

UNIVERSITY OF MINNESOTA

Partnering with Undergraduate Institution Educators to Build Pathways to Disease Intervention Certification



CENTER FOR PUBLIC HEALTH
**WORKFORCE
DEVELOPMENT**
ASPPH

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Table of Contents

Project Purpose and Background-	2
Objectives-	4
Environmental Scan Objectives.....	4
Listening Sessions Objectives.....	4
Economic Analysis Objectives	4
Methods-	5
Environmental Scan Methods.....	5
Listening Session Methods	5
Economic Analysis Methods	7
Challenges	8
Results-	9
Environmental Scan Results	9
Listening Session Results.....	17
Economic Analysis Results.....	27
Discussion-	38
Further Economic Research	38
Considerations	38
Recommendations-	40
Create marketing and recruitment materials for undergraduate institutions:	40
Help Undergraduate Institutions supplement DI content within existing undergraduate classes	41
Help Undergraduate Institutions build out opportunities for work experience and/or internships.....	41
Help undergraduate institutions to develop an evaluation plan.....	42
Work with employers to increase the value of the credential.....	43
Appendices	44
References-	48
Proposal-	51
Background-	52
Example Goals & Strategies-	54
Stakeholders & Roles-	55
Sample Gantt Chart-.....	60
Budget Line Items & Resources-	61
Project Outcome Dissemination.....	62
References-	63
Evaluation Plan-	64
Evaluation Purpose-	65
Purpose of Undergraduate DI Pathway Programs-	66
Sample Logic Model-	69
Gather Credible Evidence-	70
Evaluation Management-.....	72
Sample DI Alumni Questions-	73

Project Purpose and Background

Disease intervention (DI) professionals are an essential part of the public health workforce, supporting the prevention and control of infectious diseases through activities such as case investigation, contact tracing, partner services, care coordination, outbreak response, and community engagement. Although DI work has historically focused on sexually transmitted infections (STIs) and tuberculosis (TB), DI professionals increasingly support responses to emerging and re-emerging public health threats. As the scope of disease intervention has expanded, so has the need for a standardized approach to preparing, training, and recognizing this workforce.

To address this need, the Centers for Disease Control and Prevention (CDC), in collaboration with national public health partners, initiated efforts to establish the Certification in Disease Intervention (CDI) program. The CDI program is designed to standardize and validate the knowledge, skills, and abilities of DI professionals, improve the quality and consistency of disease intervention services, and strengthen recruitment, retention, and professionalization of the workforce.

The CDI project has advanced through several phases over more than a decade. In 2013, CDC and the National Association of County and City Health Officials (NACCHO) collaborated on a feasibility assessment to evaluate the potential for a national DI certification program. NACCHO supported stakeholder engagement and contracted with International Credentialing Associates to assess workforce needs, training gaps, operational requirements, and sustainability considerations. Beginning in 2014, the Public Health Accreditation Board (PHAB) served as the coordinating organization for the assessment phase, leading foundational activities such as the DI workforce registry, Job Task Analysis, workforce enumeration studies, and evaluation of certification models. This work helped define DI competencies and supported the selection of a test-based certification model.

In 2022, the Association of Schools and Programs of Public Health (ASPPH) assumed leadership of the CDI project through a CDC-funded cooperative agreement. In partnership with the National Board of Public Health Examiners (NBPHE), subject matter experts, and national public health partners, ASPPH has supported certification infrastructure, examination development, stakeholder engagement, and strategies to strengthen pathways into the DI workforce.

As the CDI program moves toward implementation, stakeholders have identified the need for clear educational pathways that prepare future DI professionals and support eligibility to sit for the CDI certification examination. Undergraduate public health and public health-related programs may already include coursework, experiential learning, and competencies that align with DI workforce needs. Leveraging existing curricula offers an opportunity to build scalable and sustainable pathways into disease intervention without requiring the creation of entirely new degree programs.

To explore this opportunity, ASPPH awarded a subaward to the University of Minnesota Center for Public Health Systems (CPHS) for the project, *Partnering with Undergraduate Institution Educators to Build Pathways to Disease Intervention Certification*. The purpose of this project was to assess how existing undergraduate curricula and institutional structures could be leveraged to prepare students for DI careers and future CDI certification eligibility.

The project had three primary objectives:

- Explore and characterize educational pathways for the DI workforce through undergraduate institutions;
- Assess the feasibility of establishing undergraduate pathways aligned with DI competencies and CDI certification requirements; and
- Evaluate whether these pathways could help increase the diversity of DI practitioners and better meet the needs of communities disproportionately affected by infectious diseases.

To meet these objectives, CPHS conducted an environmental scan, listening sessions with undergraduate public health educators, and an economic analysis of potential demand, implementation considerations, and sustainability. This report presents findings from those activities and offers recommendations to inform future efforts to establish undergraduate educational pathways that support CDI certification eligibility and strengthen the DI workforce pipeline.

Objectives

Environmental Scan Objectives

The environmental scan was designed to address objectives 1 and 3 and analyze existing literature to describe:

- DI career preparation programs and pathways currently available to undergraduate students
- The history and impact of DI in the public health workforce
- The importance of the DI role in infectious disease surveillance and control

Listening Sessions Objectives

The aim of listening sessions was to address Objective 1 (to explore and characterize educational pathways for the DI workforce through undergraduate institutions) and talk to educator personnel to assess:

- Current undergraduate pathway structures that could be used to prepare students for the DI field and the CDI exam
- Current program offerings that could be used to prepare students for the DI field and the CDI exam
- Current undergraduate evaluation structures that could be used to evaluate how well programs are preparing students for the DI field and the CDI exam
- What new pathway structures, program offerings, or evaluation components would need to be added to enable undergraduate schools to prepare students for the DI field and the CDI exam

Economic Analysis Objectives

This economic analysis describes key considerations for developing undergraduate DI career pathways including supply and demand for CDI training at the undergraduate level among educational institutions, the potential sustainability of these pathways, and costs and benefits associated with a CDI training pathway for undergraduates. In the following methods and results sections, information corresponds to the economic questions (EQs) and related sub-questions central to this analysis:

- EQ 1. Among undergraduate institutions, what are the current levels of supply and demand for DI career pathways?
- EQ 2. What are the potential costs and benefits for entry-level DI positions for college graduates?

Methods

Environmental Scan Methods

The literature review comprised a series of keyword searches performed via Google Scholar. Keywords were selected through an analysis of focus areas detailed in objectives 1 and 3 of the project proposal. Keywords used in this review may be found in Appendix A. Data from this search were compiled in an Excel workbook and articles were reviewed for relevance to the objectives. Literature results were limited to a 10-year window from 2015-2025.

Additional data were captured through an online search of publicly available resources. Keywords were searched on Google for topics less frequently found in peer-reviewed literature, including specific public health educational programs offered in undergraduate institutions, professional organization outreach and recruiting, and programs contained in Minority Serving Institutions (MSIs).

Lightcast, a data aggregator, was used to observe job-posting trends for the Disease Intervention Specialist (DIS) role in the US from March 2020 to March 2025. While other job titles are used within the DI field, we exclusively selected the DIS title for Lightcast data extraction at this stage due to its widespread use in health departments and to minimize ambiguity. Lightcast collects job postings from more than 160,000 sources, allowing users to build reports detailing job market metrics. Lightcast de-duplicates the data, allowing users to view unique postings. The data parameters reported for this scan were illustrative of the number of unique postings, job postings by location and company, and the education level and experience levels preferred.

Using data from the National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS), a list of institutions offering public health majors/minors was created. This list was then parsed to investigate the institutions offering baccalaureate degrees in public health. Data were cross referenced with lists of Historically Black Colleges and Universities (HBCUs), Tribal Colleges, and other minority-serving colleges and universities to build a comprehensive dataset of those awarding public health degrees. It was further expanded upon by denoting the schools of public health and baccalaureate programs accredited by the Council on Education for Public Health (CEPH). The list allowed for filtering by award level, CEPH accreditation, and university MSI designation.

Listening sessions with key stakeholders in educational institutions were held to develop an understanding of university processes currently used to craft and evaluate new undergraduate curriculum. In combination with the literature review analysis, the data obtained from these listening sessions informed the areas of focus for each project outcome. Together, the literature review, online searches, and listening session data built a picture of the current conditions for undergraduate DI career pathways, including sitting for the CDI exam.

Listening Session Methods

The CPHS team worked with ASPPH to develop a listening session guide that would address the project objectives above. The overall method was qualitative description²⁹ and data were collected via semi-structured listening sessions. This provides the flexibility needed for the team to gather contextual data that would meet the project objectives.³⁰

Participants

Participants were identified through purposeful sampling (where the CPHS team deliberately select specific individuals from a population) and snowball sampling (in which participants are asked to assist the project team in identifying other potential subjects). Potential participants were sent a recruitment email by ASPPH or CPHS that included information on the project, participation incentive (\$25 gift card via Giftogram), and a scheduling link. Interested participants were instructed to use the link to schedule an individual listening session with the CPHS team. Participants received two reminder emails and an information sheet prior to the scheduled listening session. Fifteen participants from 11 different undergraduate institutes across the US participated in the listening sessions. The institutions varied greatly from non-CEPH accredited, small liberal arts schools to CEPH accredited large, research-oriented institutions.

Listening Session Guide

The CPHS team developed a listening session guide using DI literature, informal conversations with undergraduate public health education experts, and preliminary results from the environmental scan and economic analysis. The listening session guide was reviewed by ASPPH, and feedback was incorporated into the final version.

Listening Session Procedure

At the scheduled date and time of each listening session, the CPHS team welcomed the participant(s) into the Zoom room, began with an introduction to the project, level-setting (establishing session's goals and expectations), and answered any questions. The CPHS team then began asking questions, following the semi-structured listening session guide. At the end of the session, participants were thanked and reminded about the incentive, and the CPHS team answered any remaining questions. Each session lasted about 60 minutes. The sessions were not recorded. Instead, the CPHS team took detailed notes and debriefed after each session.

Listening Session Analysis

After all listening sessions were completed, the notes were uploaded into NVivo, Lumivero (2023) NVivo (Version 14) www.lumivero.com. Analysis included deductive and inductive coding.³¹ In the deductive coding, three predetermined deductive codes ("domains") were derived from the project objectives and consisted of:

1. Evaluation Structures and Considerations
2. Pathway Structures
3. Programmatic Considerations

The inductive coding consisted of descriptive coding and thematic analysis.^{30–32}

Institutional Review Board Statement

This project was submitted to the University of Minnesota Institutional Review Board, which determined it was not human subjects research and therefore did not require Institutional Review Board (IRB) review (IRB Study ID: 00023935).

Economic Analysis Methods

Data Overview

In creating this economic analysis, we relied on both primary and secondary data and used a mixed-methods approach to analyze data we gathered. Most of the data came from the environmental scan results, existing national-level surveys (PH WINS, IPEDS), Lightcast reports, and data provided by ASPPH as part of its institutional research portfolio. The listening sessions described in the previous section provided the primary data we assessed. Table 1 summarizes these data sources, the corresponding questions that were addressed, and the analytic approaches that were used. Additional information about data sources and analytic approaches can be made available upon request.

Table 1. Overview of Economic Analysis Data Sources

Component	Question(s)	Data Used	Analysis Method(s)	Report Section
EQ1: Supply and demand for undergraduate pathways relevant to DI certification and professional roles	A. Supply: What resources are available within institutions that could help with creating and sustaining pathways?	(A-C:) Educator personnel listening session information (primary data)	Deductive and inductive coding; descriptive analysis; thematic analysis; literature review Descriptive statistics	EQ1 Environmental Scan EQ1
	B. Demand: What interest do institutions have in implementing or developing pathways?	(B-C:) NCES-IPEDS, CIP codes and CEPH accreditation data		
	C. Sustainability: What funding streams might be used to establish and maintain these pathways?			
EQ2: Costs and benefits for students	A. Benefits: What are the potential benefits to students in creating a DI pathway?	Educator personnel listening session notes	Deductive and inductive coding; descriptive analysis; thematic analysis; literature review	EQ2 Environmental Scan
	B. Costs: What are the potential costs?			
	What factors might encourage or detract from students pursuing this path?			
	C. How does DI certification or relevant additional training benefit current DI professionals?	PH WINS Lightcast reports	Descriptive statistics, thematic analysis	EQ2

Challenges

Below is a list of challenges encountered throughout this portion of the project and ways they were addressed.

Challenge	Challenge Description	Addressed
Limited listening session participant responses	While recruiting for the listening sessions, we identified schools across the US in order to obtain a more diverse sample. However, very few of the identified schools responded to recruitment emails.	We switched from purposeful to snowball recruitment, through which one participant would identify colleagues at other US institutions and email them our recruitment materials. This resulted in many more participants and helped meet our target number of participants.
Listening session recordings	At the beginning of the project, we were told that we could not record the listening sessions. Although this guidance changed half-way through the project, we opted not to, to maintain consistent notes across all the listening sessions.	To increase trustworthiness of the data, we had three team members on each listening session and at least two took notes. We had a debriefing session after each listening session. All notes and debriefing session notes were combined and used for the analysis.
Limited DI literature	A moderate amount of literature exists to describe the historical roots and evolution of the DI role in public health. Writing that discusses the education and training of these professionals is less in evidence.	To fill these gaps in research availability, we relied on extensive Google searches and other data sources such as Lightcast.
Limited DI economic data	Given the niche nature of the DI profession, there is relatively little data relevant to understanding the economic components of the DI field. Aside from the PH WINS and Lightcast data presented, we did not identify further readily accessible information on DI salaries, cost savings, wage growth, etc.	Given the short timeframe for this project, we presented analyses of data that was both directly (i.e., PH WINS, Lightcast) and indirectly (i.e., IPEDS, school information) related to DI pathways. We collected additional primary data through the listening sessions and, throughout, we suggest additional pathways to further data collection.
Limited CDI information	Due to limited information on the CDI certification, it was difficult to talk to undergraduate institutions about how a CDI pathway might work at their organization. For example, many participants wanted more information on the six DI domains in order to assess whether or not their current classes would satisfy the DI domains. Likewise, the one-year experiential learning requirement was not well-defined, and participants were unsure whether their institutions would be able to help their interested students find appropriate internships that would qualify them to sit for the CDI exam.	While many of the key concepts were undefined, we were able to talk with participants about their first impressions and whether their institutions could help students meet the DI requirements. For example, while we lacked specifics for each of the DI domains, participants were able to assess whether their current class offerings could satisfy the domain requirements, at least at a high level. We were also able to talk with participants about how their institutions facilitated internships for their students, i.e., when their students typically completed internships, the organizations they typically work with, etc. This provided sufficient information to determine how institutions might respond to the different CDI requirements.

Results

Environmental Scan Results

A total of 2,105 articles were identified through a search of the keywords (Appendix A) identified for each of the areas of focus within the project objectives 1 and 3. Of those initial articles scanned, 89 were found to be unique and related to the environmental scan. These articles were then reviewed and further evaluated. This data informed the findings of the environmental scan.

Background of the Disease Intervention Workforce

The Disease Intervention Specialist (DIS) role was originally developed by health departments in the 1930s in response to the spread of endemic syphilis.¹ Within state and local health departments, the DI professional focus has since evolved to cover myriad other infectious diseases, including tuberculosis, HIV/AIDS, and mpox.² While the work of these professionals has historically been focused on the STI sphere, their contact-tracing skills were invaluable during the COVID-19 pandemic,³ and their disease intervention skills have proven critical in the face of both known and novel and emerging disease. The DI field has expanded to include professionals with titles including but not limited to DIS, such as Communicable Disease Investigator and disease-specific titles such as HIV Prevention Specialist (see Table 13). The DIS title is most widely used but we refer to this group as DI professionals. Described as “shoe leather epidemiologists,”⁴ DI professionals conduct investigations of contagions at the patient level, using empathy and tact¹ to approach individuals in a broad range of populations, often in field interviews, and to elicit sexual partner and physical contact information. They possess specialized skills in interviewing, counseling, and wrap-around service coordination, with much of their success resulting from their communication skills and resourcefulness.³

DI professionals are primarily employed by state and local health departments, but occasionally work in private industry for health clinics or other non-governmental entities.⁵ Lightcast data offers a snapshot of hiring agencies, which shows the heaviest concentration of job postings over the past five years originating from state and local level hiring authorities (Figure 1).

