

Findings From A Us State Department Of Health Workforce Assessment Survey

Brian C. Martin, PhD, MBA

Eastern Virginia Medical School, Norfolk, Virginia, USA

Billy Brooks, MPH

Paula Masters, MPH

Robert Pack, PhD, MPH

East Tennessee State University, Johnson City, Tennessee, USA

Abstract

To determine the level of public health competency and training in the existing Tennessee Department of Health (TDH) workforce, an anonymous survey was implemented electronically. Questions were based on the Council on Linkages Core Public Health Competencies, a consensus set of skills identified by the Council on Linkages Between Academia and Public Health Practice as being desirable for the delivery of the Essential Public Health Services. All 5,178 active TDH employees were eligible to participate in the survey. In each of the core competency areas Leadership Level respondents scored consistently higher than Management Level or Entry Level, and Management Level respondents scored higher than Entry Level respondents. However, overall findings indicate that the eight core competency areas are not fully integrated into the TDH, and that there are clear training needs with high priority. Needs scores were calculated by dichotomizing responses into ‘Unaware/Aware’ and ‘Knowledgeable/Proficient’, with the ‘Unaware/Aware’ category indicating a training need in that area. When considering responses from all three Tiers, needs scores greater than 50% were found for six of the eight core competency areas. These results identify opportunities for improvements through a coordinated training strategy. Findings also highlight the need for deliberate planning activities related to diversity and hiring, as a significant percentage of employees are predicted to retire in the near future. Given resource constraints within TDH, training activities should be directed to increase competencies that are likely to have the greatest impact on the mission of the Department of Health.

Keywords: Workforce assessment, public health, competencies

Introduction

The health of residents of the United States depends on a strong public health infrastructure that is capable of efficiently and effectively delivering the essential services of public health. The US Department of Health and Human Services recognized this significance when it included specific objectives that address continuing education and training needs for the public health workforce in *Healthy People 2020* (US Department of Health and Human Services, 2010). Training activities are vital for the development of the current workforce and for future capacity.

Literature Review

In a landmark report, the Institute of Medicine noted that an estimated 80% of the public health workforce had little or no formal professional training in public health or in their specific field within public health (Gebbie, Hernandez, & Rosenstock, 2003). A 2007 National Association of County and City Health Officials (NACCHO) publication concluded that “Though information on the educational attainment of Local Health Department (LHD) workers is not available, data on occupations suggests that the percentage of LHD workers who received public health training in their formal educations is relatively low.” (Leep, 2007.).

On-the-job training options may be lacking. For example, in the state of Tennessee, with the exception of the Tennessee Workforce Development Consortium, there have been virtually no formal educational opportunities for Tennessee Department of Health (TDH) staff since the late 1980’s. The need for workforce development was highlighted in the state’s revised Tennessee Department of Health training agenda focused on employee-identified issues and leader priorities (State of Tennessee, Department of Health, 2012).

The Association of State and Territorial Health Officials (ASTHO) reported that, in the nation overall, the percentage of public health employees eligible for retirement was expected to grow steadily from 18% in fiscal year 2010 to 27% in fiscal year 2014 (Association of State and Territorial Health Officials, 2011). They also noted that Tennessee would see 30-40% of its health department employees eligible for retirement in fiscal year 2014. In 2007, an ASTHO national survey noted that the average age of a Tennessee public health employee was over 48.7 years, above the national average of 47 years (Lewis & Reichardt, 2008). The Association of Schools of Public Health (ASPH) reported that, nationally, 250,000 new public health workers would be needed by 2020, and suggested that 23% of existing public health workers would be eligible to retire by 2012 (Association of Schools of Public Health, 2008).

Two NACCHO reports highlighted the prevalence of formal training deficiencies. The first, published in 2009, noted that only 8.4% of top executives in LHDs had formal graduate-level training in public health – MPH, Dr.PH, or Ph.D. (National Association of County & City Health Officials, 2009). While several Tennessee LHD directors have completed the MPH program through the TN Workforce Development Consortium, the majority still lack formal training in public health. The second, published in 2010, reported that 52% of Tennessee’s LHDs lost staff due to layoffs and attritions in 2009, versus 46% nationwide (National Association of County & City Health Officials, 2010).

As part of its efforts to determine the level of competency in its existing workforce, as well as to assist with credentialing activities, the Tennessee Department of Health signed a Memorandum of Agreement (MOA) with LIFEPATH, the Public Health Training Center housed at East Tennessee State University’s College of Public Health. LIFEPATH’s mission is to provide both academic and non-academic competency-based training to public health employees in the state of Tennessee. The MOA outlined a process for surveying all Department of Health employees across the state of Tennessee.

