Habile Consulting LLC is a professional services company, founded by Michael Hodgins in 2018, that provides public policy, economic, financial, and strategic planning advisory services for a diverse mix of clients and industry sectors. Habile means deft and skillful, and that’s what we seek to be in our work as trusted advisors to many senior managers and elected officials working in state and local government and beyond.

Our team is particularly known for its ability to integrate financial and strategic analysis with facilitation and consensus-building processes to develop effective strategies and solutions to complex problems across a wide range of policy, fiscal, and organizational issues.

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- Annie Sieger, Project Manager
- Michael Hodgins, Principal

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COLORADO PUBLIC HEALTH SYSTEM TRANSFORMATION

Core Public Health Services Needs Assessment Report

Prepared by:
Habile Consulting LLC
January 2020

Acknowledgements

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This report was prepared for CALPHO, under the advisement and review of the CDPHE Leadership Team, CALPHO Public Health System Transformation Committee, and the Colorado Public Health System Transformation Steering Committee.

Full acknowledgments follow.
COLORADO PUBLIC HEALTH SYSTEM TRANSFORMATION POLICY PROCESS

Colorado’s public health system transformation work is being led by an impressive group of state and local public health leaders from throughout Colorado, who are working together through several teams and committees to advance transformation efforts. These policy bodies have been instrumental in the design, development, and execution of the CPHS Needs Assessment. The Project Management Team, CDPHE Leadership Team, CALPHO Public Health System Transformation Committee, and Colorado Public Health System Transformation Steering Committee have all made valuable contributions to this work providing important review based on each of their unique perspectives.

We are deeply grateful to everyone who has contributed to this Needs Assessment.

ACKNOWLEDGMENTS

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Assessment Participants

This Core Public Health Services Needs Assessment was made possible by the participation of Colorado’s 54 governmental public health agencies, including the Colorado Department of Public Health and Environment (CDPHE) and 53 local public health agencies, as well as close governmental partners Denver Public Health and Northwest Colorado Health.

In all, over 259 LPHA and CDPHE staff are known to have directly participated in the Needs Assessment Data Collection process; if we were to consider all of the people within LPHAs who answered questions or provided data for this purpose, that number might be much higher. These staff worked tirelessly within their already constrained capacity and schedules, to provide detailed agency-level data to inform this needs assessment. A full list of known participants is provided in Appendix A: Acknowledgments: Data Collection and Validation Process Participants.

More information about participating governmental public health agencies’ efforts related to this needs assessment is available in Appendix D: Data Collection and Validation Process Methodology.

We are deeply grateful to everyone who participated in the Needs Assessment data collection process.
Recognizing that the CPHS Needs Assessment is of interest to a broad audience, with varying needs, we have developed a flexible product that nests. Readers should select the version of the report that provides results and findings at the appropriate altitudes to meet their needs. The available report versions are described, below, and outlined in the graphic to the right:

- **Executive Summary.** The Executive Summary is designed to be self-contained, such that all acronyms/abbreviations, glossary terms, and sources are provided in text or as footnotes.

- **Overall Report.** The Overall Report includes the Executive Summary as well as the main report which describes the background, methods, overall, system-level results, and a robust discussion of the results of this effort. This report version should be published with the appendices.

- **Detailed Report.** The full, detailed report augments the Overall Report by providing additional results at both a foundational capability/service and function- and agency-level. Like the Overall Report, this version should be published with the appendices.

The immediately following “Contents and Wayfinding” page indicates what Report version and format you are currently accessing.
Our individual health, and the health of our loved ones, is fundamental to our quality of life. In 2015 (the most recent year for which data is currently available), the US spent significantly more on health care (as a percentage of Gross Domestic Product) than other peer, industrialized nations, yet achieved markedly lower health outcomes, including shorter life expectancy. This imbalance is so critical, that it is reflected in Governor Polis’ “Bold Four” initiatives and is explicitly identified as the key “wildly important priority” within that initiative: “Save Coloradan’s money on health care.”

Implicit in Governor Polis initiative, is the need to continue to improve health outcomes while reducing health care spending. This is an especially difficult challenge, as US life expectancy, including in the state of Colorado, is facing its longest sustained decline since World War I.