Figure 1. Top companies hiring DI Specialists* from September 2020 through March 2025

Company	Total/Unique (Mar 2020 - Mar 2025)	Posting Intensity	Duration
State of Louisiana	293 / 67	4 : 1	16 days
State of North Carolina	90 / 41	2 : 1	19 days
Department Of State Health Services	84 / 41	2 : 1	29 days
State of Arkansas	64 / 38	2 : 1	16 days
King County	117 / 38	3 : 1	35 days
State Of Alaska	86 / 33	3 : 1	21 days
State of South Carolina	54 / 29	2 : 1	26 days
City of San Antonio	77 / 26	3 : 1	n/a
Commonwealth Of Virginia	54 / 25	2 : 1	23 days
Dallas County	59 / 25	2 : 1	29 days

*Lightcast data reflective of Disease Intervention Specialist (DIS) job title only

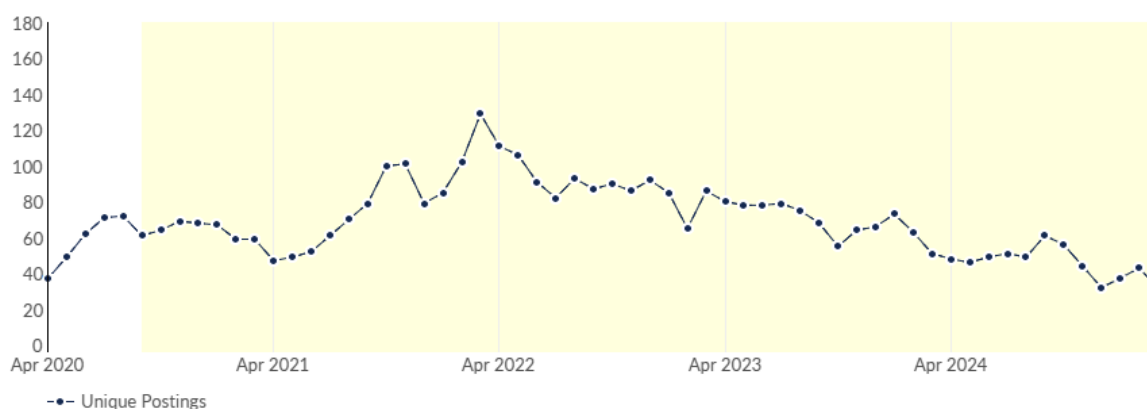
DIS is the primary job term used for the role within state and local health departments, although as previously stated, DI professionals can have an array of job titles.⁶ The DIS does not have its own Standard Occupational Classification (SOC) code, complicating the enumeration and study of these workers.⁶ The many job titles (see **Table 13** for a sample) used to describe the role make a study of the position by SOC code unreliable. A precise enumeration of the DI profession is not currently publicly available. However, a 2017 Public Health Accreditation Board (PHAB) estimate relying on survey data from the National Association of County and City Health Officials (NACCHO) places the number of practicing DIS at 1,661, with an additional 402 DI professionals working in supervisory roles for a total of 2,063 in the field.⁷ An additional 540-575 DIS were found to be working in tuberculosis programs exclusively.⁷ Most of the current workforce is female identifying and under the age of 40, according to the 2021 Public Health Workforce Interest and Needs Survey (PH WINS).⁸

Employee churn in the DI profession has been a persistent issue due to agency funding losses, deteriorating working conditions,⁹ and because many professionals see DI roles as an entry level stepping-stone into wider public health service.⁴ According to the 2021 PH WINS survey, tenure was 0-5 years for 69.8% of DIS professionals, with 26.5% intending to leave within one year.⁸ The COVID-19 pandemic exacerbated retention problems as DI professionals were shifted into contact tracing programs and often did not return to their original role.⁹ Among public health workers, DI professionals are most likely to report a desire to leave the field.⁸

Since sexual health as a specialty is scarce,¹⁰ development of new pathways into the role will be important given the increase in sexually transmitted infection rates, particularly those of syphilis and congenital syphilis. Lightcast data showed a trend in demand for DIS that peaked in April 2022, during the COVID-19 pandemic. Subsequent job postings have dropped off steadily, with demand for March 2025 of 32 open job postings slightly below the 37 open job postings for the same month five years ago (Figure 2). On April 24, 2025, six active job postings were captured in the Lightcast database.

Figure 2. DI Specialist* demand shown through number of unique job postings per month March 2020 through March 2025

Unique Postings Trend



*Lightcast data reflective of Disease Intervention Specialist (DIS) job title only

Often, DIS professionals entering the field lack formal training or public health backgrounds, although the skills they draw upon are generally found in the academic concentrations of health education and promotion and epidemiology.⁵ Most of the jobs posted for DIS in the past five years either do not list a preferred experience level or seek a candidate with 0-3 years of experience (Figure 3). Meanwhile, 22% are explicitly open to entry level candidates (with 0-1 years of experience).

Figure 3. DI Specialist* job posting experience requirements March 2020 through March 2025

Experience Breakdown		
Minimum Experience	Unique Postings	% of Total
No Experience Listed	642	42%
0 - 1 Years	340	22%
2 - 3 Years	365	24%
4 - 6 Years	152	10%
7 - 9 Years	23	2%
10+ Years	2	0%

**Lightcast data reflective of Disease Intervention Specialist (DIS) job title only*

Approximately 48% of DIS professionals possess a bachelor’s degree, although only 13% of those degrees are in public health specialties.⁸ Their training is generally experiential, taking place while on the job, with enhancement through the National Network of Disease Intervention Training Centers (NNDITC) and CDC modules.¹¹ They come to public health from a wide variety of educational backgrounds, including community health and social work.² In demographic data on practicing DIS professional from a 2016 job task analysis survey, most respondents were female and under the age of 55.⁷ Just over half (55%) had a bachelor’s degree.⁷

Lightcast’s data split required education data into two sets, one showing the minimum education level required by the hiring authority, and the other showing the levels of education mentioned in the job posting. The latter category could mean that more than one education level is mentioned, such as “bachelor’s degree is preferred, high school diploma or equivalent is required.” While the minimum education level required for DIS is a bachelor’s degree, Lightcast data shows that 18% of recruiters are looking for candidates with at least a high school diploma or general educational development test (GED; Figure 4). Education levels mentioned in the job postings follow a similar trend. However, 20% do not mention an education preference of any level (Figure 5). When taken holistically, the experience and education data from Lightcast supports literature that shows DIS professionals are frequently entry-level college graduates who acquire their skills on the job.

Figure 4. DI Specialist* minimum education level requirements March 2020 through March 2025

Minimum Education Breakdown

Minimum Education Level	Unique Postings (minimum)	Unique Postings (max advertised)	% of Total (minimum)
High school or GED	273	0	18%
Associate's degree	80	22	5%
Bachelor's degree	858	144	56%
Master's degree	7	176	0%
Ph.D. or professional degree	1	16	0%

**Lightcast data reflective of Disease Intervention Specialist (DIS) job title only*

Figure 5. DI Specialist* education levels mentioned in job postings March 2020 through March 2025

Education Breakdown

Education Level	Unique Postings	% of Total
No Education Listed	305	20%
High school or GED	273	18%
Associate's degree	157	10%
Bachelor's degree	1,051	69%
Master's degree	194	13%
Ph.D. or professional degree	17	1%

**Lightcast data reflective of Disease Intervention Specialist (DIS) job title only*

The fact that health departments are incorporating additional services, such as HIV PrEP (Pre-Exposure Prophylaxis), are increasing the scope of their wrap-around services,^{12,13} and have growing technology demands¹ suggests a need to expand the educational rigor and preparation of the DI professional.

Undergraduate Programs Alignment with DI Workforce Training and Development

From the IPEDS data, a total of 477 institutions were identified, falling into four categories: Public, Private Non-profit, Private For Profit, and Foreign. When filtered for this category, the data indicated 238 public institutions conferring degrees in public health, 199 private nonprofit universities, 36 private for-profit institutions, and four international schools. The available data were unable to confirm whether or not these programs focus on DI-specific competencies or concentrations.

The data reviewed did not reveal the existence of undergraduate programs in DI. However, some online training resources are available to the public and professionals. CDC TRAIN, the CDC's online learning system, is home to more than 1,000 training sessions for public health professionals. Courses have been developed for DI professionals, including DI fundamentals instruction, disease-specific training, and outbreak response preparedness. The CDC website also contains additional training resources such as links to the National Network of STD Clinical Prevention Training Centers (PTCs) and the free National STD Curriculum offered through the University of Washington. Finally, an online mentorship model program, Coaching for Enhanced Disease

Intervention Skills (CEDIS), funded through American Rescue Plan (ARP), is offered in collaboration with the National Network of Public Health Institutes.

The National Network of Disease Intervention Training Centers (NNDITC) has four regional, instructor-led, skill-based training centers, a national online curriculum development center, and a national instructor-led curriculum development center. As of April 1, 2025, the NNDITC was no longer providing services. However, the PTCs are online to date, and the training sessions appear to be active. The CEDIS program currently appears to be inactive. CDC TRAIN is currently active online.

For Florida DI professionals in the public health field who wish to bolster their knowledge and keep their DI skills current, the University of South Florida (USF) DIS Training Academy (DISTA) offers a program at no cost that provides a micro-certificate upon completion from USF through its College of Public Health Lifelong Learning Academy platform. The program consists of four levels aimed at various career experience levels from entry level 1 through seasoned professional level 4. A special training program is also available to DI professionals who want to become leaders in the field.

In 2018, a study was undertaken to determine the alignment of CEPH-accredited undergraduate public health curriculum with DI competencies. The curriculum of the Jiann-Ping Hsu College of Public Health at Georgia Southern University (GSU) was used in the study, while a Public Health Accreditation Board (PHAB) job task analysis report provided the DI competencies.⁵ The study found strong alignment between the GSU core curricula and the job task analysis, suggesting undergraduate institutions may be well positioned to adopt DI workforce education.⁵ Other literature on this alignment is sparse and focuses on the general education of public health students rather than DI-specific education. The literature shows the existence of some collaborations between health department and academia that target specific community needs. For example, a partnership between the Idaho Department of Health and Welfare and Idaho State University has filled a gap in infectious disease capacity through interdisciplinary enhancements to the undergraduate curriculum in STI prevention, harm reduction, and care.¹⁴ Additional literature suggests moderate alignment with contact tracing efforts based upon COVID-19 research and university programming. Several schools made the resources in their public health programs available during the COVID-19 pandemic to help local health departments build their contact tracing capacity. Eastern Washington University public health faculty trained contact tracers in the Spokane Regional Health District, offering students meaningful work within their communities and creating interest within public health agencies for additional education in this field.¹⁵ Contact tracer and DI professional roles often provide an entry point into careers in governmental public health.¹⁶ This suggests some competencies may be built upon using existing frameworks made available during COVID-19 surge capacity efforts.

Preparing a Diverse Student Population for DI Careers

To help prepare students with a broad range of backgrounds and experiences for DI careers, an online search of gray literature (literature produced outside standard commercial or academic publishing channels) was conducted to create a data set of universities that may be well positioned to serve these students. The University of California at Irvine website hosts a list of MSIs (minority serving institutions, which enroll a significant percentage of minority students from across the US—generally, 25% undergraduate enrollment of a specific minority population).¹⁷ Data from this site was used to build a dataset that was cross referenced with data filtered from IPEDS (Appendix B) to create a data subset of MSIs that award undergraduate degrees in public health (Appendix C). The resulting data can be filtered for specific populations served within each institution.

According to the data extracted from IPEDS, 477 institutions confer undergraduate degrees in public health, 88 of which were identified as MSIs using the UCI MSI data. Six of the MSIs offering public health bachelor's degrees were found to serve more than one diverse student population on the MSI list. Table 2. illustrates the options for various populations.

Table 2. Number of Institutions Offering Public Health Instruction and the Populations Served

Designation or Population Served	Number of Institutions
Historically Black Colleges and Universities (HBCUs)	14
Predominantly Black Institutions (PBIs)	7
Tribal Colleges and Universities (TCUs)	1
Native American-Serving Non-Tribal Institutions (NASNTIs)	2
Hispanic Serving Institutions (HSIs)	38
Asian American and Native American Pacific Islander-Serving Institutions (AANAPISIs)	24
Alaska Native serving Institutions or Native Hawaiian Serving Institutions (ANNHs)	2

DI professionals often work in close proximity to socially marginalized and economically disadvantaged populations, with communities of color disproportionately affected by STIs.¹² Significant disparities in STI cases exist, with rates surging among Lesbian, Gay, Bisexual, Transgender, and Queer+ (LGBTQ+) and non-Hispanic Black or African American populations.¹⁸ American Indian and Alaska Native populations saw the highest rates of syphilis and congenital syphilis in 2023.¹⁸ The sensitive nature of DI investigation into STIs makes practitioners who are reflective of the communities they serve well suited to the field, since understanding their cultural nuances means they can more easily establish trust with clients.¹⁹ When it comes to the relationship between patient and investigator, studies note the level of trust that must be rapidly established as part of the communication process.¹ According to the 2021 PH WINS survey, the DI workforce is 46.6% White, 24.1% Hispanic or Latino, 19.3% Black or African American, and 4.8% Asian.⁸ Less than 1% reported a race or ethnicity of American Indian/Alaska Native or Native Hawaiian/Pacific Islander.⁸

A keyword search in Google Scholar provided some literature highlighting current gaps in DI workforce diversity and community outreach. However, it did not yield insights into undergraduate programs. Gray literature offered limited DI-specific information and provided some insights into the recruitment of prospective public health students of diverse backgrounds.

The CDC Undergraduate Public Health Scholars (CUPS) program is one example of a significant outreach effort to encourage students from a variety of diverse backgrounds, including ethnic and racial minority populations and students with disabilities, to pursue careers in public health related fields.²⁰ The CUPS program had a positive effect on student outcomes, with close to 80% of students indicating that the program had aided their career progression.²⁰ This program has since been renamed in honor of the late John R. Lewis, and seven Lewis Scholars Programs are currently available on the CDC website (Table 3). However, the future of these programs is uncertain given the nature of federal executive orders.

Table 3. John R. Lewis Scholars Programs

Columbia Mailman School of Public Health	Summer Public Health Scholars
Kennedy Krieger Institute	Maternal Child Health Careers/Research Initiatives for Student Enhancement - Undergraduate Program (MCHC/RISE-UP) *
Morehouse College	Project Imhotep Program
Southern Plains Tribal Health Board	Tribal Health Experiential Student Internship Seminar program (THESIS)
University of Michigan School of Public Health	Future Public Health Leaders Program
University of Pittsburgh School of Public Health	Pitt Public Health Undergraduate Scholars Program
UCLA Fielding School of Public Health	UCLA Public Health Scholars

* Program partner sites: Kennedy Krieger Institute/Johns Hopkins University in Baltimore, MD, The University of South Dakota/Sanford School of Medicine Center for Disabilities in Sioux Falls, SD, The University of California in Davis, CA, Aaniiih Nakoda College/Fort Belknap Community

Barriers to entry into DI careers—such as low wages that are outpaced by rising student debt—reflect well-known barriers to service in governmental public health.²¹ The lengthy hiring process for governmental public health positions and, in some cases, additional civil service examinations may also deter graduating students interested in pursuing DI careers.²¹

Undergraduate Curriculum Evaluation

In the educator personnel listening sessions of this project, participants were asked to describe any recommended academic and curriculum program evaluation practices and methods they use. Respondents also offered perspectives on the process their university used to establish new programming areas and how these were evaluated by the university administration and the departmental leadership. This data is presented in the next section. No articles were identified in the literature review related to DI-specific programming evaluations. However a few articles with some relevance to program and course evaluation were reviewed. The methods of evaluation described in these articles included qualitative and quantitative data collection through student course evaluations, community partner evaluations, student portfolio reviews, and testing to assess student learning and material retention.^{22,23} The literature review also found an approach to undergraduate nursing program quality improvement using the Donabedian framework,²⁴ which evaluates health care quality based on three tenets: structure, process, and outcome.²⁴ The Delphi method was used to measure the success of the undergraduate nursing program quality improvement strategy and proved a useful institutional evaluation tool, identifying strong and weak curriculum elements for consideration.²⁴ All literature emphasized the importance of building a nimble framework that allows for the rapid incorporation of feedback.^{22–24}

Undergraduate Student Outreach and Recruitment

Public health is a career field of which students are often unaware when embarking upon their academic path,²⁵ so it is likely that the DI profession goes similarly unnoticed by students, unless they have been presented with the information on DI roles by their institutions or instructors. Questions in the listening sessions were used to investigate what steps the participating universities were using to encourage students to pursue a career in public health and how their students discovered the field. Additional inquiries looked at how counseling and mentoring of undergraduate students occurred and whether these were formal channels or more informal arrangements.

A search of gray literature indicated some novel use of social media to educate the public and to recruit workers into the DI workforce. Videos aimed at general audiences were developed by several health departments and organizations and uploaded to Facebook, Instagram, and YouTube (Table 4).

Table 4. Selection of DI Professional Outreach Videos

Montgomery (PA) County Office of Public Health	Day in the Life of a Disease Intervention Specialist
Oklahoma State Department of Health	Disease Intervention Specialists
Kansas City (MO) Health Department	Happy National DIS Day
National Coalition of STD Directors	Disease Intervention Specialists - Public Health First Responders
National Coalition of STD Directors	A Day with a DIS
Public Health Careers	Hear from Public Health Professionals

Literature suggests that aligning academic programming with the needs of local health departments may help ensure a well-prepared workforce enters the industry.^{14,25–27} Since these hiring authorities are vital stakeholders, understanding their workforce gaps and the competencies they must fulfill is important. Mapping curriculum to the career may be effective in transitioning graduates to the field and suggests industry can be an advisor when aligning CDI domains to the existing curriculum. Given the potential learning curve for public health hiring managers as certified graduates begin to enter the workforce with expectations around the benefits of CDI certification, partnership with industry will also be important as the CDI certification is introduced to the workforce.

Undergraduate Program Funding

A Google Scholar search of literature was conducted to find information pertaining to grant and funding streams for undergraduate programs. The search did not reveal any literature that could inform the question. An online search of gray literature found some possible external funding avenues through the [United States Department of Education higher education grants](#). Some of these grants are specific to MSIs and aimed at research and development programs and science programs.

Coefficient Giving (formerly known as Open Philanthropy), a philanthropic advisor and funder that offers grants primarily in specific areas of focus, is currently aligned with two concentrations: “global health and wellbeing” and “global catastrophic risks.” Grantees are selected through a rigorous process that evaluates three key criteria: Importance (severity of the issue), Neglectedness (level of resource), and Tractability (impact of additional resources). It has provided more than \$4 billion in funding since its inception in 2014.²⁸

ASPPH Public Health Education Enhancement and Development (PHEED) grants are awarded annually to innovative undergraduate program proposals that aim to enrich the educational growth of undergraduate students. Its 2024 grantees include a service-learning component at The University of Pittsburgh School of Public Health and a hands-on learning opportunity at the Kentucky Department for Public Health from the University of Louisville School of Public Health and Information Sciences. Applicants are all part of the [ASPPH Undergraduate Network](#).

The National Institutes of Health (NIH) offers several grants through the National Institute of General Medical Sciences (NIGMS) that may be applicable for institutions seeking a funding stream to expand curriculum. [Training and career development options](#) would be of particular interest.

The National Science Foundation (NSF) has some [funding opportunities](#) that may help institutions offer student scholarships and build research capacity. These could potentially offset the cost of curriculum enhancement and encourage students to enter the field. However, the future of these funding sources is uncertain due to recent federal executive orders.

The listening sessions included questions aimed at gaining insights into the creation of new course offerings at universities. The probing questions associated with this topic seek information on funding streams for new programming and course creation, as well as on additional training opportunities. These results may be found in the Economic Analysis Section.

Listening Session Results

Each of the domains are presented below with their salient themes and sub-themes. Since the listening sessions were not recorded and transcripts were not created, we present only the descriptions and number of listening sessions in which the theme/sub-theme was mentioned and do not present direct quotes.

