

MIT Open Access Articles

*Developing Core Capabilities for Local Health
Departments to Engage in Land Use and Transportation
Decision Making for Active Transportation*

The MIT Faculty has made this article openly available. **Please share**
how this access benefits you. Your story matters.

Citation: Lemon, Stephenie C. et al. "Developing Core Capabilities for Local Health Departments to Engage in Land Use and Transportation Decision Making for Active Transportation." Journal of Public Health Management and Practice, 25, 5 (September 2019): 464-471 © 2019 The Author(s)

As Published: 10.1097/PHH.0000000000000948

Publisher: Ovid Technologies (Wolters Kluwer Health)

Persistent URL: <https://hdl.handle.net/1721.1/126801>

Version: Final published version: final published article, as it appeared in a journal, conference proceedings, or other formally published context

Terms of use: Creative Commons Attribution-NonCommercial-NoDerivs License



Developing Core Capabilities for Local Health Departments to Engage in Land Use and Transportation Decision Making for Active Transportation

Stephenie C. Lemon, PhD; Karin Valentine Goins, MPH; Meera Sreedhara, MPH; Mariana Arcaya, ScD; Semra A. Aytur, PhD; Katie Heinrich, PhD; Bridget Kerner, MS; Rodney Lyn, PhD; Jay E. Maddock, PhD; Robin Riessman, MPH; Thomas L. Schmid, PhD

ABSTRACT

Objective: To develop a core set of capabilities and tasks for local health departments (LHDs) to engage in land use and transportation policy processes that promote active transportation.

Design: We conducted a 3-phase modified Delphi study from 2015 to 2017.

Setting: We recruited a multidisciplinary national expert panel for key informant interviews by telephone and completion of a 2-step online validation process.

Participants: The panel consisted of 58 individuals with expertise in local transportation and policy processes, as well as experience in cross-sector collaboration with public health. Participants represented the disciplines of land use planning, transportation/public works, public health, municipal administration, and active transportation advocacy at the state and local levels.

Main Outcome Measures: Key informant interviews elicited initial capabilities and tasks. An online survey solicited rankings of impact and feasibility for capabilities and ratings of importance for associated tasks. Feasibility rankings were used to categorize capabilities according to required resources. Results were presented via second online survey for final input.

Results: Ten capabilities were categorized according to required resources. Fewest resources were as follows: (1) collaborate with public officials; (2) serve on land use or transportation board; and (3) review plans, policies, and projects. Moderate resources were as follows: (4) outreach to the community; (5) educate policy makers; (6) participate in plan and policy development; and (7) participate in project development and design review. Most resources were as follows: (8) participate in data and assessment activities; (9) fund dedicated staffing; and (10) provide funding support.

Conclusions: These actionable capabilities can guide planning efforts for LHDs of all resource levels.

KEY WORDS: built environment, chronic disease prevention, local health departments, physical activity, workforce development

Author Affiliations: UMass Worcester Prevention Research Center, University of Massachusetts Medical School, Worcester, Massachusetts (Dr Lemon and Mss Goins and Sreedhara); Department of Urban Studies and Planning, Massachusetts Institute of Technology, Cambridge, Massachusetts (Dr Arcaya); Department of Health Management and Policy, University of New Hampshire, Durham, New Hampshire (Dr Aytur); Department of Kinesiology, Kansas State University, Manhattan, Kansas (Dr Heinrich); National Association of County and City Health Officials, Washington, District of Columbia (Ms Kerner); Division of Health Management and Policy, Georgia State University, Atlanta, Georgia (Dr Lyn); School of Public Health, Texas A&M University, College Station, Texas (Dr Maddock); UMass Transportation Center, University of Massachusetts Amherst, Amherst, Massachusetts (Ms Riessman); and Division of Nutrition, Physical Activity, and Obesity, Centers for Disease Control and Prevention, Atlanta, Georgia (Dr Schmid).

This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

This work was funded by cooperative agreement number U48DP005031 from the Centers for Disease Control and Prevention to Stephenie Lemon

and (Principal Investigator) Karin Valentine Goins. Bridget Kerner, and Robin Riessman were paid consultants. Meera Sreedhara's work was supported by funding from UMass Center for Clinical and Translational Science (UMCCTS), TL1 grant #UL1TR001453.

The findings and conclusions from this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

The authors declare no conflicts of interest.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's Web site (<http://www.JPHMP.com>).

