strategy for choosing the appropriate composite measures. The selection strategy of composite measures will be based primarily on theory, then will be followed by observing which of the theoretically-sound

measures will have the most data variation to be included as composite measures for the type of governing entity and site visit scores.

Subsequently, associations using Chi-Square test of independence and independent sample *t*-test will be performed between the type of governing entity reported by health departments and their corresponding scores on the seven measures. This approach will allow us to utilize the available data by hypothesizing that embedded constructs, such as the type of governing entity, are likely to be associated to the scores assigned by site visitors for each measure.

Paper 3.

Here, a *convergent validity* will be employed as another approach that would allow us to assess the validity of Domain 12 measures. This approach will utilize the site-visit scores of other PHAB's domains as the construct against which the site-visit scores of Domain 12 will be tested. The hypothesis is that for a health department to perform well in other domains, it would most likely perform well in the governance domain (Domain 12). In other words, good governance causes good performance in other domains. This will be demonstrated through association analysis between site-visit scores under Domain 12 and scores under other domains. The study outcome will contribute to the existing gap in PHAB's validity literature, and will allow us to confirm, or refute, the finding of previous studies.

CHAPTER 4

Paper 1.

Governance Measures and Validity Studies of Governance Instruments: A Systematic Review

Abstract

Background. The dynamics through which governance operates and impacts performance has been the focus of scholars in recent years. This is also true in public health systems, where there is a growing tendency to understand governance mechanisms and dimensions, as illustrated in PHAB's efforts to measure governance engagement in health departments.

Objectives. To provide an understanding of how governance, and public health governance in particular, has been operationalized and measured in the literature, and what measures offer high degrees of validity.

Methods. A systematic review of the literature from 2005 to 2017 through which articles and reports are included when (1) a measurement or a proxy measure of governance was developed and/or utilized; and/or (2) any form of validity analyses of governance instruments were performed.

Results. A total of 42 identified articles and reports show that surveys and questionnaires are the most common instruments for measuring governance. Administrative relationships and presence of boards of health were the dominant measured dimensions of governance. However, the six functions of public health governance were frequent enough to the extent that dimensionality analysis was performed as a validation approach of an instrument that measures the performance of local boards of health around these functions.

Conclusion. Although there seems to be no one particular and valid measure of governance with the various governance measures and few validity studies that the literature yielded, this review can assist future studies in identifying appropriate frameworks for measuring public health governance by considering potential measurement approaches and essential dimensions of governance.

Introduction

In a report entitled '*Governance for Health in the 21st Century*', the World Health Organization (WHO) uses the following definition of governance: "... *the sum of the many ways individuals and institutions, public and private, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and cooperative*

action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements that people and institutions either have agreed to or perceive to be in their interest.”^{21(p16)} In the United States, early efforts to include and recognize governance as a crucial part of the public health system can be traced back to the 1988 report on ‘*The Future of Public Health*’ by the Institute of Medicine (IOM), where public health services offered by local health departments began to receive more attention. The focus on the role of governance in public health systems was more apparent in 2003, when the second IOM report “*identified strategies to engage the governmental public health presence described in the first report with other key players and stakeholders in the community.*”^{27(p339)}

These efforts have furnished the ground for setting a research agenda focused on governance structure and performance in public health systems.^{28,29} They also played a role in the contextual framework for developing research agenda for the national voluntary public health accreditation program, later launched by the Public Health Accreditation Board (PHAB).¹⁶ Specifically, the National Association of Local Boards of Health (NALBOH) passed a resolution in 2004 in support of the idea and efforts made to develop the accreditation program in which it emphasized the importance of including governance as one of the core elements in accreditation.¹¹ Consequently, PHAB authorized a ‘*Governance Think Tank Report*’¹² in 2010 and collaborated with NALBOH and other public health experts and organizations in order to develop recommendations regarding governance engagement and the roles and responsibilities of boards of health in the accreditation program.

However, despite these extensive efforts, assessing governance and ensuring the validity of its measures remain a challenge in the accreditation process. In fact, it was reported that governance structures and arrangements in health departments were difficult to interpret and

evaluate.³⁰ This may partly be due to the various forms of governance structures that exist in different health departments,³⁰ but most importantly, it seems that the concept of governance itself is more complex than what it appears to be. This might be because of its relatively recent emergence as a concept in the literature,³¹ its diffuse nature as it involves complex networks, interests, and stakeholders, and/or its multi-dimensionality and connection to different disciplines.²³ Either way, it seems that in order to understand the concept of public health governance, we need to analyze its theoretical construct, components, and dimensions. Thus, the questions that need to be asked in order to come close to such understanding are: 1) how has governance and public health governance been measured in the literature? and 2) have these measures been validated? This paper aims to answer these questions and discusses the significance of the findings in relation to understanding of public health governance.

Methods

Search Strategy

The systematic search took place between February and April 2017. The research questions, on which the systematic search was based, were primarily formulated around two notions: *measurements* of governance and *validation* of governance measures. Thus, two primary questions were developed: 1) how has the concept of governance been measured (operationalized) in the literature, both in public health and in other fields? and 2) What validity studies of governance measures exist in the literature? These research questions entailed the choice of the key words, search process, and type of documents.

Selection Criteria

Studies and papers were only selected when (1) a measurement or a proxy measure of governance was developed and/or utilized; and/or (2) any form of validity analyses of governance instruments were performed. This includes studies and reports that entail governance or a related dimension of governance as one element of an instrument, and not necessarily the only main focus of the instrument. However, studies that focus on similar, but less relevant, concepts to governance such as leadership, management, administration are excluded. The search was restricted to electronically published documents from January 2005 to February 2017 (with the exception of a number of closely relevant articles³²⁻³⁵ cited within and found through the obtained results). The year 2005 was the date when early efforts of accreditation started taking place, which later led to the *Exploring Accreditation Project*.³ The type of studies and papers included quantitative studies, systematic reviews, commentaries, case studies, and descriptive reports. The reviewed results were only those available in English.

Search and Study Selection

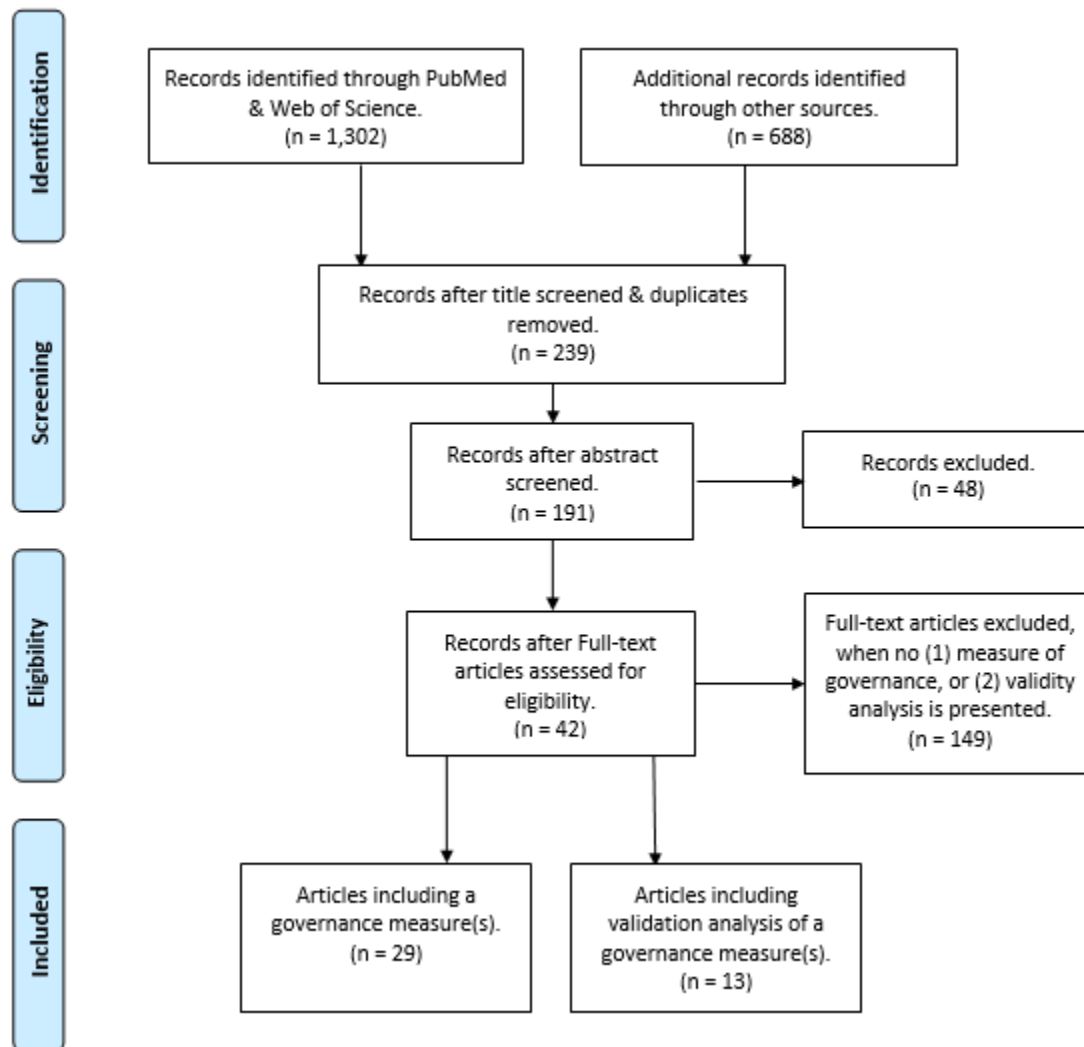
The first stage of search involved the use of PubMed and Web of Science library databases for journal articles and reviews. The following search terms: ‘measures,’ ‘measurement,’ ‘assessment,’ and ‘validity’ were used in combination with the terms ‘governance’ and ‘public health governance’. The second stage included the review of all studies and reports relevant to ‘governance’ that were published in the following public health agencies websites: the National Association of County and City Health Officials (NACCHO), the Association of State and Territorial Health Officials (ASTHO), the National Association of Local Boards of Health (NALBOH), the National Network of Public Health Institutes (NNPHI), and the Public Health Accreditation Board (PHAB). Further, PHAB’s Publications and Reports

led to the search in four issues dedicated to accreditation and quality improvement in the *Journal of Public Health Management and Practice*. Finally, grey literature on validation studies of governance measures only was identified using Google Scholar.

Final Result of the Systematic Search

PubMed and Web of Science search resulted in 1,302 articles, whereas the search in other sources yielded 688 documents. Initial screening of titles for relevancy returned 239 documents, after the removal of duplicates. Abstracts were then examined and those deemed relevant were included for a full-text review (191 documents). Subsequently, 149 publications were excluded after the contents of all documents and articles were reviewed as they did not satisfy the inclusion criteria. A total of 42 documents were eligible for inclusion, where 29 of those included or discussed a measure or a proxy measure of governance, and 13 studies employed or discussed validity analyses of a governance measure (see Figure 4.1.1). This classification of studies and documents will also be the structure through which findings will be presented in the results section.

Figure 4.1.1. Flow diagram of study selection procedure and final results.



Source: Adapted from PRISMA 2009.³⁶

Results

The focus of the majority of the identified studies and reports (28 studies and reports)^{2,17,24-26,32-35,37-55} was on governance in public health systems (local & state health departments, governing entities, and BoH), while the rest (seven studies)⁵⁶⁻⁶² were on governance in other sectors (hospital governing boards, rural health facilities, private corporations, and international health organizations).

