

An Exploration of the Adoption of Public Health Degrees and Certificates
in Community Colleges

By Brenda A. Kirkwood

B.S. in Health Services Administration, May 1999, Ithaca College
M.P.H. in Behavioral Sciences/Community Health, December 2001,
The University at Albany, State University of New York

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Dissertation directed by

Richard K. Riegelman
Professor of Epidemiology-Biostatistics, Medicine, and Health Policy

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in Community Colleges

Brenda A. Kirkwood

Dissertation Research Committee:

Richard K. Riegelman, Professor of Epidemiology-Biostatistics, Medicine,
and Health Policy, Dissertation Director

Lorien Abrams, Assistant Professor of Prevention and Community Health,
Committee Member

Debora Goetz Goldberg, Assistant Research Professor of Health Policy,
Committee Member

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Dedication

The author wishes to dedicate this dissertation to the memory of Nancy Alfred Persily, a dear friend and colleague. Nancy's pioneering efforts in undergraduate public health studies paved the way for this project and her unrivaled passion for educating others in public health continues to serve as an inspiration. Her extraordinary mentorship was a gift I will forever cherish.

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Abstract of Dissertation

An Exploration of the Adoption of Public Health Degrees and Certificates in Community Colleges

Efforts aimed at strengthening the governmental public health workforce have led to increased attention on undergraduate public health education. The focus, to date, has been on four-year institutions with minimal attention provided to community, or two-year, colleges and their potential role in addressing public health workforce needs. Progress for their inclusion has recently been demonstrated with the launch of a Healthy People 2020 objective that sets out to increase the proportion of two-year colleges offering public health or related associate degrees and/or certificate programs. In order to achieve this objective, an understanding is needed regarding why and how public health degrees and certificates are adopted in community colleges. Guided by Everett M. Rogers' Diffusion of Innovations theory, the current research used mixed methods employing qualitative techniques of in-depth interviews and documentary analysis through a comparative multiple case study approach, and quantitative methods through a web-based course catalog scan, to explore factors and processes involved in the adoption of public health associate degrees and certificates and to document their rate of adoption. Results estimate the rate of adoption of public health degree and/or certificate programs between academic years 2009-2010 and 2011-2012 at zero; however, an estimated net of one new community college offered a public health degree and/or certificate during that time period. Nine community colleges served as cases and included community colleges with public health programs that were matched to community colleges without public

health programs. Key influences on a community college's decision to adopt a new academic program relate to the community college mission to develop a workforce and prepare students for further study. Therefore, it must be demonstrated that jobs will be available and curriculum will articulate with four-year programs. Additional considerations in the adoption process include level of faculty and student awareness of public health, ability to collaborate within and outside the college, availability of resources, and accessibility to information regarding development and implementation of public health programs. Recommendations are presented for public health academic and practice communities to facilitate adoption of public health curricula in community colleges, leading to achievement of the Healthy People 2020 objective.

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Chapter 1: Introduction

Background

With a looming governmental-sector public health workforce shortage on the horizon, the population's health is in jeopardy as a diminishing supply of well-trained workers is being called upon to address an increasing array of health-related issues. This shortage will likely be further exacerbated as the U.S. economy improves and public health workers near, or at, retirement age, who had postponed retirement during the economic crisis, will begin retiring in large numbers. The mission of public health has been expressed as “fulfilling society's interest in assuring conditions in which people can be healthy” (Institute of Medicine [IOM], 1988). In order to carry out this mission, a multidisciplinary team of professionals is needed, equipped with a range of skills and knowledge to design, apply and evaluate health promotion and disease prevention activities addressing the wide variety of current and emerging public health issues faced by society today. In their recent *Statement on the Public Health Workforce*, the Association of Schools of Public Health (ASPH) demonstrated the need for the addition of 250,000 professionals to the public health workforce by the year 2020 (Rosenstock, Silver, Helsing, Evashwick, Katz, Klag, et al., 2008). This figure may be an underestimation due to provisions in the Patient Protection and Affordable Care Act of 2010 which expand coverage to individuals in public programs and task health care organizations with duties historically performed by public health professionals, such as completion of community health assessments in hospitals (H.R. 3590, 2010). This

suggests that more individuals exhibiting knowledge and skills in public health principles will be needed to carry out these services.

Colleges and universities can serve a pivotal role in addressing this gap; however, it is unlikely that traditional methods of public health instruction will be able to keep pace with the need. Historically, public health education has predominantly been limited to the graduate level with minimal attention given at the undergraduate level. In addition, ASPH estimates that only 20 percent of students graduating with a master's degree in public health pursue a career in governmental public health (Trust, 2008). As academicians and practitioners look for innovative ways to bring public health education to a broader audience and address this impending governmental public health workforce shortage, the potential role of undergraduate public health education, within both two-year and four-year institutions, is now being explored.

Statement of the Problem

The overarching problem the dissertation project aimed to address is the inadequate capacity, in terms of numbers and formal public health education, of the current governmental public health workforce to meet the increasing health needs of the population. Within this expansive problem, an issue in need of further clarification is the role of undergraduate public health education in addressing public health workforce needs. Efforts, to date, have focused on four-year institutions. However, since these institutions account for only 56 percent of all U.S. undergraduates, the remaining 44 percent of undergraduates, which are enrolled in community colleges, have largely been overlooked up until this point (American Association of Community Colleges [AACC],

2011). Therefore, an exploration was needed into how community colleges can best be tapped into to assist in strengthening the public health workforce.

Progress to Date

Stimulated by the Institute of Medicine's 2003 report, *Who Will Keep the People Healthy? Educating Public Health Professionals for the 21st Century*, support for undergraduate public health education is gaining momentum (Gebbie, Rosenstock, & Hernandez, 2003). A key recommendation from the Institute of Medicine (IOM) report was that "...all undergraduates should have access to education in public health." (p. 144). Since the release of the report, progress has been observed, particularly among four-year undergraduate institutions. In August 2009, *The Chronicle of Higher Education* identified public health as one of the five most rapidly growing college majors (Fischer & Glenn, 2009). As an example, the number of students enrolled in the undergraduate public health studies major at Johns Hopkins University nearly doubled between 1998 and 2008, from 159 to 311 students (Brown, 2008). Colleges are responding to the increased student demand by offering new and expanded public health course offerings (Brown, 2008). Baseline data gathered in summer 2008, by the Association of American Colleges and Universities (AAC&U), demonstrated that 16 percent of four-year institutions offered a minor, major or concentration in public health (Association of American Colleges and Universities [AAC&U], 2010). Indications demonstrate that this number will grow based, in part, on affirmative responses among AAC&U member chief survey respondents when asked whether their four-year institution would be interested in developing an undergraduate major, minor and/or concentration (AAC&U, 2009). In addition, the response among four-year institutions to

a national call for abstracts for “successful practices” of public health programs further demonstrated this growth since submissions included programs established after the 2008 baseline data collection. Community colleges, however, have largely been an untapped resource considering less than two percent of U.S. community colleges offered public health or related associate degrees and/or certificate programs in the 2009-2010 academic year (Kirkwood & Riegelman, 2011). However, community colleges are now becoming part of the conversation in discussions regarding undergraduate public health education. Detail describing efforts aimed at promoting undergraduate public health education is provided in Chapter 2.

Potential Future Directions

Community colleges are publicly funded two-year institutions with open-access admissions policies, meaning they provide an affordable and accessible education to all who seek it, regardless of wealth, heritage or previous academic experience (AACC, 2011). Enrolling over 12 million students, 45 percent of whom are minorities, community colleges can make a valuable contribution to the preparation of an educated citizenry by introducing the field of public health to a diverse audience and preparing a skilled workforce, providing the necessary skill set for those who directly enter the public health workforce, providing a solid knowledge base for those who wish to continue their studies at four-year institutions and/or graduate programs, and providing training to those already employed in public health who wish to seek new opportunities (AACC, 2011). The public health field can benefit from the long-term experience of community colleges in training for the healthcare professions. Nearly sixty percent of new nurses are educated at community colleges and the majority of other new healthcare workers are

also awarded degrees from community colleges (AACC, 2010). Particularly when the national spotlight is currently on community colleges, demonstrated by the first-ever White House Summit on Community Colleges held in October 2010, now is the time for the field of public health to draw its attention to this integral component of the educational system.

Recognizing this potential role of community colleges in addressing the needs of the public health workforce, Healthy People 2020, a collaborative initiative of the U.S. Department of Health and Human Services and other public and private organizations which develops and monitors a comprehensive set of public health objectives for the coming decade, includes a new objective to increase the proportion of two-year colleges offering public health or related associate degrees and/or certificate programs (Healthy People 2020). This objective has stimulated interest in community colleges among public health agencies and associations. The Centers for Disease Control and Prevention (CDC) provided funding, through its cooperative agreement with ASPH, to collect baseline data on the proportion of community colleges offering public health and related degrees and/or certificates in order to convert the objective from “developmental” to “measurable.” In collaboration with AAC&U, the Association for Prevention Teaching and Research (APTR), and CDC, ASPH developed an undergraduate public health learning outcomes model which explicitly includes two-year institutions in addition to four-year institutions. In addition, the Office of Disease Prevention and Health Promotion (ODPHP) of the U.S. Department of Health and Human Services (DHHS) provided funding through its cooperative agreement with APTR, to prepare case studies of “successful practices” among both four-year and two-year colleges which have

implemented public health academic programs. The proposed dissertation project is directly tied to these national activities.

Dissertation Project Description

In order to inform the development of practical approaches to lead to the achievement of the Healthy People 2020 objective, a thorough understanding is needed regarding the inclusion, or adoption, of public health degrees and certificates in community colleges. Guided by Everett M. Rogers' Diffusion of Innovations theory (1962), the dissertation project used mixed methods employing the qualitative techniques of in-depth interviews and documentary analysis through a comparative multiple case study approach, and quantitative methods, through a web-based course catalog scan, to explore the factors and processes involved in the adoption of public health associate degrees and certificates and to document their rate of adoption. In this study, the case is defined as a community college that has either adopted or has not adopted a public health associate degree and/or certificate program. Among the variables determining an innovation's rate of adoption, Rogers concluded that perceived attributes of the innovation explain the largest percentage of variation in the rate of adoption, and were, therefore, a focus in the study. The theory identifies the following as an innovation's perceived attributes: relative advantage, compatibility, complexity, trialability, and observability.

Based on preliminary discussions with community college and public health practice audiences, prototype public health associate degree and certificate programs have been drafted (Fulcher, Honoré, Kirkwood & Riegelman, 2010). In addition to four specialized prototypes, a public health generalist option is also being discussed among

the public health academic community. The dissertation project set out to further explore the perceived adoptability of each of these draft prototype curricular frameworks.

A brief summary of methods is introduced here and will be explained in detail in Chapter 3. The course catalog scan followed the same procedures used to establish the 2009-2010 baseline estimated proportion of community colleges offering public health degrees and/or certificates. The 2011-2012 web-based course catalogs of the same 414 community colleges were reviewed to identify colleges offering public health degree and certificate programs. Each college status (adopter or non-adopter) in 2011-2012 was compared to its own status in 2009-2010 to provide data for a paired analysis to assess the statistical change in adoption status. The proportion of community colleges offering a public health degree and/or certificate program in 2011-2012 was estimated to be 1.67% (CI 0.79 – 2.55%), compared to the estimated proportion of 1.58% (CI 0.70 – 2.46%) in 2009-2010. The change was found to be not statistically significant. One new adopter community college was found to offer a public health degree and another new adopter community college was found to offer a public health certificate in 2011-2012. However, one community college that offered both a public health degree and certificate in 2009-2010 was found to have discontinued the certificate and modified the degree program so that it no longer met the study's definition of "public health and related"; therefore, the net of new public health degree and certificate programs was found to be zero. Therefore, the rate of adoption of public health degree and/or certificate programs between academic years 2009-2010 and 2011-2012 was zero. Course offerings of individual public health-related courses were also documented as part of the catalog scan and it was found that the majority of community colleges offer such courses, either as

stand-alone courses, or as part of an academic program, such as health sciences, homeland security, and occupational health and safety.

In addition, a series of in-depth telephone interviews, accompanied by documentary analysis, took place as part of a comparative multiple case study among nine community college cases. Case study methods are well-suited for research which sets out to address *why* and *how* questions pertaining to a contemporary phenomenon taking place within a real-world context, such as the adoption of public health academic programs.

Community colleges were selected based on whether they adopted (n=4) or have not adopted (n=5) a public health degree and/or certificate program and on their accessibility and ability to illuminate the research questions. In addition, in accordance with multiple case study methods, diversity of cases was sought through selecting colleges with differing characteristics including student enrollment levels, curricular requirements, program goals and geographic location (city/town population size; proximity to graduate school or program of public health). The pool of adopter cases consisted of the colleges identified as offering public health programs in the 2009-2010 baseline catalog scan. The non-adopter cases were matched to the adopter cases, based on such characteristics as student enrollment, student demographics, types of curricular offerings, tuition and geographic location (city/town population size; proximity to graduate school or program of public health). Documentary analysis augmented data collected from semi-structured key informant telephone interviews of community college representatives. Sixty-one telephone interviews were conducted among the nine colleges. Interviews were one-on-one interviews, with the exception of two in which two

interviewees participated in a single interview. Therefore, a total of 63 interviewees participated in the study. Interviewees included: student or recent graduate (n=8); public health director (in adopter cases) or faculty member teaching a public health-related course (in non-adopter cases) (n=11); health sciences-related division chair or dean (n=6); academic affairs senior administrator (n=6); admissions director or staff member (n=7); academic advisor/counselor (n=10); administration and finance administrator (n=9); and continuing education director or staff member (n=6).

Data were analyzed across all cases, within each case, by adopter status and by matched pairs. The findings suggest that community colleges demonstrate a strong commitment to the local community and respond to identified needs within the community, including developing the workforce and preparing students for further study. Regardless of the field of study, the overarching key influences on a college's decision to adopt a new academic program were identified as: student demand, job availability, and transferability to four-year institutions. Study findings demonstrated that in order for a new academic program to be adopted in a community college, an extensive formal review and approvals process takes place. Implementation of new academic programs in community colleges is facilitated by availability of resources, collaboration within and outside the college, and accessibility to information.

The collection and analysis of data from multiple perspectives within and across the sampled colleges contributed to developing a full picture of why and how public health associate degrees and certificates are adopted. The findings will provide valuable guidance to efforts aimed at addressing the Healthy People 2020 objective to increase the proportion of community colleges offering public health degrees and certificates.

Purpose of the Study

The purpose of the study was to document the rate of adoption of public health associate degrees and certificates and to identify and describe key organizational and curricular attributes necessary in the development and implementation of public health associate degrees and certificates. Considering public health associate degrees and certificates are a new concept, with the exception of the few currently in existence, analysis of the collected data will provide important insight into this innovation and assist in targeting efforts intended to increase the proportion of community colleges offering such programs. The study provides documentation of a rate of adoption of public health associate degrees and certificates to be incorporated into the Healthy People 2020 data collection process, and highlights the intersection between academia and practice to inform the field of public health, and other disciplines, as to the needs of community colleges when establishing a new academic program.

The primary target audience for the resulting data is public health academic and practice associations which, in turn, develop and disseminate resources and guidance to the secondary target audience, which include public health employers, and faculty and administrators in community colleges as well as four-year and graduate academic institutions. The target associations include: the Association for Prevention Teaching and Research (APTR), Association of Schools of Public Health (ASPH), Association of American Colleges and Universities (AAC&U), American Association of Community Colleges (AACC), Association of State and Territorial Health Officials (ASTHO), National Association of County and City Health Officials (NACCHO), as well as the U.S. Department of Health and Human Services (HHS) which monitors Healthy People.

It is anticipated that the study results will be disseminated to the associations via presentations and publications and assist in the identification of target areas to guide the associations in planning applicable meetings, conferences, resource materials and funding opportunities which set out to facilitate the adoption of public health degrees and certificates in community colleges.

Study Aims

The phenomenon of interest in the study is public health associate degrees and certificates. To gain a rich understanding of this phenomenon of interest, it is important to gather input from multiple perspectives; therefore, the study aims encompass perceptions among the 63 informants in the four adopting colleges and five non-adopting colleges. The aims of this dissertation project are:

- 1) To assess the rate of adoption of public health degrees and certificates in community colleges between academic years 2009-2010 and 2011-2012.
- 2) To identify and describe the perceived attributes of public health associate degree and certificate programs among adopters and non-adopters.
- 3) To describe the processes, among adopters, and perceived processes, among non-adopters, for adopting public health degrees and certificates in community colleges.
- 4) To determine the perceived adoptability of draft prototype public health associate degree and certificate programs among adopters and non-adopters.

Study Aim 1 was explored through the quantitative data collection tool of a web-based course catalog scan, among 414 community colleges. Study Aims 2 through 4 were explored through the qualitative data collection tools of semi-structured key

informant in-depth interviews and documentary material analysis, via multiple case study methodology, among nine community colleges in which four had adopted a public health degree and/or certificate and five had not.

Research Questions

The questions guiding the research are:

- 1) What is the rate of adoption of public health degree and certificate programs in community colleges between academic years 2009-2010 and 2011-2012?
- 2) Why and how are public health degree and certificate programs adopted in community colleges?
 - a) What are the perceived advantages and disadvantages of public health associate degrees and certificates?
 - b) What are the facilitators and barriers to implementation of public health degrees and certificates in community colleges?
 - c) How adoptable are the proposed prototype public health degrees and certificates perceived to be?

Significance of the Study

As the field of public health adapts to changes in its scope, it will be paramount to prepare a workforce capable of addressing a wide variety of current and emerging public health issues. The study will assist national efforts aimed at transforming public health education, equipping a new, diverse audience with the necessary skills to protect the population's health. Considering so few community colleges currently offer public health degrees and/or certificates with no known studies performed on the adoption of such degrees, much can be learned from an exploration into why and how community

colleges adopt public health academic programs. Findings from this research will not only contribute to the field of public health and public health education, but also to the broader field of education. It will begin to fill a gap in educational innovation research, which has largely focused on adoption of educational tools rather than the adoption and diffusion of new academic programs in community colleges. Several specific contributions the research project aimed to address include:

Contributions to Public Health and Public Health Education

- Provide information to enable achievement of the Healthy People 2020 objective to increase the proportion of community colleges offering public health degrees and certificates, regarding:
 - perceived attributes of public health associate degrees/certificates, to assist in targeting those characteristics when marketing the innovation
 - implementation processes for public health degrees and certificates, to assist other interested colleges in following suit
- Document the rate of adoption of public health associate degrees and certificates to be incorporated into the Healthy People 2020 data collection process administered by the National Center for Health Statistics
- Provide a database to be used in future data collection efforts monitoring the adoption of undergraduate public health degrees and certificates in community colleges, to be particularly useful in informing Healthy People 2020 to monitor progress in its objectives over the decade
- Inform the refinement of prototype public health degrees and certificates to serve as a guide for community colleges considering their adoption

- Inform future research and policies regarding:
 - community colleges' adoption of public health degrees and certificates
 - education's role in addressing public health workforce needs.

Contributions to the Field of Education

- Assist in informing a variety of disciplines, particularly applied fields, on the types of information, resources and processes needed when constructing new degree and certificate programs within community colleges
- Expand on previous research and lay groundwork for future research in educational innovation
- Provide a sampling plan framework to assess the rate of adoption of new academic programs in community colleges
- Assist in the response to the national educational initiative which sets out to explore ways to expand opportunities at community colleges to develop America's workforce (The White House, 2010).

Definition of Terms

For purposes of this study, the terms *community college* and *two-year college (or institution)* will be used interchangeably. The use of both of these terms appears to be widely accepted with no apparent distinction between the two. However, one of the interviewees in the case study pointed out that *two-year college* is a misnomer considering students rarely complete a degree program within two years.

Also, the term *associate degree* is used to refer to Associate of Science, Associate of Arts, and Associate of Applied Sciences degrees. Variation in use of these specific degree labels has been observed across campuses; however, in general, Associate of Arts

and Associate of Science degrees are customarily considered transfer degrees, meaning they are designed to prepare students for four-year study. An Associate of Applied Science degree is usually designed to prepare students for direct entry into the workforce. For purposes of this study, all associate degrees meeting the public health criteria are included, regardless of the specific type of associate degree.

In addition, the term *certificate program* in this study refers to *for-academic credit certificate programs*. Community colleges offer a range of educational opportunities on multiple levels to meet the variety of needs of their diverse audience. One such opportunity is through certificate programs that carry no academic credit. However, to be consistent with the intent of the Healthy People 2020 objective, the certificates referred to in this project include only credit-bearing certificate programs.

The component of the public health workforce in which this study is focused is that in state and local health departments, referred to in this dissertation as the *governmental public health workforce*. This component comprises approximately 67 percent of the enumerated public health workforce (Gebbie, Merrill, B'toush, Cortazal, et al., 2000). Further detail describing the public health workforce, and the challenges associated with its definition, is provided in Chapter 2.

Overview of Next Chapters

Chapter 2 will describe the findings from relevant literature regarding the public health workforce and public health education's response to the workforce shortage, as well as curricular innovation adoption within higher education settings and the theoretical grounding in which the conceptual framework was based. Chapter 3 will provide detail regarding the methods employed to address the study's research questions. Chapter 4

will describe results of the study. Chapter 5 will provide a discussion of key findings and their relation to the conceptual framework, theory and previous research and put forth recommendations for research and practice related to public health education.

PUBLIC HEALTH WORKFORCE

The mission of public health has been expressed as “fulfilling society's interest in assuring conditions in which people can be healthy” (IOM, 1988, p. 7). In order to carry out this mission, a multidisciplinary team of professionals is needed, equipped with a range of skills and knowledge to design, apply and evaluate health promotion and disease prevention activities addressing the wide variety of current and emerging public health issues faced by society today. Due to its expansive breadth, the public health workforce is difficult to define and even more difficult to enumerate. Estimates indicate there were approximately 448,000 public health workers working in governmental public health at the federal, state or local levels in the United States in the year 2000 (Association of Schools of Public Health [ASPH], 2008). This figure demonstrates 50,000 fewer public health workers compared to 1980 estimates (ASPH, 2008). Considering the U.S. population increased by an estimated twenty four percent over those twenty years, the current public health workforce is being faced with having to do more with less (U.S. Census Bureau, 2010). The role of the public health workforce, its composition and its current needs are described below.

Definition

A commonly used definition of the “public health workforce” includes all those responsible for providing the ten essential public health services, described by the CDC (1994), to:

- Monitor health status to identify community health problems

- Diagnose and investigate health problems and health hazards in the community
- Inform, educate, and empower people about public health issues
- Mobilize community partnerships and action to identify and solve health issues
- Develop policies and plans that support individual and community health efforts
- Enforce laws and regulations that protect health and ensure safety
- Link people to needed personal health services and assure the provision of health care when otherwise unavailable
- Assure a competent public health and health care workforce
- Evaluate effectiveness, accessibility, and quality of personal and population-based health services
- Conduct research for new insights and innovative solutions to health problems

To carry out these services, public health workers serve many functions in diverse settings and across a variety of professions. The collective effort of public health workers contributed to the dramatic increase in life expectancy of U.S. residents during the 20th century. Between 1900 and 1999, average life span of U.S. residents increased by over 30 years, 25 of which have been attributed to advances in public health, such as vaccination, motor vehicle safety, safer workplaces, healthier mothers and babies and recognition of tobacco as a health hazard (Centers for Disease Control and Prevention [CDC], 1999).

Workforce Composition

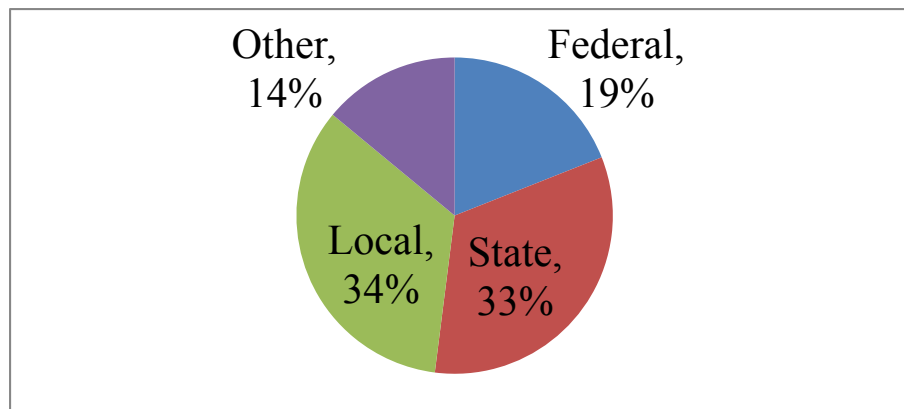
A “public health worker” is often described within three major dimensions (Gebbie, 2002):

- The specific profession of the individual (e.g. epidemiologist, public health analyst, or health educator);
- Their place of employment (e.g. health department, community health center, or research institution); or,
- Their focus of concern (e.g. maternal and child health, tobacco control, or injury prevention)

Because of the diverse professions, employment settings and type of work, it is difficult to enumerate the public health workforce. The most recent national enumeration took place in 2000, sponsored by the Health Resources and Services Administration (HRSA). To demonstrate the breadth of public health and difficulty in its enumeration, over 7,500 occupational titles were received in this national public health workforce enumeration (Gebbie, 2000). Best estimates indicate there are 450,000 public health workers in the U.S.; however, this does not include those working for the private sector, non-profit entities and unions, and those who work for the public sector in nontraditional public health professions, such as those in transportation planning and housing development. Of the 450,000, 4 percent are identified as holding official/administrative positions, 45 percent in professional positions, 14 percent in technical positions and 13 percent in clerical/support positions, with the remaining 25 percent unable to be assigned to a specific category (Gebbie et al., 2000). The breakdown according to place of employment for the identified public health workers is: local public health agencies

employ 34 percent, state public health agencies employ 33 percent, federal health agencies employ 19 percent, and other settings, such as schools of public health, account for the remaining 14 percent (ASPH, 2008; Gebbie et al., 2000).

Figure 1: Composition of Public Health Workforce



Local Health Departments

Employing approximately 155,000 employees in 2,794 local health departments across the country, the local health department workforce serves as the front line in implementing many of the essential public health services (National Association of County and City Health Officials [NACCHO], 2010).

Approximately 60 percent of the local health department workforce is comprised of the following four occupations: managers/directors, nurses, environmental health specialists, and clerical staff.

Close to 90 percent of local health departments have fewer than 100 FTE employees, and 20 percent have fewer than five FTEs. Only five percent of local health departments have 200 or more FTEs. The median FTEs among all local health departments is 15 (NACCHO, 2010).

The local health department workforce is predominantly female, with males comprising just 17 percent of the total workforce. The median age of top executives at local health departments in 2008 was 53 years (NACCHO, 2010).

State Health Agencies

Employing an estimated 120,000 public health workers, state health agencies are integral in assuring the public's health. Based on results from a 2007 ASTHO workforce study, the average state health agency employs 2,731 full time equivalents (FTE), with a median FTE of 1,383, and a range of 152 to 16,721 FTEs (Association of State and Territorial Health Officials [ASTHO], 2008).

In 2007, the median age of state health agency employees was 47 years, which is six years higher than the median age of the overall American workforce. The U.S. Bureau of Labor Statistics estimates that the median age of the American workforce will rise to 42 years, which could signify a potential increase in the median age of state health agency employees (ASTHO, 2008).

Of particular note, the average age of new hires in state health agencies has remained steady at 40 years. Reasons for this high average age of new hires are unknown; however, ASTHO's report suggests it could be a reflection of having an older pool of available public health workers, or potential barriers exist in recruiting younger people into state health agencies, including lack of competitive wages compared to the private sector and lack of an understanding about the importance of public health careers (ASTHO, 2008).

Recruitment and retention of qualified employees was cited as a need among respondents to the 2007 ASTHO workforce study. The recruitment strategy used most

often is online recruiting, such as a web-based job board and direct email of job announcements for circulation among various organizations and universities. The second most cited recruitment strategy among survey respondents was recruitment at job fairs at colleges and universities, and at other cultural events, such as Asian or Latino festivals (ASTHO, 2008).

In an effort to promote retention, the most common strategies cited among state health agencies were flexible hours, career development, and rehiring retirees. Additional retention strategies included employee recognition and reward programs, providing telecommuting options, providing tuition assistance, alternate work schedules, and providing retention bonuses (ASTHO, 2008).

Federal Public Health Workforce

Based on the most recent enumeration conducted in 2000, the federal civilian and military public health workforce is estimated to include 75,726 civilian employees, 5,718 members of the U.S. Public Health Service, and 4,310 members of the military (Air Force, Army and Navy) (Health Resources and Services Administration [HRSA], 2000). Civilian employees are employed in Agriculture, Education, Energy, Environmental Protection, Housing and Urban Development, Justice, Labor, Transportation, Treasury and Veterans Affairs, with the majority (57 percent) working in the Department of Health and Human Services (DHHS). Approximately 78 percent of the federal public health workforce is classified as professional. Two categories of professional workers have over 9,000 workers each: public health laboratory professionals and licensure/inspection/regulatory specialists. There were 126 health educators identified in the federal public health workforce (HRSA, 2000).

PUBLIC HEALTH WORKFORCE SHORTAGES AND NEEDS

Public health is increasingly being called upon to address a wide range of complex, emerging issues to a growing population; however, a diminishing workforce is being witnessed over time. In 2000, the total workforce was estimated to be about 50,000 less than what it was 20 years prior to that. The number of public health workers declined to 158 workers per 100,000 Americans in 2000, as compared to 220 workers per 100,000 Americans in 1980 (Merril, B'toush, Gupta, & Gebbie, 2003). ASPH reported that by 2020, the U.S. will face a shortfall of more than 250,000 public health workers. This figure was calculated based on a projected public health workforce of 714,839 workers for the projected 2020 U.S. population of 324,927,000, using the benchmark 1980 workforce ratio of 220 public health workers for every 100,000 U.S. residents (ASPH, 2008). In the report, ASPH acknowledges that the 1980 workforce ratio may underestimate the ideal, but believed it provided a useful benchmark. Although not clearly defined in the report, it is understood that the shortage of 250,000 public health workers is referring to the public sector, particularly within governmental public health, considering the estimates were based on those presented in the 2000 enumeration which included public health workers primarily in federal, state, and local public health agencies, with three percent of the enumerated workforce including public health workers employed at the following voluntary agencies: American Cancer Society, American Lung Association, American Red Cross and the March of Dimes (Gebbie et al., 2000).

Estimates indicate that one-quarter of the current public sector public health workforce will be eligible to retire by the year 2012. It is predicted that graduate schools of public health would need to train three times the current number of graduates to keep

pace with the demand (ASPH, 2008). Professions experiencing particular shortages include: epidemiologists, biostatisticians, health educators, environmental health workers, public health laboratory workers, public health nurses and physicians (APHA, 2006).

Key factors contributing to the inability of public health agencies to ensure a sufficient number of qualified individuals to fill vacancies are: an aging workforce nearing retirement and a lack of students and young professionals interested in careers at public health agencies (ASTHO, 2004). As states are faced with budget cuts, the vacancies resulting from retirement and employee turnover are not being filled. The salaries offered by governmental public health agencies cannot compete with the higher salaries offered in the private sector.

Local health departments

In 2008, approximately three-quarters (76 percent) of local health departments reported that one or no employees had retired in the previous year, including the 57 percent that had no employees retire in this time. Retirement-eligible data is limited among local health departments since only one-third reported they had tabulated data on employee age and 46 percent had not determined the percentage of their staff members that were eligible for retirement in the next five years. However, when asked to provide the calculated percentage, or best estimate, of their workforce that would be eligible for retirement in the next five years, an average of 20 percent was provided across the local health departments (NACCHO, 2010).

Even though the average total number of workers employed in local health departments remained consistent between 2005 and 2008, at approximately 155,000 employees, there were fluctuations within certain occupations. An increase of

approximately one percent or less was observed in number of FTEs employed as administrative/clerical personnel, managers/directors, environmental health specialists, or other environmental health scientists from 2005 to 2008. Greater increases were seen in the number of FTEs of other occupations, such as emergency preparedness coordinators (4 percent increase), information systems specialists (13 percent increase) and public information specialists (9 percent increase). However, in other occupations, the number of FTEs employed at local health departments decreased between 2005 and 2008, including physicians (6 percent decrease), registered nurses (10 percent decrease), epidemiologists (11 percent decrease) and health educators (20 percent decrease) (NACCHO, 2010).

State health agencies

“An exodus of highly skilled older workers is inevitable.”
– ASTHO 2007 State Public Health Workforce Survey Results, p. 18

According to a 2007 ASTHO workforce survey, approximately one-third (29 percent) of the state public health agency workforce, among the reporting 28 states, would be eligible to retire by 2012. Some states indicated that more than half (56 percent) of their health employees would be retirement-eligible by 2012. These figures demonstrate an increase over 2003 workforce study results, in which 24 percent of the state public health workforce was deemed eligible for retirement within five years, with rates reaching 45 percent at some state public health agencies (ASTHO, 2008).

Overcoming the workforce shortage

A variety of barriers exist to overcoming the public health workforce shortage. Among state health agencies, identified barriers included (ASTHO, 2008):

- Budget restraints

- Lack of competitive wages for public health careers
- Lack of understanding among recent graduates as to the benefits of public health careers
- Lack of visibility about the importance of public health careers
- Bureaucratic processes in selection and hiring qualified candidates

An underlying theme among these barriers is the ability to recruit and retain a qualified public health workforce. The educational requirements need to be balanced with the pay scale. For instance, a HRSA-funded workforce study demonstrated that positions requiring an MPH were most commonly found at state departments of health or larger district or local offices. While district and local health offices had some appreciation of the value of workers with formal public health training, few required it or had pay scales which would attract workers with MPH training, particularly smaller agencies. Among local agencies, there was a preference for clinicians with MPHs to steer the traditional clinical services more toward an emphasis on population health. Therefore, non-clinician MPH graduates were less likely to seek out positions at local health agencies. In addition, local health agency workers who completed MPH training were more likely to leave for other opportunities, with higher pay, elsewhere. This situation creates few incentives for local health departments to encourage their employees to pursue an MPH (HRSA, 2005).

Most district and local health leaders saw a need for training in core concepts in public health; however, they did not think their workers needed MPHs to acquire the basic skill set of a public health professional (HRSA, 2005).

The key training-related recommendations presented in the 2005 HRSA workforce report included:

- Provide more opportunities for public health training and education that are accessible to senior staff of district and local health offices, particularly those in leadership positions.
- Provide public health workers with support and assistance to further their education, both graduate and undergraduate, related to critical public health skills and competencies. This could include tuition reimbursement, release time, and increasing the availability of distance education or web-based course offerings.
- Create a service obligated scholarship or loan repayment program modeled after the National Health Service Corps that provides scholarship or loan repayment support in return for a commitment to work in local public health offices/agencies with shortages of public health workers.
- Identify and describe effective ‘career ladders’ within state public health systems that could assist other states in developing similar upgrading opportunities, particularly in shortage occupations.
- Encourage schools of public health, public health training centers, and other educational programs to be more responsive to the recruitment and training needs of local public health agencies, particularly those in remote locations. Identify and describe models of collaboration or ‘best practices’ between academia and public health practice. Provide incentives to encourage collaboration between relevant educational programs and local public health agencies.

- Support the development of a model public health curriculum that could help prepare public health professionals for contemporary public health practice and make the curriculum available to schools of public health, medicine, nursing, and other health professions.

Similar recommendations were presented in ASPH's 2008 policy brief, *Confronting the Public Health Workforce Crisis*, which included: increasing federal funding to support public health professional education; building public health education capacity, including the expansion of undergraduate education and development of opportunities for the public health workforce to enroll in short courses, certificate programs, distance learning, and other opportunities; and providing grants to state health departments to promote worker training (ASPH, 2008).

PUBLIC HEALTH EDUCATION

Many of the proposed recommendations to address the public health workforce shortage involve expanding the accessibility of public health education and training opportunities. It is estimated that only 20 percent of public health professionals have formal education in public health (HRSA, 2006). A 2005 HRSA-funded workforce study indicated that, "The greatest unmet need reported was for training in core public health concepts." (HRSA, 2005, p. 4) A basic understanding of public health should be exhibited by all involved in the daily operations of public health agencies, including clerical and support positions (Gebbie et al., 2000).

Graduate-level

Formal education in public health through schools of public health has been available since the beginning of the twentieth century. Recognized by the U.S.

Department of Education to accredit schools and graduate programs of public health, the Council on Education for Public Health (CEPH) is an independent agency which accredits these schools and programs to prepare students for entry into careers in public health. The primary professional degree is the Master of Public Health (MPH) but other master and doctoral degrees are also offered among the accredited schools and programs, including Master of Science (MS), Master of Science in Public Health (MSPH), Master of Health Administration (MHA), Doctor of Public Health (DrPH), Doctor of Science (ScD), Doctor of Philosophy (PhD), and a number of joint degrees.

As of November 2011, there were 49 schools of public health and 84 graduate programs of public health accredited by the Council on Education for Public Health (CEPH) (Council on Education for Public Health [CEPH], 2011). The 49 schools represent a 104 percent increase above the 24 accredited schools of public health in existence in 1988-89. Among the 46 schools of public health that were accredited in fall 2010, the year in which most recent data are available, 26,340 students were enrolled across the range of available graduate degree programs, representing a 66 percent increase from 1999 enrollments when there were 15,839 students enrolled. Among the 46 schools, 11 were private and 35 were public (ASPH Annual Report, 2010).

Undergraduate-level

The support for undergraduate public health education is gaining momentum, stimulated by the Institute of Medicine's 2003 report *Who Will Keep the People Healthy? Educating Public Health Professionals for the 21st Century* (Gebbie, Rosenstock & Hernandez, 2003). This groundbreaking report turned attention to the field of public health, and has led to further analysis of public health workforce issues and the

educational and training needs for building and sustaining a healthy society. A key recommendation from the IOM report was that public health education should be accessible to all undergraduate students in an effort to create an educated citizenry exhibiting a basic understanding of public health issues, regardless of their future career goals. This idea was further explored through the 2006 Consensus Conference on Undergraduate Public Health Education, which gathered academicians and practitioners from a variety of disciplines, to develop plans to guide efforts needed to meet the goal of providing all undergraduate students with access to education in public health. Consensus was achieved on the recommendation to incorporate Public Health 101, Epidemiology 101 and Global Health 101 courses meeting general education requirements on undergraduate campuses across the country (Riegelman, Albertine, & Persily, 2007).

Results of surveys conducted in 2005 and 2006 by ASPH and APTR showed that the majority of the accredited schools and programs of public health were offering coursework in public health to undergraduate students. However, such course offerings were rarely seen in the approximately 1,900 four-year colleges and universities without schools or programs of public health, indicating untapped potential in reaching students in liberal arts and sciences programs (Riegelman, 2008).

Educated Citizen and Public Health

To promote undergraduate public health studies, particularly among liberal arts and sciences campuses, AAC&U, in collaboration with APTR, ASPH and the Council of Colleges of Arts and Sciences (CCAS), launched the Educated Citizen and Public Health (ECPH) initiative in 2007. The initiative is premised on the notion that an understanding

of public health issues is a critical component of good citizenship and is a prerequisite for taking responsibility for building healthy societies. The initiative aims to serve the broader higher education community, providing direction for the integration of public health perspectives within a comprehensive liberal education framework while simultaneously fulfilling the IOM's recommendation that public health education should be accessible to all undergraduates. The initiative sets out to bring integrative public health to all undergraduate institutions, fostering interdisciplinary and inter-professional collaboration, and linking to other initiatives addressing human health and environmental sustainability. Through the creation and organization of publications, presentations, and resources, the ECPH project connects and informs, assisting faculty in the development of public health curricula throughout colleges and universities across the country (AAC&U, 2010).

AAC&U is in the midst of a ten-year course of action for undergraduate liberal education called Liberal Education and America's Promise (LEAP), which sets goals of integrative, interdisciplinary and applied knowledge and practice, including community outreach and civic responsibility, across all undergraduate programs. As public health draws upon social sciences, natural sciences, mathematics, humanities, and the arts, it is uniquely positioned to align with the goals of a liberal education. In addition, it encourages the development of written and oral communication skills, critical and creative thinking, quantitative reasoning, information literacy, and teamwork and problem solving. Therefore, the study of public health serves as a model for the implementation of LEAP's goals, and the ECPH initiative bridges that link.

Public Health Studies in Four-Year Institutions

In collaboration with ASPH, with funding from the Josiah Macy, Jr. Foundation, and through the ASPH/CDC Cooperative Agreement, AAC&U gathered quantitative and qualitative data to determine the extent of undergraduate public health studies among AAC&U member institutions and to provide insight into the variability within undergraduate public health programs. Research strategies included scanning and analyzing catalogs of undergraduate program offerings; convening focus groups comprised of faculty and administrators at four-year colleges, and surveying AAC&U member chief academic officers.

The catalog scan, conducted in July and August 2008, consisted of reviewing online catalogs for 837 four-year, U.S.-based, AAC&U member institutions. Through the catalog scan, it was determined that 16 percent (137 of 837) of institutions offer a major, minor or concentration in public health or similar field (community health, health education, health and society, etc.) Of the 137, 94 institutions offer majors, 56 offer minors, and 29 offer concentrations. Of those institutions offering programs, nearly half are research universities (48 percent), while 66 percent are public compared to 34 percent private (Hovland, Kirkwood, Ward, Osterweis, & Silver, 2009).

In line with the breadth of public health, substantial variety was found in the coursework comprising the majors. The curriculum tends to be focused either toward the natural sciences or the social sciences, while some programs offer a blend of the two. Most of the descriptions indicate that the program sets out to prepare students to either go on for additional schooling or to obtain an entry-level job upon graduation (Hovland et al., 2009).

In order to inform subsequent survey development, four telephone focus group sessions were conducted with 1) deans overseeing undergraduate curriculum at colleges which do not offer public health programs at either the undergraduate or graduate level 2) deans and faculty of master's level public health programs at institutions without undergraduate public health 3) deans and faculty at the undergraduate level at research, doctoral and comprehensive universities offering undergraduate, but not graduate, programs in public health and 4) deans and faculty at baccalaureate and smaller comprehensive institutions which offer undergraduate, but not graduate, programs in public health. The key findings included: participating deans at institutions without public health programs had a vague understanding of what public health is; participants believed there is student demand for public health course offerings on their campuses; participants saw the value of integrating public health studies into general education but see logistical challenges in doing so such as scheduling, maintaining faculty resources, and potential "turf" wars between departments; obstacles to implementing a public health program are budget and faculty resource availability, logistical issues such as coordination between departments and finding faculty with appropriate multidisciplinary expertise, and general lack of awareness of public health among students, faculty and administrators (Hart, 2009).

Sixty-nine percent of survey respondents, comprised of AAC&U member chief academic officers, indicated they offer at least one course to undergraduates that address the fundamental outcomes of public health. Thirty-nine percent of the research survey respondents indicated they have considered adding public health to their undergraduate offerings. Most of these institutions are interested in offering a concentration (14

percent) as opposed to a major (7 percent) or a minor (10 percent) (AAC&U, 2009). It is important to note that data from the survey should only be viewed as suggestive, due to the limitations of a low response rate (16 percent) and selection bias, as responses were skewed toward larger institutions (Hovland et al., 2009).

Among survey respondents, the main obstacle to establishing public health programs is not subject matter expertise (36 percent), but fiscal resources (69 percent). Another challenge identified among respondents is educating students, faculty and administrators about the learning outcomes and post-collegiate opportunities associated with a public health program – that public health is an interdisciplinary area of study that can be effectively incorporated into a liberal education. A further challenge is the marketability of the program, and thus the types of job opportunities that result from a major in public health. Overall, the main challenge appeared to relate to making the case for public health: identifying specific learning outcomes of an undergraduate public health program and demonstrating the linkages to current educational goals (Hovland et al., 2009).

Among the surveyed chief academic officers, the resources and activities most likely to be utilized in developing or expanding undergraduate public health offerings include data regarding graduates from such programs; assistance connecting colleges with public health experts in local agencies to serve as guest lecturers and preceptors for field experiences, service learning, and internships; and competencies or guidelines to develop the program, and to use with accreditation agencies (Hovland et al., 2009).

In partnership with APTR, and in conjunction with the Healthy People 2020 Curriculum Taskforce, through a competitive call for proposals, AAC&U selected fifteen

colleges and universities (thirteen four-year institutions and two two-year institutions) to develop “successful practices” case studies to describe their undergraduate public health programs. The selected institutions represented diversity across cases, from long-standing public health programs (earliest launched in 1976) to others developed as recently as 2010, from small programs (12 students) to large programs (400 students); from programs in institutions with graduate public health education to those at liberal arts institutions without graduate programs (AAC&U Cases, 2011.)

Cases described the following as impetus for initiating the public health program:

- Recognition of a need to:
 - Expand training opportunities for public health practitioners beyond graduate education
 - Expand and diversify the public health workforce
 - Introduce students to public health concepts, competencies and tools to prepare them for entry into a variety of professions and graduate/professional programs
- Response to:
 - Grant funding
 - Institute of Medicine report: Who Will Keep the Public Healthy?
 - Educated Citizen and Public Health
- Good fit with institution:
 - Interdisciplinary nature of public health allows for development of synergies across programs within the college

- Viewed as a no- to low-cost option to benefit career prospects for students
- Faculty interest
- Student interest

Cases provided lessons learned and include:

- Provide personalized attention to students
- Seek input from students and let student passion drive the process
- Market to incoming students
- Sequence course to build up skills
- Maintain consistency with competencies across the program and courses
- Provide access to public health coursework to all students
- Experiential learning is an essential component of undergraduate public health education
- Provide extracurricular activities
- Encourage study abroad experiences
- Respond to the market
- Build the program based on the institution's strengths
- Collaborate internally and externally
 - Establish articulation agreements

Public Health Studies in Two-Year Institutions

Less than two percent of community colleges offered public health degrees and/or certificates in the 2009-2010 academic year (Kirkwood & Riegelman, 2011). This equates to approximately 19 U.S. community colleges that offer public health degrees

and/or certificates. Among these, 11 have been identified (Kirkwood, 2010). The public health community, particularly the governmental public health workforce, has observed an untapped resource within community colleges to assist in addressing public health workforce needs. NACCHO (2007) cited the potential of community colleges in a 2007 report based on 2005 data:

Developers and providers of training for LHD staff should also strive to include course offerings that are appropriate to the wide range of educational backgrounds of LHD staff. Courses intended for the graduate level are unlikely to be effective for the many LHD front-line staff that have not completed bachelor's degrees. Community colleges might be useful partners in developing trainings for this segment of the LHD workforce (p. 10).

A similar sentiment was reiterated in NACCHO's 2010 report, based on 2008 data, which indicated, "Although many LHDs have some interaction with academic institutions around workforce development, the relatively lower percentage of LHDs that interact with community colleges suggests an untapped opportunity for many LHDs" (NACCHO, 2010, p. 47).

In addition, in ASTHO's Public Health Workforce Position Statement, released in late 2009, a recommendation specifically mentioning outreach to community colleges is included: "Provide funding to develop systems and training programs through partnerships with schools of public health and community colleges to increase access to formal training opportunities" (ASTHO, 2009, p. 1).

COMMUNITY COLLEGES

Community colleges are publicly funded two-year institutions which place an emphasis on serving the community by offering an affordable and accessible education to all who seek it. In addition to serving recent high school graduates as a step on the way to a four-year degree, community colleges also prepare students for entry-level jobs. In

addition, many individuals of all ages and backgrounds choose to enroll in community colleges after, or while, working to pursue continuing education, to enhance skills or explore career changes, often in the form of certificate programs. Description of key characteristics of community colleges is provided below and summarized in Table 1.

Accessibility

Community colleges are highly accessible to a diverse audience with 1,167 colleges across the United States, as of January 2011. AACC reports that 90 percent of the U.S. population lives within 25 miles of a community college. And, for those who are unable to take courses on campus, community colleges are leaders in distance learning, with 92 percent of community colleges offering at least one course online, with 41 percent of public community colleges offering full degrees online. Another attractive feature of community colleges is that tuition is approximately a third of the cost of that at public four-year colleges (AACC, 2011).

Student Demographics

Community college students comprise 44 percent of all undergraduates and 43 percent of first-time freshmen. In addition, approximately half of all Bachelor degree recipients have attended a community college at some point in their education. Among the 1,167 community colleges recognized by AACC in 2011, 12.4 million students are enrolled. Community college students are highly representative of the U.S. population, including underrepresented minorities who comprise 45 percent of the community college student population. Also of note is that 42 percent of community college students are first generation to attend college. Community college enrollees tend to be older, with

an average age of 28 years, and women are in the majority, representing 58 percent of the community college population (AACC, 2011).

Health Training Experience

Community colleges have a strong tradition of preparing the health care workforce, training 59 percent of new nurses, 63 percent of allied health workers, and, 84 percent of emergency management technicians (AACC, 2011). In addition, many community colleges offer elements of public health, such as health information management, environmental studies, homeland security, and community health worker programs. Therefore, potential exists to build upon this experience, to assemble curricula to address public health workforce needs.

Table 1: Community College Characteristics, 2011

Characteristic		Percentage (%)
Number of colleges	1,167	--
Students enrolled	12.4 million	--
Women		58
Minorities		45*
	<i>Black</i>	13
	<i>Hispanic</i>	16
	<i>Asian/Pacific Islander</i>	6
	<i>Native American</i>	1
First generation to attend college		42
Percentage of all U.S. undergraduates		44
Percentage of first-time freshmen		43
Percentage of Bachelor degree recipients who attended a community college		50 (approximate)
Percentage of health workers trained		
	<i>Nurses</i>	59
	<i>Allied health workers</i>	63
	<i>Emergency management technicians</i>	84

Source: American Association of Community Colleges, 2011

*Note: Percentages do not add to total due to rounding.

Utilization among other Professions

The public health field has lagged behind other professions, such as pharmacy, dentistry, and engineering, which have utilized community colleges to attract students to build a strong, diverse and competent workforce. Articulation agreements have been established to create pathways from two-year degrees through graduate or terminal degrees, such as is seen with pharmacy curricula. In addition, many industries utilize the community colleges to market their professions and provide opportunities for life-long learning (Honoré, Graham, Garcia, & Morris, 2008).

In the Spotlight

Community colleges

"are great, under-appreciated assets that we have to value and we have to support."

–President Barack Obama, August 9, 2010

On October 5, 2010, the first-ever White House Summit on Community Colleges was held, demonstrating the Obama administration's commitment to strengthening the nation's community college system. The Summit, hosted by Dr. Jill Biden, the wife of the Vice President and community college faculty member, brought together representatives from community colleges, business, philanthropy, federal and state policy leaders, and students to discuss ways to expand opportunities at community colleges to develop America's workforce and reach the country's educational goals.

Two national goals President Obama set are that by 2020, America will have the highest proportion of college graduates in the world, and community colleges will produce an additional 5 million graduates. In July 2009, President Obama proposed the American Graduation Initiative which sets out to invest in community colleges and assist American workers in obtaining the skills and credentials they need to succeed. The

Health Care and Education Reconciliation Act includes \$2 billion for community colleges to develop, improve, and provide education and training, through the collaboration with businesses, partnering with other educational institutions, teaching basic skills through remedial and adult education programs, personalized career services for students, and development of additional online courses (The White House, 2010).

Healthy People 2020

Since 1979, DHHS has provided and monitored a comprehensive set of science-based, ten-year national public health objectives. The initiative, referred to as *Healthy People*, sets out to meet a broad range of health needs through collaborations across sectors of society and is grounded in the notion that setting such objectives and benchmarks can motivate, guide, and focus action. In December 2010, DHHS announced the next decade's objectives (Healthy People 2020).