Correspondence: Stephenie C. Lemon, PhD, Division of Preventive and Behavioral Medicine, UMass Worcester Prevention Research Center, University of Massachusetts Medical School, 368 Plantation St, Worcester, MA 01605 (stephenie.lemon@umassmed.edu).

Copyright © 2019 The Authors. Published by Wolters Kluwer Health, Inc.

DOI: 10.1097/PHH.0000000000000948

Active transportation by walking or biking for routine trips in daily life can increase physical activity among adults and children and thus promote chronic disease risk reduction.¹ Policy-based approaches in the realms of land use design and transportation are promoted as sustainable ways to restructure how communities are designed in order to promote active transportation.^{2,3}

National recommendations urge public health sector engagement in land use and transportation to address the epidemic of physical inactivity,^{4,5} and local health departments (LHDs) have an important role in ensuring that physical activity benefits are considered in land use design and transportation policy processes at the local level.⁶ LHD participation in policy/advocacy activities related to physical activity appears to be low,⁷ although formal, representative assessments of their participation on specific policy-based approaches are lacking. While a relatively small number of LHDs have become leaders in addressing land use and transportation as it affects health (generally larger or high-resourced ones), systematic attempts to build capacity have been limited.^{8,9} A recent exploration of the perceived value of LHD engagement on community design found support among a multidisciplinary group of practitioners.¹⁰ Participation of LHDs in the complex, multicomponent system that shapes the built environment in their communities will require identifying critical entry points into existing policy development and implementation processes and engaging in selected activities on an ongoing basis to make health a routine consideration. Meaningful participation will require ongoing collaboration with professionals in other sectors, including land use planners and transportation officials as well as community advocacy groups.¹¹ A variety of tools and publications at the intersection of public health with transportation and community design have been developed, but these do not provide specific guidance on the role of LHDs or suggest how LHDs could allocate resources such as staff time or training funds.¹²⁻¹⁴ LHDs need actionable, data-driven recommendations to guide department participation in activities that inform land use and transportation policy decision making, as well as workforce development to support that engagement. The 2011 document “Public Health Preparedness Capabilities: National Standards for State and Local Planning”¹⁵ from the US Centers for Disease Control and Prevention (CDC) provides a valuable example. While the Core Competencies for Public Health Professionals are a “consensus set of skills,”¹⁶ the Capabilities are intended to “assist state and local health departments with their strategic planning.” They are thus conceptually aligned with the Public Health Accreditation Board Standards

and Measures Version 1.5,¹⁷ in particular Domains 1 (Conduct and Disseminate Assessments Focused on Population Health Status and Public Health Issues Facing the Community), 3 (Inform and Educate About Public Health Issues and Functions), and 5 (Develop Public Health Policies and Plans).

Department capabilities can help frame workforce development needs. LHD workforce development specific to active transportation is consistent with national efforts to improve public health practice to better address the social determinants of health and “upstream” causes of disease. Public Health 3.0 calls for a system redesign of public health practice to promote sustainable approaches to improving population health,¹⁸ with LHDs serving as “chief health strategists” in their communities and engaging in cross-sector collaborations that promote environmental and systems-level changes. Specific approaches prescribed for LHDs include mobilizing multisectoral partnerships, strengthening infrastructure, developing sustainable resources, and leveraging data to inform policy and planning.^{18,19} This represents a shift in current practice for many LHDs, which place more emphasis on clinical services and less emphasis on environmental, systems, and policy-related activities addressing social determinants of health and cross-sector collaboration.^{20,21} Potential challenges to achieving the Public Health 3.0 vision include variability across LHDs with respect to population served, staffing and resource availability, and required scope of services.²² In addition, the local public health workforce traditionally had little formal training in public health.²³ Recent work found the greatest training needs of state health agency workers to be policy development, budgeting, and social determinants of health.²⁴ Achieving the Public Health 3.0 vision will thus require substantial investments in workforce development that address current gaps.²⁵

Defining specific LHD capabilities, or standards for the department related to active transportation, is an important first step for increasing LHD participation in this policy realm. The purpose of this study was to develop a set of core capabilities and associated tasks to guide strategic planning and workforce development efforts of LHDs looking to increase their involvement in local land use and transportation policy processes.

