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The Epidemiology Workforce in State and Local Health Departments — United States, 2010

During 2001–2009, the Council of State and Territorial Epidemiologists (CSTE) conducted four

epidemiology capacity assessments (ECAs) in state and territorial public health departments in the United States ([1–5](#)). In October 2010, CSTE sent a follow-up, Internet-based questionnaire to the state epidemiologist in each of the 50 states and the District of Columbia. The purpose was to enumerate the state-level epidemiology workforce and determine whether it had varied since 2009 because of changes in state and federal funding and, for the first time, to estimate concurrently the number of epidemiologists working in local health departments using the same definition for local health department epidemiologist as for state-level epidemiologist. A total of 3,754 epidemiologists working in state and local health departments were reported: 2,476 (66%) at the state level and 1,278 (34%) at the local level, the latter number consistent with results of several recent surveys ([6,7](#)). The state-level epidemiology workforce increased 12.9% during the 18 months since the previous assessment. Although 63% of states reported fewer state-funded positions, only 24% reported fewer federally funded positions. Federal stimulus funding might have helped preserve and enhance the state-level epidemiology workforce. Future epidemiology workforce assessments should include both the state and local epidemiology workforce, possibly through CSTE coordination with the National Association of County and City Health Officials and other agencies.

The main objectives of the periodic CSTE ECAs are to count and characterize the state-level epidemiology workforce and to measure current epidemiology capacity by program area. The epidemiology workforce was enumerated in late 2010 because 1) state budget cutting and federal stimulus funding might have affected the number of epidemiologists and 2) previous CSTE assessments included only the state-level workforce. Given that some local health departments serve larger populations than states and receive direct federal funding (e.g., New York City, Los Angeles, and Chicago) and some states fund local-level epidemiologists whereas others do not, a concurrent assessment would more accurately and completely depict the epidemiology workforce in states. The assessment was pilot tested during September 2010 in seven states, revised on the basis of feedback from those states, and sent in October as an Internet-based questionnaire to state epidemiologists. The final questionnaire asked whether the number of state and federally funded positions at the state-level had decreased, asked for the number of epidemiologists working at the state-level by program area, and asked for the number of epidemiologists in local health departments. Additional questions addressed the nature of state budget cutting activities.* Follow-up questions were sent to local health departments in two states when the state epidemiologists could not report local health department data. As in past CSTE assessments, an epidemiologist was defined as any person who, regardless of job title, performs functions consistent with the definition of epidemiologist† in *A Dictionary of Epidemiology* ([8](#)). Respondents were asked to report part-time positions to the nearest 0.1 full-time equivalent. The final results comprise responses from all 50 states and the District of Columbia and the numbers of epidemiologists reported by 48 state epidemiologists for local health departments in their state and by local health departments in the two remaining states. Population estimates were obtained from the 2010 U.S. Census.

Respondents reported a total of 3,754 full-time equivalent epidemiologists working at the state or local health department level. A total of 2,476 (66%) epidemiologists were working at the state-level in 2010, a 12.9% increase from the 2,193 epidemiologists enumerated in 2009 but slightly fewer than the 2,498 working in 2004, when federal preparedness funding to states peaked. Compared with the 2006 ECA, the number of state-level epidemiologists changed substantially in several program-specific areas. The largest overall increases were in infectious diseases (+162 [16%]), "other" (+41 [70%]), and chronic diseases (+35 [11%]); the largest decreases were in bioterrorism/emergency response (-84 [25%]), environmental health (-77 [27%]), injury (-25 [27%]), and oral health (-18 [62%]) ([Figure](#)).

Of the 51 jurisdictions, 27 (53%) showed a $\geq 10\%$ increase in the number of state-level epidemiologists, and 12 (24%) showed a $\geq 10\%$ decrease compared with 2009. Overall, decreases in state funding resulted in a greater loss of positions than did decreases in federal funding (63% versus 24%). Among the 32 states reporting a decrease in state-funded positions, the most commonly used means of reducing spending were hiring freezes for vacant state-funded positions (25 [78%]), elimination of vacant state-funded positions (23 [72%]), early retirement options (13 [41%]), and layoffs (nine [28%]). Common budget cutting measures in the 51 jurisdictions included salary freezes (86%), travel restrictions (76%), and furloughs (41%).