Evaluation Structures and Considerations

Within the domain *Evaluation Structures and Considerations*, three themes and nine sub-themes were developed. Please see Table 5 for the themes, sub-themes, definitions, and the number of listening sessions in which each was mentioned.

Table 5. Evaluation Structures and Considerations Themes, Sub-Themes, and Definitions

Theme	Theme Definition	Sub-Theme	Sub-Theme Definition
Types of Evaluation Data (<i>n</i> = 11)	Participants' discussions around what data should be included in the undergraduate DI training pathways evaluation	Administration or Curricula Data (<i>n</i> = 11)	Data that come from program administration or the curriculum
		Student-Level Data (<i>n</i> = 9)	Data that come from DI students
		Alumni-Level Data (<i>n</i> = 6)	Data that come from DI alumni
		Job-Level Data (<i>n</i> = 3)	Data that come from DI alumni jobs
		Internship/Capstone/Practicum-Level Data (<i>n</i> = 3)	Data that come from DI student internships, capstones, or practicums
		Faculty-Level Data (<i>n</i> = 2)	Data that come from undergraduate DI training faculty
		Employer-Level Data (<i>n</i> = 2)	Data that come from employers of DI alumni
		Quality Improvement Data (<i>n</i> = 4)	Data that would result in program quality improvement
Benefit or Value of the CDI certification (<i>n</i> = 8)	Participants' discussions around the need to understand the value or benefit of an undergraduate obtaining the CDI certification	-	-
Timing of Evaluation Components (<i>n</i> = 3)	Participants' discussions around when various parts of the undergraduate DI training pathways evaluation should be obtained	-	-

Types of Evaluation Data

Participants identified eight categories of data that could be included in an undergraduate DI training pathway evaluation. These categories were based on data they currently collect, data that could be adapted for evaluation purposes, and additional data they recommended collecting. Within the “Administration or Curricular Data” category, participants emphasized the importance of aligning undergraduate DI training pathway evaluations with CEPH evaluation standards, noting that such alignment would be highly beneficial since many were already following those standards.

They also discussed evaluating whether students are attaining competencies, whether courses meet DI educational needs, student retention rates, the retention of high-performing students, and whether students are sitting for and passing the CDI exam. For “Student-Level Data,” participants suggested collecting feedback on the program—such as curriculum quality, level of support, and program structure—through formal surveys, focus groups, interviews, and informal listening sessions, which could take place during the senior practicum. They

also recommended gathering evaluation data at multiple points throughout the training: at the beginning, middle, and end. “Alumni-Level Data” included tracking job placement rates, following up with graduates, and assessing whether alumni remain in their jobs.

A few participants highlighted the value of “Quality Improvement” data to support ongoing program enhancements. In terms of “Internship, Capstone, or Practicum-Level Data,” participants suggested having internship coordinators complete evaluations and collecting student feedback on their practical experiences. “Job-Level Data” involved gathering input from current DI workers and alumni supervisors, while “Employer-Level Data” included general feedback from employers and the possibility of co-developing evaluation tools with them. Lastly, “Faculty-Level Data” included instructors reviewing coursework and engaging in reflective discussions. Participants also recommended general data collection methods such as using open-ended questions in surveys, conducting focus groups, gathering stakeholder feedback, performing internal evaluations, evaluating course and community simulations, and using both formal and informal assessment tools.

Benefit or Value of CDI certification

Within the *Evaluation* domain, the theme “Benefit or Value of the CDI” captured participants’ interest in understanding the tangible advantages of undergraduates obtaining the certification. Although these comments emerged throughout the listening session—not solely during evaluation discussions—they were considered highly relevant to evaluation efforts. As such, we recommend incorporating evaluation components that directly address this concern. Participants raised several key questions, including:

- Do employers offer higher pay to students with the CDI certification?
- Are agencies expanding their capacity as a result of the training?
- Is the certification required or in demand within the industry?
- Does the credential provide a meaningful advantage to students?
- Could it act as a barrier to employment?
- Is it recognized and valued by employers?
- Does it help students stand out in the job market?
- What is the added value of holding both an undergraduate degree and the CDI certification?

While our economic analysis attempts to address some of these questions, many cannot be fully answered until the CDI certification is more fully developed and has been in place long enough to allow for a comprehensive evaluation of its long-term value and impact.

Timing of Evaluation Components

A few participants discussed “Timing of Evaluation Components,” which included participants’ discussions around the points at which various parts of the undergraduate DI training pathway evaluation should be obtained. These participants recommended collecting data after every semester, looking at trends over time, and collecting informal feedback throughout the year. However, we acknowledge the challenge in gathering this amount of evaluation data and the recommendation may need to be tempered by staff implementation capacity. This concern may be offset through collaboration with ASPPH as evaluation plans are constructed.

Pathway Structures

Within the domain *Pathway Structures*, four themes and seven sub-themes were developed. Please see Table 6 for the themes, sub-themes, definitions, and number of listening sessions in which each was mentioned.

Table 6. Pathway Structures Themes, Sub-Themes, and Definitions

Theme	Theme Definition	Sub-Theme	Sub-Theme Definition
Recruitment Considerations (<i>n</i> = 10)	Participants' discussions around recruitment into undergraduate DI training pathways	Current Health or Public Health Students (<i>n</i> = 7)	Recruiting for undergraduate DI training pathways within current health-related or public health students
		Students Uncertain about Their Future Career (<i>n</i> = 7)	Recruiting for undergraduate DI training pathways among students who are uncertain about what they want to do in their future careers.
		General Education or Promotion of DI/CDI credentials (<i>n</i> = 6)	There needs to be general education or promotion of DI/CDI credentials
		General Types of Students (<i>n</i> = 5)	Participants' mentions of various types of students who may benefit from participating in undergraduate DI training pathways
		Recruitment Challenges (<i>n</i> = 5)	Challenges undergraduate institutions may experience when recruiting for undergraduate DI training pathways
		Connections with Current DI or Community (<i>n</i> = 4)	Recruiting for undergraduate DI training pathways among current DI employees or within the community
Supply and Demand (<i>n</i> = 6)	Participants' discussions around DI undergraduate DI training pathway supply and demand	High School Considerations (<i>n</i> = 4)	Recruiting for undergraduate DI training pathways within high schools
		-	-
		-	-
Little or No Certification Promotion (<i>n</i> = 5)	Participants' discussions around the lack of certification promotion within their institution	-	-
CDI Program Funding (<i>n</i> = 4)	Participants' discussions around how the CDI program should be funded	-	-

Recruitment Considerations

Participants shared a wide range of “Recruitment Considerations,” which were organized into seven sub-themes. The first sub-theme focused on recruiting “Current Health or Public Health Students.” Five participants suggested targeting students already interested in health-related fields, noting that public health is often a “discovered field”—one that students learn about through peers or by realizing that their current degree (e.g., nursing, pre-med, exercise science, health education) is not the right fit. Participants proposed that public health programs could promote the undergraduate DI training pathway and CDI credential to these students as a way to better meet their evolving interests. The CDI training could also complement students’ existing education, particularly for those interested in health education or communications. Another sub-theme addressed recruiting “Students Uncertain About Their Future Career.” Since many students transfer into public health from other disciplines, a DI pathway program could help them envision a more defined career path within the broad field of public health, potentially accelerating the career selection process.

Participants also discussed the importance of “General Education or Promotion about Public Health and the CDI.” They noted that the program name itself might attract students. They also noted that COVID-19 and other infectious disease outbreaks of recent years have raised awareness of the public health workforce. This may present an opportunity for undergraduate institutions to further increase awareness of public health among new students during orientation, including the CDI certification. Personalized outreach and highlighting the career opportunities associated with the CDI certification were also recommended. Beyond specific student types, participants identified “General Types of Students” who might be drawn to the program, including those seeking quick entry into the workforce, students personally impacted by public health, student-athletes looking for academic balance, and those planning for a future clinical career. Two participants emphasized the importance of understanding students’ goals, intentions, and career paths to determine whether a DI career would be a good fit.

Additional recruitment strategies recommended included building connections with the communities served by DI or with current DI workers. Two participants specifically recommended recruiting from these communities, although one of them suggested that additional support or alternative pathways might be needed to ensure accessibility for individuals who might not otherwise consider pursuing university education. The final sub-theme, “High School Considerations,” reflected suggestions to recruit directly from high schools to attract younger candidates. Ideas included expanding high school programming and offering dual-credit opportunities. Despite the enthusiasm for recruitment, participants also acknowledged several “Recruitment Challenges.” These included limited involvement in recruitment due to institutional structures, lack of funding, junior-admitting public health programs that restrict students’ time to complete an undergraduate DI training program, and concerns about promoting a program when local health departments may not offer higher pay for CDI-certified workers.

Supply and Demand

A few participants addressed the question of DI “Supply and Demand.” We include a few comments here as the Economic Analysis Section of this report has a more in-depth analysis. One participant explicitly stated that there was a clear need for an undergraduate DI training program and that current DI professionals would like additional training support. Others noted student interest in expanded course offerings and suggested that students might be more drawn to a credential such as the CDI certification compared to credentials such as the CHES. It was also mentioned that graduates are already entering roles in local and state disease surveillance. However, one participant estimated that only about two students per year might pursue CDI certification, highlighting the need to balance interest with realistic expectations for uptake.

Little or No Certification Promotion

Five participants directly stated that they had “Little or No Certification Promotion” within their current programs. Some of the reasons they gave included the fact that the programs do not currently provide student support for external exams, that their program/school CEPH accreditation and student experience is more important to employers than certifications, that they only recommend a certification if the industry requires it, and that students are not interested in certifications.

CDI Funding

Lastly, participants discussed several aspects of “CDI Funding.” One participant suggested that universities/colleges should cover the cost of certification, while others believed that either their program or employers should be responsible for the fee. Another participant proposed that DI pilot schools have students’ exam fees covered by an external organization, such as ASPPH or NBPHE. Several participants noted that limited funding is a barrier and that application fees potentially prevent students from taking the exam. They emphasized that providing financial support for CDI certification could increase student interest. Additionally, one participant raised the idea of offering incentives to undergraduate institutions to encourage students to sit for the CDI exam—an idea further explored in the Economic Analysis section of this report.

Programmatic Considerations

Within the domain *Programmatic Considerations*, seven themes and 16 sub-themes were developed. Please see Table 7 for the themes, sub-themes, definitions, and number of listening sessions in which each was mentioned.

Table 7. Programmatic Considerations Themes, Sub-Themes, and Definitions

Theme	Theme Definition	Sub-Theme	Sub-Theme Definition
Alignment Between Domains and Current Course Offerings (n = 10)	Participants' discussion on how the current course offerings within their programs or institutions align with the six CDI domains	CDI Domain: Collaboration (n = 7)	How current courses align with CDI domain Collaboration
		CDI Domain: Field Services & Outreach Activities (n = 4)	How current courses align with CDI Domain Field Services & Outreach Activities
		CDI Domain: Interviewing & Case Management Activities (n = 7)	How current courses align with CDI Domain Interviewing & Case Management Activities
		CDI Domain: Outbreak Response & Emergency Management (n = 7)	How current courses align with CDI Domain Outbreak Response & Emergency Management
		CDI Domain: Planning & Case Analysis (n = 6)	How current courses align with CDI Domain Planning & Case Analysis
		CDI Domain: Surveillance & Data collection (n = 5)	How current courses align with CDI Domain Surveillance & Data Collection
		Experience Requirement (n = 9)	How current courses align with the DI experience requirement
		General Overlap of Domains and Current Offerings (n = 9)	What current courses generally align with CDI Domains
Course Structures (n = 8)	Participants' discussion on how courses within the undergraduate DI training pathway should be structured	-	-
Programmatic Concerns (n = 7)	Participants programmatic concerns regarding undergraduate DI training pathway	-	-
Career Preparation (n = 6)	Participants' discussion about how the DI training pathway should help prepare undergraduate students for a DI career	-	-

Collaborations (<i>n</i> = 5)	Participants' discussions around various types of collaborations resulting from a potential undergraduate DI training pathway	DI ECHO (<i>n</i> = 5)	Participants' discussions around a potential DI ECHO (modeled after Project ECHO (Extension for Community Healthcare Outcomes), a hub-and-spoke framework used for training and education)
		With DI Field (<i>n</i> = 3)	Institutional connections with the DI field that would benefit undergraduate DI students
		Within Institution (<i>n</i> = 3)	Connections within the institution that would occur because of the DI training program, which would benefit undergraduate DI students
		With Other Institutions (<i>n</i> = 2)	Connections with other institutions that would occur because of the DI training program, which would benefit undergraduate DI students
CDI Support (<i>n</i> = 4)	Participants' discussion on how students should be supported for CDI certification	-	-
Employer Education (<i>n</i> = 3)	Participants' discussions regarding employer education for the undergraduate DI training programs to be successful	-	-

Alignment Between Domains and Current Course Offerings

During the listening sessions, participants discussed how their courses currently align with the “CDI Domains and Current Course Offerings,” the “Work Experience Requirement,” and general overlap with existing curricula. However, many participants were reluctant to confirm alignment due to the lack of finalized domain definitions and competencies. Among those who addressed the “Collaboration” domain, all agreed it was covered to some extent in their courses, often integrated across multiple classes. Some participants noted that “Field Services and Outreach” was covered to some extent, while others reported limited or no coverage. Similarly, responses about “Interviewing and Case Management Activities” varied. Some said it was included, others were unsure, and a few stated it was not covered at all. The “Outbreak Response and Emergency Management” domain also received mixed feedback, with some participants indicating partial coverage, others uncertain, and some reporting no content in this area. “Planning and Case Analysis” was mentioned less frequently, with most participants saying coverage was limited or minimal. Those who reported including “Outbreak Response and Emergency Management” were also more likely to cover “Surveillance and Data Collection,” particularly in programs with an epidemiology focus. All participants indicated that some form of student “Experience” was available, though the structure, requirements, and placement sites varied widely—from a 50-hour volunteer practicum to a 140-hour required internship. Experience sites included local health departments, non-profits, hospitals, and state health agencies. However, few programs required an experience component, and six participants expressed strong concerns about this requirement. These concerns included difficulties securing host sites, challenges in establishing contracts, lack of paid opportunities, and issues related to privacy and safety when placing students in health departments due to the sensitive nature of DI work.

Though unavailable at the time of all listening sessions, recent clarifications surrounding the 2,080-hour work experience requirement indicate a degree of flexibility, which may address some of these concerns. Specifically, certain volunteer and work opportunities may qualify as experience hours and may be obtained through new and existing relationships between CDI applicants and their communities. These details indicate that some students may accrue enough hours of experience prior to graduating to qualify them to take the exam within their first year of post-graduation employment. Despite uncertainty about the extent of alignment with the six CDI domains, nine participants reported at least some “General Overlap of Domains and Current Offerings.” Some felt the domains fitted well within epidemiology courses, while others noted alignment through electives.

Course Structures

Some participant suggestions regarding “Course Structures” included building the undergraduate DI training pathway and CDI certification into specific tracks (e.g., epidemiology), creating elective or special topics courses as needed, and using case-based learning. A few participants also recommended a cohort model and keeping the cohorts small.

Programmatic Concerns

Although participants described overlap between the six CDI domains and their current course content, many expressed broader “Programmatic Concerns” about implementing a DI training pathway within undergraduate education. While most agreed that elements of the domains were present in curricula, several recognized existing gaps and emphasized the need to revise or strengthen certain courses to ensure full alignment with the domains. Additional concerns included how well the domains aligned with CEPH accreditation requirements, whether the domains were appropriate and feasible for undergraduate-level public health programs, and the need for flexibility given the diversity of institutional structures and

resources. ASPPH has said that, as programs are developed, it may be able to partner with participating undergraduate institutions that are implementing DI educational pathway programming to assist with visualization of the mapping of CDI domains and CEPH accreditation requirements against course content to ensure alignment. Participants also noted that some students may require additional academic or support services to engage with the training.

Career Preparation

Regardless of the specific content or structure of the undergraduate DI training pathway, many participants emphasized the importance of ensuring it is centered on “Career Preparation.” They expressed a need for courses to prepare students to pass the CDI exam and succeed in DI roles, as well as to help students develop a strong professional identity, foster a community-minded perspective, and offer meaningful professional development opportunities. Additionally, participants highlighted the importance of designing the experiential component to closely resemble the responsibilities and activities of an actual DI position.

Collaborations

While discussing DI programmatic considerations, many participants highlighted opportunities for collaboration. These can be grouped into four main types:

- Creating a “DI ECHO,” modeled after Project ECHO, a hub-and-spoke framework used globally for training and education. Currently, one DI ECHO is being used at the University of Montana. Participants envisioned a student-focused DI ECHO that could address content gaps, support CDI exam preparation, and foster connections among DI students nationwide. Those who discussed the idea responded positively, noting its potential to build professional identity, enhance job readiness, and offer flexible training options. Suggestions included involving the CDC and current DI professionals, engaging smaller and junior colleges, and integrating participation into students’ practicum or internship experiences.
- Forming partnerships “With [the] DI Field,” such as creating clear pathways from internships to employment, developing field-based learning opportunities, and working with DI subject matter experts on curriculum content.
- Collaborating “With Other Institutions,” including the idea of creating a shared course catalog to help students prepare for the CDI exam and identifying institutions such as Emory-Piedmont that could support others in integrating DI modules into existing courses. The [Emory-Piedmont](#) project is a national faculty development and curricula development framework that offers guidance to other institutions wanting to adapt concepts for their own programs.
- Collaborating “Within Institutions,” such as partnering with other departments to strengthen DI-related content, connecting students across campus who are interested in the CDI certification, and incorporating CDI information into syllabi, course listings, and advising materials.

CDI Support

A few participants discussed various “CDI Supports” that students would need to enable them to sit for the exam. These included exam preparation materials, having faculty supporting students, creating supplemental course work for exam preparation, and having funding for students to sit for the exam.

Employer Education

For the CDI program to be successful, some participants highlighted the need for “Employer Education” since employers either do not understand Bachelors Public Health students or underestimate these students. They suggested that ASTHO and NACCHO could help with these endeavors and create standardized materials to help employers understand DI, CDI, and public health programs in general.