Methods

Design and setting

A 3-round modified Delphi method²⁶ was used to develop a set of core capabilities and associated tasks to guide LHD participation in transportation and land

use policy processes. A multiphased approach was conducted in iterative rounds to achieve consensus among a group of experts. After each round, results were synthesized, incorporated into the assessment, and then included in the subsequent round to allow participants to reassess their opinions in response to synthesized findings from the previous round.²⁶ The study was conducted between May 2015 and April 2017 and approved by the Committee for the Protection of Human Subjects in Research at the University of Massachusetts Medical School.

Participants

This study engaged a multidisciplinary panel with expertise in local transportation and land use policy processes, as well as experience in cross-sector collaboration. We targeted a convenience sample of professionals who represented the disciplines of land use planning, transportation/public works, public health/health coalition, economic development, municipal administration, and active transportation advocacy at the state and local levels. An initial sample was identified through members of the Physical Activity Policy Research Network Plus (PAPRN+), a national network of researchers and practitioners funded by the CDC to advance physical activity policy research. From the initially identified contacts, a snowball sampling approach was used to solicit additional contacts. Invitations were e-mailed to 69 individuals, of which 49 participated. Upon completion of round 1 (described later), the research team opted to supplement the sample with individuals representing municipal administration and active transportation advocacy. An additional 24 individuals were identified through collaboration with AmericaWalks, a coalition of national, state, and local advocacy groups, and invited to participate. Of these, 9 participated. Across the 3 rounds of the study, 58 unique individuals participated. This included 19 from a public health/health coalition, 13 from land use planning, 11 from transportation/public works, 10 from active transportation

advocacy, and 5 from municipal administration (no participants representing economic development were recruited). Verbal consent was obtained, and participants were offered a \$100 gift card for their involvement in the entire study. Figure 1 depicts the individuals who participated in each round of the study.

Data collection and analysis

Round 1: Key informant interviews

Qualitative key informant interviews were used to elicit initial responses on activities LHDs of varying resource levels could undertake to impact the built environment. A semistructured interview guide was developed iteratively starting with a literature scan and including feedback from the research team and testing via pilot interviews with 2 land use planners. Guide constructs included their personal experience working with officials from the other relevant disciplines (ie, land use or transportation with public health, and vice versa), including successes and challenges, role and unique contributions of LHDs in built environment decision making, activities that could be expected to have an influence on the built environment (at minimum, moderate and high levels), and knowledge and skills needed for credible participation in built environment decision making. Interviews were conducted by telephone ($n = 43$) or in-person ($n = 6$). Interviews were approximately 1 hour in duration and were audio recorded and transcribed. Transcripts were reviewed to remove personal identifiers and to check accuracy against audio recordings and interviewer notes.

A deductive analytic approach adapted from the method suggested by Campbell and colleagues²⁷ was used. Transcripts were organized and coded using NVivo10 (QSR International, Melbourne, Australia; 2012). The interview questions served as an initial guide to develop the codebook. The primary analyst (K.V.G.) coded each transcript using the a priori

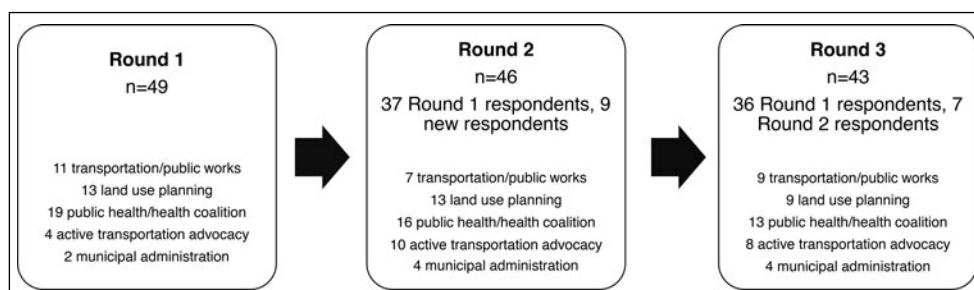


FIGURE 1 Summary of Expert Panel Members in Each Delphi Process Round

constructs. The primary analyst reviewed each construct across respondents and noted emerging themes. The primary analyst then consolidated related emergent themes within each construct into shorter lists of exhaustive, mutually exclusive codes. Matrix coding queries were created to calculate respondent totals by discipline and exported as Microsoft Excel spreadsheets to numerically evaluate numbers of respondents whose data supported construct themes. The organized raw data were reviewed to establish qualitative dimensions within themes, including disconfirming or contrasting perspectives, and explore variation by discipline. Interviews were coded by 2 members of the research team. One author (K.V.G.) applied codes relevant for the present analysis to all transcripts and another (S.C.L.) reviewed all applied codes. Percent agreement on themes was calculated to assess interrater agreement (mean = 91%) with discussion of disagreements until consensus was achieved. The final product of round 1 was an initial set of core capabilities and associated tasks.