How Governance Was Measured

Instruments and Tools

Table 4.1.1 shows the different types of instruments used to measure governance in the literature and the number of times each instrument was utilized. ‘*Surveys and questionnaires*’ were overwhelmingly the most common type of instrument used to assess governance and governance structure. Studies and reports used or presented surveys and questionnaires 22 times to measure governance^{17,25,33-35,38,39,41,43-47,49,50,52-55,57,60,61} (Some studies employed the same survey or questionnaire). The second most common approach in measuring governance was ‘*reviews of the literature*’ (four times).^{24,48,54,56} While literature reviews may not be considered as measurement tools, they do identify key characteristics and dimensions of governance that can be translated and used as standard measures for governance. An example of this was a review of empirical studies by Mays *et al.*⁴⁸ which identified the presence of BoH as a key characteristic of governance structure. ‘*Consensus building and experts review*’ as methods to define and identify governance dimensions and functions were used two times.^{24,54} Likewise, ‘*checklists of governance roles and functions*’ were presented two times,^{37,51} in which criteria and detailed functions were outlined for a governing entity to follow and evaluate its performance. ‘*Interviews and focus groups*’ were part of NORC’s⁵³ evaluation of accredited health department, which included the evaluation of some elements of governance (results from this instrument were also used by Kronstadt *et al.*⁴⁵ PHAB Standards & Measures²⁶ was the only source where a ‘*self-assessment and ratings by site visitors*’ were the instruments used to assess the performance of health departments in terms of their capacity to engage governing entities. Finally, ‘*U.S. Census data*’ were employed by one study⁴⁰ and used governance structure and

classification (state, local, or shared governance) as a measure of governance in local health departments.

Table 4.1.1. *Instruments/tools and the number of times each is used in the literature to measure governance.*

Instrument/Tool	Frequency
Survey/questionnaire	22
Literature review	4
Experts' review & feedback	2
Check list of roles & function	2
Interviews and focus groups	2
Self-assessment/site-visit rating	1
Census data	1

Domains and Dimensions

Table 4.1.2 outlines the different dimensions of governance and the frequency of which each had appeared in the literature. With respect to the dimensions of governance measured in the identified studies and reports, '*administrative relationship*' was the most commonly used governance domain as it was found in seven studies and reports.^{34,38-40,46,47,55} Administrative relationship refers to the classification of the governance structure in terms of authority, such as centralized, decentralized, mixed, and shared authorities. The second most widely employed governance dimension in the literature was the '*presence of BoH*' (five studies),^{33,43,47,48,55} followed by '*presence of BoH with policymaking authority*' (three studies),^{34,39,46} and then '*presence of BoH with statutory authority*' (two studies).^{33,43} Two studies employed the presence of BoH and classified it according to its function as '*an advisory, a governing, a policymaking, or a separate body from the elected legislative body*'.^{35,39} The '*performance of the BoH in regard to the ten essential public health services*' was also another measured dimension of governance (two studies).^{17,25} A NACCHO survey⁵⁰ (which was also used by Shah *et al.*⁵⁴) evaluated governance in terms of the '*BoH performance in key characteristics (e.g., size, frequency of*

meetings, and relationship to elected officials) and its performance according to the six functions of public health governance'. Furthermore, a report by NORC,⁵³ and a study by Kronstadt *et al.*⁴⁵ using the report's results, evaluated the impact of accreditation on health department, where two dimensions were closely relevant to governance; namely, 'accountability to external stakeholders' and 'communication with governing entities'.

The remaining governance dimensions were only used once in the identified literature, and they included 'capacity to engage the governing entity',²⁶ 'definitions of the 6 functions of governance',²⁴ 'BoH performance around the 10 essential services & the 6 functions of governance',⁵² 'size of BoH',⁴³ 'required composition of BoH',⁴³ 'collaboration and involvement of BoH',⁴⁴ 'HD director's authority',⁴¹ 'functions performed by BoH',⁴⁹ 'BoH functions according to administrative classification',³⁷ and 'BoH functions according to the 6 functions of governance'.⁵¹ The following dimensions were used by studies in disciplines other than public health systems: 'roles of a hospital governing board', 'practice of good governance' in rural health facilities, 'corporate governance', and 'governance sub-functions and types of relationships' in international health organizations. (See Appendix B for further and detailed lists of studies, domains, and functions)

Table 4.1.2. Domains/dimensions of governance and the number of times each is used in the literature.

Domain/Dimension	Frequency
Administrative relationship (centralized, decentralized, mixed, and/or shared authority)	7
Presence of BoH	5
Presence of BoH with policymaking authority	3
Presence of BoH with statutory authority	2
Function of BoH (advisory, governing, policymaking, or board separate from the elected legislative body)	2

BoH performance around the 10 essential services	2
BoH characteristics & 6 functions of governance (see NACCHO, 2015)	2
Health department's accountability to external stakeholders and communication with governing entity	2
Capacity to engage the governing entity (see Domain 12 in PHAB, 2013)	1
Definitions of the 6 functions of governance	1
BoH performance around the 10 essential services & the 6 functions of governance	1
Size of BoH	1
Required composition of BoH	1
Collaboration and involvement of BoH	1
HD director's authority (budget management, setting agenda, and initiating communication with county board or city council)	1
Functions performed by BoH (see NACCHO, 2014)	1
BoH functions according to administrative classification (centralized, decentralized, mixed, and shared authority) (see ASTHO, 2012)	1
BoH functions according to the 6 functions of governance	1
Roles of a hospital governing board (mission and strategy setting, performance evaluation and oversight, external relations)	1
Practice of good governance (accountability, community participation, intelligence & vision, regulation & oversight, transparency)	1
Corporate governance (strategic leadership, corporate culture, good corporate governance, company performance)	1
Governance sub-functions:	
- Accountability	
- Partnerships	
- Formulating policy/strategic direction	
- Generating information/intelligence	
- Organizational adequacy/system design	
- Participation and consensus	
- Regulation	1
- Transparency	
Types of relationships:	
- Control	
- Coordination	
- Collaboration	
- Communication	

Validity Studies

Within the identified literature (12 studies and one report),^{2,32,42,44,45,50,54,57-62} different validation approaches were employed on different governance instruments. Table 4.1.3 below highlights governance instruments, their corresponding dimensions, and the type of validity approaches applied to each. Most of these approaches (eight studies) utilized analysis of dimensionality as a method to validate the corresponding instruments (e.g., factor analysis and principle component analysis),^{44,54,57-62} whereas four studies and one report used face validity,^{2,44,50,60,61} four demonstrated content, criterion, and/or convergent validity,^{32,42,44,45} and one study performed construct validity.⁴⁴ (See Appendix C for further and detailed lists of articles, instruments, and validity approaches).

Table 4.1.3. *Type of validity studies performed on different instruments and their resulting governance dimensions.*

Domain/Dimension	Instrument/Tool	Type of Validity
Existence of a local public health governance system as an indicator for achieving one of the 10 essential services	Self-assessment/questionnaire Group interviews	Content validity Criterion validity
(1) Collaboration with BoH (2) Involvement of BoH	Survey	Face validity Content validity Dimensionality (factor analysis) Construct validity (correlations)
PHAB's Domain 12	Self-assessment measures	Face validity
PHAB's Domain 12 & leadership	Self-assessment measures & Baldrige program	Criterion validity
PHAB's Domains & accountability to stakeholders and communication with BoH	Self-assessment measures/site visit rating & survey	Convergent validity
Six functions of governance & BoH characteristics	Survey/questionnaire	Face validity Cognitive interviews
Six functions of governance & BoH characteristics	Survey/questionnaire	Principle components analysis
(1) Mission/strategy setting (2) Performance evaluation & oversight (3) External relations	Survey	Cluster analysis Discriminant analysis Face validity
(1) Accountability (2) Community partnership (3) Intelligence & vision (4) Regulation & oversight (5) Transparency	Survey	Factor Analysis Face validity
(1) Agency Problem	Survey/questionnaire	Factor analysis

(2) Equity Return		
(3) Management Holdings		
(4) Transparent Audit		
(5) Good Corporate Governance		
(1) Strategic Leadership		
(2) Corporate Culture	Survey/questionnaire	Confirmatory factor analysis
(3) Good Corporate Governance		
(4) Company Performance		
(1) Relationship with stakeholders	Survey/questionnaire	Factor analysis
(2) Strategy & compliance		
(1) Participatory dimension of governance	Governance indicators (global)	Exploratory factor analyses
(2) Overall quality of governance		Confirmatory factor analyses

Face Validity

A number of studies performed different forms of face validity on various instruments developed to measure governance or other constructs that include elements of governance. For instance, Joly *et al.*⁴⁴ developed a quality improvement measure called ‘*QI Maturity Tool*’, which included elements such as ‘*collaboration with and involvement of BoH*’, and experts’ reviews and judgments were conducted to include relevant items to the tool that were believed to measure what they were designed to measure. Another instrument that has undergone multiple steps of revision by subject matter experts was PHAB’s standards and measures, which included Domain 12 ‘*capacity to engage governing entities*.’² Also, NACCHO’s Local Board of Health National Profile questionnaire was developed after conducting cognitive interviews with LHD directors to obtain validation of the instrument that evaluates LBoH’s characteristics and performance in the six functions of governance.⁵⁰ In other fields, Lee *et al.*⁶⁰ relied on experts’ feedback regarding a taxonomy of hospital governing boards that they developed, and which consists of three roles for boards to be effective: ‘*mission/strategy setting, performance evaluation and oversight, and external relations*.’ For good governance in rural health facilities, Mutale *et al.*⁶¹ assessed the validity of a 17-item survey through in-depth interviews and focus

groups of the resulted governance dimensions: ‘*accountability, community partnership, intelligence & vision, regulation & oversight, and transparency*’.

Content, Criterion, and Convergent Validities

Beaulieu *et al.*³² assessed the content validity of instruments developed by the National Public Health Performance Standards Program (NPHPSP) to evaluate the performance of a number of health departments against the ten essential public health services. Group interviews and staff judgments were employed to assess the content of the instruments. In regard to governance, high percentages of agreement show that service #5, in which ‘*local public health system governance*’ was one of its indicators, contain complete description as essential service and expected to be achieved. The same study also used documentary evidence obtained from health departments as criterion through which the instrument was tested against, and the same results of agreement were obtained. Moreover, the QI Maturity Tool mentioned earlier went also through several steps for validation of its content, starting with a literature review that identified relevant items, and then followed by a review of those items by a national advisory group and cognitive interviews with health departments, and ending with a pilot test of the instrument using a number of health departments across the country.⁴⁴ Two studies with the purpose of evaluating the impact of PHAB’s accreditation on health departments employed an approach that can be considered, respectively, as forms of criterion and convergent validities of PHAB’s standards and measures. Gorenflo *et al.*⁴² evaluated and compared the contents of PHAB’s measures and the Baldrige Program (a performance excellence program) (criterion validity), and Kronstadt *et al.*⁴⁵ assessed the performance of accredited health departments in key domains (convergent validity), which included dimensions such as accountability to stakeholders and communication with BoH, against results from a health departments’ survey. In regard to governance, the

outcomes show alignments of ‘PHAB’s Domain 12’ and the results of these indicators; namely, ‘*leadership*’ (Baldrige Program) and ‘*accountability to stakeholders and communication with BoH*’ (survey).

Construct Validity

Joly *et al.*⁴⁴ was the only study to perform construct validity analysis on its quality improvement instrument (i.e., QI Maturity Tool), which included governance-related elements (i.e., collaboration with and involvement of BoH). A moderate positive correlation was found between some factors, less related to governance, and a number of quality improvement projects undertaken by health agencies. However, the two governance dimensions, ‘*collaboration with and involvement of BoH*’, showed weak correlations with the QI projects.

Dimensionality

Exploratory factor analysis and principle components analysis were performed on the QI Maturity Tool, and the analyses yielded nine factors with high loadings, two of which were relevant to governance; namely, ‘*collaboration with and involvement of BoH*’.⁴⁴ Further, Shah *et al.*⁵⁴ also conducted principle components analysis of a 60-item survey that evaluates the effect of LBoH on health departments’ performance. The results show ‘superiority’ of governance dimensions according to a pre-specified classification scheme; specifically, LBoH scored superior in the ‘*six governance functions and in certain LBoH strengths and characteristics*’.

