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# Local Health Departments' Costs of Providing Environmental Health Services

## Abstract

**Background:** A detailed understanding of the costs that local health departments (LHDs) incur in the provision of public health services plays an important role in their efforts to provide services in an effective and efficient manner. However, surprisingly little evidence exists about the key cost components that LHDs incur in the provision of services.

**Purpose:** The purpose of this report was to provide empirical estimates of LHDs' cost structure.

**Methods:** Using cost information for 2012 from 15 LHDs in North Carolina for two public health services—food and lodging and onsite water—this report first presents estimates of the total costs per service provided. In a second step, total costs are decomposed into key components, including direct and indirect costs. Both data collection and analysis were conducted in 2014.

**Results:** For the LHDs examined in this report, median cost per service amounted to \$145 for food and lodging and \$82 for onsite water. Service costs, however, varied widely across agencies. Decomposition showed that direct labor costs represented more than 80% of total costs. Other direct costs accounted for 10% to 15% of total costs, while indirect costs represented 5% to 6% of total costs.

**Implications:** The finding that labor costs represent a majority of the total costs of service provision has important implications for public health practitioners. Perhaps most importantly, for the purpose of costing public health services, estimation procedures may be simplified by focusing primarily on the cost of labor required to provide any given service.

## Keywords

Local health departments, cost, cost structure, environmental health services

## Cover Page Footnote

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## INTRODUCTION

Almost no empirical evidence exists to date about the costs that local health departments (LHDs) incur in the provision of essential, and frequently mandated, public health services. A better understanding of the costs of service provision, including a breakdown into their key components, however, plays an important role in LHDs' efforts to provide services in an effective and efficient manner and, as a result, contribute to better health outcomes.<sup>1</sup> This research aims to add to the growing literature on public health costing in two ways: First, the report presents unit cost estimates from 15 LHDs in North Carolina for two commonly provided environmental health services—food and lodging and onsite water—and compares them to recently published cost estimates for environmental health services provided by LHDs in Florida. Second, the report provides empirical evidence of the cost structure that LHDs incur when providing environmental health services.

## METHODS

Cost data for this study were collected using a costing tool that was specifically developed for this purpose. Based on the SASCAP program,<sup>2</sup> the costing tool asked the environmental health and finance managers of participating LHDs to provide information on both the number of services provided and the costs incurred in providing these services using existing internal data sources. Data were collected for fiscal year 2012 for two types of environmental health services that all LHDs in North Carolina are mandated to provide: food and lodging and onsite water. Food and lodging inspections are activities undertaken to monitor food handling and lodging establishments to reduce the risk of foodborne illness and other communicable diseases. Onsite water services include inspections and testing of private drinking water wells and onsite wastewater treatment and dispersal systems. The sample consisted of 15 (of 85) LHDs in North Carolina serving 18 (of 100) counties. While the sample was small and represented a convenience sample, study LHDs were chosen to be representative of all LHDs in North Carolina. As a result of the small sample size, the analysis contained only univariate and bivariate descriptive statistics. Both data collection and analysis were conducted in 2014.

The focus of this study was on estimating the full costs of providing a given service. In cost accounting, the full costs of a product or service include all applicable direct and indirect costs. Direct costs were measured in terms of direct labor costs (salaries, benefits, and fringes for all employees involved in the provision of a given service) and other direct costs (costs of the buildings, equipment, and supplies needed to provide the services, costs of any subcontracts, as well as miscellaneous costs, such as utilities, insurance, and staff training). In addition to direct costs, full costs also included an indirect cost component to account for a service's use of shared, or overhead, resources.

## RESULTS

Median costs per service amounted to \$145 for food and lodging and \$82 for onsite water. There was, however, wide variation in unit costs across LHDs. The unit cost for food and lodging ranged from \$65 to \$290. Likewise, the unit cost for onsite water ranged from \$35 to \$322. LHDs that provided greater numbers of services tended to have lower unit costs indicating that opportunities may exist to reduce costs through economies of scale. North Carolina LHDs' unit costs for select environmental health services differ somewhat from the cost estimates reported in the published literature for LHDs in other states, such as Florida.<sup>3,4</sup> In 2010, Florida LHDs

reported median costs per service of \$104 for food hygiene services and \$141 for onsite sewage treatment and disposal services.<sup>3,4</sup> LHDs that incurred lower unit costs for food and lodging also tended to be more efficient in the provision of onsite water. Of the 7 LHDs that incurred lower than median unit costs for food and lodging, five (71%) also reported lower than median unit costs for onsite water.

