Costing the Foundational Public Health Services in Ohio

FINAL Report

Prepared for the Ohio Public Health Partnership
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Executive summary

A detailed understanding of current spending on the Foundational Public Health Services (FPHS) and the resource gaps that exist is critical for ensuring that local health departments (LHDs) in every community are able to to protect and improve the public's health.

To assess where we are and where we should be in assuring the FPHS in Ohio, the Ohio Public Health Partnership (OPHP) developed an FPHS costing tool to determine current levels of spending on and attainment of the FPHS by LHDs across the state.

For this report, we analyzed data from a sample of 86 Ohio LHDs (76 percent of all LHDs) covering a population of 9,804,714 (84 percent of Ohio's total 2018 population of 11,690,000). Based on current levels of spending on and attainment of the FPHS as reported by sample LHDs, we estimated the financial investment that would be needed by Ohio LHDs to fully implement the FPHS in communities across the state.

Key findings

- Based on current levels of spending on and attainment of the FPHS by Ohio LHDs, an **estimated additional investment of $7.94 per capita** will be needed to close the attainment gap and ensure adequate provision of the FPHS in communities across Ohio.

    - ✓ **$4.06 per capita for full implementation of the Foundational Capabilities**
    - ✓ **$3.88 per capita for full implementation of the Foundational Areas**

- Based on the Ohio 2018 population of 11,690,000 residents, this translates into an **estimated total dollar investment of $92,846,735** to close the attainment gap in the FPHS for all LHDs in Ohio.

    - ✓ **$45,381,284 for full implementation of the Foundational Capabilities**
    - ✓ **$47,505,933 for full implementation of the Foundational Areas**

- Similar to the variation observed for current levels of spending on and attainment of the FPHS, estimated per capita investment needs varied substantially across health districts, size of population served, and type of jurisdiction served.

- LHDs with large estimated per capita investment needs differed from LHDs with smaller needs along a set of organizational and community characteristics. LHDs with larger investment needs were more likely to serve smaller populations, rural communities, and communities with somewhat lower median household incomes; they were more likely to be located in the Northwest and Southeast districts; they were also more likely to receive funding from a dedicated public health levy. LHDs with larger investment needs were less likely to be PHAB accredited.

Recommendations

Based on our findings, we have compiled the following recommendations:

1. Current funding levels do not allow all Ohio LHDs to fully implement the FPHS. Based on our analysis, an additional investment of approximately $8 per capita and year will be needed to close, or at least significantly reduce, this attainment gap. For Ohio as a whole, this estimate translates into a total additional investment need of approximately $93 million annually. Investment need, however, is not equally distributed across LHDs. As a result, the actual additional investment need of each LHD will need to be determined based on the agency's current spending and attainment levels.

2. Overall, the FPHS costing tool was well designed and the instructions provided to participants as part of the tool and the in-person training contained detailed guidance on how to complete the tool. To further improve the tool, we recommend to (a) revise the instructions for estimating attainment levels, (b) require completion of the revenue section, and (c) explore options to make the tool more useful for local public health practice (e.g., by incorporating financial performance indicators and benchmarks).

3. Results from the first round of collecting data using the FPHS costing tool have been received with great interest by public health policymakers and practitioners in Ohio. Going forward, we recommend that FPHS costing data be summarized, analyzed, and published annually to allow Ohio LHDs to benchmark their agencies against peer agencies, conduct trend analysis, and explore the link between investments in public health and improvements in community health outcomes.

We appreciate the opportunity to analyze data from the first round of data collection and share our findings with public health practitioners and policymakers through our reports and our presentation at the 2019 AOHC Fall Conference. We would like to thank Susan Tilgner at the OPHP and her team for this opportunity. We also thank the public health leaders in attendance at our AOHC conference session for their insights and feedback on our results. For questions or more information, please contact Simone Singh at singhsim@umich.edu.

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Methods

Data and sample

Financial data for this report was collected from FPHS costing tools submitted to the Ohio Public Health Partnership (OPHP) by Ohio LHDs. Completing the tool required Ohio LHDs to report detailed information on their agency's expenditures, including both labor and non-labor expenditures. The FPHS costing tool also asked LHDs to estimate the percentage of FPHS being met by the agency and its community partners and the resulting gap in attainment of the FPHS.

Ohio LHDs completed the tool between January and May 2019 using expenditure data for fiscal year 2018. Data was cleaned, validated, and analyzed by the authors of this report between June and October 2019.

Data were available for 94 Ohio LHDs. Of these, eight did not contain complete data on all variables of interest for the analysis and were subsequently dropped from the sample. The final sample for this report included 86 Ohio LHDs with complete data. A complete list of LHDs included in this report can be found in the appendix (see Table A).

Sample LHDs represented 76 percent of all Ohio LHDs and covered a population of 9,804,714 (84 percent of Ohio's total 2018 population of 11,690,000). Sample LHDs were located in all five health districts as defined by the Association of Ohio Health Commissioners (AOHC) and served populations ranging in size from 10,512 to 883,307.

Measures

Key measures analyzed and presented in this report include current levels of spending on the FPHS; current levels of attainment of the FPHS; and the estimated investment needed to close any attainment gap and fully implement the FPHS.

Current levels of spending on the FPHS were defined as total per capita spending on the FPHS as reported by Ohio LHDs in the FPHS costing tool (page 6, column O). Total per capita spending included both labor and non-labor spending and was adjusted for regional or cross-jurisdictional shared service agreements.

Current levels of attainment of the FPHS were defined as the percentages of the FPHS currently achieved by Ohio LHDs and their community partners. Specifically, attainment was defined as (a) the percentage of FPHS currently being achieved by Ohio LHDs (page 5, column C) and (b) the percentage of FPHS currently being achieved jointly by Ohio LHDs and their community partners (page 5, column E).

The estimated investment needed to close any attainment gaps was defined as the cost to fill the gap between what local public health currently provides and what local public health should be providing to fully implement the FPHS. Estimates were computed using the following steps:

1. We divided each LHD's per capita cost for each foundational service by the respective attainment percentage to obtain the expected per capita cost at full (100 percent) attainment for each foundational service.
2. We multiplied the expected per capita cost at full attainment for each foundational service by the respective attainment gap to obtain the per capita investment needed to fill the current gap in attainment, by foundational service.
3. We multiplied the average per capita investment needed to fill the current gap in attainment by the Ohio 2018 population of 11,690,000 residents to obtain the total dollar investment needed to fill the gap in attainment of the FPHS for all Ohio LHDs.

Our calculations of the estimated per capita and total costs to fill any gap in attainment of the FPHS required us to make assumptions, including:

1. We assumed that any gaps in attainment would be fully covered by the LHD alone, without relying on community partners.
2. We assumed that the costs to cover any gaps in attainment followed the same levels and patterns as the costs LHDs already expended on the FPHS. This implied, for instance, that the cost to achieve a ten percentage point increase in attainment remained constant irrespective of the current level of attainment (i.e., there are no economies or diseconomies of scale). This also implied that the share of labor and non-labor costs remained constant across levels of attainment.
3. We assumed that the average resource gap identified for sample LHDs applies to all LHDs in Ohio.

Analytical strategy

Descriptive analysis was conducted to describe current levels of spending on the FPHS by Ohio LHDs and the level of attainment of the FPHS by Ohio LHDs and their community partners. Based on current levels of spending on and attainment of the FPHS, we then estimated the investment needed to fully implement the FPHS. All results presented were weighted by population size served to account for the large variation in jurisdiction size across sample LHDs.

All analyses were conducted first for Ohio as a whole and second by geographic location, population size served and type of jurisdiction served (city or county).