Round 2: Ranking and rating survey

The goal of round 2 was to obtain expert panel member input on the capabilities and associated tasks developed in round 1. A Web-based survey was administered using Qualtrics (Provo, Utah). An initial e-mail was sent to all members of the expert panel. After 1 week, an e-mail reminder was sent to nonrespondents. Over the succeeding 3 weeks, up to 3 telephone reminder calls were made to expert panel members who had not responded at each wave. A voicemail message was left on the final call.

In the survey, respondents ($n = 46$) were first asked to rank order the set of capabilities separately on 2 dimensions: perceived impact and perceived feasibility. *Impact* was defined as the magnitude of potential effect of LHD participation on physical activity and the built environment. *Feasibility* was defined as ease of implementation based on investment of time and other resources by an LHD. Respondents completed each ranking by dragging and dropping capabilities into their preferred order from highest to lowest. Following the ranking process, respondents were given open-ended prompts to note any concerns about specific capabilities. Respondents were then asked to rate their perceived importance of each task associated with each capability. *Importance* was defined as the value of that task to achieving the respective capability. Ratings used a 7-point scale, from *not at all important* to *very important*. Median impact and feasibility rankings for each capability were calculated. Median rankings of each capability's average impact versus average feasibility were plotted. The percentage of

respondents who rated each capability as *somewhat important* or *very important* was calculated.

Round 3: Validation survey

The goal of round 3 was to obtain input on modifications made on the basis of round 2 results and achieve final consensus on capabilities and associated tasks. A Web-based survey in Qualtrics was again used along with the previously described reminder protocol.

On the basis of round 2 results (described in detail later), capabilities were organized into 3 categories based on the relative level of resources required for an LHD to implement them (fewest, moderate, most). After a description of the rationale for classifying capabilities into categories was presented, respondents ($n = 43$) were asked to indicate their level of agreement with the overall approach of grouping capabilities by implementation feasibility on a 5-point scale, from *strongly agree* (5) to *strongly disagree* (1). Then, within each resource level (fewest, moderate, most), respondents were asked to rate their level of agreement with the classification of each capability using the same 5-point scale. For any classification with which the respondents disagreed, they were prompted to describe why they disagreed and what they believed the appropriate classification to be. Average ratings were calculated. The research team made final modifications based on these results and the open-ended responses describing reasons for disagreement. For capabilities and tasks with less than 75% agreement among respondents, the research team reviewed each and came to consensus on whether modifications were needed.

RESULTS

Round 1: Key informant interviews

Ten initial capabilities (see the Supplementary Digital Content Table, available at <http://links.lww.com/JPHMP/A555>) emerged from the key informant interviews. The initial number of associated tasks (also in the Supplementary Digital Content Table, available at <http://links.lww.com/JPHMP/A555>) ranged from 2 to 8 for each capability. [Note: The table presents preliminary data and not the final capabilities.]

Round 2: Ranking and rating survey

The potential range of rankings was from 1 (most feasible/impactful) to 10 (least feasible/impactful). Plots of median impact rankings versus median feasibility rankings are presented in Figure 2. Median rankings of potential *impact* of the 10 capabilities ranged from 4 (plan and policy development) to