Healthy People 2020 includes a new measurable objective supporting the integration of public health curricula in community colleges.

The objective, listed as Objective PHI HP2020–16, reads:

Increase the proportion of 2 year colleges that offer public health or related associate degrees and/or certificate programs.

The collection of baseline data, made possible with funding through the ASPH-CDC cooperative agreement in cooperation with AACC, allowed conversion from a *developmental* to a *measurable* Healthy People 2020 objective. Baseline data indicate that an estimated 1.58% of community colleges offered public health or related associate degrees in the 2009-2010 academic year, and an estimated 0.25% of community colleges

offered for-credit public health or related certificate programs in the 2009-2010 academic year (Kirkwood & Riegelman, 2011).

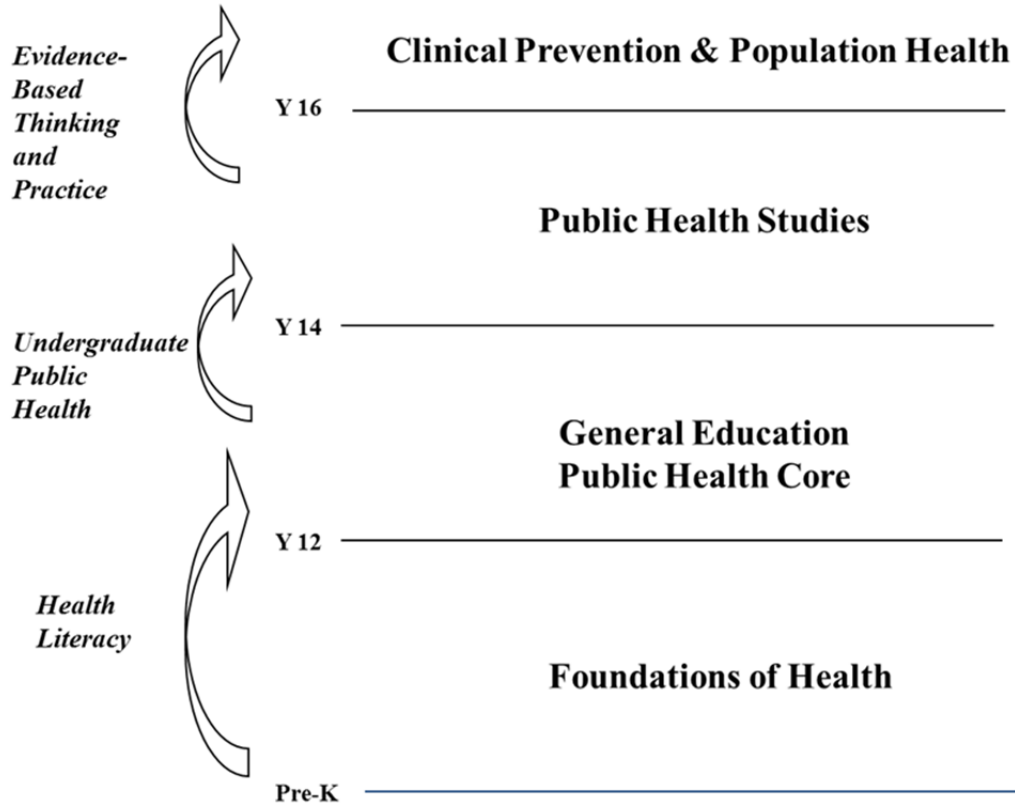
Through the target-setting process of Healthy People 2020, modest targets were set for the objective, but have the flexibility to be adjusted throughout the decade if data indicate a modification is needed. The original, and current, target set for the proportion of community colleges offering a public health or related associate degree is three percent by the year 2020. The original, and current, target set for the proportion of community colleges offering a public health or related certificate program is one percent by the year 2020.

Education for Health framework

The Education for Health framework, proposed by the Healthy People Curriculum Taskforce, highlights the need for the integration of education on all levels, bringing together the areas of health literacy, undergraduate public health, and evidence-based practice. An overall aim of the framework is to connect the educational offerings between academic institutions and to facilitate movement from education to the workforce and from the workforce back to education. As can be seen in Figure 2, community colleges (represented between Years 12-14) serve as an integral connection between K-12 schooling and four-year colleges and universities.

Figure 2: Education for Health Framework

Education for Health



BRIDGING ACADEMIA AND PRACTICE

Developing curricula intended to meet the needs of public health practice is not a new concept. Efforts to bridge academia and practice have centered on graduate-level competencies, and are now expanding to include learning outcomes on the undergraduate level. ASPH has led a variety of competency development projects including those for MPH and DrPH degrees, as well as the specific areas of public health preparedness and response and global health. The competencies are intended to serve as a guide for faculty to include relevant content in their existing courses, and for students to seek opportunities

to develop and maintain a comprehensive understanding of applicable issues to be effective public health practitioners (ASPH, Competency, 2011).

In July 2011, ASPH released the Undergraduate Public Health Learning Outcomes Model, Version 1.0. The learning outcomes are designed for *all* undergraduates. The project explicitly includes two-year colleges as part of the target audience. As indicated on the ASPH website, the goal of the project is: “To define what every undergraduate should know and be able to do to promote population health both locally and globally” (ASPH, Competency, 2011).

Prototype Public Health Associate Degrees/Certificates

Based on a review of the identified overall public health workforce needs, community college structure, and consultation with the U.S. Department of Health and Human Services Public Health Systems Working Group and other national public health organizations, four specialized prototype public health associate degrees and certificate programs have been proposed, as well as a generalist option. The prototypes fall within the following areas:

- *Environmental Health*: To prepare students for the Environmental Health Technician Certification of the National Environmental Health Association and provide appropriate coursework to transfer to a bachelor’s degree program which fulfills the educational requirement for the Environmental Health Specialist Certification.
- *Public Health Preparedness*: To prepare students to fill a range of public health preparedness roles related to the prevention, detection, and response to public health outbreaks, emergencies and disasters.

- *Public Health Informatics*: To prepare students to assist in the collection and management of public health data, including surveillance activities and outbreak investigations.
- *Pre-Health Educator*: A concentration to prepare students for bachelor degree programs in health education, in accordance with the responsibilities and competencies established by the National Commission for Health Education Credentialing, providing the general education and basic specialized coursework required to become a Certified Health Education Specialist.
- *Public Health Generalist*: An option geared for students wishing to transfer from two-year to four-year institutions with a grounding in public health concepts. Building upon the core courses (Public Health 101, Epidemiology 101, and Global Health 101), coursework will allow students to select from two or more broad areas of public health including: social and behavioral sciences, health communications, health services management, health policy, biostatistics, informatics and environmental health.

The prototypes are built upon the recommended general education core courses in public health, epidemiology and global health, provide a set of specialized courses, and include an experiential component. The prototypes are designed to ensure a career ladder, encouraging articulation of the curricula of two-year and four-year institutions as well as continuing career development at the graduate level (Fulcher et. al., 2010).

EDUCATIONAL INNOVATION RESEARCH

Among the innovation research in higher education, much is focused on the adoption of educational tools, such as an assessment tool (McCann, 2007), or a learning management system (Samarawickrema & Stacey, 2007).

Other research has focused on curriculum adoption within higher education settings, but restricted to efforts within individual institutions, such as the issues encountered during the implementation and management of an integrated four-year undergraduate civil engineering curriculum at Colorado State University (Grigg, Criswell, & Siller, 1996; Grigg, Criswell, Fontane, Sato, Siller & Sunada, 2004), the development of a Masters in Management Information Systems at Illinois Benedictine College (Dibblee, 1992) and the development of a physician manager curriculum for residents in psychiatry at the University of Toronto (Maggi, Stergiopoulos & Sockalingam, 2008).

Key facilitators for development and implementation of the curriculum highlighted in these research studies include: active involvement of faculty throughout the process, attending to the organization's culture and identifying the organization's strengths and weaknesses, and establishing and communicating a clear vision and goals for the program, projecting future needs and opportunities of employers, students and society. Key barriers to curriculum development and implementation described in the research which may be applicable to curriculum implementation in community colleges, and were explored in the present study, include: lack of faculty knowledge in the required knowledge domains, preparing faculty to teach the new courses, and rescheduling

existing courses to fit within the new curriculum (Grigg et al. 1996; Grigg et al., 2004; Dibblee, 1992; Maggi et al., 2008).

Other innovation research has focused on the broad dissemination of curricula across multiple higher educational institutions. Such research includes the adoption of gerontological curricula within schools of social work (Damron-Rodriguez & Lubben, 1994; Damron-Rodriguez, Villa, Tseng, & Lubben, 1997) and development of a tobacco treatment curriculum for psychiatry training programs (Prochaska, Fromont, Hudmon, & Cataldo, 2009), which are both described in further detail below.

Innovation diffusion theory was utilized in the research conducted on the adoption of gerontological curricula within schools of social work. One study specifically explored 1) whether schools of social work with linkages to gerontology centers on campus adopt gerontological curriculum to a greater extent than schools without such linkages and 2) whether multidisciplinary training programs have higher rates of adoption of gerontological social work curriculum than training programs without the multidisciplinary linkages (Damron-Rodriguez & Lubben, 1994). This cross-sectional study, primarily utilizing data from a 1988 survey among U.S. graduate schools of social work, assessed gerontological curricula adoption on two levels: minimal aging content integration and substantial aging curricula. The study found a statistically significant relationship between curricula adoption and the school of social work's linkage to a gerontology center, multidisciplinary approach, and presence of a medical school on campus. However, the school's linkage with a gerontology center on campus was found not to be significantly related to adoption of substantial aging curricula (Damron-Rodriguez & Lubben, 1994). A follow-up study was performed based on the 1988

survey data utilized in the previous study, as well as data from a 1993 survey among graduate schools of social work. This study also used an innovation diffusion model and examined the relationship between demographic and organizational variables and the adoption of gerontological curriculum in schools of social work (Damron-Rodriguez et al., 1997). The study found that gerontological curricula adoption was related to the size of the social work student body and the existence of a multidisciplinary gerontology center on campus, but demographic variables associated with an aging population were not directly related to curricula adoption (Damron-Rodriguez et al., 1997).

The Diffusion of Innovations theory, in combination with Glasgow's (2004) RE-AIM framework, was utilized in the development of *Psychiatry Rx for Change*, a tobacco treatment curriculum for psychiatry training programs intended to increase the likelihood that smokers with co-occurring disorders will receive evidence-based cessation treatment. The researchers examined training needs by administration of a survey to psychiatry residents and national residency training directors. Meta-analyses and clinical practice guidelines informed the curriculum content. Feedback from an expert advisory group was incorporated into a curriculum outline which served as the basis for curriculum slides and supporting materials evaluated in a focus group with psychiatry residents and further informed by individual interviews with psychiatry residency training faculty. The curriculum developers set out to maximize the potential for broad-scale dissemination and adoption through guidance provided by its theoretical grounding. For example, resources and support are provided to reduce perceived complexity, provided in a modular format to ease perceived compatibility, with ready-made teaching materials

providing relative advantage, since the trainer would not need to develop their own materials (Prochaska et. al., 2009).

Innovation Adoption in Community Colleges

Due to the focus of the present study on innovation adoption in community colleges, a close examination of literature pertaining to innovation in these institutions took place. Published literature describing the adoption of innovations in community colleges was limited; however, as was seen in the literature among the broader educational innovation research, much of the innovation research involving community colleges has also surrounded the adoption of educational tools, such as student learning assessment tools (Dove, 2009), retention strategies (Beatty-Guenter, 1994), online public access catalogs (Marson, 2001), podcasting (Hoskyns-Long, 2009), and a technology-based facility (Savukinas, 2004). Other research, however, has explored the diffusion of curriculum across community colleges such as the adoption of general education competencies (Davis, 1996), community college baccalaureate degrees (Petrosian, 2010) and an associate of arts in teaching (McDonough, 2003). These studies will be particularly relevant to the present study exploring the adoption of public health curricula in community colleges and are described below.

The study which examined efforts to integrate general education competencies in courses and programs within a community college system investigated the relationship between adoption or rejection rates of eight identified competencies and their attributes as described by the Diffusion of Innovations theory. In addition, the study identified methods used by faculty to incorporate the eight competencies into curricula. Conclusions of the study included: the surveyed colleges were in varying stages of

implementation depending, in part, on the level of support from the administration; the diffusion characteristics of compatibility, complexity, communicability and divisibility were significantly related to the rate of adoption while the relative advantage characteristic was moderately related to adoption; and the primary methods of integrating the competencies among faculty utilized general education courses and applied courses (Davis, 1996).

The study regarding community college baccalaureate degree programs examined faculty and administrator perspectives from three community colleges regarding factors which may have contributed to development of the degrees in Texas. The study's findings suggested that the perceived factors of *student need* and *workforce need* had the greatest influence in development of the community college baccalaureate degrees (Petrosian, 2010).

An article describing the development of an Associate of Arts in Teaching (AAT) degree in Maryland indicates that a collaborative effort was undertaken among the faculty and administration at two-year and four-year institutions to alleviate teacher shortages through easing the transfer process of education students from community colleges to four-year institutions (McDonough, 2003).

To gain further understanding into the adoption of new programs in community colleges, the literature search included non-peer reviewed publications, which, in turn, led to websites of individual colleges. A summary of this search is provided below.

In fall 2007, Orange County Community College began offering two new degree programs: human services and emergency management. As described by a faculty member involved in the college's adoption of the human services degree, the program is

designed to accommodate individuals currently working in the field and students not yet working in the field to prepare them with the skills necessary to be effective service providers, as well as students wishing to pursue a four-year degree within human services. The emergency management degree is primarily intended for first-responders already working in the field to continue their professional growth. The vice president for academic affairs indicated “We are constantly assessing and evaluating our entire academic curriculum as we seek to provide programs that are relevant to today’s students and that will positively impact the quality of life of our students and the residents of Orange County. These two programs accomplish both of those goals, and each has been met with tremendous response within the community” (SUNY Orange, 2006).

Based on employment projections from the Department of Labor, indicating that employment of environmental scientists is expected to increase by 25 percent between 2006 and 2016, Manchester Community College announced in January 2009 their plans to offer a new associate of science degree program in environmental science. The degree builds on the college’s existing curriculum on sustainability and the environment, and was designed through discussions with faculty from nearby four-year institutions, as the degree will provide students with the knowledge and skills for transfer to related baccalaureate programs. The director of the college’s Mathematics, Science and Health Careers division stated “Environmental issues are among the most urgent facing society today and Manchester Community College is proud to provide leadership in environmental science education with the addition of this new degree program” (Manchester, 2009).

The Associate of Science degree in which Spring Arbor University began offering in fall 2009 is designed to prepare students for further education or career enhancement. The college's vice president for academic affairs stated, "The new degree helps prepare people in two ways. Those with no degree get a strong credential that makes them more marketable during this economic downturn. The current economy requires you to be even more prepared than in the past. Second, the ASB is a great stepping stone into a bachelor's degree program" (Spring, 2009).

Beginning in fall 2009, East Arkansas Community College began offering students three options in renewable energy technology including a two-year associate of applied science degree, a one-year technical certificate, and a one-semester certificate of proficiency. The college's director of administrative services stated, "Students who earn a diploma or certificate at EACC will then be able to enter the workforce or carry that work forward and earn a baccalaureate degree at ASU in Jonesboro" (East, 2009).

Building on their experience with non-credit course offerings in renewable energy, Northwestern Michigan College began offering an Associate of Applied Science degree and a certificate program in Renewable Energy Technology, in spring 2010. The new for-credit options will provide students with opportunities to complete short-term training up through a two-year credential (Northwestern, 2009).

Hudson County Community College expanded on its hospitality management associate degree offerings by including three new specialized courses of study: Hotel and Restaurant Management, Entrepreneurship, and Travel and Tourism. Positioning graduates for careers was important in the new offerings, as evidenced by comments of the college's president, "The structure of our Hospitality and Culinary Arts courses

provides our students with a real advantage for finding work after they complete their studies, in that they have received instruction from industry professionals coupled with hands-on, in-the-field experience” (Hudson, 2009).

Central Carolina Community College began enrolling students in its new Associate in Applied Science in Sustainability Technologies in fall 2010. The college’s provost was enthusiastic about the program’s fit within the college, stating, “...this program so clearly furthers our college mission to be a catalyst for economic development in the community and it does so in a way which appropriately reflects the college’s core value of sustainability.” Job marketability of students was a focus of the degree’s development, to open the door to a variety of careers in the green economy (Central, 2010).

Abraham Baldwin Agricultural College began offering a new Associate of Fine Arts degree in Music in the 2010 fall semester. The Academic Affairs Vice President said “it will benefit students who come here from all over by allowing for a seamless transfer and at the same time allowing students to spread core curriculum classes throughout their college experience” (Abraham, 2010).

Launched in the spring 2011 semester, Montgomery County Community College offers a new concentration in its Social Science Associate in Arts degree program – Geography: Urban and Regional Planning. The program was developed out of recognition that careers in the field of urban and regional planning are expected to grow over the next several years at a rate of approximately 19 percent. The concentration is intended for students to transfer to four-year institutions to obtain their baccalaureate and master’s degrees in this field. Even though the majority of careers in the field are

expected to require a bachelor's or master's degree, the college wanted to provide internship or service learning opportunities for students while they are working on their associate's degrees (Montgomery, 2010).

Oklahoma City Community College launched a new degree program in leisure services, in spring 2011. The degree is designed to prepare students to transfer to Oklahoma State University's leisure studies program and to prepare professionals currently in the field to take the parks and recreation professional certification exam (AACC, 2010).

Findings suggest that decisions to offer a new associate degree program are based on filling a societal need demonstrated, in part, by evidence of existing or potential job growth, catering to new students as well as those currently in the workforce, and positioning students to either enter directly into the workforce or to transfer to four-year institutions. Some programs were built by expanding existing curricular offerings, both credit and non-credit, within the community colleges. In addition, collaboration with four-year institutions was cited and appeared to facilitate the establishment of a pathway to bachelor degrees.

Summary

Overall, the literature suggests that factors influencing curriculum adoption include: meeting student, workforce and societal needs, and ensuring compatibility with the organization's culture. In addition, key factors affecting curriculum implementation include: level of faculty and administrator support, availability of resources such as faculty expertise, and collaboration across academic institutions and with employers. The identified facilitators and barriers to adoption and implementation, in combination

with the theoretical base described below, provided structure to the present study and assisted in guiding data collection and analysis.

INNOVATION MODELS

A variety of models have been proposed to shed light on organizational innovation. Many describe change as occurring in a series of stages. A few key models are described below.

Zaltman, Duncan and Holbeck (1973) proposed a model exhibiting two main stages to the innovation process: initiation and implementation. The initiation stage consists of the following sub-stages: knowledge-awareness, formation of attitudes and decision. The implementation stage consists of the initial implementation and continued-sustained implementation substages. The model describes the process in which potential adopters become aware of the innovation, form attitudes about the innovation, evaluate the innovation and determine whether or not to proceed with implementation, make an attempt to utilize the innovation, often on a trial basis, and then fully implement the innovation and incorporate it into the routine of the organization.

Schroeder, Van de Ven, Scudder, and Polley (1989) developed a model to describe innovation, based on a series of six observations: (1) innovation is stimulated by shocks, either internal or external; (2) an initial idea tends to proliferate into several ideas; (3) unpredictable setbacks and surprises are inevitable; (4) as an innovation develops, old and new exist concurrently and eventually link together; (5) restructuring of the organization occurs; (6) top management are involved in the process.

Schein (2004) developed a model to explain transformative organizational change which describes that the initiation of any organizational change requires a person or a

group to not only learn something new, but to also unlearn something. Schein's seven stages of change are: disconfirmation; survival anxiety; learning anxiety; cognitive; imitation and positive identification with the role model; scanning and trial-and-error learning; and personal and relational.

Fullan (2007) has described the change process in educational institutions, based on three phases: initiation, implementation, and continuation. Initiation could be a reaction to external or internal pressures. Implementation begins after the initiation phase when the institution has decided to adopt the change. According to Fullan, successful implementation will depend on four factors: need, clarity, complexity, and quality or practicality of the program. A program with clear goals and objectives which is initiated to meet a need recognized by internal and external stakeholders has a better chance of successful implementation than one without such goals and objectives. Fullan identified six criteria for successful implementation: (1) organizational change, staffing, and administrative support; (2) a focus on curriculum and instruction; (3) supplies and materials; (4) scheduling and grouping; (5) monitoring of students' progress and performance; and (6) family and community support. The final phase in the change process is the continuation of the new program, where the innovation has become an institutional practice.

Diffusion of Innovations Theory

The theory which served as the basis for the above models is the Diffusion of Innovations theory, described by Everett M. Rogers (1962). This theory sets out to shed light on the process by which an innovation makes its way into a population and is adopted. The key processes described in the theory include: innovation development;

dissemination; adoption; implementation; and maintenance. Rogers noted that there were five stages involved in the decision to adopt an innovation: knowledge, persuasion, decision, implementation and confirmation. A visual depiction of this innovation-decision process is provided in Figure 3. The theory identifies the following variables as determining the rate of adoption of an innovation: perceived attributes of the innovation; nature of the communication channels; nature of the social system; extent of the change agent's promotion effort; and the type of innovation decision (optional, collective or authoritative.) Among these variables, Rogers concluded that perceived attributes of the innovation explain the largest percentage of variation in the rate of adoption.

Rogers identified the perceived attributes as:

- *Relative Advantage*: The degree to which an innovation is perceived as being better than ideas it supersedes
- *Compatibility*: The degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters
- *Complexity*: The degree to which an innovation is perceived as relatively difficult to understand and use
- *Trialability*: The degree to which an innovation may be experimented with on a limited basis
- *Observability*: The degree to which the results of an innovation are visible to others (Rogers, 2003).

CONCEPTUAL FRAMEWORK

A conceptual framework was developed to guide the data collection and analysis throughout the research process. As Ulin, et. al. (2005, p. 38) describe, “a thoughtfully constructed conceptual framework can be a valuable compass to help keep your work oriented to the central research problem while ensuring flexibility and credible results.”

Considering the present study’s purpose coincides with the intent of the Diffusion of Innovations theory as it set out to explore the process in which an innovation makes its way into, and is adopted by, U.S. community colleges, the theory serves as an appropriate guide to address the study’s research questions. Therefore, the conceptual framework which served as a guide for the dissertation project was based on the Diffusion of Innovations theory, as well as prior research pertaining to educational innovation, and the current understanding of community colleges’ potential role in addressing public health workforce needs as described above. The “innovation” in the dissertation project is identified as: public health associate degrees and certificates.

The first stage of the innovation-decision process as described by the Diffusion of Innovations theory is *Knowledge*. It is widely acknowledged that the general public does not possess a clear understanding of what public health is. This apparent lack of awareness prompted the development of several communication strategies intended to raise awareness of the field, including ASPH’s “What is Public Health” website (www.whatispublichealth.org), their “This is Public Health” campaign (www.thisispublichealth.org), and the American Public Health Association videos “Healthiest Nation in 1 Generation” and “A Healthier America Begins with You” (<http://generationpublichealth.org/>). Findings from focus groups convened in 2009 as

part of research undertaken by ASPH and AAC&U to better understand the role of public health in undergraduate curricula, suggest that administrators in colleges which do not offer degrees in public health have a vague understanding of the breadth of public health, while administrators at colleges which do offer public health programs provide a broad, but accurate, definition of public health (Hart, 2009). Applying this understanding to the present study, it was anticipated that knowledge of public health associate degrees and certificates would primarily be confined to contacts in community colleges with public health degrees and/or certificates, particularly considering so few public health associate programs currently exist with no known attempts made to diffuse them throughout community colleges. To fully assess the level of knowledge of public health degrees/certificates among community colleges, a survey among community college administrators would be desired but was beyond the scope of this research project. However, as will be described in Chapter 4, lack of knowledge did surface as an influence on the adoption of a public health program.

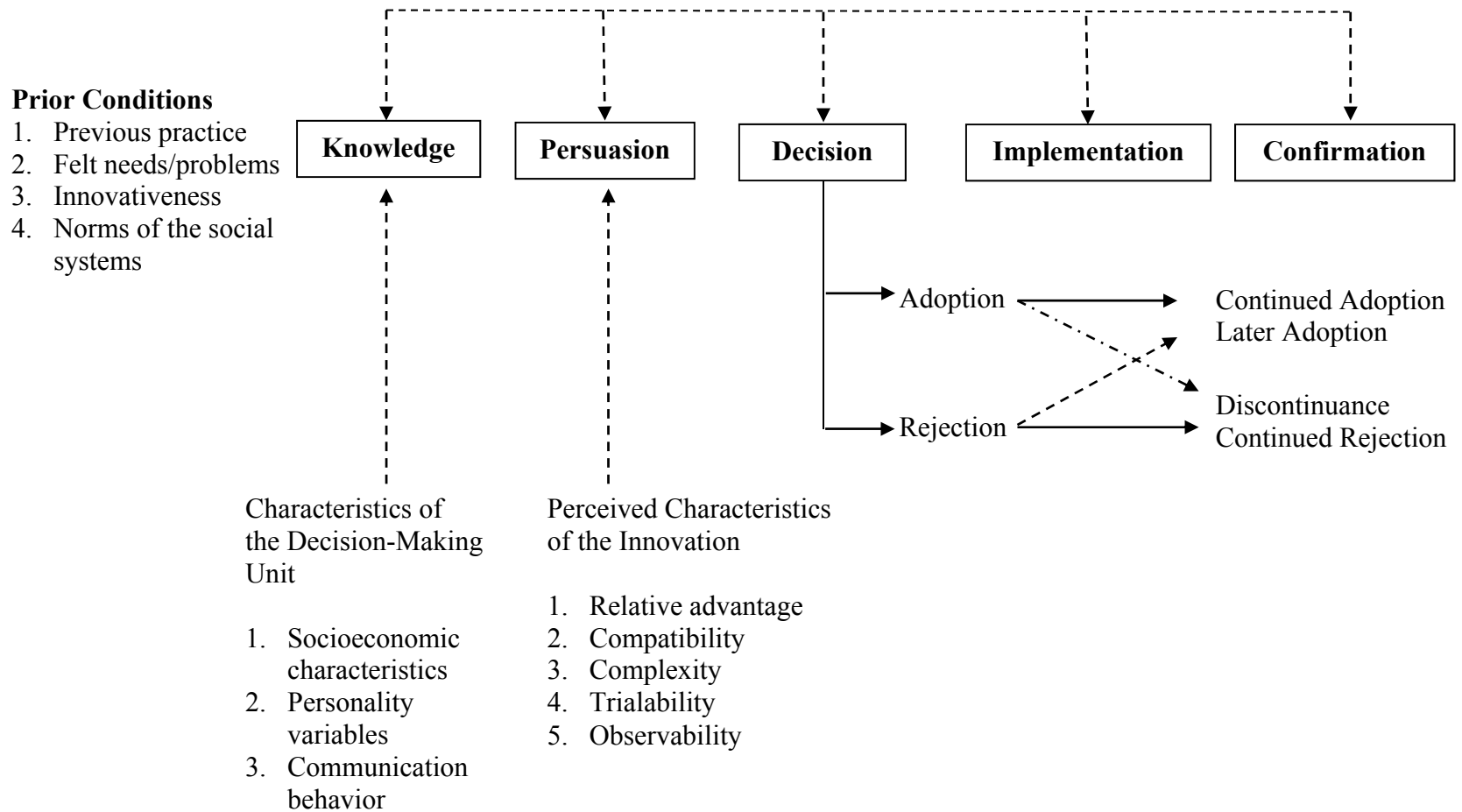
The project focused on the following four stages of the innovation-decision process: persuasion; decision; implementation; and confirmation, with a goal to contribute to the development of resource materials, including curricular frameworks for the degrees/certificates, to be disseminated to colleges, raising their knowledge of public health degrees/certificates so they can proceed through the innovation-decision process stages. According to the Diffusion of Innovations theory, an innovation's *perceived attributes* explain the largest percentage of variation in its rate of adoption. The innovation's perceived attributes of relative advantage, compatibility, and complexity are especially important in the persuasion stage (Rogers, 2003). Therefore, the project

sought to understand the perceived attributes of the degrees and/or certificates that persuade community colleges in their adoption (Study Aim 2). Characteristics explored included: perceived advantages of public health degree/certificates compared to other new curricula (relative advantage); curriculum's fit with college's curricular requirements and consistency with college's values and goals (compatibility); perceived difficulty in implementing the curricula (complexity); ability to test out a public health program, perhaps in the form of a course or certificate prior to a degree (trialability); and ability to observe experiences of colleges which have adopted a public health program (observability).

In order to gain insight into the decision stage, the rate of adoption of public health degrees/certificates was calculated (Study Aim 1). In addition, the academic program approvals process was explored during the qualitative component. In the implementation stage, an understanding was sought regarding the processes undertaken by community colleges when implementing degrees/certificates (Study Aim 3). In conjunction with the confirmation stage, the project set out to refine a set of draft prototype public health degree/certificate programs (Study Aim 4). Based on previous educational innovation research, it was proposed that a college would be persuaded to adopt a public health degree or certificate if the program's attributes are perceived to be compatible with the college's culture, including making their graduates marketable for available entry-level jobs, they articulate with four-year programs, and they provide continuing education opportunities for individuals currently in the workforce. These attributes all relate to the theory's perceived attribute of *compatibility*. The Diffusion of Innovations theory suggests that enhancement of these perceived attributes will lead to an

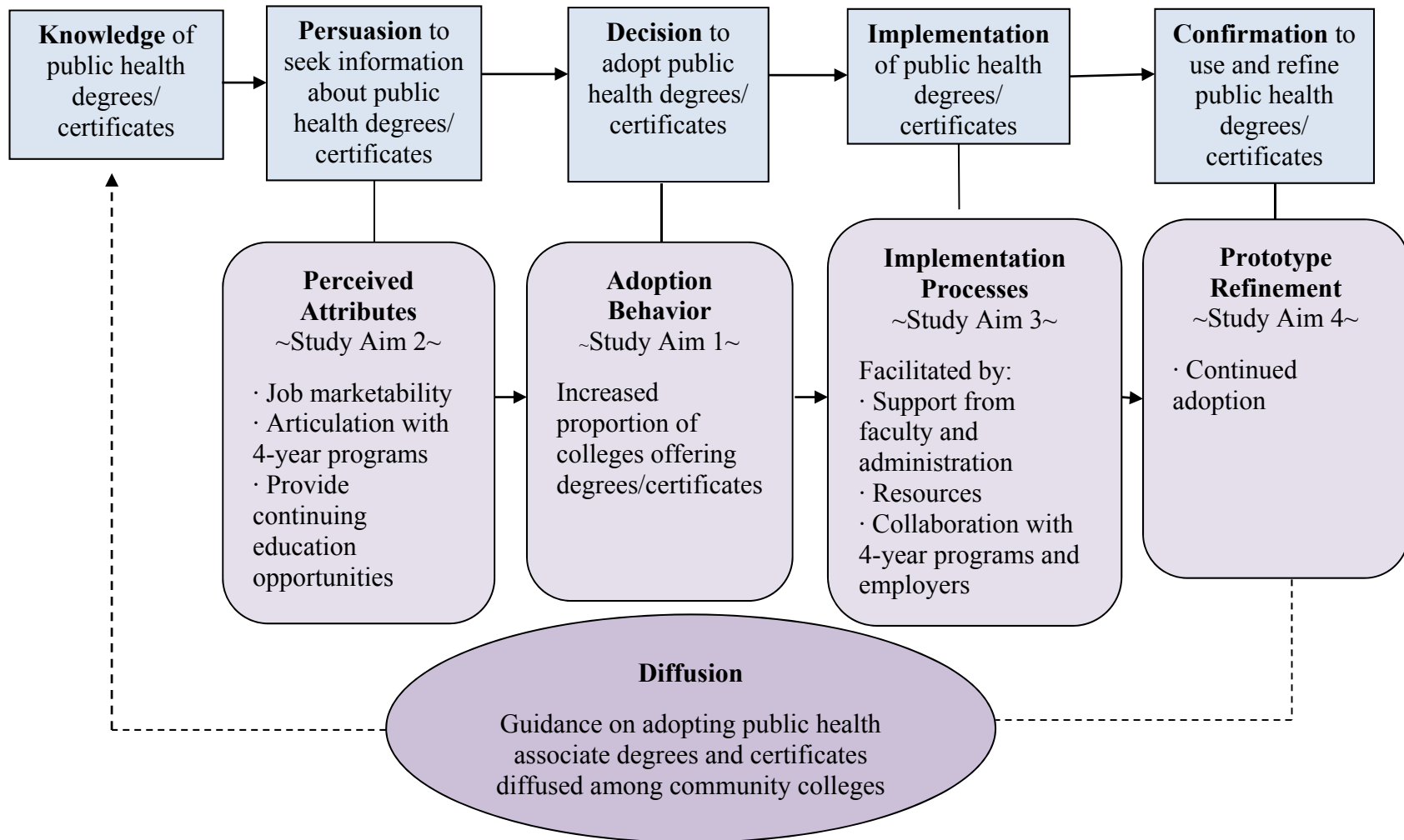
increased proportion of community colleges offering such degrees and certificates. The theory also suggests that the implementation process will be facilitated through increased support from faculty and administration, increased resources, and by collaborating with four-year institutions and the practice community, as identified in previous educational innovation research. Through refinement of the draft public health prototype degrees and certificates, it is suggested that their adoptability and continuation in community colleges will be enhanced. It was envisioned that synthesizing all of this information would assist in preparing clear guidance to the community college and public health academic and practice communities regarding the adoption of public health associate degrees and certificates. Per the theory, this guidance would then be diffused, raising the knowledge of such offerings among community colleges and assisting the colleges throughout the innovation-decision process. A visual depiction of the conceptual framework is provided in Figure 4.

Figure 3: A Model of Five Stages in the Innovation-Decision Process
COMMUNICATION CHANNELS



Adapted from: Rogers, E.M. (2003). *Diffusion of Innovations*. New York: Free Press

Figure 4: Conceptual Framework



Based on: Rogers, E.M. (2003). *Diffusion of Innovations*. New York: Free Press

Chapter 3: Methods

OVERVIEW

Mixed methods were utilized in the study and included the qualitative methods of semi-structured key informant in-depth interviews and documentary analysis, using a comparative multiple case study approach, and the quantitative method of a scan of community college course catalogs. The unit of analysis was the organization; specifically, community colleges. Data were collected along the following overarching domains: adoption behavior; perceived attributes; facilitators and barriers to implementation; and adoptability of public health associate degrees and certificates. Interpretation of findings sought to provide a comprehensive picture of the extent of public health program offerings in community colleges, why public health associate degree and certificate programs are adopted and how they are implemented. Interpretation of findings will assist in informing efforts aimed at addressing the Healthy People 2020 initiative to increase the proportion of community colleges offering such programs. A summary table describing operational definitions of each domain, with accompanying sample questions and data items, is provided in Appendix A.

PARTICIPANTS

The population from which the study sample was drawn is the 1,177 U.S. community colleges recognized by AACCC in 2009, the most recent year for which a complete list of colleges was available at time of data collection. To address Study Aim 1 of assessing the rate of adoption, the same 414 colleges included in the 2009-2010 catalog scan were included in the 2011-2012 catalog scan. This subsample was produced

through stratified sampling techniques and represents 35 percent of all U.S. community colleges recognized by AACC. The paired design provided for a more statistically powerful design compared to an unpaired design.

To address Study Aims 2, 3 and 4, a combination of convenience and purposive sampling was employed to identify the nine colleges that served as cases. The pool of adopters was identified via convenience sampling through utilization of the list of colleges identified as offering public health degrees and/or certificates in the 2009-2010 baseline catalog scan and through a call for applications disseminated to all community colleges as part of the Healthy People Curriculum Task Force Successful Practices Initiative. The call solicited descriptions of successful practices regarding the development, implementation and maintenance of public health degree and certificate programs. The call was sent via e-mail to all AAC&U institutional members, including the approximately 100 community college institutional members, by AAC&U staff and appeared in AAC&U online newsletters and the AAC&U website. In addition, the call was provided to AACC for distribution and was sent via direct e-mail to the colleges identified as having public health programs in the 2009-2010 catalog scan. Two community colleges responded to this call, and these self-identified “successful practices” colleges were, therefore, included in the sample of cases. Purposive sampling then took place to identify two additional adopter cases from among the colleges identified as offering public health programs in the 2009-2010 catalog scan and will be described further below.

Purposive sampling also took place to identify five colleges as non-adopter cases, with efforts made to match a non-adopter case to an adopter case based on institution size

(number of student enrollees), student demographics (race/ethnicity), tuition, and geographical location (city/town population size; proximity to graduate school of public health). Efforts were made to include only colleges with potential to offer public health degrees and/or certificates, based on their current health-related curricular offerings.

Non-probability sampling is deemed the most appropriate sampling strategy for qualitative research, with purposive sampling being the most common form (Merriam, 1998). Purposive sampling is particularly appropriate for case study research since cases should be selected on their ability to lead to discovery, understanding and insight into the phenomenon of interest. Case study method texts recommend that cases should be selected based on accessibility and their ability to illuminate the research questions (Yin, 2006; Merriam 1998). Additionally, in multiple case studies, Stake (2006) offers the following main criteria for case selection: relevancy to the quintain (phenomenon of interest); diversity across contexts; and opportunities to learn about complexity and contexts. Therefore, community colleges were selected as cases based on the overarching criteria of accessibility, ability to provide rich information of central importance to the study, and diversity across cases. More specifically, community colleges were selected from which a great deal could be learned concerning the adoption of public health associate degree and certificate programs, particularly the reasons for adoption (Study Aim 2), how the degrees/certificates are adopted (Study Aim 3), and the adoptability and utility of draft prototypes (Study Aim 4). Such colleges include those identified as offering a public health degree and/or certificate program, due to their first-hand experience of initiating, developing, implementing, and maintaining the public health degree and/or certificate program. Much can also be learned from community colleges

which have not yet adopted such degree/certificate programs, particularly concerning the perceived attributes and adoptability of the degrees/certificates (Study Aims 2 and 4), and perceived facilitators and barriers to their adoption (Study Aim 3). Therefore, cases were also selected from among community colleges identified as not offering a public health degree and/or certificate program. These cases were selected based on a match to the adopter cases according to the institutional size, as determined by number of students enrolled, race/ethnicity of student body, tuition levels, city/town population size, and proximity to graduate school of public health, in an effort to address potential resource availability such as access to faculty and graduate students. Matching the cases enhanced precision of the description of the phenomenon of interest as observed in the particular settings.

In multiple case studies, it is important to demonstrate how the phenomenon of interest appears in different contexts (Stake, 2006); therefore, within each sub-set of cases (adopters and non-adopters), the diversity of cases was part of the selection criteria. Among adopters, characteristics considered included: length of time the program has been offered; curriculum; and proximity to CEPH-accredited graduate schools or programs in public health. Among non-adopters, characteristics to enhance the diversity of cases include: level of progress, if any, toward adopting a public health degree or certificate demonstrated by the level of public health-related coursework offered.

Sample Size

Catalog Scan

The same sample of 414 community colleges included in the 2009-2010 baseline catalog scan was used in the 2011-2012 catalog scan. The sample size for the 2009-2010 catalog scan was calculated based on standard statistical methods for stratified samples.

Stratum 1 consisted of community colleges identified as likely having public health or related programs, based on: classification codes of the National Center for Education Statistics; a website listing programmatic offerings at colleges (www.universities.com); and other leads received from faculty familiar with community college offerings. The list of institutions was de-duplicated and institutions were removed which did not meet AACCC's criteria for a *community college*. Stratum 1, therefore, consisted of 114 community colleges. Additional detail regarding the identification of institutions for this stratum is provided in Appendix B. Upon review of the catalogs and websites of these 114 colleges, it was found that only 8 colleges offered a public health degree and/or certificate program. Although the reasons for this are unclear, a possibility may be that since colleges self-report their curricular offerings to the National Center for Education Statistics, there is likely wide variation in how colleges interpret public health and related offerings; therefore, there may be over-reporting of such programs, as colleges may be including health science programs, such as nursing, in public health-related categories. Information on where academic program information is obtained is not provided for the website for Universities.com; therefore, it is unknown why colleges would be listed as offering public health and related programs when a review of the college catalogs does not corroborate this. These discrepancies between

information pulled from such databases and information provided in the college catalogs supports the need to perform a thorough catalog scan by reviewing each college catalog separately.

In order to explore whether any additional community colleges offered public health and related degrees and/or certificate programs, a simple random sample of the remaining 1,063 community colleges was performed and the catalogs of these colleges were reviewed. This sample comprised Stratum 2 and the sample size was calculated using a standard error formula for stratified random sampling, with a 95% confidence interval, to obtain a reasonably precise interval, which was determined to be less than 3 percent (Scheaffer, Mendenhall & Ott, 1986). The sample size needed to fulfill these criteria was calculated to be 300 community colleges. An additional 3 colleges from this sample were identified as offering a public health degree and/or certificate program, for a total of 11 colleges between the two strata.

Case Studies

In qualitative research, the sample is usually small, nonrandom, purposeful and theoretical compared to quantitative research in which the sample is typically large, random and representative (Merriam, 1998). It is widely acknowledged that optimum sample size in qualitative studies is unclear such that the investigator is “guided by the degree to which incoming data adequately answer the research questions” (Ulin, Robinson and Tolley, 2005). Guidance on determining sample size in case studies suggests that it is dependent on the research questions, data being collected, analysis being performed and available resources (Merriam, 1998). Specifying a minimum sample size is recommended and should be “based on expected reasonable coverage of

the phenomenon given the purpose of the study” (Patton, 1990). Stake (2006) provides more concrete guidance for multiple case study research, indicating that the benefits to multiple case design will be enhanced if between 4 and 10 cases are selected. A review of published research employing case study methods demonstrated this range is typical.

Considering the study was to be conducted by one researcher with minimal resources, rather than a team of researchers with abundant resources, a realistic and manageable number of cases was sought. An additional limiting factor in the sample size is the minimal number of community colleges with public health programs. Based on results from the 2009-2010 catalog scan, it is estimated there are 19 colleges in the entire “adopter” sample; however, only 11 of those colleges have been definitively identified. Taking these issues into consideration, a minimum sample size for the case studies was originally set at eight: four community colleges with public health degree/certificate programs (adopters) and four matched community colleges without public health degree/certificate programs (non-adopters). During the course of the study, one of the four originally selected adopter cases was excluded due to logistical considerations and another adopter case was subsequently included. The non-adopter match to the original adopter case had already been recruited at the time the logistical issues arose, however, and was therefore retained in the study. Therefore, a total of nine colleges were included in the study in which four adopter cases are matched to non-adopters, with one unmatched non-adopter college. This figure (9) falls within Stake’s recommended range of cases for multiple case design. In addition, guidance on sample size for qualitative research indicates that data should be collected until a point of saturation is met, when little to no new information or themes emerge from the data to the point of redundancy.

Strauss and Corbin (1998, p. 212) provide the following guidance to indicate when theoretical saturation has been met:

- (a) no new or relevant data seem to emerge regarding a category
- (b) the category is well developed in terms of its properties and dimensions demonstrating variation
- (c) the relationships among categories are well established and validated.

Data analysis commenced soon after data collection and included data from documentary materials and interviews with individuals with various roles in colleges, including students, recent graduates, faculty, staff and various administrators, among community colleges with and without public health programs of varying sizes, geographic locations and distances to graduate programs of public health. As data were collected, notes, transcripts and documents were compared across sources and cases and categorized. A redundancy of information was observed from among the various interviewees and documents in the diverse colleges, addressing Strauss and Corbin's criteria (a) and (b) above. In addition, it soon became apparent that the categories and themes emerging from the data corresponded to constructs identified in the conceptual framework, which was based on the Diffusion of Innovations theory. This addressed Strauss and Corbin's criterion (c) of demonstrating the relationships are well established. Therefore, a point of saturation was met through the inclusion of nine cases, providing rich information, from multiple perspectives, to address the study's research question of why and how public health degrees are adopted in community colleges.

INSTRUMENTS

Considering so few public health associate degrees and certificates currently exist, and little is currently known about their adoption, data collection instruments were selected based on their ability to provide an opportunity to assess their rate of adoption and fully explore the factors which influence their adoption. Results from an AAC&U survey among four-year institutions suggested that chief academic officers were interested in the practical guidance regarding the development of public health programs; therefore, tools were also selected based on their ability to inform the development of such guidance (Hovland et al., 2009). In addition, coordination with national efforts aimed at increasing the proportion of community colleges offering such degree and certificate programs was desired.

A systematic approach was sought to relate the tools to the Healthy People 2020 objective to increase the proportion of community colleges offering public health and related degrees and certificates while aligning them with the conceptual framework and research questions. Therefore, the tools selected stemmed from: the 2010 baseline data collection project conducted to inform the Healthy People 2020 community college objective, the Healthy People Curriculum Task Force Successful Practices Initiative, and the innovation-decision process stages described in the Diffusion of Innovations theory. In addition, the tools set out to inform the quantitative aspect of Research Question 1 which addresses degree/certificate adoption rate, and the qualitative aspect of Research Question 2 which addresses why and how degrees and certificates are adopted. The data methods utilized were: a catalog scan, and semi-structured key informant interviews and documentary analysis, using a comparative multiple case study approach. Descriptions

of the methods are provided below and followed by their key strengths and weaknesses summarized in Tables 2 and 3 at the end of this section.

Catalog Scan (Study Aim 1)

In collaboration with AACC, baseline data from academic year 2009-2010 was collected in early 2010, estimating the proportion of community colleges offering public health or related degrees and/or certificate programs. The scan was conducted to provide baseline data required to convert the Healthy People 2020 objective to increase the proportion of two-year colleges with public health or related degrees and/or certificates from a “developmental” objective to a “measurable” objective. A second researcher, who is an AAC&U Senior Fellow knowledgeable in the subject matter and with experience conducting a similar scan for four-year institutions, performed a review on the programs identified as potentially meeting the criteria for a public health or related degree or certificate to confirm the findings. There was 100 percent agreement reached between the two researchers on the final list of colleges offering a public health degree and/or certificate program.

As part of the target-setting process, Healthy People 2020 is interested in repeated measurements throughout the decade, with early measurements informing whether targets need to be adjusted. Therefore, even though there is a relatively short time frame between measurements (two academic years) and, typically, it takes a college at least one year and often more, for a new academic program to wend its way through an approvals process, it will be helpful to document regular, repeated measurements. These measurements will be particularly beneficial in the early stages of this initiative to diffuse public health degrees and certificates among community colleges, in order to establish a

baseline rate of adoption. Therefore, in order to address Study Aim 1 to assess the rate of adoption of public health degrees and certificates in community colleges between the baseline academic year 2009-2010 and two years later, for academic year 2011-2012, the same data collection methods among the same sample were employed for academic year 2011-2012. Each college status (adopter versus non-adopter) in 2011-2012 was compared to its own status in 2009-2010 to provide data for a paired analysis to assess statistical change in the status. The paired analysis provided increased statistical power compared to an unpaired analysis.

Catalog Scan Limitations

A key limitation of the catalog scan was the potential to introduce researcher bias. However, this potential bias was minimized through a review by a second researcher of the identified colleges with public health degrees/certificates. Since the catalog scan relies on the information presented by the college on its website, another limitation is the potential for inaccurate or out-of-date information; however, with the widespread use and reliance of websites to communicate with prospective students and other stakeholders, it was believed that this potential situation would occur rarely. However, a few community colleges publish course catalogs once every other year; therefore, if a new program is developed within that timeframe, it may not appear in the catalog until the next publication. This could potentially result in an under-representation of new public health programs. In addition, colleges often offer courses as “topics” courses on a trial basis before becoming an official course offering. These “topics” courses may not appear in the course catalog and, therefore, public health-related topics courses would not be captured as part of the catalog scan. As can be expected, wide variety exists in the format

used by colleges to present their curricular offerings on their websites; therefore, a uniform set of steps to obtain the data is not feasible. Although this poses a challenge, experience from the baseline data collection of the 2009-2010 provided website navigation skills that were applied to the 2011-2012 data collection.

The unobtrusive nature, cost-effectiveness, flexibility and ease of performing make the catalog scan a practical option for documenting the proportion of community colleges offering public health degree and/or certificate programs, and calculating their rate of adoption.

Case Studies (Study Aims 2, 3, 4)

Qualitative research sets out to understand, describe and discover in a flexible, evolving manner to produce findings which are comprehensive, holistic, expansive and richly descriptive (Merriam, 1998). One type of qualitative research is case study research. Case studies have been defined in terms of the process for conducting the research (the case study method), the bounded unit of analysis (the case itself), and the product (end report) (Merriam, 1998). Case studies are often conducted when the researcher is interested in insight, discovery and interpretation rather than hypothesis testing (Merriam, 1998). They are particularly appealing for applied fields of study and have proven to be “useful for studying educational innovations, for evaluating programs and for informing policy” (Merriam, 1998). According to Yin (2006), case studies are the preferred research method when *how* or *why* questions are being posed, the investigator has little control over the events, and the research focus is on a contemporary phenomenon taking place within a real-world context. Case studies allow for an in-depth exploration of a phenomenon. Stake claims that the knowledge learned from case studies

is more concrete, contextual, developed by reader interpretation, and based more on reference populations compared to other research due to the vivid descriptions rooted in context which allows the reader to extend generalizations to other situations based on their own experiences and understanding (as cited in Merriam, 1998, p. 31). Case studies, therefore, are well-suited to explore why and how public health degrees and certificates are adopted in community colleges and provide rich description to inform development of practical guidance to colleges to facilitate diffusion of public health degrees and certificates.

Case study research can use a single- or multiple- case design. Multiple case designs are preferred since the analytic conclusions will be more powerful than those arising from a single-case study (Yin, 2009). A multiple case study design, therefore, was performed in this study.

Case studies typically involve a combination of data collection tools such as observation, interviews and documentary analysis. The community college case studies used semi-structured key informant telephone interviews and documentary analysis. Observation was not used since it was deemed less feasible and applicable to the research question of the proposed project, compared, for instance, to a study in which it would be more pertinent to observe the real-time behavior of a population in its own habitat. Interviews are useful when the behavior, feelings and interpretations of participants cannot be observed directly but the participants can provide historical information on the phenomenon of interest (Creswell, 2003; Merriam, 1998). Therefore, they are an appropriate tool to collect information on the perceptions of individuals regarding public health associate degrees and certificates and the processes involved in adopting such

degrees. Interviews can be highly structured, semi-structured or unstructured. Since specific information was desired from all respondents, but flexibility was desired in the exact wording and ordering of the questions in order to respond to the emerging concepts and to tailor the interview for the specific interviewee role in the college, semi-structured interviews provide the appropriate balance of structure with open-ended questioning and were utilized in the current project. As advised in qualitative research methods texts, the open-ended questions encouraged participants to interpret the questions themselves and the flexibility of the questioning route followed the guidance that qualitative interviews “should not be a mechanical reading of standardized questions” (Ulin., etc.al., 2006, p. 82).

