

Insights on Curriculum & Program Development

for Data Science Training and Leadership Development



PH Leads Steering Committee Feedback Synthesis Report

The Public Health Leadership and Education Advancing Data Science (PH LEADS) Steering Committee was convened to guide the development of curricula, training models, and workforce strategies that align with the evolving needs of the public health field. Comprised of a diverse and accomplished group of leaders from academia, local and state health departments, and public health innovation organizations, the committee offers deep expertise in areas such as data science, health equity, workforce development, epidemiology, and systems leadership. Their lived experience and professional insight provide a powerful lens through which to examine the current gaps and future priorities in public health education and leadership training.

The Steering Committee's charge was to support PH LEADS through strategic mentorship and the co-development of recommendations in three key domains:

1. recruitment and retention,
2. curricular development,
3. guidance and the alignment of education and training with public health workforce needs.

Over the course of quarterly meetings and in-depth review assignments, committee members offered critical insights into the shortcomings of existing educational pathways and proposed forward-looking strategies to modernize training, improve diversity and equity in leadership, and better prepare the workforce to meet emerging challenges.

This document synthesizes the PH LEADS Steering Committee's recommendations, highlighting actionable guidance and thematic priorities in three major areas:

1. general public health education,
2. data science training,
3. and leadership development.

The *Exploratory Report on Public Health Data Science & Leadership (August 2023)* served as a foundational resource for the PH LEADS Steering Committee in examining the intersections of workforce capacity, data skills, and leadership development. Grounded in field-informed insights from surveys and listening sessions with practitioners across local, state, Tribal, and academic settings, the report explores how data science, data literacy, and data-

informed leadership function as interdependent components of a resilient public health workforce. As part of their charge, The PH LEADS Steering Committee members reviewed the report with a specific focus on its implications for building equitable, data-fluent leadership pipelines and sustaining a public health workforce equipped to navigate complexity, drive innovation, and advance health equity.



General Public Health Curriculum

The Committee recommended overhauling general public health curricula to better reflect current and future demands. Courses should be updated to include data science, health equity, risk and crisis communication, and project-based learning. While innovation is key, foundational disciplines such as environmental health and behavioral sciences must remain central.



Core competencies should also include ethics, health literacy, and the use of plain language to ensure communication is clear and accessible.

Greater emphasis should be placed on interdisciplinary learning and practical experiences. This includes creating stronger partnerships with health systems, social service agencies, and community-based organizations. The Committee also advised aligning curricula with the deBeaumont Foundation's Strategic Skills framework, which incorporates systems thinking, justice/equity/diversity/inclusion (JEDI), and policy engagement.

Priorities include strengthening leadership and analytical skills, promoting cultural competence, and offering opportunities for mentoring and shadowing. Students should gain a better understanding of how public health policy is developed and its impact on communities, with case studies used to illustrate these effects. Curricula should be designed and delivered by diverse practitioners and grounded in equity-centered frameworks.

Significant educational gaps persist. Many programs remain siloed and outdated, with minimal practical training. Public awareness of public health as a viable career path is especially low among high school students, limiting the future pipeline. There is also a disconnect between academic instruction and the practical skills needed in the field, such as adaptability and effective communication. The lack of representation of Indigenous knowledge systems and non-Western practices, as well as insufficient discussion of past and ongoing harms in public health data use, further contribute to these shortcomings.

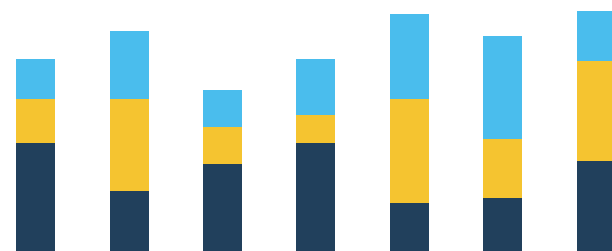
Data Science Curriculum

The Committee emphasized the importance of fully integrating the data lifecycle into public health education—spanning collection, governance, analysis, visualization, and communication. Students must be taught not only technical skills but also the ethical, equity-based, and reflective dimensions of working with data. Collaborations with departments of computer science and informatics are strongly encouraged to ensure curriculum relevance.

To enhance learning, the committee recommended providing self-paced tutorials in tools like R and Python, incorporating qualitative data alongside quantitative methods, and ensuring communication is grounded in universal

design principles and audience-centered strategies. Exposure to public health data modernization efforts was identified as essential for preparing the future workforce.

Key priorities include hands-on training in statistical modeling, programming, data visualization, and ethical reasoning. Applied instruction in biostatistics, epidemiologic methods, and decision science should be prioritized, with students working directly with real datasets from health departments and other public sources.



Yet current offerings often fall short of workforce needs. Many programs are not aligned with the practical realities of modern public health data science. There is a lack of structured mentorship for students pursuing data careers and minimal coverage of emerging tools such as artificial intelligence, machine learning, and advanced analytics.

Leadership Curriculum



Leadership training must be designed specifically for the public health context. The committee recommended that curricula focus on public policy, operations, health equity, and evidence-based decision-making. Courses should explore the relationship between advocacy and lobbying and examine the role of political dynamics in scientific communication. Mentorship, networking, and applied project opportunities were highlighted as essential components of effective leadership development.

To ensure future leaders are prepared for the complexity of public health work, priorities include systems mapping, change management, and creating psychologically safe work environments. The curriculum should also incorporate project management, community engagement, and evaluation methods. Importantly, there must be options for accessible, non-degree-based leadership training that can reach a broader audience.

Soft skills—such as cultural competence, communication, and conflict resolution—are underdeveloped in many leadership programs. There is also insufficient instruction on how to lead teams or manage in crisis settings. Financial and logistical barriers continue to limit access to formal leadership training, and curricula often fail to explore racism, colonialism, and historical trauma as core elements of public health leadership.

Cross-Cutting Insights

Across all three curriculum areas (general, data, and leadership), several cross-cutting themes emerged. Equity and inclusion must be deeply embedded, with a move away from race-based data proxies toward trauma-informed, culturally nuanced approaches. This includes a deliberate shift away from the use of race as a biological or simplistic explanatory variable in data collection and analysis. Public health education should both reflect and support a diverse workforce, actively recruiting and retaining students from historically underrepresented communities.

The committee also stressed the need to integrate Indigenous knowledge and non-Western health practices into curricula—not as secondary content, but as legitimate and vital perspectives that do not require validation through Western scientific frameworks. Data ethics must be prioritized, particularly in resisting surveillance harms and promoting responsible data governance.

Finally, academic learning must be grounded in the applied functions of public health practice. The committee underscored that relevance and retention increase when students are exposed to roles, challenges, and systems through experiential learning, partnerships, and field placements.