In evaluating the roles of hospital governing boards, Lee *et al.*⁶⁰ conducted exploratory factor analysis, and cluster and discriminant analyses of a survey instrument, and three major roles emerged from their analyses; ‘*mission/strategy setting, performance evaluation and oversight, and external relations*’. Moreover, Mutale *et al.*⁶¹ assessed the validity of a survey

instrument for good governance in rural healthcare facilities, and found, through employing factor analysis, five latent factors related to good governance: *‘accountability, community partnership, intelligence & vision, regulation & oversight, and transparency’*. Likewise, factor analyses were utilized to evaluate instruments of good corporate governance in three different studies^{57,58,62} (financial institutions, consulting firms, and manufacturing companies, respectively), and findings suggested the existence of numbers of factors (see Table 3 for more details) ranging from, among others, *‘equity Return, good corporate governance, strategic leadership’* to *‘corporate culture and relationship with stakeholders’*. Finally, exploratory and confirmatory factor analyses were employed to assess the validity of existing governance indicators developed for non-governmental organizations, and results demonstrated two factors: *‘participatory dimension of governance and overall quality of governance’*.⁵⁹

Discussion

The literature demonstrates, to large extents, a common approach regarding the type and use of governance instruments, the validation processes, and, to lesser extents, a common finding in terms of governance dimensions. Seven different instruments and tools were used to measure governance or a related construct, most of which were surveys and questionnaires; five validation approaches were utilized to assess the legitimacy and accuracy of some of those instruments, with analyses of dimensionality being the most utilized approach; and around 45 governance dimensions were the results of those studies.

It is not surprising that surveys and questionnaires were the most common used instrument since governance and its functions involve social and individual constructs that are likely to be difficult to capture using other means of measurements. For example, although some

studies used census data⁴⁰ to account for the role of governance through administrative classification such as centralized and decentralized authorities of health agencies, it was not clear how the mechanisms and effects of such authorities would be captured. Surveys are more feasible as they help understand the extent to which governance mechanisms and effects reach, whether from the outlook of individual behaviors, or social networks. However, the use of surveys and questionnaires depends on the type of questions asked which must take into account various aspects of governance and its dimensions. Some studies, for instance, used surveys to identify governance dimensions that may be less informative regarding the real impact and mechanism of governance, such as ‘the existence of BoH’ in health departments. Mays *et al.*^{48(pp262-263)} pointed out that “*governing boards appear to be strongly associated with public health system performance, but very little is known about the mechanisms through which these effects occur and about the specific board powers and duties that are most influential.*” This is not to say that surveys and questionnaires have no flaws as instruments, especially since governance as a construct involves a wide array of individual and social factors and complex networks. But compared to the other available instruments and tools in the literature, it seems that surveys/questionnaires are the most instructive and, thus, the most used instruments by scholars.

Since there is no perfect instruments to measure governance and its functions, it became imperative to assess the validity of existing instruments and determine whether they measure what they are purported to measure. Validation studies of governance instruments ranged in their scope and approaches, with some assessing instruments that entirely focus on governance, while others employed measurement tools where governance was one of the measured elements. Either way, these studies varied in the type of analysis adopted to assess the validity of different

instruments. Dimensionality analysis – either factor analysis, principle component analysis, or cluster analysis – was the dominant approach in the literature. This approach differs from other validity approaches, such as face validity, in that it empirically assesses the internal structure of the instrument where relevant factors or dimensions emerge defining a specific construct of the instrument. Although it is valuable to understand the specific underlying construct of an instrument, it may not be enough to rely on the dimensionality approach alone without accompanying it with an adequate instrument framework based on expert judgments (face and content validities) and by comparing the instrument's effectiveness to relevant criterion (criterion validity). However, this was not the case in most of the identified studies, especially those assessing public health system governance. Only one study employed several validation approaches of a survey assessing quality improvement in public health agencies, where governance was only one of the measured elements in the instrument.⁴⁴

Given these few validity studies of instruments measuring governance and, hence, the few governance dimensions that emerged from those studies compared to the numerous dimensions assembled in theory and found in the many 'invalidated' measures of governance, it seems safe to claim that there may still be omitted or uncaptured dimensions of governance in the existing instruments. For instance, the validity studies of governance instruments used in public health systems identified around 24 dimensions, whereas the domains and dimensions relevant to various governance measures in the literature were found to be around 67. Although these many dimensions found in the literature include such domains as '*centralized authority*' or '*presence of BoH*', which can be less informative, and dimensions that may have the same attribute such as '*BoH performance around the six functions of governance*' and '*BoH roles according to the six functions of governance*', the large gap between the number of emerging

dimensions from validity analysis studies and those found in the literature makes this issue worth inspecting. Nevertheless, the identified validity studies of the different governance instruments yielded a number of dimensions that are worth pointing out. For governance in local boards of health, the dimension '*BoH's six functions of governance and characteristics*' was the result of two different validity analyses. This dimension may be an adequate framework on which measuring governance in public health agencies can be based. The fact that two studies adopted different validation approaches (i.e., face validity and principle component analysis) to assess instruments designed around the six functions of governance provides promising evidence for researchers and policymakers to consider in designing governance measures in public health agencies. Moreover, various validity approaches of an instrument including a governance domain yielded '*collaboration and involvement of BoH*'. In other disciplines, many governance dimensions emerged from different validity studies, with dimensions such as '*strategic leadership*', '*accountability*', '*transparency*', '*performance*', '*oversight*', and '*quality of governance*' being more frequent and relevant to the purpose of our study.

With respect to PHAB's domains and measures, not only there were few validation studies, but even the three identified ones^{2,42,45} were not intended or claimed to be validity studies by the authors. Ingram *et al.*² reviewed the process through which the standards and measures were identified and revised by subject matter experts, which can be, rightfully so, considered as a face validity. The two other studies compared the standards and measures and the performance of accredited health departments to external measures,^{42,45} which seems to emulate the characteristics and process of criterion and convergent validities, respectively. The results from these studies, however, can be an indication of the high degree of adequacy of PHAB's Domain 12 in measuring the '*capacity to engage governing entity*' in health departments. But

this calls for more inquiry and investigation since there is a lack of studies that are purposefully intended to assess the validity of PHAB's Domain 12, and that utilizes other validation approaches such as construct validity or dimensionality in doing so.

This review of the literature on governance measures, validity studies of governance instruments, and governance dimensions encompasses some strengths as well as a number of limitations. Covering the literature produced in the last 12 years allowed for compiling a large number of publications, which in turn increased the ability to acquire a broad and rigorous body of literature in the topic, especially since the concept of governance itself, not to mention its measures and the validation of those measures, is a relatively recent concept.³¹ Furthermore, the structure adopted in this review, where the identification of several governance measures and dimensions was a major part regardless of the existence of any corresponding validation for these measures, allowed for a better understanding and critique of the identified validity studies, and will most likely assist future studies to consider a comprehensive overview of the validity of governance instruments and the resulting dimensions. Having said that, this review may have neglected other valuable validation studies of governance instruments existing in other disciplines, such as education, since the focus of the validity studies was mainly on public health system governance, even though there were a number of unsystematically identified studies from other discipline. Another likely drawback, in relation to governance in public health agencies, is the lack of distinguishing between governance measures and validation from the governing entity perspective and that from the health department. For instance, PHAB's Domain 12 measures the capacity of health departments' to engage governing entities, while a large number of governance instruments found in the literature focused on the functions or performance of governing entities rather than the engagement of those entities by health departments. This,

however, does not mean that there were no governance dimensions in the former that may apply to the latter, but this distinction needs to be cautiously pointed out in order to effectively align PHAB's Domain 12 standards and measures with governance dimensions identified in this review.

Paper 2.

Assessing the Conformance of Domain 12 Measures with the Governing Entity

Abstract

Background. The development of PHAB's Domain 12 standards and measures has undergone systematic revisions by subject matters and experts. However, there is still a need for a scientific approach to assess the conformance of such measures with existing governance structures and functions.

Objectives. To test and evaluate the conformity, or the lack thereof, of Domain 12 standards and measures with governance constructs.

Methods. Analysis of associations will be employed, using Chi-Square test of independence and independent sample *t*-test, to assess the adequacy of Domain 12 in measuring the health department's '*capacity to engage the public health governing entity*'. These associations will be between the existing governing entity reported by the health department and their corresponding site-visit scores in order to evaluate the conformance of Domain 12 measures with the health departments' governance structure.

Results. The results of the Chi-Square test and *t*-test were statistically insignificant, which indicate that there is no evidence to support the conformity of PHAB's Domain 12 measures with the governance structure.

Conclusion. Although the results show no evidence of governance conformity of Domain 12 measures, it may not be because of the redundancy or the inadequacy of these measures and their accuracy in measuring engagement of the governing entity, but rather due to limitations regarding the nature of the data and the collection process.

Introduction

The Public Health Accreditation Board (PHAB) identifies itself as "*a nonprofit organization dedicated to advancing the continuous quality improvement of Tribal, state, local, and territorial public health departments.*"²⁶ This dedication was translated into a voluntary national accreditation program that drew twelve domains, with standards and measures, for health departments to meet in order to fulfill their roles in improving public health quality and practice. Domain 12 concentrated on governance and the involvement of governing entities in

the health department's roles and responsibilities by stating that health department must “*maintain capacity to engage the public health governing entity.*”¹⁴ (p14) It includes three standards and seven measures (see Appendix A for details about the standards and measures). The development of Domain 12 standards and measures began with one of PHAB's think tanks which involved several public health organizations and experts in public health governance.¹² *The Governance Engagement in National Voluntary Public Health Accreditation Think Tank Report* consisted of recommendations to involve and improve governing bodies' leadership roles, and to assist health departments in meeting Domain 12 standards and measures and, hence, achieving accreditation.¹²

However, apart from these efforts in developing the standards and measures, there have not been any systematic attempts or scientific studies for assessing the conformity of Domain 12 measures. Evaluating the conformance of these measures is especially crucial given that Domain 12 (and Domain 11) was not based on the Ten Essential Public Health Services, which served as the framework of PHAB's first ten domains.⁷

There have been, nonetheless, a number of validity studies of governance in public health and in other fields which may be relevant to the attempt of assessing the governance conformance of PHAB's Domain 12. For example, Beaulieu *et al.*³² assessed the content validity of instruments developed by the National Public Health Performance Standards Program (NPHPSP) to evaluate the performance of a number of health departments against the ten essential public health services, and resulted in high percentages of agreement regarding the final content of the instrument. Also, Joly *et al.*⁴⁴ conducted different validity analyses on a quality improvement measure called ‘*QI Maturity Tool*,’ which included elements such as ‘*collaboration with and involvement of Board of Health*,’ and reached an overall conclusion that the tool tends

to capture what it set to capture. Moreover, the validation of an instrument that evaluates local boards of health (LBoH) characteristics and performance in the *six functions of governance* was conducted by the National Association of County & City Health Officials (NACCHO) through a Local Board of Health National Profile questionnaire and cognitive interviews of Local Health Department (LHD) directors.⁵⁰ Further, Shah *et al.*⁵⁴ also conducted principle components analysis of a survey that evaluates the effect of LBoH on health departments' performance. The results show 'superiority' of governance dimensions according to a pre-specified classification scheme.

However, the literature seems lacking validity studies of PHAB's standards and measures and studies that assesses the conformity of these measures. Apart from the expert's revision of Domain 12 standards and measures in the think tank mentioned earlier,¹² which may be considered as *face validity*, there have not been any explicit attempts to evaluate the conformance of those measures, and to apply empirical techniques in doing so. An exception to this might be the attempts by Gorenflo *et al.*⁴² and Kronstadt *et al.*⁴⁵ to evaluate the impact of PHAB's accreditation on the performance of health departments, which are approaches that can be classified as forms of criterion and convergent validities, respectively. Gorenflo *et al.*⁴² evaluated and compared the contents of PHAB's measures and the *Baldrige Program* (a performance excellence program), and Kronstadt *et al.*⁴⁵ assessed the performance of accredited health departments in key domains, which included dimensions such as accountability to stakeholders and communication with Board of Health (BoH), against results from a health departments' survey. In regard to governance, the outcomes show alignments of PHAB's Domain 12 with the results of these indicators; namely, '*leadership*' and '*accountability to stakeholders and communication with BoH*'. Although it can be argued that these studies

represent sufficient evidence for the conformance of PHAB's Domain 12, there are number of limitations that make it difficult to support such a claim. First, the studies never claimed or were intended to be validity studies or studies that assesses the conformance of PHAB Domains 12. Second, Domain 12, although was part of the overall analysis, was not the main focus of the studies, which makes it very likely to neglect essential components of its standards and measures and only focus on the overall association of this domain to the performance of health departments. Third, the validation and conformity assessment of any instrument or measures is a continuous process that requires multiple analyses and studies, and does not end with one or two studies.