Interview guides were created with input from key informants among the Healthy People Curriculum Task Force and AAC&U. Interview questions were developed based on the conceptual framework, addressing the domains of: perceived attributes (Study Aim 2); facilitators and barriers to implementation (Study Aim 3); and adoptability of public health associate degrees and certificates (Study Aim 4). Some adaptation of the interview guides was required based on the specific role of the interviewee and the characteristics of the community college. As part of the interviews, the draft prototype associate degree and certificate curricula were shared with interviewees to obtain feedback regarding their perceptions of the adoptability of the curricula. Stake (2006) describes this type of “probe-based” interviewing as an effective strategy in motivating participation to evoke interviewee comments and interpretation while giving focus and scope to the topics of interest. This was found to be an effective strategy to frame the topic particularly since not all interviewees were familiar with the field of public health. Interview guides for

each interviewee category are provided in Appendix C. Fifty-three of the 63 interviewees reviewed the draft prototype curricula prior to the interview and were therefore able to provide input on the curricula. The ten interviewees who had not reviewed the curricula prior to the interview were provided an opportunity to share their opinions following the interview, either via e-mail or follow-up phone call, but none provided comments.

The documentary materials collected provided context for the interviews by assisting in developing an understanding of the culture of the community college, examining the colleges' rationale for creation of public health programs, examining how the college markets their programs, and identifying content, structure, instructional methods and courses with potential to be incorporated into public health degree or certificate programs. The documents assisted in revealing both intentions and behaviors of the cases, providing information about the structures that enabled and hindered action. Analysis of the documentary materials was particularly useful in contributing to Study Aims 2 and 3, shedding light on the types of academic program characteristics valued by colleges, noting where the colleges place emphasis in their marketing materials, and gaining insight into the processes undertaken by the colleges when implementing public health degrees and certificates, as described in their academic proposals.

Case Study Limitations

A criticism of case studies is their lack of generalizability; however, generalizability is not a goal of case studies (Merriam, 1998). Yin (2006) advises that analytic generalizations should be the aim, as opposed to statistical generalizations, because the cases are not "sampling units" as a single respondent in a survey would be in an experiment and the cases should not be chosen for this reason. Analytic generalization

refers to the extent to which the findings from one study can be used as a guide to what may reasonably occur in another situation. The analytic generalization may be researcher-based, in which the researcher offers arguments about the generality of findings, or reader-based in which the reader judges whether the findings can be generalized to another situation, based on the detailed descriptions provided (Kvale, 2007). This differs from statistical generalization which is based on a randomly selected representative sample (Kvale, 2007). In the study, analytic generalizability was enhanced by 1) including multiple cases which are diverse with regard to the phenomenon of interest so the results may be applied to other situations, and 2) detailing rich descriptions so readers can judge whether the findings can be transferred to their situations (Rossman & Rallis, 2003).

Key limitations to case studies are the potential for bias introduced by the researcher and recall bias introduced by the interviewees. Researcher bias was minimized through detailed documentation throughout employment of the methods and analysis of the data. Recall bias was minimized by interviewing multiple contacts at each site. Another cited limitation of case studies is that the end product may be too lengthy for quick reference. This potential limitation will be minimized since the resulting data will be provided to associations, likely within time and space constraints of presentations and publications. The associations, in turn, can present the material in a format suitable to their specific audiences.

Another potential bias introduced through interviews is social desirability bias, in which the interviewees respond in a manner which they believe will be viewed favorably. This potential for bias was applicable to this study since interviewees wish to present

their institution in the best light. To minimize this bias, interviewees were notified that no institutional names would be included in any write-ups pertaining to this research and that their individual responses would not be shared with anyone either in, or outside, their institution. Social desirability bias was further minimized by interviewing multiple contacts within each site, as well as analyzing objective documentary materials.

There are a number of limitations to documentary materials, such as potential difficulty in obtaining and determining accuracy, and lack of desired detail in a usable format and/or correspondence with the conceptual model. Such potential limitations were minimized, in part, through establishing rapport with the interviewees so they were willing to share the materials and clarify any questions pertaining to them. In addition, Internet searches were employed to obtain applicable documents, therefore limiting the need to rely on the institution to provide the materials themselves.

The rich data obtained through the case studies makes them an ideal option for exploring a new phenomenon of interest like the adoption of public health degrees and certificates in community colleges; therefore, their strengths outweigh their limitations for the study.

Table 2: Strengths and Limitations of Catalog Scan

Strengths	Limitations
<ul style="list-style-type: none">• Consistency with the tool used to collect similar data from four-year institutions• Same tool used to collect baseline data for two-year institutions, which will allow for paired data analysis• Flexibility to identify programs meeting inclusion criteria which may have titles other than “public health”• Unobtrusive• Provides “real-time” data• Inexpensive• Only equipment needed is a computer with internet access	<ul style="list-style-type: none">• Requires interpretation by the researcher, introducing bias• Lack of uniformity among college course catalogs• Data is dependent on accuracy of information provided by the college and presented on their website• “Topics” courses may not be listed in published catalog

Table 3: Strengths and Limitations of Case Studies

Case Studies	Strengths	Limitations
Overall	<ul style="list-style-type: none"> • Provides a mechanism to investigate complex social systems consisting of multiple variables, and results in a rich and holistic account of a phenomenon (Merriam, 1998) • Humans, as the primary data collection instrument, are responsive and adaptive (Merriam, 1998) • One researcher will conduct the case studies, providing consistency 	<ul style="list-style-type: none"> • Lack of generalizability • End product may be too lengthy and/or detailed for quick reference • Humans, as primary data instrument, may introduce researcher bias
Interviews	<ul style="list-style-type: none"> • Allow the researcher control over the line of questioning (Creswell, 2003) • Particularly useful when participants cannot be observed directly and can provide historical information regarding the phenomenon of interest (Creswell, 2003) 	<ul style="list-style-type: none"> • Provide “indirect” information since it is filtered through the views of the interviewees (Creswell, 2003) • The researcher’s presence may bias the responses (Creswell, 2003) (e.g. social desirability bias) • Potential for recall bias
Documents	<ul style="list-style-type: none"> • Unobtrusive • Many documents are easily accessible, free, and contain information that would otherwise have taken excessive time and effort to gather. • Objective since they were developed for purposes other than the research • Presence of the researcher does not alter its contents (Merriam, 1998). 	<ul style="list-style-type: none"> • Some desired documents may be difficult to obtain • May lack desired detail sought in research • May not be in a usable or easily understandable format • May lack correspondence with the conceptual model • Authenticity and accuracy may be difficult to determine (Merriam, 1998).

PROCEDURES

The following section describes the procedures undertaken to carry out the catalog scan and case studies. Due to the nature of qualitative research, a degree of fluidity was built in to adapt to the emerging themes arising from the data.

Catalog Scan

The catalog scan was conducted in summer and fall 2011, when the 2011-2012 course catalogs became available on college websites. Academic programs of study, with corresponding curriculum, were reviewed on each of the 414 sampled colleges' websites to identify public health and related degrees and for-credit certificate programs. In addition, individual public health-related courses were identified by searching the term "health" in the course catalogs. Courses were documented if they were closely aligned with one of the core public health courses recommended as part of general education: Public Health 101, Epidemiology 101, or Global Health 101. In addition, courses were documented if they fell into one of the other core public health areas of: biostatistics, environmental health, health policy and management or behavioral sciences. Courses were also noted if they were relevant to public health, but fell outside these categories.

The inclusion criteria for the public health programs was the same as that used for the 2009-2010 catalog scan for two-year colleges. These criteria were based on that utilized by the AAC&U Catalog Scan for Undergraduate Public Health Programs, for four-year institutions.

A program qualified as a *public health or related associate degree or certificate program*, if it fulfilled both of the following criteria:

- Program of study includes courses covering material in Public Health 101 and Epidemiology 101 or Global Health 101, the core public health courses recommended as part of general education (Riegelman & Albertine, 2008); and
- Program description and/or learning goals address questions of healthy communities and society

A list of potential programs meeting this definition was prepared and provided to a second researcher to confirm findings. The AAC&U Senior Fellow who served as the second reviewer on the 2009-2010 baseline data collection and worked on the Catalog Scan of Undergraduate Public Health Programs for four-year institutions, served as the second researcher and reviewed each course catalog of the colleges in which the potential programs were identified. Upon conferral between the researchers, 100 percent agreement was reached identifying the programs that met the definition of *public health or related associate degree or certificate program*.

Data Management

A Microsoft Excel spreadsheet was used to manage the data and stored on the hard drive of the researcher's personal computer as well as on a back-up drive. The file includes the institution's name, city and state, whether it has a public health degree and/or certificate, whether it offers courses in: general public health, epidemiology, global health, biostatistics, environmental health, health policy, social behavior, other related coursework, space for additional notes, and the institution's website.

Case Studies

Selection of Cases

Sampling methods were based on purpose rather than statistical probability of selection (Ulin, et. al., 2005). Through non-probability sampling, nine community colleges were identified for inclusion in the proposed study. Each region of the United States is represented: three colleges are situated in the Northeast; one in the Southeast; two in the Midwest; one in the Southwest; and two in the West.

Adopter cases were first identified. The pool from which they were drawn was the 11 colleges identified as offering public health degree and/or certificate programs in the 2009-2010 catalog scan and through a call for applications disseminated to all community colleges as part of the Healthy People Curriculum Task Force Successful Practices Initiative. The two community colleges which responded to the Successful Practices Initiative call for applications were recruited into the present study as these self-selected “successful” programs were thought to shed light on why and how public health programs are adopted in community colleges. In addition, the two colleges were diverse from one another regarding when their public health programs launched, institution size (based on overall student enrollment), distance to graduate programs/schools of public health, city/town population size, and program titles and curriculum.

Two additional adopter cases were then identified. Efforts were made to identify colleges with diverse characteristics including length of time public health program has been offered; curriculum; geographic location (city/town population size and distance to graduate school or program of public health); and program goals such as preparation of students to enter directly into the workforce and/or continue on to a four-year institution.

In addition, efforts were made to include at least one college which offered both a public health degree and certificate. A limitation to this, however, was that it had been estimated that only three such colleges exist, based on findings from the 2009-2010 baseline catalog scan.

During the course of the study, after data collection was initiated at the college, one of the adopter colleges was excluded due to logistical issues regarding the college's Institutional Review Board (IRB) protocol requirements. Efforts were made to submit necessary documentation to fulfill the requirements; however, no response was received from the institution, therefore, the college was subsequently excluded. At the time of notification of these IRB requirements, the college's non-adopter match had already been recruited into the study with multiple interviews already conducted; therefore, this non-adopter college was retained in the study. Due to the college's unique characteristics, there was no suitable adopter match available. Therefore, a new adopter college, and its matched non-adopter college, was identified and recruited into the study. Considering this adopter college was recruited into the study after data collection had commenced, particular characteristics were sought for this remaining adopter college. Such characteristics were that the college offers a public health program as an Associate of Applied Science (A.A.S.) degree, which typically is a degree intended for workforce preparation, compared to the transfer degrees usually represented by an Associate of Arts (A.A.) and Associate of Science (A.S.). Another key characteristic sought for this college was that it offer a program called "public health" rather than "health education," "community health," etc. in order to most closely relate to the phenomenon of interest. A

table identifying the selected cases among the pool of adopter colleges is provided in Appendix D.

Non-adopter colleges were selected based on their ability to match to one of the four adopter cases. Criteria used to match the colleges, in priority order, included: the institutional size, as determined by number of students enrolled, race/ethnicity of student population, tuition, city/town population size, and proximity to graduate school of public health. Only colleges offering a health sciences, or similar, curriculum were invited to participate as a case, due to their potential to offer public health curriculum. To enhance diversity among the non-adopter cases, efforts were made to include colleges which are at varying stages of the adoption process. It was desired to include two colleges which have begun the process of offering public health curriculum, evidenced by their offering of public health and related courses.

The process for identifying the non-adopter cases involved:

- Reviewing documentation from the baseline data collection among the 414 sampled institutions, noting colleges in which health sciences related programs existed.
- Performing searches in the Integrated Postsecondary Education Data System, a public online database maintained by the U.S. Department of Education, to determine enrollment levels, tuition, and race/ethnicity of students at identified colleges.
- Reviewing websites of identified colleges to further explore curricular offerings, in an effort to identify colleges at varying stages of the public

health program adoption stages to maximize diversity across cases and ability to provide illumination into the phenomenon of interest.

- Performing an Internet search to determine city/town population size in which colleges were located.
- Searching the ASPH and APTR websites to identify public health graduate schools and programs in the states of the identified community colleges.
- Using ©Google Maps to approximate the distance between community colleges and the nearest graduate school or program of public health, further matching the cases based on this characteristic.

Due to the unique features of each community college, exact matches between adopters and non-adopters on each desired criteria was not feasible; however, efforts were made to match on the characteristics as closely as possible. The college's ability to shed light on the phenomenon of interest was of utmost importance.

Recruitment

During the selection process, the names, titles and e-mail addresses were obtained for the following contacts (or those with similar titles), through institutional websites, and/or e-mail and telephone communication with the college: public health program director (among adopters) or faculty member teaching a public health-related course (among non-adopters), health sciences (or related) division chair or dean; senior level administrator of academic affairs; academic advisor/counselor; senior level administrator of finance and administration; and senior level administrator of continuing education. These contacts were selected based on their anticipated ability to provide insight into why and how new academic programs, such as public health, are adopted within the

community college and the potential value of such programs. As data were collected and synthesized, it was deemed important to gain the perspective of those making initial contact with students who likely have an understanding of the motivations and interests of students in selecting programs of study; therefore, admissions contacts were also recruited. Students and/or recent graduates were identified through the assistance of interviewees, usually the public health program director or faculty member, who had the most direct contact with students interested in health-related fields. The varying perspectives of the interviewees contributed to developing an in-depth understanding of the adoption of public health degrees and certificates.

Contacts were recruited via e-mail which included an attachment providing the informed consent information sheet approved by The George Washington University Human Subjects Research Office. A sample e-mail invitation and informed consent information sheet are provided in Appendices G and H, respectively. If there was no response from a contact within seven to ten days, a follow-up request was e-mailed to the contact. If there was no response after five to seven days, follow-up took place via phone. If there was no response, or the contact declined to participate, they were no longer contacted and another contact within the institution was recruited. In the e-mail invitation and telephone messages, contacts were encouraged to provide the name and contact information of another contact within the college in a similar position to provide insight into the phenomenon of interest, if they were unable or unwilling to participate. On occasion, this situation did occur.

Invitations for study participation were e-mailed to 106 contacts within the nine included colleges. Sixty-six interviews had been scheduled, and 61 interviews were

conducted. Five of the scheduled interviews did not take place due to “no-shows.” Attempts to reschedule were met with non-response. With the exception of two, interviews were one-on-one telephone interviews. For two of the interviews, interviewees requested to be interviewed with a colleague. Therefore, a total of 63 individuals were interviewed. Table 4 provides the number and role of interviewees at each college.

Table 4: Number and Role of Interviewees per College

Primary Role	Number of Interviewees									Total
	Adopter Colleges				Non-Adopter Colleges					
	1	2	3	4	5	6	7	8	9	
Student/Recent Graduate	3	0	1	0	0	0	2	2	0	8
Faculty Member/Program Director	1	2	1	2	1	1	2	0	1	11
Dean/Chair	1	0	0	0	1	1	1	1	1	6
Academic Affairs Administrator	1	1	1	1	0	1	0	1	0	6
Finance & Administration Administrator	2	1	1	1	1	0	1	1	1	9
Admissions Director/Staff	0	1	1	1	1	1	1	1	0	7
Advisement Director/Counselor	3	0	0	1	2	0	2	2	0	10
Continuing Education Administrator	0	1	1	1	1	0	0	1	1	6
Total	11	6	6	7	7	4	9	9	4	63

Documentary Materials

Table 5 provides a list of documentary materials and information collected to augment and corroborate data from the interviews and assist in developing an understanding of the culture of the community college. Thirty-two documents were collected from among the nine colleges. The information was particularly useful in shedding light on the perceived attribute of compatibility as part of Study Aim 2, and revealing the institutional intentions and behaviors. In addition, examination of the

materials contributed to developing an understanding of the perceived attributes which persuaded the colleges to create public health programs depicted in the rationale provided in the program proposals and marketing materials, informing Study Aim 2. Also, the information provided insight into the processes, including facilitators and challenges involved in implementing the programs, to inform Study Aim 3. In addition, a review of documents provided an opportunity to identify content, structure, instructional methods and courses with potential to be incorporated into public health degree or certificate programs, to contribute to Study Aim 4.

Table 5: Documentary Materials and Information

Colleges with Public Health Programs (Adopters)	Colleges without Public Health Programs (Non-Adopters)
<ul style="list-style-type: none"> • Public health degree/certificate program proposal submitted as part of approvals process • Public health program marketing materials • College’s website • Course catalog • Reports and publications providing data and information pertaining to public health program • Graduating student exit survey 	<ul style="list-style-type: none"> • Proposal from most recent new degree and certificate programs • Program proposal manual • College’s website • Course catalog • Sample articulation agreement with four-year institution

Interviews

Pilot interviews

Two pilot interviews were conducted prior to the case study interviews, among an adopter and a non-adopter community college. Both pilot interviews were conducted

over the telephone and enabled testing of the interview questions, equipment and interviewing skills. The pilot interview conducted among an adopter college was with a faculty member involved in the development and teaching of the college's public health degree program. The pilot interview conducted among a non-adopter college was with the Dean of Health Professions. These contacts were selected for the pilot interviews due to their anticipated familiarity with a public health academic program and the process of establishing a new academic program. The colleges were selected based on accessibility and characteristics which correspond with those exhibited by the colleges included in the study.

Upon conclusion of the pilot interviews, minor edits to the interview questions were performed. Some re-ordering of the questions took place to enhance transitions among questions. In addition, some questions were divided into multiple, shorter questions to better direct the interviewee. Some wording was also adjusted in order to make the questions more conversational and less formal to assist in putting the interviewee more at ease to offer their opinions.

Case Study Interviews

Individual telephone interviews were scheduled with the following contacts (or similar titles each of the nine colleges:

- student or recent graduate;
- public health director (in adopter cases) or faculty member teaching public health-related course (in non-adopter cases);
- health sciences (or related) division chair or dean;
- senior level administrator in academic affairs;

- advisement director or counselor;
- senior level administrator in finance and administration;
- senior level administrator in continuing education;
- admission director or counselor.

Excluding the pilot interviews, a total of 61 interviews were conducted, with 63 interviewees. Two interviewees were interviewed together during two of the interviews. The interviews were conducted over the telephone, with an average duration of 43 minutes. The questioning route was guided by the interview guides provided in Appendix C. The interview questions emerged from the conceptual framework to explore the perceived characteristics of public health programs which persuade colleges to consider their adoption (Study Aim 1), and the various factors which facilitate or hinder their implementation (Study Aim 3), as well as assessing the adoptability of the draft prototype curricula (Study Aim 4). In an effort to gain an understanding of the “environmental context” in which the colleges operate, questions were included to address such items as leadership priorities, culture of the college, local/regional and state politics and economics. Also, to explore faculty development issues, questions pertaining to faculty development opportunities and needs were incorporated.

Approximately two days prior to the scheduled interview, a reminder e-mail was sent to the interviewee and included a two-page document summarizing the draft prototype programs with a request that the interviewees review the document in advance of the interview. The document is provided in Appendix G.

The flow of the interviews followed the stages of semi-structured in-depth interviews as described by Rubin and Rubin (1995), which include:

- Creating natural involvement to coincide with the participant's style
- Encouraging conversational competence
- Showing understanding
- Getting facts and basic description
- Asking difficult questions
- Toning down the emotional level
- Closing while maintaining contact

The average duration of the interviews was 43 minutes, with longer interviews taking place among contacts directly involved in the development and/or implementation of public health programs in the adopter colleges. All interviews were recorded and transcribed. Two public health graduate students were hired to assist with transcription of the interviews. Between the two students, 49 interviews were transcribed and the researcher transcribed the remaining 12 interviews. Approximately ten percent of the transcripts were checked, in entirety, against the digital recordings. The first interview transcribed by each student was reviewed by the researcher by reading the transcript as the recording was played back, ensuring the transcript appropriately captured the interview comments. Feedback was provided to each transcriptionist, and included such comments as abbreviating the interview questions in the transcript. Approximately every tenth completed transcript was reviewed by the researcher by reading the transcript and listening to the digital recording. Any discrepancies were corrected in the transcript and pointed out to the transcriptionist, but these were very minor and did not affect the content of the interviews. Three transcripts were reviewed in this manner for each student. In addition, each of the 61 transcripts were reviewed to check for editorial issues

and, if clarification was necessary, compared against the digital recording. Any necessary edits were made to the transcripts. Interview transcripts were then provided to the interviewees with a request to review the document to ensure accuracy of the information and to add or delete content to clarify or expand upon comments. Responses were received for 28 percent (17 of 61) of the transcribed interviews and primarily included minor editorial changes. Approximately 325 single-spaced pages of transcribed interviews were generated.

Data Management

Data was prepared and organized by typing notes, transcribing interviews, and assembling files in Microsoft Office 2007 as well as paper files. The data was managed with the assistance of QSR NVIVO 9© software, a widely used software program intended to assist in the organization and analysis of qualitative research data. Electronic files are stored on the hard drive of the researcher's personal computer and saved on a back-up CD. The computer, CD, and paper files are all secured in the researcher's home office.

Protection of Human Subjects

The study was registered as "Exempt" with The George Washington University Office of Human Research. The study took the utmost care in ensuring the protection of study participants in all aspects of the research with human subjects research protocol carefully followed as determined by The George Washington University. Minimal risks were posed to participants and participants were informed that they could discontinue the study at any time for any reason.

ANALYSIS

Quantitative Data Analysis

The data collected through the catalog scan allowed for calculation of the estimated proportion and confidence intervals of community colleges offering public health degrees and/or certificates in academic year 2011-2012. Standard statistical formulas to calculate the estimator of the population proportion and the bound on the error of estimation were used (Scheaffer et. al., 1986). Through the assistance of SAS® System version 9.1 statistical software, statistical significant tests were employed to assess the magnitude and statistical significance of changes in the community colleges offering public health degrees and certificate programs taking into account the pairing of the samples and the large sample size (n=414) of community colleges relative to the total community colleges population of 1,177. McNemar's chi-square test was employed as it is appropriate to assess the significance of the difference between matched pairs. In this study, each college's adoption status (adopter/non-adopter) was compared to its own adoption status between academic years 2009-2010 and 2011-2012. The rate of adoption of public health degree and/or certificate programs in community colleges was calculated to meet Study Aim 1.

It was hypothesized that there would be a statistically significant increase in the proportion of community colleges that offer associate degrees and/or certificate programs between academic years 2009-2010 and 2011-2012.

Qualitative Data Analysis

In qualitative research, data collection and analysis occur simultaneously since emerging insights direct the next phase of the data collection and lead to the refinement

of research questions (Merriam, 1998). Common data analysis strategies used in qualitative educational research include: ethnographic analysis, narrative analysis, phenomenological analysis, and the constant comparative method (Merriam, 1998). Among these, the constant comparative method was applied to provide an examination of the similarities and differences among community colleges regarding why and how they adopt a public health degree or certificate program, to meet Study Aims 2, 3, and 4. This strategy involves the comparison of a particular item from an interview or document with another item in the same or different set of data. These comparisons lead to tentative categories, which are then compared with one another and to other items (Merriam, 1998). By looking for variation across cases, settings and events, and comparing across activities, experiences and actions, the constant comparison technique increases the richness of description (Gibbs, 2007). The study design allowed for a combination of analyses: across all cases, within each case, within each status (adopter/non-adopter), and across matched adopter/non-adopter cases.

As documents were collected and interviews transcribed, they were uploaded and assigned labels, to ease data retrieval, in QSR NVIVO 9© software. The transcribed data collected through the interviews was organized and reviewed line-by-line to code the data, and generate descriptions, categories and themes. Coding is an analytic process that consists of identifying passages of text that represent a thematic idea and assigning a code, or shorthand reference, to categorize the data and allow for comparisons within and across cases (Gibbs, 2007). Gibbs (2007) recommends that the codes be analytic and theoretical, and not merely descriptive. Coding and generation of themes was also performed on the documentary materials through content analysis. Although

quantification is often a component of content analysis, it is not a necessity since the nature of the data can also be assessed as part of the analysis (Merriam, 1998). Content analysis was employed to guide the documentary analysis to systematically and analytically describe the content within the documents. Analysis of the documents was used to triangulate the themes identified in the interviews. The data were sorted through the use of codes, which were refined through reviewing and re-reviewing the data assigned to the codes, with the identification of key concepts leading to the development of central and secondary themes. Within-case and cross-case analyses were performed as the data were coded to generate categories and themes within each case and across all community colleges. The coding scheme was originally guided by the following dimensions based on the conceptual framework: adoption behavior; perceived and desired attributes of public health degrees and certificates; facilitators and barriers to implementation; and adoptability and utility of the degrees/certificates; however, the codes were refined through an inductive approach based on the emerging concepts found within the data.

Merriam (1998) provides the following guidance on the creation of categories, indicating that the categories should:

- Reflect the purpose of the research
- Be exhaustive
- Be mutually exclusive
- Be sensitizing, or exacting, in naming the category to capture the meaning of the phenomenon
- Be conceptually congruent

Stake (2006) provides a series of worksheets to assist in guiding the analysis of multiple case studies and provided guidance throughout the analysis. The worksheets assisted the researcher in identifying the themes, noting the prominence of each theme in each case, noting the expected utility of each case to develop the themes, and taking the findings to describe the relevance to each theme.

As part of the qualitative analysis, a second researcher performed a review on a sample of the data. The secondary reviewer was a current Doctor of Public Health student with qualitative research experience. The reviewer was provided with background information on the project, including the research questions, study aims, and conceptual framework. When approximately 75% of qualitative data were collected and coded, a sample of themes (five) were provided to the reviewer, along with all the supporting codes pertaining to those themes. In addition, a draft codebook was provided to the reviewer which included all themes and categories generated, to date, in the study. The reviewer submitted written comments which included notations on codes that fit in multiple themes as well as codes that were believed to not directly relate to themes in which they were originally placed. A de-brief session was then conducted in which these issues were discussed. At the de-brief session, additional questions surfaced and were thoroughly discussed. For example, in the original set of themes, the following were identified: student demand, serving the community, job availability, transferability and student preparation. At the de-brief session, much discussion surrounding these codes took place as there was found to be overlap in the codes. During the discussion, it was agreed that it would more appropriate to create a broader theme and sub-themes, with categories, in order to better describe and relate the concepts. Therefore, the broader

theme of “role of community colleges” was created with sub-themes: focus on community, develop workforce, and prepare students for further study. Within these sub-themes, the codes assigned to the original themes were re-assigned. Following the debrief session, additional comments were provided by the reviewer through written feedback. Consensus was reached that there was sufficient data to support the themes and the labels for the themes and categories were appropriate.

Assessing the Research

Due to fundamental differences between quantitative and qualitative approaches, assessment of rigor and quality of the research varies between the approaches. Validity, reliability and generalizability are concepts typically applied to quantitative studies. Although there are no universally agreed-upon strategies to assess the quality of qualitative studies, analogous principles of validity, reliability and generalizability applied in quantitative paradigms have been described as credibility, dependability and transferability in qualitative paradigms (Curry, Nembhard, and Bradley, 2009). These concepts as they relate to the current research are described below.

Quantitative Research Assessment

Validity

Validity relates to the degree to which a study measures what it sets out to measure, and is comprised of both internal and external validity. Internal validity deals with the congruency between the study’s findings and reality. External validity is concerned with the extent to which the study’s findings can be applied to other situations. It is optimal to enhance both internal and external validity; therefore, techniques performed in the quantitative portion of the study are provided below.

Internal validity: The catalog scan used to collect quantitative data in the study used the same approach and was based on the same criteria as that used the previous year to collect similar data among four-year institutions by researchers at AAC&U. This approach was found to provide what was believed to be an accurate representation of the colleges offering public health programs. The catalog scan performed on the 2011-2012 catalogs used the same approach as that used on the 2009-2010 catalogs, among the same 414 colleges. The same second researcher reviewed data collected from the catalog scans of both 2009-2010 and 2011-2012, and 100 percent agreement was reached on degree and certificate programs that met the pre-determined definition of *public health and related*. The findings were consistent with current understanding of the degree to which public health programs exist within community colleges.

External validity: External validity refers to the extent to which research findings, based on a sample, can be generalized to the population from which the sample is taken or to other similar populations. Calculating a rate of adoption of public health degrees and certificates in community colleges is specific to the finite population of community colleges. A simple random sample, using a random number generator in Microsoft Excel, was used to select the colleges in Stratum 2 of the catalog scan; therefore, each U.S. community college, beyond the 114 colleges in Stratum 1, had an equal chance of being included in the study.

Reliability

Reliability was enhanced by having the same researcher apply the same approach to the quantitative data collection for the 2009-2010 and 2011-2012 catalog scans. The 2009-2010 catalogs were re-checked for all colleges in which a new public health degree

or certificate program was identified in 2011-2012, in order to ensure the program was not missed in the 2009-2010 catalog scan. There was one program that was questionable whether it met the “public health” program definition that did appear in both the 2009-2010 and 2011-2012 catalogs, but was not counted as a program in 2009-2010. After review and consultation by the secondary reviewer, this program was deemed not to meet the “public health” definition. Since no new programs were missed in the 2009-2010 catalog scan, reliability was demonstrated.

Qualitative Research Assessment

Credibility

Credibility was enhanced through triangulation of data, member checks and peer examination. Multiple data collection tools (documents and interviews) were used, as well as multiple cases to address the same phenomenon (colleges with and without public health programs), and, within those cases, multiple perspectives were sought (student, public health director or faculty member teaching public health-related; health sciences division chair; vice president of academic affairs; academic advisor/counselor; vice president of administration and finance; and director of continuing education.) Analysis and interpretation based on these multiple approaches assists in demonstrating that the study findings are consistent with reality. Transcripts were sent to the interviewees for their review to check for accuracy and to elaborate on comments. A secondary reviewer performed a review on a sample of themes, with corresponding codes, and provided guidance on the emerging findings, further enhancing credibility.

Transferability

Transferability was enhanced in the qualitative portion of the study through: inclusion of multiple cases and providing thorough descriptions. Using several sites diverse with regard to the phenomenon of interest assists in being able to apply the results to other situations. Providing rich, thick descriptions assists in enhancing transferability in that readers are able to determine whether the findings are applicable to their situations. The reader, therefore, is empowered to make judgments about the applicability of the findings, which sheds light on other similar cases (Rossman & Rallis, 2003).

Dependability

In quantitative research, reliability refers to the extent to which a study's findings can be replicated. Since human behavior is ever-changing, assessing reliability has been problematic in the social sciences. In qualitative research, this concept becomes particularly challenging since the research is not conducted with the intent to isolate human behavior (Merriam, 1998). Achieving reliability in the traditional sense is not possible when studying something "in flux, multifaceted and highly contextual, because information gathered is a function of who gives it and how skilled the researcher is at getting it, and because the emergent design of a qualitative case study precludes a priori controls" (Merriam, 1998, p. 206). Therefore, the term "dependability" has been utilized to capture consistency of data collected in qualitative research. Merriam (1998) has identified techniques for qualitative researchers to apply to ensure the results are dependable. The following techniques were, therefore, applied in the project:

Clarifying the investigator's position: The investigator should explain the assumptions and theory of the study, their relationship with the group being studied, and the reasons for selecting informants. The assumptions, which are guided by the Diffusion of Innovations theory, in this study include: community colleges are capable of adopting a public health degree or certificate and the decision to adopt such programs will involve the college moving through the stages of: knowledge, persuasion, decision, implementation and confirmation, with the rate of adoption primarily influenced by the perceived attributes of the public health degrees and certificates. I have worked in higher education administration and can relate to a certain extent to the interviewees, however, my role in this study is an outside researcher. The informants have been selected due to their ability to provide insight into the phenomenon of interest, namely why and how public health degrees and certificates can be adopted in community colleges.

Triangulation of data: Using multiple data collection sources and tapping into multiple perspectives strengthens dependability as well as credibility.

Audit trail: Data collection and analysis was described in detail. Raw data is available, to the extent allowed by human subjects research protocol, including uncoded transcripts, digital recordings, and notes which offers an opportunity for independent reviewers to perform subsequent analysis (Mays and Pope, 1995). Having an audit trail allows other researchers to decide for themselves if interpretations are well grounded in the data (Ulin, et. al., 2005).

Standards for Critique of Qualitative Research

In addition to the concepts of credibility, transferability and dependability applied in qualitative research, Burns (1989) proposed five standards to critique qualitative

research. These five standards, which complement the concepts of credibility, transferability and dependability, are: descriptive vividness; methodological congruence; analytic preciseness; theoretical connectedness; and heuristic relevance. Their application in the current research is briefly described here. Descriptive vividness was met through providing thorough descriptions of the cases, data collection methods and analysis process so that independent reviewers can visualize the setting and procedures employed.

Methodological congruence was addressed by providing detailed documentation, including information on the theory and previous research in which the study was based, including the research purpose and questions, and detailing the procedures, including the informed consent process. Analytical preciseness was addressed by thoroughly describing themes and providing codes to support the themes. In addition, a sample of themes and corresponding codes were reviewed by a secondary reviewer. Theoretical connectedness was addressed by developing a conceptual framework prior to data collection, based on the Diffusion of Innovations theory. The themes were then related back to the conceptual framework and theory after data analysis. Heuristic relevance was addressed by clearly describing the phenomenon of interest - adoption of public health degrees/certificates in community colleges – along with its relationship to innovation adoption in higher education, and its relevance to public health workforce needs.

SUMMARY

The methods allowed for the collection and interpretation of qualitative and quantitative data valuable to efforts aimed at addressing the proposed Healthy People 2020 objective to increase the proportion of community colleges offering public health

degrees and/or certificates. Basing the research within a defined theoretical framework provided insight, direction and a useful list of initial concepts to build from (Corbin & Strauss, 2008). Repeating the catalog scan performed on 2009-2010 data, using the same population and methods, produced a statistically sound baseline rate of adoption of public health degrees and certificates in community colleges. Few colleges currently offer such degrees; therefore, much could be learned from an in-depth exploration of why and how the colleges adopted public health programs as well as what it will take for other colleges to follow suit. Analysis of the documentary materials and interview data from multiple perspectives contributed to developing a thorough understanding of the factors which influence the adoption of public health degrees and certificates in community colleges. The triangulation of the rich data gathered is intended to inform future research, policy development and practices regarding community colleges' role in addressing public health workforce needs.

Chapter 4: Results

OVERVIEW

The purpose of the study was to document the rate of adoption of public health associate degrees and certificates between 2009-2010 and 2011-2012 and to identify and describe key organizational and curricular attributes involved in the development and implementation of public health degrees/certificates in community colleges. Results from quantitative data collected through the catalog scan provided an estimated proportion of 1.67% (CI 0.79 – 2.55%) of community colleges offering a public health degree and/or certificate in the 2011-2012 academic year. This demonstrates a slight increase from the 2009-2010 academic year in which the estimated proportion was 1.58% (CI 0.70 – 2.46%). The change is not statistically significant. One new adopter community college was found to offer a public health degree and another new adopter community college was found to offer a public health certificate. However, one community college that offered both a public health degree and certificate in 2009-2010 was found to have discontinued the certificate and modified the degree program so that it no longer met the study's definition of "public health and related"; therefore, the net of new public health degree and certificate programs was found to be zero. Therefore, the rate of adoption of public health degree and/or certificate programs between academic years 2009-2010 and 2011-2012 was zero. Findings also demonstrate that the majority of community colleges offer at least one course related to public health.

Fifteen themes emerged from qualitative data collected through the multiple comparative case study. These themes shed light on key organizational and curricular attributes necessary in the development and implementation of public health associate

degrees and certificates and include: awareness of public health; awareness of public health degrees/certificates; innovativeness; unique features of public health; role of community colleges; building curriculum; learning from others; lack of duplication; approvals process; availability of resources; collaboration; information; refinement; prototype adoptability; and champion. Results are described in detail below according to the research question to which they address. Quantitative results primarily address research question one which relates to the rate of adoption and qualitative results primarily address research question two relating to why and how public health degrees/certificates are adopted in community colleges. Themes emerging from the qualitative data are described across all cases, within each case, between adopter and non-adopter cases, and within each matched college pair.

Research Question 1: What is the rate of adoption of public health degree and certificate programs in community colleges between academic years 2009-2010 and 2011-2012?

The rate of adoption of public health degree and certificate programs in community colleges between academic years 2009-2010 and 2011-2012 was estimated at zero; however, there was an estimated net of one new adopter community college between those years. Two new adopter colleges were identified – one offering a public health degree and the other offering a public health certificate - while one previous adopter college discontinued their public health certificate and modified their public health degree so that it no longer met the study's inclusion criteria. This led to a net of one new adopter college between 2009-2010 and 2011-2012, but a net of zero new public health degrees and a net of zero new public health certificates. The estimated proportion

of community colleges offering public health associate degrees and/or certificate programs in Academic Year 2011-2012 was 1.67% (CI 0.79 – 2.55%) compared to 1.58% (CI 0.70 – 2.46%) of community colleges in Academic Year 2009-2010. McNemar's test statistic for the paired data was calculated as 0.333 with a p-value of 0.564; therefore, the change in community colleges offering a public health degree and/or certificate between 2009-2010 and 2011-2012 was found to be not statistically significant. The proportion of community colleges offering an associate degree in public health in 2011-2012 was estimated to be 1.58% (CI 0.70 – 2.46%), which demonstrates no change from the proportion of colleges offering an associate degree in public health in 2009-2010. The proportion of community colleges offering a certificate program in public health in 2011-2012 was estimated to be 0.25% (CI 0.25-2.11%), which demonstrates no change from the proportion of colleges offering a certificate program in public health in 2009-2010. A summary of findings is provided in Table 6.

Two colleges in the sample adopted a public health program between 2009-2010 and 2011-2012. Both of these colleges were in Stratum 1. One of the colleges offers a public health degree and the other college offers a public health certificate. To ensure that the programs were new and not overlooked in the 2009-2010 catalog scan, a review of the catalogs from 2009-2010, available on each of the colleges' websites, demonstrated that the public health degree program was "pending state approval" at the time the 2009-2010 catalog was published and the public health certificate identified in the other college was not previously listed in the 2009-2010 catalog, suggesting this was a new program.

Findings demonstrated that one of the colleges identified in Stratum 1 of the 2009-2010 catalog scan as offering both a public health degree and certificate program modified their curricular requirements of the public health degree, titled Health Sciences, between the publication of the 2009-2010 and 2011-2012 catalogs. Although the college still offered the Health Sciences degree, the modification included no longer requiring an introductory public health course; therefore, the program no longer met the study's definition of a public health program. In addition, the Certificate in Community Wellness Advocacy that had met the definition of a public health program in the 2009-2010 catalog scan was not listed in the 2011-2012 catalog. A subsequent review of the college's website indicated the certificate program was not listed among the college's offerings, suggesting the program was discontinued.

**Table 6: Community Colleges with Associate Degrees and/or Certificates in Public Health
Academic Years 2009-2010 and 2011-2012**

	Academic Year 2009-2010		Academic Year 2011-2012		Change between 2009- 2010 and 2011-2012	
	Estimated Proportion (95% Confidence Interval)	Standard Error	Estimated Proportion (95% Confidence Interval)	Standard Error	Change in estimated # of community colleges	McNemar's test statistic χ^2 (p-value)
Community colleges with associate degrees and/or certificate programs in public health or related fields	1.58% (0.70 – 2.46%)	0.009	1.67% (0.79 – 2.55%)	0.009	1	0.333 (0.564)
Community colleges with associate degrees	1.58% (0.70 – 2.46%)	.005	1.58% (0.70 – 2.46%)	.005	0	--
Community colleges with certificate programs	0.25% (0.25 – 2.11%)*	.002 [†]	0.25% (0.25 – 2.11%)*	.002 [†]	0	--

Notes:

* Since so few certificate programs were identified, stratified data could not be used to calculate confidence intervals. Instead, the 95% confidence interval was calculated as if it were a simple random sample from an infinite population.

[†]Healthy People requires the calculation of standard errors for the objectives. However, since a true standard error cannot be calculated for a sample proportion of 0 (as was found in Stratum 2 for certificate programs) a "pseudo-standard error" was calculated based on using a numerator of .5 (instead of zero) in the formula.

SAS® System version 9.1 statistical software was utilized to calculate McNemar’s chi-square test statistic and p-value, calculated as 0.333 (p-value 0.564). This calculation was based on the paired data from the catalog scan, in which it was estimated to be 19 (0.158*1177) adopter community colleges in academic year 2009-2010, with one of those colleges transitioning to a non-adopter in academic year 2011-2012, and an estimated 20 (0.167*1177) adopter community colleges in academic year 2011-2012, with two of those having transitioned from non-adopters in 2009-2010. These figures are based on a total of 1177 U.S. community colleges. The calculation is provided in Figure 5.

Figure 5: McNemar’s Chi-Square Test Statistic Calculation
Academic Year 2011- 2012

	Adopter	Non-Adopter	Row Total
Adopter	18	1	19
Non-Adopter	2	1156	1158
Column Total	20	1157	1177

Academic Year
2009-2010

$$\chi^2 = \frac{(b - c)^2}{b + c}$$

$$\chi^2 = \frac{(1 - 2)^2}{1 + 2}$$

$$\chi^2 = 0.333$$

In addition to collecting information on full program offerings (public health degrees and certificates), information was collected on individual public health courses. It was found that many community colleges offer individual public health-related courses offered either as stand-alone courses and serve as electives or are part of degree or certificate programs that do meet the definition of a “public health degree or certificate”

such as programs in health sciences, health education, health informatics, and environmental science. Out of the 414 colleges in the sample, 279 were found to offer at least one course among the topic areas of: general public health; community health; epidemiology; global health; biostatistics; environmental health; health policy and management; social and behavioral sciences; or other public health-related courses. The estimated proportion of community colleges offering at least one course in those topic areas was calculated to be 64% (93 of 114 colleges in Stratum 1 and 186 of 300 colleges in Stratum 2). This figure (64%) is similar to results from an AAC&U survey administered to AAC&U member chief academic officers in four-year institutions in which 69% of respondents indicated they offer at least one course to undergraduates that address fundamental outcomes of public health (Hovland et. al., 2009). It was also found that several colleges, at least 17 in the sample of 414, offer health careers exploration courses, which may provide an opportunity to introduce public health.

In addition, the following programs advertised that graduates can work in public health settings: Dietetics, Dental Hygiene, Medical Coding, Environmental Science, Health Science, Human Services, Medical Laboratory Technician, Health Information Technology, Clinical Laboratory Science, Radiologic Technology, Medical Office Associate Diploma, Medical Office Specialist, Medical Transcription, Licensed Practical Nursing, and Human Performance and Recreation-Health Education.

A summary of course offerings identified in the sample of 414 colleges is provided in Table 7. A complete listing of course titles identified among the sample is provided in Appendix H.

Table 7: Sample of Public Health-Related Course Offerings identified in 2011-2012 Catalog Scan

Topic Area	Examples of Course Titles	Number of courses identified in sample (% of sample)
General Public Health	<ul style="list-style-type: none"> • Introduction to Public Health • Foundations of Public Health, Epidemiology and Biostatistics 	25 (6.0%)
Community Health	<ul style="list-style-type: none"> • Community Health • Personal and Community Health 	96 (23.2%)
Epidemiology	<ul style="list-style-type: none"> • Introduction to Epidemiology and Health Data • Principles of Epidemiology 	12 (2.9%)
Global Health	<ul style="list-style-type: none"> • Introduction to Global Health • Global Health Issues 	13 (3.1%)
Biostatistics	<ul style="list-style-type: none"> • Introduction to Health Statistics • Statistics for Health Sciences 	58 (14.0%)
Environmental Health	<ul style="list-style-type: none"> • Introduction to Environmental Health • Environmental Principles in Public Health • Safety, Health and Environment 	162 (39.1%)
Health Policy and Management	<ul style="list-style-type: none"> • Introduction to Health Care and Public Health in the U.S. • Introduction to Health Care Policy 	61 (14.7%)
Social and behavioral sciences	<ul style="list-style-type: none"> • Behavioral Health Issues • Social and Individual Health Determinants 	43 (10.4%)
Other	<ul style="list-style-type: none"> • Film and Public Health • Health Informatics • Infectious Diseases 	61 (14.7%)

Research Question 2: Why and how are public health degree and certificate programs adopted in community colleges?

To address *why* public health degree and certificate programs are adopted in community colleges, the persuasion stage of the innovation-decision process, as described in the Diffusion of Innovations theory, provided particular guidance to the research. Among the theory's perceived attributes, *compatibility* was found to be a key factor in the decision-making process for community colleges when considering the

adoption of a new academic program. Community colleges demonstrate a strong commitment to the local community and respond to identified needs within the community, including developing the workforce and preparing students for further study. Regardless of the field of study, key influences on a college's decision to adopt a new academic program were identified as: student demand, job availability, and transferability to four-year institutions. An additional consideration for adoption of new academic programs includes existing programs offered within the college as well as those offered at other local community colleges, and the need to not compete with these programs. An additional issue associated with the adoption of public health programs is the lack of awareness of public health among the general population and the challenge this creates in being able to demonstrate jobs in the field and generate student demand, two key aspects affecting the decision to adopt an academic program. Although resources are considered in the adoption decision, colleges described that a demonstration of community need for the program trumps availability of resources, as they will find a way to finance the program if their community needs it.

To address *how* public health degree and certificate programs are adopted in community colleges, the decision and implementation stages of the innovation-decision process served as a guide. In order for a new academic program to be adopted in a community college, an extensive formal review and approvals process takes place, typically including internal review by the college's curriculum committee and administration, and review by the Board of Regents and state education department. Regardless of the field of study, implementation of new academic programs in community colleges is facilitated by availability of resources through the college's

funding mechanism including availability of facilities, equipment and faculty and staff. In addition, implementation is facilitated through collaboration across departments within the college and with other colleges, particularly four-year colleges, and employers outside the college. Accessibility to information such as curricular guidance regarding undergraduate public health was also found to assist in the adoption process.

The study also set out to explore the adoptability of draft public health prototype curricula within community colleges. In general, the prototypes were deemed adoptable provided they met the conditions described previously in the persuasion stage – that the programs were compatible with the role of community colleges, specifically, whether they addressed a community need, there were jobs available for graduates possessing such a degree and there were four-year programs for graduates to transfer into.

Participating College Characteristics and Descriptions

In an effort to maintain anonymity of the colleges, institution names have been excluded. Adopter colleges are labeled as Colleges 1-4 and non-adopter colleges are labeled Colleges 5-9. Tables 8-12 summarize key characteristics and context for each case, followed by brief descriptions, taking care not to release identifiable information. It should be noted that when comparing unemployment rates and median household income across counties in which the colleges serve, variation is observed within the matched adopter-non-adopter pairs; however, the colleges were not matched on these criteria. In addition, only colleges offering health-related curriculum were included in the study due to their potential to offer public health curriculum; therefore, there was little variation in the health-related program titles offered among adopters and non-adopters.

Table 8: Key Characteristics of Cases

	Match 1		Match 2		Match 3		Match 4		College 9
	College 1	College 5	College 2	College 6	College 3	College 7	College 4	College 8	
Student enrollment	18,600	18,800	9,900	6,800	9,600	7,600	8,200	8,100	500
Tuition: <i>In-district</i>	--	--	--		\$4,100	--	\$2,800	--	
<i>In-state</i>	\$3,500	\$3,000	\$1,400	\$800	\$6,700	\$2,000	\$5,900	\$3,800	\$2,200
<i>Out-of-state</i>	\$5,400	\$6,400	\$4,000		\$7,900	\$4,800	\$10,800	\$7,300	
Race/ethnicity: <i>Black</i>	32%	40%	3%	4%	25%	27%	12%	18%	--
<i>Hispanic/Latino</i>	17%	7%	67%	42%	6%	9%	3%	15%	1%
<i>White</i>	35%	35%	20%	32%	48%	52%	79%	42%	2%
<i>Asian</i>	13%	3%	1%	11%	10%	2%	--	5%	--
<i>American Indian</i>	--	--	2%	--	--	1%	--	--	97%
<i>Native Hawaiian or other Pacific Islander</i>	--	--	--	2%	--	--	--	--	--
<i>Two or more races</i>	--	1%	--	2%	2%	1%	--	--	--
<i>Non-resident</i>	3%	1%	2%	1%	5%	2%	--	1%	--
<i>Unknown</i>	--	12%	4%	6%	3%	6%	5%	18%	--
City/Town population ¹	2,509,000	344,000	93,000	77,000	97,000	143,000	18,000	11,000	1,000
Unemployment rate in county, July 2011 ²	9.6%	9.7%	7.3%	8.7%	5.6%	10.5%	9.8%	6.6%	11.7%
Median household income in county, 2006-2010 ¹	\$44,000	\$37,000	\$37,000	\$86,000	\$103,000	\$39,000	\$36,000	\$83,000	\$38,000
Proximity to public health graduate school/program	5 miles	3 miles	1 mile	22 miles	20 miles	13 miles	52 miles	22 miles	205 miles

¹U.S. Census Bureau. (2012). Retrieved from: <http://www.census.gov>.

²Bureau of Labor Statistics, United States Department of Labor. (2012). Retrieved from: www.bls.gov/lau/#tables.

Table 9: Major Industries in Counties Served by Colleges

Adopters	Non-Adopters
Match 1	
College 1	College 5
<ol style="list-style-type: none"> 1. Ambulatory Health Care Services 2. Social Assistance 3. Hospitals 4. Food Services and Drinking Places 5. Educational Services 	<ol style="list-style-type: none"> 1. Food Services and Drinking Places 2. Professional, Scientific, and Technical Services 3. Accommodation 4. Educational Services 5. Administrative and Support Services
Match 2	
College 2	College 6
<ol style="list-style-type: none"> 1. Food Services and Drinking Places 2. Ambulatory Health Care Services 3. Professional, Scientific, and Technical Services 4. Social Assistance 5. Administrative and Support Services 	<ol style="list-style-type: none"> 1. Professional, Scientific, and Technical Services 2. Food Services and Drinking Places 3. Administrative and Support Services 4. Ambulatory Health Care Services 5. Air Transportation
Match 3	
College 3	College 7
<ol style="list-style-type: none"> 1. Professional, Scientific, and Technical Services 2. Administrative and Support Services 3. Food Services and Drinking Places 4. Specialty Trade Contractors 5. Merchant Wholesalers, Durable Goods 	<ol style="list-style-type: none"> 1. Transportation Equipment Manufacturing 2. Ambulatory Health Care Services 3. Administrative and Support Services 4. Food Services and Drinking Places 5. Truck Transportation
Match 4	
College 4	College 8
<ol style="list-style-type: none"> 1. Administrative and Support Services 2. Food Services and Drinking Places 3. Printing and Related Support Activities 4. Nursing and Residential Care Facilities 5. General Merchandise Stores 	<ol style="list-style-type: none"> 1. Ambulatory Health Care Services 2. Food Services and Drinking Places 3. Professional, Scientific, and Technical Services 4. Chemical Manufacturing 5. Nursing and Residential Care Facilities
	College 9
	<ol style="list-style-type: none"> 1. Accommodation 2. Food Services and Drinking Places 3. Support Activities for Mining

Source: US Census Bureau, Local Employment Dynamics, Data Tools (2012).