This trend, if left unchecked, means that today’s children are in danger of becoming the first generation in American history to live shorter, less healthy lives than their parents. The Centers for Disease Control and Prevention believes this trend is largely driven by deaths from drug overdose and suicide, of particular concern to Colorado as deaths owed to drug misuse, alcohol, and suicide outpace the US overall.

A goal to improve health outcomes while also reducing health care spending would seem to be particularly challenging and possibly working at cross purposes. One path to bridging this apparent divide could be increased investment in public health.

There is overwhelming evidence that properly funded public health programs are a cost effective approach to systematically improving the overall health outcomes of communities.

Programs and services that focus on disease and injury prevention, reducing exposure to environmental and health hazards, and the promotion of health are proven to reduce health care costs. In fact, a 2017 study conducted a systemic review of return on investment of public health interventions research and found that investment in public health activities in high-income countries had a median return of 14 to 1.

Public health work is complex and multi-sectoral, bridging policy around health, environment, and social determinants like economic development, education, housing, human services, land use and planning, and transportation, among others. Such work can be hard to define and a “black box”, as the activities are extremely broad while also often being intangible or hard for the residents who benefit from them to see.

When you receive clinical health care services, they are generally a direct, individualized service, and you typically understand the services provided (that is, what you’re paying for); the same is not true for public health services which are often enabling or indirect, population-based services that are delivered to the population. For these reasons, public health activities are often taken for granted, by both policy makers and the general public, leading to chronic underfunding, unpredictability, and insecurity of funding.

**Colorado’s Public Health System Transformation Initiative**

In an effort to reverse declining health outcomes while reducing health care costs across Colorado, the governmental public health system in Colorado seeks to systemically enhance public health services in Colorado. To do this, the Colorado Association of Local Public Health Officials (CALPHO) and CDPHE (Colorado Department of Public Health and Environment) are developing a roadmap for public health system transformation in Colorado and have identified the Foundational Public Health Services (FPHS) framework as the best model for Colorado’s effort.

FPHS are a minimum package of foundational

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1 https://ourworldindata.org/the-link-between-life-expectancy-and-health-spending-us-focus
2 https://dashboard.state.co.us/bold4-health.htm
3 https://www.tfah.org/state-details/colorado/
capabilities and services that represent a subset of all public health services and focus on activities that: (1) must be available to all people served by the governmental public health system; and, (2) meet one or more of the following criteria:

- Services that are mandated by federal or state laws.
- Services for which the governmental public health system is the only or primary provider of the service statewide.
- Population-based services (versus individual services) that are focused on disease prevention and protection and promotion of health.

More information on the national FPHS framework is available [here](https://phnci.org/national-frameworks/fphs).

The first step in this process was to align the CPHS, as codified by the Colorado Public Health Reauthorization Act (SB 08-194) (2008 Public Health Act), with the FPHS framework. Colorado’s CPHS framework already included over 75% of the national FPHS model components. Colorado’s governmental public health system elected to maintain the terminology in Colorado’s Public Health Act while expanding the concept of the Core Public Health Services to align to the FPHS framework.

Exhibit ES - 1 shows the resulting Colorado CPHS framework.
A. FOUNDATIONAL CAPABILITIES

1. Assessment and Planning
   a. Data Collection and Distribution
   b. Data Access, Analysis and Interpretation
   c. Health Assessment Development, Implementation and Evaluation
   d. Vital Records
   e. Public Health Laboratory (State and Regional Lab Role Only)

2. Communications
   a. Media Communications
   b. Public Communications
   c. Internal and Partner Communications

3. Policy Development and Support
   a. Policy Development
   b. Policy Enactment
   c. Policy Evaluation

4. Partnerships
   d. Partner and Community Relationships

5. Organizational Competencies
   a. Accountability, Performance Management and Quality Improvement
   b. Human Resources
   c. Legal Services and Analysis
   d. Financial Management, Contract and Procurement Services, and Facilities Management
   e. Information Technology/Informatics (IT)
   f. Leadership and Governance

6. Emergency Preparedness and Response
   a. Public Health Preparedness and Response Strategies and Plans
   b. Emergency Support Function 8
   c. Emergency Response
   d. Community Preparedness

