Culminating Experience Handbook

The Culminating Experience is a graduation requirement for all students in the MPH program. Through this experience, each student demonstrates synthesis of the MPH foundational and track-specific competencies and produces a high-quality written product that is developed and delivered in a manner that is useful to external stakeholders.

This handbook is intended to provide students with the information they need to plan, conduct, and complete a meaningful culminating experience that meets the academic standards of the Vanderbilt MPH program and the Council on Education for Public Health (CEPH), the accrediting body for schools and programs of public health.

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Section 1: Overview

The Culminating Experience is a graduation requirement for all students in the MPH program. The experience allows each student to synthesize the MPH foundational and track-specific competencies and produce a high-quality written product that is developed and delivered in a manner that is useful to external stakeholders. The culminating experience is completed at the end of the course of study, with final deliverables due in the student's final term (typically the spring of the second year).

Culminating experience goals and learning objectives:

- Demonstrate a strong foundation of skills in design, methods, and qualitative or quantitative analytics of population health data.
- Increase independence in critical thinking.
- Engage with public health community members (patients, community, health system/public health leaders) to develop an actionable question that reflects public health challenges.
- Expand understanding of the inter-related aspects between public health sciences and the health of individuals and communities.
- Communicate effectively, including focusing on the overarching message and identifying key audiences.

Culminating experience selection

In the spring term of the first year, students submit their selection for the culminating experience: thesis or capstone. At this time, each student provides a brief career vision statement (50-75 words). Those who select the capstone option will also identify a focus area with related competencies and courses.

Before submitting their selection, students meet with their academic adviser (track director) to discuss which option is best suited for their specific educational and professional goals. They also discuss potential research areas of interest and mentors (thesis) or focus areas, competencies, and courses (capstone) with their academic adviser and mentoring committee. After submitting their selection through an electronic form in REDCap, the student's academic adviser will review and approve their selection for the culminating experience.

Because there are required courses associated with both options, this selection will be considered final after the registration period for the upcoming fall term has ended. Registration dates can be found in YES on the student landing page under "Enrollment Dates."

Before making their culminating experience selection, students should think about the implications of each option on tuition, financial aid, visa requirements, and other considerations potentially tied to their status as a full-time or part-time student (loan deferment, health insurance, etc.). More information about the financial implications of each choice is included in the next two sections of this handbook.

IRB and ethics for culminating experience

Many students may need to submit their culminating experience project to the Vanderbilt Human Research Protections Program (IRB) for institutional review. Most often students can be added to the IRB of their mentor's project. If a new IRB submission is required, please consult your culminating experience mentor for assistance in submitting your project for review. Your IRB application will need two signatures. Your primary mentor should be designated as your supervisor and a second signature will come from your department chair. In the case where the student is not part of a department then the following second signature should be used:

- Epidemiology students - Designate Dr. Christianne Roumie as the department chair.
- Global Health students - Designate Dr. Carolyn Audet as the department chair.
- Health Policy students - Designate Dr. David Stevenson as the department chair.

Section 2: Thesis

Description

The thesis is mentored original research or other scholarly work that may take the form of a manuscript to submit for publication, a draft of a grant application, or other format appropriate to the student's educational and professional goals and approved by the thesis adviser. The thesis instructor is a faculty member who works with all students in a given track. They guide the students through the process of planning and executing the thesis, and they also offer feedback on the different thesis deliverables.

The thesis research project is typically based on secondary data analysis, due to the relatively short duration of time allocated for the culminating experience and MPH training. Original data collection that allows for the completion of the research project within the MPH timeline is allowed (two years for full-time students and three or up to four years for part-time students). The student should discuss any necessary biostatistics support or other resources with their thesis mentor when exploring topics and plans.