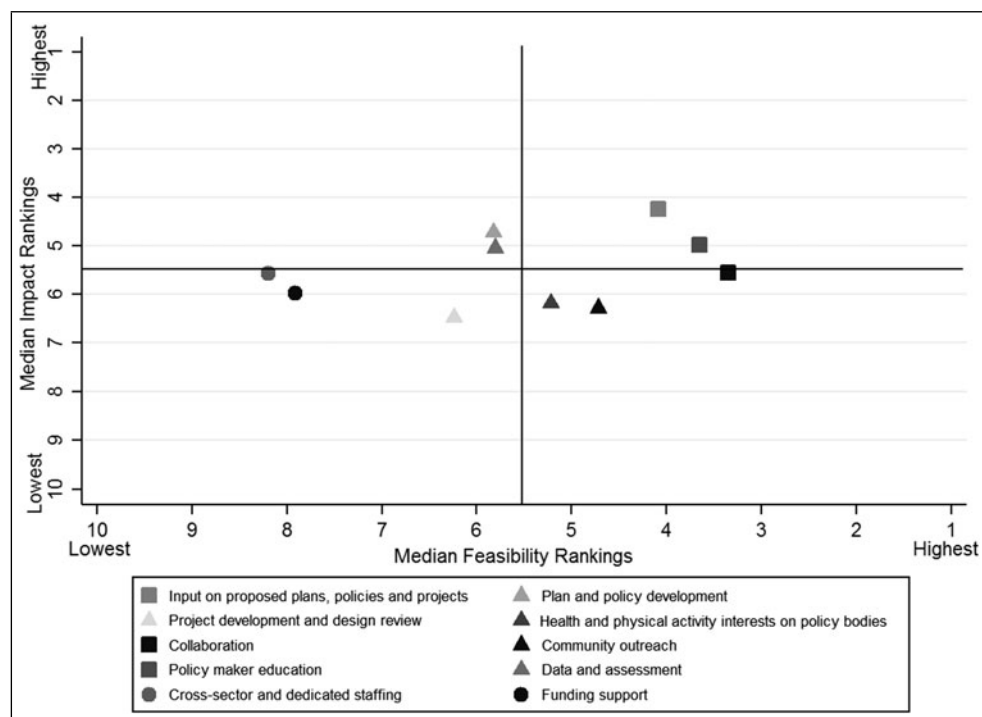


FIGURE 2 Median Rankings of Perceived Impact by Perceived Feasibility in Round 2 Survey (n = 46)

7 (represent health and physical activity interests on policy bodies and community outreach). Because of this limited range, the research team interpreted results as indicating that all of the 10 capabilities were potentially impactful, and each was thus retained. Median rankings of the potential feasibility of the 10 capabilities ranged from 3 (collaboration, policy maker education) to 9 (cross-sector and dedicated staffing and funding support). Given this variability, the research team made the decision to group capabilities according to required resources using categories of fewest, moderate, and most resources.

The majority of associated tasks (35/45) were rated as somewhat or very important by at least 75% of respondents. Those that did not achieve 75% endorsement (n = 10), indicated in the Supplementary Digital Content Table (available at <http://links.lww.com/JPHMP/A555>) with an asterisk (*), were not included in the final set of associated tasks. The final range of associated tasks was 2 to 6 per capability.

Round 3: Validation survey

Overall, 89.1% of respondents agreed or strongly agreed with the approach of categorizing capabilities by resource level. Capabilities initially categorized as requiring fewest resources and the percentage of respondents in round 3 who strongly agreed or agreed with this classification were as follows: collaboration

with other public officials (93.0%); review and comment on plans, policies, and projects (76.7%); policy maker education (72.1%); and public outreach to the community (60.5%). Capabilities initially categorized as requiring moderate resources and their percentage agreement included the following: plan and policy development (97.7%); project development and design review (95.4%); service on policy bodies (86.1%); and data and assessment (69.8%). Finally, capabilities initially categorized as requiring most resources and their percentage agreement with this categorization were as follows: cross-sector and dedicated staffing (97.7%) and funding support (88.4%).

Final capabilities

The final capabilities, grouped by resource level, are presented in a format developed for dissemination to support public health practice (see the Supplementary Digital Content Figure, available at <http://links.lww.com/JPHMP/A556>). Modifications to the preliminary resource categorizations were made on the basis of the round 2 quantitative and qualitative results. We erred on the side of caution, including capabilities in the higher resource group if there was some level of disagreement (<75% agreement with supportive qualitative input) about the classification. Three capabilities were thus shifted. “Public outreach to the community” and “policy maker education” were

reclassified as requiring moderate resources. “Data and assessment” was reclassified as requiring most resources. Capability wording was also finalized on the basis of qualitative comments from the expert panel. In addition, the capability initially named “cross-sector and dedicated staffing” was renamed “dedicated staffing” to better reflect the tasks that were retained for this capability.

