

Foundational Public Health Services Preliminary Cost Estimation Model

Final Report
September 2013



FOUNDATIONAL PUBLIC HEALTH
SERVICES SUBGROUP
Public Health Improvement
Partnership Agenda for Change
Workgroup



PUBLIC HEALTH
ALWAYS WORKING FOR A SAFER AND
HEALTHIER WASHINGTON

Public Health Improvement Partnership

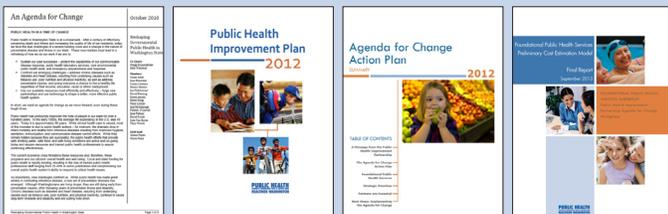
The Partnership is directed by the legislature to guide and strengthen the governmental public health system in Washington State. To accomplish that, we are responsible to ensure that our actions support a public health system that is accountable, continuously measures and improves performance and health outcomes, and reduces environmental and other health risks.



Agenda for Change Workgroup

The Agenda for Change Workgroup was formed to support implementation of the Partnership's 2010 Agenda for Change Action Plan

PRODUCTS OF THIS WORKGROUP



The Foundational Public Health Services Preliminary Cost Estimation Model report is a product of the Agenda for Change's Foundational Public Health Services Subgroup.

Foundational Public Health Services Subgroup

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EXECUTIVE SUMMARY

Background and Context

Public health services in Washington State are provided through a combination of federal, state, and local efforts, with the primary responsibility residing at the local level. The Public Health Improvement Partnership (the Partnership) is tasked by the Legislature to provide overall leadership and coordination of public health issues to improve and protect health across the State.

The Partnership includes representatives from the State Board of Health, the State Department of Health (DOH), Washington State Association of Local Public Health Officials, Local Health Jurisdictions (LHJs), Local Boards of Health, Tribal Nations, the American Indian Health Commission, and the Department of Health and Human Services.

The Partnership developed the Agenda for Change Work Plan in 2012 to provide an action plan to meet new challenges in a rapidly changing environment and use existing resources wisely. The world is evolving – new preventable disease challenges, health care reform, and diminishing resources all drive a need to rethink how public services are provided. Washington’s public health network has long been recognized as a national leader, and the Agenda for Change will help maintain this success.

A key element of the Agenda for Change’s 2012 work plan is to develop a definition of what constitutes the set of foundational public health services that should be available to all residents and communities statewide, and to provide information about the cost of providing these services to support policy discussions that will focus on providing sustainable funding for public health. To support this effort, the Agenda for Change Workgroup created the Foundational Public Health Services (FPHS) Subgroup.

The Subgroup’s purpose is to develop and help implement a long-term strategy for provision of the foundational public health services needed to assure a functional public health system statewide. This set of services would both provide basic services to the community and provide the necessary foundation for the public health system to perform adequately throughout the State.

FRAMEWORK FOR THE FOUNDATIONAL DEFINITION

The foundational public health services are defined as capabilities and programs that must be present everywhere in order to work anywhere, and that should be sustainably funded.

Developing the definition of foundational services was an iterative process. Draft versions of the definitions were widely vetted and discussed with local public health leaders via the Washington State Association of Local Public Health Officials (WSALPHO) and its forums in 2012. Input was received and considered, and revisions were made.

The Subgroup's goal is to develop a long-term strategy for predictable and appropriate levels of funding. The Subgroup has broken down its work into three tasks:

1. Define the set of foundational public health services.
2. Estimate the cost of providing foundational public health services statewide and the level of funding needed to support those services.
3. Identify and secure a sustainable funding source for the foundational services.

The third task, securing sustainable funding, is the primary objective of the foundational services work. This report serves as the summary document for the work to-date that includes elements of the first two tasks of the Subgroup – identifying what constitutes the foundational set of services and developing a model to estimate the cost of providing these services.

Foundational Definitions

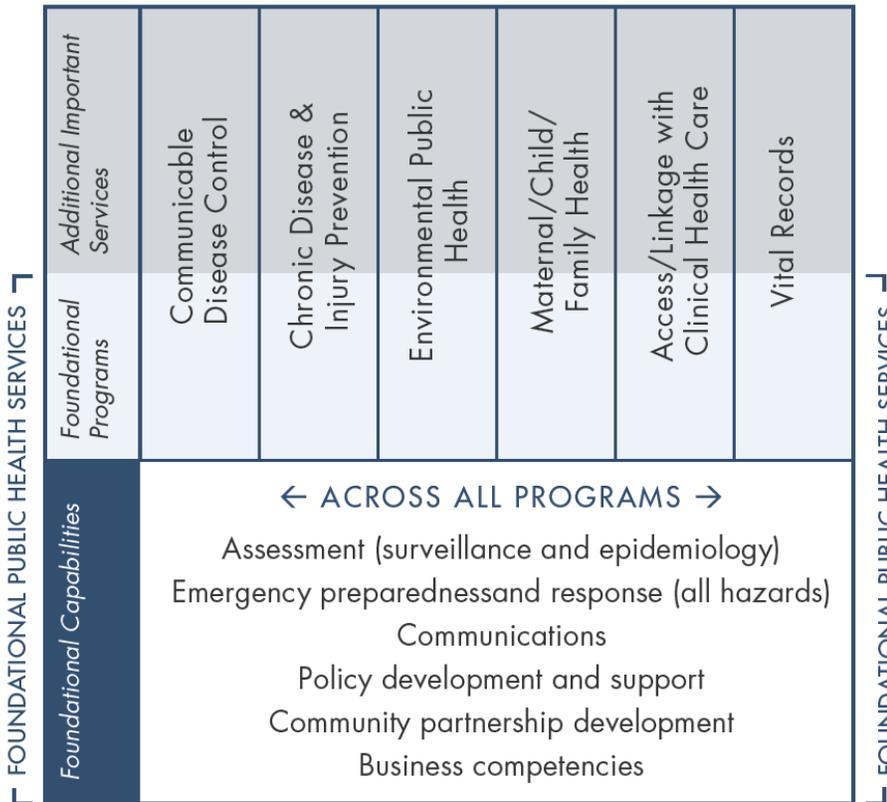
Currently, most states that identify expectations for core public health services use a framework that lays out ten essential public health services. This approach is somewhat outdated and does not do a particularly good job of capturing current realities in public health provision. A few states, however, are beginning to move in a new direction, initially proposed in the Institute of Medicine's (IOM) report *For the Public's Health: Investing in a Healthier Future*. This report studied the effectiveness of the essential services definition and provided guidance on a new framework going forward, concluding that public health providers should identify a "minimum package of public health services" consisting of basic programs that "no well-run public health department should be without" and cross-cutting capabilities to support all programs.

Washington is among a small group of states taking the first steps to redefine its public health services using the IOM model and in some ways is the farthest along in this process by considering both the definition of foundational services and estimating the cost of providing these services throughout the state.

There is a foundational level of public health services that must exist everywhere in order to work anywhere. The foundational public health services define the services that no community should be without, regardless of how they are provided. The definition of foundational services is based on the IOM framework of *capabilities* and *programs*.

Exhibit ES - 1 shows how these elements provide a framework for defining the foundational public health services.

Exhibit ES - 1
Foundational Capabilities and Programs



Source: Washington State Public Health Improvement Partnership Agenda for Change, 2013.