7. Health Equity and Social Determinants of Health
   a. Leadership and Workforce Training and Diversity
   b. Health Equity Policy
   c. Health Equity Data
   d. Health Equity Partnerships
   e. Health Equity Communications

B. FOUNDATIONAL SERVICES

1. Communicable Disease Prevention, Investigation and Control
   a. Communicable Disease Prevention
   b. Identify Communicable Disease Prevention, Investigation and Control Assets
   c. Communicable Disease Investigation and Control
   d. Immunization
   e. Coordination of Other Communicable Disease Services with Foundational Capabilities and Services

2. Environmental Public Health
   a. Environmental Health Data
   b. Identify Environmental Health Assets
   c. Environmental Health Investigations, Inspections, Sampling, Lab Analysis and Oversight
   d. Zoonotic Conditions
   e. Land Use Planning and Climate Change
   f. Coordination of Other Environmental Health Services with Foundational Capabilities and Services

3. Maternal, Child, Adolescent, and Family Health
   a. Maternal, Child, Adolescent and Family Health Information
   b. Identify Maternal, Child, Adolescent and Family Health Assets
   c. Collaborative Efforts around Maternal, Child, Adolescent, and Family Health
   d. Maternal, Child, Adolescent and Family Health Improvement
   e. Mandated Newborn Screening (State Role Only)
   f. Coordination of Other Maternal, Child, Adolescent and Family Health Services with Foundational Capabilities and Services

4. Chronic Disease, Injury Prevention, and Behavioral Health Promotion
   a. Chronic Disease, Injury Prevention, and Behavioral Health Promotion Data
   b. Chronic Disease, Injury Prevention and Behavioral Health Promotion Assets
   c. Chronic Disease, Injury Prevention and Behavioral Health Promotion Policies
   d. Coordination of Other Chronic Disease, Injury Prevention, and Behavioral Health Promotion Services with Foundational Capabilities and Services

5. Access to and Linkage with Health Care
   a. Collaborative Efforts Around Access to Clinical Care
   b. Access to Clinical Care Data
   c. Health Facility Inspection and Licensure (State Role Only)
   d. Linkage to Clinical Care
Having incorporated the most relevant components of the FPHS model into an Colorado’s updated CPHS framework, the next step was to develop a comprehensive understanding of the degree to which these services are currently provided, the magnitude and distribution of gaps in core services and the potential additional resources needed to fully implement CPHS statewide.

Toward this end, CALPHO and CDPHE contracted with Habile Consulting LLC to develop and implement a robust CPHS Needs Assessment to:

1. Understand current statewide implementation and spending on core public health services.

2. Estimate the cost to fully deliver core public health services statewide based on the current service delivery paradigm.

The resulting Needs Assessment, was designed to naturally connect to and support the robust public health system transformation planning process already being undertaken in Colorado. This Report represents the results of that Needs Assessment.

**CPHS Needs Assessment Results**

Overall, Colorado’s governmental public health system has achieved a basic level of implementation, with CPHS overall approximately 61% implemented. While

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**Exhibit ES - 2. Current Degree of Implementation of CPHS for Colorado Systemwide, 2018**
this composite scores is not particularly meaningful in terms of communicating agency- or system-level needs for full implementation (that is, they are at such an altitude that they no longer illustrate where the gaps are for the agency or system) it may be useful to (1) compare the current degree of implementation to full implementation (i.e., how close to full implementation are we?) and (2) as a system-level metric for long term tracking of implementation (i.e., how much progress are we making in implementing CPHS over time?).

To break these composite scores down, we first look at Agency-level current degree of Implementation of CPHS for Colorado systemwide, as shown in Exhibit ES - 3. In Colorado, Governmental public health is decentralized such that the Coloradan’s are served by both a state agency (CDPHE) and local public health authorities (LPHAs), where local governments, primarily counties, retain authority over many decisions related to their budget, public health orders, and the appointment and employment of local health officials.

Variation in implementation by LPHA can lead to service inequities for Coloradans. That is, a Coloradan being served by an LPHA with overall implementation of 4 is likely to have access to substantially different services than one served by an LPHA that has fully implemented CPHS.

Exhibit ES - 3. Agency-level Current Degree of Implementation for CPHS Overall, 2018
To illustrate these implications better at a foundational capability- and service-level in Colorado, Exhibit ES - 4 shows level of implementation at governmental public health agency-level for each foundational capability and service.