Methods

The survey instrument was developed by the North Carolina Center for Public Health Preparedness, The North Carolina Institute for Public Health, at The University of North Carolina at Chapel Hill and was used with permission. The North Carolina Center for Public Health Preparedness instrument has been validated and used for workforce assessments in North Carolina and West Virginia.

Questions for the survey are based on The Council on Linkages Core Public Health Competencies (adopted in May 2010), a consensus set of skills identified by the Council on Linkages Between Academia and Public Health Practice (Council on Linkages) as being desirable for the delivery of the Essential Public Health Services (The Council on Linkages Between Academia and Public Health Practice, 2010). The US Department of Health and Human Services included these competencies in their Healthy People 2020 objectives. The survey uses the 8 core competency areas identified by the Council on Linkages and assigns questions pertinent to these areas to respondents based on one of three Tiers – Tier 1: Entry Level, Tier 2: Management Level, and Tier 3: Leadership Level (The Council on Linkages Between Academia and Public Health Practice, 2010). The following table indicates the number of survey questions for each core competency area by Tier.

Table 1: Competency Areas and Questions by Tier

Competency Area	Tier 1 Questions	Tier 2 Questions	Tier 3 Questions
Analytical Assessment	12	12	13
Policy Development/Program Planning	10	11	13
Communication	6	6	7
Cultural Competency	6	6	7
Community Dimensions of Practice	10	10	11
Public Health Science	9	9	10
Financial Planning and Management	13	14	17
Leadership and Systems Thinking	8	8	9

In previous applications of the survey, respondents self-selected their Tier using descriptions provided in the survey. As a validity check to this method of self-selection, the instrument was modified to use job classification as the driver to identify Tier. A test of agreement was conducted using Cohen's Kappa statistic that resulted in moderate agreement between self-selected tier and job classification ($\kappa = 0.5089$). Job classifications were placed into appropriate Tier by a panel of practice professionals from the Tennessee Department of Health across local, regional, and state levels. These professionals were familiar with the classifications and respective job responsibilities carried out by that classification. Potential responses for each question were:

1. **Unaware** – I am unaware, or have very little knowledge of the item
2. **Aware** – I have heard of it; limited knowledge and/or ability to apply the skill
3. **Knowledgeable** – I am comfortable with knowledge or ability to apply the skill
4. **Proficient** – I am very comfortable, an expert; could teach this to others

Prior to the administration of the survey, TDH provided LIFEPATH with a list of job classifications, a list of all TDH employee email addresses, and a TDH email account. An email describing the anonymous survey and containing a link to the survey site was sent to all TDH employees on June 4, 2012. The survey was administered via SurveyMonkey™ (SurveyMonkey.com, LLC) from June 4, 2012 through June 29, 2012. All TDH employees received a weekly email reminder to complete the survey. Data were collected and maintained by LIFEPATH, and a cleaned (de-identifiable) data file was provided to TDH at the end of July.

After the survey period opened, LIFEPATH and TDH personnel began to receive communication from TDH employees noting missing job classifications. After investigation it became apparent that the job classification list, mutually agreed upon by both parties, excluded certain job categories. This meant that some employees were unable to enter the survey questions. The solution implemented was to direct employees with this issue to use ‘comparable’ job classifications (determined by a pool of experts and using an algorithm based on Tier) from the initial list. While this solution allowed employees whose job classifications were missing to participate in the survey, the incomplete job classification list caused the number of respondents who began (but did not complete) the survey to be overstated.

Results

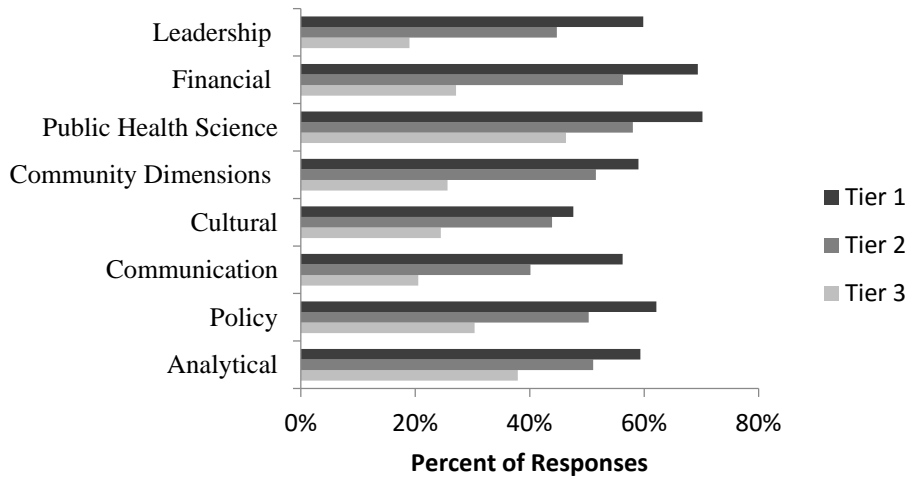
The list of TDH employee email addresses netted 5,178 usable addresses. There is variance in the rate of completion (number of questions answered), including both competency-based and demographic questions. Due to the job classification issue noted above, the final response rate was calculated as the number of respondents who completed at least 1 competency question divided by the total number of usable email addresses – $3,086/5,178 = 59.60\%$.