Estimate of Foundational Costs

An initial estimate of the cost to provide these foundational elements was developed using a financial model built to support the Subgroup’s work. The initial cost estimate is based on detailed estimates from DOH and nine LHJs of how much it would cost their organization to provide the foundational services, whether or not the services are currently being provided and regardless of how or if the services are currently funded.

The total cost estimate of providing the foundational services statewide is about \$328 million per year. Exhibit ES - 2 presents the full results of the Subgroup’s work on the initial cost estimate, showing the statewide foundational cost estimate broken down into individual programs and capabilities and split between costs at the state level and costs at the local level.

About 63% of the cost of providing the foundational capabilities is at the local level, and about 37% is at the state level. For the foundational programs, about 53% of the cost of

FOUNDATIONAL CAPABILITIES

Capabilities are skills or capacities that an organization must possess in order to support its provision of the foundational programs. These capabilities are cross-cutting and range from basic organizational functions such as accounting and financial analysis to backend capacity such as database development and emergency planning . There are six elements that constitute the basis for defining the foundational public health capabilities.

FOUNDATIONAL PROGRAMS

In defining the foundational programs, the goal was to identify the basic components necessary to keep the public safe and allow for additional programs to build on a strong foundation.

Programs are areas of DOH and LHJ responsibility that provide service directly to residents and communities. These include activities such as responding to disease outbreaks, monitoring the safety of food and water, and providing birth and death certificates. There are six elements that constitute the basis for defining the foundational public health programs.

ADDITIONAL IMPORTANT SERVICES

There are many other important public health services not included in the foundational definition. Additional services are needed to address important local health risks or community priorities and fall under all six program categories.

is at the state level, and about 47% is at the local level. Within the programs, the distribution between state and local responsibility varies significantly.

It's important to remember that the responsibilities of DOH and the LHJs are different within each of the services, so it was expected that the share of costs would vary by element. However, the shared split of the total estimate between state and local costs strongly reflects the cooperative relationship between DOH and the LHJs in providing public health services in Washington.

Exhibit ES - 2
Estimated Cost of Providing Foundational Public Health Services Statewide

Services Ranked By Cost	Total Estimated Cost of FPHS	State Dept. of Health	Local Health Jurisdictions	■ State DOH ■ LHJs	
				State DOH	LHJs
Foundational Capabilities	75,700,000	27,750,000	47,945,000	37%	63%
A. Assessment	11,350,000	5,410,000	5,935,000	48%	52%
B. Emergency Preparedness and Response	10,825,000	3,620,000	7,205,000	33%	67%
C. Communication	3,960,000	750,000	3,210,000	19%	81%
D. Policy Development and Support	4,415,000	1,115,000	3,300,000	25%	75%
E. Community Partnership Development	4,885,000	860,000	4,025,000	18%	82%
F. Business Competencies	40,265,000	15,995,000	24,270,000	40%	60%
Foundational Programs	252,290,000	134,890,000	117,405,000	53%	47%
A. Communicable Disease Control	33,760,000	9,010,000	24,750,000	27%	73%
B. Chronic Disease and Injury Prevention	24,855,000	12,590,000	12,265,000	51%	49%
C. Environmental Public Health	95,800,000	33,760,000	62,045,000	35%	65%
D. Maternal/Child/Family Health	25,175,000	13,765,000	11,410,000	55%	45%
E. Access/Linkage with Clinical Health Care	65,585,000	62,145,000	3,440,000	95%	5%
F. Vital Records	7,115,000	3,620,000	3,495,000	51%	49%
Total Cost	327,990,000	162,640,000	165,350,000	50%	50%

Source: DOH, 2013; Participating LHJs, 2013; and BERK, 2013.

Exhibit ES - 3 shows how much of the initial estimate comes from each of the capabilities and programs for the total statewide cost, for only DOH, and for the LHJs in total.

Exhibit ES - 3
Estimated Statewide Foundational Costs by Service

Services Ranked By Cost	Total Estimated Cost of FPHS		State Dept. of Health		Local Health Jurisdictions	
Foundational Capabilities	75,700,000	23%	27,750,000	17%	47,945,000	29%
F. Business Competencies	40,265,000	12%	15,995,000	10%	24,270,000	15%
A. Assessment	11,350,000	3%	5,410,000	3%	5,935,000	4%
B. Emergency Preparedness and Response	10,825,000	3%	3,620,000	2%	7,205,000	4%
E. Community Partnership Development	4,885,000	1%	860,000	1%	4,025,000	2%
D. Policy Development and Support	4,415,000	1%	1,115,000	1%	3,300,000	2%
C. Communication	3,960,000	1%	750,000	0%	3,210,000	2%
Foundational Programs	252,290,000	77%	134,890,000	83%	117,405,000	71%
C. Environmental Public Health	95,800,000	29%	33,760,000	21%	62,045,000	38%
E. Access/Linkage with Clinical Health Care	65,585,000	20%	62,145,000	38%	3,440,000	2%
A. Communicable Disease Control	33,760,000	10%	9,010,000	6%	24,750,000	15%
D. Maternal/Child/Family Health	25,175,000	8%	13,765,000	8%	11,410,000	7%
B. Chronic Disease and Injury Prevention	24,855,000	8%	12,590,000	8%	12,265,000	7%
F. Vital Records	7,115,000	2%	3,620,000	2%	3,495,000	2%
Total Cost	327,990,000		162,640,000		165,350,000	

Source: DOH, 2013; Participating LHJs, 2013; and BERK, 2013.

About 77% of the initial cost estimate is generated from the cost of providing the foundational programs, and about 23% is from the cost of providing the foundational capabilities. This percentage varies for DOH (83% for programs and 17% for capabilities) and for the LHJs (71% for programs and 29% for capabilities), but in general the cost of providing the programs is significantly higher than the cost of providing the foundational capabilities.

APPROACH AND METHODOLOGY

The statewide foundational cost estimate was developed using a financial model that used sample cost data provided by participating organizations as input and scaled the sample cost data up to a statewide estimate.

The statewide foundational cost estimate is comprised of two primary components:

1. An estimate of DOH's costs of providing the foundational services
2. An estimate of the total cost for all 35 LHJs statewide to provide the foundational services

DOH and nine LHJs provided detailed estimates of how much it would cost their organization to provide the foundational services, whether or not the services are currently provided and regardless of how or if the services are currently funded.

Next Steps

The Subgroup's focus going forward will be further refining the cost estimate into a requested funding level, producing ideas for a sustainable funding source, providing information and recommendations on potential options, and providing technical support to policy makers in designing a final sustainable funding model.

The Subgroup has developed a two-year Work Plan for the 2013-15 biennium to achieve its goal of identifying and securing a sustainable funding source for foundational public health services. The Plan includes the following milestones:

1. By **December 2013**: Have a clear description of the funding history, current funding situation, and future funding options to discuss with public health professionals and the Workgroup's key partners.
2. By **June 2014**: In collaboration with local government partners, clearly describe options, pros and cons, and an agreed upon set of recommended elements (or a recommended model) for sustainable funding of foundational public health services statewide.
3. By **Summer 2014**: Assist in the introduction of a broadly supported proposal to partners and policy makers in preparation for the 2015 legislative session.

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INTRODUCTION AND CONTEXT

Public Health Improvement Partnership

Public health services in Washington State are provided through a combination of federal, state, and local efforts with the primary responsibility residing at the local level. The Public Health Improvement Partnership is tasked by the Legislature to provide overall leadership and coordination of public health issues to improve and protect health across the State. Please see Appendix F for more information about the structure of public health in Washington State.