While it is true that some functions are more implemented than others, what these composite scores reflect is that there are no CPHS functions that are implemented universally across the entire governmental public health system. Instead, there are varied gaps throughout the entire system, which vary depending on the individual governmental public health agency.

Overall, there are more areas where extra small LPHAs’ work is minimally or limitedly implemented, however this does not mean that those agencies CPHS work is less implemented overall, as these areas likely represent smaller shares of their work. On the whole, there are more extra small LPHAs with lower degrees of overall implementation of CPHS, however, this is more likely a function of the number of extra small LPHAs than directly correlated to LPHA size (based on population served).

### Exhibit ES - 4. Current Degree of Implementation of CPHS Foundational Capabilities and Services by Governmental Public Health Agency, including Systemwide Composite Score, 2018

<table>
<thead>
<tr>
<th>Degree of Implementation</th>
<th>CDPHE</th>
<th>TCHD</th>
<th>DDPHE</th>
<th>ElPaso</th>
<th>Jefferson</th>
<th>Larimer</th>
<th>Boulder</th>
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Source: Habile, 2019.
| County     | Gunnison | Alamosa | Grand | Moffat | Prowers | Rio Grande | San Miguel | Conejos | Lake | Kit Carson | Sagatc | Rio Blanco | Bent | Lincoln | Custer | Ouray | Costilla | Dolores | San Miguel | Cheyenne | Silver Thread | Jackson | Kiowa | San Juan | Systemwide |
|------------|----------|---------|-------|--------|---------|------------|------------|----------|------|------------|--------|------------|------|---------|--------|-------|----------|---------|------------|----------|--------|-----------|------------|
| Gunnsn     | 8.5      | 3.6     | 6.6   | 5.5    | 8.0     | 6.4        | 7.8        | 5.3      | 4.9  | 9.4        | 9.8    | 6.0        | 6.9  | 9.0      | 7.0    | 6.9  | 7.5      | 6.6    | 6.2        | 8.1      | 6.7    | 7.2      | 6.7      | 5.4       | 10     | 2.0     |
| Alamosa    | 4.6      | 6.9     | 4.8   | 5.8    | 5.7     | 5.2        | 5.1        | 5.5      | 5.9  | 9.0        | 8.8    | 5.2        | 5.4  | 7.0      | 8.6    | 6.2  | 8.4      | 7.6    | 6.7        | 7.5      | 7.2    | 7.2      | 7.6      | 6.7       | 2.0     |
| Grand      | 6.0      | 2.1     | 3.5   | 3.5    | 3.6     | 4.2        | 4.3        | 5.0      | 6.9  | 5.8        | 6.0    | 6.0        | 6.4  | 8.4      | 6.4    | 5.0  | 4.3      | 5.0    | 5.3        | 5.5      | 8.0    | 4.6      | 7.6      | 3.9       | 7.8     | 2.0     |