Retrieved from: <http://lehd.did.census.gov/led/datatools/datatools.html>

Table 10: Public Health Program Titles among Adopter Colleges

College	Public Health Program Title
1	Community Health
2	Public Health
3	Public Health
4	Health Education

Table 11: Health-Related Program Titles among Adopter Colleges

College	Health-Related Program Titles		
1	·Alcohol and Substance Abuse Counseling ·Chemical Dependency Counseling ·Exercise Science/Personal Training	·Medical Technology and Management ·Mental Health and Human Services ·Nursing	·Physical Education, Recreation and Recreation Therapy ·Physical Therapy Assistant ·Surgical Technology
2	·Dental Hygiene ·Health Care Assistant ·Health Information Technology	·Diagnostic Medical Sonography ·Emergency Medical Services	·Health Information Technology ·Nursing
3	·Aging Services Management ·Athletic Training ·Cardiovascular Technology ·Emergency Medical Services	·Exercise Science ·Health Care Management ·Health Education ·Human Services	·Nursing ·Nutrition ·Radiologic Technology
4	·Dental Hygiene ·Emergency Medical Services ·Nursing	·Paramedical Services ·Physical Education ·Physical Therapy Assistant	·Pre-Physical Therapy ·Recreation

Table 12: Health-Related Program Titles among Non-Adopter Colleges

College	Health-Related Program Titles		
5	<ul style="list-style-type: none"> ·Diagnostic Medical Sonography ·Dietetic Technician ·Emergency Medical Technician ·Health Information Technology ·Medical Coding ·Medical Laboratory Technician 	<ul style="list-style-type: none"> ·Nuclear Medicine Technology ·Nursing ·Occupational Therapy Assistant ·Ophthalmic Medical Assistant ·Pharmacy Technician ·Physical Therapy Assistant 	<ul style="list-style-type: none"> ·Radiation Therapy ·Radiologic Technology ·Respiratory Care Technology ·Surgical Technology ·Veterinary Technology
6	<ul style="list-style-type: none"> ·Health Sciences ·Human Services ·Medical Assisting ·Nursing ·Physical Therapy ·Radiologic Technology 	<ul style="list-style-type: none"> ·Dental Hygienist ·Emergency Medical Technician ·Medical Assistant ·Medical Coding/Billing Specialist ·Medical Unit Coordinator ·Medical Transcriptionist 	<ul style="list-style-type: none"> ·Pharmacy Technician ·Phlebotomist ·Radiologic Technologist ·Respiratory Therapist ·Surgical Technologist
7	<ul style="list-style-type: none"> ·Addiction Counselor ·Hazardous Materials Management and Waste Technology ·Nursing ·Paramedic Mobile Intensive Care Technician ·Physical Therapy Assistant 	<ul style="list-style-type: none"> ·Pre-Chiropractic ·Pre-Dental ·Pre-Exercise Science ·Pre-Medical Technology ·Pre-Medical/Pre-Optometry ·Pre-Nursing ·Pre-Nutrition 	<ul style="list-style-type: none"> ·Pre-Occupational Therapy ·Pre-Pharmacy ·Pre-Physical Therapy ·Pre-Radiologic Technology ·Pre-Respiratory Therapy ·Pre-Veterinary ·Respiratory Care Therapy
8	<ul style="list-style-type: none"> ·Emergency Management ·Emergency Medical Services 	<ul style="list-style-type: none"> ·Fitness Specialist ·Nursing 	<ul style="list-style-type: none"> ·Occupational Therapy Assistant ·Physical Education Studies
9	<ul style="list-style-type: none"> ·Allied Health ·Health and Physical Fitness 	<ul style="list-style-type: none"> ·Homeland Security ·Human Services 	<ul style="list-style-type: none"> ·Pre-Nursing

Adopter Colleges:

College 1, located in a large metropolitan area, serves close to 20,000 students taking credit courses with another 15,000 students taking non-credit and continuing education courses. The college employs 281 full-time faculty members and 381 adjunct faculty members to teach for-credit courses and another 200 part-time and approximately 20 full-time teachers to teach non-credit and continuing education courses. The college employs 831 staff members. Sixty percent of the student population attends full-time. Fifty-six percent of the student population is female. The majority of students are white (35 percent) or black (32 percent). Seventy-eight percent of the student population is 24 years of age or younger, with 96 percent in-state residents (National, 2011). The college offers a wide array of credit and non-credit courses in liberal arts and career programs. The public health program was launched in 1985 as an Associate of Science in Community Health.

College 2, situated in a mid-size suburb in the Southwest, serves just under 10,000 students, providing associate degrees and technical certificates, as well as adult and community education in a broad array of fields, including public health. The public health degree program is offered entirely online. The program was launched in 1998 and is an Associate of Applied Science degree in public health. The community college is a branch of a university and is governed by the Board of Regents of the university. The university offers a Bachelor of Community Health and a Master of Public Health program. Sixty-two percent of the community college student population attends on a part-time basis with females comprising fifty-six percent of the student body. The majority of the student population is Hispanic/Latino (67 percent). Thirty-eight percent

of the student population is 25 years of age or older and 85 percent are in-state residents (National, 2011).

College 3, a college serving approximately 9,500 students, is located in a large suburb in the Mid-Atlantic region. Sixty-two percent of the student population pursues coursework on a part-time basis and 58 percent of the student population is female. The race/ethnicity of the student population is largely white (48 percent). Close to forty percent of the student population is 25 years of age or over (National, 2011). Ninety-three percent of the students are in-state residents, with 77 percent of those residents of the county in which the college is situated. There are 154 full-time faculty members and 519 part-time credit faculty, 135 part-time non-credit faculty and 436 nonteaching staff. The college offers associate of arts, associated of applied sciences, certificates of proficiency and letters of recognition, with close to 80 percent of students majoring in transfer programs. In 2009, the college launched the Arts and Sciences Associate of Arts degree program in public health.

College 4, situated in a rural area in the Midwest, serves a predominantly white (79 percent) student population of 8,234. A slight majority of students are male (55 percent) with forty-two percent aged 25 years or older. Ninety-eight percent of the student body is comprised of in-state residents (National, 2011). According to the institution's website, the college offers more than 150 courses online and has the fourth largest enrollment of online students among all colleges in the state. The program meeting the definition of "public health and related" is an Associate of Science in Health Education. The year in which the program was launched is unknown, but the impression of representatives within the institution is that the program has existed for many years.

Non-Adopter Colleges:

College 5, located in a large city in the Southeast United States, is a comprehensive multi-campus college with seven locations. Serving close to 19,000 credit students and another 7,000 non-credit students each year, the college offers a range of academic and continuing education programs, including several related to health. The college offers a degree in Health Sciences and various allied health degree programs. The percentage of full-time and part-time students is nearly equal, with the majority of students female (66 percent). The student population is predominantly black (40 percent) and white (35 percent). Forty-five percent of the student body is 25 years or older and 95 percent of the students are in-state residents. With more than 450 full-time faculty, the college is one of the largest higher education institutions in the state.

College 6 is located in a large suburb on the West Coast. Enrolling under 7,000 students, it is one of the smallest community colleges in its geographic area. The college is a federally-designated Hispanic Serving Institution with forty-two percent of its student population Hispanic. Through partnerships with area universities, students may obtain select Bachelor degrees without leaving the community college campus. A large percentage (79 percent) of the student population attends part-time. The majority of students are female (65 percent) and the majority of students (55 percent) are 25 years of age or older. Ninety-five percent of the students are in-state residents (National, 2011). The college offers a degree in Health Sciences as well as a Community Health Worker Certificate.

College 7, situated in a mid-size city in the Midwest U.S., enrolls approximately 7,500 students in which 62 percent are female. Sixty percent of students enroll part-time

and forty-nine percent of students are aged 25 years or older, with an overall average student age of 30 years. Over half of the student population is white (52 percent). Ninety-four percent of the students are in-state residents with 54 percent of students coming from the county in which the college is located (National, 2011). In fall 2009, the college began offering an online Introduction to Public Health course in collaboration with two other community colleges and a state university all within the state, through a grant awarded from the U.S. Department of Agriculture. The college also offers a degree in Hazardous Materials and a variety of allied health programs.

College 8, located in a large suburb in the Northeast, enrolls approximately 8,000 students, of which 63 percent attend full-time. The college is the only public institution of higher education in the county. Females comprise 54 percent of the student body, which is predominantly white at 42 percent. The college primarily serves in-state residents (98 percent) and 68 percent of the student population is under 25 years of age (National, 2011). There are approximately 125 full-time and 200 part-time faculty members. The college offers 52 programs in the humanities, social sciences, arts, technologies, business, health professions, mathematics and sciences, including 40 associate degrees and 12 one-year certificate programs. College representatives indicated the college is considering adoption of a public health degree. The college is one of four community colleges in a consortium that sets out to provide broader access to academic programs and workforce training throughout the region. One of the other community colleges in the consortium is in the process of developing a public health program. College 8 currently offers coursework that is complementary to public health, including

an emergency management degree, various allied health programs, and courses such as Community Health and Wellness and Introduction to Medical Informatics.

College 9 is located in a rural area in the West and enrolls 473 students. It is a public two-year tribally controlled community college primarily serving an American Indian population (97 percent of student body). The majority of students live and work on the Indian reservation in which the college is located. In 2003, the college began offering courses online which has expanded its service area. The majority of students (89 percent) attend full-time and more females (57 percent) attend compared to males (43 percent). Forty-eight percent of the student population is 25 years of age or older and 100 percent are in-state residents. The college currently offers coursework related to public health, including degrees in Health and Physical Fitness, Homeland Security, various Allied Health programs, and a course in Personal, Community and Tribal Health and School Health.

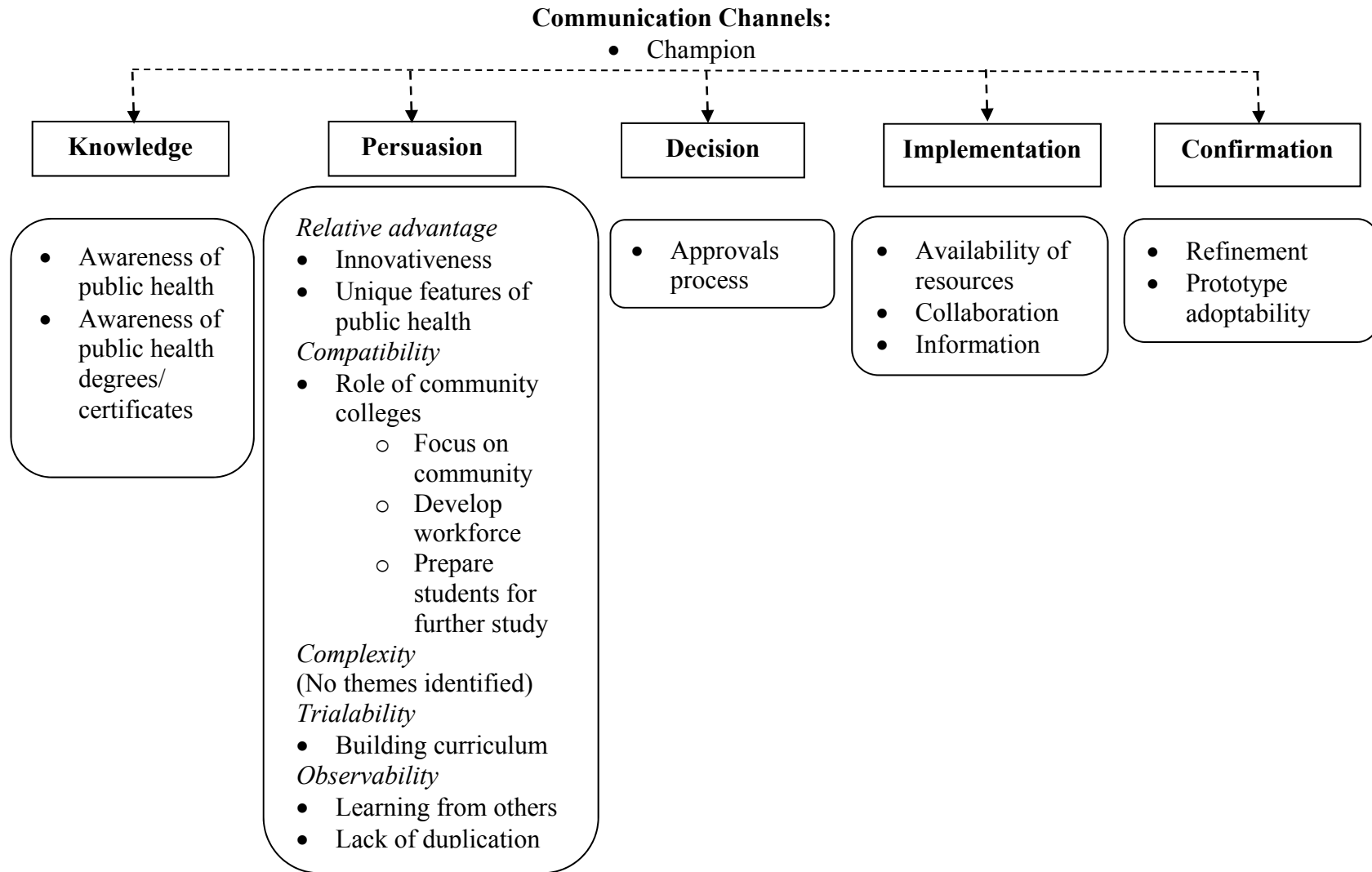
DESCRIPTION OF THEMES ACROSS ALL CASES

A summary of all the themes and their inductively derived definitions is provided in Table 13. The themes which emerged across all cases are described below and organized according to the five stages of the innovation-decision process as presented in the Diffusion of Innovations (DOI) theory: knowledge, persuasion, decision, implementation and confirmation. Figure 6 depicts the relationship of the study themes and the stages to the innovation-decision process. The description of each theme across all cases is followed by a description of each theme within each case, between adopter and non-adopter cases, and among matched pair cases.

Table 13: Description of Themes

Themes and Sub-themes	Inductively Derived Definition
Awareness of public health	Perceptions and knowledge related to the field of public health
Awareness of public health degrees/certificates	Awareness of the availability of public health degrees and/or certificate programs
Role of community colleges	Self-identified roles of community colleges
<i>Focus on community</i>	Serving the local geographic community
<i>Develop workforce</i>	Training current workforce and preparing a new workforce for available jobs
<i>Prepare students for further study</i>	Ensuring coursework transfers to four-year institutions and/or is stackable
Innovativeness	Interest among community colleges in being innovative
Unique features of public health	Characteristics that distinguish the field of public health from other fields
Building curriculum	Approaches used to build-up programs such as first testing the waters in continuing education programming, or developing individual courses prior to a certificate, then a full degree program.
Learning from others	Investigating the types of academic programs offered by other colleges and how they developed and/or implemented the programs.
Lack of duplication	Ensuring curriculum does not overlap with that offered at nearby community colleges or with other departments within same community college.
Approvals process	The necessary steps in developing a new academic program at a community college.
Availability of resources	The degree to which resources are available to community colleges to develop academic programs, including funding mechanisms, facilities and equipment, and faculty and staff.
Collaboration	Collaboration within and outside the community college.
Information	Information needs to facilitate implementation of academic programs in community colleges.
Refinement	Adjustments made, or plan to be made, to academic programs.
Prototype adoptability	Opinions on prototype public health degree/certificate programs.
Champion	An individual, or small group of individuals, within the college to push an idea forward and carry it out.

Figure 6: Study Themes Cross-Referenced to Stages of the Innovation-Decision Process



Knowledge

It is widely acknowledged that the general public does not possess a clear understanding of what public health is. Therefore, when considering the “knowledge” stage of the innovation-decision process, not only did knowledge of the innovation (public health degrees/certificates) surface but also knowledge, or awareness, of public health in general.

Awareness of public health

Possessing, or lacking, an awareness of the field of public health is a factor among community college faculty/staff themselves as well as their perceptions of the level of awareness that students possess. There is, however, recognition of a need to educate others on public health.

Some of the participants expressed their own lack of understanding of what public health is and the limitation this poses, “I just don’t know enough about public health as a field to provide much insight” while those with public health awareness felt it was beneficial to their instruction, “Having a public health background I feel makes me a more effective instructor for health science courses.” As awareness is raised among faculty, opportunities arise, “One thing since I've been teaching the course that has really surprised me is how broad public health is. You'll see it everyday and there are so many different topics you could cover.”

Many interviewees indicated they believed students are unaware of what public health is when entering the college but felt there was a “desperate need for educating people on what public health is.” It was felt that an awareness is being raised by events happening in the community and across the globe as portrayed in the media, such as local

health-related initiatives taking place and relief efforts for recent natural disasters. The benefit of raising awareness of public health among the general public was recognized, “I think that the nation, everybody, would benefit tremendously if there was an awareness of what public health was early on.”

Awareness of public health degrees/certificates

Awareness of public health degrees/certificates was primarily restricted to interviewees in adopter colleges. Public health degrees and certificates were not actively sought out by non-adopters as expressed in the following comment, “I’ve been in this business for 48 years, and this is the first I’ve ever even thought of this [public health degrees/certificates].”

Students also appear to be unaware of public health degrees/certificates and tend to find the offering once they are already on campus. Once the awareness is raised about the opportunities presented by a public health degree, however, it was cited as an attractive option for students, as indicated by an advisor of an adopter college, “I think that students, once they have a better understanding of what it is to be a community health major and what that entails and the different opportunities are presented to a student, it becomes more attractive.”

Persuasion

In order to address *why* community colleges adopt public health degree and certificate programs, the persuasion stage of the innovation-decision process was a particular focus of the research. According to the Diffusion of Innovations theory, the perceived attributes of an innovation explain the largest percentage of variation in the rate of adoption and are particularly important in the persuasion stage. The theory identified

the following as perceived attributes: relative advantage, compatibility, complexity, trialability and observability. Findings are described below in relation to these perceived attributes.

DOI Perceived Attribute: Complexity

In this research study, complexity was found not to be an influence on the adoption of new academic programs in community colleges. The desire of community colleges to be innovative (described below under “relative advantage”) and to serve the community (described below under “compatibility”) seems to overpower any potential perceived difficulty in understanding or using the innovation. Although a lack of resources may affect the college’s ability in carrying out the innovation (described below in the “implementation” stage), this does not appear to stop the college from pursuing curriculum adoption. This is reflected by a comment from a finance and administration contact, “...if there’s a program that they need to develop, it is my job to figure out how to support it.”

DOI Perceived Attribute: Compatibility

The perceived attribute of compatibility emerged as the key construct in the decision-making process of community colleges when considering adoption of a new academic program. Compatibility is viewed as fulfilling the role of community colleges and will be described below in the sub-themes of focusing on the community, developing a workforce and preparing students for further study.

Role of Community Colleges

This study suggests that community colleges view their role, first and foremost, to serve the community; therefore, an emphasis is placed on focusing on the needs of the

community. In addition, community colleges view their role as contributing to the development of a workforce and preparing students for further study. These roles were often described in terms of ensuring availability of jobs for graduates and ability for the coursework to transfer to four-year institutions. This sentiment was summed up by one Dean who indicated, “There’s no need to putting a program in if we can’t put students into jobs or into four-year schools.” These roles represent the existing values, past experiences, and needs of the community colleges, therefore relating to the perceived attribute of compatibility. Each of these roles is described in the sub-themes below.

Focus on community

Community Needs

There is a clear desire among the participating community colleges to respond to the needs of the community. As one interviewee indicated, “We are into serving the community. That is #1.” The needs span from personal enrichment to training for employees in local businesses to addressing educational aspirations of students.

To determine need, several colleges conduct needs assessments in the form of environmental scans and surveys. These assessments include searching data from the department of labor, state workforce commission, local and regional economic development organizations, and through conducting surveys within the community.

As part of the environmental scans, some colleges also do projections and caution against responding to “fads.” There is recognition of the importance of responding not only to current needs, but also for future needs.

Geographical Area

When colleges refer to the “community,” they are often referring to the city/town or region in which the college is situated. The student population tends to come from the local community, and also tends to stay local.

“One of the things that happens at community colleges, students that come here usually stay here. We are not a residential campus. So, students don’t come here from [another state] for a job that they will be going back to [that state] for. We have to make sure we are serving the needs of *our* community.”

In considering the types of services and programs the college should offer, there is sensitivity to address the particular demographics of the local community members. For example, if there is a high percentage of individuals residing in the community in which Spanish is their primary language, then classes may be offered in Spanish. Even if a need has been demonstrated elsewhere in the country, community colleges will only respond to that need if it can be demonstrated in their local region, “I think tailoring it to the realities of your local community and its workforce needs and its public health challenges is what will give it appeal locally and attract people.” A comment referring to public health, specifically, demonstrates this emphasis on the needs within the geographic area:

I think the public health associate’s degree is a spectacular idea; I just don’t think that in our community it would be feasible. In a place where there’s a bigger population to draw from I think it’s a fantastic idea.

Personal enrichment

As part of the role of community colleges, lifelong learning opportunities are provided to the community, at large, through a variety of personal enrichment opportunities. These opportunities, typically in the form of non-credit options through continuing education offices, range from skills-based options such as English as a second language, to recreational activities such as photography.

Student demand

As community colleges consider the adoption of new programs, a key factor is whether there will be student demand. As an interviewee indicated, community colleges need to ask, “Do we have the students to fill the seats? Is there an interest?”

Demonstrating this need is often part of the documentation required as part of the academic program proposal (described in the “decision” stage section.) Student demand is gauged by feedback from employers and the community, as indicated by an academic affairs administrator, “We rely on the employers and the community to gauge coming demand for particular programs.” Students will only be interested in programs in which it is clear what opportunities are presented with such a degree as a student described, “If you are looking at a public health degree and there’s nothing you can do with the public health degree no one is going to take that course work.”

Student goals

Demonstrating student demand seems particularly challenging considering many participants indicated that a large proportion of incoming students do not know which program or career area they wish to pursue. Among the students who enter thinking they have a clear idea of what they want to pursue, they may change their mind once they are on campus. Colleges provide advisement services to assist students in making decisions about their educational and career pursuits. There are often general advisement offices to assist students in setting goals, with some colleges requiring a course in life, career and educational planning. Once students identify an area of interest, advisement is provided by faculty members within that area.

Marketing of programs

Community colleges utilize a variety of mechanisms to market their curricular offerings. Marketing efforts include use of the following: flyers, brochures, websites, word of mouth, inviting high school students and community members to the college for various events, college fairs, mass mailings, DVDs, press releases, social networking, advertising in trade publications, and on-campus events for the student body.

Develop workforce

Another role of community colleges is to develop the workforce. This includes providing training to the existing local workforce as well as preparing students to enter the workforce, either for the first time, or as career changers. Regardless of the specific student population served, as colleges consider adoption of new academic programs, they must demonstrate that jobs will be available to students. Knowing the needs of employers is instrumental in this process as described by an academic affairs administrator in relation to influencing adoption of academic programs, “If a large company comes in and says ‘hey we need x amount of graduates this year and we can guarantee we're going to need x amount of graduates from here on out and we want to hire all those people from your institution.’ They pretty much tell us this is what we need in the curriculum and they kind of tell us what they want.”

Training existing workforce

Community colleges may become aware of a training need in the community when businesses come directly to them with a specific need. Some training needs are due to licensure requirements, whether it be for such professions as cosmetologists, real estate

professionals, dental hygienists, or nursing home administrators. Other times individuals are looking to advance in their careers and are seeking additional skills and competencies.

Career exploration and preparation

Colleges provide a variety of opportunities for students to explore various career options, through career days and job fairs, one-on-one advisement from career counselors, personality tests to assist in matching interest with types of employment and career exploration courses.

Community colleges also set out to prepare students for careers. For students interested in directly entering the workforce, curricular options include the Associate of Applied Science degree, certificate programs, and diploma programs.

Job availability

Before a community college decides to adopt a program, it is critical to demonstrate that jobs will be available in that field. If availability of jobs cannot be demonstrated, the program will not be considered. In keeping with the role of community colleges to focus on their local geographic area, the availability of jobs must be demonstrated for that area, “We don’t want to prepare students for a career where there is no job market in this area.”

The availability of jobs does not necessarily have to be demonstrated for an associate’s degree if the jobs within that field require a bachelor’s degree. For instance, as described by an interviewee in an adopter college:

It could be that those same folks would come to us and say we, or the state, will have job openings in the next five years for people trained in these particular areas, that require a bachelor’s degree, so you might want to be recruiting students into your two-year degree that would lead them into a four-year degree to fill these job openings.

In addition to demonstrating there will be jobs available to graduates, it has to be demonstrated that those jobs will provide a living wage for graduates, as indicated by a Dean of a non-adopter college, “A couple of times people have tried to twist our arms to start a physical therapy aide program and then they make like \$17,000 a year that’s not a living wage here in this part of the country. Why train people for a job which you can’t make a living wage? We won’t do that and that’s part of our criteria.”

Prepare students for further study

Community colleges also see themselves as providing a foundation for continued study, whether it be direct transfer into a four-year institution or to serve as a stepping stone for a career ladder in which individuals may enter and exit the higher education system at different points.

Transferability

Similar to the need to demonstrate job availability, community colleges also need to demonstrate the curriculum is transferable to a four-year institution. Typically, degree programs intended for transfer are the Associate of Arts and Associate of Science degrees. Articulation agreements are often utilized to formalize the transfer of coursework between community colleges and four-year institutions. This need for transferability of coursework was expressed by many types of interviewees, including students, as demonstrated by one of their comments, “Why spend two years at a community college if none of it transfers?”

Stackability

Recognizing that students have different needs and circumstances, community colleges set out to accommodate the diverse student population by offering various

options for students. “I’m always looking at how it stacks, and where students might be able to enter here and leave – multiple entry and exit points”

DOI Perceived Attribute: Relative advantage

Per the Diffusion of Innovations theory, the perceived attribute of relative advantage addresses the degree to which an innovation is perceived as being better than ideas it supersedes. Considering colleges do not have to select one academic program over another as the college could offer both, the themes that most closely align with this attribute address aspects of academic programs that may assist in their consideration for adoption.

Innovativeness

“Innovation is a strategic priority area for our college.” This sentiment was apparent among participating community colleges. Being innovative is embedded in the mission and goals of some colleges and is reinforced from actions of management, “What we found here in the state, the Board of Regents provides funding for innovative programs” and “...because of the support of the President [the college] is very willing to be innovative.”

Therefore, academic programs that are innovative would likely be viewed as advantageous to community colleges. Public health programs may be viewed as innovative as one participant indicated, “I think [a public health program] would be novel, different and new.”

Unique features of public health

Public health exhibits some unique features compared to other potential offerings which may influence their consideration for adoption in community colleges.

In alignment with the desire of community colleges to serve the community, public health, too, sets out to serve communities. In reference to the prototype public health degree/certificate document provided to interviewees, “When I first opened your document I thought that would be awesome here because we really do face a lot of health issues.” Another interviewee indicated, “As a public institution, we are here to serve the public. And, the public needs trained health care professionals.”

Related to the theme *awareness of public health*, additional effort may be required to demonstrate advantages to this field. One such “advantage” may be that public health was often cited as an alternative to nursing and other allied health programs. Nursing is a major draw to community colleges with long waiting lists of students wishing to get in to nursing programs. Public health could serve as an alternative to students who are either waiting to get into the nursing program or decided that nursing or direct patient care was not for them. As a public health student at one of the adopter community colleges indicated, “I found that there is something in it for everybody, whether they might be interested in being a biostatistician, or social work, public health is the best field that can incorporate a lot of different people’s interests.”

Since public health education has typically been offered only on the graduate-level, community colleges demonstrated some hesitation to developing a program that, as one interviewee described, may be viewed as “the bottom end of the totem pole” in public health. In addition, proximity to MPH programs may affect a community college’s offering of public health. As one college found, there were highly educated public health people in their geographic area, therefore, they felt “no one is going to be hiring an AA trained public health person.” However, another interviewee felt public

health was appropriate for community colleges, indicating that public health is “a great program and fits exactly what community colleges should be doing. It fits all the challenges facing community colleges.”

DOI Perceived Attribute: Trialability

Aligned with the perceived attribute of trialability which refers to the degree to which an innovation may be experimented with on a limited basis, community colleges have a variety of ways to test the waters as they build curriculum (Rogers, 2003).

Building curriculum

Community colleges identified several approaches they may take when building a new academic program. Some colleges may test the waters by running special topics courses and gauging student interest in the topic, as indicated by a Dean in one of the participating community colleges, “We’re not going to create an associate’s degree in public health until we see that public health courses are making it and there are enough students to enroll in it.”

However, other colleges would package courses in a program. As indicated by one interviewee, “We don’t just put in courses to have courses. The courses that we deal with have to be part of a program.” Some colleges opt to begin with a certificate program prior to a full degree program and some colleges utilize their continuing education programs to test a program. Continuing education programs tend to be more flexible than the academic units and can, therefore, implement a new course or set of courses quicker without a large commitment as indicated by an interviewee, “The advantage of using the non-credit area is the programs come and go so if you try something that’s really hot, if it continues then you can switch it to credit, if not you can just get rid of it.”

DOI Perceived Attribute: Observability

Per the Diffusion of Innovations theory, the perceived attribute of observability refers to the degree to which the results of an innovation are visible to others (Rogers, 2003). Two themes emerging from this research relate to this attribute: learning from others and lack of duplication.

Learning from others

If a college is known for their particular offerings, they may receive inquiries from other colleges. Information sought from colleges includes how to start the program up, costs, what the facilities and staffing needs are, requirements needed for faculty to teach in the program, and how to partner with four-year institutions. In keeping with the community college role of focusing on their local community, the colleges then evaluate whether the program is feasible in their area and can be adapted to fit their needs. As one participant indicated, “What we’d like to be able to do is see what other people have done and adapt to what we can do.”

Lack of duplication

Community colleges take special care to not duplicate offerings either within the institution or with nearby colleges. Community colleges cannot compete with one another and this extends to recruitment of students as they are not supposed to recruit students from another community college’s district. The approvals process requires that colleges notify community colleges in their area when they intend to add a new program and allow the colleges to raise concerns that they believe there would be a conflict with what they are offering. The Board of Regents can, and has, denied programs if there appeared

to be a conflict with another community college in the area, as was described by one of the colleges.

The lack of duplication also surfaces as a factor internally within the institution, between different departments and between the continuing education program and academic units. In each scenario, there is a desire to stay away from being viewed as competitive with a program and pulling students away. This lack of duplication is similar to the “turf wars” between departments as described by focus group participants of faculty and administrators in four-year institutions, described in Chapter 2 (Hart, 2009).

Decision

The decision to adopt a new academic program in community colleges is a process, requiring input from several committees at various levels.

Approvals Process

Although some variation occurs across the colleges included in the study, the typical process for reviewing program proposals includes review by at least one internal committee, often a curriculum committee, then to college administration whether it be the vice president of academic affairs, vice chancellor, and/or president, then the Board of Regents, and the state education department. The process usually takes a minimum of one year and can take up to three years. This process is often viewed as a hindrance as expressed by an interviewee “We have so much red tape around here it takes us about a year to get a program in place so that’s a big problem.”

Implementation

In order to address *how* community colleges adopt new academic programs, a research focus was on the implementation stage. Implementation was found to be

influenced by availability of resources, internal and external collaboration, and access to information.

Availability of Resources

The availability of resources surfaced as a factor in influencing the implementation of new programs in community colleges. Although resources are taken into consideration during the persuasion stage, their importance seemed more critical in the implementation stage considering colleges will go to great strides to develop and implement a program if a need has been demonstrated. Lack of funding was cited as an impediment to developing or enhancing programs, “The budget has been cut dramatically in our school district and it has impeded us in really expanding programs or improving them.” However, serving the community takes precedence over financial constraints, as colleges indicated they will find a way to make it work if there is a need for a program. This priority of addressing community needs was repeated across several cases and summarized by a financial and administrative contact “Certainly there are times when we are actually willing to lose money if it’s a real need in the community.” In addition to the funding mechanism itself, resources of particular relevance are facilities and equipment and faculty and staff.

Funding Mechanism

Community colleges have three primary sources of funding: tuition, the county, and the state. Additional funding may come in the form of grants and are often for specific projects or programs. Several colleges referred to state and/or county budget cuts, which have affected the amount of funding colleges receive. However, the shortfall from the state/county funding has typically been off-set by an increase in tuition dollars

due to increased student enrollment, “There’s an inverse relationship between bad economies and good enrollment. While we are currently under a budget freeze from the city, in terms of hiring, the student enrollments are quite robust. The funding formula itself works to our advantage even though we have restrictions on spending the money that we would collect. Usually we end up more or less in the same place as one tends to offset the other.”

When adopting a new program, colleges consider how the program will be funded and whether it is sustainable, “For me it would eventually get down to the dollars and cents of it, both to start up the program and to sustain the program. We don't mind investing in the program as long as it's sustainable.” As programs grow, more students enroll and bring in more tuition, making the program sustainable. They consider the revenue that will be generated from the program and determine how expensive it will be to run it, but since colleges “are not looking to make money – a lot of times we’ll do it if it’s break-even.”

Facilities and Equipment

Having adequate space is a concern among colleges as they are described as “busting at the seams.” However, if the need is there then “we work as hard as we can to come up with the space for it.” Equipment needs are also taken into consideration, as certain programs, such as allied health programs, require equipment such as lab space, dissection specimens, medical supplies, and software. These equipment needs add to the overall cost of the program which need to be off-set by other programs not requiring such equipment. However, since healthcare is viewed as a critical field, colleges appear to be willing to assume those costs and provide the necessary facilities and equipment as

indicated by a finance and administration administrator, “When you look at the value added, healthcare is going to be a huge player in the future so any curriculum you can bring forward I would think a community college would be interested in providing the space, equipment, and resources to make that happen.”

Faculty and Staff

Other key resource considerations are the faculty and staff needs for launching a new program. Community colleges would consider whether new faculty members would need to be hired to carry out the program, and, if so, what salary levels will it take to recruit such faculty. Also, what additional staff will be required, including staff considerations extending beyond the immediate management of the program, such as whether another security guard may be needed to ensure safety on the growing campus.

Collaboration

Another influence on the implementation of new academic programs in community colleges is collaboration both within and outside the institution. External collaboration includes that with high schools, other colleges, employers/industry and other state, local and national entities.

Internal collaboration

Collaboration within the colleges facilitated overall implementation of programs as well as recruitment and advisement of programs. Support from administration surfaced as a key factor in adoption of new programs, as one interviewee summarized, “So that was huge that the vice president and the chairs were so incredibly supportive. Otherwise, it never would have taken off the ground.” However, it takes more than support from administration for a new program to get off the ground as another

interviewee indicated, “But, just saying the President may be interested doesn’t mean it would be approved by the faculty. It all depends on the faculty.” Another interviewee re-iterated the importance of having faculty support, “I know if we have faculty support, it moves along in committees much more easily and quickly because you already have faculty support, rather than the other way around.”

Collaboration was often referred to as taking place as part of committees in which representatives from various aspects of the college serve. Communication and sharing of information is an integral component to internal collaboration and was cited as an area that could be improved upon between academic departments and academic and career advisement services in order for advisers and career counselors to be aware of curriculum changes and can effectively relay applicable information to students.

Collaboration that takes place as part of the curriculum itself primarily takes the form of inclusion of courses from different departments in an academic program, such as a biology course requirement as part of a public health program. Even though collaboration is an important element across departments, programs also need to look out for themselves and, as one interviewee recommends, avoid making a program “interdependent with another department in case something ever went wrong.”

Additional collaboration that was referenced in the interviews was sharing of facilities, equipment, and technology across departments.

The level of collaboration between the academic departments and continuing education offices varies among the colleges but there is a general recognition that continuing education offerings could serve as a feeder to the credit-bearing academic

side. A department chair described continuing education to serve as a feeder for those individuals currently working in the field:

I also think we'll be seeing more and more people using continuing ed programs on campuses trying to attract low level workers in getting certified and ultimately a certain percentage of those people who are getting certified, some kind of certificate in community health worker or something like that, also feeding into the programs themselves so not only kids coming from high school but actually people in the field already who actually don't have any educational background besides a high school degree or maybe a GED or something.

High schools

The collaboration that community colleges indicated they have with high schools primarily surrounded recruitment, including admissions staff going out to the high schools as well as the college inviting high school students to visit the campus. Some community colleges also offer classes to high school students by either offering the courses directly in the high schools or allowing high school students to take courses on campus.

Other colleges

Collaboration with other colleges takes various forms but is generally viewed positively. Advice from a faculty member in a non-adopter college offering a public health course included, "Don't be afraid to collaborate. If you could find a partner college or partner colleges that would be willing to work with you that would be great." Among collaborations with other community colleges, four-year institutions, and graduate programs, collaboration with four-year institutions was most frequently mentioned across the cases and appeared to be instrumental in offering public health programs in the adopter colleges. The four-year colleges in which adopters have articulation agreements

offer coursework aligned with the public health programs of the adopter colleges which facilitates the transfer of credit from the community college to the four-year institution.

Community colleges

Some colleges have cooperative agreements with nearby community colleges which allow students to enroll in classes at the partner college not offered on their home campus, with the home institution accepting those credits.

Additional collaborations among community colleges include coordination of meetings and conferences, such as a Community Health Worker Basic Training Working Conference. Sharing of ideas among community colleges also takes place as part of affinity groups, such as admissions officers across the state getting together on a regular basis to compare notes and discuss current issues they are facing.

Four-year institutions

Formal collaboration between community colleges and four-year institutions takes the form of articulation agreements, which are set up to ease transfer of credits from the community college to the four-year institutions. Although collaborations may be made with both public and private four-year institutions, since the state is one of the primary funding sources for community colleges, often the articulation agreements are set up with public four-year institutions within the same state. The collaboration can be initiated by either the community college or the four-year institution.

Coordination also takes place with academic advisors at the community colleges and four-year institutions to ensure appropriate advisement is taking place regarding transfer.

Graduate programs/institutions

There is generally very little, if any, collaboration between a community college and graduate programs/institutions. The gap in the educational system is viewed as too wide, “You don’t have that connection because you have the baccalaureate degree in-between.” If such collaborations do exist, they tend to be informal and based on personal connections. Proximity to a graduate school of public health may influence the opportunity for collaboration, however, as one non-adopter community college in close proximity to a graduate school of public health indicated they have some of the graduates of the graduate public health program teach biology courses at the community college. This same contact indicated that there would be interest in establishing more of a relationship with the graduate program, but “The possibility just hasn’t arisen before.”

Employers/Industry

In alignment with the community college role of developing a workforce, participants suggested there was a great deal of collaboration with employers which contributed to a program’s success, “I think that goes a long way in making a program successful. Collaboration with industry.” Opportunities for collaboration include providing input in curriculum/training needs often through advisory boards organized by the college, providing experiential learning opportunities, serving as guest speakers and/or instructors in classes, sharing facilities and equipment, and recruitment for both – colleges recruiting employees as students and employers recruiting graduates. Making the connection is initiated by either the college or the employer.

Local, State and National Entities

Other entities in which community colleges collaborate include local, state and national associations, agencies and organizations. Examples of entities in which community colleges have collaborations include: professional associations, non-profit organizations, adult education centers, unemployment offices, and local and state government. The collaboration can take the form of service-learning and professional development opportunities for students, recruitment opportunities for the community college, participating in community events, and serving on advisory committees – both representatives from local entities serving on community college advisory committees and community college representatives serving on local or state advisory committees.

Information

Launching a new academic program is a thoughtful process and requires a considerable amount of information to ensure success. As an interviewee from an adopter college indicated, in reference to the college's public health program, "We didn't just jump in. We did our homework to make sure the program, once it was in place, was a well-developed program."

Colleges seek guidance on development of programs and benefit from publications such as those describing undergraduate public health curricula. Several interviewees were interested in receiving a report from this current research study. In addition, interviewees inquired what the dissemination plans were for the prototype public health degree/certificate document and were anxious to share it with others within their college. It was indicated that, "I think information like this has got to get out."

A college also expressed interest in having guidance on available textbooks that could be used in public health courses.

As was seen in the persuasion stage of ensuring jobs will be available for graduates, this informational need was also expressed in the implementation stage in order to market the programs to students and advise students on available career options. Another informational need desired from employers relates to expectations of internships – what skills do employers look for in student interns and what will the internship entail. Related to the community college’s role of developing a workforce, they want to know from employers the types of skills they need of their employees and want to know if the colleges can do anything to better prepare graduates for employment.

In regard to faculty development needs, when a new program such as public health is launched, faculty would be encouraged to learn applicable skills to assist in their ability to teach in the program and may require taking courses themselves, take advantage of faculty development resources available in the college, and network with others that have gone through, or are going through, the same thing. That communication may include attendance at conferences and workshops or, when travel cost is a factor, participating in webinars.

The fact that not a lot of us have a public health background would be a little bit of a barrier. Most of us science teachers use a lecture format and I think public health really lends itself to discussion and case study reading. Getting training in teaching those sorts of courses would definitely be helpful for my coworkers. Maybe attending an APHA conference would be helpful.

Confirmation

As part of the confirmation stage, refinement of the curriculum takes place. Opinions on the draft public health prototype degree/certificate curricula were also sought in order to refine the programs for potential dissemination.

Refinement

Overall, student enrollment dictates whether programs will continue. Considering the investment into the program, efforts will be made to make adjustments to improve student enrollment prior to cutting the program. As one interviewee indicated:

We might do some PR and try to promote it but if that doesn't seem to work then we have to make the decision to cut programs. We do, annually, look at enrollment in programs and what should continue and what maybe a faculty member needs to be retrained or trained in some other aspect of it in some other field so that we don't have to just totally cut everybody out of that.

Prototype adoptability

The prototype public health degree/certificate curricula, available in Appendix G, include a set of three core public health courses (Public Health 101, Epidemiology 101 and Global Health 101) which have been recommended as part of general education, an experiential learning component, four specialized options: environmental health; public health preparedness; public health informatics; pre-health educator; and a public health generalist option geared for transfer to a four-year institution. Comments received pertaining to the draft prototype public health degree/certificate curricula provided followed the themes described above, namely, those themes related to the perceived attribute of compatibility in the persuasion stage of the innovation-decision process. If jobs can be demonstrated for the prototypes, they can transfer to four-year institutions, they serve a community need and student demand can be demonstrated, then, in general,

colleges would consider their adoption. The overall adoptability considerations are described below, followed by a description of the specific aspects of the draft curricula regarding the core courses, specialty areas, generalist public health option, and the experiential learning component.

Overall Adoptability Considerations

As was previously described, community colleges are influenced to adopt a new academic program if current or future jobs can be demonstrated for that program in the local geographic area. This same issue was raised in relation to the draft public health prototypes. A finance and administration administrator of an adopter college indicated, “In any of those concentrations, if there happened to be a company or workforce need for that specialization in our community we would probably be willing to jump on it and start offering that concentration if a company landed here or the job market in health care or public health required it.” Colleges would also need information on how to market the programs, which would involve describing what graduates of such a program could do and where they would be working. If student demand could be demonstrated for any of the prototypes, colleges would be likely to adopt them.

In addition, another key factor in influencing adoptability of the prototypes is their transferability to four-year institutions. As an interviewee indicated, “You want to make sure that they are meeting the needs of the four-year schools if they’re going to transfer.”

The theme of *lack of duplication* re-surfaced in relation to the prototypes. An academic affairs administrator indicated, “make sure you are maximizing resources and not competing for the same student population within my own institution.” Colleges

indicated that they would look at their existing programs to determine whether some of the prototypes could be off-shoots of existing programs rather than creating entirely new programs. For instance, one of the colleges recently launched an environmental studies program and wondered whether there could be a public health arm from that. That same college also offers a homeland security program and would inquire whether public health preparedness could be an off-shoot of that. In addition, the college is starting a medical informatics program and the interviewee felt that public health informatics could likely be an arm off of that.

In terms of internal collaboration, an advisor from a non-adopter college strongly advised coordinating with the nursing and allied health programs to implement the programs laid out in the prototypes since the advisor felt “there is a 94% to 100% probability that that’s where the program will end up. You’ll get a lot of your students there and you’ll get a lot of your questions and/or support coming from them.”

State requirements determine the number of credit hours for degrees and the number of credit hours that need to be dedicated to general education. For example, in at least one state among the participating colleges, 48 hours in general education courses are required for an associate degree and an Associate of Science degree is to consist of a total of 64 hours. Since the prototype curricula consisted of 30 hours, the college indicated they would not be able to fit all of the prototype coursework into an associate degree. However, for an Associate of Applied Science, which is often a two-year terminal degree, the state allows up to 74 credit hours, and the prototypes could more easily fit in this type of degree.

The issue of space and equipment needs was also raised again when discussing the adoptability of the prototypes. Prior to adopting such curricula, colleges would need to determine the cost of any specialized software, equipment, or any needed classroom renovation in order to carry out the programs.

Related to the theme of *building curriculum*, a Dean in a non-adopter college indicated that the college likely would not adopt all five options all at once, but rather, first launch the ones based on feedback from the community, and then build the program from there, adding components as needed. Utilizing continuing education offerings to stimulate and gauge interest was also brought up by the interviewees. A continuing education director indicated that continuing education can typically put curriculum together quicker than the academic units and the offerings can stimulate interest to potentially be developed into a degree or certificate.

Core Courses

While some interviewees viewed the core public health courses (Public Health 101, Epidemiology 101 and Global Health 101) as a beneficial component to a public health program indicating the courses would serve as “the backbone of a good, solid program” and are “relevant to what’s going on today,” others questioned the ability to classify them as meeting a social science requirement as part of general education. Due to state regulations, some colleges are unable to classify health courses as a general education requirement based on a definition that has been on the books for decades. One participating college in particular has been lobbying to have this changed but with no success. One of the cited reasons is that since health is viewed as a practitioner-based field, it cannot count as general education. Faculty and administrators in the health-

related departments within the college are supportive of having health courses count as general education, however, “I was very impressed looking at this that this potentially might be recommended as part of the gen ed piece and I was like, wow, if we had that here at the college that would be such a dream if that happened.”

An interviewee in another community college, based in a different state from the one above, also voiced concern about being able to count the core courses as fulfilling a social science or humanities general education requirement. That state has Faculty Service Areas (FSAs) in which faculty teaching in particular disciplines must meet certain qualifications to teach in those disciplines. For instance, faculty teaching in the discipline of health must possess either a bachelor’s or master’s degree in health science, health education, biology, nursing, physical education, dietetics and nutrition or a master’s degree in public health or any biological science. As the interviewee indicated, the FSA for health is not a social science; therefore, social science courses could not be offered through a health-related division within the college. Questions that would need to be addressed include how these core public health courses would be different from the courses that already exist as social sciences courses and are taught by sociologists, and in what department would these core courses fall. In colleges in which these types of issues were not raised, interviewees saw value in having the courses count as general education requirements since it would benefit the student to fulfill both a major requirement and general education requirement simultaneously.

Specialized coursework

A range of opinions were provided on the four specialty coursework options of environmental health; public health preparedness; public health informatics; and pre-

health educator. Several interviewees referred to their lack of expertise in the public health field and therefore felt limited in their ability to provide comments on the specific content; however, many still provided overall impressions of the specialty areas.

The environmental health specialty was generally viewed as a viable option among the interviewees. An attractive aspect of this option was the perception that there is a career path associated with environmental health and students can pursue careers in this field having an associate's degree without needing to go on to a bachelor's degree. In addition, an interviewee indicated that having introductory coursework in environmental health would be very useful for any individual, which made it an attractive option.

The public health preparedness specialty was also generally viewed favorably among the interviewees. One interviewee did demonstrate concern about the job outlook for such a specialty, thinking it may be "too limiting in scope for employers." Another concern raised was whether the coursework would require pre-requisites that would deter students from enrolling. An interviewee among one of the adopter colleges indicated that developing a public health preparedness specialty is a future goal for the college, and the specialty's relevance to current events, such as natural disasters that have recently occurred across the globe as well as in the college's local area, was viewed as a factor in assisting its potential for adoption.

The option in which interviewees expressed the most hesitation with was the public health informatics specialty. The concerns raised surrounded the specific nature of the curriculum, the potential inability to recruit enough students into such a program, the job outlook for this field in the college's geographic region, whether the coursework

would transfer to a four-year institution, whether it is distinct enough from health information or health informatics to warrant a new program, and a lack of an understanding among students and advisors what the field entails. However, other interviewees expressed interest in this option, indicating that “there is a lot here that I think would be of interest to our President and Provost; therefore, would be of interest in getting the program approved.” The anticipated interest from higher administration in this field was due to its potential fit with a new graduate school of public health that was being created near the community college. Another interviewee described public health informatics as a growing field, pointing out that “more and more may already have the piece of data collection and computer expertise but they need to have the focus of public health and how one collects the data and focuses and analyzes that.” Another interviewee felt this option would be an exciting alternative for students interested in computer information systems but “wants to venture out into a different career area.”

The pre-health educator option was often viewed as one that was related to existing coursework in the community colleges. It was felt that there could be many different directions that could be taken with this option and could, therefore, be very positive for the local community. An interviewee of an adopter institution suggested calling the option “health education” and another felt the option could be more fully developed.

No additional specialty areas beyond those listed among the prototypes were identified. Anything beyond these prototypes was viewed as too specialized as indicated through a comment of an interviewee, “I think anything more would be highly

specialized and, quite honestly, very limiting in the opportunities in what students could pursue.”

General public health track

The existing public health programs among the adopters tend to align most closely with the generalist option. Several interviewees felt that a generalist option would be a better fit for a community college, providing introductory courses to students and reserve the more specialized coursework for the four-year institutions. There was a feeling that if the curriculum was too specialized students may miss out on some aspects, compared to a generalist option in which they would get a sampling of all aspects. With the generalist option, since it would be viewed as a transfer degree, it is important for it to be portrayed to students as such, clearly indicating to them that they would be expected to transfer.

Another interviewee questioned the demand for the generalist option, suggesting that it may be too broad such that students looking for a career change or advance in their careers may not be interested without knowing what the job outlook would be for such a degree.

Related to the Diffusion of Innovation’s perceived attribute of trialability, a suggestion received from a student interviewee was for colleges to begin with the generalist option, gauge student interest, and build specialized options accordingly.

Experiential learning

The experiential learning component was viewed very favorably among interviewees with no objections raised for including this piece in a public health program. Many interviewees view hands-on learning as a crucial aspect to almost any degree in

order to provide students with an opportunity to put classroom knowledge into practice and to get a feel for what the actual work will be like to determine if this is a field they can see themselves in. Some interviewees indicated they would consider requiring more than the three credits of experiential learning indicated on the draft curricula and requiring two distinct field experiences for students to develop a deeper understanding of the breadth of the field.

Multi-Stage Theme

A theme that emerged that spans across multiple stages in the innovation-decision process was having a champion, a person or sometimes a small group of people, to own the idea and follow through on it.

Champion

A champion may raise the idea of the innovation, and go the extra mile to persuade others to support it, and continue to be a critical force in the implementation and confirmation stages to ensure the program is successful. One interviewee commented that “You’ve got to have someone who is passionate about wanting to do this” while another interviewee indicated, “If you don’t have an identified faculty member you’re not going to be able to move it through.”

Contextual Information

As part of the case studies, the context in which community colleges function was noted. These notations were categorized into: community college attributes and priorities.

Community college attributes

A number of positive perceived attributes of community colleges surfaced throughout the data analysis and are described below. Individuals working in community colleges seem to take pride in the important place that community colleges have in higher education and acknowledge that they must educate others on this important role, as described by an admissions contact in one of the participating community colleges, “There is such a need for the community college education environment because we have a special place in the higher education hierarchy. It is so important that we are able to get others to understand the role of the community college.”

Open access: College websites, course catalogs and interviewees often referred to the open door policy of community colleges, meaning they admit students regardless of sex, race, color, creed, religion, national origin, age, physical ability, marital status, veteran status, sexual orientation, previous experience or performance. This policy is viewed as the “college’s commitment to bringing cultural, occupational and education opportunities within the reach of everyone in the community.”