The Partnership includes representatives from the State Board of Health, the State Department of Health, Washington State Association of Local Public Health Officials, Local Health Jurisdictions (LHJs), Local Boards of Health, Tribal Nations, the American Indian Health Commission, and the Department of Health and Human Services.

ONGOING PARTNERSHIP EFFORTS

The Partnership developed the Agenda for Change Work Plan in 2012 to provide an action plan to meet new challenges in a rapidly changing environment and use existing resources wisely. The world is evolving – new preventable disease challenges, health care reform, and diminishing resources all drive a need to rethink how public services are provided. Washington’s public health network has long been recognized as a national leader, and the Agenda for Change will help maintain this success.

The Partnership adopted the 2012 Agenda for Change Action Plan as its guiding document for the next two years. The Plan focuses on achievable actions that fully recognize the current resource challenges in government-funded public health efforts. The Partnership includes the following priorities in its short-term plan:

- Commit to health equity
- Prioritize strategic efforts
- Develop foundational public health services
- Modernize business practices
- Identify essential partners

The Partnership chartered an Agenda for Change Workgroup to turn the broad concepts in the Action Plan into more specific action steps.

Foundational Public Health Services

THE FOUNDATIONAL PUBLIC HEALTH SERVICES SUBGROUP

A key element of the Agenda for Change's 2012 work plan is to develop a definition of what constitutes the set of foundational public health services that should be available to all residents and communities statewide, and to provide information about the cost of providing these services to support policy discussions that will focus on providing sustainable funding for public health. To support this effort, the Agenda for Change created the Foundational Public Health Services (FPHS) Subgroup.

The Subgroup's purpose is to develop and help implement a long-term strategy for provision of the foundational public health services needed to assure a functional public health system statewide. This set of services would both provide basic services to the community and provide the necessary foundation for the public health system to perform adequately throughout the State.

SUBGROUP OBJECTIVES AND TASKS

The Subgroup's goal is to develop a long-term strategy for predictable and appropriate levels of funding. The Subgroup has broken down its work into three tasks:

1. Define the set of foundational public health services.
2. Estimate the cost of providing foundational public health services statewide and the level of funding needed to support those services.
3. Identify and secure a sustainable funding source for the foundational services.

The third task, securing sustainable funding, is the primary objective of the foundational services work. This report serves as a summary document for the work to-date that includes elements of the first two tasks of the Subgroup – identifying what constitutes the foundational set of services and developing an analytical model to estimate the cost of providing these services.

DEFINING THE FOUNDATION

The first step toward a sustainable source of funding for foundational public health services was to define exactly which services should be considered foundational. The Subgroup framed the foundational public health services (FPHS) as those that must be present everywhere in order to work anywhere. The foundational definition includes the services that no community should be without, regardless of how they are provided. The FPHS include cross-cutting capabilities that underlie and support programs and a basic level of programs.

Developing the definition of foundational services was an iterative process. Draft versions of the definitions were widely vetted and discussed with local public health leaders via the Washington State Association of Local Public Health Officials (WSALPHO) and its forums in 2012. Input was received and considered, and revisions were made. This section presents the results of the Subgroup's work to define the foundational public health services.

Definition of Foundational Public Health Services

The definition of foundational services is based on the framework of *capabilities* and *programs*. Exhibit 1 shows how these elements provide a framework for defining the foundational public health services.

FOUNDATIONAL CAPABILITIES

Capabilities are skills or capacities that an organization must possess in order to support its provision of the foundational programs. These capabilities are cross-cutting and range from basic organizational functions such as accounting and financial analysis to backend capacity such as database development and emergency planning . There are six elements that constitute the basis for defining the foundational public health capabilities.

FOUNDATIONAL PROGRAMS

In defining the foundational programs, the goal was to identify the basic components necessary to keep the public safe and allow for additional programs to build on a strong foundation.

Programs are areas of DOH and LHJ responsibility that provide service directly to residents and communities. These include activities such as responding to disease outbreaks, monitoring the safety of food and water, and providing birth and death certificates. There are six elements that constitute the basis for defining the foundational public health programs.

ADDITIONAL IMPORTANT SERVICES

There are many other important public health services not included in the foundational definition. Additional services are needed to address important local health risks or community priorities and fall under all six program categories. For a comprehensive list of these services, please see Appendix A.

Exhibit 1
Foundational Capabilities and Programs

FOUNDATIONAL PUBLIC HEALTH SERVICES	Additional Important Services	Communicable Disease Control	Chronic Disease & Injury Prevention	Environmental Public Health	Maternal/Child/Family Health	Access/Linkage with Clinical Health Care	Vital Records	
	Foundational Programs							
FOUNDATIONAL PUBLIC HEALTH SERVICES	Foundational Capabilities	<p>← ACROSS ALL PROGRAMS →</p> <p>Assessment (surveillance and epidemiology)</p> <p>Emergency preparedness and response (all hazards)</p> <p>Communications</p> <p>Policy development and support</p> <p>Community partnership development</p> <p>Business competencies</p>						FOUNDATIONAL PUBLIC HEALTH SERVICES

Source: Washington State Public Health Improvement Partnership Agenda for Change, 2013.

For a complete list of foundational capabilities and programs included in the definition, please see Appendix A. For a comparison of foundational capabilities and programs as defined in Washington State and other comparable states, please see Appendix B.

The responsibilities of the State DOH and the LHJs vary across each of the services. Even within specific programs, the collaborative structure of Washington’s public health system is evident. For some programs, the State has the primary responsibility, sometimes the LHJs have primary responsibility, and sometimes the responsibility is shared. In all cases, state and local efforts are not duplicative – each provides complementary components of the program.

INITIAL ESTIMATE OF FOUNDATIONAL COSTS

The ultimate goal of the Subgroup is to develop a tool that will support their efforts to identify the level of funding needed from non-fee and non-categorical state and local sources to support the foundational public health services. The first step in understanding this overall funding needs is to understand how much the foundational services cost in total, regardless of whether or how they are currently funded.

This chapter provides an overview of the cost model that was developed to support the Subgroup's work and summarizes the initial estimates of the total statewide cost of the foundational services. The Subgroup may continue to refine both its definition of foundational services and the estimate of cost to provide these services in subsequent phases of work. As such, the model described here provides a flexible tool to support these future discussions.

Approach and Methodology

Estimating the statewide cost of providing foundational public health services presents a significant analytical challenge because services are delivered by 35 autonomous LHJs and the state Department of Health.

This section explains the approach taken to this analysis, the framework for applying the analysis, and the structure of the financial model used to develop this initial statewide foundational cost estimate.

ANALYTIC APPROACH OVERVIEW

The primary means of developing the statewide foundational cost estimate was to develop a flexible financial model that used sample cost data provided by participating organizations as input and scaled the sample cost data up to a statewide estimate.