- Geographic location was defined in terms of the five health districts as defined by the AOHC: Central, Northeast, Northwest, Southeast, and Southwest (see Appendix Table B).

- Population size served was defined as using the following four groups: fewer than 30,000; 30,000 to 49,999; 50,000 to 99,999; and 100,000 and more people served (see Appendix Table C).
- Type of jurisdiction served was defined as LHDs serving either a city or a county. Combined city-county LHDs were included in the group of LHDs serving counties.

Results

Current levels of spending on the FPHS

In FY 2018, Ohio LHDs reported average total spending on the FPHS (below the line) of $24.21 per capita (see Graph 1 and Table 1). Spending was roughly equally divided into spending on the Foundational Capabilities ($11.20 per capita) and spending on the Foundational Areas ($13.01 per capita).

In addition, Ohio LHDs spent an average of $11.78 per capita on Expanded Services (above the line) for total average spending of $35.99 per capita. Total spending on the FPHS (below the line) represented approximately 67 percent of total spending by Ohio LHDs while spending on Expanded Services (above the line) accounted for approximately 33 percent of total spending.

Graph 1: Per capita spending on the FPHS (above and below the line), by foundational service

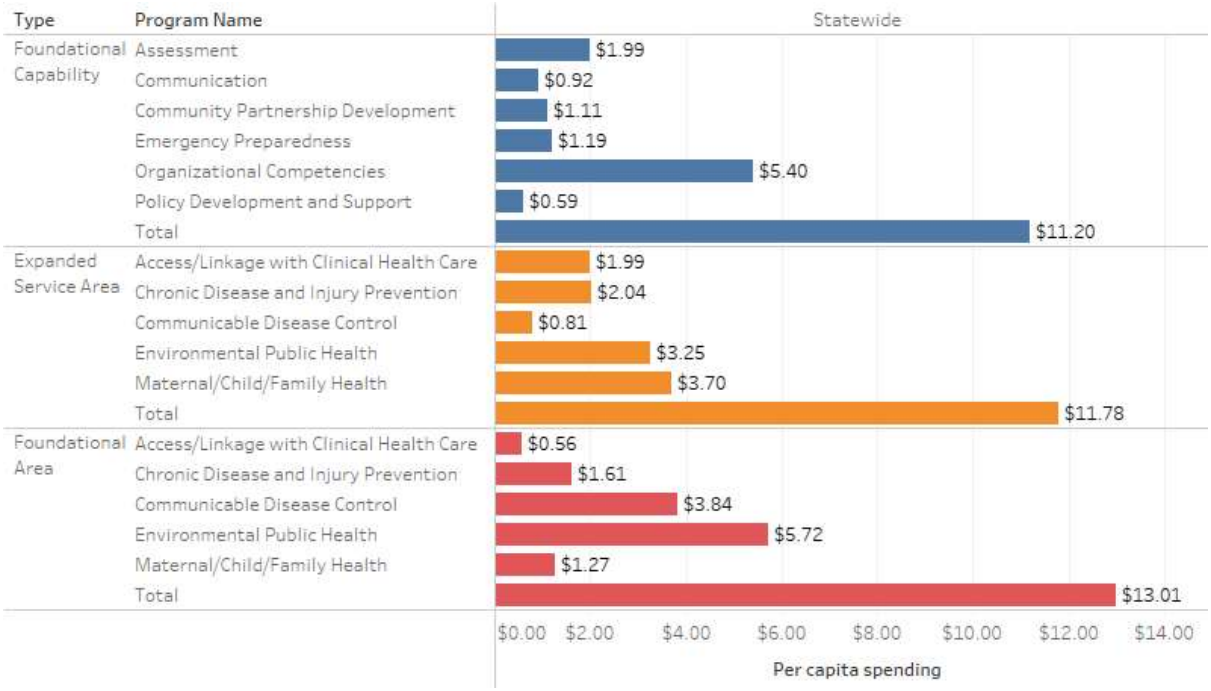


Table 1: Descriptive results for per capita spending (in $) on the FPHS (above and below the line), by foundational service

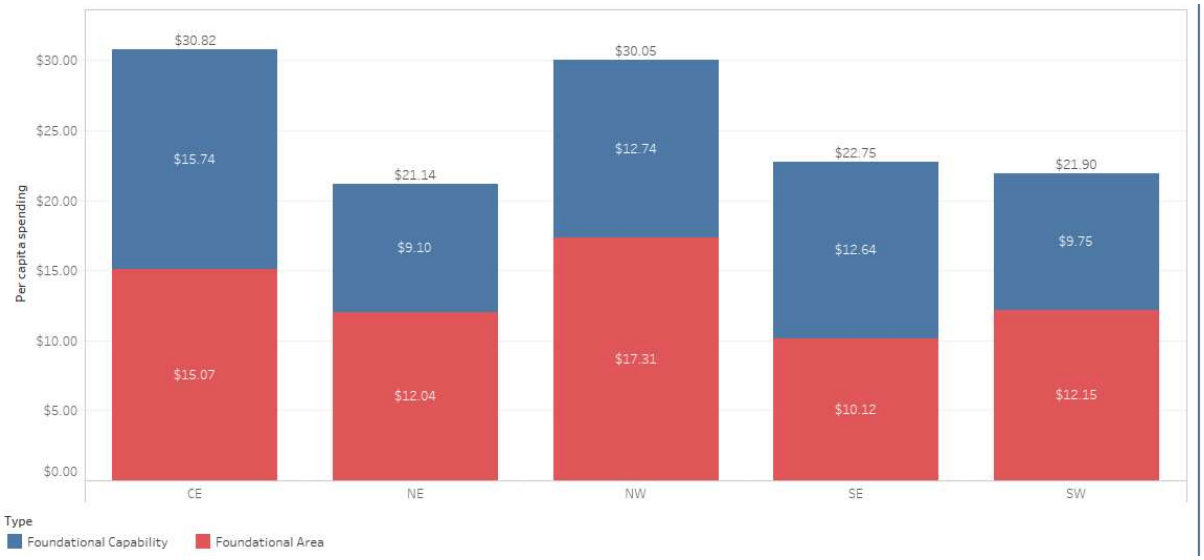
	Minimum	25th percentile	Median	75th percentile	Maximum
Foundational Capabilities					
Assessment	(0.19)	1.08	1.49	2.39	16.42
Emergency Preparedness	0.20	0.59	0.77	1.84	7.57
Communication	0.00	0.32	0.91	1.06	3.76
Policy Development	0.00	0.25	0.50	0.75	3.05
Community Partnerships	0.00	0.35	0.64	0.99	5.64
Organizational Competencies	0.49	2.77	4.21	6.94	28.59
Total Foundational Capabilities	**3.00**	**7.15**	**8.43**	**15.04**	**34.57**
Foundational Areas					
Communicable Disease	(0.04)	1.52	3.00	4.52	27.00
Chronic Disease	(1.98)	0.24	0.70	2.70	18.93
Environmental Health	0.27	3.81	6.18	7.97	12.70
Maternal, Child, and Family Health	(1.74)	0.50	0.74	1.59	13.93
Access to Care	0.00	0.03	0.23	0.62	13.43
Total Foundational Areas	**(0.49)**	**9.33**	**11.61**	**16.78**	**36.06**
Total FPHS (below the line)	**2.51**	**16.48**	**20.04**	**31.82**	**70.63**
Expanded Services					
Communicable Disease	(2.43)	0.00	0.29	0.87	4.25
Chronic Disease	(0.44)	0.25	1.22	2.66	9.68
Environmental Health	(4.46)	1.46	2.90	3.90	12.25
Maternal, Child, and Family Health	(6.11)	0.00	2.54	5.91	38.42
Access to Care	(21.24)	0.00	0.89	2.85	99.43
Total Expanded Services	**(34.68)**	**5.23**	**10.35**	**18.57**	**139.45**
Total FPHS (above and below the line)	**(32.17)**	**21.71**	**30.39**	**50.39**	**210.08**

Note: Negative values are the result of shared service arrangements.