| Moffat     | 8.0      | 6.6     | 5.1   | 4.3    | 5.8     | 7.0        | 6.7        | 8.0      | 8.0  | 7.0        | 10     | 5.0        | 5.7  | 8.0      | 7.4    | 8.4  | 8.0      | 8.0    | 8.0        | 8.0      | 8.0    | 8.0      | 8.0      | 8.0       | 2.0     |
| Prowers    | 7.2      | 4.8     | 6.6   | 7.6    | 6.0     | 6.2        | 7.4        | 8.4      | 6.2  | 7.0        | 9.6    | 6.0        | 5.7  | 8.0      | 6.5    | 7.7  | 7.9      | 8.0    | 7.0        | 7.3      | 7.0    | 7.6      | 8.3      | 5.6       | 7.5     |
| Rio Grande | 7.9      | 7.0     | 6.2   | 9.1    | 8.4     | 8.4        | 8.0        | 7.4      | 5.7  | 8.4        | 9.4    | 6.4        | 7.0  | 6.0      | 5.6    | 8.1  | 4.8      | 6.0    | 8.0        | 7.0      | 6.4    | 8.0      | 8.0      | 6.7       | 8.0     |
| San Miguel | 6.0      | 5.9     | 4.3   | 5.1    | 7.7     | 4.2        | 4.4        | 6.3      | 4.4  | 7.5        | 7.4    | 6.4        | 6.8  | 6.0      | 6.0    | 5.2  | 4.3      | 6.0    | 6.5        | 6.1      | 4.2    | 7.8      | 8.4      | 8.0       | 8.0     |
| Conejos    | 7.6      | 8.8     | 5.0   | 6.6    | 7.9     | 6.6        | 7.2        | 7.1      | 5.3  | 10        | 9.4    | 6.5        | 6.1  | 8.6      | 7.5    | 9.6  | 6.3      | 7.4    | 6.6        | 6.8      | 7.0    | 5.9      | 6.8      | 5.7       | 7.7     |
| Lake       | 5.1      | 4.9     | 2.6   | 4.7    | 4.6     | 4.9        | 6.4        | 4.6      | 4.6  | 6.4        | 6.6    | 5.8        | 5.9  | 3.6      | 7.7    | 6.2  | 3.5      | 5.6    | 4.7        | 5.9      | 6.2    | 4.8      | 5.3      | 6.8       | 5.7     |
| Kit Carson | 7.4      | 5.4     | 4.1   | 4.8    | 8.2     | 5.4        | 5.7        | 8.2      | 5.2  | 7.0        | 9.0    | 5.0        | 5.0  | 8.1      | 6.9    | 8.6  | 8.3      | 8.9    | 5.1        | 8.0      | 5.9    | 6.8      | 6.8      | 5.8       | 8.4     |
| Sagatc     | 6.0      | 5.7     | 4.2   | 3.7    | 8.9     | 6.4        | 5.6        | 7.0      | 5.0  | 8.0        | 8.0    | 7.0        | 4.6  | 8.3      | 6.0    | 6.1  | 8.0      | 5.5    | 6.0        | 6.2      | 6.3    | 10       | 8.0      | 7.2      | 6.8     |
| Rio Blanco | 8.0      | 7.0     | 5.8   | 8.4    | 3.7     | 5.0        | 7.5        | 6.8      | 4.0  | 6.3        | 7.9    | 7.0        | 6.0  | 9.0      | 5.0    | 7.1  | 8.0      | 6.4    | 8.8        | 5.0    | 5.8      | 8.4      | 5.4       | 6.1     |
We also used (S)FY 2018 data to generate a statewide estimate for the spending needed to achieve this capacity and expertise in (S)FY 2018. This estimate represents spending on CPHS, and should not be confused with the amount of revenue needed to achieve it. Key findings around the governmental public health system’s current spending on CPHS, include:

Colorado’s governmental public health system spent just over $278 million on CPHS in (S)FY 2018 (approximately $48.90 per capita). This does not include pass through spending from CDPHE to LPHAs - it attempts to count only the dollars spent “on the ground” for CPHS.

A little less than 39% of the governmental public health system’s “on the ground” spending was done by CDPHE, while approximately 61% was done by LPHAs. The distribution of this spending across the CPHS framework varied significantly between CDPHE and LPHAs.

Current spending is approximately 62% of the full cost of implementation. Upstream activities (that is, the types of services like overhead and infrastructure building activities) are more implemented than some of the downstream activities designed to improve population health (the population-based, enabling, and direct health care services). Population-based, enabling, and direct health care services are interdependent on overhead and infrastructure building activities, so the significant gaps in spending on those activities may also impact the ability of governmental public health to implement population-based, enabling, and direct health care services.

Exhibit ES - 5. Current Spending, Full Implementation Cost, and Additional Increment of Cost to Achieve Full Implementation of CPHS by Foundational Capability and Service, FY 2018

<table>
<thead>
<tr>
<th>Foundational Capabilities</th>
<th>Total Estimated Cost of Full Implementation</th>
<th>Current Spending</th>
<th>Additional Increment of Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment and Planning</td>
<td>$45,324,000</td>
<td>$30,837,000</td>
<td>$14,487,000</td>
</tr>
<tr>
<td>Communications</td>
<td>$14,897,000</td>
<td>$7,368,000</td>
<td>$7,529,000</td>
</tr>
<tr>
<td>Policy Development and Support</td>
<td>$13,346,000</td>
<td>$7,385,000</td>
<td>$5,957,000</td>
</tr>
<tr>
<td>Partnerships</td>
<td>$11,473,000</td>
<td>$8,575,000</td>
<td>$2,898,000</td>
</tr>
<tr>
<td>Organizational Competencies</td>
<td>$76,456,000</td>
<td>$59,323,000</td>
<td>$17,133,000</td>
</tr>
<tr>
<td>Emergency Preparedness and Response</td>
<td>$16,658,000</td>
<td>$9,941,000</td>
<td>$6,717,000</td>
</tr>
<tr>
<td>Health Equity and Social Determinants of Health</td>
<td>$15,088,000</td>
<td>$7,492,000</td>
<td>$7,596,000</td>
</tr>
<tr>
<td>Foundational Services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communicable Disease Prevention, Investigation and Control</td>
<td>$35,031,000</td>
<td>$24,135,000</td>
<td>$10,896,000</td>
</tr>
<tr>
<td>Environmental Public Health</td>
<td>$83,614,000</td>
<td>$57,465,000</td>
<td>$26,149,000</td>
</tr>
<tr>
<td>Maternal, Child, Adolescent and Family Health</td>
<td>$42,467,000</td>
<td>$27,744,000</td>
<td>$14,723,000</td>
</tr>
<tr>
<td>Chronic Disease, Injury Prevention and Behavioral Health Promotion</td>
<td>$62,613,000</td>
<td>$18,935,000</td>
<td>$43,678,000</td>
</tr>
<tr>
<td>Access to and Linkage with Healthcare</td>
<td>$28,601,000</td>
<td>$19,027,000</td>
<td>$9,574,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>445,568,000</strong></td>
<td><strong>278,231,000</strong></td>
<td><strong>167,337,000</strong></td>
</tr>
</tbody>
</table>

Source: Habile, 2019.
The full, annual cost of implementing CPHS in Colorado would be $445,568,000 (approximately $78.32 per capita) an additional increment of cost of $167,337,000, in current year dollars. We also estimated a contingency of $21,390,000 on top of that estimate to address potential variability in the results. The full implementation cost estimate (as well as estimates of current spending and the additional increment of spending to achieve full implementation) are point-in-time, planning-level estimates of the regular, annual costs to the governmental public health system on just CPHS, a subset of public health services. When considering these results in the future, adjustments should be made to ensure that they are comparable with current assumptions (like the evolving CPHS framework and service delivery paradigm) and purchasing power.

The “additional increment” represents the additional spending that would need to occur to achieve the incremental increase in capacity and expertise to support full implementation of CPHS statewide. This “additional increment” does not represent the additional revenues needed to fully implement CPHS, as that value is dependent on alignment of funding responsibilities and the security, predictability, and flexibility of existing revenues as discussed later in this report.

The full implementation cost and additional increment of spending costs do not consider the costs of implementation; that is, the resources that might be required to move from current implementation of CPHS to full implementation. It is expected that these costs will be material. However, they are also likely to be highly dependent on how full implementation of CPHS is phased, and so, should be estimated as part of future phasing and workplan development.

**Next Steps**

The CPHS Needs Assessment is the first step in an evolving process to implement CPHS through a public health system transformation process. The Needs Assessment clearly articulates the Colorado governmental public health system’s current governance and service delivery paradigm, documents current implementation and spending on CPHS, and estimates the full cost of implementing CPHS at a planning-level. However, it does not clearly articulate how to achieve full implementation of CPHS.

Instead, it is expected that how full implementation will be achieved will be articulated as part of CALPHO and
CDPHE’s roadmap for public health system transformation in Colorado. Achieving full implementation of CPHS will require significant systemic change.

Achieving full implementation of CPHS will require significant systemic change. To support this, it is crucial that Colorado's governmental public health system coalesce around a roadmap for achieving it as part of their broader public health system transformation efforts. This roadmap should guide the many policy choices, both within and outside of the governmental public health system, necessary to achieve public health system transformation. It should also recognize that these decisions will be made both systemically and individually (for individual governmental public health agencies), and support flexibility in individual decision making.

Because public health system transformation is an overarching initiative intended to systemically transform Colorado's governmental public health system, this workplan should be designed to maximize integration within the broader governmental public health system context and existing initiatives, rather than be a standalone initiative.
Icons and Pictures

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