Economic Analysis Results

EQ1a. Supply: What resources are available within institutions that could help create and sustain a CDI pathway? What funding streams might be used for this?

When conceptualizing supply for this economic analysis, we considered current resources within educational institutions that could sustain a pathway to DI professional roles for their students. As stated in the Environmental Scan sections of this report, we found no evidence of DI-specific undergraduate programming (i.e., schools offering a major, minor, certificates, or other formal instruction in DI skills targeting undergraduate students.) We did identify school and public agency-affiliated resources for DI training that schools could potentially incorporate into future pathways and presented those in previous report sections.

The table below presents these sub-themes as general types of resources that were mentioned in listening sessions. As corroborated in the listening session analysis, the fact that schools had curricula at least partially overlapping with DI skills was noted by all but three of the 11 institutions participating in the sessions. Table 6 of the listening session analysis further analyzes this data, showing how instances of some of these resources shared by participants may correspond with CDI domains. There were three instances of listening session participants explicitly mentioning that faculty, school infrastructure (in this instance, physical space for instruction,) and interest among current students in DI-relevant training. Finally, two institutions mentioned current relationships with potential employers that might help sustain a DI pathway in the future. These modest accounts of schools’ potential readiness to institute DI pathways may indicate a need for further development of resources prior to instituting pathway pilots or similar efforts. However, they could also reflect a general lack of understanding of what resources might fall into the supply definition presented. Resource mapping—including but not limited to curricula mapping as described by Mase, Hansen, Smallwood, Shah, Peden, Mulherin and Bender⁵ and as shown in Appendix C—might be a useful exercise for educational institutions interested in pursuing DI pathway implementation.

Table 8. Supply at Undergraduate Institutions

Definition	Sub-theme	Institutions discussing	Instances of discussion
Participants described resources falling into subtheme categories currently present at their institution <i>available to undergraduate students</i> that could contribute or otherwise relate to DI pathways	Curricula overlap with DI skills	8	18
	Faculty	1	3
	Infrastructure	1	1
	Student availability/ interest	1	1
	Relationships with employers	2	3

EQ1b. Demand: What interest do institutions have in implementing or developing a CDI pipeline?

For listening session analyses, comments in notes relevant to demand were coded then sorted into three sub-themes. The most frequently cited demand concept related to schools showing interest in career-focused pathways that could help students find jobs post-graduation. As noted in additional sections of this report, public health is a broad field, and some institutions (n=3) showed enthusiasm for DI pathways that could help students find a specific niche for their public health career path.

Discussion of how students choose to pursue the public health-relevant certificates currently available at institutions comprised another sub-theme relevant to demand. One institutional representative reported that while the institution's students do not pursue CHES certification, CDI certification may be more feasible. Only two institutions said that students are encouraged to pursue CHES or similar certifications while eight institutions said that undergraduate students do not pursue such certifications. In total, three participants said they wanted to know more about how CDI certification would be perceived among their students' future employers. While these certificates may have few similarities to undergraduate DI training pathway content, both demand and lack of interest in promoting another type of certificate to students may point to the specific types of schools to which the CDI certification might be most effectively promoted. A potential limitation of this interpretation is that while facilitators prompted participants to consider CEPH certification as similar to CDI certification, participants may have considered other, less similar certifications (e.g., Six Sigma certification, CHW certification, certificates related to data analysis) in their responses when assessing how current students view extra certifications. Further, previous research has suggested that faculty may lack a clear understanding of CHES, MCHES, and CPH certifications and the value they would bring to undergraduates interested in public health.³³

Participants said they wanted to know more about CDI certification and how this might fit into future career pathways for undergraduates interested in public health careers. They also wanted to know how such pathways might be implemented in their institutions. From the notes, it was difficult to assess whether this was due to participants' unfamiliarity with their institutions' processes for developing career pathways generally or to their limited understanding of DI pathways. When considered alongside schools' view that demand is relevant in linking students to future employers, this concern underscores the fact that, when deciding wheth-

er or not to invest in implementing a DI educational pathway, schools want to see a clear connection between those pathways and students’ future employability. A future challenge lies in determining whether employers will find sufficient value in CDI certification to sponsor DI training for current and future employees, whether they will give preference to job candidates with DI training or willingness to seek it, and whether they will pay higher salaries to those with CDI certification. “Selling” value of certification will likely require a dual approach of educating faculty to generate a greater supply of CDI (or CDI-interested) graduates and educating employers on the value of this training. Even if these efforts are successful, however, economic uncertainties will likely affect hiring and sustainability of roles for all DI roles, regardless of certification status. DI retention is already a challenge for the workforce—as Becher et al reported in their 2023 findings—which may create significant challenges for DI training promotion.⁹ The CDI program may help to address this.

In the listening sessions, fewer participants saw a need for implementing DI pathways than those who believed supply could facilitate pathway development. This reinforces the fact that undergraduate institutions are concerned about demand and supply when considering whether or not to invest in implementing these pathways. It also suggests that additional CDI program information would support institutions with this decision.

Table 9. Demand at Undergraduate Institutions

Sub-theme	Additional detail	Institutions discussing	Instances of discussion
Connecting students to jobs	Participants discussed desire for pathways that would connect students to employment	3	5
Public Health Certifications	Students show interest in certificates, certification is encouraged	2	2
	No or few students show interest in certificates; certification not supported	8	12
Requiring additional information	In relation to future employers’ perceptions of CDI certification	3	4

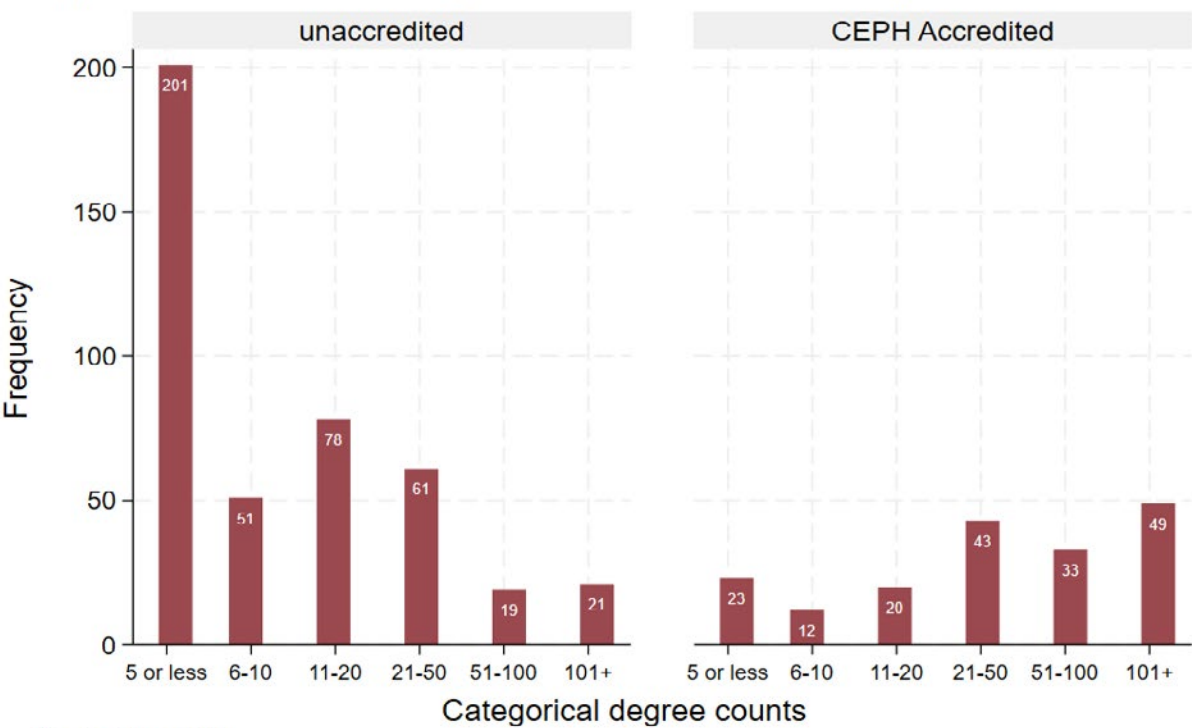
In analyzing the IPEDS data, which tracks 2023 undergraduate degrees conferred, we found that 611 institutions offered majors in areas aligned with the field of public health. Among these schools, 522 had at least one graduate with a public health major in 2023. Almost 24,000 public health degrees were conferred, with nearly half falling into the sub-category of general public health.

Since accreditation may help determine students’ exposure to specific public health curricula and educational institutions’ capacity to institute structural changes to their programs, we assessed data on institutions’ CEPH accreditation and their number of public health graduates in 2023. In what was the largest of all groups, 201 of the institutions reporting five or fewer graduates were unaccredited. Among schools with 100 or more public health graduates, 21 were unaccredited and 49 were accredited. Among the schools with 51-100 graduates, 19 were unaccredited and 33 were accredited.

It is challenging to determine the skills undergraduates might learn in their programs and how this might translate to interest or fit for DI roles and CDI certification, especially among unaccredited programs. However, it is reasonable to infer that some graduates in specific subcategories of public health would be less likely to pursue the CDI certification than others. For example, a nutrition or biostatistics major might be less likely to pursue a DI job than someone majoring in general public health or behavioral health. Despite the limitations

of this data, totals may still be close to estimating the total marketable audience for undergraduate DI training pathways since some relevant majors would not be represented in these data (e.g., social work, counseling.)

Figure 6. Distribution of Public Health Degree Conferring Undergraduate Institutions by Count, 2023



EQ1C. Sustainability: What funding streams might be used to establish and maintain these pathways?

Within the Environmental Scan data, no formal literature documented sources for potential funding streams. The gray literature yielded limited results as well. This validated prior coding decisions to treat anything from the notes taken in the listening sessions as potentially informative sustainability data. We categorized the notes associated with sustainability into broad sub-themes of facilitators and barriers to pathway sustainability.

The most frequently mentioned potential facilitator was the willingness to use external resources, such as existing online materials that could provide content to interested students. Two institutions described how a DI pathway might be integrated into current programming. Six participants described funding streams that might support such pathways including alumni donations and grant funding, although participants said these were less available today than in the past. Participants cited more barriers to sustainability than facilitators. Only one participant directly said their institution had no current streams of funding that could align with supporting a DI pathway. Two participants described challenges in partnering with potential employers and in securing internships needed for DI pathways. This could relate to the institutions' locations, since those in less populated areas or based further from public agencies can find maintaining connections with agencies logistically challenging. Meanwhile, schools with lower overall capacity to manage student internships and other employment opportunities may be unable to engage in these types of partnerships even if agencies are willing and able to support these activities. Overall, listening session participants said that their institution's capacity to sustain a DI pathway was limited. As with our environmental scan findings, this suggests limited capacity is a key challenge to sustaining DI pathways, even when institutions have potential interest or overall

fit with existing resources. Alternatively, it could suggest limited awareness of both potential resources to sustain these pathways and potential barriers to sustainability.

Table 10. Sustainability

Sub-theme	Additional detail	Institutions discussing	Instances of discussion
Facilitators	Willingness to use external resources	5	9
	Availability of relevant funds in the past	4	5
	Availability of relevant funds currently	2	2
	Existing partnerships	2	2
	Participants expressed seeing opportunities to integrate into existing programs	2	3
Barriers	Limited capacity to expand current partnerships with employers	2	2
	No existing funding streams	1	1
	Limited capacity to accommodate internship programs	2	2

EQ2a. Benefits: What are the potential benefits? What factors might encourage students to pursue this path?

In terms of benefits to students of implementing DI pathways, we coded for three sub-themes within the general benefit theme: attractiveness to employers, the provision of additional work experience, and alignment with career path. Only one institution’s representative mentioned that DI training pathways could enhance students’ marketability to employers, but four mentioned that the additional work experience required for CDI preparation might be helpful when job searching. Examples of potential benefits cited by participants indicated the existence of student demand for and readiness to gain professionally-applicable skills through academic curricula and especially through hands-on experience that might expose them more broadly to public health career pathways.

Among the 11 institutions whose representatives we spoke with, four reported across eight instances that DI curricula would match current students’ desired career paths; in contrast, six institutions across 13 instances said that DI career paths might not align with the types of roles current students pursue. Many participants from larger, CEPH-accredited institutions said students were more interested in pursuing graduate or professional school training either immediately after or within a few years of graduation and that this would not necessarily align with DI roles or CDI content. Data relating to the percentage of students entering graduate programs directly from CEPH-accredited undergraduate programs were not available at the time of analysis. Future promotion of the CDI certification and development of DI pathways should clarify assumptions about relative alignment with student career goals.

Table 11. Benefits

Sub-theme	Additional detail	Institutions discussing	Instances of discussion
Attractiveness to employers		1	1
Providing additional work experience		4	4
Career path alignment	DI pathways would align with career paths	4	8
	DI pathways would not align with career paths	6	13

EQ2b. Costs: What are the potential costs of this pathway for students? What factors might detract from students pursuing this path?

Two sub-themes relevant to student costs emerged from the listening sessions. Four participants expressed concerns that the costs associated with the CDI exams might deter students who are interested in pursuing this path but have limited financial resources. As noted in the listening session reports, participants expressed interest in educational institutions or employers potentially taking on exam costs on behalf of students interested in CDI paths. One participant expressed concern that use of online materials to deliver DI curricula could be poorly received by students who experienced long periods of exclusively online instruction during COVID-19 quarantine periods.

Few findings for this theme likely reflect the fact that participants were not directly asked about this topic. However, because participants shared these thoughts organically, they may underscore the need to consider these factors, at least within the institutions that shared these concerns. The limited number of themes that emerged could also relate to low levels of knowledge about DI as a career path more generally.

Table 12. Costs

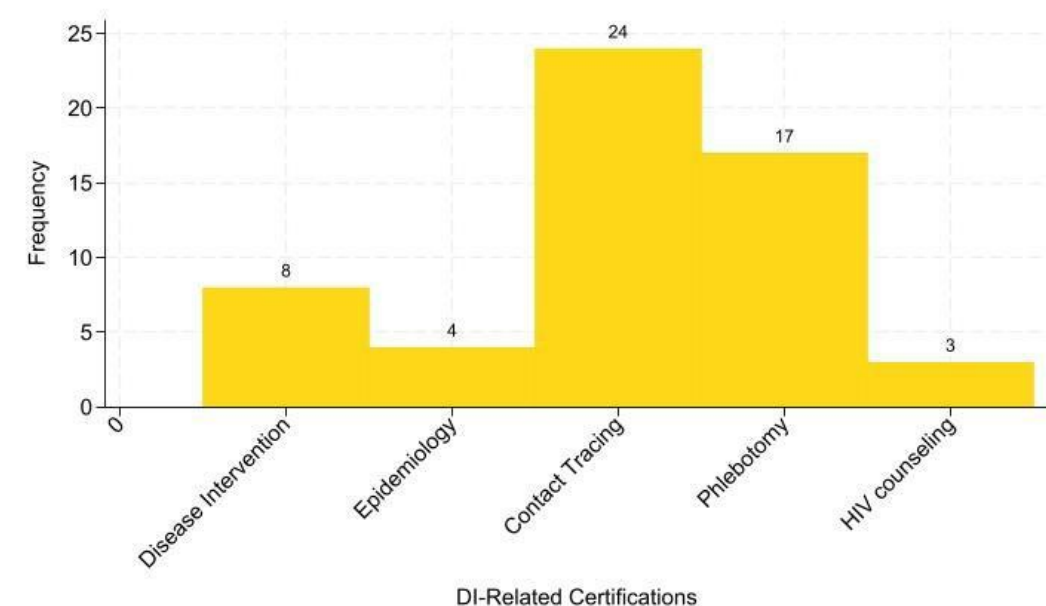
Sub-theme	Institutions discussing	Instances of discussion
Misalignment with pedagogical preferences	1	2
Exam costs	4	6

These concerns represent tangible upfront costs faced by undergraduate students pursuing a DI pathway.

EQ2C. How does CDI certification or relevant additional training benefit current DI professionals?

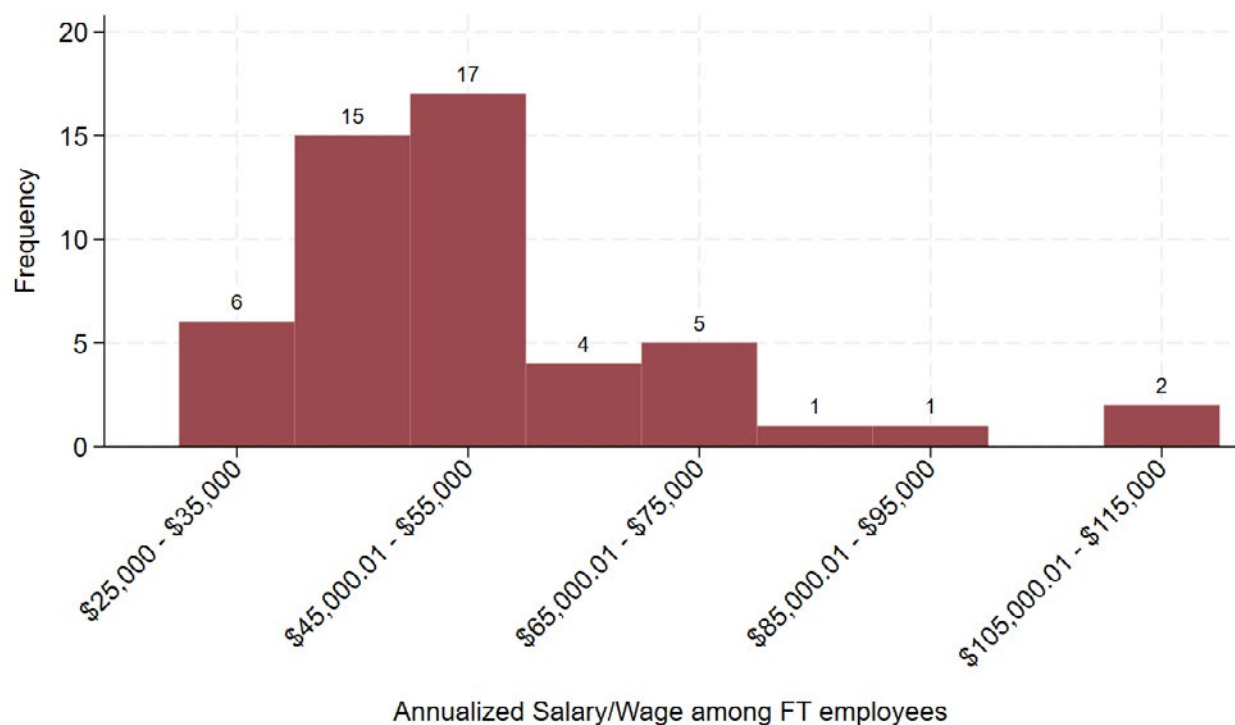
In reviewing the 2021 PH WINS certificate data, we found that a limited number of participants reported having a certification relevant to DI skills (n=56.) The distribution of these types of certificates is shown in the figure below. Of note, only eight participants reported having DI-specific training. Three times as many professionals reported having a contact tracing certification, which likely reflects the growth of this type of training in response to COVID-related needs and associated funding for these roles. While skills related to certifications in contact tracing, epidemiology, phlebotomy, and HIV counseling may not fully overlap with DI competencies, some crossover in job tasks is likely. This may indicate that employers value these skills, although the data related to the salaries of these individuals suggests that these roles are not highly paid.