Therefore, the purpose of this study is to evaluate the conformity of PHAB's Domain 12 measures. The primary approach is to examine the association between the existing type of governing entity reported by the health departments and their measure scores assigned by site visitors. We hypothesize that health department with active governing entities will perform well in Domain 12 by fulfilling the requirements and receiving high scores in the seven measures. We believe that this study will fill in some of the literature gap regarding the conformance of some of PHAB's measures, and will provide PHAB's experts and those concerned with the development and validation of measures with clearer understanding and opportunities for improvement of Domain 12 standards and measures.

Methods

Study Sample and Instrument

The data in this study were provided by PHAB and it includes 161 different health departments across the United States (20 state and 141 local health departments). This sample

was reduced to 147 (14 state and 133 local health departments) after removing those that reported ‘other’ only as the type of governing entity while providing no or unclear information regarding the types of governing entities (more details on this shortly). Selection of these health departments followed a nonrandom purposive sampling approach since the participating health departments were those that applied for accreditation. Each health department was anonymously identified with an ID number. The instrument was intended to assess the health department’s compliance with Domain 12 measures, and it includes the following characteristics and data for each health department: the used version of PHAB’s standards and measures in the assessment (either version 1.0 or 1.5); the type of health department (either 1= ‘state’ or 2= ‘local’); the type(s) of governing entity (‘advisory board’, ‘governing board’, ‘policymaking board’, and/or ‘other’, or ‘none’; with variables coded as 1 or 0); appointing authority (1= ‘governor’, 2= ‘mayor’, 3= ‘chair of county commissioners’, 4= ‘chair of governance’, 5= ‘director of super public health agency, super health agency, or umbrella agency’, or 6= ‘other’); final assessment scores from the Site Visit Report (‘fully demonstrated’, ‘largely demonstrated’, ‘slightly demonstrated’, or ‘not demonstrated’); and three variables in the form of comments by site visitors (conformity, opportunity for improvement, and areas of excellence). Apart from the site visit comments, there was no missing data except for few site visit scores under measure 12.2.2, where version 1.5 was used. This was due to the difference between PHAB’s two versions which lies in standard 12.2, where version 1.0 consists of two separate measures unlike version 1.5 that combined them into one single measure.^{26(p256-57), 14(p248-49)} Although there were only 9 health departments that used version 1.5, compared to 138 used version 1.0, the missing scores were assigned the same corresponding scores found in measure 12.2.1, since this measure, in version 1.5, is a combination of the two measures found in version 1.0 (12.2.1 & 12.2.2). Finally, health

departments that reported ‘other’ only as the type of governing entity had the opportunity to explain the type, role, and responsibility of its governing entity in written details. However, some of these explanations were either missing or less detailed to allow for the classification of the governing body under one of the three categories (i.e., advisory, governing, policymaking, or none). Thus, those with no or less informative data were removed. The remaining departments with more detailed information about their ‘other’ type of governing bodies were reviewed, and, accordingly, assigned to one or more of the three categories.

Data Collection Process

The data were compiled by PHAB through a review process of the final assessments from the Site Visit Reports. These reports were submitted to an accreditation committee in order to make initial decisions regarding accreditation, and to create an action plan for each health department to complete.⁹ The characteristics of each health department (state or local, type of governing body, appointing authority etc.) were self-reported by the department, whereas the scores of the final assessment were assigned by site visitors. The review process of the final assessments was finalized between January 2013 and November 2016.

Study Design

Analysis of associations will be employed, using Chi-Square test of independence and independent sample *t*-test, to assess the adequacy of Domain 12 in measuring the health department’s ‘*capacity to engage the public health governing entity*’. These associations will be between the existing governing entity reported by the health department and their corresponding site-visit scores in order to evaluate the conformance of Domain 12 measures with the health

departments' governance structure. The following are the definitions of each type of governing entity developed by PHAB's 'Governance Think Tank Report':^{12(p3)}

- **Advisory** boards of health report to a health officer and city, county, or township commissioners or trustees (the title varies). Advisory boards make recommendations and offer guidance on programs, policies, and budgets for public health operations. These recommendations are acted upon by those having the legal authority to govern.
- **Governing** boards of health serve in more complex roles as they are responsible for establishing local ordinances and regulations, approving health agency budgets and expenditures, setting fees for services, issuing permits and licenses, and hiring and firing the chief executive officer (i.e., health officer).
- **Policy-making** boards of health have legal authority to establish policies, goals, and priorities that guide local health agencies.

Two hypotheses will be tested in order to determine the association between the governing entity construct and the site visit scores:

- 1) There is an association between having a governing entity with legal authorities and active roles and responsibilities (e.g., developing policies and setting agenda) and scoring higher in Domain 12 measures. Specifically, health departments that reported having governing bodies with legal authorities and active roles and responsibilities will demonstrate higher scores in the seven measures, while those that reported having governing entities with consultative roles only and/or with less or no legal powers will demonstrate lower scores in the seven measures. (see Figure 4.2.1).
- 2) The mean site-visit scores for health departments with at least 'governing' or 'policymaking' boards is different from the mean site-visit scores for those with 'advisory' only or 'none' boards.

Figure 4.2.1. *Visualization of the hypothesized correlations between the types and roles of governing entities and Domain 12 Standards and Measures.*



Source: Data are adapted from PHAB's Standards and Measures Version 1.5.²⁶

However, due to the lack of sufficient variation in most of these variables (see descriptive statistics in results), composite measures of those variables needed to be constructed in order to capture more variation that would allow for more statistical power and, hence, support conducting the analysis. Since there are numerous ways to construct composite measures of these variables, it was necessary to adopt a valid strategy for choosing the appropriate composite measures. This strategy of composite measures selection was based primarily on theory, then followed by observing which of these theoretically sound measures had the most data variation.

Composite Measures for the Type of Governing Entity

Since the data under the type of governing entity were not mutually exclusive and a health department was able to report more than one type of governing body, the following approach was adopted:

Composite Measure A. those that reported having at least ‘governing’ or at least ‘policymaking’ boards as their governing entities were considered, according to PHAB’s definitions above, as those with governing bodies that acquire legal authorities and responsibilities for establishing policies and setting agenda, and hence were coded ‘1’; whereas those that reported having ‘advisory’ only or ‘none’ boards were considered, respectively, as having consultative roles only and no legal powers or no existing governing body, and hence were coded ‘0’.

Composite Measures for Site Visit Scores

Composite Measure B. measures where site-visit scores show the health department had ‘fully’ or ‘largely’ demonstrated the requirements were assigned a code of ‘1’, while those showing ‘slightly’ or ‘not’ demonstrated requirements were assigned a code of ‘0’.

Composite Measure C. those where scores in *all* seven measures showing ‘fully’ or ‘largely’ demonstrated were coded ‘1’; otherwise coded ‘0’.

Composite Measure D. the sum of all seven scores will be composited using the following coding: ‘fully’= 1, ‘largely’= 2, ‘slightly’= 3, and ‘not’= 4. This entails this measure to be continuous with a range of a minimum score of 7 (when all seven measures scored ‘fully’ demonstrated), and a maximum score of 28 (when all seven measures scored ‘not’ demonstrated).

Data Analysis

As mentioned earlier, descriptive statistics were conducted for the purpose of observing variation in the data and, therefore, selecting the appropriate composite measures. Next, association analyses using Chi-Square test of independence were performed between: (1) Composite Measure A. and Composite Measure B.; and (2) Composite Measure A. and Composite Measure C. Results showing Chi-Square values with statistical significance (p -value < 0.05) were considered as an indication of association, and allows for the rejection of the null hypothesis of no association. When there are small cell sizes (i.e., 20% or more of cells have expected values less than 5), the Fisher's Exact test was used to determine the significance of the association. Finally, independent sample t -test was conducted to compare the means of: (3) Composite Measure A. and Composite Measure D. IBM SPSS Statistics 22 was used for conducting the analysis.⁶³

Results

Table 4.2.1 shows the characteristics of the participating health departments in the national voluntary accreditation program. Of the 147 health departments, around 90% were local and about 10% were state health departments. Almost 94% of health departments used PHAB's Version 1.0 as the guideline of standards, measures, and the required documents for accreditation. Further, a *chair of governance* was the highest reported form of appointing authority among health departments (37.4%), while a *mayor* and a *director of super health agency or umbrella agency* were the least reported forms of appointing authority (6.8% for both). In terms of the type and role of governing entity, more than 82% of health departments reported having a board with governing roles, followed by around 22% reported having a board with

policymaking roles, and 17% reporting a board with advisory roles, while three health departments only reported not having any form of governing entity.

Table 4.2.1. *Descriptive statistics (frequencies and percentages) of the participating health departments (n = 147).*

Variable	Number of Health Departments (%)
Department Type	
State	14 (9.5)
Local	133 (90.5)
PHAB Version	
Version 1.0	138 (93.9)
Version 1.5	9 (6.1)
Appointing Authority	
Governor	11 (7.5)
Mayor	10 (6.8)
Chair of County Commissioners	18 (12.2)
Chair of Governance	55 (37.4)
Director of Super Health Agency, or Umbrella Agency	10 (6.8)
Other	43 (29.3)
Governing Entity	
Advisory Board	25 (17)
Governing Board	121 (82.3)
Policymaking Board	33 (22.4)
None	3 (2)

Figure 4.2.2 below visualizes the lack of variation among health departments in terms of the type of governing entity, which in turn necessitated the construction of composite measures. Similarly, the lack of variation in the Site Visit scores is demonstrated in Figure 4.2.3. A ‘Fully Demonstrated’ score is dominant in all the seven measures, while other scores show low frequencies (except for Measure 12.3.2). Hence, it became necessary to construct composite measures for the type of governing entity as well as for the Site Visit scores in order to capture more variation and increase statistical power to perform the analysis.

Figure 4.2.2. *The percentages of health departments that reported the existence and absence of different types of governing boards.*