The statewide foundational cost estimate is comprised of two primary components:

1. An estimate of the State Department of Health's costs of providing the foundational services

LOCAL HEALTH JURISDICTIONS
PROVIDING SAMPLE DATA

The following LHJs provided sample data for this analysis (in order of population served):

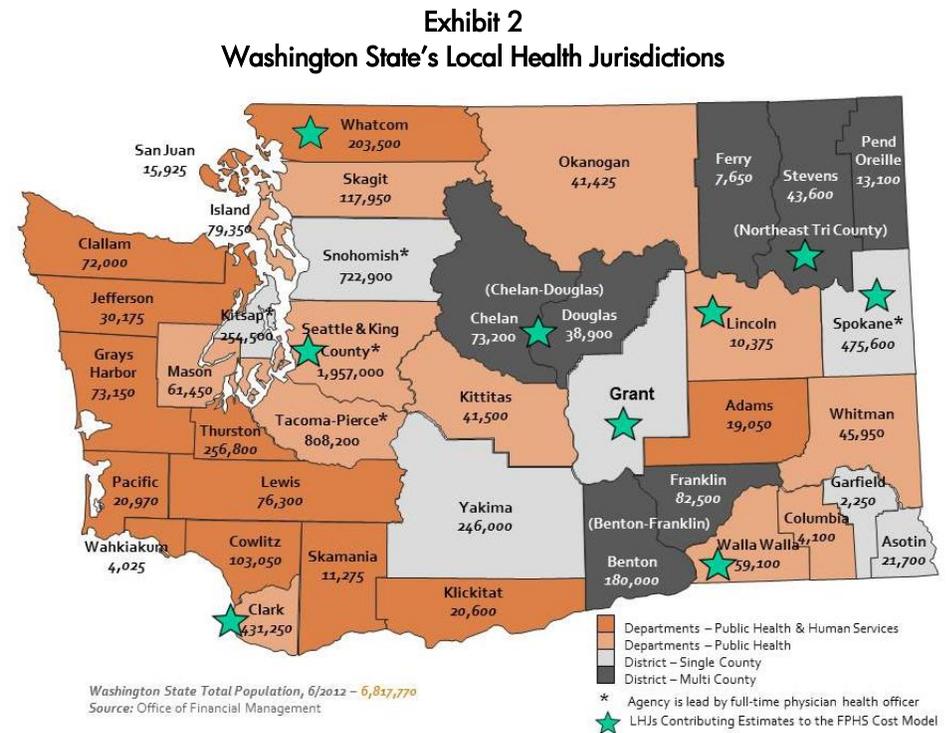
1. Public Health – Seattle-King County
2. Spokane Regional Health District
3. Clark County Public Health
4. Whatcom County Health Department
5. Chelan-Douglas Health District
6. Grant County Health District
7. Northeast Tri County Health District
8. Walla Walla County Health Department
9. Lincoln County Health and Human Services

2. An estimate of the total cost for all 35 LHJs statewide to provide the foundational services

To develop the cost estimate, the Subgroup asked DOH and nine LHJs to provide detailed estimates of how much it would cost their organization to provide the foundational services, based on the detailed definitions included in Appendix A.

The nine participating LHJs represent a cross section of organizations, including those serving large and small populations, those located in the east, central, and west portions of the State, and both department and district governances. The provided sample data was then used to extrapolate to statewide costs.

Exhibit 2 shows how the participating LHJs relate to the statewide LHJ system in terms of geography, population served, and governance structure.



Source: Public Health Improvement Partnership, 2013.

Each of the participating LHJs and DOH provided a detailed estimate of what it would cost to deliver the defined services, whether or not the services are currently provided and regardless of how the services are currently funded. This detailed estimate included number of staff, salary and benefit information, and overhead and indirect support needs to ensure the sample estimated the full cost of providing the foundational services.

To achieve higher validity of the data and a consistent interpretation of definitions, levels of service, and funding sources, costs were collected through a consistent input form and supplemented both with personal interviews and numerous group discussions that involved the Subgroup and agencies that contributed data.

FOUNDATIONAL COST ESTIMATE ANALYTIC FRAMEWORK

In any cost estimating effort, the key to developing a reliable estimate is to understand to the greatest extent possible (1) the unit cost of providing a service and (2) the quantity of the services being provided or delivered. There are three major technical challenges that this study's analytic framework takes into account:

- 1. Developing cost factors.** The statewide foundational cost estimate is built from the ground up on a series of cost factors that relate the cost of providing a particular foundational service to the magnitude of the service that needs to be provided in each jurisdiction. These cost factors were developed through the sample data provided by the LHJs. In most cases, the factor is based on a per capita relationship, but in some cases it is based on other demographic factors, such as disease rates.
- 2. Scaling cost data statewide.** Once per-unit cost factors were developed, the per-unit factors were applied to the total service units needed to estimate the likely statewide cost of providing the foundational services. Costs were scaled based on the underlying drivers of demand for each service (such as population) and the total magnitude of each driver statewide.
- 3. Accounting for economies of scale.** The analytic framework is structured so costs are not scaled on a one-to-one basis between organizations, as there are often economies of scale within larger organizations that result in slightly smaller per-unit costs of providing a service than at smaller organizations.

FINANCIAL MODEL STRUCTURE

The primary tool for creating this initial statewide foundational cost estimate was a flexible, assumption-driven financial model that allowed for evaluation of alternative concepts and changes in key assumptions about the three technical challenges noted above: cost factors, cost scaling, and economies of scale.

The purpose of the financial model is to create an order-of-magnitude estimate of the cost of providing the foundational public health services statewide. It's important to note that this is a model, and does not imply a definitive "answer" to the analytic question. It is based on estimated data and designed to generate a reasonable cost estimate for planning and policy-level use.

The model was developed in multiple steps and in close collaboration with the Subgroup to ensure that, to the maximum extent practical, the model contained sufficient flexibility and functionality to support decision making, and the model was able to reflect the public health cost structure in Washington State.

The key steps in the model's cost estimating methodology are:

- 1.** Translating sample data into program or per-unit cost factors for direct service costs
- 2.** Applying appropriate overhead and indirect cost factors to account for total costs

OVERHEAD AND INDIRECT COSTS

Including overhead and indirect costs in the statewide estimate ensures that the estimate captures the full cost of providing the foundational public health services.

Direct costs – the cost of the staff and supplies that directly provide the foundational services – do not capture all the costs of running an organization.

Overhead and indirect costs must be included to reflect the true cost of doing business, and include costs such as:

- Rent and Capital Improvements
- Utilities
- Vehicles and Large Equipment
- Facility Management
- Fiscal and Legal Services
- Human Resources
- Information Technology
- Administration and Leadership

3. Applying appropriate elasticity factors to account for economies of scale
4. Scaling per-unit costs to all jurisdictions statewide based on underlying cost factors
5. Finalizing a statewide foundational cost estimate

These steps are described in more detail in the following sections.

Translating sample data into per-unit factors for direct service costs. The key step in developing cost factors was to collect real world information from the LHJs about the underlying cost drivers of each foundational service. The sample costs provided were then scaled to the magnitude of each cost driver in each LHJ’s service area (e.g. population, rates of tuberculosis infection, number of restaurants) to create a cost factor for each service that was based on the number of driver units within the jurisdiction.

It’s important to note that the estimated cost was based on the **foundational level of service as defined by the Subgroup**. In this way, the cost factors capture the full cost of providing the foundational level of service and not the LHJ’s current costs of providing related services, which may be below or above the foundational level.

The resulting cost factors describe the relationship between direct service costs and the specific cost drivers.

Applying overhead and indirect cost factors. Factors, structured as a percentage cost increase applied to direct service costs, were developed for overhead and indirect costs that allow for appropriate scaling of the direct service costs up to a total cost of service. These factors were designed to capture the relevant costs associated with doing business, such as rent, facility maintenance, and administration.

Since the definitions of overhead and indirect costs vary across organizations and some of the elements within the definition of foundational capabilities are commonly categorized as overhead costs, interviews were conducted to ensure the model did not double count any of these costs when developing the indirect and overhead cost factors.