Figure 7. PH WINS 2021 Other Certifications Relevant to DI (N=56)



Among the 56 individuals reporting these certifications, only eight (14.3%) reported receiving an annual salary, while 48 (85.7%) reported receiving an hourly wage. Annualized combined salary and wage distribution for these workers is shown in the figure below.

Figure 8. DI-Relevant Certified Worker Salaries PH WINS 2021 (N=56)



Most of the 56 participants who reported having one of the DI-relevant certificates discussed above reported their annualized wage data to PH WINS. Among the 51 participants who reported their wages, 75.4% reported making \$55,000 or less annually. In contrast, the latest data from the U.S. Bureau of Labor Statistics shows that a full-time worker in the US earns aged over 25 with a bachelor's degree earns a median annualized salary of approximately \$80,000.³⁴ This data is reflective of a broad spectrum of public and private sector fields, including those that have historically had higher salaries at entry level (e.g., finance, technology) while others have had lower starting salaries (e.g., government, non-profits.) Those pursuing public health professions may expect to earn wages in closer alignment with historically lower-paying sectors. The average public health undergraduate salary among graduates of ASPPH member schools and programs was \$50,000 in 2023, an increase from the 2019–2022 average of \$46,356 (ASPPH, Institutional Reporting dataset, data provided September 25, 2025).

While the small sample size precluded meaningful inferential statistical analyses of these data, the descriptive data presented provide insight into some of the potential barriers to introducing DI pathways at the undergraduate level. Two key takeaways are reflected in this data. First, relatively few current public health workers hold public health relevant certifications that may compare to the CDI certification. The CDI certification is also intended to address a specific profession, which contrasts with other certifications analyzed in these data. Second, current public health workers with certifications related to DI skills frequently work for relatively low hourly wages. These and similar findings were supported by the results of the Environmental Scan, including the Environmental Scan's Lightcast report for Disease Intervention Specialist jobs posted between September 2020 and March 2024, along with the results of an additional Lightcast report. This second Lightcast report (Lightcast Report 2) built on DI-relevant job titles set out in a 2017 PHAB report that ASPPH shared with the authors of this report and provides additional insight into jobs requiring skills that overlap with CDI content areas.

Table 13: Lightcast Search Terms

Job Title Search Terms	2017 PHAB Report	Lightcast Report 1 (September 2020 - March 2024, Environmental Scan Report)	Lightcast Report 2 (April 2024- April 2025, Economic Analysis Report)
Disease Intervention Specialist	x	x	x
Communicable Disease Investigator	x		x
Disease Control Investigator	x		
Disease Prevention Specialist	x		x
HIV/STD Counselor	x		
HIV Prevention Specialist			x
HIV Testing Counselor			x
HIV/STD Program Manager	x		
Linkage to Care Coordinator	x		
Public Health Advisor	x		x
Public Health Associate	x		x
Public Health Inspector	x		x
Public Health Program Representative	x		
STD Health Navigator	x		
Testing and Referral Coordinator	x		x
Testing Coordinator			x

In Lightcast Report 1, which looked at only DIS roles, the median advertised wage for advertised DI roles was \$25.91 per hour, which would yield an annualized salary of approximately \$53,900. In this earlier report, trends in job listings over time show peak demand during the COVID-19 pandemic, with otherwise limited growth. A negative trend in advertised salaries emerged in this search, with the median salary falling 8.9% from September 2020 to March 2024. While a bachelor's degree was listed as a minimum educational requirement for over half these listings, nearly half listed three or fewer years of professional experiences as a requirement.

With the expanded job title search terms, Lightcast Report 2 yielded a total of 1,952 unique job postings among 530 employers within the past year. This averages to approximately 163 active roles per month from April 2024 to April 2025. This provides a more optimistic view of demand for CDI-relevant skills than found in Lightcast Report 1's findings of only six DIS-specific job listings for the month of March 2025. The median advertised salary for DIS and related jobs in 2025 was \$61,600, according to Lightcast Report 2. This is a nearly \$8,000 per year increase compared to DIS jobs alone. Further, DI and DI-adjacent roles often require employees to use their own personal vehicle to complete job duties, which would further reduce their wages.

Educational and experiential requirements for DI-adjacent jobs are similar to those for DIS only. Approximately 25% of all jobs listed in Report 2 had no educational requirement listed, which may indicate that these jobs would be suitable for those with limited educational training. Among those with educational requirements, 54% required a bachelor's degree. An additional 24% listed a high school or GED credential (a high school equivalency diploma), while 26% required an associate's degree. With respect to job experience, only 22% of Report 2 jobs required four or more years of work experience. In combination, this suggests that many of these jobs are entry-level and may not expect specialized educational backgrounds from applicants.

Required skills for DIS and DI-related jobs summarized respectively in Reports 1 and 2 looked similar, as shown in figures 9 and 10 below. Specifically, public health is still the most frequently listed specialized skill listed in Report 2, followed by communicable diseases. While the DIS-only search yielded Sexually Transmitted Diseases as the third most commonly listed skill, prevention of HIV/AIDS was the third most common skill in the broader search. Other overlap among the top 20 skills in the broader searches and top 10 skills reported in the DIS-alone search included: biology, phlebotomy, social work, case management, and epidemiology. This indicates a potential overlap with the DI job task analysis and CDI competencies. However, in their respective top 10 skills, the broader search did yield the skills of reproductive health care and pharmaceuticals while excluding the DIS-only report's tenth most common skill of infection control.

Figure 9: Report 1 (DIS-alone) Skills Summary

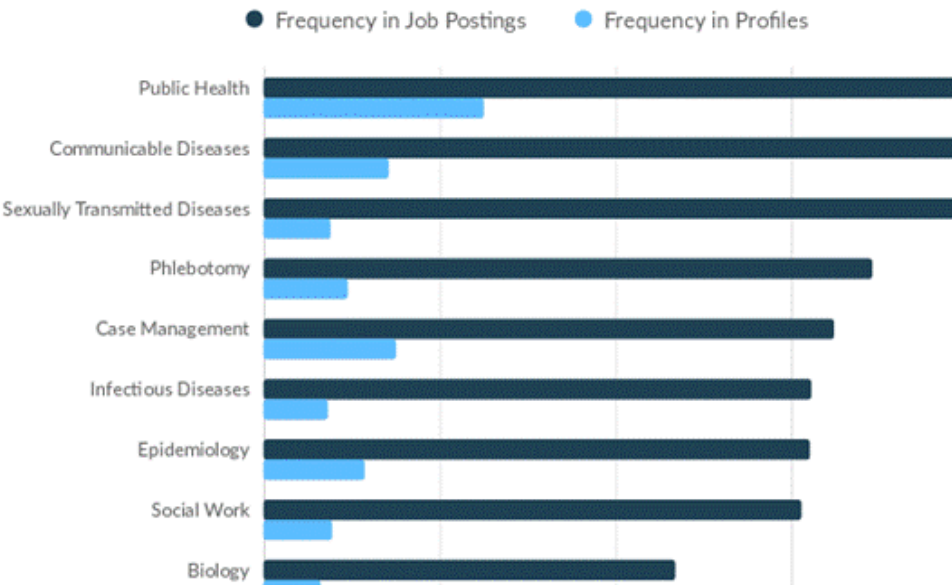
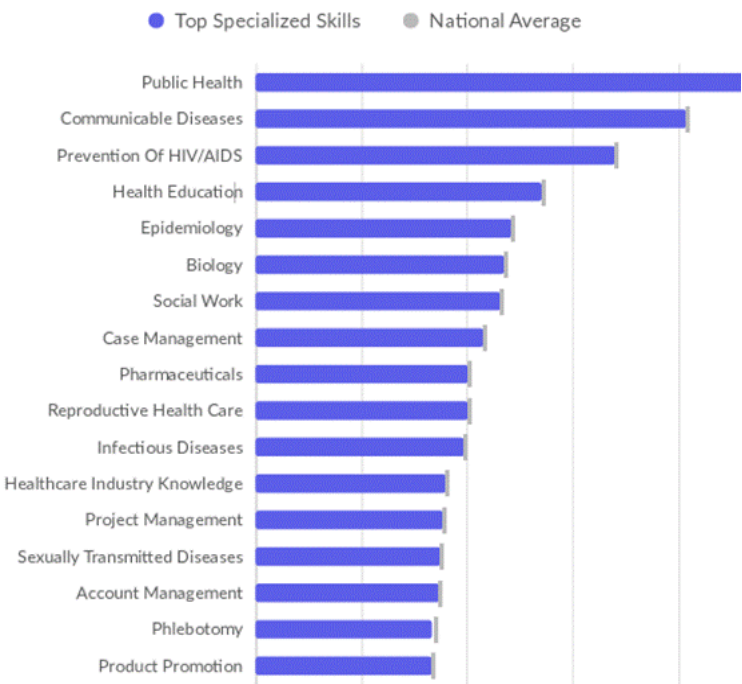


Figure 10: Report 2 (DIS-related jobs) Skills Summary



Potential limitations in these reports include a risk of either underestimating or overestimating the range of CDI-relevant job availability. For example, especially in the DIS-only reports, as the 2017 PHAB report suggests, there are several titles that vary by location and industry that may describe job duties associated with the DI field; search terms were unlikely to be comprehensive given the age of the report and evolving nature of the role beyond the initial COVID-19 pandemic. Alternatively, reports might overestimate available roles, especially in the broader search, since some of the job titles used could apply to professionals working outside the DI sector in part or all of their job duties. For example, Lightcast Report 2 yielded 41 jobs with the SOC code for sales managers and 51 for registered nurses; while these SOC codes could have some overlap with DI job tasks, it seems unlikely that a majority of the time of these professionals would be spent on the same tasks as someone hired under a DIS-specific job title. This potential mismatch also underscores the issue of DIS lacking a specific SOC code. Until a DIS-specific SOC code is adopted, researchers seeking to understand DIS job markets may mitigate these over- and underestimation risks by searching by job function rather than title.

Altogether, findings related to how DI training pathways might affect career trajectories highlight the potential mismatch between the career goals of those graduating from four-year degree programs and existing DI roles. One response to this could be promoting CDI certification among future workers and employers to raise awareness of the value of the skills it represents. However, increased awareness may not help overcome existing barriers to hiring and retaining DI professionals, especially in this period of general economic and political uncertainty in public health.

A more directly informative analysis might involve identifying workers looking to hire and work with entry-level workers completing DI tasks and interviewing them. These listening sessions could help future researchers understand whether and how additional education (including bachelor's degrees and/or CDI certification) might influence hiring, compensation, and retention within agencies. Appendix E presents questions that could be asked of current public health agency workers to better understand their perspectives on the potential costs and benefits of DI pathways for undergraduate students who may be future employees.

Discussion

Further Economic Research

One way to increase understanding of the costs and benefits of entry-level DI pathways among public health agencies would be to collect and analyze additional primary qualitative data from agency representatives who work with individuals in these roles, or have done so in the past. Since these individuals have direct knowledge of working with current DI workers, they would have valuable insights into how dedicated career pathways for undergraduate students might influence their work. Listening sessions with representatives from agencies that are planning to hire entry level DI professionals in the future may also provide valuable insights into the sustainability plan for these roles. Appendix E presents a list of potential questions to pose to such listening session participants that would allow them to share their perspectives on the shorter and longer-term effects of potential CDI pathways.

Further analyses of the data collected for the economic analysis part of this report might inform additional questions, especially if supplemented with additional primary data. For example, data from listening sessions could be further analyzed in stratified groups to understand how factors such as school size, region, and student demographics might influence institutional demand and supply for pathways. This could identify institutions that are well-positioned to promote CDI certification to their students.

Further analyses of the secondary data sources such as PH WINS and other components of the IPEDS data used in the economic analyses might reveal insights into the student side of costs and benefits. Specifically, expanding PH WINS analyses to include data from previous and future rounds of PH WINS could enable comparison of trends in certification and salaries over time. The IPEDS data could be further explored to include graduation and retention rates of students in majors outside the public-health-relevant CIP codes analyzed here, which may correspond to career interests outside public health that align with DI skills (e.g., social work, criminal justice and legal studies.)

Existing data from higher education institutions interested in understanding their readiness for DI pathways might be collected using methods parallel to those of Mase et al. 2018. As described in the economic analysis results and illustrated preliminarily in Table 2 in the economic analysis, this type of scan could be conducted to understand how closely current curricula align with DI domains. Once data are collected, further descriptive studies could be conducted.

Considerations

There are very few open DI positions in the US. Unless employers begin signaling that they will hire more DI professionals, there may be a shortfall of graduates aiming to secure these roles, especially if employer demand for these roles increases as a result of additional promotion of CDI certification and new potential pathways.

The salary for DI workers may be too low for most students graduating with an undergraduate degree. The CDI program aims to close this salary gap, but low public health salaries remain a recruitment and retention barrier since most undergraduate students in fields related to public health hold loan debt that would likely prove financially burdensome if they accepted DI roles, particularly given current salary levels.³⁵

Our environmental scan, economic analysis, and listening session findings did not indicate that undergrad-

uate institutions are aware that public health agencies have demonstrated demand for the CDI certification. While our results did not indicate that employers would recognize the additional credential as a valuable asset among candidates or current employees, internal reporting of past ASPPH findings add context that signal potential employer demand.³⁵ These findings may mitigate some of the apprehension expressed in listening sessions.

Finding ways for undergraduates to get direct DI experience is a concern, given the many privacy and safety rules. For example, rules may prohibit taking unpaid, uncertified volunteers (who are not formally employed by the health department) to meetings with individuals who are being asked about their sexual experiences and other sensitive topics. Programs establishing DI pathways may receive additional guidance regarding work experiences pending CDC approval.

The education requirement of 2,080 hours is hard for most full-time undergraduate students to complete during their degree training. In the listening session, all participants who were representatives of educational institutions expressed significant doubts that any student could complete the 2,080 experience hours before graduating, especially if done as part of an unpaid internship. Work experience may need to be completed after graduation, with students sitting for the exam in their first year on the job.

This requirement could also place an undue burden on agencies, which already have limited opportunities to compensate students financially for their time, to provide adequate supervision, and to offer them meaningful and work that is both skill-appropriate and challenging. Some agencies may be able to adopt promising strategies to encourage public health careers akin to Baltimore City's Public Health Leadership Academy, which supports students interested in CDI certification. Other concerns emerging from the literature, the review of Lightcast data, and subsequent discussions among the project team suggest that longer-term costs for students should also be considered. Considerations include:

- The opportunity cost of pursuing highly specialized training or internships (i.e., students' experiences in DI-related work and/or CDI preparation may not translate well to other types of roles, or may require "selling" as valuable skills to certain employers)
- The fact that skills may not translate well to more advanced jobs (e.g., supervisory or managerial roles) or across content areas
- The fact that the CDI certification may not appeal to a wide range of employers and may depend on employer knowledge of the training content and the requirements of acquiring this certification
- The opportunity cost of pursuing DI careers (as noted in the Lightcast data, many roles are not well paid, especially initially, which may limit student's ability to repay student loan debt and to begin saving for retirement)
- The fact that the CDI certification is currently only available to US citizens or lawful permanent residents residing in the US, US territories, or on a US military installation may limit the geographic diversity of new grads.
- The limited growth opportunities and number of people wanting to leave the profession⁹ (this may not set the foundation for a long-term career that college grads may want to pursue)

Recommendations

This section presents recommendations supported by the findings presented throughout the Listening Session, Environmental Scan, and Economic Analyses. Recommendations are organized in five broad topics:

1. Creating marketing and recruitment materials for undergraduate institutions
2. Helping undergraduate institutions to create supplemental DI content for existing undergraduate classes
3. Helping undergraduate institutions to build out opportunities for work experience and/or internships
4. Helping undergraduate institutions to develop an evaluation plan
5. Working with employers to increase the value of the CDI certification

Create marketing and recruitment materials for undergraduate institutions:

The listening sessions provided evidence to support a variety of strategies for engaging students in DI pathways. Suggestions ranged from beginning the recruitment process in K-12 settings to promoting CDI courses within university settings. The following recommendations are built from this feedback.

- Provide materials to help schools introduce DI training pathways and the CDI within new student orientations, among prospective high school students, and to current students whose background or interests may align with DI (e.g., public health, health education, community health, nursing, CHW, health promotion).
- Materials should cover topics that include the following: what is a DI, what does a DI job look like, where does a DI work, what is the CDI certification, what are its benefits, how are students supported while studying for the certification.
- Work with schools in areas of high need for DI, which can help identify the students well positioned to serve their communities.
- Study job demand through job postings and conversations with local health departments to identify regions most in need of DI workforce expansion.
- Seek crossover opportunities to promote CDI certification. The environmental scan and listening sessions highlighted some overlap between the DI pathway and coursework beyond an undergraduate public health concentration. Student interest in CDI certification may reside in other areas of study that require relevant skills (e.g., social work, criminal justice). Program directors can be engaged in promoting the CDI to these students. Include information on DI training pathways and CDI certification in course descriptions, syllabi, advising sheets, and alongside available other institutional concentrations (e.g., minors, concentrations). Websites could capture the attention of

prospective students by presenting program information.