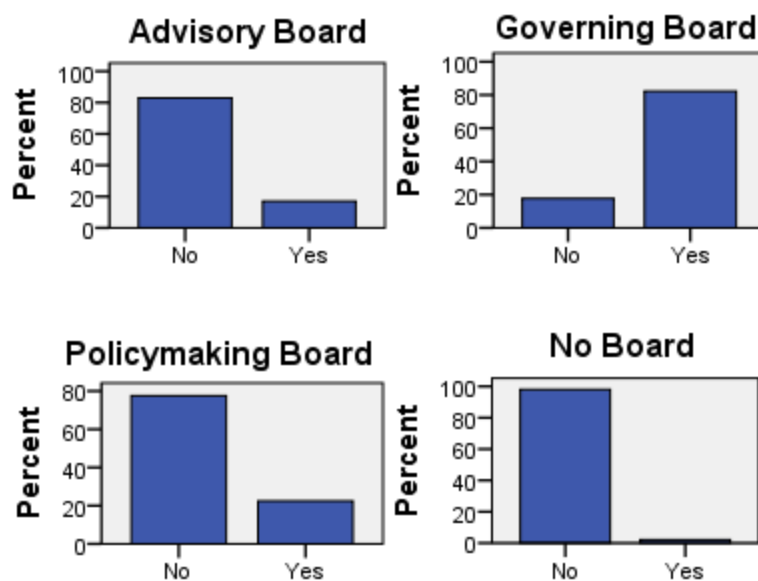
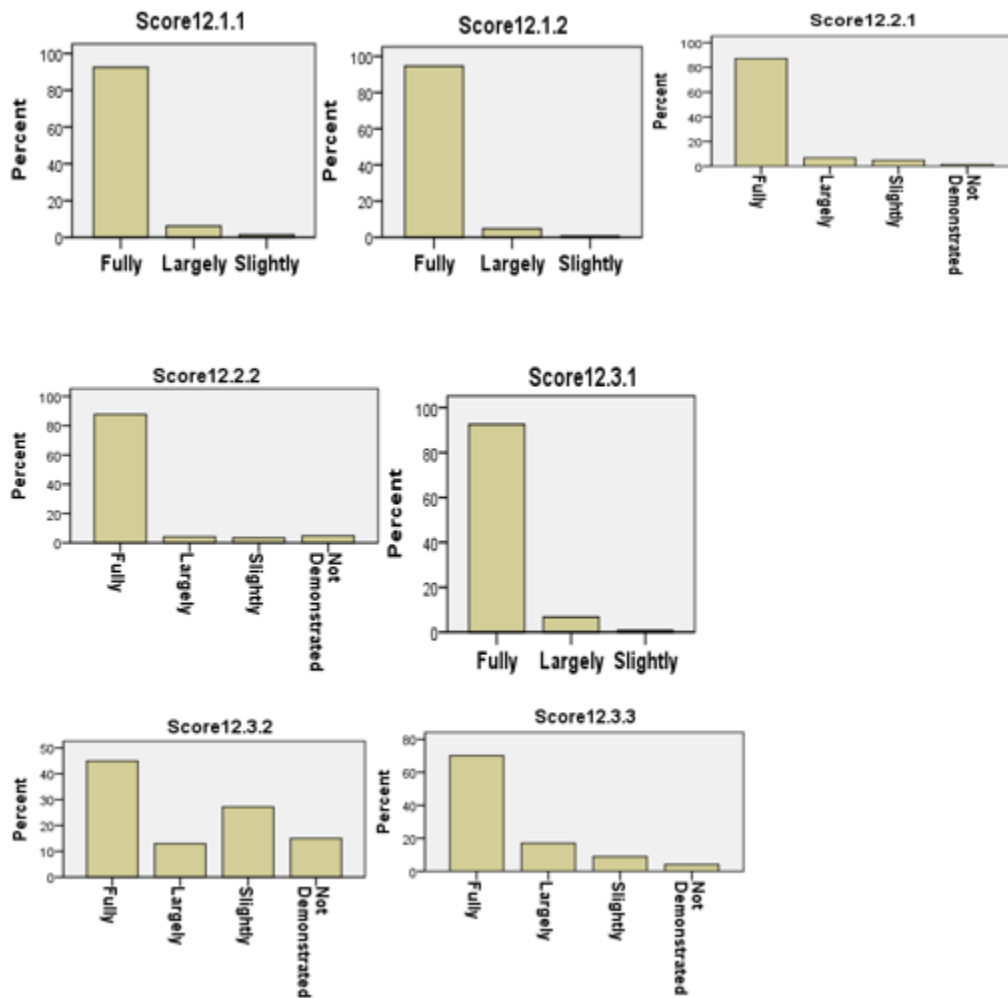


Figure 4.2.3. *The percentages of health departments categorized according to site-visit scores.*



The association between Composite Measure A on one hand, and Composite Measure B and C on the other are illustrated in Tables 4.2.2 and 4.2.3, respectively. Results show a lack of any statistically significant association between having a governing board with at least *governing* or *policymaking* roles and the demonstration of required documents for individual measures (i.e., ‘fully’ or ‘largely’ demonstrated). Likewise, the association between having a governing board with at least *governing* or *policymaking* roles and the full or large demonstration of required documents for all the seven measures combined was statistically insignificant. This lack of association is signified by the Chi-Square tests and their corresponding *p*-values shown in Tables

4.2.2 and 4.2.3, which provide no evidence to reject the null hypothesis of no association between existing governing entities and health department's performance though site-visit scores.

Similarly, the *t*-test shown in Table 4.2.3 indicates non-significant finding when the means of Composite Measure A and Composite Measure D were compared. Thus, there is no statistically significant evidence ($p = .408$) to reject the null hypothesis that the mean site-visit scores for health departments with at least 'governing' or 'policymaking' boards equals the mean site-visit scores for those with 'advisory' only or 'none' boards.

Table 4.2.2. *Chi-Square test of association between site-visit scores for each measure and governing entities (Composite Measure A x Composite Measure B).*

Measures	Chi-Square (<i>p</i> -value)
12.1.1. Provide mandated public health operations, programs, and services	.213 (1.0)
12.1.2. Maintain current operational definitions and/or statements of the public health governing entity's roles and responsibilities	.106 (1.0)
12.2.1. Communicate with the governing entity regarding the responsibilities of the public health department	1.794 (.206)
12.2.2. Communicate with the governing entity regarding the responsibilities of the governing entity	.774 (.320)
12.3.1. Provide the governing entity with information about important public health issues facing the health department and/or the recent actions of the health department	.106 (1.0)
12.3.2. Track actions taken by the governing entity	1.421 (.233)
12.3.3. Communicate with the governing entity about assessing and improving the performance of the health department	.460 (.695)

Table 4.2.3. *Chi-Square test of association and t-test between Composite Measure A on one hand and Composite measures C and D on the other.*

Measures	Chi-Square	<i>t</i> -value	<i>p</i> -value
Composite Measure A x Composite Measure C	1.090	-	.297
Composite Measure A x Composite Measure D	-	-.829	.408

Discussion

Results from the Chi-Square test of independence as well as the *t*-test indicate that there is no evidence to support the conformance of PHAB's Domain 12 standards and measures with the existing governance structures and functions in health departments. This, however, may not be due to the redundancy or the inadequacy of Domain 12 standards and measures and their validity in measuring engagement of the governing entity, but because of the nature and potential drawbacks of the data sources and the collection process, which include the limitation of the self-reported data about the type and roles of governing entity, the potential scores discrepancies by multiple site visitors, and the variations of governance structures among health departments.

Self-reporting makes it difficult to determine the accuracy of data. This is especially true when there is self-interest involved in reporting specific information that may help achieve accreditation. Although a health department accreditation coordinator receives training by PHAB regarding the concepts and measures of accreditation in order to accurately report the required data for accreditation, and a site visitor conforms those self-reported data, it is still unclear in terms of governance systems and governing entity that the reported and conformed data are accurate. This may be due to the lack of clarity and complexity of governance structure and its networks in health departments. The relationship between a governing body and the health department administration can take any form with no defining framework, which may allow for any interpretation regarding the nature and role of this relationship. This was pointed out by PHAB's description of data and codebook which stated that "*the information provided in the PHAB application is self-reported*" and that "*it has not been verified.*"⁶⁴

Divergence in site-visit scores based on raters' understanding rather than real differences in health departments' conformity to PHAB's standards and measures is another limitation in the data, which is likely to affect any attempt to evaluate the validity of Domain 12 measures. In a report presenting results of a beta test on health departments' accreditation process, it was pointed out that a number of site visitors faced difficulties defining the types and roles of governing entities.³⁰ This was particularly apparent in health departments where the governing entity was not called a *Board of Health*. Site visitors struggled to classify such entities given the lack of a defining structure of governance in health departments. Moreover, even those with entities called *Boards of Health* were sometimes difficult to identify due to the unclear roles they play which may not reach the level of governance. Despite PHAB's efforts in ensuring the consistency of site-visit rating system and the rater and inter-rater reliability of scores, limitations still exist in the data. Thus, it is suggested that in addition to training site visitors and extensive reviews of documents, PHAB may concentrate on further efforts to define the discrepancies in governance structures, and to rely on an independent body for auditing documents.⁶⁵

There are varying levels, roles, and bodies of governance in health departments. These structural differences make it difficult to evaluate and capture governance effects with a uniformed set of standards and measures, especially when those standards and measures fail to accommodate the varying structures and roles of governance. For instance, the beta test report showed that some health departments, where multiple governing boards with different roles exist, struggled to select the limited and pre-identified types of governing entities found in the accreditation application.³⁰ This issue suggests that PHAB adopts an approach that accommodates this variations in governance structures when modifying its standards and measures.

The lack of evidence regarding the conformance of Domain 12 measures must be of concern for future accreditation efforts. However, before rushing to actions that solely focuses on changing and modifying the standards and measures and neglects the “pre-existing conditions” of the data sources and the nature of the measured subjects, PHAB must equally tries to enhance its data collection methods and work towards a clearer definition of governance constructs found in different health departments. Further, similar to the need for multiple studies evaluating the conformity of measures and pursuing more “valid” measures, it is also necessary to conduct numerous validation analyses of measures that were found to be “invalid” so that the areas for improvement and modification of measures become clearer. The implication for PHAB is to encourage researchers and future studies to investigate the conformance of its measures with cautious and patience using different techniques and approaches that consider the inherited variations in governance structures as well as using more valid sources of data that limits the existing inadequacy of self-reporting and the inaccuracy of site-visit scoring.

Paper 3.

Assessing the Convergent Validity of Domain 12 Measures against Measures under Other Domains

Abstract

Background. Given the lack of validity studies of PHAB's Domain 12 measures, the validity question remains important. This requires the adoption of different forms of validation approaches in order to explore this question from different directions, and to rigorously contribute to a needed body of literature.

Objectives. To explore the convergent validity of PHAB's Domain 12 measures.

Methods. A convergent validity analysis was conducted by examining the association between health departments' performances in Domain 12 and their performances in all the other domains. Specifically, associations using Chi-Square test in independence were calculated between the site-visit scores for Domain 12 measures and scores under the remaining eleven domains, with a focus on certain measures that included governance elements in their descriptions (Measures 4.2.2, 5.1.3, and 6.1.2).

Results. Findings show that there are few statistically significant associations between Domain 12 and other domains, and between Domain 12 and the three measures that included governance. Although those statistically significant associations can be theoretically explained, the other measures that were theoretically more relevant to Domain 12 showed no associations. Similar findings are found when testing the correlation between Domain 12 measures and three measures that specifically involved governance in their descriptions.

Conclusion. The results are consistent with *paper 2* in which they provide no validity or conformity evidence of Domain 12 measures. Such finding supports the notion that PHAB needs to improve these measures and support more validity studies that would allow for such improvement to be effective.

Introduction

The Public Health Accreditation Board (PHAB) was established with a mission to enhance people's health by ensuring a better quality and practice of all health departments through the development and implementation of a voluntary national accreditation program using standards and measures based on the Core Functions of Public Health and the Ten Essential Public Health Services.^{1,26} The development of PHAB's accreditation domains was initiated as recommendations by a committee that included various public health stakeholders,⁷ and the Ten Essential Public Health Services were the agreed upon framework on which the first

ten domains, and their standards, may be organized and developed, in addition to two domains concerning management and governance (see Table 4.3.1). Later, a number of think tanks on specific topics were formed and brought together academic experts and public health practitioners to discuss and provide inputs that would help formulating the accreditation standards and measures.⁸

Table 4.3.1. *Domains for public health accreditation standards development.*

.....
1. Monitor health status and understand health issues
2. Protect people from health problems and health hazards
3. Give people information they need to make healthy choices
4. Engage the community to identify and solve problems
5. Develop public health policies and plans
6. Enforce public health laws and regulations
7. Help people receive health services
8. Maintain a competent public health workforce
9. Use continuous quality improvement tools to evaluate and improve the quality of programs and interventions
10. Contribute to and apply the evidence base of public health
11. Govern and manage health department resources (including financial and human resources, facilities, and information systems)

Source: Adapted from Bender *et al* (2007)⁷

One of those think tanks was the *Governance Engagement in National Voluntary Public Health Accreditation Think Tank*,¹² which resulted in a number of recommendations that enabled PHAB to draw a specified governance domain (i.e., Domain 12) which states that health department must “*maintain capacity to engage the public health governing entity*” and to outline three main standards and seven measures (Version 1.0).^{14(p242)} Details regarding the description, purpose, significance, and required documents for each measure are outlined in Appendix A.

Despite the extensive process of developing PHAB’s standards and measures, there have been modest and indirect efforts to follow up and assess the validity of these standards and measures. Apart from the multiple revisions of PHAB’s Domain 12 by experts in the think tank² (i.e., face validity), there were two performance-evaluation studies of health departments after

the implementation of PHAB accreditation, which may indirectly serve as a form of criterion and convergent validity. Gorenflo *et al.*⁴² evaluated and compared the contents of PHAB's measures and the Baldrige Program (a performance excellence program) (criterion validity), and Kronstadt *et al.*⁴⁵ assessed the performance of accredited health departments in key domains (convergent validity), which included dimensions such as accountability to stakeholders and communication with Board of Health (BoH), against results from a health departments' survey. The outcomes of the two studies show alignments of PHAB's Domain 12 and the results of these indicators; namely, '*leadership*' and '*accountability to stakeholders and communication with BoH.*' Another study evaluated the connections between Community Guide interventions that allow health departments to provide documentation for accreditation and PHAB's domains, standards, and measures.⁶⁶ These interventions include tackling issues related to, among others, adolescent health, diabetes, HIV/AIDS, and cancer, and the results demonstrate connections between PHAB's domain and measures and many of the Community Guide interventions.⁶⁶ This study may also provide, although not specifically intended to, some form of convergent validity, which assesses the validation of PHAB's measures in accordance to external indicators (i.e., documentation from Community Guide interventions).