Geographic variation

Current levels of spending on the FPHS (below the line) varied widely across the five AOHC health districts (see Graph 2). Spending was highest in the Central ($30.82 per capita) and Northwest ($30.05) districts. Spending was substantially lower in the Northeast ($21.14), Southeast ($22.75), and Southwest ($21.90) districts.

Graph 2: Geographic variation in per capita spending on the FPHS (below the line)



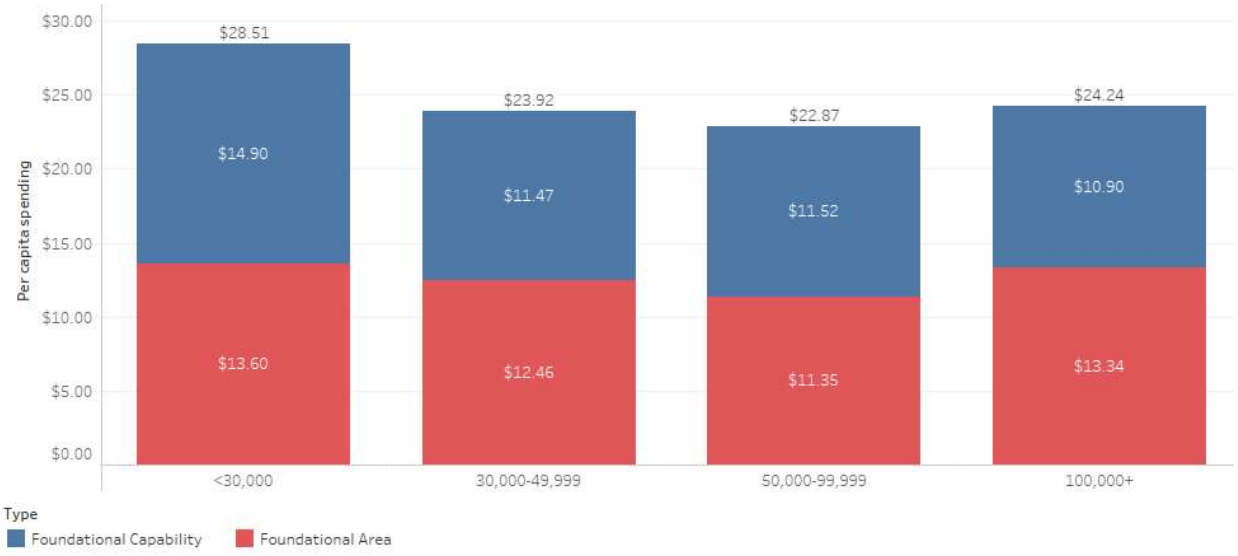
Spending on Expanded Services (above the line) also varied across health districts. Spending was largest in the Southeast ($14.68 per capita), Northeast ($13.30) and Northwest ($12.79) districts. Spending was much lower in the Central ($9.72) and Southwest ($9.88) districts.

Combined, Ohio LHDs' spending on the FPHS (above and below the line) ranged from an average of $31.78 per capita in the Southwest district to $42.84 per capita in the Northwest district. Spending averaged $34.44 per capita in the Northeast district, $37.44 in the Southeast district, and $40.53 in the Central district.

Variation by population size served

Current levels of spending on the FPHS (below the line) varied widely across population size served (see Graph 3). Spending was highest among small LHDs serving populations up to 30,000 residents ($28.51 per capita). Spending was substantially lower among medium-size to large LHDs (ranging from $22.87 to $24.24).

Graph 3: Variation in per capita spending on the FPHS (below the line) across population size



Spending on the Expanded Services (above the line) also varied across population size served. Spending was highest among LHDs serving up to 30,000 residents ($18.92 per capita) and substantially lower among larger LHDs (between $7.52 and $11.88 per capita).

Combined, at an average of $47.42 per capita, LHDs serving up to 30,000 residents spent by far the most on the FPHS (above and below the line). Compared to the smallest LHDs, agencies serving 30,000 to 50,000 residents spent an average of $31.45 per capita, agencies serving 50,000 to 100,000 residents spent an average of $34.42 per capita, and agencies serving more than 100,000 residents spent an average of $36.12 per capita.

A closer look at the composition of spending showed that small LHDs serving up to 30,000 residents had substantially higher labor costs as a percentage of total costs than larger LHDs (see Table 2). For LHDs serving up to 30,000 residents, labor costs represented over 70 percent of total spending. For LHDs serving more than 30,000 residents, labor costs represented between 60 and 67 percent of total spending (with the exception of Expanded Services provided by LHDs serving between 30,000 and 50,000 residents where labor costs accounted for 72 percent of total spending). These results provide some evidence that staffing

requirements are more onerous for the smallest LHDs while agencies serving larger jurisdictions benefit from economies of scale.

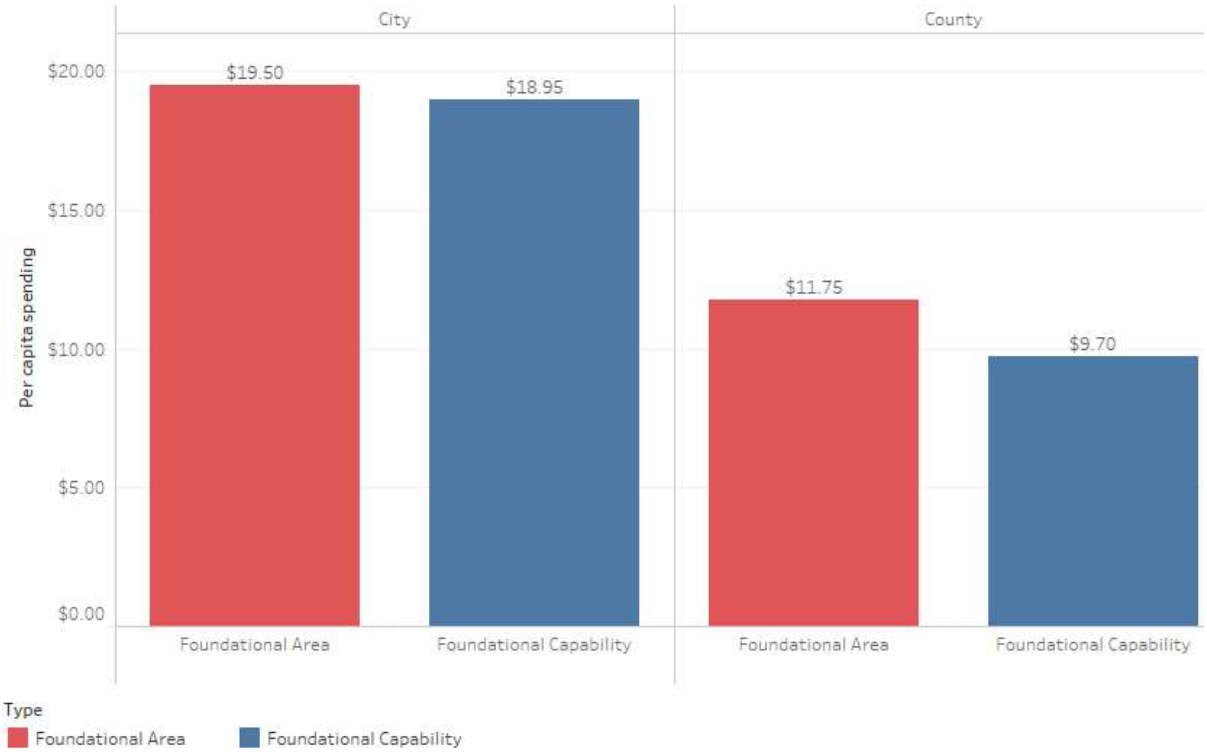
Table 2: Variation across population size in LHD's proportion of labor cost to total cost