Applying appropriate elasticity factors to account for economies of scale. Not all areas of service scale on a one-to-one relationship with their underlying cost driver. The model provided the ability to apply an elasticity percentage to each service’s cost factor to control how costs scaled across the LHJs.

Elasticity assumptions allow the model to define what portion of costs are “variable” (i.e., changing with the underlying cost driver) and what portion of costs are “fixed” (i.e. remain stable for all types of organizations).

Scaling per-unit costs to all jurisdictions statewide based on underlying cost factors. The model used the three inputs developed above (direct service cost factors, overhead and indirect percentages, and elasticity assumptions) to create an estimate for every LHJ in the State. These individualized estimates include the number of FTEs and the costs for direct service and indirect and overhead needs for each element of the foundational services.

Costs were scaled based on the magnitude of the chosen cost drivers at each jurisdiction.

Finalizing the statewide foundational cost estimate. The final step in developing the statewide foundational cost estimate was to analyze the model’s outputs using alternative scenarios for cost drivers and elasticity factors to create a reasonable estimate.

In order to bring qualitative input and subject matter expertise into the quantitative financial model, the process included multiple work sessions with the Subgroup and the jurisdictions that provided sample data to refine the assumptions in the model. These work sessions were integral to creating a reasonable and justifiable preliminary estimate of foundational costs.

ASSUMPTIONS AND RATIONALE

As part of developing an initial estimate of the statewide foundational costs, specific assumptions and model settings were chosen based on group input, subject matter expertise, and the analytic framework. This section describes the key assumptions that drive the estimate and the rationale behind them.

Elasticity Assumption. For the statewide foundational cost estimate, the model used an elasticity assumption of 80% for all of the foundational programs and services. This means the model is treating 80% of the costs as “variable” and 20% of the costs as “fixed” across all organizations.

This elasticity factor creates a curve across the different sized organizations that resonated as the most reasonable to the Subgroup and to the agency representatives reviewing the modeling work. The impacts of this assumption are explored further in the Sensitivity Analysis on page 16.

Jurisdictional Groupings for Scaling Factors. The statewide foundational cost estimate is comprised of two components: (1) the estimates of DOH’s foundational functions and (2) the combination of all LHJs statewide performing the foundational functions. DOH’s estimate is based directly on the sample data provided by the Department, and was not adjusted by the model.

The estimate for the State’s 35 LHJs is based on a sample set of 9 local jurisdictions. The sample data from these jurisdictions, as noted in the methodology section above, was used to create scaling factors that drive the estimates for all other LHJs.

One of the key assumptions in the model is choosing how the sample data is scaled to the non-sampled LHJs. At its most basic, the model can create an overall average from the nine sample jurisdictions and create cost factors to scale costs to all other LHJs. However, the model also allows additional levels of granularity by providing the flexibility to group the sample jurisdiction data according to various characteristics and use develop separate cost factors for each that can then be applied to jurisdictions with similar characteristics.

For the initial statewide foundational cost estimate, the model uses the inputs from the sample jurisdictions serving significant urban centers to create scaling factors for the other jurisdictions serving similar markets. The model is then used to develop cost factors

ECONOMIES OF SCALE

The term “economies of scale” refers to a situation where costs scale in a less than one-to-one relationship with service levels.

The basis for an organization’s economies of scale is usually a combination of the following factors:

- Lower input costs due to volume discounts or reduced inventories
- Distribution of fixed costs, such as administration and infrastructure
- More efficient operations due to advanced technology or labor specialization

An example of a foundational public health service with potential for large economies of scale is Communication – both small and large organizations only need one or two staff members to manage communication tasks for most sizes of organizations.

On the other end of the spectrum, a program with a large direct service component such as Environmental Public Health Inspections has smaller economies of scale, because staff needs increase quickly with changes in scale.

The model addresses economies of scale using an elasticity assumption which allows only certain portions of costs to vary with changes in underlying drivers.

using the all other sample jurisdictions to create estimates for the remainder of jurisdictions statewide.

Key Findings

TOTAL STATEWIDE FOUNDATIONAL COST ESTIMATE

The initial estimate of the total annual cost to provide the foundational services statewide is about \$328 million. Exhibit 3 presents the results of the Subgroup’s work on the initial estimate, showing the statewide foundational cost estimate broken down into individual capabilities and programs and split between costs at the state level and costs at the local level.

Exhibit 3
Estimated Cost of Providing Foundational Public Health Services Statewide

Services Ranked By Cost	Total Estimated Cost of FPHS	State Dept. of Health	Local Health Jurisdictions	■ State DOH ■ LHJs	
Foundational Capabilities	75,700,000	27,750,000	47,945,000	37%	63%
A. Assessment	11,350,000	5,410,000	5,935,000	48%	52%
B. Emergency Preparedness and Response	10,825,000	3,620,000	7,205,000	33%	67%
C. Communication	3,960,000	750,000	3,210,000	19%	81%
D. Policy Development and Support	4,415,000	1,115,000	3,300,000	25%	75%
E. Community Partnership Development	4,885,000	860,000	4,025,000	18%	82%
F. Business Competencies	40,265,000	15,995,000	24,270,000	40%	60%
Foundational Programs	252,290,000	134,890,000	117,405,000	53%	47%
A. Communicable Disease Control	33,760,000	9,010,000	24,750,000	27%	73%
B. Chronic Disease and Injury Prevention	24,855,000	12,590,000	12,265,000	51%	49%
C. Environmental Public Health	95,800,000	33,760,000	62,045,000	35%	65%
D. Maternal/Child/Family Health	25,175,000	13,765,000	11,410,000	55%	45%
E. Access/Linkage with Clinical Health Care	65,585,000	62,145,000	3,440,000	95%	5%
F. Vital Records	7,115,000	3,620,000	3,495,000	51%	49%
Total Cost	327,990,000	162,640,000	165,350,000	50%	50%

Source: DOH, 2013; Participating LHJs, 2013; and BERK, 2013.

About 63% of the cost of providing the foundational capabilities is at the local level, and about 37% is at the state level. It was expected that the cost of the capabilities, which are elements that support provision of public health services, would be higher for LHJs than for DOH because there are significant economies of scale within those programs that can be achieved by a large organization such as DOH. For example, business competencies require many fixed costs such as IT systems and human resources and finance departments that don’t vary significantly in size between organizations.

For the foundational programs, about 53% of the cost is at the state level, and about 47% is at the local level. Within the programs, the distribution between state and local responsibility varies significantly. The biggest difference in costs is within Access/Linkage

with Clinical Health Care, where DOH comprises 95% of the costs of this program. This difference is driven by DOH's significant responsibilities around healthcare provider licensing and monitoring.

It's important to remember that the responsibilities of DOH and the LHJs are different within each of the services, so it was expected that the share of costs would vary by element. However, the nearly even split of the total estimate between state and local costs strongly reflects the cooperative relationship between DOH and the LHJs in providing public health services in Washington.

Exhibit 4 shows how much of the estimate comes from each of the capabilities and programs for the total statewide cost, for only DOH, and for the LHJs in total.