Student population: In addition to the traditional student population, community colleges tend to have a large proportion of non-traditional students, which may include older students, displaced workers, career changers, low-income single parents, veterans, etc. Community colleges appear to be quite responsive to the needs of these non-traditional students. As one college’s catalog cited, “The college is committed to programming, scheduling and services that facilitate the ability of adult learners to achieve their academic, career and personal goals in a convenient and timely way.”

Affordability: Community colleges boast that the tuition at a community college is a fraction of that at four-year institutions, particularly at four-year private institutions. The affordable tuition rate is used in marketing materials, encouraging students to pursue their first two years at a community college to save money before transferring to a university with higher tuition.

Location: Related to the theme of community college's role of focusing on the community, a positive attribute of community colleges is their location within the community. Due to the non-traditional student population to which community colleges cater, "two-year colleges tend to be a viable opportunity for people that are place-bound because of their job or family responsibilities." Many students choose to attend a community college because it is close to where they live.

Flexibility: Community colleges view themselves as more flexible than four-year institutions, due, in part, to the perception there is less bureaucracy at a community college than at four-year colleges. As an academic affairs administrator indicated, "Community colleges by their very nature need to be pretty flexible in order to respond quickly to external forces, needs and requirements within their community, otherwise we're not serving our constituency. "

Stepping stone: There is a recognition that "not every student is ready to go away [to college] either socially or academically," and that those students can benefit from first going to a community college to get their "feet wet to go on to the four year college."

Individualized attention: The focus on students was repeatedly mentioned as a perceived benefit of community colleges. Classes tend to be small in size providing an

opportunity to get to know the teacher and fellow classmates. This sentiment was captured in a statement by an interviewee at one of the larger colleges, “Also, even though our community college has about 20,000 students the class sizes are so small and we pride ourselves on making sure that students get to know the faculty members and the faculty members get to know the students.”

Developmental education: Related to the open door admissions policies of community colleges, services are provided to prepare students in need of remedial education. Developmental education is typically provided in reading, writing and mathematics. Populations in need of these services may be those who dropped out of high school and their English and math skills are lacking or they may be individuals who did not perform successfully in a four-year institution and need to get their grades up before transferring back to the university.

High-quality instruction: Community colleges contend with “the public’s perception that it is a lower class education.” Therefore, interviewees emphasized that the education provided at a community college is on par with that offered at a university and the unique features of a community college make them a “good investment” with “a special place in the higher education hierarchy.”

Priorities

A variety of college-wide priorities was referred to in the documents and interviews and are summarized below:

Academic programming: Colleges seek to maintain high quality education to students. Academic programs of particular interest to community colleges are those in the allied health field, with the following fields specifically mentioned: nursing, physical

therapy, dental health, nursing assistant, emergency management technician, and cytotechnology. However, anything related to health has potential to draw the attention of community colleges. As one academic affairs administrator mentioned, “Health programs are always on the radar screen to determine if we can just add additional health programs to support the community.” Additional academic program priorities mentioned were: global education, agriculture, criminal justice, business and green technology.

Assessment: Assessment of programs was mentioned as a key priority among several colleges. This focus appears to be in line with trends across institutions of higher education as indicated by one college administrator, “Assessment is a tremendous initiative across the country for all higher education institutions, so we are trying to get faculty to think more in terms of assessing what they are doing.”

Organizational excellence: Striving for organizational excellence was indicated as an overall priority. Some defined this as being innovative and others referred to the institution’s culture as determining excellence.

Being diverse: Although only explicitly stated by two participating colleges, maintaining and/or enhancing diversity was cited as a key priority.

Enrollment/Manage Growth: Enrollment was also indicated as a priority among the sampled community colleges due to its tie to funding as indicated by one administrator, “For better or for worse, we live or die by enrollment because we are funded by credit hours generated.” Enrollment issues related to both meeting enrollment targets as well as managing the enrollment growth observed among colleges. Making sure enrollment does not get “too low” was a concern cited among a smaller community college while other colleges need to keep up with increased demand, “Just keeping up

with our enrollment growth over the past 10 years - we've averaged 10% growth every year” and being able to provide the same services to more students with same resources.

Funding: Remaining financially stable and seeking funding opportunities was cited as another priority. Colleges find this challenging considering many states are cutting budgets for education. This is putting a strain on those working in the colleges, as indicated by an interviewee, “nobody has gotten a raise in three years and that is very serious with the other costs going up -insurance costs, and actually our retirement benefits are taken out of our pay so actually this year we’re seeing increases in what comes out of our checks with absolutely no ability to get an increase in pay.”

Keeping tuition costs down: Even with budget cuts, some colleges appeared to be quite sensitive to the financial circumstances of students, and made great strides at keeping tuition affordable. They look at additional ways to keep costs down for students such as textbook rentals and using e-books and e-readers, which tend to cost less than print versions.

Infrastructure: As was seen in the implementation stage, securing appropriate facilities and equipment is a priority in order to provide high-quality programming to meet the needs of students. In addition, enhancing technology was mentioned, in relation to technology to ease administrative processes, enable classrooms with technology, and providing courses online.

Staffing: Community colleges appear to value their faculty and staff and wish to build their faculty and staff. As a financial and administrative contact indicated, “Hiring top of the line instructors, top of the line support staff is a top priority.”

Partnerships: Building partnerships was also cited as a key priority by some colleges. Specifically, partnering with employers was of particular interest to understand what skills employers are looking for in their new hires. A career advisor in one of the community colleges indicated, “Employers are going outside of our service area to fill the jobs when we have a lot of unemployed people within our service area that can do the same work.”

Retention: Largely due to funding mechanisms, retention of students and enhancing graduation rates is currently a major priority among community colleges. Retention is a particular challenge for community colleges due to the needs and situations of the student population. Often, students have families and jobs, therefore, they may take a few courses then need to take a few semesters off, and some never return. Providing support services is therefore a large component of community colleges.

Marketing: Marketing efforts are another priority to ensure the community colleges are recognized in their community in order to recruit students.

Student success: A focus of community colleges is the students and ensuring their success. Colleges are sensitive to the needs of the community college student population, recognizing that many students have jobs and families to take care of, and some enter the college without being able to academically perform at the college-level; therefore, colleges provide support services and developmental education to assist students in balancing their life-school-work lives and developing skills to prepare them for the academic rigor of college courses.

Workforce development: Corresponding to the attributes of academic programs identified in the persuasion stage, a focus of community colleges is workforce

development. A couple of interviewees suggested that responding to workforce needs may be the way the colleges are trending. Another interviewee shared a similar sentiment, “I think the priority for the board of trustees right now is workforce development. I think they really have a focus on finding out what the community needs, when they need it and let’s be ready to provide that.”

Green initiative: In addition to an interest in developing academic programs pertaining to green technology, one case referred to their efforts in making their college green by becoming a more sustainable campus.

Political and Economic Influences

Since community colleges are partially funded by the state and county, political and economic influences play a role in the college’s ability to address these priorities. For instance, an academic affairs contact indicated that the County Executive approves their budget; therefore, they need to be responsive to their local elected officials with each party having a mutual understanding of needs. Colleges also indicated that the economy plays a role in their enrollment. When the economy is poor, enrollment in for-credit programs increases, but declines in non-credit offerings since there is no financial aid provided for non-credit offerings. When the economy is poor, though, students wish to gain employability skills and get back to work. A faculty member observed, ” I think the economy has quite a bit to do with it because we're seeing a lot of people who want to get back into the workforce really quickly.”

DESCRIPTION OF THEMES BY CASE

College 1

Awareness of public health

College 1 referred to raising awareness of public health as indicated by an interviewee, “I think the United States would be different if you had this grassroots movement of people exposed to, aware of, public health and became this educated citizenry.” This theme was further demonstrated in the college’s actions since, according to documentary materials collected, the college has a Health Education & Lifestyle Management Center “whose primary mission is to raise the collective consciousness of the college community with regard to major health issues.”

Awareness of public health degrees/certificates

College 1 indicated the challenges associated with the lack of awareness of public health degrees/certificates among prospective students, indicating that the college’s public health program “struggles sometimes to have an identity because it isn’t among the more commonly followed allied health careers” which leads the college to promote the program “as having a role in the allied health professions.” However, once students are made aware of the program, it becomes an attractive option, “I think that students, once they have a better understanding of what it is to be a community health major and what that entails and the different opportunities are presented to a student, it becomes more attractive.”

Innovativeness

College 1’s innovativeness appeared to be driven by upper-level administration. As indicated by an interviewee:

Our Provost is very innovative in his own right and he's done some major innovative programs, so I think he generally likes it. I think he has a reasonable perspective on whether you can get faculty interested or not. Our President is a very hard-driver, very student-driven, and she pushes the faculty to do things that they might not otherwise want to do. So, [the college], because of the support of the President, is very willing to be innovative.

Although being innovative is viewed as beneficial, the college cautions against fads that may not be sustainable, as indicated by another interviewee:

I've had the Provost say to me sometimes you just get popular trendy fad kind of things and those kinds of things petered out. We were interested in starting a massage therapy program here and the Provost didn't want to go forward with that. He said we really need to stick with really viable concentrations you don't want to water down programs by offering so many things that you end up watering down the main things that you're doing.

Unique features of public health

College 1 referred to the lack of knowledge of what public health is as a potential deterrence for students to enroll in the public health program; therefore, it may be marketed as an alternative option to those students who are not accepted into the clinical programs. The college's public health program is viewed as "a great program and fits exactly what community colleges should be doing. It fits all the challenges facing community colleges."

Role of Community Colleges

Focus on Community

College 1 strategizes to assess community needs. This strategic approach appears to come from upper-level administration, "We have a President who believes in strategic planning and being systematic about it. When she first came to campus about seven years ago, she did what our research officer called an environmental scan – what are the needs of the community in terms of workforce development." The environmental scan

takes into consideration, “all aspects of the program in terms of its value to the students, its potential to long-term and short-term impact, and whether or not the return on our investments in program development is worthwhile.”

The college also responds to student demand and guides students accordingly, “A lot of times they have a romanticized version of what it entails to be a nurse. We help them make an educated decision on what curriculum and career path is best for them.”

Develop workforce

The overall goals of the public health program at College 1 “are to prepare students for entry-level front line public/community health positions and transfer to a related four year college program.” To develop professional skills, the program has a strong emphasis on experiential learning and service-learning, taking field trips, presenting at conferences, and otherwise engaging students on and off campus. As advertised in the program brochure: “When you graduate from [the college], you are eligible to work as a Community Liaison, Community Health Worker, Patient Navigator, Program Aide, or Public Health Advisor in many different and exciting work settings!”

Aligned with the strategic planning exhibited by the college, when looking at market trends, the college not only considers present needs, but also “upcoming needs for professions in the next 10-20 years.”

Prepare students for further study

The college, as a whole, “has shifted its focus in understanding that many of our students do transfer to senior colleges and it’s important that the courses and curriculum is based toward that.” The public health program fits this goal, “Our mission and goal is to not only provide career preparation but also entrée into higher education. Our

community health program is a perfect example of that.” The curriculum is currently set up to facilitate transfer to four-year institutions, as described by an administrator within the college:

One of things that I think was very helpful was some years back they changed the degree I believe. From an AAS which is an associates of applied science to an associates in science. From an AAS to an AS degree. The reason that that is significant is that it changes the number of general education courses like sociology, psychology, math - things that are not within the major. The AAS for example had about 20 credits of the 60 credits in Gen Ed, the other 40 are within the major. Then the AS degree moves it to 30, 30, so it moves up in terms of the Gen Ed requirements which actually helps them a lot when they transfer. When they transfer to senior colleges that makes them go through the rest of the programs and the community health programs a little bit faster and a little bit more prepared because they are more generally rounded.

Building curriculum

It is believed that the public health program was implemented all at once at College 1, but did not have concentrations, which are now part of the curriculum. The college referred to utilizing continuing education as a way to build curriculum from a non-credit certificate program to a credit-bearing academic program. An interviewee used the Emergency Medical Technician (EMT) option as an example, “So, a program can get started in the continuing education program and then move over to the academic. For example, EMT, we have a certificate program which does not require the same level of work that a full-time program does. But, next year or the year after, we are starting an A.S. or A.A. degree program in EMT.”

Learning from others

The public health program was created through pioneering efforts of a “champion” who built the curriculum based on a public health graduate program.

Lack of duplication

Although this theme was not very prominent in College 1, there was mention that they would not be able to mount a program that another nearby college already offers, and, therefore, must demonstrate how any new academic programs would be distinguished from what another college offers.

Approvals process

It can take three years to develop and launch a new degree program at College 1. Faculty in the department would work with the academic affairs office to draft a proposal demonstrating need and rationale for the program, target student population, and curriculum. The proposal needs to be approved by the local campus governance, then a region-wide educational system, then submitted to the state education department.

Availability of resources

The theme of availability of resources was prominent in College 1. The college's size provides the college with flexibility to take risks that smaller colleges may not be able to, "...if the bottom falls out of the program, what kind of hit will we take and what impact will it be for other students in the college. Fortunately for us we are around 15,000, exclusive of our high school population, so we can take some risks and if things don't work out they can be ameliorated by other factors." The number of students in a program provides a leverage point for securing additional resources, "If students are coming into your program and having good experiences that's really powerful in terms of getting more faculty, more money, more resources." The public health program witnessed enrollment growth in a short amount of time and the concern related to being able to provide quality internship supervision, "As the major became more popular we

went from 49 to 150 in a couple of years- in the last three years it's tripled and the problem was how were we going to place everybody and then supervise them properly.”

Faculty teaching as part of the public health program began with the existing core of health-related faculty and expanded to include faculty with formal training in community health, community health sciences and health education. There is a core group of five full-time professors for the public health program plus adjunct faculty. The program has been directed by either a single individual, or co-directed by two faculty members, depending on the faculty members' schedules.

Collaboration

The theme of collaboration was highly prominent in College 1, both in terms of internal collaboration as well as external collaboration. As an advisor within the institution indicated, “there is a tremendous collaboration between all of the departments.”

Specific to the public health program, collaboration takes many forms including a community health advisory board that provides input into the program, through public health-related associations, organizations and agencies that provide experiential learning and professional development for students, and with other colleges, particularly four-year institutions in which College 1 has set up articulation agreements with to ease transfer of credit between the institutions.

Information

College 1 indicated interest in learning from employers what they expect from students in relation to field experiences and what the needs are of the organization.

As far as disseminating information to faculty, e-mail was cited as the most widely form of communication, with webinars becoming more widely used in recent months.

Refinement

In regard to the public health program, there are plans to change the name and focus to ‘public health’ from ‘community health’ to increase the number of majors, and increase the number of articulation agreements with Bachelor of Science programs in public health. In addition, there are plans to hire full-time and part-time faculty members with public health degrees. The curriculum will likely remain the same, with perhaps the addition of a new concentration in health sciences/pre-department of health employment track. There are plans to use the continuing education programs of Community Health Worker training and Family Development credential training as gateway classes for the major.

Prototype adoptability

Overall, comments regarding the prototypes in College 1 were generally favorable toward adoption, with an understanding that the prototypes could serve as templates for colleges to adapt to suit their particular needs and meet their specific state requirements. There was some concern that the coursework may be too specialized and require pre-requisites, “The prerequisites for the courses would certainly be a limiting factor.” In the state in which College 1 is located, health courses cannot be classified as general education courses, therefore, having the core courses (Public Health 101, Epidemiology 101 and Global Health 101) meet general education requirements is not likely to occur in this institution. The college, however, has been trying to change this state requirement and, as one interviewee indicated, it “would be such a dream if that happened.” A

recommendation from an interviewee was to have public health faculty work with the social science faculty to develop a Social Science 101 course, instead of a Public Health 101 course, using public health examples to provide students with the foundation in public health.

Interviewees emphasized the need to work with four-year schools to adapt the templates to fit programs at the four-year institutions, selecting courses that will prepare the students “that don’t steal the thunder from the four-year college because they’ll never forgive you.”

Champion

The theme of having a champion was prominent in College 1, with multiple interviewees of various roles making references to this theme, which was further corroborated by documentary materials. Having a champion was referred to both in a general sense in academic programming as well as specific to the public health program. An example of the importance of having a champion, in general terms, can be demonstrated by the following quote from an interviewee, “Sometimes you get a really talented, ambitious, visionary educator out there on campus who comes up with this need, so we say ok, you give us the rationale and you convince us about the benefits of this degree and we’ll consider it.” The importance of having a champion, specific to the public health program, was demonstrated in the initiation of the program in documentary materials indicating the program was conceived and developed by an individual with a particular interest in the field and vision for the college’s role in addressing the need in the community. A champion was viewed as an important influence on the maintenance

and success of the public health program as well, with multiple references to the director of the program as being “dynamic” and “enthusiastic.”

College 2

Awareness of public health and Awareness of public health degrees/certificates

Neither of the awareness-related themes emerged in College 2.

Innovativeness

The innovativeness theme was not prominent in College 2, with only one reference suggesting that the continuing education program is willing to “take something that hasn’t been done” provided a community need has been identified.

Unique features of public health

The characteristics of the public health program at College 2 that contribute to its success were described by a faculty member as:

One that it is a catchment that it helps fill the needs of students who haven’t gotten into their program and then again there’s good and bad with that. I either feel it’s a blessing for so many students because they maybe didn’t realize about the program and realize that maybe they really did want to do more community than one-on-one stuff so I think we help fill that need that students can still get a degree. I think the other benefit that we have is that we do truly have the articulation agreement with main campus so as they do get their associate’s and move into the junior year at [the university] that all the credits be accepted. We work on that to make sure our articulation agreement is one of the shining stars.

Role of community colleges

Focus on community

Per the college’s catalog, the college’s mission is “to assist community members in attaining their personal as well as professional goals through a wide range of credit and noncredit programs.” As an academic affairs administrator indicated, the impetus for developing a new program is primarily “whatever is happening in our environment or our

service area.” The college may have an organization come to them indicating they need training, a certificate, or degree, and “then it’s up to the administration at the community college to determine okay what do you need, what is it going to take for us to do it, are we going to create a program that’s going to work into the credit side, associate’s degree for example, or is it more going to fit into the workforce training side of the community college where we deal more with non-credit and sometimes industry certifications.”

Develop workforce

An interviewee summed up the college’s focus on developing a workforce as, “The culture here is to just have a quality program, graduate students, and get them in the workforce.” The college listens to industry to determine program offerings, “If there happened to be a company or workforce need for that specialization in our community we would probably be willing to jump on it and start offering that concentration if a company landed here or the job market in health care or public health required it.”

Prepare students for further study

College 2 is affiliated with a university; therefore, due to this relationship, the community college is “always trying to create degree programs that are 2+2 so when a student graduates from the community college they can move directly into the University and continue their educational career.”

Specific to the public health program, per the college’s catalog, “The associate degree program fully articulates with the bachelor of community health degree program offered at the main [university] campus in the Department of Health Science, which also offers the master of public health in community health education at the graduate level.”

The associate's degree was created after the bachelor's degree, "We essentially packaged an associate's degree in public health to encourage students to hopefully come to the community college first and then transfer over or enter the job market if that is what their choice is."

Building curriculum

According to an interviewee, it is believed that the public health program started from scratch at College 2 without first trying out the subject area with individual courses.

Learning from others

This theme was relatively prominent in College 2, as interviewees indicated that they not only seek information from other colleges but also receive inquiries from other colleges looking to learn from them. This is reflected in one of the interviewee's comments, "Academically, we tend to reach out to community colleges in the state to share information about academic programs and things like that. We tend to get called frequently about our health related programs." Although the details were unknown due to change in leadership, it was believed that other colleges did reach out to the college to inquire how to design an associate's degree for public health.

Lack of duplication

This theme surfaced as an internal lack of duplication between the continuing education programs and academic units of the college. As a continuing education program contact indicated, before developing a new program, they must check with the academic units to ensure there is not a closely related area that would potentially affect enrollment or otherwise affect the credit program. The interviewee indicated, "An example of that might be if we were going to offer a medical terminology class, and this

is based on a real example, we check to make sure that our public health division and the administration doesn't have any problems with us doing it. In this case, the dean said 'no, I don't think we should do that because we offer a program like this and it might hurt our numbers' even though it absolutely would not and we could substantiate that."

Approvals process

College 2 indicated that it can take about a year to get a new academic program in place, due to "so much red tape around here." Once the proposal is approved at the community college level, approval is needed from the affiliated university, the state and the federal government to make sure that it is a program financial aid will cover. An interviewee referred to the process as "pretty daunting."

Availability of resources

Funding for College 2 comes from state funding (approximately 55 percent), local tax levies (approximately 15 percent), and tuition (approximately 30 percent.) As was indicated in other cases, enrollment plays an important role in securing resources, "If a new program grows, you will eventually get new faculty members full-time. And, if we get full classes, we will run programs."

The public health degree is offered entirely online, and the college pays faculty extra for teaching online. The program was first offered by adjunct faculty and now has two full-time faculty members and one part-time faculty member teaching public health courses. The faculty all have masters degrees in public health. One of the full-time faculty members serves as the program director.

Collaboration

The theme of collaboration was prominent in College 2. In regard to internal collaboration, one interviewee summed it up as, “We’re a team as an institution.” In regard to the public health program, collaboration with other units in the colleges is “probably not as consistent as it could be.” The public health program collaborates with the dental hygiene and dental assistant programs on service learning planning, the tutoring center to assist students, and with the early childhood education program to jointly market their programs.

In regard to external collaboration, the “college has a strong connection with the business community” as advisory committees are set up for various programs, comprised of employers, continuing education representatives, public school system representatives and university representatives. In addition, contacts within the community college are encouraged to be active participants within the community, as indicated by the following comments from an interviewee:

We try to be very aware of what’s going on within our community and so all of us are encouraged to join the chambers, join economic development agencies or boards, serve on boards and so on and so forth to be active out there so then we’re able to have a pull on the community as well. So if we hear of a need in the community we can jump on it and we can direct the person who has that need in the organization to the appropriate location or department at the community college to assist.

Information

College 2 indicated they would like a document delineating standards the public health program should have, for accreditation purposes. It was recommended that organizations such as the Society for Public Health Education (SOPHE) could be a venue for disseminating such information.

Refinement

In general, there is not a formal process in place to review programs; however, an interviewee did indicate that the key consideration of whether a program would be discontinued would be if student demand and enrollment dips for the program.

Specific to the public health program, updates on enrollment and graduates are provided at the Advisory Council meetings. In addition, an exit survey is administered in the major's capstone class to evaluate the program, with the data compiled and submitted to the college.

Prototype adoptability

College 2 felt their public health program most closely aligned with the generalist public health option and possibly the pre-health educator concentration option. It was felt that the prototypes “would not be hard for us to adopt” and “If there was a demand for any of the other prototype options I know we would move to create curriculum and options to fill those.” Similar to College 1, the college indicated that each college may wish to tailor the prototypes, “I think it just might depend on the institution itself.”

Champion

The theme of a champion was not prominent in College 2, with only one interviewee mentioning they felt a program's success is due, in part, to the “department chair running the program - they'll have the connections and experiences to bring it all together and make it all happen.”

College 3

Awareness of public health

The awareness of public health theme surfaced in College 3 in the form of awareness of public health among those working within the college, “I just don’t know enough about public health as a field to provide much insight” as well as through external initiatives that may have assisted in raising awareness of public health within the community, “I think there was also an environmental factor, being in our county, to look at an initiative that was occurring within the county – that raised awareness of public health among incoming freshmen and among community members that also drive interest.”

Awareness of public health degrees/certificates

Although not a prominent theme in College 3, awareness of public health degrees/certificates was referred to as a student interviewee discussed a national initiative “to push more public health into undergraduate education. I know that’s a good push, but I’m not sure about a lot of other people knowing about it.”

Innovativeness

College 3 seemingly takes pride in their innovativeness, as described on the college’s website, “Our faculty are known as innovators” and the proposal submitted as part of the public health program emphasized that the college would be the first community college to offer the type of public health degree being proposed. In addition, the values of the college include “innovation” and the public health program “definitely is very innovative.”

Unique features of public health

College 3 referred to the MPH as the gold standard for public health education, and, therefore, the public health program at the community college was set up as a transfer degree, indicating that students graduating with an associate degree in public health would not be able to compete for jobs with those graduating with master degrees in public health.

Role of community colleges

Focus on community

College 3, as with the other cases, focuses on the community, “We see ourselves as being an integral part of the community. We are always looking at how we can serve our community.” Environmental scans are performed to identify growth areas within the county and state, and enrollment projections are performed to estimate the number of students that a new program will attract.

Develop workforce

In general, the college sets out to develop the workforce, and explores data available through the state Department of Labor to “see where the gaps are and where the job growth is, and what the major economic engines are of our community. We are always looking at what are the needs of the community and when the students finish will they have the requirements for a job available to them.”

In regard to the public health program, it was set up as a transfer degree program, and not for direct entry into the workforce, particularly since their focus group data demonstrated that, in their geographic region, those working in public health are highly educated; therefore, it was felt that “no one is going to be hiring an AA trained public

health person.” However, an interviewee within the college did indicate they would “want to know who out in the workforce is hiring any AA degree trained public health people.”

Prepare students for further study

The public health program at College 3 was designed to articulate to a health administration and policy program at a local state university. However, students may also be able to transfer to other institutions, but are advised to check the requirements of that receiving institution. Not only are students notified that the public health program is intended for transfer to a bachelor’s degree, they are also advised “not to look at the bachelor’s as a terminal degree. We want them to think that the bachelor’s is a transfer degree to a master’s program.”

Building curriculum

The public health program in College 3 was built from existing courses in health education, environmental health and environmental science.

Learning from others

The college indicated they seek out information from other colleges, “we would look at what other colleges are offering, trying to determine if there’s a similar market here” and have been contacted by other colleges regarding their public health program. The colleges that are contacting College 3 in regard to their public health program include four-year institutions interested in partnering with community colleges. Colleges inquire about how the program was started and how did the college get an inroad to the university.

Lack of duplication

This theme did not emerge in College 3.

Approvals process

The approvals process begins with a faculty member working with their department chair or dean to discuss the curriculum and performing research in terms of needs, student interest, and whether there are in-state public institutions students can transfer to. Cost analysis is performed to determine resources required, curriculum needs and projected enrollment.

Discussions take place with other faculty within the division to seek their opinions on whether or not this would be a good fit. Discipline-specific discussions then move into supporting discipline conversations, determining whether pre-requisite courses are required for the program, and determine whether the college has faculty with the expertise and credential to implement this program or whether additional faculty need to be hired.

Once a decision has been made that the program would be a good fit, then the individual with expertise in the curriculum area would develop course and program proposals which include the course descriptions, objectives, and whether or not it is part of the general education core. The proposal then goes to the curriculum and instruction committee which is a cross-functional team consisting of faculty, a registrar's office representative, student support services. This committee looks at transferability and a variety of additional aspects. Once the proposal and courses are approved internally, then the proposal is submitted to the state's Higher Education Commission in which their division of academic affairs reviews the proposal. It is posted on their website for public

review and comment. Once it receives approval from the commission, then the program can be advertised in the college's catalog.

Availability of resources

College 3 receives the majority of funding through tuition revenue, with other funding streams being the county and the state with the remainder from other sources such as the bookstore and food services.

As an interviewee indicated, "one of the things the community colleges are experiencing is that we have this huge growth in enrollment" which creates a problem of space. College 3, however, has built seven buildings in the past ten years, currently building a Health Sciences building, to accommodate increased demand.

At the time when the public health program was being considered for adoption, the college did not have anyone on faculty that possessed a Master of Public Health degree. The college, however, had an individual internally that was interested in pursuing the credential; therefore, the college provided that faculty member with a year-long sabbatical to pursue the degree. The public health program is directed by that individual who is the only full-time faculty member teaching as part of the program, with three adjunct faculty members also teaching in the program.

Collaboration

Collaboration was a prominent theme in College 3. In particular, support from administration and collaboration with a university was critical during the development and implementation of the public health program. The collaboration with the university was initiated by the faculty member in the community college who also served as an adjunct instructor at the university. The collaboration was formalized through an

articulation agreement, to provide a “seamless pathway” for public health students to transfer to the university. Interviewees at College 3 advise that community colleges align themselves with their intended transfer institutions when setting up such programs.

Others in the institution referred to collaboration in more general terms, indicating that, “We’re so collaborative within our institution and we work so closely together, I usually know what’s going on.” This open communication is facilitated through a number of committees that regularly meet.

Information

Interviewees within College 3 appeared to value the ability to share and learn from others across the country, with one interviewee, in particular, strongly suggesting becoming a member of a professional organization for networking purposes.

Information pertaining to undergraduate public health education was instrumental in guiding the development of the public health program at College 3. As documented in materials from the college, “The publication *The Educated Citizen and Public Health: A Consensus Report on Public Health and Undergraduate Education* (Riegelman, Albertine, and Persily 2007) served as an invaluable guide in the development of [the college’s] public health program.” In addition, the Institute of Medicine report that recommended all undergraduates have access to education in public health helped to build the case for the program.

The current research study was also viewed as beneficial in providing valuable information, “I think it’s great you are taking this on since it only strengthens the program when more are joining the forces. I would certainly love to learn from others because the only ones I’ve had to look at are four-year institutions because there’s no one

else to compare to at the two-year, so the feedback that you get and that you can share would be fantastic.”

Refinement

The existing public health program in College 3 originated as a Cross-Cultural and International Health option under the pre-existing Arts and Sciences Associate of Arts Health Education transfer degree program, offered in 2005. The Arts and Sciences Associate of Arts Transfer Degree program in public health was established in fall 2009 but, due to a college-wide change in the general education core requirements, underwent a revision.

As indicated in documentary materials, “Future plans for the program include the development of additional articulation agreements with four-year institutions, securing student scholarships, hiring of full-time faculty, tracking of public health graduates, and continued marketing of the public health program.”

Prototype adoptability

Similar to College 2, College 3 felt their public health curriculum most closely aligned with the public health generalist option. Similar to College 1, there was a question whether the courses would require prerequisites. Having pre-requisites could help students comprehend the material, but they could also deter students from enrolling in the courses.

In regard to whether the prototypes could be adapted for continuing education offerings, a key question would be whether there was a credentialing body that would accept the coursework and would it assist individuals in obtaining employment.

Similar to College 1, a question was raised concerning having the core public

health courses (Public Health 101, Epidemiology 101 and Global Health 101) count toward general education. The college does not currently offer these courses as general education and indicated that if the college chose to do so, the courses would likely need to be cross-listed as social sciences courses.

The college would look to see how best to incorporate the prototypes into their existing programs, “Just looking to make sure you are maximizing resources and not competing for the same student population within my own institution.”

A goal of the college is to develop a public health preparedness specialty which may be offered through continuing education as non-credit. It was recommended that the pre-health educator concentration be called health education and that environmental health be offered through biology if the college does not have a stand-alone public health program.

A student interviewee indicated that “introductory courses are a very good fit at the two-year level” and more specialized coursework can be pursued at four-year institutions.

Champion

The theme of a champion was highly prominent in College 3. Among the documentary materials collected as part of this case, there was a specific reference to the connection of having a champion and the program’s success, “A successful program initiative requires a public health champion at the community college who is passionate in their desire to advance the teaching of public health at the undergraduate level.” It is not only the individual serving as the champion who recognizes the importance of this

role, but others in the college also recognize the importance of having someone to push an initiative through. As described by the public health director:

I was the one who had the idea, who promoted it, and I was the one who got people enthusiastic and to hop on the train with me to push on through. If you don't have an identified faculty member you're not going to be able to move it through. It has to be someone who is very passionate because this is going to take far more work initially than what is going to be signed on the contract. I've worked hours upon hours on this. You've got to have someone who is passionate about wanting to do this which may be a definite hindrance at some of the schools.

The champion appears to be involved in all aspects of the program, including recruitment as indicated by a student, "My first impression of public health was pretty much non-existent. I had no idea what it was until [the professor] mentioned it was a major and what it entails. It was not heavily advertised. Until [the professor] mentioned it, I had no idea it was a major or was available at that time." In addition, an academic affairs contact within the college indicated that:

We had a faculty member who was very interested in global health and public health and expanding the offerings that we have here on campus, so she really was a champion of this initiative and worked it into some of her core work to explore the possibilities to bring that information back to the faculty, curriculum committee, and discuss the possibility of public health.

College 4

Awareness of public health and Awareness of public health degrees/certificates

Neither of the awareness themes emerged in College 4.

Innovativeness

The college sets out to be innovative. This was expressed in the interviews, "Innovation is a strategic priority area for our college. We want to be creative in how we approach education – we want to try new things. We want to be innovative in everything we do here." It was also indicated in the college's catalog, "You will find [the college's]

faculty and staffs are always searching for innovative ways to enhance the experience you have here. We are committed to your success, both in and out of the classroom.”

Unique features of public health

No reference to this theme in College 4.

Role of community colleges

Focus on community

In line with the mission of the college, the theme of focusing on the community was prominent, “The community college mission is to provide education to a local population to provide them with both specific training, like an AAS or career technical program, as well as education that will transfer to other institutions.” Comments from interviewees indicated they take into consideration the specific needs of their local community, “I think the demographics of the area has to fit whatever curriculum the person is thinking of developing” and “for us, rural health is important since we are a rural area.”

Develop workforce

Developing a workforce, in addition to transferability, was also prominent in College 4, “Our biggest emphasis is to ensure that our students are getting the instruction they need to be employable and they are able to transfer on in a successful way. That’s probably our biggest focus.”

In regard to the public health program, which is designated as health education, the college advises aligning the curriculum and skill set with what is needed in industry, and relay occupational opportunities to students. This was described in an interviewee’s comments:

So, we don't see a lot of students that are interested in health education and I think possibly it's because they don't understand what are some related occupations and that kind of thing that they could do with it. I don't think they are real clear on what they can do. So, anything anyone can do about promoting it would be the employability factor of it. They are always interested in what starting salaries are, are there going to be jobs when they graduate.

Prepare students for further study

One of the elements that the college seeks when considering the adoption of a new academic program is, "Are there going to be programs at four-year institutions for these students to transfer to?" The public health program "fits very well within our mission as a community college to provide education that will transfer to other institutions. I feel it fits very well."

Building curriculum

There was no clear indication of how the public health program was built.

Learning from others

This theme was not very prominent in College 4, with one interviewee indicating that they were under the impression that no other community colleges had contacted them in regard to their public health program. Another interviewee had indicated that "If there's a college doing public health, we would want to know what direction they have taken to get there. We want to know what the requirements are for an instructor to teach for this degree."

Lack of duplication

No reference to this theme in College 4.

Approvals process

Limited information was provided regarding the approvals process in College 4. The college has a curriculum committee on campus that new courses and programs need to go through and then need to be approved by the state's community college board.

Availability of resources

In College 4, when implementing a new program, "it all boils down to financial resources." In the state in which the college is located, when community colleges begin a new program, there is a two-year lag in receiving state funding; therefore, "With a new program, not only do we bear the initial costs, but we bear the entire cost of that new program for the first two years before we see any state reimbursement on a credit-hour basis from the credit hours generated."

Even though there are financial constraints, if there is a need for a program, the college will invest in it, "When you look at the value added, healthcare is going to be a huge player in the future so any curriculum you can bring forward I would think a community college would be interested in providing the space, equipment, and resources to make that happen."

Collaboration

Collaboration was a prominent theme in College 4. In regard to internal collaboration, the seven academic division chairs work closely together "if there is a need for support or input or a class from another division, that is facilitated at the division chair-level and that happens very regularly and really quite easily." Collaboration can include sharing of resources such as classrooms, equipment or faculty. With the public health program, students "may be taking classes in the humanities, health division, social

science division, math, science. Looking at the curriculum in front of me, these students are going to be touching on at least four of our academic divisions to complete this degree. So, there is very close collaboration among those four division chairs and faculty within those divisions.”

The program was originally created due to its proximity (ten miles) to a four-year institution in which many students from the community college transfer to. There is not much sharing of resources with other community colleges due to the geographic size of the community college’s district, which is approximately 4,000 square miles. As one interviewee indicated, “It's more knowledge that is shared between the community colleges.”

Other collaboration that takes place comes in the form of advisory committees in which employers provide input. Each division has advisory committees.

Information

The types of information that would assist College 4 related to marketing of a public health program and include such things as what graduates of the program could do, where would they get jobs and how can they apply the skills they are learning. From the faculty perspective, it would be beneficial to have information on how programs can assist each other, “People do get nervous that a new program will take students away from another program. They would want to know that they really need the program or determine if an existing program could grow to meet the needs.”

Attendance at conferences was viewed favorably, “since they provide the ability to network and collaborate with colleagues around the country and the ability to hear top

speakers in that particular field.” However, due to limited resources, other formats should be considered as well such as webinars so faculty would not need to travel.

Interest was demonstrated in seeing the results of the current study as well, “I would be very interested in seeing your final report. That would be great. Because if I see things in there that would be helpful for here, then I’ll pass it on.”

Refinement

No specific comments were provided regarding refining the public health program; however, an interviewee indicated that, in general, a program may be cut due to low enrollment. The interviewee went on to say that, “We’ve never cut a program due to financial difficulties. Our college is very sound financially so we’ve never had to lay anybody off or make cutbacks.”

Prototype adoptability

Overall, the interviewees in College 4 seemed to favor the environmental health specialty and the pre-health educator concentration. The college’s existing public health curriculum fits most closely with the pre-health educator option.

Due to state requirements, degrees intended for transfer are 64 credits hours and must include approximately 48 credit hours in general education; therefore, the college felt it would not be able to include all 30 of the credits presented in the prototypes unless it was an AAS degree, which can go up to 74 credit hours, “so these prototypes would fit that AAS model very well. Those degrees are designed more for specific skills-training than for broad general education training. So, I could fit any of these five prototypes into an AAS much easier.”

The office of continuing education at the college also felt that “It wouldn’t be a problem to offer these.”

Champion

This theme had low prominence in College 4, with one interviewee citing a program’s success is based on “whoever is in charge of the program.”

College 5

Awareness of public health

The theme of *awareness of public health* emerged in College 5, as interviewees saw value in raising the awareness of public health and its role within the workforce, “There is a desperate need for educating people on what public health is and linking it to the workforce.” However, there is recognition that the general public may not exhibit such awareness, “it needs to be in terms that the general public can understand. It’s just a matter of educating the public about the role of public health, the need of public health, and how public health fits into the overall health community.” It was felt that students do not “even think so much about public health.”

Awareness of public health degrees/certificates

Interviewees in College 5 did not appear to have an awareness of public health degrees/certificates. Being part of this study was the first that at least one interviewee had even thought of public health programs, “Because, I guarantee you, I hadn’t thought about it until I got this document.”

Innovativeness

College 5 places value on being cautiously innovative. In reference to the college’s administration, an interviewee indicated “They want to be on the cutting edge – they don’t want to be cut from being on the cutting edge. They don’t necessarily want to

be the first to try and do something.” Funding is tied to innovativeness, “What we found here in the state, the Board of Regents provides funding for innovative programs.”

Unique features of public health

College 5 referred to public health as a potential alternative to nursing and other related competitive programs with limited admission. It was felt that if students were made aware of what the field of public health offers, then it could draw interest. A biology faculty member with public health training sees the value of providing public health training to students, indicating, “I personally feel like having had a few public health courses that my students would be more effective in their jobs. Students would be more effective if they could back up what they learned with public health.”

Role of Community Colleges

Focus on community

There is a strong sense of focusing on the community in College 5, “because we are a community based organization we do what is best for the general population.” Similar to other colleges, College 5 also assesses community needs, using data from the state’s workforce commission and “local and regional economic development organizations to identify the high or emerging demand areas.” The college also surveys the community “to determine the feasibility – for employment of our graduates or going to four-year schools.”

Industry within the community influences student demand. For example, “They are building a new hospital in the city which is causing people from the tourist industry to think about a career change into nursing, considering they are already accustomed to

working weird hours and it may be a good transition for them, but more stability and benefits.”

The population the college serves tends to be from the immediate geographic area, as indicated by an interviewee, “We get multi-generational people that live here. They were born here and raised here and not looking to leave.”

Develop workforce

College 5, as with other cases, emphasized the need to demonstrate job availability in addition to transferability, “There’s no need to putting a program in if we can’t put students into jobs or into four-year schools.” An interviewee speculated that the more successful academic programs are those areas in which there are jobs available, “With the nursing program it is the idea that you will get a job after graduation. Sometimes there’s also the family legacy. I really think it is the availability of employment.”

In addition to developing professional skills among traditional student population entering from high school, the college also caters to those already working, “I think a lot of our students are already working while they are in school so they are either career changers or they’re trying to improve their marketability in field that they are in.”

Prepare students for further study

The state in which College 5 is located recently developed state-wide transfer degrees “which are intended to transfer to any four-year public institutions in the state. They are like general studies degrees in which you can pick out curriculum that is transferable.”

Building curriculum

There was some discrepancy among interviewee comments in College 5 related to building curriculum. One interviewee indicated that the college utilizes special topics courses to gauge student interest in a subject area prior to implementing a program while another interviewee indicated they would not create courses for the sake of having courses, but, instead any new courses have to be part of a program.

Learning from others

Multiple contacts within College 5 referred to the theme of learning from others. The college is interested in knowing approaches taken by other community colleges, sometimes inviting colleges to present at the college or “scouring the web to see what other folks have out there on their sites.” Specific to public health, another interviewee indicated that they would be interested in learning from others, “Yes, I would be interested later on...if we attempted to do this...to talk with people who have this kind of program. As a matter of fact, that’s what I know my Vice Chancellor and Chancellor are going to want me to do.”

Lack of duplication

One of the interviewees at this college spoke from experience that in order to get a new academic program approved, it cannot duplicate programs offered at nearby community colleges, “The first thing we have to do is convince them that this is not like a program that’s over at a community college nearby, and it’s a different program.”

Approvals process

The state in which the college is located has four higher education management boards, one of which is for the state’s community and technical colleges. The Board of

Regents coordinates all of those bodies and is the entity that sets what types of degrees can be offered and how many hours they can be. The community and technical college management board has to approve any new program at College 5 and then the Board of Regents has to approve the program.

Availability of resources

As described by an interviewee, the state in which College 5 is located is under a “budget crunch” but, due to the state’s constitution, there are only two places in which budget cuts can take place: education and health services. However, since enrollment in the community college has been growing, tuition dollars have been able to make-up for shortfalls from the state, “...you can see why the administration would like to see the numbers keep growing. As numbers grow, we aren’t affected by whatever cuts they have, but we could eventually be.”

Even though space is taken into consideration when developing a new program, lack of space does not stop the college from pursuing the program, “...we always find new space as we go along, so I don’t know if that would be an impediment.”

In regard to developing a public health program, it was felt existing faculty could teach as part of the program. This is likely due to the nearby graduate school of public health in which graduates teach at the community college, “I have personnel right now that I know could run it – in terms of teachers.”

Collaboration

Collaboration was a prominent theme in College 5. Internal collaboration generally takes the form of sharing information and providing input through various institutional committees. Collaboration with employers appeared to be limited to the

workforce development unit of the college. When asked whether there has been any collaboration with the health department or other public health agencies, a response was that “I don’t think it has ever occurred to us previously. Our main focus is getting the people into the nursing and the allied health programs. Public health has just not been on the radar.” However, there is interest in partnering with public health agencies, “I would definitely be in favor of forming some type of partnership with the office of public health. The possibility just hasn’t arisen before.”

Information

Interviewees at College 5 offered suggestions on disseminating information in support of the Healthy People 2020 objective that sets out to increase the proportion of community colleges offering public health degrees and/or certificates. Having that backing from a federal agency was viewed as a leverage point, “that’s something to always put out there in any types of needs assessment that you would always start with that in a paragraph.” Presenting at conferences of the League for Innovation in the Community College was identified as a potential “good way to reach a lot of people.” It was felt that “Colleges need to know. I was not aware of this until you sent it to me that this was one of the objectives. The objectives need to be better publicized. Unless colleges are taking an active role in this it is not going to happen.” Another interviewee indicated that “I think what you’re doing right now is part of the answer to that particular platform idea. In other words – getting out the information about public health and about how maybe it might fit into community colleges.”

Information sought from employers includes what community colleges can do to better prepare students to make them more employable and possess appropriate job maintenance skills.

Faculty development was also cited as a need in College 5 since “Most of us science teachers use a lecture format and I think public health really lends itself to discussion and case study reading. Getting training in teaching those sorts of courses would definitely be helpful for my coworkers. Maybe attending an APHA conference would be helpful.”

Refinement

The theme of refinement did not surface in College 5.

Prototype adoptability

As was brought up in other cases, an interviewee in College 5 questioned whether the courses laid out in the prototypes would require pre-requisite courses prior to enrolling in such a program.

The college used to offer a safety and technology degree that was discontinued due to lack of student demand. The interviewee, who was not directly involved with the program, believed part of the issue may have been because it was not clearly communicated to students what job opportunities the degree could lead to. Therefore, referring to the prototypes, the interviewee recommended capitalizing on an industry that individuals are already in and encourage them to seek additional credentials to advance in their career.

Another interviewee within the college indicated that the prototypes they would adopt would depend on feedback they received from the community, “We would not

necessarily put in all five options in the beginning. Once we have our committee go out and canvas the area and we know what kinds of jobs those people are going to have, and get more feedback, we would pick out one or two of these options to go into.”

Another “critical piece” is, if the degrees are intended to be transfer degrees, there must be programs at four-year institutions waiting for them to transfer into.

Champion

The theme of a champion surfaced through an example provided by an interviewee regarding the development of a veterinary technology program at the college, “The program director, who has since retired, and she has pet dogs that she used as therapy dogs so she was very interested in health care as it applies to animals and she really took the lead in communicating the interest to do a program in veterinary technology.” This idea was followed up in relation to the possibility of developing a public health program at the college, indicating that graduates of the nearby graduate school of public health may be interested in teaching public health courses at the community college, in which they would serve as “a built-in cheerleading group.”

College 6

Awareness of public health

This theme was not prominent in College 6, however, one interviewee discussed the value of individuals having an awareness of public health in terms of benefitting their own personal health, “I think that for one if it enables a person to improve their health and take charge of their health that would be a great incentive for one that we can empower them to make some good healthy decisions.”

Awareness of public health degrees/certificates

When asked whether they were aware of public health degree/certificate programs, interviewees in College 6 indicated they were not.

Innovativeness

The innovativeness theme was not prominent in College 6, however, it was felt that “the college itself is very aggressive and very innovative in establishing programs and they are in the process in establishing new programs.”

Unique features of public health

Since nursing is such a popular, yet competitive, program, it was felt that public health could be provided to students as they wait to gain admittance in the nursing program. Also, one interviewee who teaches at multiple colleges indicated that even though the interviewee did not believe the community college had ever considered the adoption of a public health degree or certificate, the interviewee felt the college should because there is a graduate public health program at the other college in which the interviewee teaches “and there is a great demand for that.”

Role of community colleges

Focus on community

As indicated in the catalog of College 6, the college “responds to the changing needs of the people it serves by being involved in and responsive to the community, developing new programs and partnerships and incorporating new technologies and methodologies into its programs and services.” A large percentage of the student body speaks Spanish; therefore, the college offers a curriculum in Spanish to cater to this population. A faculty member within the college felt this was an important element,

particularly as the Spanish-speaking population continues to grow in the U.S., opening up opportunities to introduce public health concepts, “I think we need to focus more on their culture, eating and living habits and so forth because that affects their health, and all of them are so used to frying foods and eating this and they weren't aware that all of that is unhealthy and nobody really focuses or takes the time to show them we can supplement this or take this instead of that.”

Develop workforce

As observed in other cases, College 6 also considers the job market prior to program development, “because there has to be a market for it.” Not only do jobs have to be available, but those jobs must provide a living wage, “The other criteria that we have for starting a program, which I should mention, is that we won't start a program that doesn't give people, when they graduate, a living wage for this area.”

A marker of a program's success is student achievement on national licensing exams, which reflects the college's ability to prepare students for entry into the workforce.

Prepare students for further study

College 6 takes pride in their ability to prepare students for four-year schools, indicating that they “are historically one of [the state's] best community colleges when it comes to transferring students to four-year schools.” They do not let their size affect their ability to transfer students, “While we are small, we have a full array of courses that transfer to universities as general education requirements.”

Building curriculum

College 6 indicated that how a curriculum is built may depend on the budget situation. As an interviewee indicated, “I mean it’s easy to add a class here or there but our students really need to see where it’s going so sometimes the package is more compelling than an individual class.” That interviewee goes on to say that, “If you were on my faculty and you came to me and said I want to develop this program and I’d go yeah but given the budget and the restrictions we have on classes why don’t we do one class and work with our partner universities and see where the best classes to offer and then we’ll develop a more specific pathway and we’ll build it but in times when the budget is less of an issue.”

Learning from others

This theme did not emerge in College 6.

Lack of duplication

The theme of lack of duplication in College 6 was consistent with other colleges, as it was indicated that “You have to check with the other colleges in our district to make sure you’re not competing with anyone else who’s developing a similar program. We try not to duplicate things across the district.”

Approvals process

The approvals process for developing a new academic program involves preparing a proposal, seeking approval from an internal curriculum committee, getting approval from the curriculum committee for all the individual courses, working with other offices within the college to determine if there is a budget to pay for the classes or if there is any equipment or space needs, checking with other colleges in the district to

ensure the program is not competing with others, and then obtain regional and state approval.

Availability of resources

College 6's ability to expand curricular offerings is drastically affected by the state's budget situation, "The budget has been cut dramatically in our school district and it has impeded us in really expanding programs or improving them." However, if there is a demonstrable need in the community for particular training, the college is willing to figure out how to provide that training, "If there is a huge need in the community for students with that kind of training then we're going to figure out a way to get it done. We'll balance some other things."

Collaboration

Collaboration was a prominent theme in College 6. Much of the internal collaboration takes place via a very involved curriculum committee. Also, collegiality appears to be prominent within the college, as suggested by one of the interviewees, "I've been asked to teach at some other smaller junior colleges and so forth and I've declined to teach there just because the ambiance at [this college] is just amazing and the collaboration between the deans and the programs are just really very different than you would find at many other colleges."

Collaboration that takes place between the community college and four-year colleges is dependent on the college, the individuals involved and the discipline. Sometimes the community college will send students to a four-year institution to work with their students, and vice versa. In addition, sometimes faculty from a four-year institution will come to the community college to teach courses. Collaboration with

employers was not mentioned in College 6.

Information

Faculty development did not appear to be an immediate concern for College 6 when a new program is launched since, “If the school wanted to start a program in, let’s say public health, we would hire adjuncts to do it and so the current faculty would not be involved. Unless one of them wanted to step up and do it in which case they already have the knowledge.”

Face-to-face meetings were the preferred method of faculty development, and even more preferable for two or three people to attend so they can learn and share ideas.

Refinement

Due to state budget cuts, the college was faced with recent programmatic cuts and an interviewee indicated that they will likely have programmatic cuts again when the state budget is cut again the following year.

Prototype adoptability

There was not a lot of feedback collected on the prototype adoptability theme in College 6. This may have been due to the interviewees lack of expertise in public health, as indicated by one of the interviewees, “I’m not an expert in the discipline so all of it is really foreign to me because I’m not familiar with the public health industry and what it entails and the various careers that are in the field” and recommended individuals from the public health industry be consulted to provide feedback.

The state requires faculty service areas in which faculty must have masters degrees in that particular field in order to teach courses related to that area. Therefore, the Public Health 101 course, for example, would have to be taught through social

sciences or humanities if it was to be labeled as a social science or humanities course. The faculty service areas would pose a logistical issue of where to house the courses since there is not an epidemiology department and no faculty service area for epidemiology, “It probably would be under health? Math? Social science? That’s just part of the issues when you look at lists of classes like this and how would they fit with our structure.”