	<30,000	30-50 K	50-100 K	>100 K
Foundational Capabilities	70.2%	65.8%	66.5%	66.1%
Foundational Areas	70.2%	65.8%	66.5%	66.1%
Expanded Services	71.3%	71.8%	61.9%	59.7%

Variation by type of jurisdiction served

Current levels of spending on the FPHS (below the line) varied widely across type of jurisdiction served (see Graph 4). City LHDs spent an average of $38.45 per capita on the FPHS (below the line) while LHDs serving counties spent an average of $21.45 per capita. Both city and county LHDs spent somewhat more on the Foundational Areas than the Foundational Capabilities.

Graph 4: Variation in per capita spending on the FPHS (below the line) by type of jurisdiction served



Spending on the Expanded Services (above the line) also varied across type of jurisdiction served. Spending was higher among LHDs serving cities ($17.66 per capita) than among LHDs serving counties ($10.64 per capita). Combined, LHDs serving cities spent a total of $56.11 per capita on the FPHS (above and below the line) compared to average spending of $32.09 by LHDs serving counties.

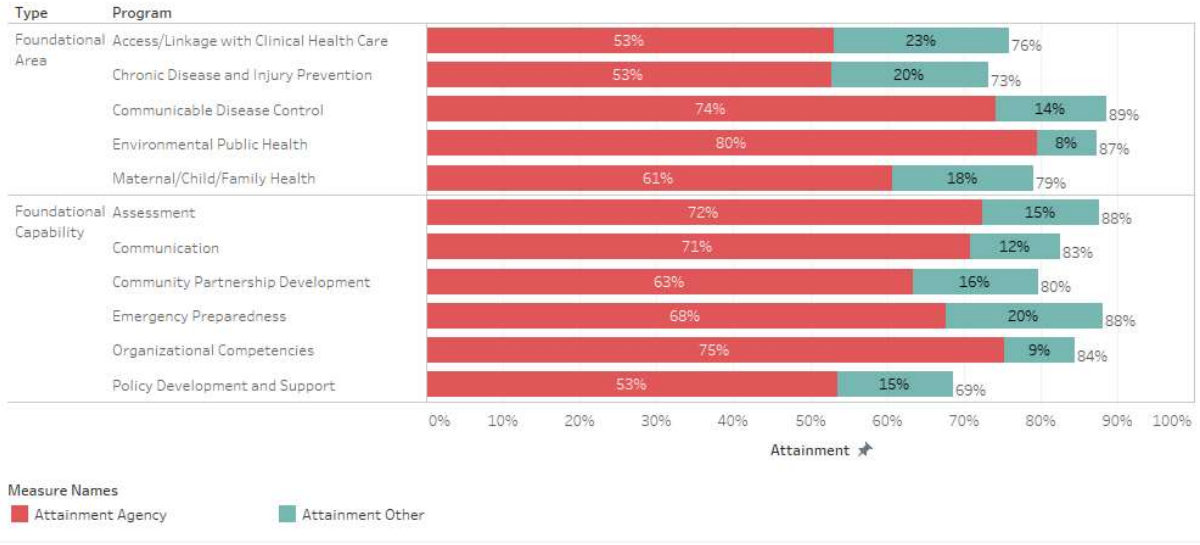
Of note, the substantial differences in spending between LHDs serving cities and LHDs serving counties were not the result of city LHDs serving smaller populations. The average population size served was around 114,000 for both city and county LHDs. Likewise, the range of population sizes served was similar for both types of LHDs (10,512 to 800,608 for city LHDs compared to 13,435 to 883,307 for county LHDs).

Current levels of attainment of the FPHS

In FY 2018, Ohio LHDs reported average agency-level attainment rates between 53 percent and 80 percent across the foundational services that comprise the FPHS (see Graph 5). Average attainment rates for community partners ranged from 8 to 23 percent. Combined, LHDs and their community partners reported attainment rates ranging from 69 percent to 89 percent. The resulting average gap in attainment ranged from 11 percent to 31 percent.

Across all foundational services, average agency-level attainment amounted to 66 percent while attainment by community partners averaged 16 percent. Combined, LHDs and their community partners reported average attainment levels of 81 percent. The resulting gap in attainment thus averaged 19 percent across the FPHS.

Graph 5: Average levels of attainment of the FPHS by LHDs and their community partners, by foundational service

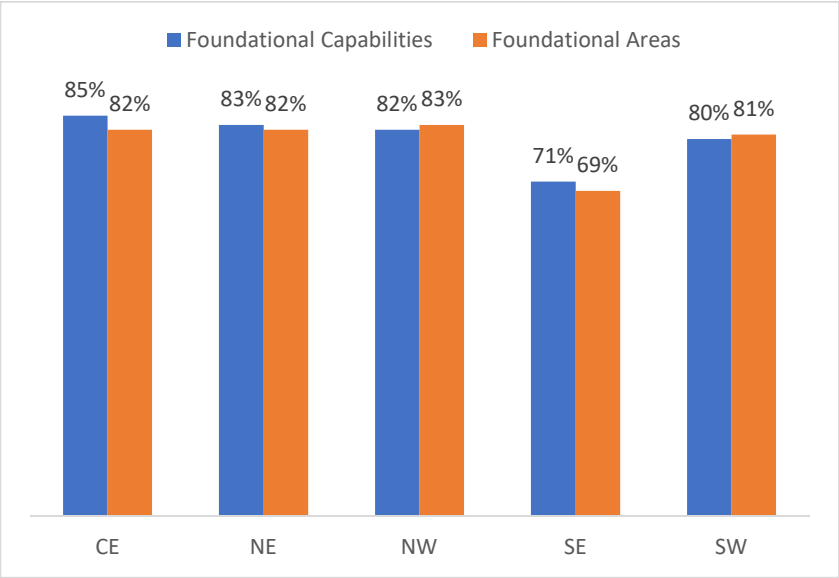


One caveat to the results reported above is that reported attainment rates varied widely across LHDs. Of the 94 LHDs for which we had data, 6 reported no attainment rates at all and 2 reported extremely low rates given their level of spending. These 8 LHDs were dropped from the sample. Of the remaining 86 LHDs, 10 LHDs reported full attainment for all 11 foundational services and 9 reported full attainment for between 6 and 10 of the 11 foundational services. While some of these LHDs may indeed be at full attainment, we have since learned that some respondents misunderstood the instructions for how to report attainment levels. Specifically, some respondents assumed that attainment by the agency and its community partners combined was supposed to equal 100 percent. More generally, however, the lack of definitions and specific examples made estimating attainment rates challenging.

Geographic variation

Attainment rates varied across AOHC health districts (see Graph 6). Attainment rates for both Foundational Capabilities and Foundational Areas were lowest in the Southeast (72 and 69 percent, respectively) while attainment rates averaged between 80 and 83 percent in the remaining four districts.