DISCUSSION

The goal of this study was to develop a set of core capabilities and associated tasks that LHDs can undertake to enhance their involvement in local land use and transportation policy processes. It resulted in 10 actionable capabilities that can guide LHD strategic planning and workforce development efforts. These capabilities are available for free download from the UMass Worcester Prevention Center Web site.²⁸

With expanded Public Health 3.0¹⁸ expectations of LHDs to serve as “chief health strategists” in their communities through cross-sector collaborations and promotion of policy, environmental, and systems strategies to address social determinants of health, considerable investments in public health workforce development are needed. The capabilities defined in this project refer to specific department-level functions that LHDs can perform in a defined area. Capabilities refer to the knowledge, skills, and abilities of the department as a whole and offer organizations information to use in strategic planning. This department or organizational-level emphasis differs from *competencies*, which are primarily applied at the individual level and describe knowledge, skills, and abilities an individual could have in order to carry out his or her responsibilities.^{29,30} Capabilities for public health preparedness released in 2011,¹⁵ which were “intended to serve as national standards that state and local public health departments can use to advance their preparedness planning” at the department level by identifying gaps and priorities and developing plans for improvement in the designated areas, provided a valuable example for organizing the current study. The preparedness capabilities were developed through a similarly rigorous process, and each has multiple functions and tasks that “describe[s] the steps to complete the [functions].”¹⁵ Our work further demonstrates that this approach of engaging a multidisciplinary expert group to generate, validate, and achieve consensus on a set of activities offers a rigorous approach to developing public health practice standards as Public Health 3.0 advances.

The specific capabilities generated are consistent with the 10 Essential Public Health Services defined by the CDC³¹ and offer a valuable tool for LHDs in

the context of Public Health 3.0.³² Only 3 of the 10 capabilities explicitly address policy. Collectively, the capabilities are indicative of the complex process involved in policy development, implementation, and evaluation and capture the systems changes inherent in the *policy, systems, and environmental change* approach embraced by public health, that is, influencing and participating in routine decision making over time. Such capabilities are more difficult to articulate and assess³³ but are critical.³⁴ The World Federation of Public Health Associations underscores³⁵ this point in its 2016 Charter, which recognizes workforce capacity, governance, advocacy, and information as key areas of focus for policy implementation. The capabilities offer an opportunity to plan for and demonstrate systems change progress as measured by public health engagement with actors and processes for social determinants of health. The capability focused on data and assessment represents a widely perceived strength of public health, and advances in measurement and data¹³ are among the most visible and exciting developments in health and transportation. However, metrics are only part of the process and the range of capabilities elicited suggest opportunities for LHD engagement throughout the transportation and land use policy processes.

Three capabilities that emerged in this project (review and comment on plans, policies, and projects; plan and policy development; and project development and design) represent integral, yet conceptually distinct phases and level of involvement in transportation and land use planning policy development and implementation. “Review and comment on plans, policies, and projects” refers to providing input at a late stage when a plan, policy, or project is nearly fully developed and only tweaks are possible; “plan and policy development” entails participation in developing the policy from an earlier, often conceptual stage; and “project development and design review” refers to providing input into specific projects at an early stage to ensure the inclusion of elements related to health within policies. Despite their distinctness, each of these capabilities requires a foundational understanding of the complexities of policy processes and skill development in order to engage successfully.

These capabilities were developed in recognition of the variability in LHDs nationally. Departments of varying sizes and resources could benefit from tailoring of expectations, including identification of entry points and allowable activities appropriate for multiple resource levels. It is important for LHDs to be aware of local regulations regarding what role they can play in these processes. LHDs can then select from menus of options based on a combination of community priorities and departmental resources. They may

Implications for Policy & Practice

- Workforce development initiatives that position LHDs to effectively address the social determinants of health through policy changes are needed to be consistent with the Public Health 3.0 vision.
- Results of this study provide LHDs of varying resource levels with a tool that can be used in strategic planning for participation in land use and transportation policy processes and workforce development activities to help achieve this vision.
- Engaging a multidisciplinary expert group to generate, validate, and achieve consensus on a set of activities offers a rigorous approach to developing public health practice standards as Public Health 3.0 advances.

begin by assessing how their current activities fit into a set of capabilities or target specific activities of interest.