As was indicated in other cases, there was some concern about the coursework being too specialized unless there was a great need in the community, “it would be really hard for us to offer that many courses in such a specialized area unless there was a huge need in the region and we weren't competing with one of the other nearby schools.”

Champion

No data collected for College 6 related to the theme of a champion.

College 7

Awareness of public health

The awareness of public health theme surfaced in College 7 in terms of student enrollment in the introduction to public health course offered by the college. Some students are thought to be aware of public health and are, therefore, motivated to enroll in such a course while other students are unaware of public health but are looking to fill their schedule with a science course requirement that does not require pre-requisites. The majority of students are thought to not know what public health is when they enroll in the course as the faculty member teaching the course mentioned, “I know most of them do not know what it is when they come into it.”

Awareness of public health degrees/certificates

Interviewees were unaware of any community colleges offering public health degree/certificate programs.

Innovativeness

The college appears to value innovation as evidenced in their catalog describing “an openness to innovation and change at every level and in every unit throughout the college environment” and on the college’s website, “you will meet highly educated, dedicated faculty; energetic, knowledgeable staff; and innovative, articulate administrators.”

Unique features of public health

Comments received from College 7 referred to public health as another career option that students may not have thought of previously and the college’s introduction to public health course is “a benefit to our students...so many students when they think they want to go into allied health they don’t know what their options are and that’s what this course does it tells them what their options are in public health.”

Role of community colleges

Focus on community

As an interviewee in College 7 indicated, “We really do pay attention to the needs in this community.” Specific to the introduction to public health course offered by the college, “The impetus for the idea in developing the course was to get more minority students interested in public health. Of the three colleges that were chosen, we were probably chosen because we have somewhat of a minority population.”

Develop workforce

When asked what characteristics a new academic program needs to possess to assist in it being considered for adoption by the college, one interview indicated, “If I had to put it into two words it would be “workforce development.”

The introduction to public health course offered by the college is part of a larger initiative that “was created to recruit and retain students historically underrepresented in the food and agriculture sciences workforce.”

Prepare students for further study

The introduction to public health course offered at College 7 was designed to recruit “community college students for a fast-track bachelors/masters degree program in public health that is being developed” at a local university.

Students also place value on transferability of coursework, “Why spend two years at a community college if none of it transfers? When I was looking at universities and colleges to transfer to - that was one deciding factor – how much of my coursework was going to transfer...I immediately ruled out schools that did not transfer. I don’t want to be doing things over again, especially with good grades. I don’t see why I need to re-take something just because it doesn’t transfer.”

Building curriculum

Although there are no immediate plans to build from the college’s offering of an introduction to public health course, there was consistency among interviewees that the college would be more likely to move forward with a certificate program rather than a full degree program. As one interviewee indicated, “I would say it would probably be certificate and that we would try to develop something that would be transferable.” This

was expanded upon by another interviewee, “There’s been a lot of talk about certificate versus associates program but personally I’d like to see a certificate program because you’ve got people out there who have background and may even be working in the area but then again we would have to some sort of study because we don’t just jump we have to see if there’s a market for that is it worth the students to pay for the classes to get it.”

Learning from others

This theme for College 7 was restricted to the college’s experience with the introduction to public health course. The college has presented at conferences about the course and received positive feedback from attendees.

Lack of duplication

An interviewee mentioned that a local university is planning on developing a bachelor’s degree in public health program and that “we have to make sure we’re not stepping on other people’s toes. They don’t like duplication of programs.”

Approvals process

The approval for a new academic program at College 7 involves creating course syllabi, listing course requirements, submission to the state’s Board of Regents. The Board would provide the okay to move forward with preparing a proposal, but would not guarantee the program at this time. The program would then begin to be created and would involve talking with outside agencies and companies to determine if students would be able to be hired with this degree. Letters of support would be obtained to build the case for the program. There is an internal review board at the college that reviews all the syllabi to ensure the program will fit with other programs of the institution.

If it were an internal certificate, less than an associate's degree, approval would not be required from the Board of Regents. Instead, internal approval would be needed through the college's Academic Policies and Dean's Council.

Of note, the college is already approved to offer associate's degrees that are not track specific. As an interviewee indicated, "You don't get an associate's of arts or science in public health you just get an associate's of arts or science. You don't have to get that degree approved as a separate degree because you're just creating a track of classes."

Availability of resources

College 7, similar to other cases, considers "whether the cost of faculty and cost of equipment will be covered by tuition and fees." The introduction to public health course offered by the college is part of a larger initiative which is partially funded by a United States Department of Agriculture Higher Education Challenge Grant. A university and three community colleges within the state receive funding through the grant. The faculty member selected to teach the course at College 7 was identified due to his background in veterinary medicine.

Collaboration

The theme of collaboration was very prominent in College 7. Interdepartmental collaboration was referred to as "on and off" since there is no campus-wide initiative to encourage collaboration, but "if two departments would like to collaborate nobody is going to stop them."

Collaboration with the area community colleges occurs in order to offer programs in a more cost-effective way, however, there is an element of competition as well, "We

meet as a group to share information but it is much easier to develop that partnership with a four year school than a two year school that may be competing with you.”

Very close collaboration takes place with two other community colleges and a university in order to offer the online introduction to public health course. Challenges in the partnership were identified as time, distance and logistics. Since the campuses were located several hours from one another, meetings had to be organized as infrequently, yet productively, as possible. As was indicated in documentary materials, “It was hoped that we could do teleconference meetings, but after the first attempt which didn’t run as smoothly as we had hoped, we decided that we would need to meet face-to-face for some of the meetings in [the college town] to really be effective in the creation and development of the course.”

The college also collaborates with employers through advisory committees that are comprised of employers, employees, faculty and students. In addition, the college offers a program called “Industry Speaks” in which industry representatives come to campus to work with deans and program coordinators to assist students in finding out about career opportunities and the skills that may be needed.

Information

In general, information was viewed as an important tool in the development of a new academic program, “The more information you have the better chances are at getting what you need.”

Information sought from employers includes what skills are necessary for the job, what the expectations are, and what the job outlook is in the local area.

When developing the introduction to public health course, the college utilized the Recommendations for Undergraduate Public Health Education document created based on recommendations from the 2006 Consensus Conference on Undergraduate Public Health Education convened by the Association for Prevention Teaching and Research. Additional information that would have been helpful to them was available textbooks for the course.

Refinement

Technical programs would be in jeopardy of being discontinued if graduates of the program are not able to obtain jobs, “With some of our technical programs here, if the market has dried up and if you have technically trained people that are not getting a job, there’s no need for a program.”

In regard to the introduction to public health course offered at the college, there are plans to continue to offer the course online.

Prototype adoptability

Multiple contacts within College 7 questioned where the curriculum would be housed in the college and felt the curriculum fit with allied health and would likely not warrant a stand-alone public health program. Multiple contacts also felt the curriculum appeared to be better suited for those individuals who are already working in the field and would be interested in seeking certification; however, there may also be potential for transfer but “The challenge with the specialized courses would be developing a partnership with four-year institutions where they would accept the student and not expect them to take the courses there.”

As was indicated in other cases, it was felt that pre-requisite courses may be needed, especially biology, in order to enroll in the coursework.

Champion

The single reference to the idea of a champion in College 7 was in relation to having someone with the expertise in the field to support a new program, “You really have to have somebody who has a background in that area.”

College 8

Awareness of public health

There is recognition of “the need to be aware of public health principles” and it is felt that media plays a role in raising awareness, due to putting “public health in the forefront” during times of crisis, such as natural disasters.

Awareness of public health degrees/certificates

Interviewees appeared to be unaware of existing public health degrees/certificates.

Innovativeness

Although not a prominent theme in College 8, being able to adjust to changing times and needs is important as indicated in the college’s catalog, “Building on the foundation of fifty years of academic excellence, [the college] continues to adapt to an evolving world, continuously seeking new ways to prepare our students to meet the current challenges of a global economy.”

Unique features of public health

As indicated by an academic affairs administrator at the college, public health has “knocked at our door before” as the presidents of the community colleges comprising a consortium, in which College 8 is a member, felt that public health would be beneficial to

offer and serve as “a stepping stone to the four-year level.” Public health is viewed as an avenue for students who do not get into the nursing program.

Role of community colleges

Focus on community

College 8 also responds to the community, “Basically, when we are looking at a program, one of the first things we look at is - is it viable in the community we are serving? So, we kind of take a survey of the community.” An example of a recently developed program was provided demonstrating their response to the community, “We just got engineering off the ground and that came by community members stating that they would see it viable within our college to offer that program.”

Develop workforce

As part of a new academic program proposal, the college must “document the potential employers of graduates. Specify employers who have requested establishment of the program and describe their specific employment needs.”

Demonstration of jobs and/or transferability can greatly influence whether the program is adopted, “If they can show that there is a need, either there’s demand in the community for jobs, or there’s a need to transfer to a four-year institution for Bachelor’s degrees or Master’s degrees in these areas, then we will consider it. If they can’t prove need, then it really doesn’t go any further than that.”

Prepare students for further study

In addition to demonstrating workforce need, program proposals also require “documentation that program graduates will be able to transfer into at least two registered baccalaureate programs and complete them within two additional years of full-time study.

Letters from the chief academic officers of two baccalaureate institutions attesting to the articulation of the proposed A.A. or A.S. must be included with the program proposal.”

The college’s commitment to transfer services is demonstrated by staffing since they “have a transfer counselor who does nothing but that.” Considering the majority of the college’s students transfer to four-year institutions, “One of the things that academic affairs has been trying to do is when we develop our new programs that they are also geared for students who want to transfer, meaning that they incorporate not only core classes for the area of study but also general education classes.”

Building curriculum

College 8 indicated that how curriculum is built depends on the program. It may start out as individual courses, or a non-credit certificate program, prior to a full program whereas other times, a degree may be launched and then a non-credit certificate follows. One of the interviewees indicated the likely scenario is “If they can prove need and that it’s worthwhile to try it, usually, what we do is start small and set a target of what we’d like in the program: probably 15-20 students in the program is our threshold to kick it off.”

Learning from others

No data related to this theme surfaced in College 8.

Lack of duplication

As indicated on the required program proposal form, submitted as part of a proposed academic program, the college must “Identify existing or projected programs of the campus in the same or related disciplines and the expected impact of the proposed program on them.” In addition, the college must “Identify similar programs at other

institutions, public and independent, in the service area, region and state, as appropriate” and describe “reasons for any objections from [such] campuses as well as the resolution of discussions regarding perceived competition between campuses.”

The college must also be cognizant of how a proposed program would relate to existing programs within the college, as indicated by an interviewee, “We would probably go to curriculum committee first with our proposal and they are usually supportive, but if they see it pulling away from another program in the college, they will raise that as a negative issue. For example, if we talked about the environmental health, they may ask how might that draw students away and therefore diminish the environmental studies program. Same also with the health preparedness – would that draw away from our emergency medical management program?”

Approvals process

It may take two years to get a degree off the ground for College 8. The approvals process involves having the department in which the program will reside prepare a proposal which would then be sent to the college’s curriculum committee. From there, it would go to the vice president of academic affairs and then to the board of trustees, as well as a state higher education system and the state education department. The proposal can take six to eight months at the state education department alone.

The proposal must outline the general education courses to ensure they are filling the seven components of general education. If the proposal is for a transfer degree, the proposal must indicate two four-year schools in which there will be articulation agreements, indicated by a letter from the Vice President of Academic Affairs from the four-year institutions. Letters must be sent to all the other community colleges in the area indicating that the college wants to incorporate the degree and to find out if there are any

conflicts with what they are offering. On campus, the proposal needs to be made available for thirty days for all the department chairs to review it to see if they have any comments about the program.

Availability of resources

Funding for College 8 is supposed to be evenly split between the state, county and tuition. However, due to state budget cuts, there has been a shortfall from the state portion, but the college has been able to off-set that through tuition.

In a proposal for a new academic program, the college must document the projected cost of the program, including personnel, library, equipment, laboratories, supplies and expenses, capital expenditures, and other expenses. The college must indicate the estimated costs at start-up, when the program begins and after five years.

As was indicated in other cases, additional faculty may be hired for a program depending on enrollment, “If it takes off and becomes a big program, like 50, then 75 students, then 100, then, because it’s generating much more revenue now because of the number of students in the program, then we can spring for more full-timers into the mix, because it becomes much more cost-effective for the institution since its generating revenue for us.”

Also, as was indicated in other cases, if there is a need for program, the college will find a way to offer it, “And, certainly, there are times when we are actually willing to lose money, if it’s a real need in the community.”

Collaboration

In the proposal for new academic programs, the college must provide evidence of consultation with other public colleges in the state. The community college is one of

four community colleges in a consortium which is intended to allow the colleges to offer programs and not be in competition with one another. They use teleconferencing to share guest speakers, etc. It is a seamless transfer of credits for the students between the institutions. One of the colleges in the consortium is designing a two-year public health program, which can benefit the other consortium colleges. That college developing the program is considered the host school meaning “They would get the curriculum together and have it passed through the system then the other three schools would send it through their curriculum committees.”

Collaboration takes place with four-year institutions as well and as one interviewee described, the relationship has evolved with the changing economic times, “I’ve been doing this for over twenty years and I’ve seen the four-year schools slowly come around to the absolute idea that it really is in their best interest to work with the community college because as their tuitions go up people can’t afford them, even the upper middle class are having trouble....if they can collaborate and reach out and work with us and convince us that we should steer our students in their direction that’s a source of revenue for them. They’re doing that more.”

The college has several advisory boards in which employers are members and provide input into curriculum development so that the programs match the employer needs.

Information

As was indicated in College 5, College 8 also indicated that having the backing from Healthy People 2020 would provide “selling power” to offer public health-related curricula within the college. Additional information that was deemed beneficial includes

what students can do with a degree in public health and what would their salaries be.

Face-to-face meetings were preferred to learn and share from others since “It helps generate interest for the program by sending faculty to keep up with the newest data, and investigate potential new arms for the programs” and “because a lot of times faculty will have questions.” Webinars were also found to be a beneficial tool and videos related to current public health issues were suggested.

Refinement

The college indicated that they look at trend analysis, looking at enrollment trends in each program. If it is determined that enrollments are declining, administration will meet with the department chair to explore the possible reasons and determine if the program needs to be redesigned. As an interviewee indicated, “We’ll give them a year or two and see if they’ve turned things around. If it doesn’t turn around, then possibly a hard decision would have to be made.”

Prototype adoptability

When commenting on the prototypes, interviewees in College 8 tended to focus on the goals of the degree – what could students do after graduating with such a degree. If transfer to a four-year institution is a goal, then more general education coursework should be included and discussions need to take place with four-year colleges, “You want to make sure that they are meeting the needs of the four-year schools if they’re going to transfer.” The college would look to see how the curricula could potentially fit with their existing programs, and consider incorporating aspects of the prototypes as arms of their current programs.

One interviewee felt that the generalist public health option was too broad, “I think, coming to the community college, are more the students who are either doing a career change or returning from the workforce after a hiatus, or someone’s life circumstances warrant them to earn a degree to progress in their professional field” and they would be looking for more specialized coursework.

Champion

The theme of a champion surfaced in College 8 as it related to driving interest in new courses and programs, “If you can gather two faculty members who are fired up who want to be part of that course development, using some of the courses that are already basic to some of our other programs, and then new additional programs and start looking into what our projections would be for year 1 through year 5.” The same interviewee goes on to say that “As new faculty come on, the desire to demonstrate achievements within the world of academia sometimes produces faculty who are interested in developing new courses or new programs.”

College 9

Awareness of public health and Awareness of public health degrees/certificates

No data supporting the theme of awareness of public health for College 9. Although the college was unaware of existing public health degrees/certificates, they indicated they usually only associated with the other colleges on the Indian reservation.

Innovativeness

No reference to innovativeness in College 9.

Unique features of public health

A comment related to the theme of public health's unique features is related to the sub-theme of focus on community. It was felt that public health would be applicable for the college since the community faces a lot of health issues, "When I first opened your document I thought that would be awesome here because we really do face a lot of health issues."

Role of community colleges

Focus on community

The theme of focusing on community is reflected in the college's catalog which described the college as being "operated exclusively for non-profit purposes to provide post-secondary and higher educational services to the community, and to provide cultural, social and recreational services that are sensitive to the varying community needs." They continually reach out to the community as indicated by one of the interviewees, "I am out in the community at least once a week. I will set up a table at one of the tribal programs to see what they are in need of."

Develop workforce

In regard to considering a public health program, College 9 would pose similar questions raised by other cases, "Where would this two-year associate program in public health, where would they be able to work in our community?" As a tribal college, one of the potential employers suggested by an interviewee was the Indian Health Service.

Prepare students for further study

This theme was a bit less prominent in College 9, however, it was mentioned that if they considered a public health degree, they would need to work with the universities

to determine if they would accept the coursework and what areas of study students could pursue at the university.

Building curriculum

This theme was not prominent in College 9, but an interviewee suggested that the college would first test out curriculum through a certificate prior to launching a public health degree program, “I think that we would probably go with the certificate and see how it works with enrollment and once we find out that we have enough student base to support that program we would move into a two-year [degree].”

Learning from others

No data supporting the theme surfaced in College 9.

Lack of duplication

As seen in other cases, the need to demonstrate a lack of duplication with area colleges was indicated in College 9, “Sometimes colleges call to ask me if we are going to do something and if not they want to do it. We don’t want to step on anyone’s toes.”

Approvals process

The approvals process at College 9 involves creating a curriculum outline within the department, and then work with the dean of academic affairs to ensure accreditation guidelines are followed. The Dean would then call the accreditation body and go over the curriculum. Then, the proposal would go to the college president which, in turn, would go to the board. Once the board approves it, the proposal goes back to the Dean, which sends it to accreditation. Once accreditation approves it then the program is implemented.

Availability of resources

Funding for College 9 comes mostly from federal grants as well as Tribally Controlled Community College funds through the Bureau of Indian Affairs. The college received a large grant from the U.S. Department of Health and Human Services which provides \$2.5 million per year for five years. They were able to build a facility on campus through a health and fitness grant, which has alleviated space issues since, as one interviewee indicated, it is a “very, very, very small campus.”

Collaboration

The theme of collaboration was prominent in College 9. Per the course catalog, the college “will collaborate with all internal and external (local, state, national, global) stakeholders in order to provide the widest range of educational, training and employment opportunities possible.”

Collaboration with four-year institutions is reflected in their courses as they “try to coincide with our four-year colleges and our universities so that they are transferable.”

The college has close connections with their community, “Each one of us in our departments has to have an advisory committee and it’s made up of our school district, IHS, the tribe, our businesses, our elders.” The advisory committee meets once a year and provides ideas on areas the college should be addressing.

Information

College 9 would be interested in learning how various existing programs within the college can collaborate to offer a public health program, “Take for instance how can the math department help the health program.”

Face-to-face meetings are preferable over e-mail to disseminating information,

“When you do things hands on here you have a better chance of it being implemented.”

Refinement

Similar to other cases, College 9 indicated that enrollment levels are monitored in academic programs and if there are few graduates from the program, then it may be discontinued.

Prototype adoptability

College 9 viewed the prototypes favorably and indicated, “we could actually use all of these.” The health-related program within the college was classified as a young program that is still in the developing stages and therefore felt could benefit from looking at different areas of study such those presented in the prototypes.

As was indicated in other cases, the transferability of the coursework would be a priority, and working with the four-year colleges to identify the areas of study students can pursue with a two-year degree in the prototype areas.

Champion

This theme did not emerge in College 9.

Summary

Table 14 below provides a summary of the degree to which the themes emerged in each case. Appendix I provides a table depicting the prominence of the themes in each case with brief descriptions summarizing key aspects regarding how the theme emerged in that case.

Table 14: Summary of Prominence of Themes by Case

Themes/subthemes	College								
	1	2	3	4	5	6	7	8	9
Awareness of public health	*	0	*	0	*				
Awareness of public health degrees/certificates	*	0		0					
Innovativeness	*		*	*	*		*		0
Unique features of public health	*	*			*	*	*	*	
Role of community colleges									
<i>Focus on community</i>	◆	◆	◆	◆	◆	◆	◆	◆	◆
<i>Develop workforce</i>	◆	◆	◆	◆	◆	◆	◆	◆	◆
<i>Prepare students for further study</i>	◆	◆	◆	◆	◆	◆	◆	◆	*
Building curriculum								*	
Learning from others		*			*	0		0	0
Lack of duplication			0	0				*	
Approvals Process	*	*	*		*	*	*	*	*
Availability of resources	◆	◆	◆	◆	◆	◆	◆	◆	◆
Collaboration	◆	◆	◆	◆	◆	*	◆	◆	◆
Information			◆	◆	◆		◆	◆	
Refinement					0				
Champion	◆		◆		*	0		*	0

Key: ◆: Highly prominent; Substantial emphasis in relation to other themes
 *: Moderately prominent; Medium emphasis in relation to other themes
 Blank: Low prominence; Minimal emphasis in relation to other themes
 0: No mention in documents or interviews

DESCRIPTION OF THEMES BY ADOPTION STATUS

Awareness of public health

Both adopters and non-adopters acknowledge that students typically do not know what public health is when they enter the college but recognize a need to raise awareness of public health. An interviewee at a non-adopter college indicated, “We recognize, as does most of the community, the need to be aware of public health principles.” Adopters refer to the challenges associated with a lack of awareness of public health, particularly as it relates to promoting their public health programs.

Awareness of public health degrees/certificates

Non-adopters indicated they are not aware of colleges offering public health degrees or certificates while the adopters indicated that even though students typically are not aware of the public health program when they first arrive on campus, once they understand what it means to be a public health major, it becomes an attractive option for them.

Role of community colleges

Focus on community

Community Needs: Adopters and non-adopters emphasized their colleges' focus on the community, particularly when it comes to developing new curricula to address the needs within the community. Adopters could speak more specifically to how their public health programs address community needs. In one of the documentary materials of an adopter college, the impetus for the public health program was described, in part, as "Given the growing concern about HIV transmission in [the college's geographic region], the need to infuse the community with street smart educators was a compelling incentive to launch a community health program at the community college level." Another adopter college also indicated the driving force behind development of their public health program was that, "our community demonstrates a great need for public health – period." When providing advice to other colleges that may be considering the adoption of public health programs, adopters again refer to focusing on the community, as one public health program director indicated "I think tailoring it to the realities of your local community and its workforce needs and its public health challenges is what will give it appeal locally and attract people." At least some non-adopters also see the need for public health in

their communities as indicated by a Dean in a non-adopter college, “public health is a concern in the region.”

Geographical Area: Adopters and non-adopters equally weighed the importance of focusing on the geographical area in which the colleges are located. In addition to discussing this focus in general terms, adopters referred specifically to the geographic area influence on their public health program, particularly as it related to the initiation of public health program, “rural health is important since we are a rural area” and “when they look at job outlooks and look at industries in [the area] the biggest industry in [the area] that the president points out is the health industry in all forms...that was a driving force as well.” Due to the emphasis on the local population, many community colleges are non-residential campuses, and one non-adopter referred to this lack of housing as a deterrent to marketing a public health program to a wider audience, “I could market this more if there was housing available.”

Personal enrichment: Adopters and non-adopters both referred to providing programming as part of lifelong learning. One adopter specifically mentioned that the public health program fits with the college’s strategic goal to provide lifelong learning, “The public health programs have definitely appealed across the board to all ages.”

Student demand: Adopters and non-adopters are both concerned about being able to fill seats when considering whether to offer a new program. Typically, as part of the approvals process, colleges need to determine annual projections for the number of student enrollees in the proposed program. Once a program is established, there is a possibility of it being cut, mainly due to low student enrollment. Therefore, numbers of students in the program is a measure of success. All but one of the adopter colleges

seemed to have experienced consistent growth in student enrollment in their public health programs. The one adopter college that witnessed stagnant student enrollment was one in which the program was marketed as a health education program and appeared to have identity issues that contributed to its lack of appeal among students. The non-adopter college that offers an individual public health course exceeded anticipated enrollment projections, as indicated by an article describing the course development. “Initially the goal was to have one course offered, it did and was full, so a second course was offered and it filled as well.”

Student goals: Adopters and non-adopters both expressed that many students, approximately half of entering students, do not know what career area they would like to pursue when entering the college. Among the adopters, students who ended up pursuing the public health programs did not seem to seek the college out due to its public health offering. These students are attracted to public health courses once they are already on campus, many times due to a personal health issue. The public health programs attract a diverse student population, including traditional and non-traditional students, as described by a public health director, “I thought we would get just traditional aged students and I had a good number of nontraditional aged students that have taken the public health courses. It was never setup for one specific age group.”

Marketing of programs: In general, adopters and non-adopters utilize similar marketing strategies to advertise their curricular offerings. In regard to marketing public health programs, adopters cited an additional strategy: make the introductory public health courses available to all students in order to introduce them to the field. As a student majoring in public health at an adopter college indicated, “I think having the 101

courses are very helpful because students may be looking for a course to fill their schedule to meet the full-time status requirement, so they would enroll in one of these 101 classes having no pre-reqs. A lot did take Public Health 101, and that would be a very good class opportunity for the instructor to inform the student of what public health is, and pique their interest, with the hopes of changing their major to public health.” That same student suggested that advisors be made aware of the programs, “When I was asking about the public health program, advisors didn’t even know they had a public health program. So, education of the general advisors in the advisement program would be helpful.”

Develop workforce

Career exploration and preparation: Adopters and non-adopters undertake similar career exploration and preparation activities for students. In addition to these activities, specific to public health career exploration and preparation, adopters cited the importance of encouraging extracurricular activities to provide students with an opportunity to further develop an understanding of public health careers and to provide students with professional skills, “you have to provide interesting extracurricular activities.”

Job availability: Demonstrating that jobs are available for graduates was emphasized among both adopters and non-adopters as influencing whether a program would be considered. In reference to developing a public health program, an academic affairs administrator at a non-adopter college indicated:

You don’t want to convince a community college or community colleges as a group to invest in this and then in three years the first group of graduates go out there and everyone looks at them like they’re crazy and they don’t get any jobs that they couldn’t have just gotten walking off the street.

Understanding the types of jobs available for those individuals possessing a public health degree is also beneficial to raising awareness of public health, as indicated by a non-adopter, “One thing I just thought of that may help people to better understand public health is once they finish the program is to know what types of jobs they would be prepared for.”

Among the adopters, the one college in which there has been stagnant student enrollment, an interviewee attributes the lack of interest due to a lack of understanding of the career options offered by the health education program:

So, we don't see a lot of students that are interested in health education and I think possibly it's because they don't understand what are some related occupations and that kind of thing that they could do with it. I don't think they are real clear on what they can do. So, anything anyone can do about promoting it would be the employability factor of it. They are always interested in what starting salaries are, are there going to be jobs when they graduate.

Understanding job availability is not limited to the persuasion stage, but is also important to the maintenance of such programs, as indicated by a public health program director, “I want to know who out in the workforce is hiring any AA degree trained public health people.”

Prepare students for further study

Stackability: Although not heavily emphasized in either group, both adopters and non-adopters referred to stackability of their programs to provide students with opportunities to enter and exit the higher educational system to successfully build on their credentials.

A Dean at a non-adopter college described this as:

What we're hoping for is that it's a degree program, but there is a point in which a student could stop and have a recognizable certificate, if, indeed, the certificate is useful in the community. I know a degree would be useful if he went to a four

year school provided four-year schools have these programs. But the certificate – well, you have to be careful there- it might be a signature of well I've accomplished something, but it may not be something the student could use in which to make a living with.

An academic affairs administrator at an adopter shared this sentiment, describing:

I'm always looking for that stackable credential through, ideally, from non-credit through a bachelor's and master's degree, and possibly doctorate, if that's what's appropriate for that discipline. So, I'm always looking at how it stacks, and where students might be able to enter here and leave – multiple entry and exit points – and then move on to a four-year institution.

Transferability: The need for curriculum to be transferable to four-year institutions was indicated as a key influence in adoption of new academic programs, among both non-adopters and adopters. Transferability depends on the offerings at four-year institutions. An interviewee at a non-adopter college indicated that majors that are more common articulate easier:

Where if you have a new or emerging major, new to the job market or higher education, it's a little bit harder because finding the school that has the courses you can articulate with will be more difficult. Business is a common major every campus has business -every four-year campus has business every two-year campus has business. Within business itself as a discipline there is a lot of common courses like general accounting, managerial accounting, intro to business so these courses are common so they're easier to articulate because you can find them in both places where if you have a major in sustainability and the environment a more new major you would have to find a specific major that offers that major in order to articulate with them.

Among the adopters, setting up articulation agreements with four-year institutions has been a critical component of their public health programs in order for the public health coursework to meet course requirements at the receiving four-year institution. All four adopter colleges included in the study have articulation agreements with four-year institutions to ease transfer of the public health coursework to related programs in the four-year institutions, such as public health, community health, and health education.

Innovativeness

Adopters and non-adopters appeared to place a similar emphasis on being innovative, with slightly more emphasis among adopters. Adopters described their public health programs as being an example of their college's innovativeness considering so few public health programs exist among community colleges, "I know it was a pretty big deal when we started the public health program since it was one of the first in the area, that I know of anyway."

Unique features of public health

Adopters and non-adopters both referred to aspects of public health that make it unique, including its focus on the community which coincides with the role of community colleges. As described by a student in a non-adopter college offering a course in public health, "A personal opinion I think it's something that everyone should know and since it's a community college, I would think they would want the students that are going to be working in their community to get a public health degree at a local college. I don't think there can be any disadvantage to the situation." A similar comment was made by an interviewee in an adopter college offering a community health program, "It has the word 'community' in it. We are a community college."

Both adopters and non-adopters referred to public health as an alternative, or complement, to competitive health programs in which students may not be accepted into or be on waiting lists for, described by an interviewee at an adopter college, "I would think that with public health, students, while they're trying to get into one of the nursing or other health programs they're actually working on something that will actually give them a credential that they can use either in their chosen health degree or if they're

unable to get into their chosen health field perhaps they can use that and still move into health.”

Building curriculum

Adopters and non-adopters shared similar thoughts on how they build new academic programs, many indicating they would test the waters first with individual courses before launching an entire new program, whereas some colleges indicated they do not create new courses without them being part of a program. These different approaches took place in developing public health programs among the adopters since two of the four adopter colleges first offered individual courses that evolved into the public health program while the other two adopter colleges launched the program from scratch.

Learning from others

Adopters and non-adopters both referred to their interest in learning from other colleges. Specific to public health programs, the non-adopter college offering an individual public health course and some of the adopter colleges indicated that they received positive feedback after presenting at conferences. One of the adopter colleges indicated that they have also heard from four-year institutions interested in partnering with community colleges, “Some colleges across the country have contacted me and are interested in what we’re doing because they want to start up the program and want a course to be a feeder school so that students can transfer to their program.”

Lack of duplication

Although both adopters and non-adopters referred to the need to demonstrate a lack of duplication of programs with colleges in the area, “There’s some sharing that goes

on but there's also some concern about competitiveness in starting a program too close to the same college," this theme was more prominent among non-adopters.

Approvals process

Regardless of adoption status, community colleges indicated the series of approvals a new program proposal must go through. Rationale provided in one of the adopter proposals for the public health program focused on the field of public health's connection to the mission of the division in which the program is housed. An excerpt from the proposal is provided below:

The mission of public health is to "fulfill society's interest in assuring conditions in which people can be healthy." (Institute of Medicine, Committee for the Study of the Future of Public Health, Division of Health Care Services. 1988. *The Future of Public Health*. National Academy Press, Washington, DC). This mission is implemented through organized, interdisciplinary efforts which focus upon the "physical, mental and environmental health concerns of communities and populations at risk for disease and injury". Public health's mission is achieved through the application of health promotion and disease prevention technologies and interventions designed to improve and enhance quality of life. A public health program of study is consistent with the overall mission of the Health Sciences Division.

Availability of resources

Funding mechanism

No apparent differences surfaced, between adopters and non-adopters, regarding the mechanisms through which colleges receive funding, which typically includes: tuition; local/county revenue; and state revenue. In addition, grants sometimes assist in launching individual programs, as was the case with the non-adopter college offering the individual public health course. Both adopters and non-adopters referred to recent budget cuts and indicated that if academic programs demonstrate low enrollment, then they may need to be cut.

Facilities and equipment

Among the non-adopters, perceived barriers to adopting a public health program were often cited as equipment, space and the need to hire additional faculty. Colleges need to explore “whether the cost of faculty and cost of equipment will be covered by tuition and fees.” As described by an adopter college, lack of space and resources can be hindrance, but not an insurmountable one, “Even if there is student interest, there is a need, but space is needed. That is a process. But, you go through that because then you document that and indicate you need space in order to grow.”

Faculty and staff

A consideration among adopters and non-adopters in developing a new program is whether they have the faculty to teach courses in the program. The use of adjunct faculty is commonplace, particularly for a new program since adjuncts are less expensive than full-time faculty as described by a finance and administration administrator at a non-adopter college:

From a financial perspective, what we'll do is: there might be a full-time faculty member assigned to it to be responsible for kicking it off. We won't re-allocate their full salary and benefits to that line. We'll only allocate a portion and bring adjuncts in since they are much less expensive. An adjunct can teach for \$3,000 with no benefits associated with it, which translates to \$1,000 per credit. If it's a full-time faculty member – say it's a professor making \$100,000, with benefits, that probably costs us \$140,000, and with their contracts, they can only teach 30 credit hours. So, that would be about \$4,500 per credit. So, you can see the cost differential is tremendous – they are a little more than 4x as expensive.

The public health programs of the adopter colleges utilize a combination of full-time and adjunct faculty in order to carry out the programs, with two of the adopter colleges explicitly indicating that a goal of the program is to hire additional full-time faculty members. As the program grows, the rationale for full-time faculty is

strengthened. However, rapid growth of a program, such as that which has taken place in the public health programs of some of the adopter colleges, puts a strain on faculty and staff for advising and having appropriate supervision of experiential learning.

Collaboration

Internal collaboration

Adopters and non-adopters both referred to a variety of collaboration that takes place within their institutions. However, adopters tended to refer to budgeting and sharing of resources, including courses, space and marketing, more so than the non-adopters. Specific to the public health programs, adopters referred to the benefits of collaborating with allied health programs to promote the public health program as one of the many options in health, making the public health program visible on campus through participating in campus-wide activities, partnering with the health career advisement center, collaborating with the library so students learn how to use databases and conduct research to prepare them for the workplace, partnering with continuing education to serve as a gateway into the public health major, and partnering with several departments to either cross-list courses or enhance coursework of the public health major, such as with the Behavioral Science Department to offer a substance abuse counseling concentration, the Biology Department to offer a program to facilitate transfer into the Health Science and Nutrition program at a nearby four-year college, with the Health Services Department to offer blood pressure screening for the health promotion class students, with the English Department to make courses writing intensive, with the Art Department to produce posters and program booklets for a health leadership conference, with the

Honors Program on field trips, and with many of these and other departments to bring the college's Smoke-Free Entrancesways campaign into classrooms across campus.

In addition to collaboration with various departments and units on campus, support from administration was also cited as a facilitator to program implementation, particularly among two of the adopter colleges, "So that was huge that the vice president and the chairs were so incredibly supportive. Otherwise, it never would have taken off the ground" and a faculty member "proposed the development of a Community Health degree program to [the department chair], who supported the idea whole-heartedly and provided the support and guidance necessary to gain program approval at the departmental, campus, university, and, finally, state level."

High schools

Both adopters and non-adopters do outreach to local high schools for recruitment. Only one adopter college specifically referred to high school outreach as it relates to the public health program, indicating the college has a program in which high school students can take a college course, so the public health program made two of its courses available to high school students, to interest them in the field. However, the college indicated that even though students do get interested, they tend not to enroll in the community college to pursue the degree since they leave the state.

Other colleges

Community colleges

No apparent distinction was observed between adopters and non-adopters regarding their collaboration with other community colleges. In regard to the public

health program, one adopter college interviewee indicated they worked with a nearby community college to assess training needs for Community Health Workers.

Four-year institutions

Collaboration with four-year colleges and universities was a prominent theme among both adopters and non-adopters. As an advisor at a non-adopter college indicated, “My recommendation would be to talk to four-year colleges about what they are willing to have the transfer students to have. You want to make sure that they are meeting the needs of the four-year schools if they’re going to transfer.” A student in an adopter college summed it up by stating, “For a public health program, you have to ensure that the associate’s is not in isolation from the four-year program.” Advice from adopter colleges for other colleges interested in developing a public health program included developing such collaboration, “developing a partnership from a two year to a four year institution and having that type of an arrangement I would definitely advise that.”

The collaboration with four-year institutions often takes the form of articulation agreements, and this is the case with public health programs among the adopters, which have established articulation agreements with four-year institutions, with some indicating their goal is to establish agreements with additional four-year institutions.

Graduate programs/institutions

Neither the adopters nor non-adopters appear to have formal collaborations with graduate programs or institutions, but some informal connections exist which has assisted in providing opportunities to students enrolled in the public health program at one of the adopter colleges, through networking and exposure to lectures offered at the graduate school of public health.

Employers/Industry

Partnering with employers was mentioned frequently among both adopters and non-adopters, particularly as it related to providing input on advisory boards within the colleges, and providing students with experiential learning opportunities. As an interviewee in an adopter college indicated, “We have an advisory board from the community which has been the best thing in the world.” The interviewee describes their community health program advisory board being comprised of representatives from nearby four-year colleges in which students can transfer to, representatives from various departments within the community college itself which serve various student populations and needs, faculty in the public health program, and representatives from eleven agencies. The interviewee goes on to say that “the biggest best partner has been the health department.” The interviewee also mentions the important contributions of the district public health and a local health coalition. Advisory boards serve as an opportunity to connect community colleges and employers, as indicated by an academic affairs administrator at an adopter college:

For all of our degree programs we have an advisory board and that’s comprised of employers and the community educators from the community college, the public school system, even the university and those advisory boards meet twice a year to look at curriculum to look at employment opportunities...salaries...so that would be a perfect opportunity for any potential employer to interface with us at the community college and say ‘hey, I want to come to one of your meetings and talk about opportunities and what not.’

Local, State and National Entities

Adopters and non-adopters both referred to the importance of working closely with local and state government officials. Adopters tended to emphasize the importance of taking advantage of national organizations to provide service-learning and professional

development opportunities for themselves as well as students, such as the American Public Health Association and local affiliates, a state-wide community health worker network and the Society for Public Health Education.

Information

Having information on things such as employment trends, employer needs, and curricular resources were mentioned as an important element in developing and implementing new academic programs, among adopters and non-adopters. As an academic affairs administrator at an adopter college indicated, “It’s that ability to gather information internally and externally that is critical to the decision about where you are going to put your resources to develop a new program.”

The adopter colleges were particularly interested in sharing lessons learned with other community colleges indicated by two interviewees in different adopter colleges:

“I would certainly love to learn from others because the only ones I’ve had to look at are four-year institutions because there’s no one else to compare to at the two-year, so the feedback that you get and that you can share would be fantastic.”

“Does anyone have any money to bring us altogether? It would be a really cool conference for you to do. One person from each college to just sit and talk lessons learned what worked, what didn't work.”

Refinement

The theme of refinement was not a prominent theme among either the adopters or non-adopters. Adopters tended to provide more specific detail pertaining to maintaining the public health programs compared to the more general speculations of the non-adopters.

Prototype adoptability

Adopters and non-adopters shared similar views on the draft public health prototypes. Both groups inquired about potential job opportunities for graduates of these options, and would need to demonstrate there are four-year programs in which the courses could be articulated. This was expressed by a student of an adopter college, “If you are marketing this, you have to assure someone who is transferring to a bachelor’s program that the credits will transfer and you won’t have to repeat anything when you transfer, and then that could be sold to students.” Adopters and non-adopters both referred to the need to include liberal arts/general education courses in to the prototypes to assist in transfer to four-year institutions. Both groups also inquired about pre-requisites that may be necessary, such as anatomy and physiology and biology, for students to be able to enter a program such as depicted in the prototypes, and felt that may be a limiting factor for students to enroll. Both adopters and non-adopters found value in including the experiential learning component.

When comparing the generalist option to the specialized options, the curriculum of the adopters is currently aligned more closely with the generalist option; however, there was no one option that was favored among either adopters or non-adopters. As an interviewee at an adopter college indicated, “The generalist is probably what we’re actually doing which is probably what we’d be most interested in but that’s not to say that we wouldn’t given any other options...if there was a demand for any of the other prototype options I know we would move to create curriculum and options to fill those.”

Adopters referred more to possible connections with continuing education in regard to the prototypes, whereas, one continuing education interviewee in a non-adopter

college felt that the college's nursing program was already offering some of the coursework depicted in the prototypes and, therefore, would likely not offer such courses through continuing education.

The non-adopters were more concerned than adopters in the ability to market the prototypes. Questions raised among the non-adopters included, "How would I sell this?" and "Who are we targeting?" It was felt that clarification was needed on what the programs were preparing students for.

Champion

Having a champion, usually a faculty member, within the institution to move a new idea through the college was referred to by both adopters and non-adopters. Specific to the public health program, a champion was critical throughout all stages of the process, from initiation, development, implementation and maintenance of the program. The work of the champions does not go unnoticed by others in the institution.

In an adopter, the program director indicated, "I was the one who had the idea, who promoted it, and I was the one who got people enthusiastic and to hop on the train with me to push on through." Another interviewee in that institution recognized this dedication, "She really was a champion of this initiative and worked it into some of her core work to explore the possibilities to bring that information back to the faculty, curriculum committee, and discuss the possibility of public health."

In documentary materials of another adopter institution, the importance of having a champion was emphasized, "A successful program initiative requires a public health champion at the community college who is passionate in their desire to advance the teaching of public health at the undergraduate level."

Table 15: Summary of Prominence of Themes by Adoption Status

Themes/subthemes	Adopters	Non-Adopters
Awareness of public health	Mixed	
Awareness of public health degrees/certificates		
Innovativeness	*	
Unique features of public health	*	*
Role of community colleges		
<i>Focus on community</i>	◆	◆
<i>Develop workforce</i>	◆	◆
<i>Prepare students for further study</i>	◆	◆
Building curriculum		
Learning from others		
Lack of duplication		
Approvals Process	*	*
Availability of resources	◆	◆
Collaboration	◆	◆
Information	Mixed	Mixed
Refinement		
Champion	Mixed	Mixed

Key: ◆: Highly prominent; Substantial emphasis in relation to other themes
 *: Moderately prominent; Medium emphasis in relation to other themes
 Blank: Low prominence; Minimal emphasis in relation to other themes
 Mixed: Prominence of theme differed among colleges within adoption status category

DESCRIPTION OF THEMES IN MATCHED PAIRS

Match 1: College 1 and College 5

Awareness of public health

Both colleges in Match 1 placed value on raising an awareness of public health among the general population, indicating there is a need to do so but must be in terms the general public can understand.

Awareness of public health degrees/certificates

Both colleges in Match 1 referred to a lack of awareness of public health degrees/certificates. The adopter (College 1) referred to this lack of awareness among the

student population while the non-adopter (College 5) referred to the lack of awareness among faculty.

Innovativeness

The colleges comprising Match 1 expressed similar views regarding innovativeness. The theme was moderately prominent in both colleges with the colleges indicating the innovativeness of the college is driven by administration, but cautions against being too trendy.

Unique features of public health

This theme emerged similarly in both colleges of Match 1. Both colleges described public health as potentially serving as an alternative to competitive clinical programs, and indicated that if students are made aware of what the opportunities are within public health, then students may be drawn to the field.

Role of community colleges

This theme and its corresponding sub-themes were highly prominent across all cases.

Building curriculum

The theme of building curriculum was not prominent in Match 1, and there was a lack of consistency within and between the colleges. The non-adopter college (College 5) had differing opinions from interviewees on whether individual courses would first be offered to test out a subject area prior to launching a new program. The adopter college (College 1) launched the public health program all at once, but did indicate that they sometimes utilize continuing education to test viability of academic programs.

Learning from others

The *learning from others* theme was more prominent in the non-adopter (College 5), indicating that the college has explored what other community colleges have done, and, if public health is considered, would be interested in learning from those that have developed such programs.

Lack of duplication

Both colleges in Match 1 referred to the need to ensure proposed academic programs do not duplicate those at nearby community colleges.

Approvals process

The approvals process at each college generally follows the pattern of preparing a proposal, obtaining internal approval, oftentimes Board approval, and then state approval.

Availability of resources

Both colleges in Match 1 referred to increasing student enrollment as assisting in providing funding to the college. Neither college seems to be challenged in having a pool of faculty members to carry out a public health program.

Collaboration

The theme of collaboration was highly prominent in Match 1, as it was in most of the matches.

Information

There was inconsistency between the colleges in Match 1 as to how the theme of information emerged. In the adopter, this theme was not very prominent, but it was in the non-adopter college which emphasized getting information out about public health in community colleges, building on the Healthy People 2020 objective.

Refinement

This theme did not emerge in the non-adopter match (College 5), whereas specific future plans for the public health program of the adopter (College 1) were provided.

Prototype adoptability

Both colleges in Match 1 expressed some concern about the specializations and potential need for pre-requisites for the curriculum. College 1 placed emphasis on the need to be able to tailor the templates to the particular needs of the college and College 5 would adopt curricula depending on feedback received from the community.

Champion

The theme of a champion was more prominent in College 1, the adopter college, however, both College 1 and College 5 referred to the importance of having a champion to spearhead the initiation of a new academic program. In College 1, the theme was carried through the confirmation stage of the innovation-decision process, and specifically applied to the public health program.

Match 2: College 2 and College 6

Awareness of public health

The awareness of public health theme was not prominent in either college of Match 2, with no mention in College 2 and limited reference in College 6.

Awareness of public health degrees/certificates

This theme of awareness of public health degrees/certificates was also not prominent in Match 2, with no mention in College 2 and the only references in College 6 were that the interviewees lacked awareness of such programs.

Innovativeness

The innovativeness theme was not prominent in Match 2, although there was reference to each college being innovative.

Unique features of public health

Both colleges in Match 2 described characteristics of a public health program as potentially serving needs of students as they wait to gain admittance to nursing program, and is, or has potential to be, articulated with public health programs at other institutions.

Role of community colleges

This theme and its corresponding sub-themes were highly prominent across all cases.

Building curriculum

The theme of building curriculum was not very prominent in Match 2, as the adopter (College 2) indicated the public health program started from scratch and the non-adopter (College 6) indicated the budget situation will dictate whether a program will first be tested through individual courses.

Learning from others

College 2 exhibited moderate prominence of the theme *learning from others*, indicating they seek out and are sought out by other colleges to learn from one another. The non-adopter (College 6) had no mention of this theme.

Lack of duplication

Both colleges in Match 2 indicated they cannot duplicate academic programs offered at nearby community colleges.

Approvals process

The approvals process at each college generally follows the pattern of preparing a proposal, obtaining internal approval, oftentimes Board approval, and then state approval.

Availability of resources

College 6's ability to develop new programs has been affected by state budget cuts while College 2 has been able to add full-time faculty members as the public health program has grown.

Collaboration

The theme of collaboration was more prominent in the adopter (College 2) in Match 2 compared to the non-adopter (College 6).

Information

The theme of information was low in Match 2 as neither college put much emphasis on having particular information available during development and implementation of a program.

Refinement

The adopter (College 2) indicated programs may be cut due to low student demand and enrollment whereas the non-adopter match (College 6) indicated they have experienced programmatic cuts due to state budget cuts.

Prototype adoptability

The biggest issue in adopting the prototypes with the non-adopter (College 6) is limitations due to state requirements pertaining to faculty service areas. The adopter college (College 2) would adopt the prototypes if demand was demonstrated.

Champion

The prominence of the theme of champion was very low in both Colleges 2 and 6. The only reference to the theme among this pair was by an interviewee in the adopter college (College 2) when describing what makes a program successful. The interviewee felt that it could be a number of factors, and specifically mentioned the department chair running the program.

Match 3: College 3 and College 7

Awareness of public health and Awareness of public health degrees/certificates

The awareness themes in Match 3 were not highly prominent in either college.

Innovativeness

Both colleges in Match 3 incorporate innovation in their college's vision and take pride in their innovativeness.

Unique features of public health

This theme was not prominent in either college of Match 3, with the colleges differing slightly on how they described public health's unique features. College 3 emphasized the consideration of MPH programs serving as the gold standard in public health education while College 7 described public health as a viable option for students interested in health-related professions.

Role of community colleges

This theme and its corresponding sub-themes were highly prominent across all cases.

Building curriculum

Both colleges in Match 3 built, or would likely build, public health curriculum incrementally, considering the adopter (College 3) built the public health from existing courses and the non-adopter (College 7), which already offers an individual public health course, believes the next step would be to develop a certificate program rather than a degree program.

Learning from others

Both colleges referred to this theme of learning from others but was more prominent in the adopter (College 3) as it related to the public health program.

Lack of duplication

There was no reference to this theme in the adopter (College 3); however, the non-adopter (College 7) indicated that there cannot be a duplication of programs, specifically referring to a public health program being developed at a nearby university.

Approvals process

The approvals process at each college generally follows the pattern of preparing a proposal, obtaining internal approval, oftentimes Board approval, and then state approval.

Availability of resources

Match 3 benefited from having funds available to offer public health curricula, with the adopter college providing a year-long sabbatical to a faculty member to obtain an MPH and the non-adopter college received funding through a USDA grant to offer an online introduction to public health course.

Collaboration

The theme of collaboration was quite prominent in Match 3. A similarity between the colleges was the collaboration with a four-year institution offering public health curricula.

Information

Both colleges in Match 3 made use of national publications pertaining to undergraduate public health education when developing the public health program (College 3) and course (College 7). The *information* theme was high in both colleges.

Refinement

The adopter college (College 3) provided specific future plans for the public health program, and the non-adopter (College 7) plans to continue to offer the introduction to public health online.

Prototype adoptability

The biggest issue raised in the non-adopter (College 7) regarding adopting the prototypes was where to house the programs. Both colleges in Match 3 referred to incorporating the prototypes into existing programs.

Champion

There was inconsistency with the theme of a champion in this match since the theme was very prominent in the adopter (College 3) with only minimal reference in the non-adopter match (College 7).

Match 4: College 4 and College 8

Awareness of public health and Awareness of public health degrees/certificates

Neither of the awareness themes was prominent in Match 4, with no mention in the adopter (College 4) and minimal reference in the non-adopter (College 8).

Innovativeness

The innovativeness theme was slightly more prominent in College 4 compared to its non-adopter match (College 8) but both colleges appear to incorporate innovativeness in their overall priorities.

Unique features of public health

The prominence of this theme was mixed in Match 4 with no mention in the adopter (College 4) but did surface in the non-adopter (College 8) which views public health as a potential stepping stone to four-year programs.

Role of community colleges

This theme and its corresponding sub-themes were highly prominent across all cases.

Building curriculum

This theme was more prominent in the non-adopter (College 8) compared to the adopter (College 4) since there was very little mention of building curriculum in College 4. College 8 indicated that the approach to building curriculum varies depending on the program.

Learning from others

This theme had low prominence in Match 4 with minimal reference in the adopter (College 4) and no mention in the non-adopter (College 8).

Lack of duplication

The prominence of the theme of lack of duplication differed between the colleges comprising Match 4, considering there was no reference to the theme in the adopter (College 4) but the theme was relatively prominent in the non-adopter (College 8), which indicated that they must demonstrate how a proposed program would affect existing programs both on and off campus.

Approvals process

The approvals process at each college generally follows the pattern of preparing a proposal, obtaining internal approval, oftentimes Board approval, and then state approval.