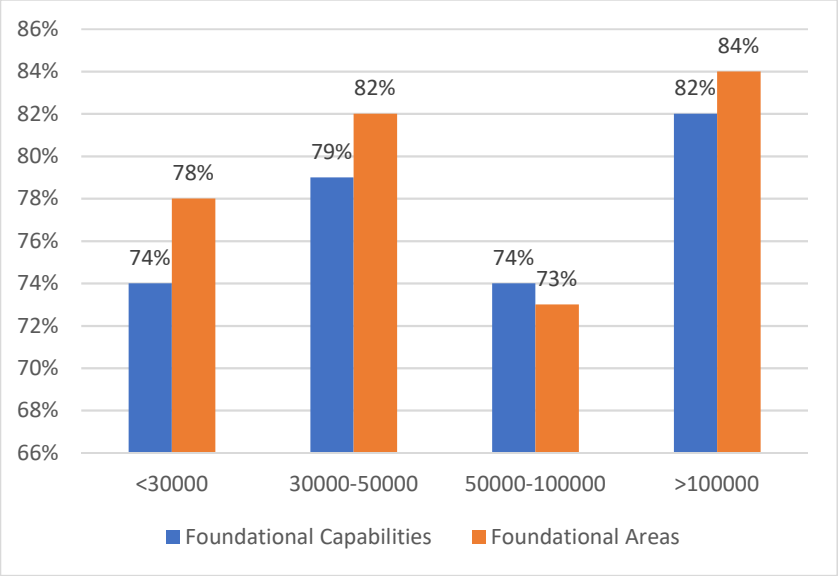
Graph 6: Geographic variation in attainment rates of the FPHS by LHDs and their community partners



Variation by population size served

Attainment rates also varied by population size served (see Graph 7). Attainment rates for the Foundational Capabilities were lowest among LHDs serving fewer than 30,000 residents and LHDs serving between 50,000 and 100,000 residents (74 percent). Attainment rates for the Foundational Areas were lowest among LHDs serving between 50,000 and 100,000 residents (73 percent).

Graph 7: Variation across population size in attainment rates of the FPHS by LHDs and their community partners

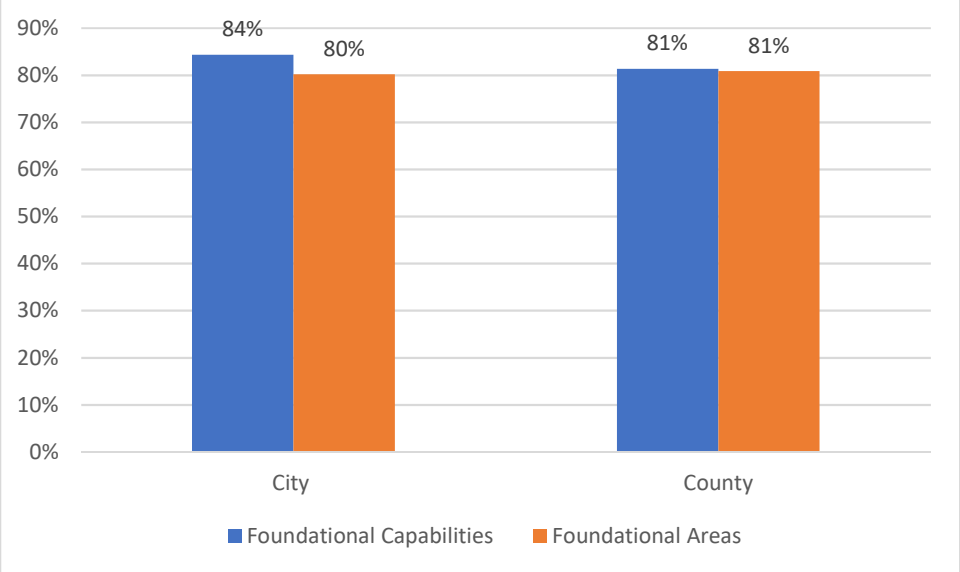


One possible explanation for these findings is that LHDs that serve between 50,000 and 100,000 residents are rather unique. Compared to smaller LHDs, these agencies often serve more dynamic and diverse populations and are thus expected to offer a greater range of services. Compared to larger LHDs serving more than 100,000 residents, on the other hand, these agencies are at a disadvantage as their levels of funding do not allow them to offer the full breadth of services, thus resulting in lower than average attainment levels. Compared to LHDs serving more than 100,000 residents, attainment levels for LHDs serving between 50,000 and 100,000 were, on average, almost 10 percentage points lower. Policy development and support and organizational competencies showed the largest differences in attainment levels (14 and 15 percentage points, respectively) while environmental public health showed the smallest difference in attainment levels (7 percent).

Variation by type of jurisdiction served

Attainment rates did not vary meaningfully by type of jurisdiction served (see Graph 8). Attainment rates for LHDs serving cities were fairly close to those for LHDs serving counties. For city LHDs, attainment rates for the Foundational Capabilities averaged 84 percent while attainment rates for the Foundational Areas averaged 80 percent. For county LHDs, attainment rates for the Foundational Capabilities and the Foundational Areas both averaged 81 percent.

Graph 8: Variation in attainment rates of the FPHS by type of jurisdiction served

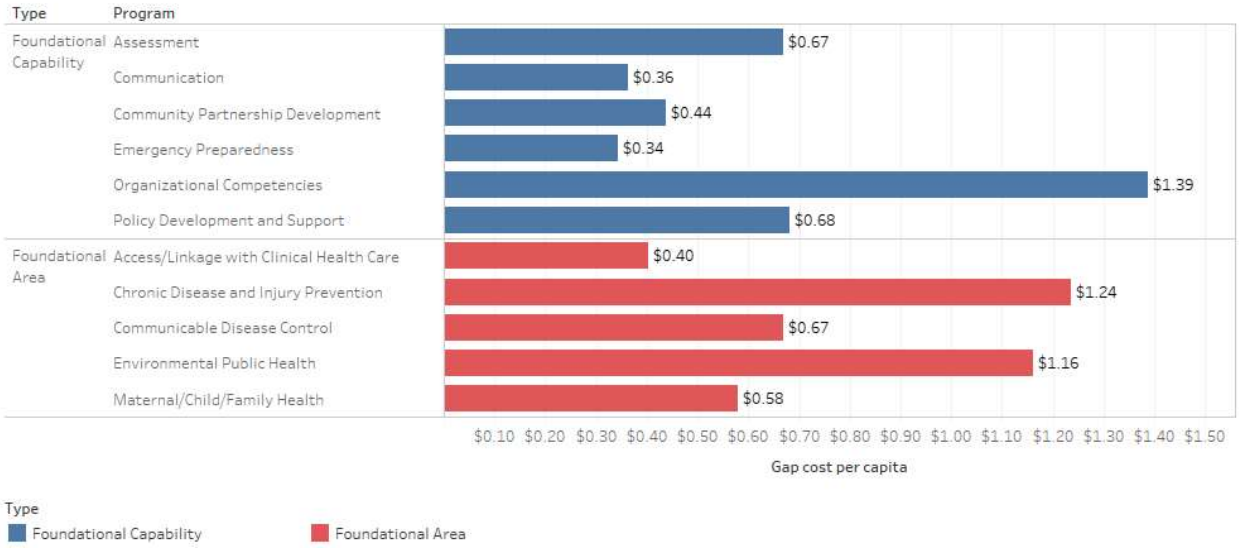


Estimated investment needed to fully implement the FPHS

Based on current levels of spending on and attainment of the FPHS, an **estimated additional investment of $7.94 per capita** per year will be needed to close the attainment gap and ensure full implementation of the FPHS in communities across Ohio (see Graph 9 and Table 3).