In 2010, a total of 1,278 (34%) epidemiologists were working in local health departments, 384 (30%) of whom worked in the five most populous cities (New York City, Los Angeles, Chicago, Houston, and Philadelphia), which constituted 6% of the total U.S. population in 2010. The overall number of state-level and local-level epidemiologists per 100,000 population was 1.22 (median: 1.20; range: 0.44–4.08) ([Table](#)).

Reported by

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Editorial Note

The timely detection, investigation, control, and prevention of outbreaks and major long-term public health problems require a well-trained and competent epidemiology workforce as a key component of the national public health infrastructure. The 2010 CSTE ECA describes the size of the state and local epidemiology workforce as of late 2010 and reveals important trends during a time of unprecedented fiscal challenges for governmental public health.

Including epidemiologists working in local health departments yields a total number of epidemiologists approximately 50% greater than the number of state-level epidemiologists. Although epidemiologists in local health departments have not been included in previous CSTE ECAs, they contribute to the functional epidemiology capacity of states as described in the 2009 and earlier ECAs ([1–5](#)). Clearly, changes in numbers of local epidemiologists affect overall state-level functional capacity. Furthermore, these epidemiologists need to be included in future assessments of competency and training needs of the public health epidemiology workforce. The National Association of County and City Health Officials has assessed the size of the epidemiology workforce in local health departments as part of its larger periodic assessment of the national local health department workforce ([9](#)). The 2010 National Profile of Local Health Departments, which directly surveyed local health departments and used weighted estimates to account for nonrespondents, calculated that 1,500 epidemiologists (range: 1,100–1,800) worked in local health departments, a range encompassing the number described in this report by CSTE ([6](#)). The Bureau of Labor Statistics estimated that 1,100 epidemiologists worked in local health departments in 2010 ([7](#)).

The findings of this report are subject to at least three limitations. First, even though all state and local health departments used the same definition of epidemiologist, jurisdictions supplying counts might have applied the definition differently. Second, because program-specific information was obtained for state-level but not local-level epidemiologists, the actual proportion of the entire state epidemiology workforce in any given program area likely varied from that reported. Finally, unlike in previous ECAs, this assessment only counted staff members; it did not measure functional epidemiology capacity ([1,2,4](#)). The extent to which the 12.9% increase affected overall functional capacity is unknown.

Because previous CSTE ECAs did not enumerate local health department epidemiologists, assessment of trends is limited to state-level epidemiologists. The 12.9% increase in epidemiologists since 2009 was unexpected given the sustained national economic downturn, which has resulted in reported reductions in the local and state public health workforce ([6,9,10](#)). The data suggest that although the number of state-funded epidemiologists decreased in most states, federal funding appeared to compensate for those losses. New federal funding streams during this time included funding to respond to 2009 pandemic influenza A (H1N1) and federal stimulus funding that supported health-care–associated infection initiatives. Despite this new funding and a boost in the number of epidemiologists, it is troubling that 12 states had overall $\geq 10\%$ decreases in the number of state-level epidemiologists, given that states consistently have reported a need for additional epidemiologists ([2–5](#)) and epidemiologists have been identified as a workforce shortage occupation in several studies ([6,9,10](#)). The number of epidemiologists decreased in a number of program areas including bioterrorism/emergency response, environmental health, injury, occupational health, and oral health. In all these areas, except bioterrorism/emergency response, epidemiology capacity

already was marginally functional (4). Trends in the workforce, and functional epidemiology capacity in these areas especially, require continued monitoring to identify gaps and address future needs. Such monitoring will be particularly important as federal funding fluctuates and states operate under persistent budget deficits.

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* Budget cutting activities include early retirement options, hiring freezes for vacant state-funded positions, alternative work schedule, rehiring of retirees, travel restrictions, hiring freezes for vacant federally funded positions, elimination of vacated state-funded positions, furloughs, shortened work week, and salary freezes.