Exhibit 4
Estimated Statewide Foundational Costs by Service

Services Ranked By Cost	Total Estimated Cost of FPHS		State Dept. of Health		Local Health Jurisdictions	
Foundational Capabilities	75,700,000	23%	27,750,000	17%	47,945,000	29%
F. Business Competencies	40,265,000	12%	15,995,000	10%	24,270,000	15%
A. Assessment	11,350,000	3%	5,410,000	3%	5,935,000	4%
B. Emergency Preparedness and Response	10,825,000	3%	3,620,000	2%	7,205,000	4%
E. Community Partnership Development	4,885,000	1%	860,000	1%	4,025,000	2%
D. Policy Development and Support	4,415,000	1%	1,115,000	1%	3,300,000	2%
C. Communication	3,960,000	1%	750,000	0%	3,210,000	2%
Foundational Programs	252,290,000	77%	134,890,000	83%	117,405,000	71%
C. Environmental Public Health	95,800,000	29%	33,760,000	21%	62,045,000	38%
E. Access/Linkage with Clinical Health Care	65,585,000	20%	62,145,000	38%	3,440,000	2%
A. Communicable Disease Control	33,760,000	10%	9,010,000	6%	24,750,000	15%
D. Maternal/Child/Family Health	25,175,000	8%	13,765,000	8%	11,410,000	7%
B. Chronic Disease and Injury Prevention	24,855,000	8%	12,590,000	8%	12,265,000	7%
F. Vital Records	7,115,000	2%	3,620,000	2%	3,495,000	2%
Total Cost	327,990,000		162,640,000		165,350,000	

Source: DOH, 2013; Participating LHJs, 2013; and BERK, 2013.

About 77% of the statewide cost estimate is generated from the cost of providing the foundational programs, and about 23% is from the cost of providing the foundational capabilities. This percentage varies for DOH (83% for programs and 17% for capabilities) and for the LHJs (71% for programs and 29% for capabilities), but in general the cost of providing the programs is significantly higher than the cost of providing the foundational capabilities.

Within the foundational capabilities, the largest component is Business Competencies, which constitutes about 12% of the total statewide cost estimate and slightly more than half of the total cost for the foundational capabilities. The other foundational capabilities are minor portions of the statewide cost estimate, constituting no more than 3% of the total.

Within the foundational programs, the largest overall component is Environmental Public Health, which constitutes 29% of the total estimate, or about \$95.8 million per year. The second largest program is Access/Linkage with Clinical Health Care at 20% of the total, or about \$65.6 million. As noted above, the estimate for this program contains a large component for healthcare provider licensing.

STATE DEPARTMENT OF HEALTH FOUNDATIONAL COST ESTIMATE

As shown in Exhibit 4, the majority of the costs for providing foundational services at the state level are within the foundational programs. The largest cost center for DOH is Access/Linkage with Clinical Health Care, which comprises about 38% of DOH's total estimated cost, or about \$62.1 million.

- Clinical Health Care costs at the state level are largely driven by inspection and licensing of healthcare facilities and licensing, monitoring, and discipline of healthcare providers. This is a large function that is only applicable to DOH, and is not provided by LHJs.
- It's important to note that this program is primarily supported by fees and licensing costs, meaning it does not drive significant need for state and local funding.

The second largest service at the state level, in terms of cost, is the Environmental Public Health division, which makes up about 21% of DOH's foundational cost estimate, or about \$33.8 million.

- As with Clinical Health Care, there is a large state-only component within this program related to protecting the public and workers from radiation exposure and ensuring safe shellfish and public drinking water systems.
- This program also has a large, fee-supported component related to conducting mandated public health inspections of food, water, and liquid and solid waste streams.

Business Competencies, a foundational capability, is the third largest portion of DOH's estimate. This service constitutes about 10% of DOH's foundational cost estimate, or about \$16 million. This service includes the State's costs related to general business administration, such as human resources, IT systems, legal support, and policy and communications.

One significant difference between state and local responsibilities is the state laboratory. DOH runs a large, state of the art laboratory that supports all realms of public health. While PHSKC also has a laboratory, it primarily conducts clinical testing and most LHJs use the state laboratory for their needs.

The costs associated with the state laboratory are included in DOH's foundational cost estimate, and are spread throughout the relevant programs that the lab supports in order to align costs more closely to the LHJ cost structure. Exhibit 5 shows how the state laboratory costs are included within individual programs and capabilities. Overall, the laboratory costs associated with supporting the State's foundational programs and capabilities constitute about 7.8% of DOH's total cost estimate, or about \$12.6 million.

Exhibit 5
Distribution of DOH Laboratory Costs Across FPHS

	Cost of Service Without Lab	Lab Cost By Service	Cost of Service Including Lab	Lab Cost as % of Service
Foundational Capabilities	26,925,000	825,000	27,750,000	3.0%
A. Assessment	5,410,000	0	5,410,000	0.0%
B. Emergency Preparedness and Response	2,795,000	825,000	3,620,000	22.8%
C. Communication	750,000	0	750,000	0.0%
D. Policy Development and Support	1,115,000	0	1,115,000	0.0%
E. Community Partnership Development	860,000	0	860,000	0.0%
F. Business Competencies	15,995,000	0	15,995,000	0.0%
Foundational Programs	123,105,000	11,785,000	134,890,000	8.7%
A. Communicable Disease Control	4,960,000	4,050,000	9,010,000	45.0%
B. Chronic Disease and Injury Prevention	12,590,000	0	12,590,000	0.0%
C. Environmental Public Health	30,750,000	3,010,000	33,760,000	8.9%
D. Maternal/Child/Family Health	9,040,000	4,725,000	13,765,000	34.3%
E. Access/Linkage with Clinical Health Care	62,145,000	0	62,145,000	0.0%
F. Vital Records	3,620,000	0	3,620,000	0.0%
Total Cost	150,030,000	12,610,000	162,640,000	7.8%

Source: DOH, 2013; and BERK, 2013.

Please see Appendix C for notes about specific activities that are included within DOH's defined foundational responsibilities and Appendix E for additional information on the policy implications of this initial analysis.

LOCAL HEALTH JURISDICTION ESTIMATES

Similar to DOH, the majority of the cost of providing the foundational services lies within the foundational programs. The largest single component of the estimate at the local level is the Environmental Public Health programs, which constitutes about 38% of the total LHJ estimate, or about \$62 million. A large portion of the costs associated with Environmental Public Health is supported by fees and licenses for public health inspections of food and drinking water supplies as well as solid and liquid waste.

The second largest service for LHJs is Communicable Disease Control, which is estimated to cost about \$24.8 million per year, or 15% of the total foundational cost estimate for LHJs. Providing supportive Business Competencies is also estimated to comprise about 15% of the total LHJ foundational cost estimate, at about \$24.3 million.