- **$4.06 per capita will be needed to fully implement the Foundational Capabilities.**
- **$3.88 per capita will be needed to fully implement the Foundational Areas.**

Graph 9: Per capita investment needed to fully implement the FPHS, by foundational service



Per capita investment needs are largest in organizational competencies ($1.39 per capita), chronic disease and injury prevention ($1.24 per capita), and environmental public health ($1.16 per capita). Per capita investment needs are smallest in emergency preparedness ($0.34 per capita), communication ($0.36 per capita), access and linkages with health care ($0.40 per capita), and community partnership development ($0.44 per capita).

The per capita estimates presented above translate into an estimated **total dollar investment of $92,846,735** per year to close the attainment gap in the FPHS (below the line) for all LHDs in Ohio.

- **$45,381,284 will be needed to fully implement the Foundational Capabilities.**
- **$47,505,933 will be needed to fully implement the Foundational Areas.**

The foundational services with the largest total dollar investment needs are organizational competencies ($16,200,000); chronic disease and injury prevention ($14,500,000); and environmental public health ($13,600,000). The investment needs for these three services alone account for $44,300,000, or approximately 48 percent, of the estimated total additional investment need of $92,846,735.

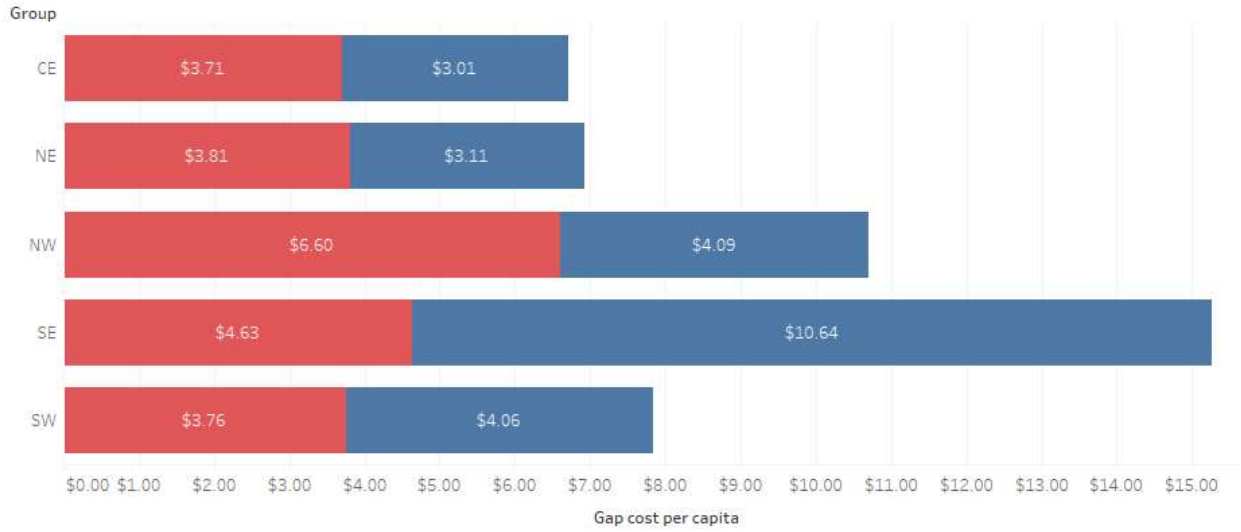
Table 3: Estimated annual per capita and total investment needed to fully implement the FPHS

	Current per capita spending	Estimated per capita investment need	Investment need as % of current spending	Estimated total investment need
Foundational Capabilities				
Assessment	$1.99	$0.67	34%	$7,825,969
Emergency Preparedness	$1.19	$0.34	29%	$4,016,250
Communication	$0.92	$0.36	39%	$4,241,785
Policy Development	$0.59	$0.68	116%	$7,972,678
Community Partnerships	$1.11	$0.44	39%	$5,124,600
Organizational Competencies	$5.40	$1.39	26%	$16,221,547
Total Foundational Capabilities	**$11.20**	**$3.88**	**35%**	**$45,402,830**
Foundational Areas				
Communicable Disease	$3.84	$0.67	17%	$7,820,598
Chronic Disease	$1.61	$1.24	77%	$14,468,374
Environmental Health	$5.72	$1.16	20%	$13,569,600
Maternal, Child, and Family Health	$1.27	$0.58	46%	$6,815,691
Access to Care	$0.56	$0.41	73%	$4,769,643
Total Foundational Areas	**$13.01**	**$4.06**	**31%**	**$47,443,906**
Total FPHS (below the line)	**$24.21**	**$7.94**	**33%**	**$92,846,735**

Geographic variation

Estimated per capita investment needs varied substantially across AOHC health districts (see Graph 10). LHDs in the Central and Northeast districts had, on average, the lowest investment needs ($6.71 per capita and $6.92 per capita, respectively), followed by LHDs in the Southwest ($7.84 per capita) and the Northwest districts ($10.75 per capita). LHDs in the Southeast had the highest investment need ($15.33 per capita).

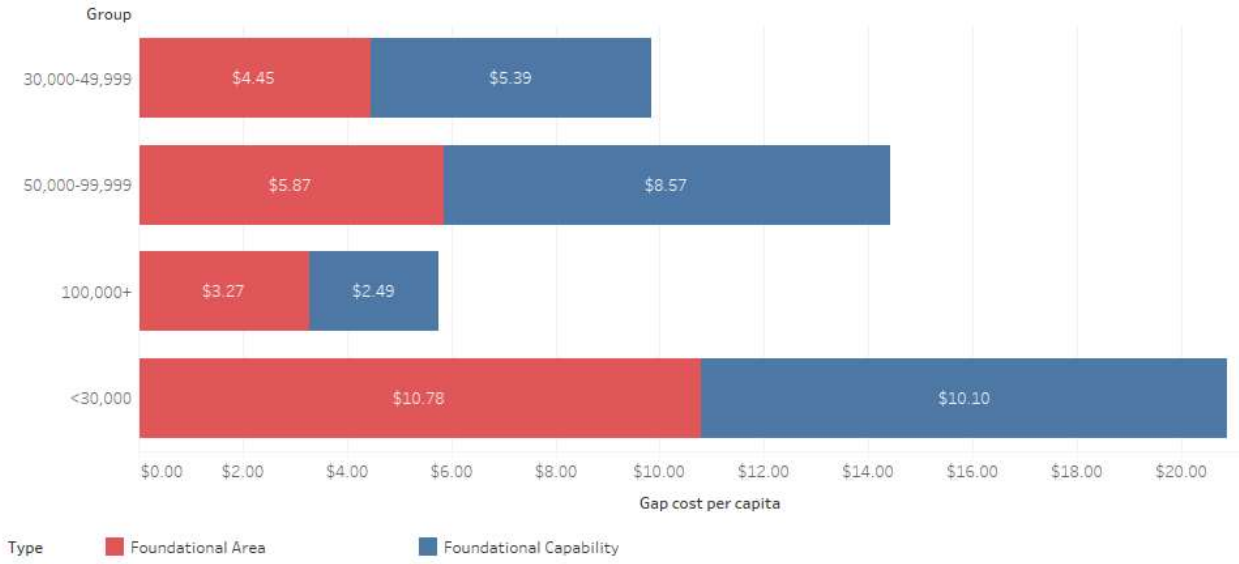
Graph 10: Geographic variation in estimated per capita investment needed to fully implement the FPHS



Variation by population size served

Estimated investment need also varied by population size served (see Graph 11). LHDs serving populations of fewer than 30,000 residents had by far the greatest investment need ($21.20 per capita) followed by LHDs serving between 50,000 and 100,000 residents ($14.47 per capita) and LHDs serving between 30,000 and 50,000 ($9.93). LHDs serving populations of more than 100,000 had the lowest investment need ($5.76 per capita).