† "An investigator who studies the occurrence of disease or other health-related conditions or events in defined populations. The control of disease in populations is often also considered to be a task for the epidemiologist, especially in speaking of certain specialized fields such as malaria epidemiology. Epidemiologists may study disease in populations of animals and plants, as well as among human populations."

What is already known on this topic?

Previous Council of State and Territorial Epidemiologists (CSTE) capacity assessments have shown that the number of epidemiologists working at the state level decreased during 2004–2009, from 2,498 to 2,193.

What is added by this report?

The number of state-level epidemiologists increased 12.9% in the 18 months from April 2009 to October 2010, to 2,476, partly because of changing federal funding streams, including federal stimulus funding. Although the number of epidemiologists increased overall and in the areas of infectious disease and chronic disease, the number decreased in some states, as well as in bioterrorism/emergency response, environmental health, injury, occupational health, and oral health. In addition to the state-level epidemiologists, the 2010 CSTE workforce assessment counted an additional 1,278 epidemiologists working at the local level and not previously included in CSTE workforce assessments.

What are the implications for public health practice?

Overall, the country's epidemiologic public health workforce remained intact through 2010 and able to take on new initiatives despite the national fiscal crisis. However, in some states and epidemiology program areas, the epidemiology workforce has shrunk. Future assessments of the epidemiology workforce competence, training, and needs should include epidemiologists employed at the local level, who account for one third of the epidemiology workforce in states.

FIGURE. Number of state-level epidemiologists, by program area — CSTE Epidemiology Capacity Assessments, United States,* 2006 and 2010

Abbreviations: CSTE = Council of State and Territorial Epidemiologists; ID = infectious diseases; BT/ER = bioterrorism/emergency response; CD = chronic diseases; EH = environmental health; MCH = maternal-child health; Occ = occupational health; oral = oral health.

* Includes the 50 states and the District of Columbia.

Alternate Text: The figure above shows the number of state-level epidemiologists, by program area, in the United States during 2006 and 2010, according to Council of State and Territorial Epidemiologists epidemiology capacity assessments. A total of 3,754 full-time equivalent epidemiologists were reported as working at the state or local health department level. A total of 2,476 (66%) epidemiologists were working at the state-level in 2010, a 12.9% increase from the 2,193 epidemiologists enumerated in 2009 but slightly fewer than the 2,498 working in 2004, when federal preparedness funding to states peaked. Compared with the 2006 assessment, the number of state-level epidemiologists changed substantially in several program areas. The largest overall increases were in infectious diseases (+162 [16%]), "other" (+41 [70%]), and chronic diseases (+35 [11%]); the largest decreases were in bioterrorism/emergency response (-84 [25%]), environmental health (-77 [27%]), injury (-25 [27%]), and oral health (-18 [62%]).

TABLE. Number and number per 100,000 population of state-level and local-level epidemiologists, by state population — CSTE Epidemiology Capacity Assessment, United States,* 2010

Population	No. of epidemiologists			
	No. of states	No. (per 100,000)†	Median (per 100,000)§	Range (per 100,000)§

≤5 million	29	963 (1.48)	25 (1.52)	4–104 (0.44–4.08)
>5 million	22	2,790 (1.14)	81 (1.10)	51–468 (0.47–2.41)
Total	51	3,754 (1.22)	58 (1.20)	4–468 (0.44–4.08)

Abbreviation: CSTE = Council of State and Territorial Epidemiologists.

* Includes the 50 states and the District of Columbia.

† Based on sum of all epidemiologists in category and total population of category.

§ Based on state-specific numbers of epidemiologists and population.

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 - [Past Volumes \(1983-2014\)](#)
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-
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-
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1. [A](#)
2. [B](#)
3. [C](#)
4. [D](#)
5. [E](#)
6. [F](#)
7. [G](#)
8. [H](#)
9. [I](#)
10. [J](#)
11. [K](#)
12. [L](#)
13. [M](#)
14. [N](#)
15. [O](#)
16. [P](#)
17. [Q](#)
18. [R](#)
19. [S](#)
20. [T](#)
21. [U](#)
22. [V](#)
23. [W](#)
24. [X](#)
25. [Y](#)
26. [Z](#)
27. <#>