Required Courses

EPIDEMIOLOGY TRACK

Y1 Spring Term	PUBH 5527 Protocol Development I (1 hr)	*Total min. credit hours: 6* *Total max. credit hours: 8*
Y1 Summer Term	PUBH 5530 Protocol Development II (1 hr)	
Y2 Fall Term	PUBH 5599 Thesis Research I (3 hrs)	
Y2 Spring Term	PUBH 7999 Thesis Research II (3 hrs)	

GLOBAL HEALTH TRACK

Y2 Fall Term	PUBH 5527 Protocol Development I (1 hr) PUBH 5599 Thesis Research I (3 hrs)	*Total min. credit hours: 6* *Total max. credit hours: 7*
Y2 Spring Term	PUBH 7999 Thesis Research II (3 hrs)	

HEALTH POLICY TRACK

Y2 Fall Term	PUBH 5527 Protocol Development I (1 hr) PUBH 5599 Thesis Research I (3 hrs)	*Total min. credit hours: 6* *Total max. credit hours: 7*
Y2 Spring Term	PUBH 7999 Thesis Research II (3 hrs)	

- PUBH 5599 Thesis Research I and PUBH 7999 Thesis Research II convey full time status.
- Students enrolled in these courses during their final year in the MPH program are automatically considered full-time students, and they are charged the MPH program's flat tuition rate (even if registered for 7 or fewer credit hours in the term). In addition, full-time international students enrolled in these courses during their final year in the program meet the visa requirements for full-time student status.

Competencies

Through the thesis, students will demonstrate attainment of at least three MPH competencies (a minimum of one foundational competency and one track-specific competency).

1 - 2	+	**1 - 2**	=	**3 - 4**
Foundational competencies		Track-specific competencies		Thesis competencies

Before selecting the competencies, students should meet with their academic adviser (track director) to discuss which competencies are most appropriate to their individual educational and professional goals.

The final evaluation of the student's thesis will include evaluation of the attainment of the approved competencies.

Format

The final thesis is a high-quality written product that is developed and delivered in a manner that is useful to external stakeholders including the academic and applied public health professional communities. Examples include:

- Research manuscript suitable for publication in a peer-reviewed journal.
- Grant application.
- Other formats appropriate to the student's educational and professional goals and approved by the thesis adviser (e.g., program evaluation, curriculum evaluation, and policy paper or briefing).

Thesis Timeline

Y1 Fall Term	*All tracks:* • Discuss directions for research and potential thesis mentors in fall mentoring committee meeting. • Conduct literature review independently.
Y1 Spring Term	*All tracks:* • Submit culminating experience selection form. • Discuss directions for research and potential thesis mentors in spring mentoring committee meeting. • Conduct literature review independently.
Y1 Summer Term	*Epidemiology track and select students from other tracks with defined thesis:* • Conduct literature review. • Complete aim statement and timeline, then review and obtain mentoring committee approval per PUBH 5527 Protocol Development I course syllabus. • Submit full proposal and obtain approval from thesis instructor per PUBH 5527 Protocol Development I course syllabus. • Seek stakeholder engagement and feedback. • Submit additional drafts and deliverables per PUBH 5527 Protocol Development syllabus.
Y2 Fall Term	*Epidemiology track:* • Engage with research team to review collected data, data analysis, follow-up, and budget. • Schedule and lead weekly meetings with research team and hold regular (weekly or biweekly) meetings with thesis mentor to review writing and revisions. • Attend biostatistics consulting meeting. *Global Health and Health Policy tracks:* • Submit proposal and deliverables per PUBH 5527 Protocol Development I syllabus. • Schedule and lead weekly meetings with research team and hold regular meetings (weekly or biweekly) with thesis mentor to review writing and revisions. • Seek stakeholder engagement and feedback.

Y2 Spring Term
 	
For written and oral evaluation rubric, see Section 6.
	All tracks:
	• Attend MPH career development session on writing.
	• Attend consultations with writing studio as needed.
	• Engage with research team to review collected data, data analysis, follow-up, and budget.
	• Schedule and lead weekly meetings with research team and hold regular meetings with thesis mentor to review writing and revisions.
	• Attend biostatistics consulting meeting *(required for GH and HP students; 2nd meeting optional for Epi track students).*
	• Identify and enact strategies to distribute and seek feedback from community partners and stakeholders.
	• Submit final written thesis by **March 15** *(this is the final deadline, with no extensions for May graduates).*
	• Prepare draft of thesis presentation and seek feedback from thesis mentor and research team.
	• Final thesis presentations:
	  ○ March 17, 8am to 12:30pm: Health Policy track
	  ○ March 21, 8am to 12:30pm: Epidemiology track

	○ March 24, 8am to 12:30pm: Global Health track ○ March 28, 8am to 12pm: all tracks • Prepare written thesis for scholarly dissemination (i.e., submit to journal or present at conference) by incorporating feedback from mentors and advisers *(encouraged).* • Summative feedback provided by thesis instructor by April 15, 2025.