Competencies

Responses to questions for each of the 8 core competencies were dichotomized into ‘Knowledgeable/Proficient’ and ‘Unaware/Aware’ and reported by Tier. Tier 3 (Leadership Level) respondents scored consistently higher than Tier 2 (Management Level) or Tier 1 (Entry Level) in each of the core competency areas, and Tier 2 respondents scored higher than Tier 1 in each of the core competency areas. Nearly 20% of Tier 3 employees and 40%+ of Tier 2 employees scored within Unaware/Aware in each of the core competency areas.

The level of ‘need’ for each of the 8 core competency areas was also calculated. Need Score was calculated by first dichotomizing the responses as described above then assessing the percentage of responses in the ‘Unaware/Aware’ category. The following is a summary of needs scores for all Tiers by all competencies.

Figure 1 - Percent of Responses With Needs Score By Tier



When considering responses from all 3 Tiers, the needs score is greater than 50% for 6 out of 8 core competency areas. Tier 1 respondents have an average need of 60.46% in each of the 8 core competency areas, Tier 2 respondents have an average need of 49.50% across the 8 core competency areas, and Tier 3 respondents have an average need of 28.91% across the 8 core competency areas.

Demographics

Demographic findings were calculated based on those respondents who answered at least 1 of the competency questions. This approach is justified by frequency analysis showing less than 1% of respondents who did not complete at least half of the competency questions filled out the demographics portion of the survey.

Statewide

Most (84.10%) of the respondents are female. More than one-half (51.03%) of respondents are age 18-49, and 48.97% are age 50 and above. Interestingly, 3.2% of respondents are age 66 and above, with 0.8% of respondents being 71 years or older. Most respondents (81.92%) are white or Caucasian and 13.84% of respondents are Black or African American.

Approximately 33% of respondents have a BS or BA degree, 20.85% have a high school degree or GED, 16.46% have an Associate’s degree, and 14.01% have a graduate or professional degree. Slightly less than 4% of respondents have “known” formal public health training (MPH, MSEH, DrPH), while 8.86% of respondents “may have” some formal public health

within their training (i.e., these include MSN, MD/DDS/Other clinical doctoral degrees, PhD), and 32.67% of respondents have BS/BA degrees where the level of formal public health training is unknown.

While respondents were asked their employment status (in terms esoteric to the state, each employment contract holds status of “Contract”, “Metro”, “State”, or “County”), the number of ‘State’ responses is overstated, leading us to believe that respondents misunderstood the question, their actual contracting mechanism status, or both. The data indicate that most employees work for the state (68.4%), followed by 22.31% for the County, 7.75% for Metro, and 1.54% under contract.

As mentioned previously, the incomplete job classification list caused the number of respondents who began (but did not complete) the survey to be overstated. A total of 353 respondents self-identified Tier level using the descriptions listed in question 1 of the survey, then exited the survey – presumably because their job classification was not listed in the dropdown list in question 2 of the survey (selecting a job classification in question 2 was required for direction into the Tier-based competency questions). Ninety-one individuals and two large groups/departments of employees (State Laboratory and the Office of Policy, Planning, and Assessment) were directed to ‘comparable’ job classifications. It is not possible to assess the effect of the missing job classifications on response rate, or to assure an accurate job classification frequency.

Central Office, Metropolitan, and Rural Regions

Rural regions reported the greatest female to male employee ratio, followed by Metropolitan areas. Rural regions have a younger workforce relative to Metropolitan regions, which report a younger workforce than Central Office. While most respondents for each region are white or Caucasian, Metropolitan regions have a higher percentage of Black or African American employees.