In the previous study, we employed association analysis to assess the conformance of Domain 12 measures with the existing governance structure. The approach was to examine the association between the type of governing entity affiliated with a health department and the department's site-visit scores under each measure of Domain 12. The results showed no evidence to support the conformity of these measures. However, since that was one approach towards the evaluation of Domain 12 conformance and validation, we decided in this paper to employ a *convergent validity* as another approach that would allow us to assess the validity of Domain 12

measures. This approach will utilize the site-visit scores of other PHAB's domains as the construct against which the site-visit scores of Domain 12 will be tested. The hypothesis is that for a health department to perform well in other domains, it would most likely perform well in the governance domain (Domain 12). In other words, good governance causes good performance in other domains. This will be demonstrated through association analysis between site-visit scores under Domain 12 and scores under other domains. The study outcome will contribute to the existing gap in PHAB's validity literature, and will allow us to confirm, or refute, the finding of the previous study.

Methods

Study Sample and Instruments

The study sample consists of data from PHAB on 188 health departments across the United States, which presents their compliance with all of PHAB's twelve domains. This sample was not randomized since the health departments were only included after applying for accreditation by PHAB. Although there were numbers of variables in this data set, only site visit scores for all measures under the twelve domains were utilized in this study. Those were the final assessment scores from a Site Visit Report submitted to PHAB, which assessed the compliance of the department to provide required documents that indicate the fulfillment of demonstrating each measure. These scores were in the form of the following four Likert-scale: 'fully demonstrated', 'largely demonstrated', 'slightly demonstrated', and 'not demonstrated' (check paper 2 for more details). PHAB's twelve domains and their corresponding measures are illustrated in Table 4.3.2.

Table 4.3.2. *PHAB’s domains and the corresponding numbers of measures.*

Domain	Number of Measures
1. Conduct and disseminate assessments focused on population health status and public health issues facing the community	11
2. Investigate health problems and environmental public health hazards to protect the community	15
3. Inform and educate about public health issues and functions	7
4. Engage with the community to identify and address health problems	4
5. Develop public health policies and plans	12
6. Enforce public health laws	10
7. Promote strategies to improve access to health care services	6
8. Maintain a competent public health workforce	3
9. Evaluate and continuously improve health department processes, programs, and interventions	7
10. Contribute to and apply the evidence base of public health	4
11. Maintain administrative and management capacity	11
12. Maintain capacity to engage the public health governing entity	7*

Note: Measures for specific types of health departments (tribal, state, or local) were excluded, and only those that apply to all health departments were included.

*Measures are different in Version 1.0 compared to Version 1.5

Source: Data are adapted from PHAB Standards & Measures Versions 1.0 & 1.5.^{14,26}

Some Site Visit scores were missing when PHAB’s Version 1.5 was used. The reason behind this is that Version 1.5 combined two measures found under Version 1.0 (12.2.1 & 12.2.2) into a one measure (12.2.1).^{14(248-49), 26(256-57)} However, only 29 health department used Version 1.5, compared to 159 used Version 1.0. Thus, the missing scores were assigned the same corresponding scores found in measure 12.2.1, since this measure, in version 1.5, is a combination of the two measures found in version 1.0 (12.2.1 & 12.2.2). For example, when a health department using Version 1.5 was assigned a score of ‘Fully Demonstrated’ under Measure 12.2.1, it receives the same score, ‘Fully Demonstrated’, under the missing Measure

12.2.2 since Measure 12.2.1 under Version 1.5 is basically a combination of Measures 12.2.1 & 12.2.2 under Version 1.0.

Data Collection Process

PHAB's data collection process took place between January 2013 and November 2016 through a review process of the final assessments from the Site Visit Reports. These reports were submitted to an accreditation committee in order to make initial decisions regarding accreditation, and to create an action plan for each health department to complete.⁹ The final assessment scores were assigned to the health departments by site visitors (check paper 2 for more details).

Study Design and Data Analysis

The performance of each health department can be assumed to be mostly consistent across all the twelve domains. This is especially true when it comes to Domain 12, which assesses the department's capacity to engage the governing entity. Good governance is likely to help enhancing the health department's performance in other domains. Thus, the first hypothesis is that more measures across the other domains will be associated, through the site-visit scores, with the measures under Domain 12. That is, higher site-visit scores (fully/largely demonstrated) across Domain 12 measures will have statistically significant association with higher scores across most of the other measures under the first eleven domains, and lower site-visit scores across Domain 12 measures will have statistically significant association with lower scores across most of the other measures under the first eleven domains. The second hypothesis is that measures under other domains that specifically involve and state governance in their descriptions and documentation (see Table 4.3.3) will have statistically significant association, through the

site-visit scores, with the measures under Domain 12. That is, higher site-visit scores (fully/largely demonstrated) across Domain 12 measures will have statistically significant association with higher scores across those specific measures under the other domains, and lower site-visit scores across Domain 12 measures will have statistically significant association with lower scores across those specific measures under the other domains.

For the associations between Domain 12 and the other domains, we transferred the data through summing up the four Likert-scale ('Fully Demonstrated'=1, 'Largely Demonstrated'=2, 'Slightly Demonstrated'=3, and 'Not Demonstrated'=4) for each domain. Then, we used a threshold when scores in *all* seven measures were showing 'Fully' or 'Largely' demonstrated (coded '1'; otherwise coded '0'). For the three measures that specified engagement with governing entities in their descriptions (Table 4.3.3), we dichotomized the four Likert-scale to code those that scored 'Fully' or 'Largely' demonstrated with '1', or otherwise were coded with '0'.

Finally, association analysis using Chi-Square test of independence will be performed to assess that hypothesis and examine the association between these scores. Chi-Square values and *p*-values will be presented, and those at the significance level (i.e., 0.05) will be considered as associations with statistical significance. However, when there are small cell sizes (i.e., 20% or more of cells have expected values less than 5), the Fisher's Exact test will be used to determine the significance of the association IBM SPSS Statistics 22 will be used to conduct the analysis.⁶³

Table 4.3.3. Measures under other domains that involved governance.

Measures	Description
4.2.2	Engage with governing entities, advisory boards, and elected officials about policies and/or strategies that will promote the public's health.
5.1.3	Inform governing entities, elected officials, and/or the public of potential public health impacts, both intended and unintended, from current and/or proposed policies.

Source: Data are adapted from PHAB Standards & Measures Versions 1.0 & 1.5.^{14,26}

Results

The associations between Domain 12 measures and all other measures under other domains are presented in Table 4.3.4. Out of all the eleven domains, only one was found with a statistical significant association with Domain 12, $X^2(1, N = 188) = 23.351, p < .01$, which allows to reject the hypothesis that there is no association between Domain 9 and Domain 12. Domain 9 states that health departments should evaluate and continuously improve health department processes, programs, and interventions. The association between these two domains is theoretically plausible since having a well-performing governance would most likely encourage a health department to evaluate and continuously improve its processes, programs, and interventions. However, it is still worth noting that the rest of the 10 domains showed no statistically significant associations with Domain 12. This is especially important as the hypothesis was that most of the other domains, represented by the site visit scores of their measures, would be associated with Domain 12.

Table 4.3.4. *Chi-Square test of association between site-visit scores for Domain 12 and site-visit scores for other domains.*

Domain	Chi-Square
Domain 1. Conduct and disseminate assessments focused on population health status and public health issues facing the community	.366
Domain 2. Investigate health problems and environmental public health hazards to protect the community	.205
Domain 3. Inform and educate about public health issues and functions	.312
Domain 4. Engage with the community to identify and address health problems	1.919
Domain 5. Develop public health policies and plans	.475
Domain 6. Enforce public health laws	.312
Domain 7. Promote strategies to improve access to	.184

health care services	
Domain 8. Maintain a competent public health workforce	.587
Domain 9. Evaluate and continuously improve health department processes, programs, and interventions	23.351**
Domain 10. Contribute to and apply the evidence base of public health	.475
Domain 11. Maintain administrative and management capacity	.051

Note: * Association is significant at the 0.05 level. ** Association is significant at the 0.01 level.

Table 4.3.5 illustrates the association between Domain 12 measures and measures that involved governance or governing entities in their descriptions. Only two statistically significant associations emerged between these three measures and Domain 12 measures. In particular, the Chi-Square test yielded a statistically significant association, $X^2 (1, N = 188) = 13.620, p < .01$, between Measure 5.1.3 and Measure 12.3.3. It is theoretically possible to associate these two measures together as one encourages health departments to *inform a governing entities* of the public health impacts from policies (Measure 5.1.3) and the other requires them to *communicate with the governing entity* about assessing and improving the performance of the health department (Measure 12.3.3). The other statistically significant association was between Measure 6.1.2 and Measure 12.2.1, $X^2 (1, N = 188) = 8.886, p < .01$. Similarly, there may be some theoretical link between those two measures since Measure 6.1.2 states that a health department must *inform governing entity* of needed updates/amendments to current laws and/or proposed new laws and Measure 12.2.1 asks the health department to communicate with the governing entity regarding the health department's responsibilities. However, it is crucial to point out that only these two measures were found with statistically significant associations out of 21 other associations with Domain 12 seven measures.

Table 4.3.5. *Chi-Square test of association between Domain 12 measures and other measures involving governance.*

Measures	12.1.1	12.1.2	12.2.1	12.2.2	12.3.1	12.3.2	12.3.3
4.2.2. Engage with governing entities, advisory boards, and elected officials about policies and/or strategies that will promote the public's health	.066	.044	1.427	.549	.044	.093	5.088
5.1.3. Inform governing entities, elected officials, and/or the public of potential public health impacts, both intended and unintended, from current and/or proposed policies	.383	3.072	.031	.049	.254	3.622	13.620**
6.1.2. Inform governing entity and/or elected/appointed officials of needed updates/amendments to current laws and/or proposed new laws	.226	.150	8.886**	1.333	.150	.074	4.065

Note: * Correlation is significant at the 0.05 level. ** Correlation is significant at the 0.01 level.

Discussion

The results show no enough evidence of a meaningful association between Domain 12 measures and measures under the other eleven domains. Although there are few statistically significant associations between some measures and Domain 12 measures, these measures represent less than 10% of the rest of the measures. Furthermore, the three measures that explicitly stated governance in their descriptions were also lacking clear and consistent associations with Domain 12 measures. This, in effect, wards off any ability to claim the

existence of a convergent validity of Domain 12 measures through connecting them to better performances in other domains.

Perhaps the main strength in this study lies in the fact that some of the data limitations that were present in the previous study (paper 2) have been overcome. In particular, drawbacks associated with self-reporting and the potential confusion when classifying the governing entity were not a concern in this study since the focus was in utilizing site-visit scores only. Also, the issue related to the differences in governance structures among different health departments was absent here as the governing-entity construct was not part of the analysis. However, limitations related to the scoring approach by site visitors were still likely to exist since all the data were derived from the site-visit scores. Although it is important to consider such limitation, it is also rather essential to remember that those site visitors were public health experts who received special training by PHAB, which may decrease such drawbacks related to insufficient scoring.

On a domain basis (Table 4.3.4), there appears to be no pattern of association between Domain 12 and the other domains as hypothesized at the beginning of the study. One domain (Domain 9) out of eleven showed a statistically significant association. Although this association can be explained theoretically as for a health department to evaluate and to continuously improve its processes, programs, and interventions it needs to have a good governance structure and to engage with a well-performing governing entity, it is still unclear why Domain 12 had no statistically significant associations with other domains that may theoretically be more relevant. For example, we would expect that Domain 5 which states that a health department must develop public health policies and plans or Domain 6 which requires it to enforce public health laws would be plausible outcomes of having and engaging with a functioning governing body. Yet, these two domains showed no statistically significant associations with Domain 12. Similar

findings were present when testing the associations between Domain 12 measures and three measures that specifically stated the engagement with governing entities. Only two out of the 21 associations in Table 4.3.5 were statistically significant although there is no clear reason why Measure 4.2.2, for instance, which states the need to *engage with governing entities* regarding policies that promote the public’s health had no statistically significant association with any of Domain 12 measures.