Final Deliverables

1. Final written manuscript in the following format (approximately 3,000 words without including title page or abstract), unless you note when submitting to the program that a different format is required for a target journal:
    a. Title page
    b. Abstract (Introduction, Methods, Results, Discussion, approximately 300 words)
    c. Introduction
    d. Methods
    e. Results
    f. Discussion
    g. References (Numerical citation style e.g., AMA)
    h. Figure Legend
    i. Tables (One table per page)
    j. Figures (One figure per page)

2. Final oral presentation (March Year 2): 15-minute presentation with 5-minute Q&A. An outline of the presentation slides is included in this handbook (see Section 7).

3. Note: the deadlines for final deliverables may not be extended for May graduates. Those seeking extensions will be enrolled for an additional summer term and graduate in August.

Deliverable Submission

Students will utilize Brightspace to submit each course deliverable.

SUMMER THESIS START (Epidemiology and Select Students from Health Policy and Global Health)

Term	Course	Deliverable
Y1 Spring Term	PUBH 5527 Protocol Development I (1 hr)	Protocol presentation
Y1 Summer Term	PUBH 5530 Protocol Development II (1 hr)	Protocol presentation; Final written protocol
Y2 Fall Term	PUBH 5599 Thesis Research I (2-4 hrs)	Draft written thesis with shell tables (Dec. 15)
Y2 Spring Term	PUBH 7999 Thesis Research II (2-4 hrs)	Draft written thesis (February 1) Draft thesis presentation (February 15) Final thesis presentation (see dates/times on p. 4) Final written thesis (March 15)

FALL THESIS START (Health Policy and Global Health)

Term	Course	Deliverable
Y2 Fall Term	PUBH 5527 Protocol Development I (1 hr)	Draft written protocol; Protocol presentation
	PUBH 5599 Thesis Research I (2-4 hrs)	Draft written thesis (Introduction and Methods)
Y2 Spring Term	PUBH 7999 Thesis Research II (2-4 hrs)	Draft written thesis (February 1) Final thesis presentation (see dates/times on p. 4) Final written thesis (March 15)

Student Assessment

The assessment of the culminating experience is designed to give the student feedback at regular intervals throughout the process as well as a final summative evaluation. Students will primarily receive feedback from three sources:

1. Thesis instructor: This is the course instructor for the Thesis Research courses. The thesis instructor will be responsible for providing formative feedback throughout the process, which will include written feedback. In addition, the thesis instructor will evaluate each student's achievement of CEPH competencies and provide a grade for each course taken as a part of the course of study.

2. Primary thesis mentor: This is a faculty member who will guide the student throughout the thesis project on a weekly basis. Each student will identify a faculty mentor in the fall or spring of their first year. In addition to providing regular feedback, the primary thesis mentor will provide an assessment of the final written product and the final oral presentation.

3. Secondary thesis reader*: This is a faculty member who will provide a second assessment of the final written thesis and the final oral presentation.

* The secondary thesis reader serves as an internal reviewer and gives feedback like a peer reviewer from a journal.
    - This reader is required for students in the Epidemiology track and is often a member of the Epidemiology track faculty.
    - The secondary thesis reader is strongly encouraged for students in the Global Health and Health Policy tracks.

Section 3: Capstone

Description

The capstone includes a series of specific graduate- or professional-level courses in a selected focus area that aligns with the student's educational and professional goals.

Students who choose the capstone option select their focus area and take classes that align with that area. Additionally, they take two courses PUBH 5531 MPH Capstone ePortfolio Development Part 1 (0 credit hours) in the fall term and PUBH 5532 MPH Capstone ePortfolio Development Part 2 (1 credit hour) in the spring term, both in the student's final year of training.

These courses are designed to guide second-year students through synthesizing and reflecting upon the public health knowledge and skills that they have developed during their time in the MPH Program. Students will develop an ePortfolio to showcase their knowledge and skills to an external audience and *either* create a resource kit of two or more public health tools *or* partner with an external organization to develop a public health tool.