Metropolitan and Rural respondents reported higher numbers of High School/GED, Associate degrees, BS/BA degrees, and MSN than Central Office. Central Office respondents reported higher MPH, MBA, MD/DDS/Other, PhD, and Other degree categories than Metropolitan and Rural regions.

Limitations

The effect of the incomplete job classifications list is unknown. As described above, the same panel that selected Tiers for job classifications also developed the equivalency cipher that allowed individuals with classifications not listed to respond to the survey. As these equivalencies were based on Tier, this solution should not have affected statistical tests of

agreement. As a further assessment of validity, however, the same agreement tests will be conducted on data gathered from future surveys containing complete job listings.

The process of substituting equivalencies limited any analysis of competency scores or demographics by job classification. The distribution of employees among the available job classifications was inflated due to the substitution process; therefore, researchers were unable to draw any correlations between specific jobs and competency or needs scores. Measures of competency within job classifications or groups of classifications are useful for training initiatives and will be gathered through the administration of future surveys.

A further limitation that was not anticipated was email firewall security in place at some health departments that blocked the receipt of our survey by their employees. It was assumed that using a @tn.gov, rather than @etsu.edu email address, would allow all email traffic would be received by all TDH employees. However, this was not the case for two large Metropolitan regions (827 total employees. In both cases the Department Directors agreed to forward all emails related to the survey directly to their employees; however, the survey period was approximately one-half complete when this solution was implemented. The effect of this issue on potential response is unknown.

Conclusion

The findings from this survey indicate that the 8 core competency areas are not fully integrated into the Tennessee Department of Health, and that there are clear training needs with high priority. Assuming these competencies are required to deliver the Essential Public Health Services, the survey results identify opportunities for TDH to make improvements through a coordinated training strategy. Such improvements may serve to increase both the efficiency and effectiveness with which TDH provides public health services to protect, promote, and improve the health and prosperity of people in Tennessee.

One possible strategy would be to evaluate the needs scores for each Tier, determine the importance of the core competency area to that Tier, and develop training opportunities to increase the level of competency within that Tier.

On August 24, 2012, LIFEPAATH personnel presented preliminary findings of the TDH Workforce Assessment survey to the TDH Executive Leadership Team (ELT). After this presentation, Deputy Commissioner Behringer conducted a session where groups of ELT members discussed the 8 core competency areas and reported the ‘Importance’ of each competency and the ‘Interest’ in each competency for the 13 TDH Units represented.

The ‘Importance’ ranked higher than the ‘Interest’ for all but 1 of the core competency areas – Cultural Competency. These findings may be used to identify training opportunities that are of interest to Units, of importance to Units, or both.

The strategy of using needs scores for each Tier as an identifier of training opportunities could be married with this ‘Importance’ data as a guide to target training to specific Units. Once training needs are identified, TDH could use formal educational offerings (e.g., Certificate and degree programs), in-house training options, and/or opportunities available through LIFEPATH to move the workforce toward proficiency in the core competency areas. LIFEPATH’s Learning Management System (LMS) houses an expanding number of non-academic courses that could be useful in this regard. Additionally, TDH could contract with LIFEPATH for more interactive training.

In addition to identifying training needs based on competency scores, this survey also highlights two important demographic characteristics of the TDH workforce: lack of diversity and an aging labor pool. As the workforce ages and significant number of employees become eligible for retirement, and as the demand for public health workers increases to meet the needs of the people of Tennessee, hiring strategies could be implemented to address both of these issues. It should be noted that while retirements result in vacancies in positions they also result in lost knowledge. Strategies such as mentoring programs may be warranted to assure continuity of services.

While the need for trained public health professionals will remain, there are also significant resource constraints. ASTHO’s research brief “Budget Cuts Continue to Affect the Health of Americans: March 2012 Update” reports that 87% of state and territorial health agencies have had budget cuts since 2008 (Association of State and Territorial Health Officials, 2012). And NACCHO recently released a report from its Job Losses and Program Cuts survey that showed 57% of all LDHs reduced or eliminated services in at least one program area in 2011 (National Association of City & County Health Officials, 2012). Therefore, training activities should be directed to increase competencies that are likely to have the greatest impact on the mission of TDH.

Future Need

There are several opportunities to improve future TDH workforce training needs assessments. The survey core competency questions could be modified to include an ‘N/A’ (not applicable) response, which would provide an indication of the significance of any competency area(s) to respondents in specific job classifications. A response column could also be added that would allow respondents to indicate an ‘Importance’ score for each of the

core competency area questions – while the ‘Ability’ score indicates competency, an ‘Importance’ score could be used as an indicator of importance of the competency question to the job. This calculation would reduce the inclusion of non-applicable low competency scores from respondents in jobs that do not require skill in a particular competency category. However, it would also lengthen an already lengthy survey. Finally, the demographic section could be extended to include a question asking respondents about formal public health education.