Availability of resources

Both colleges indicated willingness to provide curriculum if there is a need in the community, even though funding through the state poses a challenge.

Collaboration

The theme of *collaboration* was prominent in Match 4.

Information

The theme of *information* was highly prominent in Match 4. Both colleges would be interested in learning the types of available opportunities for graduates of a public health program and prefer face-to-face meetings, but would also consider webinars.

Refinement

Both colleges in Match 4 indicated that programs may be discontinued if enrollment levels drop.

Prototype adoptability

The main issue with considering the adoption of the prototypes for the non-adopter (College 8) would be to delineate the goals of the program. This was also expressed, to a lesser extent, in the adopter (College 4) as it would dictate whether the prototypes would be AA or AS degrees or AAS degrees.

Champion

Similar to results in Match 3, the prominence of the theme of a champion was inconsistent in Match 4, since there was low prominence in College 4, but moderate prominence in College 8, particularly as it related to needing individuals interested in a specific field in order to consider development a new academic program.

Table 16: Summary of Prominence of Themes in Matched Pairs

Themes/subthemes	Matched College Pairs			
	Match 1	Match 2	Match 3	Match 4
Awareness of public health	*			
Awareness of public health degrees/certificates	*			
Innovativeness	*		*	
Unique features of public health	*	*		Mixed
Role of community colleges				
<i>Focus on community</i>	◆	◆	◆	◆
<i>Develop workforce</i>	◆	◆	◆	◆
<i>Prepare students for further study</i>	◆	◆	◆	◆
Building curriculum				Mixed
Learning from others	Mixed	Mixed		
Lack of duplication				Mixed
Approvals Process	*	*	*	*
Availability of resources	◆	◆	◆	◆
Collaboration	◆	◆	◆	◆
Information	Mixed		◆	◆
Refinement				
Champion	*		Mixed	Mixed

Key: ◆: Highly prominent; Substantial emphasis in relation to other themes
 *: Moderately prominent; Medium emphasis in relation to other themes
 Blank: Low prominence; Minimal emphasis in relation to other themes
 Mixed: Prominence differed among the colleges within the match

SUMMARY

Results suggest there was an increase in the number of community colleges offering a public health program degree and/or certificate program between academic years 2009-2010 and 2011-2012; however, this increase was not statistically significant. Results also suggest, however, that the majority of community colleges, an estimated 64 percent, offer at least one public health-related course. Among the themes identified in the case study, the most prominent across all cases related to addressing the *role of community colleges*, with sub-themes of *focus on the community*, *develop workforce*, and *prepare students for further study*, and the themes of *availability of resources* and *collaboration*. Overall, there was little variation in the prominence of the themes between adopters and non-adopters, or among the matched adopter – non-adopter pairs. Two themes which demonstrated the most variation in their prominence across all cases were *information* and *champion*. Comparing adopters and non-adopters, adopters tended to emphasize innovativeness slightly more than non-adopters. In addition, the theme of awareness of public health was slightly more prominent among adopters; however, the prominence of the theme differed within the adopter category itself. Among the matched pairs, Match 4 (College 4 and College 8) demonstrated the most variation in the prominence of themes. Each matched pair differed in theme prominence on at least one theme. An interpretation of these findings will be presented in Chapter 5.

Chapter 5: Discussion

“I just think it’s a really good idea to introduce people to public health as soon as possible and I don’t want to see community colleges overlooked.”

– Public Health Program Director

OVERVIEW

The study aimed to: assess the rate of adoption of public health degrees and certificates in community colleges; identify and describe perceived attributes of public health associate degree and certificate programs; describe the processes for adopting such degrees; and to determine the perceived adoptability of draft prototype public health degree and certificate programs among adopters and non-adopters. The study achieved each of these aims, as will be described in the discussion of findings section below.

Overall, the findings demonstrate that much work remains to be done in order to achieve the Healthy People 2020 objective to increase the proportion of community colleges offering public health degrees and/or certificates. Results from the study provide insight into considerations needed and approaches that can be undertaken to achieve this objective. Future strategies should build on the value community colleges place on ensuring their academic programs are consistent with their mission, demonstrate entry-level jobs are available for graduates and coursework can be articulated with four-year programs. Findings demonstrate some variation with the original conceptual framework which will be described in this chapter. In addition, findings are described according to their relationship with the Diffusion of Innovations theory, demonstrating overall that the theory is applicable to guide research pertaining to the study topic. Implications to research and practice are described and recommendations are put forth for future research and actions to be undertaken by community colleges, the public health education

community, and the public health practice community to integrate public health curricula within community colleges as part of efforts to strengthen the public health workforce. Strengths and limitations of the study are also described. Research findings provide documentation necessary for monitoring the Healthy People 2020 objective that sets out to increase the proportion of community colleges offering public health degree and/or certificate programs and provide guidance for efforts aimed at achieving this objective.

DISCUSSION OF FINDINGS

As presented in Chapter 4, among the themes identified in the case study, the most prominent across all cases were 1) *role of community colleges* with sub-themes of *focus on the community, develop workforce, and prepare students for further study*, 2) *availability of resources* and 3) *collaboration*. With the exception of two themes, prominence of each theme varied little among the cases. The two themes which demonstrated the most variation in their prominence across the cases were *information* and *champion*, with the themes emerging prominently in some cases and minimally in others. For the *information* theme, there was no apparent relationship between the prominence of the theme and characteristics of the college since it emerged highly and minimally among both adopters and non-adopters, among colleges with low and high student enrollment, and those close and far from graduate schools or programs of public health. This suggests specific informational needs may be unique to the institution and individuals within the institution. The *champion* theme emerged highly prominently in two adopter cases, with low to moderate prominence in all other cases, suggesting champions may be particularly important to the adoption of public health degree programs and should be considered in efforts aimed at integrating public health curricula

in community colleges. Considering there was little variation in the prominence of all other themes between adopters and non-adopters, and among the matched adopter – non-adopter pairs, the findings suggest that the factors influencing the development and implementation of public health degrees/certificates are likely consistent across community colleges. This will assist efforts aimed at integrating public health curricula in community colleges considering little, if any, audience segmentation will need to take place to develop and disseminate information and resources as they will generally be applicable across diverse community college settings.

There are, however, some college characteristics to consider in these efforts. In order to demonstrate how the phenomenon of interest appeared in different contexts, diversity of cases was sought in the selection of cases, among such characteristics as institutional size, based on student enrollment; population size in which the college is located; distance to nearest CEPH-accredited graduate public health school or program; and curriculum. In addition to these characteristics, colleges were also matched on student demographics (race/ethnicity) and tuition levels. Institutional size arose among the cases, for both large and small institutions, based on student enrollment levels. Among colleges with higher student enrollments, a comment that surfaced was that the college is willing to take risks, such as a new academic program, since any loss of revenue would be absorbed elsewhere in the college. Among the colleges with smaller student enrollments, they did not let this affect their ability to carry out their services, such as having an array of courses that transfer to universities, and building new facilities to alleviate space issues. The population size of the area in which the college is located also surfaced among colleges. The adopter college located in an area with the smallest

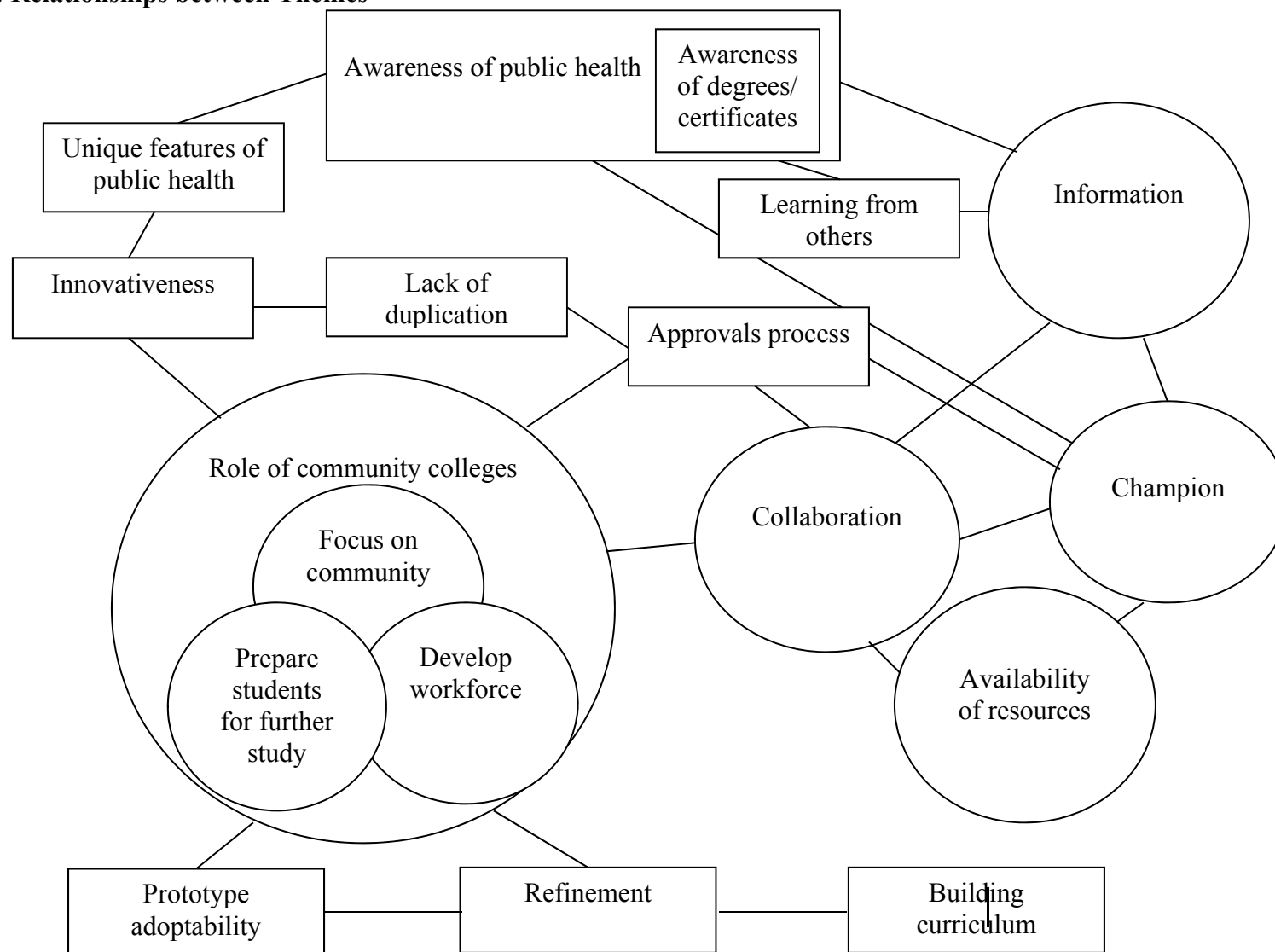
population size among adopters indicated that rural health is important for them since they are in a rural area. Interestingly, a comment received from the largest of the non-adopter colleges indicated that they felt their population size could not support the need for a public health program and, instead, suggested that it would be more suitable for a place with a bigger population. Proximity to a graduate school or program in public health surfaced among those colleges in close proximity to such a school or program. A disadvantage to being close to such institutions was cited among one of the adopters in that they found there was a high concentration of highly educated people in public health in their geographic area and felt that nobody would, therefore, hire someone trained in public health at a community college. Considering the college moved forward with adopting the public health degree, however, this likely did not serve as a major deterrent. Advantages to being close to a public health graduate school or program were cited by another adopter in that there was articulation between the two-year, four-year, and graduate program. Other potential advantages cited among the non-adopters related to having graduates of the graduate program available to teach at the community college and potential curricular fit between public health coursework at the community college and the graduate school. In regard to curriculum, it was found that those adopter cases that appeared to be more in line with a public health program, based on program title and public health coursework beyond the minimum requirements to meet the “public health and related” definition, appeared to be flourishing whereas one of the cases, titled “health education” was stagnant with minimal student interest and no observed growth. This case also appeared not to have a champion, or anyone designated to lead the program. In addition, in the catalog scan, the college that discontinued their program was titled

“health sciences.” Efforts should be made to ensure consistency in program titles to ease identification of programs for branding purposes and ease articulation with four-year programs. Race and ethnicity of the student population were raised as issues in the tribal college (College 9) as their mission is to serve community members on the Indian reservation, and in both colleges with high percentage of students identified as Hispanic/Latino since both colleges referred to the fact that many of their students and/or community members are Spanish-speaking; therefore, courses are offered to accommodate this population. Other than references to low tuition across all community colleges, the differences in tuition observed among the cases did not surface as an issue.

Relationships between Themes

Figure 7 provides a visual of relationships between the themes that emerged in the study. Themes which emerged more prominently are depicted by circles and themes which emerged less prominently are depicted by rectangles. Role of community colleges is a central theme that ties together several of the other themes. This is not surprising since the theme was prominently featured throughout the study, as each case emphasized their focus on the community, desire to develop a workforce and the importance of preparing students for further study. Two additional themes that connect several other themes together are collaboration and champion. As was found in the study, a champion is integral throughout initiation, implementation and maintenance of new academic programs. Although not a highly prominent theme in the study, awareness of public health will be a key driving force in efforts to integrate public health curriculum in community colleges and, as the figure demonstrates, is related to several of the other study themes.

Figure 7: Relationships between Themes



Study Aim 1: To assess the rate of adoption of public health degrees and certificates in community colleges between academic years 2009-2010 and 2011-2012.

The rate of adoption of public health degree and certificate programs in community colleges between academic years 2009-2010 and 2011-2012 was estimated at zero; however, there was an estimated net of one new adopter community college between those years with the proportion of community colleges offering a public health degree and/or certificate program estimated to be 1.67 percent. The integration of public health in community colleges has only recently gained attention, with the December 2010 release of Healthy People 2020, which includes the first-ever objective to increase the proportion of community colleges offering public health degrees and/or certificates. Considering the qualitative data suggested that it can take one to three years for a new academic program to wend its way through the approvals process, it is reasonable that a net of one new community college would offer a public health degree and/or certificate program between the two academic years, particularly at the start of the diffusion of this innovation. However, these findings demonstrate that much more work is yet to be done to reach the Healthy People 2020 target to have three percent of U.S. community colleges offer a public health degree and one percent offer a public health certificate by 2020.

The majority of community colleges, an estimated proportion of 64 percent, were found to offer at least one course related to an area of public health. This may present an opportunity to expand public health-related curricular offerings in these colleges, since this suggests the college has faculty expertise in these areas, therefore addressing faculty resource needs described within the theme of *availability of resources*. In addition, in some of the study cases, it was described that programs may be developed incrementally,

such as building from individual courses, as was described in the *building curriculum* theme. The majority of public health-related courses fell under the umbrella of environmental health, and may be an area to initially focus efforts. Among the prototype options, the environmental health track was one that was viewed favorably among interviewees with no specific criticisms provided, and would be compatible with a college's interest in "green initiatives" as emphasized in one of the cases.

An opportunity to raise awareness among students about the field of public health and its various career opportunities is through such courses as Introduction to Health Careers, which several colleges were found to offer. In addition, public health was marketed as a career opportunity for students pursuing such programs as dietetics, environmental science, health science, human services, and clinical laboratory science. The qualitative component of the present study suggested that colleges may look to create off-shoots from existing programs, as was described in relation to incorporating the public health prototypes; therefore, there may be potential in creating public health programs as off-shoots to such existing programs.

Study Aim 2: To identify and describe the perceived attributes of public health associate degree and certificate programs among adopters and non-adopters.

Overall, the attributes that community colleges primarily seek in an academic program include: fulfillment of a community need, generation and sustainability of student demand, job availability for program graduates, and transferability of the curriculum to programs in four-year institutions. These attributes are reflected in the study's theme of *role of community colleges* that relate to the perceived attribute of *compatibility* of the Diffusion of Innovations theory. An additional attribute sought by

community colleges is lack of duplication of similar programs within the college or with programs at community colleges in the local region, since programs are not to compete with one another. An additional consideration is the cost of the program, including space, equipment, faculty and staff resources. However, colleges repeatedly expressed that if there is a need for the program, then the college will figure out how to make it work within their budget, so high cost will not necessarily prohibit a college from adopting a new program.

Among the key attributes identified above, adopters emphasized the following as specific to public health degrees and certificates: fulfilling a community need and transferability of curriculum to programs in four-year institutions. Job availability for graduates was not as emphasized by adopters in relation to their public health programs. Lack of duplication was also not emphasized, likely since so few public health programs currently exist in community colleges. This lack of associate public health programs was actually used as a selling point for at least one new public health program among the adopters, demonstrating the college's innovativeness. Also, of note, is that adopters did not raise concern about resources in relation to their public health programs, suggesting the programs did not place a major strain on the college's resources. One college that lacked faculty expertise invested resources in the form of providing a sabbatical to a faculty member for that individual to receive an MPH and return to the community college to develop and manage the public health program.

Both adopters and non-adopters described an attribute of public health programs as being an alternative and/or a complement to competitive allied health programs. Nursing, in particular, is a major draw for community colleges with demand exceeding

capacity. Many students are on waitlists, and some students are not accepted into the nursing programs. Being able to provide students with an alternative, related, program was attractive to interviewees in the cases. A public health program was viewed as a possibility to be pursued by individuals as they wait to get into the nursing program or by individuals who do not get accepted into the nursing program.

Similar to adopters, non-adopters also described a perceived attribute of public health programs as serving the community, citing health needs within their region and/or the broader global community.

Study Aim 3: To describe the processes, among adopters, and perceived processes, among non-adopters, for adopting public health degrees and certificates in community colleges.

Proposed academic programs in community colleges must go through a series of approvals prior to implementation. Although some variation takes place based on institutional and/or state requirements, the process among the cases typically follows these steps: a faculty member, or group of faculty members, prepare a program proposal usually describing the rationale for the program, curriculum, resource needs, projected student enrollment, impact of the new program on existing similar programs within the college, impact of the new program on other similar programs in community colleges within the region, and potential employers of graduates of the program. The proposal may be developed in consultation with the department chair and/or academic affairs office. The proposal is vetted by a curriculum committee within the community colleges, reviewed by college administration, then submitted to the Board of Regents, and then the

state education department. The process was indicated to take a minimum of one year and up to three years, sometimes longer if there are delays.

Once the program is approved, it can be advertised in the course catalog. The colleges secure the space, equipment, faculty and staff needs, often starting the program with adjunct faculty teaching the courses. As the program grows, full-time faculty will be hired. Collaboration within the college facilitates implementation to ensure applicable parties are aware of the program and can advise students accordingly. If the program is intended for transfer, articulation agreements are set-up with four-year institutions. Collaboration with employers also facilitates the adoption process to provide curricular guidance, serve as guest lecturers, provide internships, and provide information to be used for marketing of the program, such as job titles and salaries for graduates of the program. This collaboration can likely be mutually beneficial for the community colleges and the public health employers. A HRSA workforce report put forth several training-related recommendations, as discussed in Chapter 2, and included encouraging collaboration between relevant educational programs and local public health agencies in an effort to encourage educational programs to be more responsive to the recruitment and training needs of local public health agencies (HRSA, 2005). Additional information that assists in adoption is guidance on the curriculum, textbooks, and ways to partner with four-year institutions. Among non-adopters, the perceived process for adopting a public health degree or certificate is believed to follow this path.

Among the adopters, the process for adopting the public health programs closely followed this trajectory. However, an additional key driver throughout the process of adopting a public health program, as identified in two of the adopter cases, was a

champion – an individual dedicated to the success of the program who pushed it forward. Also an important part of the process identified in those same two adopter colleges was support from administration and other departments within the institution. Adopters tended to refer more so to budgeting and sharing of resources across departments, including courses, space and joint marketing. One of the adopters also stressed the importance of collaboration with employers and other professional organizations to provide experiential learning and professional development opportunities for the students in the public health program. Collaboration with four-year institutions was emphasized in the adopter colleges to ease the transfer of public health coursework. In addition, one of the adopter colleges also emphasized having curricular resources available regarding undergraduate public health education, to assist in making the case for the program as well as developing the program's curriculum.

Study Aim 4: To determine the perceived adoptability of draft prototype public health associate degree and certificate programs among adopters and non-adopters

The adoptability of the draft prototype public health associate degree and certificate programs was found to relate to the perceived attributes described in Study Aim 2. Overall, the public health prototypes are likely to be adopted, among both adopters and non-adopters, if it can be demonstrated that they fulfill a community need, generate student demand, there are jobs available for graduates, and the coursework can transfer to programs in four-year institutions.

Among the five prototypes (environmental health; public health preparedness; public health informatics; pre-health educator; and public health generalist), adopters

most closely aligned their existing public health programs with the generalist public health option, followed by the pre-health educator concentration. The appeal of these options appeared to be due to the clear path to four-year degree programs. However, the adopters did express interest in the other options, provided there was a demonstrated need for such options. Some adopters would also consider partnering with their college's continuing education office to provide training in these areas.

Among the three remaining specialized options (environmental health, public health preparedness, and public health informatics), the environmental health option generally appeared to be favored, followed by public health preparedness and, lastly, public health informatics. The appeal of environmental health and public health preparedness was based on the perception that there would likely be jobs in these areas and the curriculum could build from existing curriculum in the colleges. This perception of job availability coincides with an APHA report (2006) which identified environmental health workers as one of the professions experiencing particular workforce shortages. The hesitation surrounding the public health informatics option was due to the perception that the coursework was too specialized in that there would not be jobs available, it may be difficult finding faculty to teach such courses, and there would not be sufficient demand to warrant a degree in this area of study. Another comment concerning this option related to whether, and how, public health informatics was distinct from health information technology –relating to the theme of *lack of duplication* in that programs cannot compete with one another.

When considering adoption of any of the prototypes, both adopters and non-adopters would look at whether and how the coursework could be integrated into their

existing programs. Non-adopters, in particular, questioned where to house such programs and some felt strongly that development and implementation of such programs take place in coordination with allied health programs within the college.

RELATION TO CONCEPTUAL FRAMEWORK

To demonstrate an in-depth perspective, Ulin, et.al. (2005, p. 167) advise comparing the final interpretations with what was first expected to be found. Therefore, a discussion comparing the study findings to the conceptual framework are presented here. Table 17 below summarizes the comparison. In general, the findings coincided with the study's conceptual framework, however, a few differences did arise. Having a "champion" throughout the innovation-decision process was found to be an important factor in the present study although this was not reflected in the original conceptual framework. In addition, the perceived attribute of providing continuing education opportunities, described in the conceptual framework, was not found to be as much of an influence on the adoption of public health degrees/certificates as originally anticipated. This was included in the conceptual framework since it was anticipated that public health programs, particularly for-credit certificate programs, could be pursued by individuals currently working in the field of public health but lacked formal training in public health. However, the study findings suggested that this type of training would likely take place through a college's continuing education program, and would likely be in the form of non-credit offerings. This did not surface as a factor that would influence a college to adopt a program. As was proposed in the conceptual framework, job availability and articulation with four-year programs were found to be important perceived attributes affecting adoption of new academic programs. The terminology used in the conceptual

framework, “job marketability,” was tweaked to “job availability” to better reflect the emphasis colleges place on ensuring jobs will be available to students upon graduation. An additional perceived attribute that surfaced in the study that was not reflected in the original conceptual framework was student demand, which related to community colleges’ desire to serve the community. All three of the key perceived attributes of job availability, transferability to four-year programs and student demand, fall under the overarching theme of *role of community colleges* that emerged in the study.

In addition, implementation processes were found to primarily be facilitated by: availability of resources (funding, facilities, equipment and faculty/staff), internal and external collaboration, particularly with four-year institutions and employers, and information, such as guidance on development of programs, faculty development needs, skills needed for employment in the field of study, and available career options. This is a slight deviation from the conceptual framework in that the conceptual framework did not include *information* as a factor in implementation of public health degrees/certificates. Also related to information is overall awareness of public health. Several interviewees referred to the lack of awareness of public health among the general population. Therefore, efforts aimed at raising awareness of public health among the general population will likely assist in the adoption of public health degrees/certificates in community colleges.

Table 17: Comparison of Conceptual Framework and Key Study Findings

Construct	Conceptual Framework	Key Study Findings
Knowledge	Knowledge of public health degrees/certificates	<ul style="list-style-type: none"> • Awareness of public health • Awareness of public health degrees/certificates
Persuasion	Perceived attributes: <ul style="list-style-type: none"> • Job marketability • Articulation with 4-year programs • Provide continuing education opportunities 	Perceived attributes: <ul style="list-style-type: none"> • Compatibility with role of community colleges <ul style="list-style-type: none"> ○ Develop workforce <ul style="list-style-type: none"> ▪ Job availability ○ Prepare students for further study <ul style="list-style-type: none"> ▪ Transferability to four-year programs ○ Focus on Community <ul style="list-style-type: none"> ▪ Student demand
Decision	Adoption behavior: <ul style="list-style-type: none"> • Increased proportion of colleges offering degrees/certificates 	Adoption behavior: <ul style="list-style-type: none"> • Increased proportion of colleges offering degrees/certificates
Implementation	Implementation process facilitated by: <ul style="list-style-type: none"> • Support from faculty and administration • Resources • Collaboration with 4-year programs and employers 	Implementation process facilitated by: <ul style="list-style-type: none"> • Collaboration <ul style="list-style-type: none"> ○ Internal collaboration, including support from administration ○ External collaboration, particularly with 4-year programs and employers • Resources <ul style="list-style-type: none"> ○ Funding ○ Facilities/Equipment ○ Faculty/staff • Information
Confirmation	Prototype refinement: <ul style="list-style-type: none"> • Continued adoption 	Prototype refinement <ul style="list-style-type: none"> • Continued adoption
Diffusion	Guidance on adopting public health associate degrees and certificates diffused among community colleges, leading to increased knowledge of public health degrees/certificates	Guidance on public health associate degrees and certificates diffused among community colleges, leading to increased awareness of public health field and public health degrees/certificates
Communication channel	Not included	Champion

IMPLICATIONS OF THE PRESENT STUDY

Theoretical Implications

As described in Chapter 2, the theoretical grounding for the present study was provided by the Diffusion of Innovations theory, described by Everett M. Rogers (1962). This theory sets out to shed light on the process by which an innovation makes its way into a population and is adopted. The innovation in the current study is public health degrees/certificates in community colleges. The key processes described in the theory include: innovation development; dissemination; adoption; implementation; and maintenance. Rogers described five stages in the decision to adopt an innovation: knowledge, persuasion, decision, implementation and confirmation as depicted in Figure 3 in Chapter 2. Among the variables identified in the theory, Rogers concluded that perceived attributes of the innovation explain the largest percentage of variation in the rate of adoption, and identified these as relative advantage; compatibility; complexity; trialability; and observability (Rogers, 2003).

Overall, the Diffusion of Innovations theory served as an applicable and appropriate guide to explore the adoption of public health degrees and certificates in community colleges. As presented in Figure 6 in Chapter 4, the themes that emerged in the study closely coincided with the five stages of the innovation-decision process as described by the theory. The relationship of the study findings and each stage are summarized below:

Knowledge

According to the theory, the knowledge stage occurs when a decision-making unit is exposed to the existence of an innovation and gains an understanding of how it

functions. An additional challenge is presented regarding public health associate degrees and certificates since not only does there need to be knowledge of the innovation itself – public health programs - but there also needs to be knowledge about what the innovation represents – the field of public health. This latter portion surfaced as the bigger challenge in the present study since the general population has a lack of awareness of what the field of public health entails. This, in turn, will have an effect on the perceived attributes of the innovation described in the next stage –persuasion. Therefore, this additional component of knowledge of what the innovation represents could supplement the definition provided by the theory.

Persuasion

The theory describes the persuasion stage as that which occurs when a decision-making unit forms a favorable or unfavorable attitude towards the innovation. According to the theory, it is this stage that the perceived attributes of an innovation are most applicable. The theory describes the perceived attributes of relative advantage, compatibility and complexity as being particularly important in the persuasion stage. In regard to the adoption of public health associate degrees/certificates, persuasion is based more on *fact* than *attitude* considering community colleges must provide rationale for a new program, supported by data. The themes that emerged in the study did relate to the perceived attributes presented in the theory, and described below:

Relative advantage: The theory describes this perceived attribute as the degree to which an innovation is perceived as being better than ideas it supersedes. In relation to the current study, this can be viewed as whether the college would be better off offering a public health program versus not offering a public health

program. The characteristics of public health programs, as described among both adopters and non-adopters, suggest there is an advantage to offering a public health degree or certificate. For instance, public health programs were viewed as being innovative, which aligns with the values of community colleges and described in the theme of *innovativeness*. Therefore, offering a public health program would assist a community college in addressing this desire to be innovative. In addition, the focus of public health on populations and communities coincides with community colleges' focus on the community, a key factor in addressing the role of community colleges. Another unique feature of public health programs is their potential to serve as an alternative or complement to competitive allied health programs; therefore, offering a public health program could fill a gap and assist in retention efforts to keep students enrolled as they pursue public health coursework. The theory described relative advantage as one of two attributes (compatibility being the other) that are particularly important in explaining the rate of adoption of an innovation. However, the current study did not find relative advantage to be as strong an influence as suggested by the theory. The study findings coincide with previous research, described in Chapter 2, which examined integration of general education competencies in curricula within a community college system. In that study, it was found that relative advantage was moderately related to adoption (Davis, 1996).

Compatibility: The current study corresponded to the theory's identification of compatibility as one of the most important perceived attributes regarding the decision to adopt an innovation. The theory describes this perceived attribute as

the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters. This was reflected in the strong prominence of the theme *role of community colleges* across cases. This theme directly relates to compatibility with the college's mission and values to *focus on the community, prepare students for further study and develop a workforce*. When discussing the draft public health prototype degrees and certificates, interviewees often considered how the curriculum would fit with their existing curricular offerings and would seek ways to integrate the public health curriculum in a way that would build on, and not compete with, their existing programs. Public health was viewed as potentially being an off-shoot of existing programs such as environmental studies, medical informatics and homeland security. Past experience in developing and implementing academic programs has also prepared colleges for the scrutiny in which a new academic program proposal for a public health program would undergo as part of the approvals process. This also relates to needs of adopters, as described by the theory, in that colleges must demonstrate jobs are available for graduates, there are four-year programs in which the curriculum will transfer, there will be student demand for the program and the program is not a duplication of existing programs in the college or with nearby colleges. New programs also must abide by state regulations which determine number of credits required for the degrees of Associate of Arts, Associate of Science, and Associate of Applied Science. Therefore, public health programs should be able to be adapted to such needs of the colleges.

Complexity: The theory describes the perceived attribute of complexity as the degree to which an innovation is perceived as relatively difficult to understand and use. Although no themes emerged in the current study which directly correspond to this theme, a combination of related themes may contribute to the overall perceived complexity of public health degrees and certificates. For example, the general lack of awareness of what public health is likely serves as a barrier in the adoption of public health programs since such programs would not be on the radar screen of colleges. Similarly, there may be a lack of understanding of the types of career opportunities available for graduates of public health programs and types of four-year programs in which students could transfer into. Since job availability and transferability were key features colleges seek in academic programs, this lack of awareness of public health opportunities may contribute to the innovation's complexity. Even if colleges were aware that public health degrees and certificates existed in other colleges, there may be a lack of understanding of the resources needed to implement such a program, including facilities and equipment and faculty expertise. As described in the interviews, particularly among non-adopters, there was question on where to house a public health program due to its multidisciplinary nature. These factors, taken in combination, would relate to the perceived complexity of public health programs.

Trialability: The theory describes this as the degree to which an innovation may be experimented with on a limited basis. New academic degree programs in community colleges may be first experimented with in the form of non-credit

options, individual courses, a concentration, or a certificate. Colleges in the present study described different approaches they took, or would take, regarding adoption of public health programs and was described in the theme of *building curriculum*. Although this experimentation may be part of the process, the ability to test out the program was not found to influence a college's decision to adopt the program. Therefore, for purposes of public health degree/certificate adoption in community colleges, trialability may be classified as a construct, rather than an "attribute", and is more applicable to the implementation stage.

Observability: The theory describes this attribute as the degree to which the results of an innovation are visible to others. The ability to learn from other colleges did surface as a theme in the present study and, therefore, relates to this attribute. However, there was an additional component that emerged in the study in that there is a requirement that community colleges cannot duplicate programs offered by community colleges in the same region; therefore, if the innovation – public health degrees/certificates – are visible to other colleges, colleges may be discouraged from adopting the innovation.

Decision

The Diffusion of Innovations theory describes the decision stage taking place when a decision-making unit engages in activities leading to a choice to adopt or reject the innovation. In regard to adoption of public health degrees/certificates in community colleges, this stage is a process, in and of itself, since there are a set of required steps that take place among multiple decision making units to determine whether action will be taken to adopt or reject the innovation.

Implementation

The theory describes implementation as the stage when a decision-making unit puts a new idea into use. This is applicable to the study's topic since after gaining approval to offer a public health degree/certificate, community colleges would then take action to implement the program. As previously described, implementation of academic programs in community colleges is facilitated by the availability of resources, collaboration and information.

Confirmation

The theory describes the confirmation stage as occurring when a decision-making unit seeks reinforcement of an innovation-decision that has already been made, but it may reverse this previous decision. During this stage, either an innovation will continue to be used and refined or discontinued. Sustainability of an academic program within community colleges is dependent on student demand. Results from the case study indicate that, prior to discontinuance of a program, colleges seek to refine the program and make adjustments in an effort to maintain or increase student demand, often these adjustments are to keep up-to-date on the needs of the community. The catalog scan demonstrated that the majority of public health programs continued between 2009-2010 and 2011-2012; however, one college in the sample did appear to discontinue their certificate program and refined their degree program so that it no longer met the study's inclusion criteria for a public health program. Further exploration into the rationale for these adjustments may be beneficial to further understanding on sustainability of programs.

Champion

In addition to the five stages of the innovation-decision process, having a champion to support and promote the new academic program was found to be an important factor in the adoption process. The Diffusion of Innovations theory also described the role of a champion, describing this person as “a charismatic individual who throws his or her weight behind an innovation, thus overcoming indifference or resistance that the new idea may provoke in an organization” (Rogers, 2003, p. 414). Rogers described that these champions are not necessarily powerful or hold a high office in an organization, but excel in their people skills. The champions identified in the present study appeared to fit this description – they were not upper-level administrators within the colleges, but they were adept at handling people.

Social system

The theory identifies the social system as one of the main elements in the diffusion of innovations. The theory defines the social system as “a set of interrelated units that are engaged in joint problem solving to accomplish a common goal” (Rogers, 2003, p. 24). As described by the theory, diffusion occurs within the social system, which has both formal and informal structure. Relating this to community colleges, formal structure refers to the patterned arrangements of the colleges in the higher education system. Informal structure refers to the interpersonal networks that exist within and between colleges. In the present study, having information available emerged as a facilitator to adoption of public health degrees and certificates. The type of information identified in the study included guidance on undergraduate public health curriculum development, types of jobs available in public health and corresponding salary levels, and skills needed to be successful in the field of public health. Considering

there is a lack of awareness of public health and public health programs among members of the social system, diffusing such information within the social system likely needs to precede diffusion of the innovation itself (public health degrees and certificates).

Findings from the study suggest that diffusion of this information can be channeled through champions, as they advocate for development and implementation of public health programs. The champions described in the present study became aware of public health programs through the social system. In one case, it was through a graduate institution offering public health-related coursework and in another case it was through the Association of American Colleges and Universities. Similarly, study findings suggest that collaboration, often in the form of communication, within the college and with other colleges and employers also facilitates adoption of public health programs. This relates to the theory's description that the social and communication structure of a system can facilitate or impede diffusion of innovations in the system.

Research Implications and Recommendations

Previous research addressing curriculum adoption in higher educational settings suggests that factors influencing curriculum adoption include: meeting student, workforce and societal needs and ensuring compatibility with the organization's culture. Previous research specifically addressing curriculum adoption in community colleges found that student need and workforce need had the greatest influence in development of the curriculum (Petrosian, 2010). The findings from the present study coincide with these factors considering compatibility with the role of community colleges, which can be viewed as the culture of community colleges, emerged as the key influence in adoption of public health programs. The role of community colleges was further described in the

present study as: focusing on the community, developing a workforce, and preparing students for further study. These are very much in line with meeting student, workforce and societal needs as identified in the previous educational innovation research.

In addition, previous published research suggested that key factors affecting curriculum implementation include: faculty and administrator support, availability of resources, and collaboration across academic institutions and with employers. The current study also found these to be key facilitators for implementation. The current study also found two additional elements that served as important implementation factors: having a champion to spearhead the development and implementation of the program and having access to information, such as curriculum development guidance, faculty development needs, information on skills needed for employment in the field of study, and available career options. Having information available for an innovation such as public health degrees/certificates is particularly beneficial due to the lack of understanding of the field of public health among the general population, including faculty and students. For marketing purposes, it is important for admissions staff and advisors to be able to provide prospective students with information on such aspects as: what public health entails, what types of careers they can pursue with a degree in public health, potential employers, salary expectations, and types of baccalaureate programs they can transfer into. As indicated in Chapter 2, an ASTHO report identified a variety of barriers to overcoming the public health workforce shortage, including a lack of understanding and a lack of visibility regarding the importance and benefits of public health careers (ASTHO, 2008). Therefore, relaying this information to prospective and current students may assist in addressing workforce needs.

Research Recommendations

As the only study known to address the adoption of public health programs in community colleges, the current research set out to explore this overarching phenomenon of interest. To gain further insight in this area, the field would benefit from additional research; therefore, recommendations for future research are presented below:

- Repeat catalog scan for both four-year and two-year institutions approximately every two years: As part of Healthy People 2020, repeated measurements over the decade will be beneficial to inform the goal-setting process of the objectives. In addition, monitoring the rates of adoption will inform public health academic and practice organizations to accommodate the potential entry of additional individuals with public health knowledge into graduate programs and/or employment settings.
- Assess specific public health workforce needs in defined geographic areas: Community colleges set out to serve the needs of the community in their geographic region. As part of a new program proposal, it must be demonstrated that there are, or will be, jobs available for graduates in that region. Therefore, having this type of data available will assist colleges in preparing their program proposals and making the case for adoption of public health programs.
- Explore articulation processes between two-year and four-year institutions: Transferability of coursework to four-year programs was identified as a key factor that community colleges consider when developing a new academic program. As described in Chapter 2, collaboration regarding the transfer process between two-year and four-year institutions was also found to be beneficial in previous

literature describing the development of an associate's degree in teaching (McDonough, 2003). The current study gained insight into the community college perspective; however, it would be beneficial to gain insight into the perspectives of faculty and administration among four-year colleges regarding the articulation process, willingness to collaborate with two-year institutions, and processes for doing so.

- Investigate destination of graduates from public health and related programs among community colleges: Having data on the destination of graduates will assist in developing curricula suited for particular types of jobs and/or transfer to four-year programs, and will assist in marketing efforts for public health programs to provide students with information on potential employment settings, jobs, and anticipated salary ranges.
- Survey community colleges regarding adoption of public health programs: To gain additional insight among the community college population regarding the adoption of public health programs, such as stage of adoption and informational needs to assist in program adoption, a survey could be sent to all, or a representative sample, of community colleges. Such informational needs may further address the barriers identified in the current study as well as previous educational research, described in Chapter 2, concerning lack of faculty knowledge in the required knowledge domains; preparing faculty to teach new courses; and approaches to reschedule existing courses to fit within the new curriculum. The current study identified some informational needs as: how can departments effectively collaborate to offer the interdisciplinary public health

program; what are the costs, including facilities, staffing needs, and credentials and knowledge/skill requirements for faculty to teach in the program; and how best to partner with four-year programs. Additional insight into each of these would benefit the development of clear guidance to community colleges and address potential barriers to adoption of public health programs described by non-adopters as: equipment, space and need to hire additional faculty.

- Follow-up with community colleges that 1) offer individual public health courses and/or 2) market public health as a career option for existing programs: The catalog scan identified several community colleges that offer individual public health-related courses and community colleges that market public health as a career option for particular academic programs such as dental health, medical laboratory assisting, and human services. These offerings suggest the college is aware of public health and, therefore, potential to incorporate public health programs should be explored.

Practice Implications and Recommendations

The study findings will assist the educational and practice communities as the field of public health evolves and approaches are sought to strengthen the public health workforce while the role of undergraduate public health education is further explored. Based on the current research, recommendations are provided below for actions that can be taken by community colleges, associations addressing public health education, and the public health practice community, to assist in meeting the Healthy People 2020 objective to increase the proportion of community colleges offering public health degree and/or certificate programs. The public health educational and practice communities should

capitalize on the synergy between the public health focus on populations and the community college focus on communities. As the field of public health field sets out to develop a workforce reflective of the diverse population of which it serves, the diversity of the community college population is an apt place to introduce the field of public health and attract to the public health workforce. Overall, efforts must continue to raise awareness of the field of public health, through providing concrete examples of opportunities presented by an education in public health. Collaboration between two-year and four-year institutions must take place to ensure a seamless transition between academic programs. Collaboration must also take place between the public health academic and practice communities to identify specific public health careers that either currently have, or are anticipated to have, job availability, identify the knowledge and skills necessary for these positions, provide salary ranges, and disseminate this information to community colleges. Future strategies aimed at integrating public health curricula in community colleges should be based on the fundamental aspects of ensuring entry-level jobs are available for graduates and there is articulation between two-year and four-year colleges, and beyond. Potential for bringing together representatives from two-year, four-year and graduate schools and programs and the practice community lies in a newly created group that sets out to address the continuum of public health education and its connection to the public health workforce. Established in November 2011, the ASPH Public Health Education Continuum Taskforce, comprised of representatives from all levels of higher education, including community colleges, and the public health practice community, will be exploring approaches to ensuring a public health education continuum to facilitate development of seamless pathways between two-year, four-year,

and graduate and professional public health curriculum while addressing the needs of the public health workforce. This taskforce has potential to serve an integral role in synthesizing and acting on many of the recommendations put forth below.

Community Colleges

Development of public health programs

- Learn from others by seeking information on undergraduate public health curriculum available through such organizations as AAC&U, ASPH and APTR.
- Take advantage of networking opportunities available through such organizations as APHA, the APHA affiliates and League for Innovation in the Community College.
- Invite representatives from local public health organizations to serve on advisory committees.
- Identify a “champion” within the college interested in the success of the program that will take the lead in generating interest for the program and move the program through the development, implementation and maintenance phases.
- Seek support from college administration to facilitate the development and implementation process.
- Test out a public health course through the continuing education offerings, or through an individual public health course.
- In order to avoid lack of duplication with existing programs, tailor the curriculum to address the unique needs among the local population.
- When making the case for public health programs within the college, indicate it is a low-cost option requiring little, if any, specialized equipment and existing

courses can potentially be packaged into a program with only a few additional new courses needed. Adjunct faculty members can be utilized to first launch the program, and, as the program grows, full-time faculty members can be hired. Particularly for those colleges near a graduate school or program of public health, recruit recent graduates and/or doctoral students to teach courses in the community college's public health program.

Implementation of public health programs

- Develop articulation agreements with four-year institutions to ease transferability of coursework.
- Work with other departments within the college, such as biology, social sciences, and allied health programs, to cross-list courses and share faculty.
- Collaborate with public health employers in the region to offer internships and hire graduates, serve as lecturers in courses, and market the public health program to their current employees.
- To assist marketing of the public health program, consider:
 - Opening up the core public health courses to all students, with no pre-requisite courses
 - Add the topic of public health in health careers exploration courses, especially considering many students enter community colleges without knowing what career they wish to pursue and, among adopter colleges, students did not seek out the college because of its offering of public health, but, instead, found it when they were already on campus

- Provide public health-related experiential learning opportunities to all students (internships, volunteering, attendance at public health meetings and conferences)
- Ensure admissions staff and academic and career advisors are aware of the public health program and have information to provide to prospective students. Include the public health program in college-wide marketing, such as those described by interviewees including flyers, websites, mass mailings, press releases, social networking and on-campus events.
- When targeting prospective students, indicate that they can keep their current jobs while pursuing a public health program since there are no clinicals associated with the degree. In addition, when marketing the public health program, emphasize that public health is a field that allows an individual to make a difference in their communities by addressing the health needs of individuals and populations.
- Seek out public health-related scholarship opportunities such as that described in the 2011-2012 East Arkansas Community College course catalog indicating that the Arkansas Public Health Association offers a \$500 scholarship to an individual that demonstrates the desire to enter a public health field.

Public Health Education Community

Making the case for public health

- Continue efforts at raising awareness of the roles and responsibilities of public health among the general population, specifically targeting younger people, such

as has been done with the ASPH “What is Public Health” website, “This is Public Health” campaign” and the new “I am Public Health” campaign. This will assist in addressing the lack of awareness of the field of public health described among interviewees in community colleges. In turn, it will assist in addressing the aging public health workforce, as described in Chapter 2, and the concern raised by ASTHO that it is difficult to recruit younger people in state health agencies due to a perceived lack of understanding of the importance of public health careers.

- When generating interest among community colleges, tap into the desire of community colleges to be innovative by emphasizing public health associate programs are a hot new area, taking care that it is not viewed as a passing fad.
- Develop marketing materials such as fact sheets and descriptions that can be used by colleges on such topics as “What can I do with an Associate’s degree in Public Health?” describing potential educational and career paths.
- Market public health as one of many options in health-related fields.

Collaboration

- Collaborate with the public health practice community to identify specific public health careers that either currently have, or are anticipated to have, job availability, identify the knowledge and skills necessary for these careers, provide salary ranges, and disseminate this information to community colleges.
- Identify four-year programs in which students with associate public health degrees can transfer into and encourage articulation of public health curriculum between community colleges and four-year institutions.

- Target public four-year institutions to encourage collaboration with community colleges since state funding sometimes limits articulation between public institutions within the state and tuition cost is typically lower in public, versus private, colleges making them more attractive to a community college population. Considering 66 percent of the 137 four-year institutions offering public health programs are public and approximately 76 percent of graduate schools of public health are public, this would be a reasonable place to focus efforts (Hovland, et. al., 2009 and ASPH Annual Report, 2010.)

Resources

- Organize conferences, workshops and webinars, and prepare electronic resources to disseminate information to assist faculty teaching, or interested in teaching, public health-related courses, providing an opportunity for faculty to learn from one another and offer tips on appropriate instructional methods and available curricular materials.
- Identify and cultivate potential champions in community colleges – invite these individuals to conferences and workshops related to undergraduate public health, such as the ASPH Summit on Undergraduate Public Health Education that takes place prior to the annual APHA meeting and exposition.
- Explore state-specific regulations pertaining to general education requirements to assist community colleges in offering core public health courses as part of general education.
- Provide suggestions to community colleges on where to house the public health programs within the college.

Public Health Practice Community

- Identify current and future public health workforce needs for specific job titles in specific geographic regions (state, county, city/town). Indicate skills needed for these positions, salary ranges, and educational requirements (High school diploma, Associate's degree, Bachelor's degree, Graduate degree). Partner with public health education associations to disseminate this information to schools and colleges.
- Emphasize the focus on the community exhibited by state and local health departments, as this will resonate with community colleges considering they, too, focus on addressing needs of the community.
- To address shortage of public health laboratory workers, consider working with community colleges to adapt existing programs such as: medical laboratory assistant programs, health unit coordinator, and patient care technician.
- Work with continuing education/workforce development offices, institutional research, and/or faculty conducting needs assessments and environmental scans to ensure public health is on the radar.
- Reach out to community colleges as there are multiple points of intersection between community colleges and employers:

As colleges are in the persuasion stage, employers can assist by:

- providing information on job availability and training needs of the workforce
- participating in community college advisory committees to provide input regarding curriculum to tailor coursework to specific needs of employers;

conversely, public health organizations should also invite community college representatives to serve on their advisory committees

As colleges move into the implementation stage, employers can assist by:

- serving as internship placement sites
- teaching and/or serving as guest speakers in classes
- providing facilities and equipment
- encouraging employees to enroll in coursework
- recruit graduates as employees

STRENGTHS AND LIMITATIONS

As one of the few studies known to explore curricular innovation adoption among community colleges, and the only known study to explore the adoption of public health degrees and certificates in community colleges, this research contributes to building the body of knowledge regarding educational research and the field of public health education. Utilizing primary data collection, the methods and instruments were selected and adapted for the distinct purpose of addressing the research questions and study aims, compared to a reliance on secondary data that may have been collected for purposes other than the research. The study also provided an opportunity to demonstrate how the Diffusion of Innovations theory applied to the adoption of academic programs within community colleges, contributing to the applicability of the theory across different topics and settings. Utilizing mixed methods, the study provided quantitative data documenting an estimated proportion of community colleges offering public health degree/certificate programs and a rate of adoption of such programs as well as qualitative data providing rich, contextual information regarding why and how these programs are adopted.

The strengths and limitations of the catalog scan and case study are described in detail in Chapter 3 and summarized here. Key strengths of the catalog scan are: consistency with the approach used to collect similar data from four-year institutions; same tool used to collect baseline data for two-year institutions, allowing for paired data analysis and, therefore, increased statistical power compared to an unpaired design; ability to identify programs meeting inclusion criteria for “public health and related” programs beyond programs with titles of “public health”; unobtrusive; provides “real-time” data; is inexpensive; and requires minimal supplies and equipment. Another strength of the catalog scan is that it provides a sampling frame that can be applied for future research to collect similar data on other fields of study. The catalog scan approach enhanced precision of the proportion of community colleges offering public health programs, compared to reliance on other data available, such as that from the National Center for Education Statistics (NCES) data center, in which approximately seven percent of colleges identified from NCES data as offering public health were found to actually offer such a program. The catalog scan also has its limitations which include: lack of uniformity among college course catalogs; accuracy of data is dependent on information provided and updated by the college; and researcher bias due to the interpretation required to determine whether a program meets the “public health and related” inclusion criteria, which was minimized by having a second researcher perform a review of the collected data to determine program’s fit with the inclusion criteria.

Key strengths of the case study include: provides a rich and holistic account of the phenomenon of interest; the multiple case study design leads to more powerful analytic conclusions compared to a single case study design; and using a combination of data

collection tools (interviews and documents) as well as interviewing multiple contacts within each case enhances credibility. In addition, matching adopter and non-adopter cases enhanced precision of the description of the phenomenon of interest. The key limitations of the case study include: lack of generalizability; potential for researcher bias, social desirability bias and recall bias; and the number and types of documents varied across the cases. In addition, conducting the interviews via telephone may have prohibited interviewees from being as forthcoming as they would have been in an in-person interview and body language was not able to be observed which may have provided additional insight. An additional limitation to the study was that, due to employee turnover, it was not always possible to interview contacts directly responsible for adoption of public health curricula within each adopter case. No attempts were made to follow-up with these individuals. An overall limitation of the study was that it was focused on the governmental public health workforce and did not specifically include public health workforce outside of local, state and federal government; however, many of the findings and recommendations would be applicable to the broader public health workforce. An overall limitation was the small pool of adopters to select cases from. This limited the ability to include the entire range of characteristics that would have been desired such as offering of a public health certificate program and collaboration with colleges that offer four-year programs in public health. However, diversity across the cases was achieved through such characteristics as length of time public health program has been in existence; curriculum; geographic location; proximity to graduate school or program of public health; and institutional size based on student enrollment.