The broad nature of these capabilities raises expectations for public health agency engagement but does not offer preparation guidance or benchmarks. While the capabilities can serve as a stand-alone tool, their utility for workforce development could be enhanced through affordable training and technical assistance to drill down on definitions and address nuances such as those enumerated earlier.^{6,36} State health departments and other stakeholders in the public health network, such as hospitals, community health centers, nonprofit organizations, and public health training programs preparing the next generation of leaders may also find the capabilities useful. For example, the capabilities correspond to nearly all of the foundational competencies for Master of Public Health graduates and could be used to design curricula that fulfill 1 or more of them.³⁷

The developed set of capabilities is being widely disseminated as a stand-alone tool through a variety of channels and will also serve as the foundation of future research to develop and test workforce development training and technical assistance interventions.

Limitations

This study has several strengths and limitations. The sample size was large for qualitative research and comprised a diverse set of representatives of multiple relevant disciplines. A rigorous process was applied throughout the project, including initial data collection and analysis, the iterative modified Delphi process, and application of a threshold in making final determinations. While many LHDs will find value in the capabilities, some departments may foresee no opportunity to utilize them due to resource constraints. Some capabilities may prove more useful

than others, and some capabilities may be more useful in certain locales. Rural health departments face the greatest challenges in addressing active transportation challenges,³⁸ and further refinement of the capabilities for this context will be needed.

References

1. Hamer M, Chida Y. Active commuting and cardiovascular risk: a meta-analytic review. *Prev Med*. 2008;46(1):9-13.
2. Institute of Medicine. For the public's health: revitalizing law and policy to meet new challenges. http://www.nap.edu/openbook.php?record_id=13093. Accessed October 11, 2018.
3. Guide to Community Preventive Services. Physical activity: built environment approaches combining transportation system interventions with land use and environmental design. <https://www.thecommunityguide.org/findings/physical-activity-built-environment-approaches>. Accessed October 11, 2018.
4. National Physical Activity Plan. Commentaries on physical activity and health. <http://www.physicalactivityplan.org/index.html>. Accessed October 11, 2018.
5. Surgeon General.gov. National Prevention Strategy. <https://www.surgeongeneral.gov/priorities/prevention/strategy/index.html>. Accessed October 11, 2018.
6. Dyjack DT, Botchwey N, Marziale E. Cross-sectoral workforce development: examining the intersection of public health and community design. *J Public Health Manag Pract*. 2013;19(1):97-99.
7. Lemon SC, Goins KV, Schneider KL, et al. Municipal officials' participation in built environment policy development in the United States. *Am J Health Promot*. 2015;30(1):42-49.
8. Rube K, Veatch M, Huang K, et al. Developing built environment programs in local health departments: lessons learned from a nationwide mentoring program. *Am J Public Health*. 2014;104(5):e10-e18.
9. Miro A, Perrotta K, Evans H, et al. Building the capacity of health authorities to influence land use and transportation planning: lessons learned from the Healthy Canada by Design CLASP Project in British Columbia. *Can J Public Health*. 2014;106(1)(suppl 1):eS40-eS52.
10. Sreedhara M, Goins KV, Aytur SA, et al. Qualitative exploration of cross-sector perspectives on the contributions of local health departments in land use and transportation policy. *Prev Chronic Dis*. 2017;14:E118.
11. US Department of Transportation Federal Highway Administration. Local transportation agencies. https://ops.fhwa.dot.gov/plan4ops/resources/loc_trans_agencies.htm. Accessed October 11, 2018.
12. ChangeLab Solutions. A guide to building healthy streets. http://www.changelabsolutions.org/sites/default/files/Building_Healthy_Streets_FINAL_20160630.pdf. Accessed October 11, 2018.
13. US Department of Transportation. Transportation and health tool. <https://www.transportation.gov/transportation-health-tool>. Accessed October 11, 2018.
14. American Public Health Association. At the intersection of public health and transportation: promoting healthy transportation policy. https://www.apha.org/~media/files/pdf/factsheets/at_the_intersection_public_health_and_transportation.ashx. Accessed October 11, 2018.
15. *Public Health Preparedness Capabilities: National Standards for State and Local Planning*. Atlanta, GA: Centers for Disease Control and Prevention; 2011.
16. Public Health Foundation. Core competencies for public health professionals. http://www.phf.org/resourcestools/pages/core_public_health_competencies.aspx. Accessed October 11, 2018.
17. Public Health Accreditation Board. Public Health Accreditation Board Standards & Measures Version 1.5. http://www.phaboard.org/wp-content/uploads/PHABSM_WEB_LR1.pdf. Accessed October 11, 2018.
18. US Department of Health & Human Services. Public Health 3.0: a call to action to create a 21st century public health infrastructure. <https://www.healthypeople.gov/sites/default/files/Public-Health-3.0-White-Paper.pdf>. Accessed October 11, 2018.