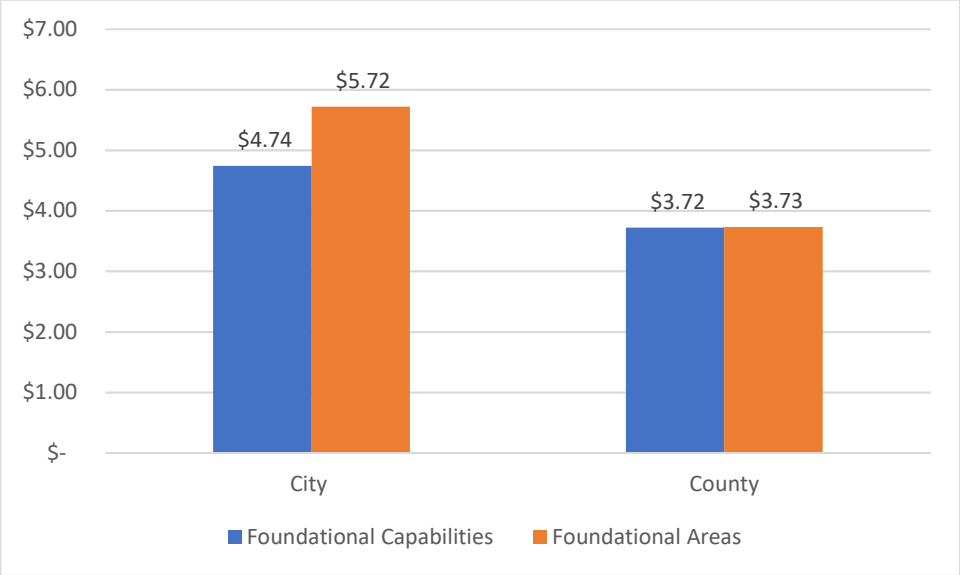
Graph 11: Variation in estimated per capita investment needed to fully implement the FPHS across population size served



Variation by type of jurisdiction served

Estimated investment need also differed by type of jurisdiction served (see Graph 12). LHDs serving cities had higher investment needs than those serving counties ($10.46 per capita for city LHDs compared to $7.45 per capita for county LHDs). Since city and county LHDs had comparable attainment rates, the higher investment need of city LHDs is largely the result of the higher spending on the FPHS by these LHDs.

Graph 12: Variation in estimated per capita investment needed to fully implement the FPHS by type of jurisdiction served



Comparison of LHDs with small vs. large estimated investment needs

Estimated investment need to fully implement the FPHS was highly unequal across LHDs in Ohio (see Graph 13). For 35 of the 86 sample LHDs (41 percent), estimated investment need was less than $5 per capita. For 20 LHDs (23 percent), per capita investment need was between $5 and $10, while for 31 LHDs (36 percent), per capita investment need exceeded $10.

Graph 13: Distribution of LHDs by estimated per capita investment needs

LHDs with an estimated investment need of less than $5 per capita required, on average, an additional $1.94 per capita to fully implement the FPHS (see Table 4). LHDs with an estimated investment need between $5 and $10 per capita required an additional $7.67 per capita, on average. LHDs with an estimated investment need between $10 and $20 per capita required an additional $14.31 per capita. LHDs with an estimated investment need of more than $20 per capita required an additional investment of $35.88 per capita.

Table 4: Estimated per capita investment needs across LHDs with varying levels of agency-level total per capita investment needs

	Estimated agency-level total investment needs			
	$0-$5	**$5-$10**	**$10-$20**	**>$20**
Foundational Capabilities				
Assessment	$0.11	$0.61	$0.34	$5.33
Emergency Preparedness	$0.06	$0.46	$0.35	$1.65
Communication	$0.07	$0.32	$0.40	$2.37
Policy Development	$0.15	$0.52	$1.62	$3.00
Community Partnerships	$0.13	$0.35	$0.90	$1.97
Organizational Competencies	$0.38	$0.97	$4.01	$4.55
Total Foundational Capabilities	**$0.91**	**$3.22**	**$7.62**	**$18.87**
Foundational Areas				
Communicable Disease	$0.13	$0.75	$1.48	$2.22
Chronic Disease	$0.19	$1.71	$1.05	$6.36
Environmental Health	$0.29	$1.60	$2.70	$1.68
Maternal, Child, and Family Health	$0.30	$0.17	$0.81	$3.93
Access to Care	$0.13	$0.22	$0.65	$2.81
Total Foundational Areas	**$1.02**	**$4.45**	**$6.69**	**$17.01**
Total FPHS	**$1.94**	**$7.67**	**$14.31**	**$35.88**

LHDs with large estimated investment needs of $10 and more differed from LHDs with no or small estimated investment needs of less than $5 along a set of organizational and community characteristics (see Table 5).

- LHDs with large estimated investment needs, on average, served smaller jurisdictions and were more likely to be located in rural rather than urban or suburban areas. They were more likely to be located in the Northwest and Southeast districts and less likely to be located in the Central, Northeast, and Southwest districts.
- LHDs with large estimated investment needs were less likely to be accredited than LHDs with small investment needs.
- LHDs with large estimated investment needs were much more likely than LHDs with small investment needs to receive funding from a dedicated public health levy and levy funding represented a larger share of these agencies' total revenues.
- LHDs with large estimated investment needs were located in communities with somewhat lower median household incomes than LHDs with small investment needs. Uninsured rates, on the other hand, were somewhat lower in communities served by LHDs with large investment needs.

Table 5: Characteristics of LHDs with small vs. large estimated investment needs

	LHDs with estimated per capita investment needs of less than $5 (n=35)	LHDs with estimated per capita investment needs of more than $10 (n=31)
Geographic location		
Central	20%	10%
Northeast	34%	19%
Northwest	11%	26%
Southeast	6%	29%
Southwest	26%	16%
Urban-rural location		
Urban	11%	6%
Suburban	40%	29%
Rural	49%	65%
Population size served	Mean: 129,052 Median: 66,982	Mean: 67,880 Median: 48,000
Type of jurisdiction served		
City	14%	16%
County	86%	84%
Accreditation status		
Accredited	43%	26%
Site visit	11%	16%
Documentation	9%	19%
Intent	34%	29%
Prerequisites	3%	6%
Not started	0%	3%
Funding sources		
LHDs with public health levy	34%	64%
Levy as % of total revenues	10%	16%
County-level characteristics		
Education beyond high school	50%	49%
Household income	$54,294	$50,462
Uninsured rate	8.3%	7.8%

Recommendations

Based on our analysis we would like to share the following recommendations.

Recommendations for increasing investment in local public health

Given current funding levels, Ohio LHDs indicated that they were able to implement, on average, 80 percent of the FPHS. Based on our analysis, an additional investment of approximately $8 per capita and year will be needed to close, or at least significantly reduce, this attainment gap. For Ohio as a whole, this estimate translates into a total additional investment need of approximately $93 million annually. Investment need, however, is not equally distributed across LHDs. Indeed, our analysis uncovered substantial variation in current spending on and attainment of the FPHS, translating into large variation in investment needs across agencies.

The actual additional investment need of each LHD will need to be determined based on the agency's current spending and attainment levels. Given the challenges that some LHDs faced when reporting attainment levels, we recommend that reported attainment levels be audited and corrected, as needed, to determine each agency's additional investment need.

Because new funds have the potential to substitute for existing revenue streams (i.e., increased funding from one stream correlates to a decrease from another), we recommend that any additional funding be earmarked for the purpose of providing FPHS on top of any existing allocations to avoid cuts to agencies' budgets in other areas.