Significance of this Study

It is clear from this study that the 8 core competency areas are not fully integrated into the practice of public health in the Department of Health; and the mission to protect, promote, and improve the health of the people may not be served efficiently and/or effectively. Findings from this study could be used to inform a training strategy for Health Department workers based on Tier. Given the period of limited resources, a more targeted training approach could prove beneficial.

Finally, the results highlight a need to plan for future changes in the public health workforce. With a significant percentage of the workforce expected to retire in the near future, the Department of Health is faced with both a dilemma and an opportunity. The dilemma includes the loss of key personnel with a resulting knowledge/expertise loss for the organization. Mentoring strategies and succession plans are encouraged to limit this effect. The opportunity includes the ability to diversify the workforce and hire employees who are knowledgeable about the core public health competencies.

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References:

- Association of Schools of Public Health. (2008). *ASPH Policy Brief: Confronting the public health workforce crisis*. Retrieved from <http://www.healthpolicyfellows.org/pdfs/ConfrontingthePublicHealthWorkforceCrisisbyASPH.pdf>. Accessed December 5, 2015.
- Association of State and Territorial Health Officials. (2012). *Budget cuts continue to affect the health of Americans: Update March 2012*. Retrieved from <http://www.aahd.us/wp-content/uploads/2012/04/ASTHO-Budget-Cuts-Impact-Research-0312.pdf>. Accessed December 5, 2015.
- Association of State and Territorial Health Officials, (2011). *ASTHO Profile of State Public Health, Volume Two*. Retrieved from http://www.astho.org/uploadedFiles/_Publications/Files/Survey_Research/ASTHO_State_Profiles_Single%5B1%5D%20lo%20res.pdf. Accessed December 5, 2015.
- The Council on Linkages Between Academia and Public Health Practice. (2010). *Core competencies for public health professionals*. Retrieved from http://www.phf.org/resourcestools/Documents/Core_Public_Health_Competencies_III.pdf. Accessed December 5, 2015.
- Gebbie, K.M., Hernandez, L.M., & Rosenstock, L. (Eds). (2003). *Who will keep the public health? Educating public health professionals for the 21st century?* Washington, DC: National Academies Press.
- Leep C. (2007). *The Local Health Department workforce: Findings from the 2005 national profile of Local Health Departments study*. National Association of County & City Health Officials. Retrieved from http://www.naccho.org/topics/infrastructure/profile/upload/LHD_Workforce-Final.pdf. Accessed December 5, 2015.
- Lewis, M. & Reichardt, A. (2008). *2007 State public health workforce survey results*. Arlington, VA: Association of State and Territorial Health Officials. Retrieved from <http://biotech.law.lsu.edu/cdc/astho/WorkforceReport.pdf>. Accessed December 5, 2015.
- National Association of County & City Health Officials. (2009). *2008 National profile of Local Health Departments*. Retrieved from http://www.naccho.org/topics/infrastructure/profile/resources/2008report/upload/NACCHO_2008_ProfileReport_post-to-website-2.pdf. Accessed December 5, 2015.
- National Association of County & City Health Officials. (2010). *Local Health Department job losses and program cuts: Findings from January/February 2010 survey*. Retrieved from <http://www.naccho.org/topics/infrastructure/lhdbudget/upload/Job-Losses-and-Program-Cuts-5-10.pdf>. Accessed December 5, 2015.

- National Association of County & City Health Officials. (2012). *Local Health Department job losses and program cuts: Findings from the January 2012 Survey*. Retrieved from <http://www.naccho.org/topics/infrastructure/lhdbudget/upload/Research-Brief-Final.pdf>. Accessed December 5, 2015.
- State of Tennessee, Department of Health. (2012) *TN forward: Top to bottom review 2012, Chapter 11: Health*. Retrieved from <http://www.arts.tn.gov/governor/toptobottom/files/chapters/health.pdf>. Accessed December 5, 2015.
- SurveyMonkey.com, LLC. Palo Alto, CA. Available from: www.surveymonkey.com.
- U.S. Department of Health and Human Services. Office of Disease Prevention and Health Promotion. (2010). *Healthy People 2020*. Washington, DC: Office of Disease Prevention and Health Promotion. Retrieved from <http://www.healthypeople.gov/2020/topics-objectives/topic/preparedness>. Accessed December 5, 2015.