The decomposition of total costs into direct and indirect costs showed that approximately 94% of total costs were direct costs of service provision, while the remaining 6% represented indirect, or overhead, costs (Table 1). Labor was the largest cost component of direct costs. For food and lodging, labor costs accounted for 84% of total costs. Similarly, for onsite water, labor costs accounted for 80% of total costs. The next largest cost category was supplies, which accounted for between 5% and 7% of total costs. All other direct costs accounted for 4% to 5% of total costs. There was significant variation in the composition of LHDs' costs, however, in particular in the proportion of total costs devoted to direct labor. For food and lodging, direct labor costs ranged from less than 56% of total costs to almost 92%. Similarly, for onsite water, direct labor costs ranged from 70% of total costs to over 90%.

**Table 1: Composition of costs for environmental health services provided by local health departments in North Carolina**

Cost element	Food and lodging inspections (%)	Onsite water services (%)
<b>Direct costs</b>	<b>93.9</b> (92.6–96.8)	<b>94.5</b> (92.2–97.4)
Labor, i.e., salaries, benefits, and fringes of employees involved in providing the respective services	83.7 (74.0–86.3)	80.2 (75.6–84.7)
Buildings, i.e., the expenditures (rent or mortgage payments) for space used to provide the respective services	2.6 (1.3–3.8)	2.4 (1.2–3.6)
Supplies and equipment, i.e., the cost of the supplies, materials, and equipment used to provide the respective services	4.8 (2.5–7.1)	6.7 (4.0–12.3)
Subcontracts, i.e., total spending on subcontracts used to provide the respective services	0.0 (0.0–0.0)	0.0 (0.0–0.0)
Miscellaneous, i.e., the cost of utilities, insurance, non-payroll taxes, communication, patient transportation, dues, membership fees, staff training, and other items not yet accounted for to provide the respective services	1.3 (0.4–3.6)	2.1 (0.7–6.3)
<b>Indirect costs</b>	<b>6.1</b> (3.0–7.6)	<b>5.5</b> (2.6–7.8)

Note: Table shows medians with interquartile ranges in parentheses.

While this report provides insights into the costs that local health departments incur in the provision of environmental health services, the empirical results presented are limited to a sample of 15 LHDs in North Carolina. Although largely representative of LHDs in the state as a whole, they may not be generalizable to LHDs in other states. Moreover, as a result of the small

sample size the statistical analysis was purely descriptive. Future research is needed to better understand what drives levels of and variation in LHDs' costs of providing environmental health services. Finally, the indirect costs reported by the LHDs in the sample appear to understate the true indirect costs incurred in the provision of environmental health services. While every effort was made to clarify to respondents what was to be included in the indirect cost category on the costing tool, collecting indirect cost data proved to be challenging for most LHDs. Anecdotal evidence from other cost studies suggests that indirect costs likely represent closer to 25% to 30% of total costs, rather than the 5% to 6% reported in this study.

## IMPLICATIONS

Over 80% of total costs that LHDs incur in the provision of environmental health services represent labor costs. Other direct and indirect costs account for less than 20% of total costs. These findings have important implications for the organization and financing of public health at the local level: First, with labor costs representing the majority of total costs, procedures for estimating total costs per service may be simplified by focusing primarily on the cost of labor required to provide a service plus a fixed or proportional add-on for other direct and indirect costs. In general, cost estimation can be challenging for LHDs given the lack of standardized financial data collected and the time and resources required to obtain detailed cost estimates.<sup>5</sup> Being able to focus primarily on labor costs has the potential to greatly simplify cost estimation in local public health. Moreover, labor costs typically represent fixed cost as employees are typically salaried and at least in the short-run, salaries are paid irrespective of the actual volume of service provided. High fixed cost blocks, such as labor costs, thus open up possibilities for potential economies of scale in the provision of services, for instance, through contractual or cross-jurisdictional sharing arrangements, where legally and operationally feasible.

### SUMMARY BOX

**What is already known about this topic?** Efforts are currently underway across the country to estimate the costs incurred by LHDs in the provision of essential public health services.

**What is added by this report?** This study reports the results of the North Carolina Delivery and Cost Study (DACs), which focused on costing environmental health services. Using survey data from 15 LHDs in North Carolina, it presents estimates of the total cost per service incurred in the provision of environmental health services as well as the key cost components that make up total costs.

**What are the implications for public health practice, policy, and research?** The finding that labor costs represent the majority of the costs of providing environmental health services has important implications for public health practitioners. Perhaps most importantly, for the purpose of costing public health services, estimation procedures may be simplified by focusing on the cost of labor required to provide any given service.

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