The overall finding of this study suggests that there is no clear association between performing well in Domain 12 and performing well in other domains and, hence, no evidence of convergent validity. It may, however, be incorrect to conclude that Domain 12 measures are “invalid”, but it does indicate that there is still no evidence to claim otherwise. This advocates for more investigation by researchers and psychometricians who are interested in improving and validating PHAB’s Domain 12. Different validation approaches need to be adopted in order to examine the extent that these measures reach, and whether there is untapped areas that current validity studies failed to uncover given its data and design limitations.

CHAPTER 5

SUMMARY AND RECOMMENDATIONS

Summary

This study was divided into three parts: a systematic literature review of governance measures and validity studies, analysis of Domain 12 conformance with existing governance constructs, and a convergent validity analysis. The review of literature identified a number of instruments used to measure governance and its impact. Of these instruments, the most widely used one was in the form of survey or questionnaire. Despite known flaws of such instruments, surveys and questionnaires appear to be the most plausible mean of measurement of governance. In terms of the validity studies found in the literature, in addition to the limited numbers of the overall studies, very few were focused primarily on governance and the effect of engaging governing bodies on public health agencies, and rather evaluated governance as one part of other elements. The validation approaches varied in the literature, but dimensionality was the most commonly used approach in different validity studies of governance. For validity studies of PHAB's Domains, none were found except for indirect attempts that may be considered as some form of validation approaches. Further, the literature review resulted in a large number of governance dimensions found in various measures which, unlike what is predicted, few of them were assessed in the validity studies of governance.

The second and third papers assessed the conformance and convergent validity of PHAB's Domain 12 measures. However, no evidence in each were found to support the conformity or validity of these measures. But instead of rushing into the judgment that Domain 12 measures are "invalid", improvements in the type of data and data collection methods must be

considered. Likewise, a clear characterization and definition of the differences in governance structures among health agencies is conditional to conduct any future validity analysis of Domain 12 measures.

Recommendations

This study, through its three parts, can offer a number of recommendations for future researchers to consider when deciding to adopt and conduct validation analysis of PHAB's measures in general, and of Domain 12 measures in particular. The following are the final recommendations of this study:

- Examine all governance domains and dimensions found in the literature and include the omitted dimensions in any attempt to modify PHAB's Domain 12 standards and measures.
- Understand that the lack of validity assessments of Domain 12 measures requires the support for future researchers and research agendas to focus on this issue, especially that Domain 12, in addition to Domain 11, was not based on the *Ten Essential Public Health Services* framework.
- Consider the *Six Functions of Public Health Governance* as an effective framework on which Domain 12 standards and measures can be based.
- Understand that the lack of evidence regarding the validity of Domain 12 measures may not necessarily point to the inadequacies of these measures, but rather indicate the need to clarify the differences in governance structures and to improve the data collection methods.
- Adopt a data collection method that includes surveys and questionnaires of governance mechanisms and structures in health agencies. This approach might assist PHAB to

clearly identify and differentiate between the various governance structures among health departments.

- Support the adoption of different validation approaches in assessing the validity of Domain 12 measures, and assist researchers with data that allows them to conduct advanced validation approaches such as dimensionality and factor analyses.

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APPENDICES

Appendix A. (Adapted from PHAB)

Standard 12.1 *Maintain current operational definitions and statements of public health roles, responsibilities, and authorities.*

Measure	Purpose	Significance	Required Documents	Keywords
1. <u>Mandated</u> public health operations, programs, and services provided	The purpose of this measure is to <u>assess</u> the health department's <u>knowledge of</u> and provision of the operations, programs, and services that it is <u>mandated to provide</u>	Each health department has a <u>set of mandated operations</u> , programs, and services that it provides to protect and preserve the health of the population within the jurisdiction it serves. It is important that the health department is <u>knowledgeable of these mandates</u> and performs them as required.	1. <u>Authority</u> to conduct public health activities 2. <u>Operations</u> that <u>reflect authorities</u>	Health Department's Authority & Operational Definitions
2. <u>Operational definitions and/ or statements</u> of the public health governing entity's roles and responsibilities	The purpose of this measure is to <u>assess</u> the health department's <u>knowledge of</u> the governing entity's <u>operational definition</u> and/or governing entity's <u>roles and responsibilities</u>	The governing entity is the point of <u>accountability</u> for the health department. The health department should have a clear understanding of the <u>governing entity's structure, responsibilities, and expectations</u>	1. The governing entity's <u>authority</u> 2. The governing entity's <u>structure and composition</u>	Governing Entity's Authority & Operational Definitions

Standard 12.2 *Provide information to the governing entity regarding public health and the official responsibilities of the health department and of the governing entity.*

Measure	Purpose	Significance	Required Documents	Keywords
1. <u>Communication</u> with the governing entity regarding the responsibilities of the public health department and of the responsibilities of the governing entity	The purpose of this measure is to <u>assess</u> the health department's education of and <u>communications</u> with its governing entity regarding the <u>health department's responsibilities</u> and the roles and responsibilities of the governing entity	Governing entities significantly influence the direction of health departments through policy making and other similar activities. Many governing entities have key roles in resource allocation, policy making, legal authority, collaboration, and/or quality improvement activities. As a result, they may heavily influence whether health departments are fulfilling their responsibilities. The governing entity, to be an effective advocate for public health and for the agency, must be <u>aware of its responsibilities and duties and of the health department's roles and responsibilities.</u>	<u>Communication with the governing entity regarding the responsibilities of the public health department</u>	Communication regarding Health Department's Responsibilities
2. Same	Same	Same	a. <u>Communication with the governing entity</u> about its operational definitions and/ or statements <u>of the public health governing entity's</u> roles and responsibilities b. The orientation process for new members of the governing entity	Communication regarding Governing Entity's Responsibilities

Standard 12.3 *Encourage the governing entity's engagement in the public health department's overall obligations and responsibilities.*

Measure	Purpose	Significance	Required Documents	Keywords
1. <u>Information</u> provided to the governing entity <u>about important public health issues</u> facing the community, the health department, and/or the <u>recent actions</u> of the health department	The purpose of this measure is to <u>assess</u> health department efforts to <u>keep</u> the governing entity <u>informed of public health issues and health department activities</u>	The health department has a responsibility to <u>communicate</u> with its governing entity to ensure that the governing entity's policies and decisions are <u>informed</u> . A regular flow of information helps to ensure that the governing entity acts in the best interests of the public's health. Information also needs to flow from the governing entity to the health department to ensure mutual understanding of policy options and implications	<u>Communication</u> with the governing entity <u>regarding important public health issues</u> and/or <u>recent actions</u> of the health department	Communication regarding Important Health Issues and Recent Actions by Health Department
2. <u>Actions</u> taken by the <u>governing entity tracked and reviewed</u>	The purpose of this measure is to <u>assess</u> the health department's <u>familiarity and awareness</u> of the <u>governing entity's actions</u> in order for the health department to identify patterns of issues discussed and topics or areas that call for increased communication and information	It is important that the health department <u>understand</u> the priorities, policy positions, opinions, and actions of the governing entity in order to continually improve communication and effectiveness, leading to a quality governing entity-health department relationship	Consistently <u>review issues</u> discussed, <u>actions taken</u> , and <u>policies</u> set by the governing entity	Awareness of Governing Entity's Actions
3. <u>Communication</u> with the governing entity about <u>health department performance assessment and improvement</u>	The purpose of this measure is to <u>assess</u> the health department's <u>communication</u> with the governing entity on the overall <u>assessment</u>	The governing entity should be <u>knowledgeable</u> about the health department's overall <u>assessment and quality improvement</u>	1. <u>Communication</u> with the governing entity concerning <u>assessment</u> of the health department's performance 2. <u>Communication</u>	Communication regarding Assessment & Improvement of Health Department's Performance

and improvement
of the performance
of the health
department

initiatives. The
governing entity
will be in a better
position to guide,
advocate for, and
engage with the
health department
if it is aware of
improvements
being undertaken

with the governing
entity concerning
the improvement of
the health
department's
performance

Appendix B.

Studies and reports involving governance measures, with the area of study, type of instrument, and purpose of using the measure.

Author(s)	Area of study	Measurement tool/instrument/variable	Purpose for using this measurement
Handler <i>et al.</i> , 1996	Public Health Systems (local health departments)	A survey of local health departments measured governance as: <ul style="list-style-type: none"> - The presence of a board of health - Statutory authority of the board of health if present 	To “describe more fully the key structural and service characteristics of an effective local public health agency.”
Mays <i>et al.</i> , 2004	Public Health Systems (local health departments)	Data from CDC and NACCHO was used in this cross-sectional study, and governance was measured as: <ul style="list-style-type: none"> - State-local administrative relationship (i.e., centralized, decentralized, mixed, and shared authorities) - Existence of a local board of health with policymaking authority 	To examine “the availability and perceived effectiveness of 20 basic public health activities in the communities where most Americans reside.”
Scutchfield <i>et al.</i> , 2004	Public Health Systems (local health departments)	Data from NPHPSP and NACCHO was used in this cross-sectional study, and governance was measured as four functions of local board of health: <ul style="list-style-type: none"> - Advisory - Governing - Policy making - Board separate from the elected legislative body 	To identify “local public health agency capacity characteristics that are related to their local public health systems’ performance scores on the CDC’s National Public Health Performance Standards Program assessment instrument.”
Mays <i>et al.</i> , 2006	Public Health Systems (local health departments)	Data from NPHPSP and NACCHO was used in this cross-sectional study, and governance was measured as: <ul style="list-style-type: none"> - State-local public health authority (i.e., centralized, decentralized, and shared) - Existence of a local board of health with policymaking authority 	To examine “the association of institutional, financial, and community characteristics of local public health delivery systems and the performance of essential services.”
Beckett <i>et al.</i> , 2008	Public Health Systems (local governing bodies)	The NPHPSP governance instrument for governing bodies developed around the Ten Essential Public Health Services	To “examine the use of, and results from, the National Public Health Performance Standards Program Local

Mays <i>et al.</i> , 2009	Public health delivery systems (public health agencies)	A review of empirical studies used the presence of boards of health in state and local public health agencies as the governance structure.	Governance Instrument.” To identify “unanswered questions, highlighting areas where new research is needed.” and to suggest “that key organizational and governance characteristics of public health agencies may explain differences in service delivery across communities.”
Beitsch <i>et al.</i> , 2010	Public Health Systems (local health departments)	<p>A NACCHO survey of local health department measured the type of governance as:</p> <ul style="list-style-type: none"> - LHDs with units of local government (decentralized) - LHDs with units of the state health agency (centralized) <p>Data from NPHPSP and NACCHO was used in this cross-sectional study, and governance was measured as:</p> <ul style="list-style-type: none"> - Functions of local board of health (i.e., advisory, governing, policy making, and board separate from the elected legislative body) - State-local public health authority (i.e., centralized, decentralized, and shared) - Existence of a local board of health with policymaking authority <p>Data from NACCHO was used in this longitudinal study, and governance was measured as:</p> <ul style="list-style-type: none"> - The presence of a local board of health - Administrative relationship with state agency (i.e., centralized state control, decentralized local control, and shared control) 	<p>“To assess the current status of quality improvement (QI) within local health departments (LHDs) and examine the characteristics associated with such QI efforts.”</p> <p>To examine “the relationship between community and system characteristics of 353 local public health agencies and local public health system performance by revisiting previous research by Mays et al and Scutchfield et al.”</p>
Mays <i>et al.</i> , 2010	Public health delivery systems (public health agencies)		To “present an empirical method of classifying and comparing public health delivery systems based on key elements of their organizational structure.”
Hays <i>et al.</i> , 2012	Public Health Systems (local health	A survey of local health departments operative structure	To detail “the categorization of local

	departments)	and authority that identified:	public health governance and reveals that certain governance types may be better suited to achieve better population health outcomes.”
		<ul style="list-style-type: none"> - The presence of a board of health - The size of the board - The required composition of the board of health - The level of government (i.e., board of health, county, or state) with the statutory authority for each of four authorized powers: hiring and firing, budgeting, adopting regulations, and setting fines and fees 	
ASTHO, 2012	Public Health Systems (local health departments)	A list of criteria and functions of governmental entities based on the health department’s governance classification (i.e., centralized, decentralized, mixed, or shared)	N/A
Joly <i>et al.</i> , 2012	Public Health Systems (public health agencies)	A QI Maturity Tool included items for ‘organizational culture’ through which elements of governance could be found under measured as the collaboration and involvement of board of health	“To identify features of an organization that may be enhancing or impeding QI; monitor the impact of efforts to create a more favorable environment for QI; and define potential cohorts of public health agencies for evaluation purposes.”
NALBOH, 2012	Public Health Systems (local boards of health)	A model and a check list (for local boards of health) of the six functions of public health governance	“To strengthen and improve public health governance”
Gearin <i>et al.</i> , 2012	Public Health Systems (local health departments)	A survey for Minnesota’s local health department directors developed around six key authorities that include: budget management, setting agenda, and initiating communication with county board or city council.	“To measure the extent to which Minnesota local health directors report having key authorities and examine the relationship between organizational structure and authority of local health directors.”
Vest <i>et al.</i> , 2012	Public Health Systems (local health departments)	<p>A NACCHO survey that included:</p> <ul style="list-style-type: none"> - LHD’s governance structure (i.e., state, local, shared) - Presence of a local board of health 	To “identify the factors associated with resource sharing” among LHDs
PHAB, 2013	Public health systems (health departments)	Domain 12: “Maintain Capacity to Engage the Public Health	To assist “the health department’s support