- Ensure that affordability does not create a barrier to students sitting for the CDI exam. Schools can also recruit prospective students from the communities that DI serve. Limiting barriers to certification is critical for these students.
- Foster collaboration among university offices that are responsible for student engagement, student outreach, and scholarship advancement, which may provide crucial support through pathway marketing and promotion.

Help Undergraduate Institutions supplement DI content within existing undergraduate classes

All listening session participants said they would need to at least supplement or revamp their existing undergraduate coursework to fully prepare students for CDI certification. The following recommendations are based on this insight.

- Provide funding to schools to support DI training pathways (e.g., revamping of courses, course creation, faculty supporting students preparing for CDI certification) and to help students prepare for and take the CDI exam. Where gaps in institutional funding exist, outside sources noted in the environmental scan could be explored.
- Provide clear definitions of the CDI domains and associated competencies. Assist schools with alignment of existing curriculum.
- Provide schools with accessible tools (e.g., videos, infographics, step-by-step Excel tools) to compare their existing courses to the CDI domains to identify gaps and understand which courses need to be added to or created to fulfill the requirements for their students to sit for the CDI exam.
- Provide technical assistance to help schools ensure their DI training pathway prepares students for a DI career. This technical assistance could be similar to CEPH technical assistance with online trainings/webinars.
- Encourage schools to collaborate within their institution and with other institutions to fill any competency gaps. This could be done through a DI ECHO where students could connect across the US and prepare for CDI certification. Alternatively, institutions could collaborate to create a list of available DI courses and allow students to fill curricula gaps by cross-registering for these courses at different institutions.

Help Undergraduate Institutions build out opportunities for work experience and/or internships

While listening session participants agreed that DI experience was important for the position, they were all concerned about how they would implement current CDI experience requirements (i.e., one full year equaling 2,080 hours). The following recommendations are based on these concerns.

- Provide clear examples to undergraduate institutions of what will count towards the experiential requirement of the certification and how students may be meeting these requirements without even realizing it (e.g., working as a contract tracer).
- Work with DI employers to identify ways in which students can gain experience while remaining HIPAA compliant and safe.
- Create easy-to-use validation and experience credit approval processes, including identifying individuals who can confirm that the experience hours count and can certify these hours.
- Help institutions to create processes that allow students to complete required hours before graduation.
- Provide technical assistance to institutions that need to develop relationships with internship host sites. This could include creating memorandum of understanding templates, helping institutions connect with potential host sites, and forming hosting learning collaboratives where institutions can connect with each other and work through shared challenges.

Help undergraduate institutions to develop an evaluation plan

ASPPH and schools should periodically collect various data to evaluate whether DI training pathways and CDI certification is benefiting undergraduate students. For example, whether employers are paying more to recruit CDI-certified students, whether agencies are increasing their capacity as a result of the training, whether industry is requiring the certification, whether there is demand for the certification, whether the credential is an employment barrier, whether the certification is recognized by employers, or whether the CDI certification helps students stand out in the job market. ASPPH works with member institutions each fall to collect valuable student, graduate, and financial data, and may be able to partner with programs that are implementing DI pathways to streamline evaluation data collection. Rapid-cycle improvement processes should be conducted to respond flexibly to the needs of students and employers. Consider aligning the DI training pathway evaluation with CEPH accreditation. Because maintaining the CEPH accreditation framework is resource intensive, this may help accredited schools save time and resources. CPHS is creating an evaluation plan in the second half of this project and will use the following recommendations to shape this plan.

Types of evaluation data collected could include:

- Administration data
 - DI student retention rates
 - Student CDI exam performance
 - Recruitment data to understand whether incoming students are representative of the communities they are serving
- Course data
 - Pre- and post-course assessment of whether student knowledge and skills are in alignment with CDI domains and competencies
 - End of semester course feedback
 - Capstone/Practicum/Internship evaluation to understand if the experience prepares students for the DI workforce
- Alumni data

- Current career information (e.g., salary, location, duties, job title)
- Notes from interviews and focus groups to understand how the program affected participants' careers and current positions and what is missing within the DI training pathway programming
- Employer data
 - Employer survey data to evaluate whether training programs meet their needs

Work with employers to increase the value of the credential

The listening sessions revealed that a key concern for undergraduate institutions when considering whether or not to invest in implementing DI educational pathways is whether clear connections can be made between those pathways and students' future employability. Moreover, since employers do not always understand undergraduate public health, listening session participants were concerned that this lack of understanding would extend to CDI certification. The following recommendations are based on these concerns.

- Consider creating a national registry of DI professionals to enhance workforce connection
- Ensure that employers recognize the CDI certification and understand that the credential benefits students. This may include advocating for higher pay for CDI-certified employees, for a reduction in the number of years of work experience required for those coming in with CDI certification, or for requiring someone to either have or prepare to sit for the CDI exam within two years of entering the position.
- Work with DI employers to increase recognition of undergraduate public health and of the CDI certification.
- Create opportunities for DI employers to communicate their expectations and needs for incoming professionals to educational institution representatives, including to career services professionals who may help direct interested students to appropriate resources.

The next steps include developing a pilot DI training pathway program proposal that undergraduate institutions could implement at their institutions. This proposal will include information about DI, suggestions on how to structure the program, programmatic considerations, and an evaluation outline. We will then reach out to the previous listening session participants and recruit them to help review the materials. Interested participants will receive the documents and participate in a group listening session to provide feedback. The feedback will be aggregated and integrated into revised materials. Participants will then receive the revised materials along with a feedback poll. The feedback will be incorporated into the final materials.

Keywords Used in Literature Review Search

Search Tracking	Key Words Used	Results
1A	("disease intervention specialist" OR "disease intervention specialists" OR "communicable disease specialist" OR "contact tracer") AND ("pathway" OR "pipeline") AND ("undergraduate" OR "college" OR "university" OR "school") AND ("skills" OR "training" OR "education") AND ("career" OR "prepare" OR "preparation")	134 results 37 unique results reviewed Excluded dissertations, books, international results Relevant results ended at page 5 – remainder were not applicable to project outcomes 18 results align to 1A
1B	("disease intervention specialist" OR "disease intervention specialists" OR "communicable disease specialist" OR "contact tracer") AND ("underrepresented" OR "diverse" OR "diversity") AND ("community" OR "population") AND "undergraduate"	120 results 20 unique results reviewed Excluded dissertations, books, international results Relevant results ended at page 3 – remainder were not applicable to project outcomes 11 results align to 1B
1C	"undergraduate program evaluation" AND ("best practice" OR "recommend")	4 results 4 unique results reviewed 3 results align to 1C
1D	("disease intervention specialists" OR "disease investigation specialist" OR "communicable disease specialist" OR "contact tracer") AND ("skill" OR "occupation" OR "tasks" OR "employment" OR "competency" OR "training" OR "work") AND ("education" OR "undergrad*" OR "bachelor*")	1,040 results 28 unique results reviewed Excluded dissertations, books, international results Relevant results ended at page 7 – remainder were not applicable to project outcomes 28 results align to 1D

1F	("disease intervention specialists" OR "disease investigation specialist" OR "communicable disease specialist" OR "contact tracer") AND ("technology" OR "tech" OR "software") AND ("train" OR "educate*")	244 results – redundant results, matched search D
1G	("disease intervention specialist" OR "disease intervention specialists" OR "communicable disease specialist" OR "contact tracer") AND ("career") AND ("funding" OR "grant" OR "scholarship")	298 results Many results are repeats or unrelated 4 unique results reviewed 4 results align to 1G
3A	("disease intervention specialist" OR "disease intervention specialists" OR "communicable disease specialist" OR "contact tracer") AND ("demographics") AND ("community" OR "population") AND ("career" OR "profession" OR "workforce")	239 results 4 unique results reviewed Many results are repeats or unrelated 4 results align to 3A
3B	("disease intervention specialist" OR "disease intervention specialists" OR "communicable disease specialist" OR "contact tracer") AND ("talent") AND ("diversity") AND ("recruit" OR "attract")	23 results no new material found
3C	("disease intervention specialist" OR "disease intervention specialists" OR "communicable disease specialist" OR "contact tracer") AND ("talent") AND ("diversity") AND ("recruit" OR "attract")	23 results no new material found

APPENDIX D

Analyses of Current DI Curricula*

Educational Institution	Degree Pathway		Disease Intervention Domain				Notes	Information source
	Major	Specialization	Investigations	Case management and analysis	Provider & community engagement	Outbreak detection and response		
University of South Florida	Public Health BS	Specialization in Infection Control				PHC 4032 Foundations of Infection Control		https://health.usf.edu/~media/Files/Public%20Health/Undergrad/Major-Degree-Sheet.ashx?la=en
		Elective coursework			HSC 4933 Community Engagement in PH			https://health.usf.edu/~media/Files/Public%20Health/Undergrad/Major-Degree-Sheet.ashx?la=en
University of Montana	Public Health BS	Elective coursework		CHTH 485 - Theories of Health Behaviors and Counseling	HTH 395 - Peer Health Practicum			https://catalog.umt.edu/colleges-schools-programs/health/public-community-health-sciences/bs-public-health-general/
		Internship (PUBH 498)	x	x	x	x	A potential vehicle for all DI domains	https://catalog.umt.edu/colleges-schools-programs/health/public-community-health-sciences/bs-public-health-general/

*Curricula shown in this sample are existing university DI programs and are not representative of mapping exercises to be undertaken by prospective DI pathways

Suggested Questions for Future Listening Sessions with Governmental Public Health Agencies

1. Could you describe the role of disease intervention (DI) professionals within your agency? As needed: How many are there? What groups or programs do they work with? What are their responsibilities?
2. Please describe the type of skills or training DI professionals have. What experience is required to fill these roles? Formal and informal training or educational background? How do you think these experiences affect their work?
3. In your experience, how do DI professionals influence [your agency?]? Do they bring value to the agency (with respect to your agency's function? financially?)
4. Increasingly, undergraduate programs provide training in public health, including within specializations that may overlap with or include DI-specific context or skills. Have you noticed changes over time with respect to who applies for and works in DI roles? Do you think this might affect your agency in the future? How?
5. If universities were to offer DI-specific undergraduate pathways (e.g., a concentration or specialization within public health majors, or a minor,) would this affect your agency? How? For example, could you see it changing hiring patterns? Would these types of pathways help satisfy job requirements? Would it change how appealing candidates might be for entry level roles? For more experienced roles?
6. Is there anything else you would like to share with us regarding undergraduate pathways in DI roles?

References

1. Cope AB, Mobley VL, Samoff E, O'Connor K, Peterman TA. The Changing Role of Disease Intervention Specialists in Modern Public Health Programs. *Public Health Rep.* 2019;134(1):11-16. doi:10.1177/0033354918813549
2. National Coalition of STD Directors: Disease Intervention. National Coalition of STD Directors. <https://ncsddc.org/our-work/about-disease-intervention/>
3. Dalal D, Randall J, Danna G, Ash J. Identifying Critical Psychological Characteristics Related to Successful Performance as a Contact Tracer: A Job Analysis. *PAD.* 2023;9(1). doi:10.25035/pad.2023.01.005
4. Chaulk CP, Zenilman J, Bialek R, Rompalo A. An Urgent Call for Public Health Firefighters. *Journal of Public Health Management and Practice.* 2021;27(3):322. doi:10.1097/PHH.0000000000001362
5. Mase WA, Hansen AR, Smallwood SW, et al. Disease Intervention Specialist Education for the Future: An Analysis of Public Health Curricula. *Public Health Rep.* 2018;133(6):738-748. doi:10.1177/0033354918792014
6. Krasna H, Venkataraman M, Robins M, Patino I, Leider JP. Standard Occupational Classification Codes: Gaps in Federal Data on the Public Health Workforce. *Am J Public Health.* 2024;114(1):48-56. doi:10.2105/AJPH.2023.307463
7. Public Health Accreditation Board. *Disease Intervention Specialist Certification Project Final Report to the Centers for Disease Control and Prevention.* Public Health Accreditation Board; 2017. <https://phaboard.org/wp-content/uploads/PHAB-DIS-Full-Report.pdf>
8. Leider JP, Balio CP, Hogg-Graham R, et al. *An Enumeration of the Public Health Workforce in 2024.* Consortium for Workforce Research in Public Health; 2025. <https://cworph.umn.edu/sites/cworph.umn.edu/files/2024-08/enumeration-2024.pdf>
9. Becher J, Salmon ME, Gift TL. The Epidemiology and Costs of Disease Intervention Specialist Retention. *Sexual Trans Dis.* Published online March 29, 2023. doi:10.1097/olq.0000000000001812
10. Guilamo-Ramos V, Benzekri A, Thimm-Kaiser M, et al. Capitalizing on Missed Opportunities for Sexual Health Workforce Development by Adoption of a Sexual Health Paradigm. *Am J Public Health.* 2021;111(11):1916-1919. doi:10.2105/ajph.2021.306492
11. Crowley JS, Geller AB, Vermund SH, National Academies of Sciences, Engineering, and Medicine. Supporting and Expanding the Future STI Workforce. In: *Sexually Transmitted Infections: Adopting a Sexual Health Paradigm.* National Academies Press (US); 2021. Accessed July 28, 2025. <https://www.ncbi.nlm.nih.gov/books/NBK573165/>
12. Hurt CB, Morrison AS, Guy J, et al. Beyond Disease Intervention: Exploring an Expanded Role for Partner Services in the MATRix-NC Demonstration Project. *Sexual Trans Dis.* 2022;49(2):93-98. doi:10.1097/OLQ.0000000000001544
13. Wang H, Guinn D, Ramisetty XR, Giordano TP, Poon IO. A Review of Studies on HIV Pre-Exposure Prophylaxis.

laxis in Community Pharmacies in States with Restrictive Pharmacist Prescription Authority in the United States. *Pharmacy*. 2024;12(5):144. doi:10.3390/pharmacy12050144

14. Moeteke NS, Zahidie A, Van De Griend K, Lindsay R, Hachey D. Addressing the Epidemics of HIV, Sexually Transmitted Infections, and Hepatitis Through an Integrated and Coordinated Undergraduate and Continuing Education Program in Idaho. *Public Health Rep*. Published online September 17, 2024. doi:10.1177/00333549241275400
15. Line D, Kohlmeier P, Mount S. Community Engagement through Contact Tracing Training. *MUJ*. 2022;33(3):23-38. doi:10.18060/25661
16. Santella AJ, Bosley A, Carillo I, Fraticelli D, Muder SJ. “I Wanted to be Part of the Solution”: Motivations, Preparation, and Mental Health of COVID-19 Contact Tracers in the New York Metropolitan Area. *Journal of Health and Human Services Administration*. 2021;44(3):219-244. doi:10.37808/jhhsa.44.3.2
17. Li X, Carroll CD. *Characteristics of Minority-Serving Institutions and Minority Undergraduates Enrolled in These Institutions: Postsecondary Education Descriptive Analysis Report*. National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education; 2007:196. <https://nces.ed.gov/pubs2008/2008156.pdf>
18. National Overview of STIs in 2023. CDC STI Statistics. November 12, 2024. *Internet Archive*, <https://web.archive.org/web/20250523091503/https://www.cdc.gov/sti-statistics/annual/summary.html>
19. Castrucci B, Juliano C, Inglesby TV. Four Steps to Building the Public Health System Needed to Cope With the Next Pandemic. *Journal of Public Health Management and Practice*. 2021;27(Supplement 1):S98-S100. doi:10.1097/phh.0000000000001303
20. Young KH, Liburd L, Penman-Aguilar A. An Evaluation of a Pipeline Program to Support Diversity in the Public Health Workforce: CDC Undergraduate Public Health Scholars (CUPS) Program. *Pedagogy in Health Promotion*. 2021;7(1_suppl):23S-35S. doi:10.1177/23733799211047522
21. Krasna H, Fried L. Generation Public Health: Fixing the Broken Bridge Between Public Health Education and the Governmental Workforce. *American Journal of Public Health*. 2021;111(8). Accessed January 24, 2025. <https://ajph.aphapublications.org/doi/10.2105/AJPH.2021.306317>
22. Whitmore C, Thacker S. Using ePortfolio for Team-Based Transformational Learning Experiences in a Health Education Course. *International Journal of ePortfolio*. 2021;11(1):1-9.
23. Whitmore CB. Teaching Evaluation Through Community-Engaged Learning Courses. *American Journal of Evaluation*. 2023;44(2):270-281. doi:10.1177/10982140221100448
24. Ghofrani M, Valizadeh L, Zamanzadeh V, Ghahramanian A, Janati A, Taleghani F. Adapting the Donabedian model in undergraduate nursing education: a modified Delphi study. *BMC Med Educ*. 2024;24(1). doi:10.1186/s12909-024-05187-7
25. Hook EW, Golden MR. STD Clinic–Academic Partnerships: Contributors to Public Health STI Control. *Sexual Trans Dis*. 2024;51(9):622-623. doi:10.1097/olq.0000000000002044
26. Kelly J, Gielstra D, Oberding TJ, Bruno J, Hadley S. Uniting academia and industry to bridge the skills gap: Incorporating industry advisory councils in Curriculum-to-Careers Programmatic Mapping in undergraduate environmental science programs. *Industry and Higher Education*. 2024;38(2):112-123. doi:10.1177/09504222231175413

27. Leser KA, Hay MC, Henebry B, et al. An Academic–Health Department Community Partnership to Expand Disease Investigation and Contact Tracing Capacity and Efficiency During the COVID-19 Pandemic. *Journal of Public Health Management & Practice*. 2022;28(1):E16-E22. doi:10.1097/phh.0000000000001379
28. Open Philanthropy course development grants. Open Philanthropy. <https://www.openphilanthropy.org/open-philanthropy-course-development-grants/>
29. Sandelowski M. Whatever happened to qualitative description? *Res Nurs Health*. 2000;23(4):334-340. doi:10.1002/1098-240x(200008)23:4<334::aid-nur9>3.0.co;2-g
30. Saldaña J. *The Coding Manual for Qualitative Researchers*. 2. ed. SAGE Publ; 2013.
31. Johnson RB, Christensen LB. *Educational Research: Quantitative, Qualitative, and Mixed Approaches*. Eighth edition. SAGE; 2024.
32. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006;3(2):77-101. doi:10.1191/1478088706qp063oa
33. Blavos A, Kerr D, Hancher-Rauch H, Brookins-Fisher J, Thompson A. Faculty Perceptions of Certifications in Health Education and Public Health: Implications for Professional Preparation. *Pedagogy in Health Promotion*. 2022;8(1):49-58. doi:10.1177/2373379920938823
34. Median weekly earnings of full-time workers with only a bachelor's degree \$1,541 in Q2 2024. Bureau of Labor Statistics TED: The Economics Daily. July 25, 2024. Accessed July 28, 2025. <https://www.bls.gov/opub/ted/2024/median-weekly-earnings-of-full-time-workers-with-only-a-bachelors-degree-1541-in-q2-2024.htm>
35. Association of Schools and Programs of Public Health (ASPPH). (2023–2024). Regional Disease Intervention Workforce Meeting Summary Reports. Internal project documents prepared for the National Disease Intervention Certification Project; not publicly released.