SUMMARY

The present study allowed for the collection and interpretation of quantitative and qualitative data valuable to assist efforts aimed at addressing the Healthy People 2020 objective to increase the proportion of community colleges offering public health degrees and/or certificates. Results of the study are particularly relevant at a time when undergraduate public health education is gaining attention as a potential strategy to address shortages experienced within the governmental public health workforce. Findings suggest community colleges, which enroll close to half of all undergraduates, would consider the adoption of public health programs if it can be demonstrated there is a community need for such programs, jobs are available for graduates and there are applicable four-year programs in which graduates can transfer into. Collaboration among community colleges, four-year institutions and the public health practice community is necessary to facilitate implementation of public health curricula in community colleges and can be coordinated through organizations and associations addressing public health education, such as through the newly developed ASPH Public Health Education Continuum Taskforce. Development and dissemination of information describing specific public health workforce needs and curricular guidance coinciding with those needs will assist community colleges in moving through the stages of the innovation-decision process. On a broad scale, efforts should be expanded to raise awareness of the functions of public health and the field's associated career opportunities. The current study provides a foundation for future research and practice that sets out to prepare a workforce with the knowledge and skills necessary to protect the population's health.

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APPENDIX A: SAMPLE DATA ITEMS PER DOMAIN

Domain	Operational Definition	Sample Questions/Data Items	Measurement Tool		
			Catalog Scan	Case Studies	
				Documents	Interviews
Adoption behavior	Change in proportion of community colleges offering public health degrees/certificates.	Rate of degree/certificate adoption between academic years 2009-2010 and 2011-2012	X		
Perceived attributes	Perceived characteristics of public health degrees/certificates including: relative advantage, compatibility, complexity, trialability, and observability.	<ul style="list-style-type: none"> • How does the public health program fit within your college's mission and goals? (Compatibility) • Description of public health program provided in marketing materials. 		X	X
Facilitators	Mechanisms contributing to public health degree/certificate implementation in community colleges.	<ul style="list-style-type: none"> • Please describe the elements that need to be in place for a new degree or certificate program to be adopted in your college. 			X
Barriers	Mechanisms that hinder implementation of public health degrees/certificates in community colleges.	<ul style="list-style-type: none"> • What challenges did your college encounter when implementing the program? 			X
Adoptability	Perceived adoption potential for prototype public health degrees/certificates.	Please describe the reasons why your college may or may not adopt each prototype.			X

APPENDIX B: IDENTIFICATION OF STRATUM 1 INSTITUTIONS 2009-2010 CATALOG SCAN

- 1) Searched websites of each institution (155 institutions) identified through the following:
 - a. Generated lists of colleges offering Associate degrees and Certificates below Baccalaureate level, from the National Center for Education Statistics (NCES) data center (<http://nces.ed.gov/ipeds/>).

The following Classification of Instructional Program (CIP) codes were searched:

51.22 Public Health

51.2201 Public Health, General (MPH, DPH)

51.2202 Environmental Health

51.2205 Health/Medical Physics

51.2206 Occupational Health and Industrial Hygiene

51.2207 Public Health Education and Promotion

51.2208 Community Health and Preventive Medicine

51.2209 Maternal and Child Health

51.2210 International Public Health/International Health

51.2211 Health Services Administration

51.2299 Public Health, Other

26.1102 Biostatistics

26.1309 Epidemiology

30.1501 Science, Technology, and Society

44.0201 Community Organization and Advocacy

51.0701 Health Care Administration/Management

51.1504 Community Health Services/Liaison Counseling

51.1618 Occupational and Environmental Health Nursing

51.2706 Medical Informatics

- b. Searched www.universities.com for colleges identified as offering Associate degrees in the following areas:
 - Public Health
 - Environmental Health
 - Community health and preventive medicine
 - Community health services and liaison counseling
- c. Followed-up on leads received from personal contact:
 - Searched list from a community college faculty member who presented on this topic at an APHA annual meeting.
 - Leads received from posting a request on the Educated Citizen and Public Health listserv, maintained by the Association of American Colleges and Universities (AAC&U).

The decision was made to utilize the American Association of Community College's definition for *community college*; therefore, 41 institutions were removed and 114 institutions were included in Stratum 1.

APPENDIX C: INTERVIEW GUIDES

Community colleges offering a public health degree and/or certificate (Adopters)

Interviewees:
Public Health Program Director
Health Sciences Division Chair/Dean
Vice President of Academic Affairs

Perceived Attributes (Study Aim 2)

- 1) What was the impetus for the institution's decision to initiate the public health program?
- 2) Did the college begin the program from scratch, or were there existing elements that were adapted or built upon to offer the degree program?
- 3) What would you say are the key characteristics of the public health program that contributed to its adoption?
 - a) How do these compare to other academic programs within the college?
- 4) How does the public health program fit within your college's mission and goals?
- 5) What are the overall goals of the public health program?
 - a) Is it geared for a particular target audience?
- 6) How is the program delivered? Face-to-face, distance education, a combination? Daytime, evening, weekend?

Implementation Processes (Study Aim 3)

- 7) What were the key steps involved in the approval process for the public health program?
 - a) What helped or hindered this process?
- 8) In regard to the teaching of the courses:
 - a) Are the courses taught by full-time or adjunct faculty?
 - b) Were additional faculty hired specifically for this degree program?
 - c) Was any special preparation provided to faculty teaching courses in the public health program?
 - i. What kind of preparation? [Probe: Was the content interdisciplinary?]
 - ii. How does this compare to faculty preparation of other new programs?

- 9) Describe the collaboration that takes place across departments, if any, within the college to offer this degree program.
- 10) Describe the collaboration, if any, that takes place outside the college as part of this degree program.
 - a) Is there any collaboration with public health agencies? Four-year institutions? Graduate programs?
- 11) What elements do you feel your institution has done particularly well in the development, implementation and maintenance of the program?
- 12) What were the major challenges your institution encountered during the development, implementation and maintenance of the program?

Prototype Refinement (Study Aim 4)

- 13) What are the future plans for the program?
[Probe: Are there plans to expand or change the program in terms of content, mission etc?]
 - a) Describe any information and resources which you would be interested in to assist with maintenance/enhancement of the program.
 - b) Regarding faculty preparation, what types of information would faculty be most interested in to prepare them for participation in a new academic program such as public health?
 - i. In what format should the information be provided? (Probes: Face-to-face meetings/conferences; materials provided electronically and/or in hard copy?)
- 14) Have other community colleges contacted you about your public health program?
Have you contacted other community college about their public health program?

If yes:
-What types of information were the colleges seeking from you and you from them?
- 15) Please consider each of the prototype public health associate degree and certificate curricula that I provided. Describe which elements are favorable and which ones are not.

Context

The next few questions are intended to provide a contextual snapshot of your institution, and are therefore, “big picture” types of questions.

- 16) How flexible does your college tend to be? [Probe: Does the college easily adapt to change and respond to external influences?]
- 17) What are the current key priority areas of the college’s administration?

18) To what extent do local and state politics play a role in the college's decision-making when addressing these key priorities?

19) To what extent does the status of the local and state economy affect the college's ability to address these key priorities?

Supplemental question (If time permits):

20) Healthy People 2020 has a new objective to increase the proportion of community colleges offering a public health degree and/or certificate program. What measures should be taken to successfully address this objective?

21) This concludes the set of questions that I had. But, are there any additional comments that you would like to share?

Thank you very much for your time and valuable insight. I will be happy to share with you a summary of findings and applicable resources at the conclusion of my dissertation project.

Please feel free to contact me if you have any questions or additional comments.

**Interviewee:
Academic Advisor/Counselor**

Perceived Attributes (Study Aim 2)

- 1) What types of information do students typically seek regarding academic planning?
- 2) What types of information do students typically seek regarding career planning?
- 3) Please describe how the public health program fits within your college's mission and goals.
- 4) What are the key characteristics of the public health degree/certificate program which might make it attractive to students?
 - a) How do these characteristics compare to other degree offerings?
- 5) What characteristics of the public health degree/certificate program might deter students from enrolling in the program?
 - a) How do these characteristics compare to other degree offerings?

Implementation Processes (Study Aim 3)

- 6) To what extent is your office involved in the development and implementation of new academic programs?
- 7) What is the role of your office as it relates to the public health program?
- 8) Describe the relationship/collaboration between your office and the college's academic departments. Other colleges? Potential employers?

Prototype Refinement (Study Aim 4)

- 9) Please review the prototype public health associate degree and certificate curricula provided. Describe the reasons why your college may or may not adopt each prototype indicating which elements are favorable and which ones are not.
- 10) If you were to "sell" the utilization of community colleges to the public health community, how would you do so?

Interviewee:
Vice President of Administration and Finance

Perceived Attributes (Study Aim 2)

- 1) To what extent is your office involved in the college's decision to develop a new academic program?
- 2) What organizational and curricular factors are taken into consideration when a new academic program is being developed?
- 3) Can you think of a situation in which a proposed academic program may not be approved?

Implementation Processes (Study Aim 3)

- 4) The college offers a degree/certificate in public health. To what extent is your office involved in the operations of this program?
 - a) Based on your knowledge of the program, how does the program fit within your college's mission and goals?
- 5) Are there financial incentives and/or disincentives for faculty and/or departments to participate in and/or grow an academic program such as the public health program? [Probe: Do faculty from one department get paid the same way to teach in another department as in their own? Is inter-departmental collaboration encouraged?]
- 6) How are resources allocated to departments and/or individual programs? (Based on # students? Is there an annual review?)
- 7) Can you think of a situation in which an academic program may be cut from the college's offerings?

Prototype Refinement (Study Aim 4)

- 8) Taking a look at the draft prototype public health degree curricula that I had e-mailed, from the perspective of your office, is there anything in there that stands out to you that might assist or hinder the curricula's adoption within your institution?

Context

- 9) How flexible does your college tend to be? [Probe: Does the college easily adapt to change and/or respond to external influences?]
- 10) What are the current key priority areas of the college's administration?
- 11) To what extent do local and state politics play in the college's decision-making when addressing these key priorities?

12) To what extent does the status of the local and state economy affect the college's ability to address these key priorities?

**Interviewee:
Admissions Representative**

- 1) What types of recruitment activities does the college participate in?
- 2) Any particular marketing and recruiting performed for the public health program?
- 3) Based on your observations, what motivates a student to enroll in a community college?
- 4) What types of information do students typically seek regarding admission?
- 5) How do admissions specialists learn about, and stay current on, the curricular offerings?
- 6) Typically, do students enroll in the college knowing what area of study they would like to pursue?
- 7) Do certain degree programs tend to be more attractive to students than others? If so, what are the characteristics of those majors that you think make them more attractive?
- 8) Looking at the prototype public health curricula I sent, are there elements there that might attract or deter students from enrolling?
- 9) Are there enrollment limits either for the college, as a whole, or with particular programs? If so, how are these determined?
- 10) Does your office collaborate with the academic departments within the institution? If so, what does that collaboration entail?
- 11) Does your office collaborate with the advisement services office?
- 12) What kind of collaboration, if any, does your office have with high schools and other colleges (2-year, 4-year, and graduate institutions)?
- 13) What kind of collaboration, if any, does your office have with employers/industry?
- 14) What are the current key priority areas of the Admissions Office?

**Interviewee:
Director of Continuing Education**

Perceived Attributes (Study Aim 2)

- 1) Who is the target audience for your college's continuing education offerings?
 - a) How are the offerings marketed to this target audience?
- 2) What fields of study does your target audience typically seek?
- 3) In what format (online or in-class) does this audience seem to prefer?
- 4) Does your office offer non-credit and/or credit-bearing options?
 - a) Describe the advantages and disadvantages to each.

Implementation Processes (Study Aim 3)

- 5) To what extent does your office collaborate with the academic units of the community college? Other colleges?
- 6) Describe the collaboration, if any, the college has with public health agencies.

Prototype Refinement (Study Aim 4)

- 7) Please review the prototype public health associate degree and certificate curricula provided. Describe the reasons why your college might or might not adopt each prototype indicating which elements are favorable and which are not.

Context

- 8) How flexible does your college tend to be? [Probe: Does the college easily adapt to change and/or respond to external influences?]
- 9) What are the current key priority areas of the college's administration?
- 10) To what extent do local and state politics play in the college's decision-making when addressing these key priorities?
- 11) To what extent does the status of the local and state economy affect the college's ability to address these key priorities?

**Interviewee:
Community College Student**

Perceived Attributes (Study Aim 2)

- 1) What prompted you to pursue coursework at a community college?
- 2) What are the key issues faced by students at _____ College?
- 3) Describe the level of involvement students have in the college's decisions pertaining to the development of new courses, certificates and degree programs.
- 4) How did you learn about the public health program at _____ College?
- 5) What comes to mind when you think of "public health"?
- 6) What might attract students to pursue a degree or certificate in public health?
- 7) How could community colleges market their public health program to others?
- 8) What is the best thing about the public health program?
- 9) What suggestions would you have to improve the public health program?
- 10) Thinking of your fellow classmates, what are students' typical plans upon graduation?
- 11) What are your plans upon graduation?

Prototype Refinement (Study Aim 4)

- 12) Please review the prototype public health associate degree and certificate curricula provided. Describe the reasons why students might or might not be interested in each prototype indicating which elements are favorable and which are not.

**Community colleges not currently offering a public health degree and/or
certificate program
(Non-Adopters)**

Interviewees:

**Faculty member teaching public health-related course
Health Sciences Division Chair
Vice President of Academic Affairs**

Perceived Attributes (Study Aim 2) and Prototype Refinement (Study Aim 4)

- 1) What characteristics does a new academic program need to possess in order for it to be adopted in your college?
- 2) What facilitates and impedes the development and implementation of new academic programs in your college?
- 3) Are you aware of any community colleges which offer, or plan to offer, a public health degree or certificate?

If yes:

- How did you hear about the program(s)?
- Describe your reaction to hearing about the program(s).

- 4) Has your institution ever considered the adoption of a public health degree or certificate program?

If yes:

- Please describe the impetus for considering the adoption of the public health degree or certificate program.
- Why did your institution not adopt the program?

If no:

- Why do you think a public health degree or certificate was never considered?

- 5) Please review the prototype public health associate degree and certificate curricula provided. Describe the reasons why your college might or might not adopt each prototype indicating which elements are favorable and which are not.
- 6) What characteristics of a public health associate degree and certificate might assist in its being considered for adoption in your college?
 - a) How do these characteristics compare to those of other proposed or newly developed degree offerings?
- 7) What do you see as the potential barriers associated with adopting a public health degree or certificate in your college?

- 8) Do you think your institution would be more likely to adopt a public health certificate, or individual public health courses, prior to a full degree?
- 9) Healthy People is a collaborative initiative of the U.S. Department of Health and Human Services and other public and private organizations which develops and monitors a comprehensive set of public health objectives for the next decade. Healthy People has a new objective to increase the proportion of community colleges offering a public health degree and/or certificate program by the year 2020. What measures do you think should be taken to successfully address this objective?

Implementation Processes (Study Aim 3)

- 10) Describe the extent of collaboration the college has with other institutions of higher learning (other 2-year colleges, 4-year colleges, graduate programs)
- 11) Describe the extent of collaboration the college has with employers.
- 12) Please describe the faculty development opportunities currently provided to the college's faculty.
- 13) What types of information would faculty be most interested in to prepare them for participation in a new academic program such as public health?
 - i. In what format should the information be provided? (Probes: Face-to-face meetings/conferences; materials provided electronically and/or in hard copy?)

Context

- 14) How flexible does your college tend to be? [Probe: Does the college easily adapt to change and/or respond to external influences?]
- 15) What are the current key priority areas of the college's administration?
- 16) To what extent do local and state politics play a role in the college's decision-making when addressing these key priorities?
- 17) To what extent does the status of the local and state economy affect the college's ability to address these key priorities?

**Interviewee:
Academic Advisor/Counselor**

Perceived Attributes (Study Aim 2) and Prototype Refinement (Study Aim 4)

- 1) What types of information do students typically seek regarding academic planning?
- 2) What types of information do students typically seek regarding career planning?
- 3) Please review the prototype public health associate degree and certificate curricula provided. Describe the reasons why your college might or might not adopt each prototype indicating which elements are favorable and which are not.
- 4) Do you think a public health program would fit within your college's mission and goals?
- 5) What characteristics of a public health degree/certificate program might make it attractive to students?
 - b) How do these characteristics compare to other degree offerings?
- 6) What characteristics of a public health degree/certificate program might deter students from enrolling in the program?
 - b) How do these characteristics compare to other degree offerings?

Implementation Processes (Study Aim 3)

- 7) To what extent is your office involved in the development and implementation of new academic programs?
- 8) Describe the relationship/collaboration between your office and the college's academic departments. Other colleges? Potential employers?
- 9) If you were to "sell" the utilization of community colleges to the public health community, how would you do so?

**Interviewee:
Vice President of Administration and Finance**

Perceived Attributes (Study Aim 2)

- 1) What organizational and curricular factors are taken into consideration when a new program is being developed?
- 2) Please describe a situation in which a proposed academic program may not be approved.

Implementation Processes (Study Aim 3)

- 3) Describe the role of your office when the college establishes a new academic program.
- 4) Are there financial incentives and/or disincentives for faculty and/or departments to participate in and/or grow a new program? [Probe: Do faculty from one department get paid the same way to teach in another department as in their own? Is inter-departmental collaboration encouraged?]
- 5) Please describe the process involved in resource allocation to departments (Annual basis? # students?)
- 6) Please describe a situation in which an academic program may be cut from the college's offerings.

Context

- 7) How flexible does your college tend to be? [Probe: Does the college easily adapt to change and/or respond to external influences?]
- 8) What are the current key priority areas of the college's administration?
- 9) To what extent do local and state politics play in the college's decision-making when addressing these key priorities?
- 10) To what extent does the status of the local and state economy affect the college's ability to address these key priorities?

**Interviewee:
Admissions Representative**

- 1) What types of recruitment activities does the college participate in?
- 2) Based on your observations, what motivates a student to enroll in a community college?
- 3) What types of information do students typically seek regarding admission?
- 4) How do admissions specialists learn about, and stay current on, the curricular offerings?
- 5) Typically, do students enroll in the college knowing what area of study they would like to pursue?
- 6) Do certain degree programs tend to be more attractive to students than others? If so, what are the characteristics of those majors that you think make them more attractive?
- 7) Looking at the prototype public health curricula I sent, are there elements there that might attract or deter students from enrolling?
- 8) Are there enrollment limits either for the college, as a whole, or with particular programs? If so, how are these determined?
- 9) Does your office collaborate with the academic departments within the institution? If so, what does that collaboration entail?
- 10) Does your office collaborate with the advisement services office?
- 11) What kind of collaboration, if any, does your office have with high schools and other colleges (2-year, 4-year, and graduate institutions)?
- 12) What kind of collaboration, if any, does your office have with employers/industry?
- 13) What are the current key priority areas of the Admissions Office?

**Interviewee:
Director of Continuing Education**

Perceived Attributes (Study Aim 2)

- 1) Who is the target audience for your college's continuing education offerings?
 - a) How are the offerings marketed to this target audience?
- 2) What fields of study does your target audience typically seek?
- 3) In what format (online or in-class) does this audience seem to prefer?
- 4) Does your office offer non-credit and/or credit-bearing options?
 - b) Describe the advantages and disadvantages to each.

Implementation Processes (Study Aim 3)

- 5) To what extent does your office collaborate with the academic units of the community college? Other colleges? Employers?
- 6) Describe the collaboration, if any, the college has with public health agencies.

Prototype Refinement (Study Aim 4)

- 7) Please review the prototype public health associate degree and certificate curricula provided. Describe the reasons why your college might or might not adopt each prototype indicating which elements are favorable and which are not.

Context

- 8) How flexible does your college tend to be? [Probe: Does the college easily adapt to change and/or respond to external influences?]
- 9) What are the current key priority areas of the college's administration?
- 10) To what extent do local and state politics play in the college's decision-making when addressing these key priorities?
- 11) To what extent does the status of the local and state economy affect the college's ability to address these key priorities?

**Interviewee:
Community College Student**

Perceived Attributes (Study Aim 2)

- 1) What prompted you to pursue coursework at a community college?
- 2) What are the key issues faced by students at _____ College?
- 3) Describe the level of involvement students have in the college's decisions pertaining to the development of new courses, certificates and degree programs.
- 4) How did you learn about your program of study at _____ College?
- 5) What comes to mind when you think of "public health"?
- 6) What might attract students to pursue a degree or certificate in public health?
- 7) Thinking of your fellow classmates, what are students' typical plans upon graduation?
- 8) What are your plans upon graduation?

Prototype Refinement (Study Aim 4)

- 9) Please review the prototype public health associate degree and certificate curricula provided. Describe the reasons why students might or might not be interested in each prototype indicating which elements are favorable and which are not.

APPENDIX D: Community Colleges with Public Health Degrees and/or Certificates (2009-2010)

College	Student Enrollment	City Population Size	Distance to nearest graduate public health program within the state	Degree	Program of Study	Program Goals (per program website)	Year program launched	Certificate program
A	1,935	1,074	385 miles	A.S.	Public Health	Workforce or Transfer	2004	Yes
B	3,260	Campus 1: 30,988 Campus 2: 14,500 Campus 3: 8,889	Campus 1: 849 miles Campus 2: 1,120 miles Campus 3: 590 miles	A.A.S.	Health Sciences	Workforce or Transfer	Unknown	Yes
C	4,003	10,977	169 miles	A.A.	Health Services Management and Community Development	Transfer	Unknown	No
D	4,820	12,513	0 miles	A.A.	Pre-Health Promotion and Education	Transfer	Unknown	No
E	6,187	1,391,903	3 miles	A.S.	Community Health	Workforce	Unknown	Yes

APPENDIX D continued: Community Colleges with Public Health Degrees and/or Certificates (2009-2010)

College	Student Enrollment	City Population Size	Distance to nearest graduate public health program within the state	Degree	Program of Study	Program Goals (per program website)	Year program launched	Certificate program
F	6,512	48,770	15 miles	A.S.	Health Promotion and Education	Transfer	Unknown	No
G	7,945	18,291	52 miles	A.S.	Health Education	Transfer	Unknown	No
H	8,778	97,200	20 miles	A.A.	Public Health	Transfer	2009	No
I	9,021	92,919	1 mile	A.A.S.	Public Health	Transfer	1998	No
J	9,192	Campus 1: 62,409 Campus 2: 7,734	Campus 1: 12 miles Campus 2: 41 miles	A.S.	Community Health	Transfer	2008 (approx.)	No
K	18,204	2,508,820	5 miles	A.S.	Community Health	Transfer	1985	No

Note: Highlighting indicates colleges recruited into dissertation research study.

APPENDIX E: Sample Recruitment E-mail

Dear XX:

I am a doctoral candidate at The George Washington University conducting my dissertation research which sets out to explore the various influences on academic programming within community colleges, with a particular focus on public health-related curricula. XX College has been sampled for inclusion in the study and I am in the process of conducting one-on-one telephone interviews with a variety of contacts within the college. Based on your role as XX in the college, I would like to invite your participation in a brief (30-45 minute) telephone interview with me. Questions would address things such as XX.

Attached is an informed consent sheet which provides information on the research project. I am currently available on the following dates/times: XX. Please let me know if you are willing to participate in a brief telephone interview with me, and which dates/times will work with your schedule.

Your assistance would be much appreciated. If you are unable to participate but can recommend another contact within the college knowledgeable about XX within the college, please feel free to pass along this invitation to them, or send to me their contact information and I will follow-up with them directly. Looking forward to hearing from you.

Regards,
Brenda Kirkwood

--

Brenda Kirkwood, MPH, DrPH(c)
The George Washington University
School of Public Health and Health Services

APPENDIX F: Informed Consent Information Sheet

An Exploration of the Adoption of Public Health Degrees and Certificates in Community Colleges

Study Participant Consent Form

GW IRB Reference Number: 031103

Principal Investigator: Richard K. Riegelman, MD, PhD
Telephone number: XXX-XXX-XXXX

Principal Contact: Brenda Kirkwood, MPH
Telephone number: XXX-XXX-XXXX

INTRODUCTION

You are invited to participate in this research study being conducted under the direction of Dr. Richard Riegelman and the School of Public Health and Health Services of The George Washington University. You are being asked if you want to take part in this study because of your affiliation with a community college. Participating in this study is completely voluntary and even if you decide to participate, but later change your mind, you can stop at any time. The status of your academic standing and/or employment will not, in any way, be affected should you choose not to participate or if you decide to withdraw from the study at any time. You must be at least 18 years old to take part in this study.

PURPOSE

This study is being conducted to explore why and how new academic degree and certificate programs are adopted in community colleges, with a particular focus on the adoption of public health degrees and certificates. Research findings will assist in identifying and describing key organizational and curricular elements and strategies necessary in developing and implementing public health associate degree and certificate programs. The resulting information will lead to the development and dissemination of resource materials and information to assist colleges in developing and sustaining public health academic programs to contribute to strengthening the public health workforce.

PROCEDURES

If you decide to participate in this study, you will be asked to take part in an interview conducted over the telephone and led by Ms. Brenda Kirkwood, a doctoral candidate at the School of Public Health and Health Services of The George Washington University. The interview is expected to last approximately 45 minutes and will include questions pertaining to the development and implementation of new academic degree and certificate programs within your community college and your perceptions of public health associate degrees and certificates. Over the course of approximately six months following the interview, you will be contacted approximately 0-3 times by Ms. Kirkwood, via telephone, to seek clarification and/or additional information.

RISKS & CONFIDENTIALITY

Every effort will be made to keep your responses confidential. No individual names will be stored with the research data. The records of this study will be kept private. In any published articles or presentations, information will be summarized so that no individual responses can be linked to you. No individual responses will be shared with others either within, or outside, your organization.

BENEFITS

Taking part in this research will not directly benefit you. However, it is anticipated that the information collected as part of the study will contribute to furthering the understanding of why and how public health degrees and certificates are adopted in community colleges, and assist in guiding the development of resource materials and the organization of conferences and meetings regarding curricular and faculty development strategies intended to benefit the broader academic community. As a participant in the study, a summary of research findings and applicable resource materials will be provided to you to assist your college in the adoption and/or sustainment of public health degree and/or certificate programs.

QUESTIONS

If you have any questions about the study, please call the study's principal contact, Ms. Brenda Kirkwood at XXX-XXX-XXXX or the Principal Investigator of the study, Dr. Richard Riegelman at XXX-XXX-XXXX. If you have questions about your rights as a participant in human research, please call The George Washington University Office of Human Research at XXX-XXX-XXXX.

APPENDIX G: Prototype Public Health Associate Degrees/Certificate Programs

Supplemental Information for Telephone Interview with Brenda Kirkwood, Doctoral Candidate, The George Washington University

Prototype Public Health Associate Degrees/Certificate Programs

Five prototype public health programs designed for implementation in community colleges have recently been drafted as a result of a review of the identified overall public health workforce needs, community college structure, and consultation with the U.S. Department of Health and Human Services Public Health Systems Working Group, as well as other national public health organizations. Each prototype consists of a set of uniform core public health courses; an experiential learning component; and a set of specialized courses.

CORE PUBLIC HEALTH COURSES (9 semester hours)

Each of the prototype curricula include the core introductory “101” curriculum recommended as part of general education (9 semester hours):

Public Health 101: An introductory overview course designed to fulfill a social science requirement, perhaps integrated into the humanities, advancing both intellectual and practical skills and embracing civic learning and application.

Epidemiology 101: An introductory course illustrating the scientific method and designed to fulfill a science requirement, including the option for an “epidemiology laboratory,” integrating such skills as quantitative thinking, inquiry and analysis, and teamwork.

Global Health 101: An introductory course focused on applying public health principles in developing as well as developed countries, designed to fulfill a global studies integrative requirement, perhaps incorporating service and research.

EXPERIENTIAL LEARNING (3 semester hours)

Each prototype curricula include an experiential learning component including a community or field work based experience for students to gain hands-on learning.

SPECIALIZED COURSEWORK (18* semester hours)

FIVE PROTOTYPE OPTIONS:

1. ***Environmental Health Specialty courses-*** 18 semester hours designed to fulfill the educational requirements for the Environmental Health Technician certification providing experiential career oriented learning opportunities.
 - Principles of Environmental and Occupational Health (3 semester hours)

- Courses cover the following content areas of the Environmental Health Technician Certification examination - (15 semester hours)
 - Food
 - Vector and Pest Control
 - Occupational Health/Hazardous Exposure
 - Water
 - Housing/Shelter-Environment
 - Toxicology
 - Air Pollution
 - Solid Waste
 - Waste Water

2. Public Health Preparedness Specialty courses- 18 semester hours designed to prepare students for an all-hazards approach to public health preparedness. Graduates will acquire a range of skills necessary for prevention, detection and response to outbreaks, emergencies and disasters as well as skills and knowledge enabling them to obtain entry level positions as generalists in public health.

- Overview of Public Health Preparedness (3 semester hours)
- Implementing and Managing Public Health Preparedness (3 semester hours)
- Health Information Systems (3 semester hours)
- Health Communications (3 semester hours)
- Environmental Health (3 semester hours)
- Applied Epidemiology (3 semester hours)

3. Public Health Informatics Specialty courses- 18 semester hours designed to prepare graduates for careers in public health informatics that enable them to work as part of a team to collect and manage epidemiology data including surveillance activities, and outbreak investigations. Graduates will acquire a range of skills necessary for developing and implementing research studies, obtaining and managing high quality data, and participating in field investigations including acute outbreaks.

- Principles of Biostatistics (3 semester hours)
- Introduction to Computerized Data Systems (3 semester hours)
- Applications of Computerized Data Systems (3 semester hours)
- Introduction to Study Design (3 semester hours)
- Data Collection and Data Quality (3 semester hours)
- Surveillance and Public Health Data Systems (3 semester hours)

4. Pre-Health Educator Concentration courses – 6 semester hours

The Pre-Health Educator curriculum is designed to prepare community college graduates to enter health education programs in bachelor’s degree granting institutions. The curriculum is designed as a concentration but may be included as part of an associate

degree or certificate in Community Health or other public health related discipline. It includes 6 semester hours of coursework that covers fundamental principles and applications of health behavior and health communications:

- Health behavior (3 semester hours)
- Health communications (3 semester hours)

5. *Public Health Generalist courses* – 18 semester hours

The Public Health Generalist option is designed for students wishing to gain a broad understanding of public health, and intend to transfer from two-year to four-year institutions.

Students may select courses (18 semester hours) from at least two broad areas of public health such as:

- Social and behavioral sciences
- Health communications
- Health services management
- Health policy
- Biostatistics
- Informatics
- Environmental health

*Please note the Pre-Health Educator prototype is presented here as a concentration, and, therefore, is listed as 6 semester hours rather than a full 18 semester hours.

**APPENDIX H: Public Health Courses in Community College Sample
Academic Year 2011-2012
N=414**

Topic Area	Number of colleges (%)	Course Titles
General Public Health	N=25 (6.0%)	<ul style="list-style-type: none"> - Community and Public Healthcare - Foundations of Public Health, Epidemiology and Biostatistics - Fundamentals of Public Health Safety - Health Education-Concepts in Public Health - Health Problems and Prevention - Infectious Disease: An Application to Everyday Life - Infectious Diseases: Past, Present and Future - Introduction to Public and Community Health (3) - Introduction to Public Health (7) - Introduction to Public Health and Health Care Policy - Public Health (3) - Public Health and Epidemiology - Public Health for American Indians - Public Health in Emergency Management - Public Health Science
Community Health	N=96 (23.2%)	<ul style="list-style-type: none"> - Community/Family Health Issues - Community Health (21) - Community Health Advising - Community Health and Development Field Experience - Community Health and Wellness - Community Health Issues (3) - Community Health Perspectives - Community Health Practicum - Community Health Problems (2) - Concepts of Personal and Community Health (5) - Essentials of Community and Personal Health - Introduction to Community Health (4) - Introduction to Community Health Education - Issues in Personal, Family and Community Health - Overview of Health and Community Services - Personal and Community Health (45) - Personal and Community Health Problems - Personal, Community and Tribal Health, and School Health - Personal Health and Community Hygiene - Personal Hygiene and Community Health -Personal and Community Health Problems - Principles of Personal and Community Health -Overview of Health and Community Services

APPENDIX H *continued*: Public Health Courses in Community College Sample

Topic Area	Number of colleges (%)	Course Titles
Epidemiology	N=12 (2.9%)	<ul style="list-style-type: none"> - AIDS and Sexually Transmitted Disease - Bioterrorism and Public Health Emergencies - Cancer Statistics and Epidemiology - Disease Processes - Epidemiology (2) - Introduction to Epidemiology (2) - Introduction to Epidemiology and Health Data - Principles of Epidemiology - Public Health and Epidemiology - The New Plagues: New and Ancient Infectious Diseases affecting World Health - The Role of Data in Injury Prevention
Global health	N=13 (3.1%)	<ul style="list-style-type: none"> - Biology of Global Health - Critical Perspectives in Global Health - Foundations of Global Health - Global Environmental Health - Global Health - Global Health Issues (2) - Global Perspectives in Health - Global Women's Issues - Introduction to Global Health (3) - Special Topics in Global Health
Biostatistics	N=58 (14.0%)	<ul style="list-style-type: none"> - Biomedical Statistics - GIS in Health - Health Calculations - Health Care Statistics (24) - Health Data and Statistics (2) - Health Data Content and Structure - Health Information Statistics and Analysis - Health Information Statistics and Data Display - Health Information Statistics and Quality Improvement - Health Record Statistics and Data Presentation - Health Statistics (8) - Health Statistics and Research - Healthcare Data Analysis - Healthcare Statistical Applications and Research - Healthcare Statistics and Reporting - Healthcare Statistics and Research (3) - Healthcare Statistics, Quality Improvement - HIT Statistical Analysis - Hospital and Health Statistics

**APPENDIX H *continued*: Public Health Courses in Community College
Sample**

Topic Area	Number of colleges (%)	Course Titles
Biostatistics <i>continued</i>		<ul style="list-style-type: none"> - Introduction to Biostatistics - Introduction to Health Statistics (3) - Introduction to Statistics for the Study of Behavior - Quality Improvement and Healthcare Statistics - Quality Management and Healthcare Statistics - Social Statistics with SPSS - Statistical Analysis of Health Data - Statistics for Health Information - Statistics for Health Sciences
Environmental health	N=162 (39.1%)	<ul style="list-style-type: none"> - Biological and Bacteriological Water Quality Analysis - Community Health/Environmental Problems - Construction Safety and Health - Contemporary Issues in Environmental Health - Emergency and Disaster Preparation - Emergency Planning and Response - Environmental Biology - Environmental Ethics - Environmental GIS - Environmental Hazards to Health - Environmental Health (8) - Environmental Health and Justice - Environmental Health and Safety (11) - Environmental Health and Safety Internship - Environmental Health and Safety Internship - Environmental Health Practicum - Environmental Health Science (2) - Environmental Health, Disasters and Tribes - Environmental Issues in Health and Wellness - Environmental Principles in Public Health - Environmental Protection and Pollution Prevention - Environmental Risk Assessment (2) - Environmental Science (2) - Environmental Toxicology (3) - Fundamentals of Occupational Health and Safety - Fundamentals of Safety and Health - Global Environmental Health - Hazardous Materials (8) - Hazardous Materials Chemistry - Hazardous Materials – Health and Safety (2) - Hazardous Materials and Industrial Safety - Hazardous Materials for the Emergency Responder

**APPENDIX H *continued*: Public Health Courses in Community College
Sample**

Topic Area	Number of colleges (%)	Course Titles
Environmental health <i>continued</i>		<ul style="list-style-type: none"> - Hazardous Materials Training - Hazardous Waste Operations & Emergency Response (2) - Hazardous Waste Operations (3) - Hazardous Waste Operations and Emergency Response - Hazardous Waste Response and Emergency Management - Hazards, Disasters and the Environment - Health and Environment - Health and Hygiene for Stationary Engineers - Health and Safety Training for Hazardous Waste Operations - Health Effects of Environmental Hazard Materials - Health, Safety and Environment - Industrial Health and Safety (2) - Industrial Hygiene (2) - Industrial Safety and Hygiene - Industrial Hygiene Applications - Industrial Hygiene Practices - Industrial Safety (6) - Industrial Safety and Health (2) - Industrial Safety Procedures (3) - Infection Control and Hazard Communication - Injury Prevention and Risk Management - Intermediate Sanitary Chemistry and Microbiology - Integrated Pest Management - Introduction to Emergency Management Systems - Introduction to Environmental Health (5) - Introduction to Environmental Management - Introduction to Environmental Safety and Health (2) - Introduction to Environmental Studies - Introduction to Environmental Science, Safety and Health - Introduction to Pollution Prevention, Hazardous Waste and Environmental Justice - Introduction to Occupational Safety and Health - Introduction to Occupational Safety, Health and Environmental Technology - Introduction to Occupational Safety, Health and Environmental Awareness - Introduction to Sustainable Build Environments

**APPENDIX H *continued*: Public Health Courses in Community College
Sample**

Topic Area	Number of colleges (%)	Course Titles
Environmental health <i>continued</i>		<ul style="list-style-type: none"> - Introduction to Safety and Health - Occupational Health and Industrial Hygiene - Occupational Health and Safety (5) - Occupational Health and Safety for the Fire Service - Occupational Safety - Occupational Safety & Health for Emergency Services - Occupational Health and Safety through Hazardous Waste Management - Occupational Safety and Health (9) - Occupational Safety and Health Technology - OSHA HazWoper Health and Safety - OSHA Safety - OSHA Safety and Health Standards - OSHA, Health and Environmental Safety (2) - Principles of Environmental Health - Principles of Environmental Toxicology - Principles of Industrial Hygiene - Principles of Industrial Safety - Public Health and Disasters - Risk Assessment - Safety and Health Program Management - Safety and Health Technology - Safety in Health Occupations - Safety in Workplace - Safety regulations and Hazwoper - Safety, Health and Environment (5) - Safety, Health and Environmental Studies - Sanitation - Sanitation and Hygiene (1) - Sanitation and Safety (2) - Sanitation, Health and Safety in the Hospitality Industry - Solid and Hazardous Waste Management - Special Topics in Environmental Health - The Environment and Human Health - The Urban Environment - Wastewater Operations IV (Public Health, Environmental, Management) - Wastewater Treatment Techniques - Workplace Health and Safety - Workplace Safety

**APPENDIX H *continued*: Public Health Courses in Community College
Sample**

Topic Area	Number of colleges (%)	Course Titles
Health policy and management	N=61 (14.7%)	<ul style="list-style-type: none"> - American Indian Health Care Systems - Community-Based Health Policy Advocacy - Current Issues in Health Care Administration - Essentials of Medical Law and Ethics for Health Professionals - Ethics and Legalities in Healthcare - Fundamentals of Healthcare Organization and Management - Health Care Delivery - Health Care Delivery Systems (10) - Health Care Delivery Systems and Trends - Health Care Finance - Health Care in the United States - Health Care Law (3) - Health Care Law and Ethics (2) - Health Care Management (4) - Healthcare Systems - Health Care Reform: Cost and Efficacy - Health Law and Ethics (3) - Health Services and Policy - Introduction to Health Care and Public Health in the U.S. - Introduction to Healthcare Management - Introduction to Healthcare Delivery Systems - Introduction to Health Care Policy - Introduction to Health Care Systems (3) - Introduction to Health Services - Introduction to Tribal Health Services - Law and Ethics for Health Occupations - Law and Ethics for Health Professionals (3) - Law and Ethics for Health Professions (2) - Legal Aspects of Healthcare (2) - Legal and Ethical Aspects of Health Care - Legal and Ethical Considerations in Health Care - Management in Healthcare - Managing Injury Prevention Programs - Medical Ethics and Law (3) - Medical Law and Bioethics - Medical Legal/Ethical Issues - Organization and Delivery of Health Care - Orientation to United State Health Care - Principles of Health Care Administration

APPENDIX H continued: Public Health Courses in Community College Sample

Topic Area	Number of colleges (%)	Course Titles
Health policy and management <i>continued</i>		<ul style="list-style-type: none"> - Public Health Law and Administration - Public Policy - The Health Care System: Issues and Professions
Social and behavioral sciences	N=43 (10.4%)	<ul style="list-style-type: none"> - Behavioral Health Issues - Community Advocacy in Public Health - Community Health Advocacy (2) - Community Health Education - Community Health Education Program Planning - Culture and Health - Current Issues in Health Education - Developing and Evaluating Health Programs - Ethnicity, Health and Illness - Ethnicity and Minority Issues - Foundations of Health Promotion (2) - Health and Human Behavior - Health education (9) - Health Issues in a Culturally Diverse Society - Health Program Planning and Evaluation - Health Promotion (3) - Health Promotion and Disease Prevention through the Lifespan - Health Promotion through Behavior Change - Health Psychology (3) - Human Behavior and Social Environment - Implementation and Evaluation of Public Health Interventions - Introduction to Health Behaviors - Introduction to Social Marketing for Health - Medical Sociology (3) - Prevention, Methods and Materials - Principles of Health Education - Public Health and Health Promotion - Race, Ethnicity and Health - Social and Individual Health Determinants - Social Health and Diversity - Sociology of Health and Illness - Sociology of Women's Health - Social Marketing and Health Promotion - Social Problems - Transgender Health: Public Health Strategies - Violence as a Public Health Issue - Women and Poverty

APPENDIX H *continued*: Public Health Courses in Community College Sample

Topic Area	Number of colleges (%)	Course Titles
Other	N=61 (14.7%)	<ul style="list-style-type: none"> - Agricultural and Public Health Biosecurity - AIDS in NYC - Alcoholism as a Public Health Problem - Bioethics (3) - Biomedical Ethics (4) - Chronic and Infectious Disease - Communicable Disease (3) - Communicable Disease Awareness in Counseling - Community Health Nursing (2) - Community Health Nursing in a Rural Setting - Community-based Nursing - Community Nutrition - Diabetes in Native Communities - Disease Overview - Disease Processes - Drug Abuse and Human Disease - Ecological Approach to Health and Fitness - Ethical and Research Issues in Human and Community Services - Film and Public Health - Flouridation - Food Protection and Safety - Food Service and Sanitation - Globalization Issues - Health and Wellness Services in the Community - Health Data Documentation and Informatics - Healthcare Informatics - Health Informatics (4) - Health Informatics and EHRs (2) - Health Informatics Simulation - Health Leadership and Community Development - HIV/AIDS for Counselors - HIV and AIDS: Insights and Implications - Human Diseases for Health Professions - Infection Control - Infectious Diseases - Informatics Essentials - Introduction to Applied Community Development Research - Introduction to Global Economics - Introduction to Health Informatics (2) - Intro to Homeland Security and Emergency Mgmt

APPENDIX H *continued*: Public Health Courses in Community College Sample

Topic Area	Number of colleges (%)	Course Titles
Other <i>continued</i>		<ul style="list-style-type: none"> - Introduction to Medical Informatics - Introduction to Nursing Informatics - Medical Ethics - Medical Informatics - Nursing Informatics (2) - Public Health Abuse and Addiction - Public Health and Injury Prevention - Public Health Issues in Abuse and Addiction (2) - Public Health IT - Public Health Microbiology - Public Health Sciences - Prevention Works! A Cost-Benefit Analysis Tool to Improve Communities - Sanitation Principles and Practices - Terminology in Health Care and Public Health Settings - The Health of the Nation
Community Dental Health	N=75 (18.1%)	<ul style="list-style-type: none"> - Community Dental Health (52) - Community Oral Health (9) - Community Oral Health Outreach - Community Oral Health: Public Health - Dental Community Health - Dental Public Health (6) - Public Health Dental Hygiene (2) - Public Health Dentistry - Preventive Dentistry

APPENDIX I: Prominence of Themes within Each Case

Themes and Sub-themes	College 1	College 2	College 3	College 4	College 5	College 6	College 7	College 8	College 9
Awareness of public health	Moderate*: Recognition of importance of raising awareness	Low: No mention	Moderate: External influences in community assist in raising awareness.	Low: No mention	Moderate: Place value on raising awareness.	Low: Raise public health awareness by connecting it to personal health.	Low: Although some students possess an awareness, the majority do not.	Low: Recognize need to be aware, and media assists in raising awareness.	Low: No mention
Awareness of public health degrees/ certificates	Moderate: Program suffers from identify crisis and, therefore, marketed with allied health programs.	Low: No mention	Low: National initiative related to undergraduate public health, but others unaware of this initiative.	Low: No mention	Low: Lack awareness.	Low: Lack awareness.	Low: Lack awareness	Low: Lack awareness	Low: Lack awareness.

APPENDIX I continued: Prominence of Themes within Each Case

Themes and Sub-themes	College 1	College 2	College 3	College 4	College 5	College 6	College 7	College 8	College 9
Role of Community Colleges									
<i>Focus on community</i>	High: Take strategic approach	High: Reacts to situations within the service area	High: Perform environmental scans	High: Focus on specific needs of community	High: Respond to community needs	High: Sensitive to cultural needs of community	High: Focus on community needs	High: Assess viability of programs within the community	High: Focus on tribal community
<i>Develop workforce</i>	High: Prepare students for entry-level positions	High: Respond to industry	High: College sets out prepare workforce.	High: Advise working with industry to determine workforce needs	High: Successful programs dependent on job availability	High: Available jobs need to provide living wage for the area	High: Intro to public health course part of initiative to recruit minority students	High: Program proposals require information regarding potential employer	High: Need to know where graduates would seek employment
<i>Prepare students for further study</i>	High: Program set up to facilitate transfer to 4-year colleges	High: Program fully articulates with affiliated university program	High: Public health program set up for transfer.	High: Public health program fits within mission due to transferability	High: State-wide transfer degrees	High: College has successful transfer rate	High: Intro to public health course feeder into bachelor/master programs	High: Program proposals require information from baccalaureate institutions	Moderate: Would work with universities to determine opportunities for students

APPENDIX I *continued*: Prominence of Themes within Each Case

Themes and Sub-themes	College 1	College 2	College 3	College 4	College 5	College 6	College 7	College 8	College 9
Innovativeness	Moderate: Driven by administration	Low: Continuing education willing to try new programs	Moderate: Innovativeness is embedded within values of college; public health program aligned with this.	Moderate: Innovation part of college strategic priorities.	Moderate: Cautiously innovative	Low: College viewed as innovative	Moderate: Innovativeness marketed as a benefit of the college.	Low: College sets out to meet changing needs.	Low: No mention
Unique features of public health	Moderate: Public health can serve as alternative to clinical programs.	Moderate: Public health can be provided to students as a complement or alternative to nursing programs	Low: Public health program to be a transfer degree due to MPH serving as gold standard	Low: No mention	Moderate: Public health can serve as alternative to competitive programs	Moderate: Public health can serve as alternative to nursing programs	Moderate: Public health to serve as another viable option for students interested in health.	Moderate: Public health to serve as stepping stone to four-year programs and an alternative to nursing program.	Low: Applicable to community needs

APPENDIX I *continued*: Prominence of Themes within Each Case

Themes and Sub-themes	College 1	College 2	College 3	College 4	College 5	College 6	College 7	College 8	College 9
Building curriculum	Low: Utilize continuing education to test out programs	Low: Public health program started from scratch	Low: Public health program built from existing courses.	Low: Unknown how public health program was built.	Low: Mixed results among interviewees	Low: Building curriculum dependent on budget	Low: Certificate is likely next step from individual public health course.	Moderate: Approach to building curriculum depends on program.	Low: Likely would build from certificate to degree.
Learning from others	Low: Public health program based on nearby graduate public health program	Moderate Seek information from and are sought out by other community colleges.	Low to moderate: Seek information from others and have been sought out regarding the public health program.	Low: Interested in hearing from other colleges with public health program.	Moderate College has, and likely to continue, to explore approaches undertaken at other colleges.	Low: No mention	Low: Have conducted presentations about their introduction to public health course.	Low: No mention	Low: No mention

APPENDIX I *continued*: Prominence of Themes within Each Case

Themes and Sub-themes	College 1	College 2	College 3	College 4	College 5	College 6	College 7	College 8	College 9
Lack of duplication	Low: Cannot duplicate programs offered at nearby colleges.	Low: Continuing education programs cannot develop programs perceived to duplicate academic unit programs.	Low: No mention	Low: No mention	Low: Cannot duplicate programs at nearby colleges.	Low: Must demonstrate lack of duplication.	Low: Must be careful not to duplicate programs, even with four-year programs.	Moderate: Must demonstrate proposed program's relationship to existing programs at other colleges as well as with existing programs within the college.	Low: Lack of duplication must be demonstrated
Approvals process	Moderate	Moderate	Moderate	Low	Moderate	Moderate	Moderate	Moderate	Moderate

APPENDIX I *continued*: Prominence of Themes within Each Case

Themes and Sub-themes	College 1	College 2	College 3	College 4	College 5	College 6	College 7	College 8	College 9
Availability of resources	High: Increasing enrollment assists in securing resources	High: Public health program offered online; full-time faculty added	High: Provided sabbatical to faculty member to obtain MPH	High: Lag in state funding when new programs launched	High: Tuition off-sets shortfalls from state budget cuts	High: Recent state budget cuts affect college	High: Received grant from USDA to offer public health course	High: Willing to lose money if need	High: Majority of funding comes from federal grants
Collaboration	High: Community health advisory board; articulation agreement; experiential learning	High: Advisory board; College faculty and staff encouraged to be involved in community	High: Institutional committee; articulation; support from administration	High: Advisory committee; Four-year program led to initiation of public health program	High: Institutional committees	Moderate: Collaboration with four-years depends on institution, individuals and discipline	High: Collaboration with community colleges and four-year university to offer intro to public health course	High: Consortium of community colleges	High: Very close connection to community

APPENDIX I *continued*: Prominence of Themes within Each Case

Themes and Sub-themes	College 1	College 2	College 3	College 4	College 5	College 6	College 7	College 8	College 9
Information	Low: Information needs relate to internship expectations	Low: Info sought regarding standards for associate public health degrees	High: Info regarding undergraduate public health instrumental in program development	High: Info on opportunities for graduates, departmental collaboration	High: Encourage dissemination to community colleges	Low: Faculty development not priority when launching new program	High: Info needs relate to job outlook for graduates	High: Info on opportunities for graduates and salary expectations	Low: How can existing programs collaborate to offer public health
Refinement	Low: Specific refinement plans provided for public health program	Low: Exit survey administered; Programs may be discontinued if low student demand/enrollment	Low: Specific refinement plans provided for public health program	Low: Programs may be cut due to low enrollment, but has yet to happen	Low: No mention	Low: State budget cuts may lead to program cuts	Low: Technical programs may be cut if no available jobs; Public health course to continue online	Low: Programs may be cut due to low enrollment; programs provided opportunity to redesign	Low: Programs may be cut due to low enrollment

APPENDIX I *continued*: Prominence of Themes within Each Case

Themes/ Sub- themes	College 1	College 2	College 3	College 4	College 5	College 6	College 7	College 8	College 9
Prototype adoptability	Prototypes to serve as templates for colleges to tailor	Existing like generalist option; Would adopt others if demand is demonstrated	Existing program like generalist; General courses would need to be cross-listed	Existing program aligns with pre-health educator; AAS degree may fit for prototype	College used to offer safety and health degree; Work with community/industry to i.d. needs	State-required faculty service areas pose logistical issues	Prototypes likely to be housed with allied health and suited for those currently working in the field	Need to determine goals of the program; Incorporate into existing programs	Very interested in developing their new health program; therefore, prototype to serve as guide
Champion	High: Need a champion during initiation and maintenance of new programs	Low: Minimal reference	High: Champion needed in all aspects of a program	Low: Success of program depends on who oversees the program.	Moderate: Faculty needed to drive initiation of new programs	Low: No mention	Low: Need someone with knowledge in the field.	Moderate: Champion important to introduce interest in a topic.	Low: No mention

*** KEY**

- Low:** Minimal emphasis in relation to other themes
- Moderate:** Medium emphasis in relation to other themes
- High:** Substantial emphasis in relation to other themes