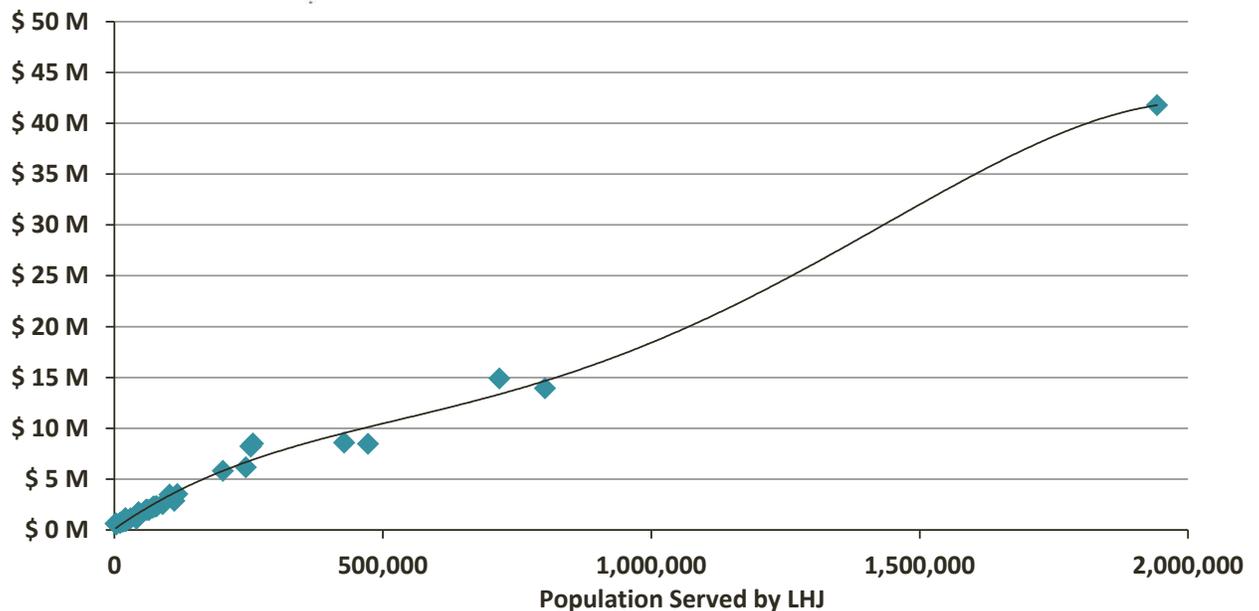
Please see Appendix C for notes about specific activities that are included within LHJs' defined foundational responsibilities. For a full accounting of the cost estimates by foundational service for all LHJs, please see Appendix D.

Individual LHJ Estimates. The foundational LHJ cost estimate was built from the ground up by modeling the cost of providing the foundational services for each of the State's 35

LHJs individually. Exhibit 6 shows the foundational cost estimate for each LHJ compared to the size of the population they serve.

- The overall curve is generated by the elasticity and cost scaling assumptions explained above. The elasticity factor drives a flattening of the curve due to economies of scale as the service area grows.
- The small variances away from the curve are due to differences in labor costs throughout the State. The cost factors within the model were scaled appropriately to each jurisdiction based on relative labor costs taken from the U.S. Bureau of Labor Statistics.
- The difference in labor costs is also the primary reason that the estimate for PHSKC, with a service population of about 1.9 million, is higher than the rest of the curve would suggest – labor costs in King County are significantly higher than the rest of the state.

Exhibit 6
Estimated Annual Cost of Providing Foundational Public Health Services by Local Health Jurisdiction



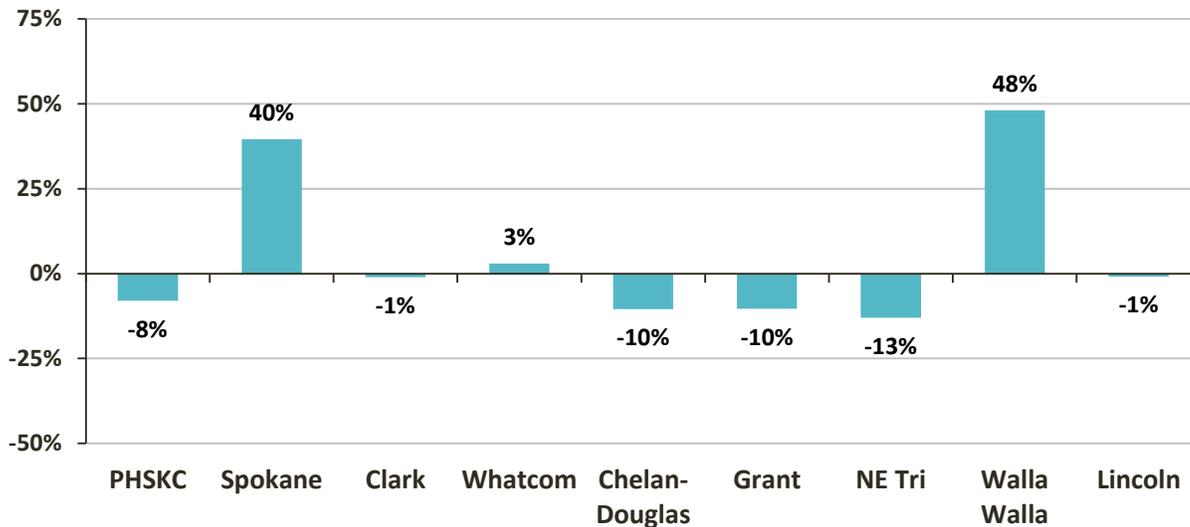
Source: Participating LHJs, 2013; and BERK, 2013.

A continual check in refining the model and the assumptions in the model was to compare the cost estimates generated for the nine LHJs that provided sample data with their sample cost data. Exhibit 7 shows the difference between the model-estimated costs and the provided sample cost data for the nine participating LHJs.

Where the percentage is positive, it means the model is estimating a cost for that LHJ that is *higher* than the provided sample cost data. Where the percentage is negative, the model is estimating a cost *lower* than the provided sample.

Exhibit 7

Estimated Costs Compared to Provided Estimates For LHJs Providing Sample Data



Source: Participating LHJs, 2013; and BERK, 2013.

- In the model, most of the jurisdictions (PHSKC, Clark, Whatcom, Chelan-Douglas, Grant, and Lincoln) are estimated to within 10% of their provided sample.
- The model is estimating costs for Spokane and Walla Walla that are more than 10% higher than the provided samples, and is estimating a cost for NE Tri that is more than 10% lower than the provided sample.

Overall, the total model-estimated cost for these nine jurisdictions is within \$1.1 million of their combined provided estimates, or about 0.3% of the total statewide foundational cost estimate. A jurisdiction by jurisdiction review of all 35 LHJs shows that this assumption creates reasonable estimates for every organization, including for the largest and smallest jurisdictions.

This analysis drove a decision to use the model-estimated costs for these nine jurisdictions in the statewide foundational cost estimate, instead of the costs directly provided in the sample data. The difference between using the model-generated costs and the provided costs is about \$1.1 million, or a 0.3% variation from the selected statewide estimate.

One can see why the totals would be similar by the results shown in Exhibit 7, since the majority of jurisdictions are being slightly underestimated by the model, while a few jurisdictions are being significantly overestimated. These variations average out to an estimate that is within a few percentage points of the provided total for these jurisdictions.

Given the similarity between the provided sample data and the model-generated estimate, the Subgroup and the participating jurisdictions decided it was appropriate to use the model-generated estimates rather than the sample data for two main reasons:

1. Using only model-generated estimates means that all jurisdictions are estimated using the same methodology, creating consistency for comparing the estimates across different sizes of organizations.
2. Using the model-generated estimates averages out some of the variation between participating LHJs' provided samples. Since there was variation among the survey responses, using the model-generated estimate reduces the impact of the sample as the samples drive the cost factors, but do not directly add into the statewide foundational cost estimate.

Sensitivity Analysis

The foundational cost estimate outlined in the previous section is based on a specific methodology and set of assumptions. In order to provide additional confidence in the model approach and analysis, a sensitivity analysis was undertaken to see how different modeling assumptions would impact the overall estimate of statewide costs.

The assumptions that have the greatest impact on the estimate of statewide costs are the jurisdictional groupings used for development of the scaling factors and the elasticity assumptions which describe the how sensitive each cost factor is to changes in the underlying driver. Each of these elements is analyzed individually and in combination below to see how costs might vary under alternative assumptions.