DISEASE INTERVENTION
UNDERGRADUATE PATHWAYS

Proposal

Background

Disease Intervention (DI) professionals can trace their career roots to nearly a century ago when the Disease Intervention Specialist (DIS) role was created to investigate and prevent the spread of syphilis in the US.¹ The mitigation efforts compelled the newly installed Centers for Disease Control and Prevention (CDC) to establish federal funding to build and bolster the capacity of the DI workforce, instituting the role within state and local health departments.¹ DI professionals' core functions of contact investigation and treatment referral have remained vital to the public health service mix of state and local health departments nationwide. Historically described as “shoe leather epidemiologists,”² DI professionals conduct investigations of contagions at the patient level by approaching individual community members from a broad range of populations, often through field interviews, to elicit sexual partner and physical contact information. They possess specialized skills in interviewing, counseling, and wrap-around service coordination, with a great deal of their success resulting from their aptitude for communication and resourcefulness.³ The DI workforce has grown over the years and now encompasses many roles and activities beyond the original DIS position. A variety of disease and public health surveillance, communicable disease investigation, and health services consulting jobs have developed in the DI space to provide targeted assistance in outbreak mitigation.

DI professionals are primarily employed by state and local health departments but occasionally work in private industry for health clinics or other non- governmental entities.⁴ Though DI work remains mostly in the sexually transmitted infection (STI) sphere, the contact tracing skills of DI professionals were invaluable during the COVID-19 pandemic³ and will continue to be in demand in the face of both novel and re-emerging diseases. The DI workforce has grown over time, bringing the considerable capacity for tact, cultural sensitivity, and empathy¹ of DI professionals to the investigation of tuberculosis, gonorrhea, HIV, and Mpox outbreaks. The increasing tendency for health departments to incorporate expanded wrap-around services, including HIV PrEP (Pre-exposure Prophylaxis) provision and referral services,^{5,6} as well as the increasing need for agency use of technology,¹ create a case for the strengthening of educational rigor for DI leaders and practitioners.

The Certified in Disease Intervention (CDI) certification, administered through the National Board of Public Health Examiners (NBPHE), is designed to align the evolving public health and disease DI with the knowledge, skills, and abilities (KSAs) in which professionals need to be proficient. It will standardize the required KSAs for the field of DI and develop a framework of professional development through continuing education, creating an environment in which the field can expand and modernize in line with changing public health goals and objectives.

Candidates for the CDI certification who hold a bachelor's degree may sit for the exam after undertaking one year, or 2,080 hours, of work experience. Their supervisor or human resources manager will submit an online verification form to confirm that this requirement has been met. The candidate will also provide the NBPHE with a copy of their student transcript. Recertification is needed every three years and requires 30 continuing education credits. Acceptable recertification activities include a variety of academic coursework, conferences, presentations, and workshops relating to disease intervention and prevention. Please see the [NBPHE website](#) for more information on acceptable recertification activities and other CDI requirements.

In undergraduate public health instruction, the combination of DI educational goals and experiential learning components could support candidates in meeting the CDI eligibility requirements for successful

certification. Existing curriculum and experiential learning may be used to create pathways that support student success in the CDI exam. The NBPHE has defined six CDI exam domains that are essential to the DI professional body of knowledge. Note that these domains have been validated through a recent NBPHE job task analysis and may change over time to reflect the evolving needs of the DI profession. The six CDI exam domains, as defined by the NBPHE, are:

1. Planning and Case Analysis
2. Interviewing and Case Management Activities
3. Field Services and Outreach Activities
4. Surveillance and Data Collection
5. Collaboration
6. Outbreak Response and Emergency Preparedness

Domain descriptions and competencies and guidelines for required work experience are available on the [NBPHE website](#)

Example Goals & Strategies

Educational institutions that wish to develop pathways to CDI certification for their students may start by identifying a series of interrelated and incremental goals. We describe such possible goals below and provide concrete strategies for achieving each of these goals. Rather than providing a step-by-step guide, these goals are intended to provide a starting point for goals and strategies that meet an institutions' specific needs. The Timeline and Milestones section provides additional detail on how institutions can engage in development of a CDI pathways pilot, and offers several example strategies for achieving these goals.

GOAL: Understand your institution's current resources and gaps in resources as they are relevant to DI pathways STRATEGIES: ▶ Complete course mapping exercises ▶ Gather information relevant to development of any necessary new courses, administrative support mechanisms, and connections with external resources (e.g., understand any administrative processes and their timelines, identify relevant stakeholders, budgetary needs, etc.) ▶ Generate report summarizing results	GOAL: Educate your undergraduate students about the benefits of CDI certification ▶ Promote CDI pathways pilot programs using existing communication channels (e.g., department listservs, student orientation tabling, distribution of physical materials) ▶ Host information sessions targeting students in relevant degree programs and/or pre-professional tracks ▶ Increase knowledge of CDI certification benefits among undergraduate career advisors working with students who might be interested in pursuing DI roles ▶ Have a target number of students complete the DI pathway pilot ▶ Have a target number of students complete the CDI exam
GOAL: Launch a pilot DI pathway program ▶ Execute plans to fill gaps that were identified in the needs assessment process for the DI pathway program ▶ Recruit a target number of student participants	GOAL: Strengthen connections between undergraduate institutions and potential employers ▶ Partner with agencies to place students in experiential learning roles ▶ Have a target number of students placed in experiential learning opportunities ▶ Facilitate information sharing sessions between student career professionals and potential employers ▶ Have a target percentage of positive experiential learning facilitator feedback
GOAL: Develop evaluation criteria that reflect practical student progress through the program ▶ Develop robust evaluation plans ▶ Implement evaluation plans ▶ Using the proposed evaluation plan as guidance, develop a program evaluation framework ▶ Estimate the number of classes students must complete in preparation and what percentage of these course completions are indicative of program success ▶ Calculate the percentage of CDI domains that are taught in DI pathway courses ▶ Have a target number of students pass a CDI practice exam	

Stakeholders & Roles

Our previous findings identified many organizations and individuals with significant interest in DI pathways. Some have had direct involvement in CDI program development (e.g., the CDC providing funding to develop the CDI program) while others with less direct experiences may wish to be kept informed of DI pathway and CDI progression. Parties in the latter group may have had historic or will have future engagement with DI professionals, who are likely to be affected by these pathways (e.g. National Coalition of STD Directors helping local health departments to support their workforce.)

CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC)

The CDC is providing funding for the development of the Certified in Disease Intervention (CDI) exam through a cooperative agreement with ASPPH and an NBPHE subaward.

ASSOCIATION OF SCHOOLS AND PROGRAMS OF PUBLIC HEALTH (ASPPH)

ASPPH is the voice of academic public health—advancing education, practice, and research. ASPPH represents more than 150 accredited schools and programs of public health, training the next generation of public health professionals, convening leaders, generating evidence, and advocating for policies that improve the health and well-being of everyone, everywhere. In 2022, ASPPH was awarded funds by the CDC to develop and implement the CDI program and the infrastructure needed for it to succeed. ASPPH has created the [This is Disease Intervention](#) website, which will host a variety of resources for students sitting for the CDI exam or wanting to work in DI professions. The , currently hosted and maintained includes study materials and exam preparation resources.

COUNCIL ON EDUCATION FOR PUBLIC HEALTH (CEPH)

CEPH is the accrediting body for schools and programs of public health. CEPH requires member institutions to have specific programming to retain its accreditation. The CDI domain alignment will require these institutions to meet additional academic standards that may or may not align with current CEPH standards.

EDUCATIONAL INSTITUTIONS

Schools of Public Health

CEPH-accredited schools of public health may need to make curriculum changes to meet CDI domain standards. These changes may or may not align with their resources or educational philosophy. The process for CEPH accreditation is resource intensive and the work needed to meet the additional requirements should be considered. Additional concerns for CEPH-accredited schools include the cost-benefit analysis of this pathway for students and how to discuss the benefits and potential drawbacks of DI certification with current and prospective students.

Programs and schools of public health that are not CEPH accredited are often small or growing programs that may lack the resources required for application.

Additionally, their educational philosophy may not support CEPH accreditation. These institutions may consider CDI certification a useful pathway for their student population and their educational offerings

should be assessed for alignment. As with accredited institutions, the costs and benefits of certification and how to advise current and prospective students on these may be of interest.

University Faculty

Faculty need to create and adapt coursework to align with the CDI exam domains and DI pathways and maintain this alignment over time. They also need to deliver the curricula to students to prepare them for the DI pathway. These activities may add to the other responsibilities of their roles.

University Staff/Administrators

Staff and administrators are responsible for administration of the pathway and promotion of curricula. Staff may also need to work with employers to develop student experiential opportunities and to determine whether these apprenticeships align with the CDI exam eligibility requirements. The administration of a new program may therefore require additional allocation of time and resources.

Students

Prospective DI students and prospective undergraduate public health students should understand fully the benefits and demands of the CDI exam. Students undertaking certification exams may incur additional expenses. This and associated risks and rewards should be clearly articulated.

EMPLOYERS

State, Local, and Tribal Health Departments

State, local, and Tribal health departments are the primary employers of the DI workforce. These agencies should offer experiential learning opportunities to students entering the DI field. As such, they have the expertise needed to help shape the development of pathways to service and to provide an understanding of the competencies required for career success. Employers may experience a learning curve as well, including understanding the benefits of certification. Salary models and job descriptions may need to be rewritten to align with the CDI-certified workforce.

Association of State and Territorial Health Officials (ASTHO)

ASTHO supports the work of state and territorial health departments in employing the DI workforce. Feedback between ASTHO and CDI administrators, and communication with DI educators will inform exam and curriculum content as the field grows and programs cover new competencies.

National Association of County and City Health Officials (NACCHO)

NACCHO was involved in a [2013 DIS certification feasibility assessment](#), describing the present and future direction of the DI career field and the impacts of developing the new certification. It represents the needs of the DI workforce at county and city health department levels. Its continued involvement will include ongoing educator and examiner communication as DI competency needs grow. Additionally, NACCHO hosts communities of practice (COPs) specifically designed to support the needs of DI professionals.

Private employers or clinics

These are entities that employ members of the DI workforce (although less often than governmental public health organizations). They include case managers within health care systems or some contact tracing employers. To keep pace with the changing candidate pool as CDI certification increases, these employers will need to assess DI roles' salaries and job descriptions.

Public health recruiters and related human resources professionals

These recruiters may be organizations working within health systems, governmental public health departments, or third-party recruiters working on behalf of these and other entities. They will embark on a learning curve as newly-certified DI candidates are incorporated into the workforce. Salary

expectations and job descriptions may need to be revisited to align with the new designation. The benefits of building a CDI-certified workforce will need to be made clear in job postings and recruitment efforts.

Nonprofit or philanthropic organizations

These employers include family and children's services organizations, harm reduction organizations, social work organizations, and behavioral health organizations. As certified professionals enter the DI workforce, these employers will embark on a learning curve and may need to revisit salary expectations and job descriptions to align with DI core competencies.

DI WORKFORCE

The DI workforce is made up of a broad and diverse cohort of professionals. ASPPH, in its web resource "[This Is Disease Intervention](#)," defines the DI professional as any public health professional who conducts disease intervention activities including, but not limited to:

- Person-centered interviews
- Collection of enhanced surveillance and community assessment data
- Partner services such as contact tracing
- Field investigation, field specimen collection, and field investigation in outbreaks
- Emergency preparedness
- Community outreach
- Collaboration with medical providers

Employers, educators, and other stakeholders will need to define the DI workforce so workers can understand who will benefit from certification and which workers may be expected to obtain the credential.

Timeline & Milestones

Below are some major milestones and potential timeframes in which those milestones may be completed. Timeframes required to implement these milestones will vary depending on an institution's needs and resources.

PHASE 1: Planning

DI Pathway Leadership Committee Creation (1-2 months)

Work with your dean or division/department chair to create a leadership committee tasked with creating a DI pathway within your school/department.

Internal DI Course Assessment (1-3 months)

Using the sample course mapping tool, make an assessment of which courses within your school of public health will align with CDI domains and competencies.

DI Course Assessment within your Institution (1 month)

Assess which CDI domains and competencies your institution is missing. Use the sample course mapping tool to assess which courses are available within your university to fill these gaps.

Course Revamping vs. Creation (1 month)

To fill gaps within CDI domains and competencies, convene the leadership committee to assess whether any new courses need to be created and/or courses need to be revamped.

Plan Creation and Presentation for the Dean or Division/Department Chair (3-4 months)

Create a plan that sets out how the DI pathway would function within your school/department. This should include which classes would need to be created or revamped, how they would be created/revamped, who would do the work, and the course approval process. Include a timeline, a case for the benefits of the DI pathway to students, and a plan for marketing the pathway to current and prospective students. The plan should include creating experiential learning (e.g. internships) with workforce partners. This means signing memorandums of understanding and other legal/ academic documents that may be needed by your institution.

	Example:	Example:	Gaps Identified
Course Name	Epidemiology 101	Community Health	
Course #	3002	2005	
Domains / Competencies:			
1. Planning and Case Analysis			
1a.			✓
1b.	✓		✓
1c.	✓		
1d.			
2. Interviewing and Case Management Activities			
2a.		✓	
2b.			✓
2c.			✓
2d.			✓
3. Field Services and Outreach Activities			
3a.			✓
3b.			✓
3c.			✓
3d.			✓
4. Surveillance and Data Collection			
4a.	✓		
4b.			✓
4c.			✓
4d.			✓
5. Collaboration			
5a.		✓	
5b.		✓	
5c.		✓	
5d.		✓	
6. Outbreak Response and Emergency Preparedness			
6a.	✓		
6b.			✓
6c.			✓
6d.			✓

PHASE 2: Developing

Create/Revamp Courses as Needed (3-6 months)

After approval by the dean or division/department chair, begin implementing your plan beginning by creating or revamping the courses as set out in your plan. Ensure that the wording within syllabi and course descriptions (particularly ones that are on the registrar) explain the courses are part of the DI pathway and will help students prepare for CDI certification.

Develop the Evaluation Plan (1-2 months)

While creating the program, create an evaluation plan and criteria for successful implementation. [See the evaluation plan portion of this proposal.]

Obtain Approval for Courses as Needed

This varies by institution and has no recommended timeframe.

Work with Local Health Departments and Partner Organizations to Finalize Experiential Learning (3-6 months)

An important part of the DI pathway is helping students gain experiential learning. This could be through internship(s) or practicum(s). CDI-eligible experiences may be sourced through a variety of organizations, and the [NBPHE website](#) will provide guidance on qualifying opportunities.

Create DI Student Support System (2-3 months)

Students will need support when studying for CDI certification and collaboration/support from fellow DI alumni. Set a time and place where all DI pathway students can gather to study, discuss cases, or collaborate on other challenges. This could be informal, such as a student club, or formal, such as, a seminar class. Resources, including [UniversiDI](#), NBPHE help in building this support system.

Create Promotional Materials (1-2 months)

Create promotional materials that will be used for students currently enrolled in your school/department and students currently enrolled in other programs similar to DI (e.g. social work, criminal justice, legal studies).

PHASE 3: Implementing and Evaluating

Recruit Initial Cohort of Students (2-4 months)

Recruit the initial cohort of students. The number of students in the initial cohort will depend on what you and your department feel is reasonable. The initial cohort may be small, one-to-three students. This will ideally occur the semester before the students are expected to take their first classes.