19. National Association of County and City Health Officials. Public Health 3.0: transforming communities. <https://www.naccho.org/programs/public-health-infrastructure/public-health-3-0>. Accessed February 17, 2018.
20. Shah GH, Sheahan JP. Local health departments' activities to address health disparities and inequities: are we moving in the right direction? *Int J Environ Res Public Health*. 2016;13(1):44.
21. Kulkarni M. PH 3.0: supporting local health departments in the new paradigm to improve population health. *J Public Health Manag Pract*. 2017;23(3):331-333.
22. Robin N, Leep CJ. NACCHO's National Profile of Local Health Departments Study: looking at trends in local public health departments. *J Public Health Manag Pract*. 2017;23(2):198-201.
23. Institute of Medicine. *Who Will Keep the Public Healthy?: Educating Public Health Professionals for the 21st Century*. Washington, DC: The National Academies Press; 2003.
24. Sellers K, Leider JP, Harper E, et al. The Public Health Workforce Interests and Needs Survey: the first national survey of state health agency employees. *J Public Health Manag Pract*. 2015;21(suppl 6):S13-S27.
25. Public Health Leadership Forum. The high achieving health department in 2020 as the community chief health strategist. RESOLVE health Web site. <http://www.resolve.org/site-healthleader-shipforum/hd2020>. Accessed October 11, 2018.
26. Hsu CC, Sandford BA. The Delphi technique: making sense of consensus. *Pract Assess Res Eval*. 2007;12(10):1-8.
27. Campbell JL, Quincy C, Osseman J, Pedersen OK. Coding in-depth semistructured interviews: problems of unitization and intercoder reliability and agreement. *Sociol Methods Res*. 2013;42(3):294-320.
28. Capabilities for public health agency involvement in land use and transportation decision making to increase active transportation opportunity. <https://www.umassmed.edu/globalassets/umass-worcester-prevention-research-center/documents/paprn-local-health-department-capabilities-wtasks-2017.pdf>. Accessed October 11, 2018.
29. *Environmental Health Competency Project: Recommendations for Core Competencies for Local Environmental Health Practitioners*. Atlanta, GA/Washington, DC: CDC National Center for Environmental Health/American Public Health Association; 2001.
30. Ned-Sykes R, Johnson C, Ridderhof JC, et al. Competency guidelines for public health laboratory professionals: CDC and the Association of Public Health Laboratories. *MMWR Suppl*. 2015;64(1):1-81.
31. Centers for Disease Control and Prevention, Office for State Tribal Local and Territorial Support. The 10 Essential Public Health Services: an overview. <https://www.cdc.gov/stltpublichealth/public-healthservices/pdf/essential-phs.pdf>. Accessed October 11, 2018.
32. DeSalvo KB, O'Carroll PW, Koo D, Auerbach JM, Monroe JA. Public Health 3.0: time for an upgrade. *Am J Public Health*. 2016;106(4):621-622.
33. Honeycutt S, Leeman J, McCarthy WJ, et al. Evaluating policy, systems, and environmental change interventions: lessons learned from CDC's Prevention Research Centers. *Prev Chronic Dis*. 2015;12:E174.
34. Erwin PC, Brownson RC. The public health practitioner of the future. *Am J Public Health*. 2017;107(8):1227-1232.
35. A Global Charter for the Public's Health—the public health system: role, functions, competencies and education requirements. http://www.wfpa.org/images/Charter_WFPHA.pdf. Accessed October 11, 2018.
36. Goins KV, Ye J, Leep CJ, Robin N, Lemon SC. Local health department engagement in community physical activity policy. *Am J Prev Med*. 2016;50(1):57-68.
37. Council on Education for Public Health. Accreditation criteria: schools of public health & public health programs. https://storage.googleapis.com/media.ceph.org/wp_assets/2016.Criteria.pdf. Accessed October 3, 2018.
38. Hansen AY, Umstattd Meyer MR, Lenardson JD, Hartley D. Built environments and active living in rural and remote areas: a review of the literature. *Curr Obes Rep*. 2015;4(4):484-493.