Required Courses

EPIDEMIOLOGY TRACK

Y1 Spring Term	PUBH 5527 Protocol Development I (1 hr) Approved capstone content courses (variable hours)
Y1 Summer Term	Approved capstone content courses (variable hours)
Y2 Fall Term	PUBH 5531 Capstone ePortfolio Development Part 1 (0 hrs) Approved capstone content courses (variable hours)
Y2 Spring Term	PUBH 5532 Capstone ePortfolio Development Part 2 (1 hr) Approved capstone content courses (variable hours)

Capstone total min. credit hours: 11

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Y1 Spring Term	Approved capstone content courses (variable hours)
Y2 Fall Term	PUBH 5531 Capstone ePortfolio Development Part 1 (0 hrs) Approved capstone content courses (variable hours)
Y2 Spring Term	PUBH 5532 Capstone ePortfolio Development Part 2 (1 hr) Approved capstone content courses (variable hours)

Capstone total min. credit hours: 10

- All students who pursue the capstone option will take PUBH 5531 Capstone ePortfolio Development Part 1 (0 hrs) in the fall term and PUBH 5532 Capstone ePortfolio Development Part 2 (1 hr) in the spring term, both in the final year of MPH training.
- Epidemiology track students also take PUBH 5527 Protocol Development I in the spring term of their first year of MPH training to develop skills in formulating a protocol.
- Students should take at least 9 credit hours of pre-approved graduate- or professional-level courses related to their Capstone focus area. They will identify these courses at the time they submit their culminating experience selection (Year 1, spring term), including alternate courses if identified courses are not available (e.g., limited enrollment). Students should meet with their academic adviser (track director) to discuss their capstone content courses before submitting their culminating experience selection.
- PUBH 5531 Capstone ePortfolio Development Part 1 (0 hrs) and PUBH 5532 Capstone ePortfolio Development Part 2 (1 hr) convey full-time status. Students enrolled in these courses during their final year in the MPH program are automatically considered full-time students, and they are charged the MPH program's flat tuition rate (even if registered for 7 or fewer credit hours in the term). In addition, full-time international students enrolled in these courses during their final year in the program meet the visa requirements for full-time student status.

Capstone Content Courses

- Capstone content courses should align with the student's individual educational and professional goals and address the student's capstone competencies.
- The sum of credit hours for capstone content courses (not including PUBH 5531 and PUBH 5532) should be greater than or equal to 9 credits.
- Up to 3 credit hours may come from Independent Study courses (including public health field experience **beyond** the practicum requirement and related to the student's Capstone focus area).
- Capstone courses may not include MPH courses required for the core or the student's track.
- For courses offered by other programs outside the public health field of study (i.e., *courses with a course code other than PUBH*), the student is responsible for:
    - Planning to ensure they have taken any pre-requisite courses,
    - Confirming the course does not have a scheduling conflict with any required PUBH courses,
    - Obtaining the instructor's written approval and submitting the Non-PUBH Registration Request Form,
    - Following up with their academic adviser if the course is not approved in a timely manner.

Each term, course offerings are posted to YES about 1 month before the registration window opens. To see when a course has been offered in the past, look up course information for past terms in YES.

Area(s) of Focus

At the time they submit their culminating experience selection (Year 1, spring term), each student will identify the area of focus for their capstone. Examples include*:*

- Leadership and Management
- Public Health Informatics
- Implementation Science
- Program Evaluation
- Global Health*◊
- Health Policy◊
- Biomedical Ethics*
- Latin American, Caribbean, and Latinx Studies*
- Lesbian, Gay, Bisexual, and Transgender (LGBT) Health*
- Other areas of focus appropriate to the student's educational and professional goals and approved by the capstone adviser.

NOTE

*** These options may have a corresponding graduate certificate. Students are responsible for contacting the certificate program administrator to enroll in a certificate program and ensure they meet the certificate requirements prior to graduation.**

◊ The Global Health focus area is open to students in the Epidemiology and Health Policy tracks. The Health Policy focus area is open to students in the Epidemiology and Global Health tracks.

Competencies

Through the Capstone, students will demonstrate attainment of at least three MPH competencies (a minimum of one foundational competency and one track-specific competency). At the time they submit their Culminating Experience selection (Year 1, Spring term), students will identify the three to four competencies their Capstone will address.

1 - 2 Foundational competencies	+	**1 - 2** Track-specific competencies	=	**3 - 4** Capstone competencies

Before selecting the competencies, students should meet with their academic adviser (i.e., track director) to discuss which competencies are most appropriate to their individual educational and professional goals.