Recommendations for improving the FPHS costing tool

Overall, the FPHS costing tool was well designed and the instructions provided to participants as part of the tool and the in-person training contained detailed guidance for respondents on how to complete the tool. We have three recommendations to further improve the tool and make it more useful to respondents:

1. We recommend that more detailed instructions be provided to respondents on how to estimate and report attainment levels. In particular, it might be helpful to provide examples of what would be considered full vs. partial attainment for each foundational service. In addition, the instructions should clarify that the attainment percentages for the agency and the attainment percentages for community partners for each foundational service do not need to add up to 100 percent.

2. We recommend that respondents be required to complete the revenue section, to the extent possible. At a minimum, it would be desirable to have high-level revenue

information for all LHDs, including total dollar amounts of local, state, and federal funding.

3. We recommend that the FPHS costing team explore options to make the costing tool even more useful to respondents. Ideas to consider include (a) giving respondents the option to compute key financial performance indicators for their agencies based on the revenue and expenditure data reported and (b) allowing respondents to benchmark their spending and attainment levels against per agencies by including in the tool summary information on spending and attainment levels from prior year(s).

Recommendations for future data collection and analysis

We appreciate the opportunity to analyze data from the first round of data collection and share our findings with public health practitioners and policymakers through our reports and our presentation at the 2019 AOHC Fall Conference. We recommend that data collected for future years be analyzed and summarized to allow respondents to benchmark their agencies against peer agencies and to conduct trend analysis. We also recommend that the FPHS costing team explore how financial data from the FPHS costing tool can be combined with data on community health outcomes, such as data from the University of Wisconsin's County Health Rankings and Roadmaps program, to allow respondents to better understand the link between investments in public health and improvements in health outcomes.

Appendix

Table A: List of local health departments included in the report

Adams County
Allen County
Alliance City
Ashland County City
Ashtabula City
Ashtabula County
Athens City County
Auglaize County
Belmont County
Brown County
Butler County
Canton City
Carroll County
Champaign County
Clermont County
Cleveland City
Clinton County
Columbiana County
Columbus City
Coshocton City
Coshocton County
Cuyahoga County
Darke County
Dayton Montgomery County
Defiance County
Delaware County
Fairfield County
Franklin County
Fulton County
Galion City
Gallia County
Geauga County
Greene County
Hamilton City
Hamilton County
Hancock County
Harrison County
Henry County
Hocking County
Holmes County
Jackson County
Kenton Hardin County
Know County
Lake County
Lawrence County
Licking County
Logan County
Lorain County
Madison County
Mahoning County
Marietta Belpre City
Massillon City
Medina County
Meigs County
Mercer County
Middletown City
Monroe County
Morgan County
Noble County
Norwood City
Paulding County
Perry County
Pickaway County
Pike County
Portage County
Preble County
Putnam County
Richland County
Ross County
Salem City
Sandusky County
Seneca County
Shelby Sidney County
Stark County
Summit County
Trumbull County
Tuscarawas County
Union County
Van Wert County
Vinton County
Warren County
Wayne County
Williams County
Wood County
Youngstown City
Zanesville Muskingum County

Table B: List of local health departments by AOHC health district

Central	Northeast	Northwest	Southwest	Southeast
Ashland City County	Conneaut City	Allen County	Adams County	Athens City County
Columbus City	Alliance City	Auglaize County	Brown County	Belmont County
Delaware County	Ashtabula City	Defiance County	Butler County	Coshocton City
Fairfield County	Ashtabula County	Fulton County	Champaign County	Coshocton County
Fayette County	Canton City	Galion City	Clermont County	Gallia County
Franklin County	Carroll County	Hancock County	Clinton County	Hocking County
Knox County	Cleveland City	Henry County	Darke County	Jackson County
Licking County	Columbiana County	Kenton Hardin County	Dayton Montgomery County	Lawrence County
Logan County	Cuyahoga County	Mercer County	Greene County	Marietta Belpre City
Madison County	Geauga County	Ottawa County	Hamilton City	Meigs County
Pickaway County	Harrison County	Paulding County	Hamilton County	Monroe County
Richland County	Holmes County	Putnam County	Miami County	Morgan County
Union County	Lake County	Sandusky County	Middleton City	Noble County
	Lorain County	Seneca County	Norwood City	Perry County
	Mahoning County	Van Wert County	Preble County	Pike County
	Massillon City	Williams County	Shelby Sidney County	Ross County
	Medina County	Wood County	Warren County	Vinton County
	Portage County			Zanesville Muskingum County
	Salem City			
	Stark County			
	Summit County			
	Trumbull County			
	Tuscarawas County			
	Wayne County			
	Youngstown City			

Table C: List of local health departments by population size served

<30,000	30,000-49,999	50,000-99,999	100,000 and more
Adams County	Auglaize County	Ashland County City	Allen County
Alliance City	Brown County	Ashtabula County	Butler County
Ashtabula City	Champaign County	Athens City County	Clermont County
Carrol County	Clinton County	Belmont County	Cleveland City
Conneaut City	Defiance County	Canton City	Columbus City
Coshocton City	Fulton County	Columbiana County	Cuyahoga County
Coshocton County	Gallia County	Darke County	Dayton Montgomery County
Fayette County	Holmes County	Geauga County	Delaware County
Galion City	Jackson County	Hamilton City	Fairfield County
Harrison County	Kenton Hardin County	Hancock County	Franklin County
Henry County	Logan County	Knox County	Greene County
Hocking County	Madison County	Lawrence County	Hamilton County
Marietta Belpre City	Massillon City	Miami County	Lake County
Meigs County	Mercer County	Pickaway County	Licking County
Monroe County	Middletown City	Ross County	Lorain County
Morgan County	Ottawa County	Sandusky County	Mahoning County
Noble County	Perry County	Seneca County	Medina County
Norwood City	Preble County	Tuscarawas County	Portage County
Paulding County	Putnam County	Union County	Richland County
Pike County	Shelby Sidney County	Youngstown City	Stark County
Salem City	Williams County	Zanesville Muskingum County	Summit County
Van Wert County			Trumbull County
Vinton County			Warren County
			Wayne County
			Wood County

Table D: List of local health departments by type of jurisdiction served

LHDs serving cities	LHDs serving counties	
Alliance City	Adams County	Lawrence County
Ashtabula City	Allen County	Licking County
Canton City	Ashland County City	Logan County
Cleveland City	Ashtabula County	Lorain County
Columbus City	Athens City County	Madison County
Coshocton City	Auglaize County	Mahoning County
Galion City	Belmont County	Medina County
Hamilton City	Brown County	Meigs County
Marietta Belpre City	Butler County	Mercer County
Massillon City	Carroll County	Monroe County
Middletown City	Champaign County	Morgan County
Norwood City	Clermont County	Noble County
Salem City	Clinton County	Paulding County
Youngstown City	Columbiana County	Perry County
	Coshocton County	Pickaway County
	Cuyahoga County	Pike County
	Darke County	Portage County
	Dayton Montgomery County	Preble County
	Defiance County	Putnam County
	Delaware County	Richland County
	Fairfield County	Ross County
	Franklin County	Sandusky County
	Fulton County	Seneca County
	Gallia County	Shelby Sidney County
	Geauga County	Stark County
	Greene County	Summit County
	Hamilton County	Trumbull County
	Hancock County	Tuscarawas County
	Harrison County	Union County
	Henry County	Van Wert County
	Hocking County	Vinton County
	Holmes County	Warren County
	Jackson County	Wayne County
	Kenton Hardin County	Williams County
	Know County	Wood County
	Lake County	Zanesville Muskingum County