Students Complete DI Pathway

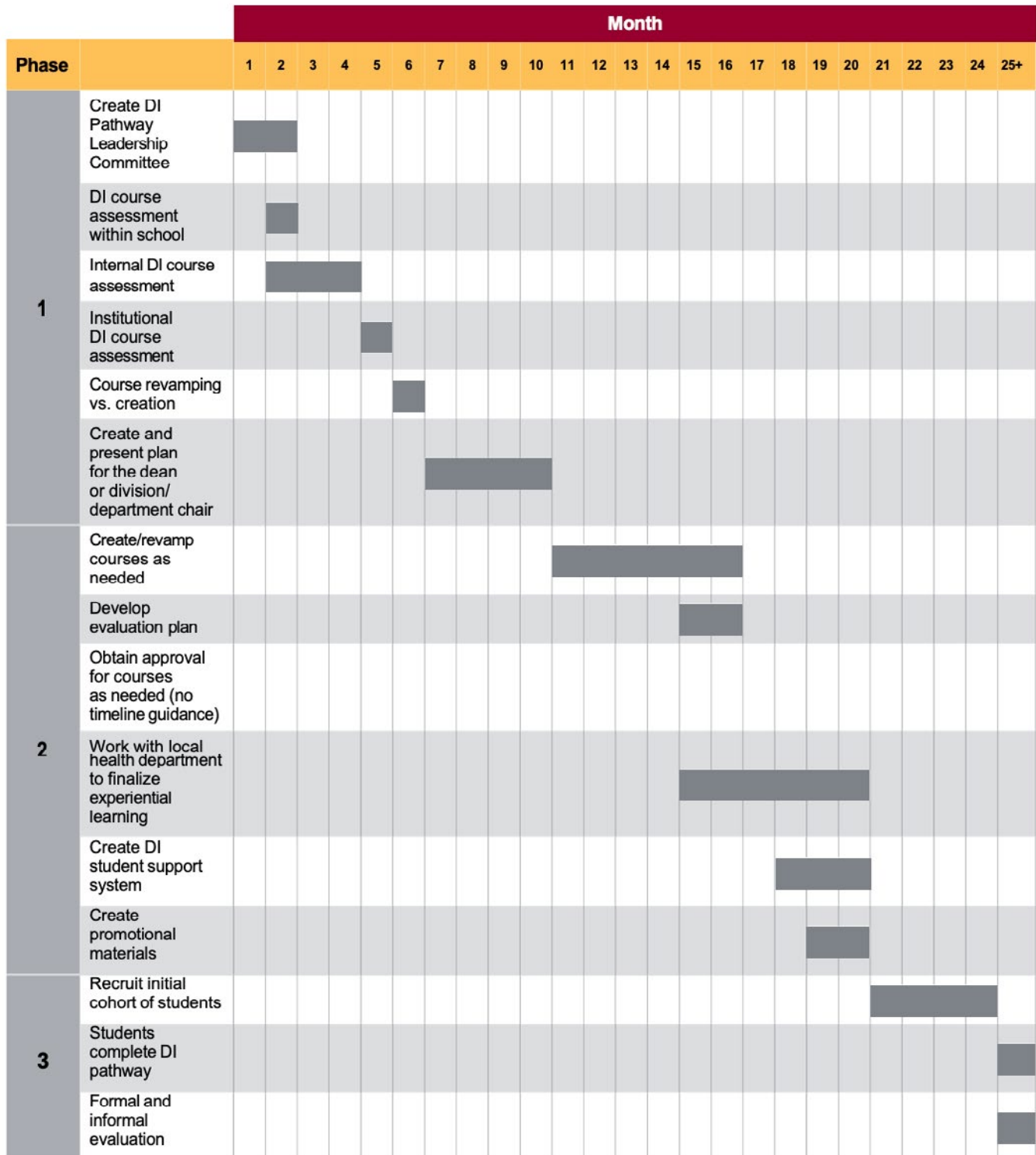
The students will complete the DI pathway and sit for the CDI exam. This does not have a specific timeline as it is dependent on the plan you created. Students may initially enter the pathway at different points in their academic career, and some may have several coursework or experience requirements completed before joining the pathway. The student may sit for the exam after graduation from the university, depending upon ability to meet eligibility requirements. Therefore a pathway completion metric may be successful completion of a practice exam.

Formal and Informal Evaluation

Evaluation should begin on day one of the program and should include rapid cycle improvement, yearly evaluation, and overall program evaluation. Please see the draft evaluation of this proposal for more information.

Sample Gantt Chart

Please use this sample Gantt chart to plan your pilot



Budget Line Items & Resources

This section provides guidance on items you might consider when creating a budget for a DI pathway program. These are simply suggestions, and their relevance will depend on a variety of factors, including the institution's financial situation and grant support dollars.

Faculty/staff time	DI pathway promotional materials	Student funds	Experiential learning funds
• Planning • Curriculum design • Pathway coordination • Student DI pathway advisory support • DI pathway recruitment • Creating experiential learning opportunities	• Graphic designer • Brand developer • Printing • Website design • Social media presence	• Stipend for sitting for the CDI exam if the student is eligible before graduation • Experiential learning pay/stipend if applicable • Teaching assistant or student mentor pay where applicable	• Site stipend • Site preceptor stipend

Project Outcome Dissemination

Several key outcomes are relevant to the planning and implementation of a DI pathway program. The Evaluation Plan suggests approaches to conducting a process and outcomes evaluation that will assess how well your DI pathway is being implemented and how successfully it is delivering optimal student outcomes.

Once you have gathered sufficient data on relevant student outcomes, disseminating the results of your evaluation will be a key next step. Several stakeholder groups will want to know how your DI pathway program has progressed and what has been achieved. Suggested stakeholder groups to update regularly include:

- Program administration and leadership
- Faculty and staff
- Participating employers: State and local health departments, Tribal health departments, private organizations
- Partner organizations, including ASPPH, CEPH, and NBPHE

Ideally, dissemination will occur at different stages, particularly during the initial pilot phase. For example, once the pathway has been planned and implemented, stakeholders will want to know how many students have signed up to complete the certification. As the students progress through the DI pathway program, you may want to provide regular updates on, for example, the number of students that have completed the DI pathway program, the number of students that sat for the CDI exam, the proportion of students passing the CDI exam, the number of students that applied for DI positions, and student satisfaction with the DI pathway program. Once an initial cohort of students has completed the DI pathway program, you can start reporting on longer-term outcomes of the CDI pathway, such as the number of students remaining in DI positions and whether their training gives them the KSAs required for a DI professional.

References

1. Cope AB, Mobley VL, Samoff E, O'Connor K, Peterman TA. The Changing Role of Disease Intervention Specialists in Modern Public Health Programs. *Public Health Rep.* 2019;134(1):11-16. doi:10.1177/0033354918813549
2. Chaulk CP, Zenilman J, Bialek R, Rompalo A. An Urgent Call for Public Health Firefighters. *Journal of Public Health Management and Practice.* 2021;27(3):322. doi:10.1097/PHH.0000000000001362
3. Dalal D, Randall J, Danna G, Ash J. Identifying Critical Psychological Characteristics Related to Successful Performance as a Contact Tracer: A Job Analysis. *PAD.* 2023;9(1). doi:10.25035/pad.2023.01.005
4. Mase WA, Hansen AR, Smallwood SW, et al. Disease Intervention Specialist Education for the Future: An Analysis of Public Health Curricula. *Public Health Rep.* 2018;133(6):738-748. doi:10.1177/0033354918792014
5. Hurt CB, Morrison AS, Guy J, et al. Beyond Disease Intervention: Exploring an Expanded Role for Partner Services in the MATRix-NC Demonstration Project. *Sexual Trans Dis.* 2022;49(2):93-98. doi:10.1097/OLQ.0000000000001544
6. Wang H, Guinn D, Ramisetty XR, Giordano TP, Poon IO. A Review of Studies on HIV Pre-Exposure Prophylaxis in Community Pharmacies in States with Restrictive Pharmacist Prescription Authority in the United States. *Pharmacy.* 2024;12(5):144. doi:10.3390/pharmacy12050144

DISEASE INTERVENTION
UNDERGRADUATE PATHWAYS

Evaluation Plan

Evaluation Purpose

The purpose of this plan is to establish key evaluation parameters and functions for undergraduate programs to consider when assessing their Disease Intervention (DI) pathway programs. This evaluation plan gives educators and administrators the tools, templates, and workplans necessary to establish an evaluation process for their DI pathway programs. It is intended to serve as a companion to the pilot proposal, which lays out appropriate processes and materials for schools interested in establishing a DI pathway for their undergraduate students. However, this evaluation plan may also be useful to undergraduate institutions that are at other stages in creating DI pathway programs (e.g., those considering the feasibility of a pilot, or those with established pathways or plans to pathways). Please note that not every component and suggestion of this evaluation plan will be appropriate for every program, given different curricula, faculty, student demand, and available resources. The DI pathway evaluation findings will help programs better understand the potential benefits and challenges that students face as they work to become DI professionals and obtain the Certified in Disease Intervention (CDI) credential.

Purpose of Undergraduate DI Pathway Programs

The CDI certification, administered through the National Board of Public Health Examiners (NBPHE), endeavors to align the evolving public health and disease intervention environment with the knowledge, skills, and abilities (KSAs) in which professionals must show proficiency for success. It will serve to standardize the required KSAs for the field of DI and develop a framework of professional development through continuing education, creating an atmosphere in which the field can expand and modernize in line with changing public health goals and objectives. This section explains the purpose of establishing DI pathway programs. Please also refer to the logic model below, which describes key inputs, activities, outputs, and short-term, intermediate-term, and long-term outcomes.

Need

DI pathway programs seek to help undergraduate students become certified professionals in a critical, needed public health profession. DI professionals serve an important public health role in investigating and tracking the spread of infectious diseases, particularly sexually transmitted infections (STIs). ASPPH, in its web resource, [“This Is Disease Intervention,”](#) defines the disease intervention professional as any public health professional who conducts disease intervention activities including, but not limited to: person-centered interviews, collection of enhanced surveillance and community assessment data, contact tracing, field specimen collection, field investigation in outbreaks, emergency preparedness, community outreach, and/or collaboration with medical providers. Obtaining the CDI certification may give interested students an opportunity to stand out as being qualified in DI-related skills and experiences when applying for public health positions.

Context

This evaluation plan assumes each undergraduate program uses and updates, as needed, existing curricula to meet the required CDI exam domains (Planning and Case Analysis; Interviewing and Case Management Activities; Field Services and Outreach Activities; Surveillance and Data Collection; Collaboration; and Outbreak Response and Emergency Preparedness). The plan also takes into account the fact that some courses may need to be created to meet students’ needs. Please refer to the [NBPHE \(National Board of Public Health Examiners\) website](#) for additional information on the CDI domains. This evaluation also assumes that DI pathway program students will follow a class schedule during their undergraduate degree that prepares them to meet CDI exam requirements. To be eligible for the CDI exam, students graduating with a bachelor’s degree must obtain one year of work experience (2,080 hours), and this evaluation assumes that undergraduate programs will help students find appropriate work experiences so that they can fulfill all or part of this requirement as feasible. Depending on program structure, students may not be ready to sit for the CDI exam immediately after they graduate, a factor this evaluation takes into account.

Stage of Development

The NBPHE intends to launch the CDI exam in 2025, therefore undergraduate programs can pilot a DI pathway program as early as 2026. Once a pathway program is established, undergraduate programs may want to adjust the tools presented in this proposed evaluation plan to reflect their program's stage of development.

Resources/Inputs

Every program will need to be taken through a planning process to determine a baseline set of existing and needed resources to institute a DI pathway program. For example, undergraduate programs will need to evaluate:

- What undergraduate student demand there is for careers in DI
- What curricula exist that align with CDI exam domains
- What resources are available to enable students to undertake the experiential learning components needed to meet the
- CDI work experience requirement
- What internal resources are available to address potential gaps (e.g., difficulty finding internships, courses that are not suitable for completing the CDI exam, etc.) identified after a DI pathway is established
- What resources are available to enable a DI pathway program to be evaluated

Evaluating these points will help determine what inputs are available for the pursuit of a DI pathway program at each institution. National DI partners (e.g., CDC, ASPPH, and NBPHE) have resources to help undergraduate programs plan and establish a DI pathway program.

Activities

Programs may undertake a number of activities to implement a DI pathway program and support their students in pursuing DI fields and sitting for the CDI exam:

- Evaluate current curriculum based on CDI domains and adjust curricula and other undergraduate programming to align with CDI exam content
- Help undergraduate students follow the DI pathway curriculum
- Help undergraduate students to find and complete the experiential learning needed to meet the CDI work experience requirement (e.g., year-long DI internship at a local health department)
- Establish internal forms of support that will help students to prepare for the CDI exam (e.g., study groups)
- Create connections between potential employers and DI pathway program students and inform

employers that program graduates are working toward CDI certification eligibility

- Evaluate the DI pathway program by collecting relevant data and tracking progress on key programmatic outcomes that are important to the program and institution

Objectives

Some potential short-, intermediate-, and long-term objectives that institutions may find important to pursue include:

Short-term objectives:	Intermediate-term objectives:	Long-term objectives:
• Curricula that enable undergraduate students to pursue DI careers and meet the CDI eligibility criteria • Increased numbers of students taking relevant courses to obtain the CDI credential and enter DI careers • Increased numbers of students who have met the CDI eligibility criteria for work experience • An increase in students' DI-related knowledge, skills, and abilities • Increased student awareness and interest in DI careers • Increased numbers of students passing practice CDI exams	• Increased numbers of students pursuing a DI career and sitting for the CDI exam • Increased CDI awareness of employers hiring for DI-related positions • Increased numbers of undergraduate students completing DI pathways and entering DI careers	• An established DI career pathway for undergraduate students • Increased numbers of young professionals pursuing a DI career • A better-prepared DI workforce • An established DI professional scope of work • Better functioning undergraduate DI pathway programs that incorporate evaluation results

Sample Logic Model

Undergraduate Pathways to Disease Intervention (DI) Certification Logic Model

INPUTS	- Partners: CDC, ASPPH, NBPHE - Undergraduate programs - Undergraduate DI-related curricula - CDI domains	- DI Employers - CDI exam - DI pathway program proposal and evaluation plan - National Association of County and City Health Officials (NACCHO) Communities of Practice - Exam preparation and study material from UniversiDi
ACTIVITIES	- NBPHE administers the CDI exam - Undergraduate programs evaluate current curricula based on the CDI domains and adjust/create courses to align with the CDI exam content - Undergraduate students undergo pre-certification process (e.g., complete the practice CDI exam, fulfill work experience requirements)	- Undergraduate students prepare for the CDI - Undergraduate students / graduates pass the CDI exam - Potential employers learn about the CDI and incorporate credential into DI job descriptions - Certified DIs apply for and receive DI positions - Educators implement evaluation plans that assess student progress and outcomes
OUTPUTS	- Final CDI process, including the exam - Undergraduate programs supportive of the CDI program - Number of classes that are revised to be incorporated into the DI pathway - Number of students who enroll in DI classes	- Number of students who complete the coursework - Number of students who are successfully placed in an experiential learning role - Number of students/graduates who take the CDI exam - Number of students/graduates who pass the CDI exam - Evaluation of DI pathway results
SHORT-TERM OUTCOMES (KNOWLEDGE / ATTITUDES)	- Curricula that enable undergraduate students to pass the CDI exam and pursue DI careers - Increased numbers of students taking relevant courses to pursue careers in DI - Increased numbers of students meeting the CDI eligibility criteria for work experience	- An increase in students' DI-related knowledge, skills, and abilities - Increased student awareness and interest in DI careers - Increased numbers of students passing practice CDI exams
INTERMEDIATE OUTCOMES (BEHAVIOR)	Increased numbers of undergraduate students completing DI pathways and entering DI careers	- Increased CDI awareness of employers hiring for DI-related positions - Increased numbers of students sitting for the CDI exam and pursuing a DI career
LONG-TERM OUTCOMES	- An established DI career pathway for undergraduate students - Increased numbers of young professionals pursuing a DI career	- A better-prepared DI workforce - Established DI professional scope of work - A better functioning undergraduate DI pathway program that incorporates evaluation results

Gather Credible Evidence

Data Collection

Primary data collection methods should follow the typical evaluation methods used to evaluate processes and outcomes associated with other program curricula and programs, such as student questionnaires and alumni surveys. Existing data collection methods should be leveraged to the extent possible, including applicable data collected as part of accreditation activities.

To help measure how well a DI pathway has met the needs of students and satisfied the institution's internal goals and objectives, Appendix 1 has provided sample questions. These can be included in surveys already distributed to students and alumni.

Internal discussions may also help determine how well the DI pathway meets the needs of students and institutions. Formal or informal data collection from employers on their needs for DI pathways and student preparation may also benefit the program.

Data Analysis & Interpretation

Most analyses will likely be descriptive, with results assessing how well the program's curricula prepared students for the CDI exam, identifying barriers students faced in meeting CDI eligibility criteria, as well as what facilitated the process, and tracking if and how well the CDI certification helped alumni get hired and advance in their careers.

To improve outcome interpretation, it is important to set benchmarks for student outcomes during the initial planning process, rather than after the DI pathway has been established. Questions to ask when establishing benchmarks include:

- What are enrollment numbers in DI pathway aligned courses? Has this enrollment increased since the introduction of the DI pathway?
- How many students complete the DI pathway once enrolled? What is the attrition rate?
- What proportion of participating students are expected to sit for the CDI exam?
- What proportion of participating students are expected to report feeling that the DI curricula helped prepare them for the CDI exam?
- What proportion of participating students are expected to complete their experiential learning internship to meet the CDI work experience requirement before graduation?
- What proportion of participating students complete the full experiential learning component by or before graduation?
- What proportion of participating students are expected to get hired as DI professionals?

Ideally, this initial goal-setting process should be a collaborative effort between administrative leadership and DI program staff/ faculty. Once sufficient data has been collected from the first cohort of participating DI students, comparisons can be made between initial goals and actual data.

Process-related questions may be asked both at the beginning and periodically throughout the pilot DI pathway:

- What proportion of the undergraduate students in the program (e.g., public health, health sciences program) are participating in a DI pathway? How many—if any—have opted to not pursue a DI career once they started the DI pathway?
- What program/major are students joining DI pathways from?
- Are DI pathway courses electives or core curriculum?
- How well does support (e.g., learning materials) from partnering organizations (e.g., CDC, ASPPH, and NBPHE) help students to complete the DI pathway program?
- How supportive are faculty of a DI pathway program? What challenges do faculty report experiencing with the DI pathway program (e.g., with workload)?
- Which academic programs are providing instruction? Are all courses within the school of public health or are others contributing?
- What barriers will / have students encountered as they follow the DI pathway? How can these barriers be alleviated?

These process-oriented questions are the cornerstone of rapid-cycle improvement and will provide potential solutions to improving the DI process for students.

Evaluation Management

EVALUATION MANAGEMENT

This section provides questions to ask when managing the evaluation of a DI pathway:

Who will be responsible for managing and implementing this evaluation?

Are entities such as ASPPH, your institution, or others already collecting the data you need? Will different entities be responsible for the collection of different data?

What data is feasible to collect?

Could existing data-collection tools be used for DI pathway data collection?

How often will data be collected, compiled, and analyzed, and the results disseminated?

Will data collection coincide with accreditation data-collection timeframes?

How will results be disseminated?

Who is the audience for the various reports?

How often will those responsible for evaluating the DI pathway meet with administrators, faculty, and other stakeholders to assess the progress of the pathway?