Capstone Timeline

Y1 Fall Term	*All tracks:* • Discuss culminating experience options in fall mentoring committee meeting.
Y1 Spring Term	*All tracks:* • Discuss capstone focus area and relevant courses in spring mentoring committee meeting and academic advising meeting. • Choose capstone focus area after discussing with mentoring committee and academic adviser. • Develop course of study, including proposed capstone content courses that align with focus area. • Submit culminating experience selection form.
Y1 Summer Term	*All tracks:* • Complete approved capstone content courses (variable hours).
Y2 Fall Term	*All tracks:* • Complete PUBH 5531 Capstone ePortfolio Development Part 1 (0 hrs). • Complete approved capstone content courses (variable hours). • Choose format for final written capstone product (either resource tool kit *or* work with an organization to develop a public health tool). • Submit an outline of the written product for review by capstone instructor, per PUBH 5531 Capstone ePortfolio Development Part 1 course syllabus. • Develop written product. • Attend consultations with writing studio as needed. • Submit a draft of the ePortfolio for peer review and make revisions based on feedback, per PUBH 5531 Capstone ePortfolio Development Part 1 course syllabus.

Y2 Spring Term
 	
For written and oral evaluation rubric, see Section 6.
	All tracks:
	• Complete PUBH 5532 Capstone ePortfolio Development Part 2 (1 hr).
	• Complete approved capstone content courses (variable hours).
	• Submit draft of written product for peer review, per PUBH 5532 Capstone ePortfolio Development Part 2 course syllabus.
	• Continue developing written product incorporating feedback from peer review.
	• Attend consultations with writing studio as needed.
	• Submit draft of written product for review by capstone instructor, per PUBH 5532 Capstone ePortfolio Development Part 2 course syllabus.
	• Revise and finalize ePortfolio and written product, incorporating feedback.
	• Submit final written product by **March 15** *(this is the final deadline, with no extensions for May graduates).*
	• Prepare draft of slides for mock presentation in PUBH 5532 Capstone ePortfolio Development Part 2.
	• Present capstone at MPH culminating experience presentations and attend colleagues' presentations:
	  ○ March 17, 8am to 12:30pm: Health Policy track
	  ○ March 21, 8am to 12:30pm: Epidemiology track
	  ○ March 24, 8am to 12:30pm: Global Health track
	  ○ March 28, 8am to 12pm: all tracks
	• Identify and enact strategies to distribute to and seek feedback from community partners and stakeholders.
	• Summative feedback provided by capstone instructor by April 15, 2025.

Final Deliverables

1. Final written product: Based on their capstone content course work, students will develop and hone either a resource tool kit *or* a specific tool for an external organization. Both options should be accompanied by a formal written product describing the development process and the impact of the tool(s) for a community or the organization. Examples of public health tools include, but are not limited to, a needs assessment, monitoring and evaluation plan, program evaluation report, strategic plan, training manual, policy statement, grant application, capital campaign, and curriculum.

2. Final oral presentation (March Year 2): 15-minute presentation with 5-minute Q&A. An outline of the presentation slides is included in this handbook (see Section 7).

Note: Deadlines for final deliverables may not be extended for May graduates. Those seeking extensions will be enrolled for an additional summer term and graduate in August.

Deliverable Submission

Students will utilize Brightspace to submit each course deliverable.

EPIDEMIOLOGY TRACK

Term	Course	Deliverable
Y1 Spring Term	PUBH 5527 Protocol Development I (1 hr)	Protocol presentation
Y2 Fall Term	PUBH 5531 Capstone ePortfolio Development Part 1 (0 hrs)	Draft written product Draft capstone portfolio/presentation
Y2 Spring Term	PUBH 5532 Capstone ePortfolio Development Part 2 (1 hr)	Final written product Final capstone portfolio/presentation

GLOBAL HEALTH and HEALTH POLICY TRACKS

Term	Course	Deliverable
Y2 Fall Term	PUBH 5531 Capstone ePortfolio Development Part 1 (0 hrs)	Draft written product Draft capstone portfolio/presentation
Y2 Spring Term	PUBH 5532 Capstone ePortfolio Development Part 2 (1 hr)	Final written product Final capstone portfolio/presentation