		<p>Governing Entity” includes three standards and seven measures to be met by health departments for accreditation. The three standards are:</p> <ul style="list-style-type: none"> - Maintain Current Operational Definitions and Statements of the Public Health Roles, Responsibilities, and Authorities - Provide Information to the Governing Entity Regarding Public Health and the Official Responsibilities of the Health Department and of the Governing Entity - Encourage the Governing Entity’s Engagement In the Public Health Department’s Overall Obligations and Responsibilities 	<p>and engagement of its governing entity in maintaining and strengthening the public health infrastructure for the jurisdiction served.”</p>
<p>CDC, 2013 (Local Public Health Governance Performance Assessment Instrument)</p>	<p>Public Health Systems (local governing bodies)</p>	<p>A questionnaire for governing bodies developed around the Ten Essential Public Health Services</p>	<p>To assure “that the governmental public health agency and its local public health system partners have the necessary legal authority, resources, and policies to provide the Essential Services. It “assists board of health members in understanding these important roles and determining how they can strengthen their ability to oversee public health within the community. It serves as an educational, orientation, and improvement tool for boards of health.” It “helps identify strengths and weaknesses within the governing body and ways that public health services can be more effectively coordinated.”</p>
<p>NALBOH, 2013 (Public Health Governing Entity Assessment Instrument)</p>	<p>Public Health Systems (local governing bodies)</p>	<p>A questionnaire for governing bodies developed around the Ten Essential Public Health Services & the Six Functions of Public Health Governance</p>	<p>“To develop a</p>
<p>NACCHO, 2014</p>	<p>Public health systems</p>	<p>A survey on the functions</p>	

	(local health departments)	performed by local boards of health	comprehensive and accurate description of LHD infrastructure and practice” “to describe the patterns and predictors of administrative evidence-based practices (structures and activities that are associated with performance measures)”
Brownson <i>et al.</i> , 2014	Public Health Systems (local health departments)	Data from U.S. Census showing the governance structure (i.e., state, local, or shared governance) of LHDs	
Carlson <i>et al.</i> , 2015	Public health systems (governing entities)	A list of governance functions and their definitions (6 functions) based on: <ul style="list-style-type: none"> - A systematic literature review - A review and feedback from experts and practitioners 	“To determine if accepted governance functions continue to reflect the role of public health governing entities”
NACCHO, 2016	Public Health Systems (local boards of health)	A survey of local boards of health (LBoH) characteristics and 6 functions A survey and interviews/focus groups evaluating the impact of PHAB on accredited health departments. Two criteria relevant to governance were evaluated:	“to measure different aspects of governance function” including the 6 functions of public health governance
NORC, 2016; Kronstadt <i>et al.</i> , 2016	Public Health Systems (health departments)	<ul style="list-style-type: none"> - The health department’s accountability to external stakeholders - Allowing the health department to communicate better with the board of health or governing entity - A classification scheme based on existing literature - NACCHO 2016 survey of local boards of health (LBoH) characteristics and functions - A discussion and consensus building 	“To identify opportunities to improve the accreditation process and to understand the impact of accreditation”
Shah <i>et al.</i> , 2017	Public health systems (local health departments)		“To develop a local board of health (LBoH) classification scheme and empirical definitions to provide a coherent framework for describing variation in the LBoHs”
Lee <i>et al.</i> , 2008	Healthcare systems (hospital governing boards)	Data from a hospital governance survey was used and governance was measured according to the following three roles of a hospital governing board: <ul style="list-style-type: none"> - Mission and strategy 	“To develop a taxonomy of governing board roles in U.S. hospitals.”

		<ul style="list-style-type: none"> - setting - Performance evaluation and oversight - External relations 	
Mutale <i>et al.</i> , 2013	Healthcare systems (rural health facilities in Zambia)	<p>A survey on the practice of good governance was used and 16 items measured the following domains:</p> <ul style="list-style-type: none"> - Accountability - Community participation - Intelligence & vision - Regulation & oversight - Transparency 	<p>“To establish whether the [governance] statements were reliable and valid for assessing governance practices at primary care level.”</p>
De Araujo <i>et al.</i> , 2013	Private business sector (corporations)	<p>A questionnaire developed by the authors around the following domains:</p> <ul style="list-style-type: none"> - Strategic leadership - Corporate culture - Good corporate governance - Company performance 	<p>“To conduct a representative indicator study as a basis in forming variables of Strategic Leadership, Corporate Culture, Good Corporate Governance and Company Performance in Camara Comercio Industria Timor-Leste (CCI-TL).”</p>
Barbazza <i>et al.</i> , 2014 *	Global health (international health organizations)	<p>A targeted review of the governance literature identified common tools for</p> <p>(1) governance sub-functions:</p> <ul style="list-style-type: none"> - Accountability - Partnerships - Formulating policy/strategic direction - Generating information/intelligence - Organizational adequacy/system design - Participation and consensus - Regulation - Transparency <p>(2) types of relationships:</p> <ul style="list-style-type: none"> - Control - Coordination - Collaboration - Communication 	<p>“To consolidate and align literature on governance by presenting an overview of efforts to define, describe, and operationalize the health governance function.”</p>

*See Barbazza *et al.* for detailed description of the tools.

Appendix C.

Studies and reports involving validity analysis, with the area of study, validation approach, and resulting governance dimensions.

Author(s)	Area of study	Validation approach	Results
Beaulieu <i>et al.</i> , 2003	Public health systems (health departments)	<p>Content and criterion validity evaluation of the National Public Health Performance Standards Measurement Instruments which assess public health system performance around the 10 Essential Services of Public Health</p> <p>A 37-item survey called the QI Maturity Tool for evaluating quality in public health agencies performed the following:</p> <p>Face validity: experts review of the instrument.</p> <p>Content validity:</p> <ul style="list-style-type: none"> - Literature review - National Advisory Group review of the instrument - Cognitive interviews with two local health departments - Pilot test using nine health departments 	<p>“Local public health system governance” was one indicator under essential service #5, and the expert judgments (content validity) show high percentages of agreement that service #5 “contain a complete description” and expected to be achieved.</p>
Joly <i>et al.</i> , 2012	Public health systems (public health agencies)	<p>Dimensionality: factor analysis using principal components analysis were used to test the dimensionality of the instrument.</p> <p>Construct validity: correlating numbers of QI projects with dimensions generated by the factor analysis.</p> <p>Think tanks with input from subject matter experts in the public health field developed and reviewed PHAB’s standards and measures (i.e., face validity)</p>	<p>Two out of the resulted nine factors evaluating the QI Maturity Tool were, to some extent, relevant to governance. These factors were (1) collaboration and (2) involvement of board of health</p>
Ingram <i>et al.</i> , 2014	Public health systems (health departments)	<p>Think tanks with input from subject matter experts in the public health field developed and reviewed PHAB’s standards and measures (i.e., face validity)</p>	<p>Three standards and seven measures of PHAB’s domain 12</p>
Gorenflo <i>et al.</i> , 2014	Public health systems (health departments)	<p>Although this was not a validity study, it aligned</p>	<p>Domain 12 was associated with the leadership</p>

		PHAB's domains with a performance management program (i.e., Baldrige Program). (can be considered a form of criterion validity)	dimension of the Baldrige Program.
Kronstadt <i>et al.</i> , 2016	Public health systems (health departments)	Although this was not a validity study, it shows the positive impact of PHAB's accreditation on health departments. (can be considered a form of Convergent validity)	83% & 67% of health departments in the study reported that accreditation improved accountability to external stakeholders and allowed for a better communication with the board of health or governing entity, respectively.
NACCHO, 2016	Public health systems (local boards of health)	Subject matter experts reviewed NACCHO's survey questions for the local board of health national profile, and face validity and cognitive interviews were conducted with 10 LHD administrators to determine whether questions were interpreted consistently as intended	The survey was designed around: <ul style="list-style-type: none"> - The six functions of public health governance - Local boards of health characteristics
Shah <i>et al.</i> , 2017	Public health systems (local boards of health)	A categorical principal components analysis was conducted on a 60-item survey that evaluates local boards of health (LBoH) influence on the functions of local health departments.	<p>“A classification schema to mark LBoH as “superior” in overall governance as well as “superior” in specific dimensions of governance”:</p> <ul style="list-style-type: none"> - The six functions of public health governance - Additional domain (i.e., LBoH characteristics and strengths)
Lee <i>et al.</i> , 2008	Healthcare systems (hospital governing boards)	A taxonomy of hospital governing board roles undergone cluster analysis, validation of clusters using ANOVA and discriminant analysis , and review of resulting clusters by industry experts (face validity) . Factor analysis was conducted to evaluate the validity of a 17-statement survey on the practice of good governance at primary healthcare	The validation analysis support the resulting taxonomy of the three governing board roles: mission/strategy setting, performance evaluation & oversight, and external relations
Mutale <i>et al.</i> , 2013	Healthcare systems (rural health facilities in Zambia)		<p>The analyses resulted in 5 latent factors:</p> <ul style="list-style-type: none"> - Accountability - Community participation - Intelligence &

		facilities in Zambia. Also, in-depth interviews and focus groups (face validity) were employed to analyze the resulted factors.	<ul style="list-style-type: none"> - vision - Regulation & oversight - Transparency
Naeem <i>et al.</i> , 2012	Private business sector (financial institutions)	Factor analysis was performed using self-developed instrument for evaluating good corporate governance	<p>The analysis resulted in the following factors:</p> <ul style="list-style-type: none"> - Agency Problem - Equity Return - Management Holdings - Transparent Audit - Good Corporate Governance
De Araujo <i>et al.</i> , 2013	Private business sector (consulting firms)	Confirmatory factor analysis was performed using questionnaire for evaluating good corporate governance.	<p>The CFA resulted in the following factors:</p> <ul style="list-style-type: none"> - Strategic Leadership - Corporate Culture - Good Corporate Governance - Company Performance
Dočekalová <i>et al.</i> , 2015	Private business sector (manufacturing companies)	Factor analysis was performed using questionnaire for evaluating corporate governance performance.	<p>The analysis resulted in the following two factors:</p> <ul style="list-style-type: none"> - Relationship with stakeholders - Strategy & compliance
Knoll <i>et al.</i> , 2012	Non-governmental organizations (international organizations)	Exploratory & confirmatory factor analyses were performed using the perception-based governance indicators of the US Millennium Challenge Account for aid allocation decisions	<p>The analyses resulted in the following factors:</p> <ul style="list-style-type: none"> - Participatory dimension of governance - Overall quality of governance