JURISDICTIONAL GROUPINGS FOR SCALING FACTORS

As noted above, the model allows control over how the sample jurisdiction data is scaled to the other jurisdictions. For the selected estimate, the model uses the inputs from jurisdictions with large urban centers to create scaling factors for other jurisdictions with large urban centers. The model then averages the inputs from all other jurisdictions with non-urban centers to create estimates for all other jurisdictions statewide.

For sensitivity analysis, the model was tested for five additional scaling factor scenarios:

Scenario 1. Jurisdictions were grouped into five size categories based on population size.

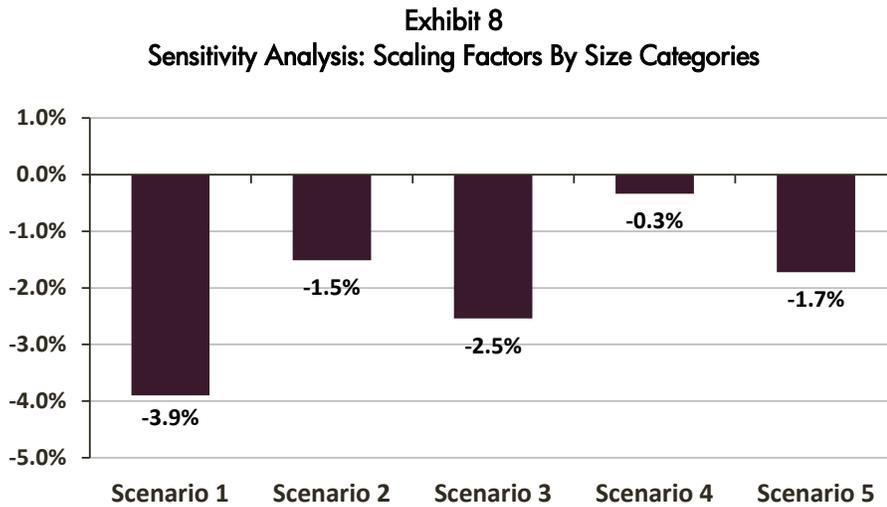
Scenario 2. PHSKC was removed from the scaling factors, and the average sample data from the eight other jurisdictions was used to estimate all other jurisdictions.

Scenario 3. PHSKC was removed from the scaling factors, and the remaining jurisdictions were split into two categories based on population size. The two groups were split into extra small jurisdictions (serving populations below 60,000) and all other jurisdictions.

Scenario 4. PHSKC was removed from the scaling factors, and the remaining jurisdictions were split into two categories based on population size. The two groups were split into large jurisdictions (serving populations between 425,000 and 800,000) and all other jurisdictions.

Scenario 5. The overall average of the nine sample jurisdictions was used to create scaling factors for all estimated jurisdictions.

Exhibit 8 shows the impact on the statewide foundational cost estimate of these five different scaling factor scenarios.



Source: DOH, 2013; Participating LHJs, 2013; and BERK, 2013.

Different scaling factor groupings impact the estimate by a maximum of 3.9%, or about \$12.8 million. Most scaling factor options fall within 2.5% of the selected estimate.

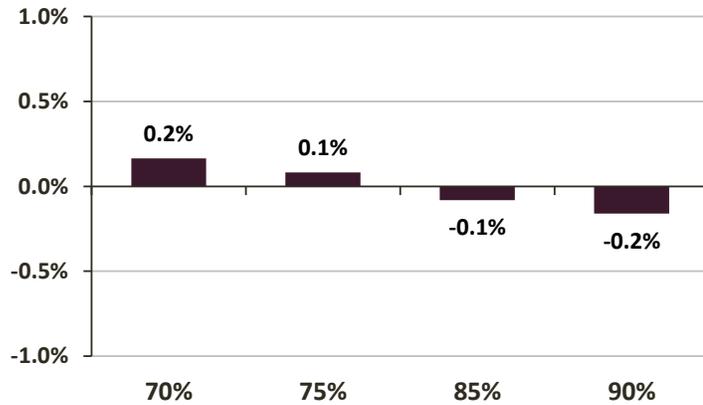
ELASTICITY ASSUMPTION

The basis for the selected elasticity assumption of 80% and background on how the elasticity assumption works is explained in more detail on page 8. The purpose of this section is to understand how different elasticity assumptions would impact the statewide cost estimate, if at all.

To understand the sensitivity, the model was tested with four additional elasticity assumptions ranging from 70% to 90% variable costs. The Subgroup and participating jurisdictions advised that elasticity factors above or below that range did not make sense given the way public health services are provided.

Exhibit 9 shows the impact on the statewide foundational cost estimate of different elasticity factors.

Exhibit 9
Sensitivity Analysis: Elasticity Assumptions



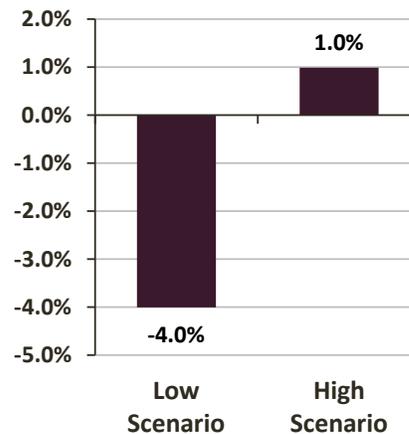
Source: DOH, 2013; Participating LHJs, 2013; and BERK, 2013.

Different elasticity assumptions, using the scaling groupings from the selected estimate, do not significantly impact the statewide cost estimate. At 70% and 90% elasticity, the total estimate is only impacted by about 0.2%, or \$0.5 million.

RANGE OF COMBINED IMPACTS

In order to conduct a full sensitivity analysis, alternative key assumptions were tested in combination to understand how the impacts added together. The changes in assumptions are not directly additive. The model was tested with every permutation of the elasticity and scaling grouping assumptions identified above, and the highest and lowest results are presented in Exhibit 10.

Exhibit 10
Sensitivity Analysis: Combined Impacts of Assumptions



Source: BERK, 2013.

- Choosing Scenario 1 from the scaling grouping factors, which groups jurisdictions into five distinct size categories based on their population, and setting elasticity to 90% results in an estimate that is 4.0%, or about \$13.1 million, lower than the selected estimate.
- Choosing Scenario 5 from the scaling grouping factors, which creates an overall average scaling factor for each element, and setting elasticity to 70% results in an estimate that is about 1.0%, or \$3.2 million, higher than the selected estimate.

NEXT STEPS

Foundational Public Health Services Subgroup

The Foundational Public Health Services Subgroup is currently within the Agenda for Change Workgroup in the Partnership's organizational structure. Moving forward into the 2013-15 biennium, the Subgroup will be moved up in the structure to be its own distinct workgroup.

The Workgroup will continue to work toward identifying a sustainable funding program to support foundational public health services in Washington State. The Workgroup's focus will be refining the preliminary revenue analysis, producing ideas for a sustainable funding source, providing information and recommendations on potential options, and providing technical support to policy makers in designing a final sustainable funding model

2013-15 Work Plan

The Subgroup has developed a two-year work plan for the 2013-15 biennium to achieve its goal of identifying a sustainable funding program for foundational public health services. The plan includes the following milestones:

1. By **December 2013**: In consultation with key partners, have a clear description of the funding history, current funding situation, and future funding options to discuss with public health professionals and the Workgroup's key partners.
2. By **June 2014**: In collaboration with local government partners, clearly describe options for sustainable funding of foundational public health services statewide.
3. By **Summer 2014**: Assist in the introduction of a broadly supported proposal to partners and policy makers in preparation for the 2015 legislative session and continue working towards adoption of a new model.