Student Assessment

Deliverables are assessed and assigned in PUBH 5531 Capstone ePortfolio Development Part 1 and PUBH 5532 Capstone ePortfolio Development Part 2. Both courses are taken in the student's final year of MPH training. The final written deliverable is submitted in the spring term of the student's final year. The final oral presentation will take place as part of the MPH Program's culminating experience presentations in the spring term of the final year. In academic year 2024-2025, these dates will be:

- March 17, 8 am to 12:30 pm: Health Policy track
- March 21, 8 am to 12:30 pm: Epidemiology track
- March 24, 8 am to 12:30 pm: Global Health track
- March 28, 8 am to 12 pm: all tracks

The final written product, ePortfolio, and oral presentation are reviewed by the:

- Capstone instructor,
- MPH track director(s),
- Additional faculty reviewers and mentors or advisors/ public health practitioners who directly worked with student.

The Capstone instructor compiles the feedback from the other reviewers and assigns a final grade. They also send the student a written summary of the feedback on their performance.

Section 4: Competencies

The Council on Education for Public Health (CEPH) stipulates that all MPH students complete a culminating experience that demonstrates synthesis of foundational and track-specific competencies. In the Vanderbilt MPH program, students, in consultation with their track director(s), select foundational and track-specific competencies appropriate to the student's educational and professional goals. Students should demonstrate synthesis and integration of at least one or two foundational and one or two track-specific competencies (for a total of three to four competencies).

Foundational Competencies

Evidence-based Approaches to Public Health

- Apply epidemiological methods to settings and situations in public health practice. **(CEPH 1)**
- Select quantitative and qualitative data collection methods appropriate for a given public health context. **(CEPH 2)**
- Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate. **(CEPH 3)**
- Interpret results of data analysis for public health research, policy or practice. **(CEPH 4)**

Public Health & Health Care Systems

- Compare the organization, structure and function of health care, public health and regulatory systems across national and international settings. **(CEPH 5)**
- Discuss how structural bias, social inequities, and racism undermine health and create challenges to achieving health equity at organizational, community and systemic levels. **(CEPH 6)**

Planning & Management to Promote Health

- Assess population needs, assets and capacities that affect communities' health. **(CEPH 7)**
- Apply awareness of cultural values and practices to the design, implementation, or critique of public health policies or programs. **(CEPH 8)**
- Design a population-based policy, program, project, or intervention. **(CEPH 9)**
- Explain basic principles and tools of budget and resource management. **(CEPH 10)**
- Select methods to evaluate public health programs. **(CEPH 11)**

Policy in Public Health

- Discuss the policy-making process, including the roles of ethics and evidence. **(CEPH 12)**
- Propose strategies to identify relevant communities and individuals and build coalitions and partnerships for influencing public health outcomes. **(CEPH 13)**
- Advocate for political, social, or economic policies and programs that will improve health in diverse populations. **(CEPH 14)**
- Evaluate policies for their impact on public health and health equity. **(CEPH 15)**

Leadership

- Apply leadership and/or management principles to address a relevant issue. **(CEPH 16)**
- Apply negotiation and mediation skills to address organizational or community challenges. **(CEPH 17)**

Communication

- Select communication strategies for different audiences and sectors. **(CEPH 18)**
- Communicate audience-appropriate public health content, both in writing and through oral presentation to a non-academic, non-peer audience with attention to factors such as literacy and health literacy. **(CEPH 19)**
- Describe the importance of cultural humility in communicating public health content. **(CEPH 20)**

Interprofessional Practice

- Integrate perspectives from other sectors and/or professions to promote and advance population health. **(CEPH 21)**

Systems Thinking Health

- Apply a systems-thinking tool to visually represent a public health issue in a format other than standard narrative. **(CEPH 22)**

Track-Specific Competencies

Epidemiology

1. Compare the strengths and weaknesses of observational study designs and select an appropriate observational study design for population-based research.
2. Evaluate sources for confounding, and selection and information bias from a causal-inference perspective and through the use of directed acyclic graphs.
3. Build multivariable regression models and interpret statistical output from these models to make appropriate statistical inference.
4. Perform regression diagnostics, including residual analyses to assess how well models fit the data, inspect the presence of outliers, and assess the fulfillment of model assumptions.
5. Develop a study protocol that addresses a specific research question and includes appropriate selection of a study design and adequately accounts for potential sources of bias.

Global Health

1. Identify historical and emerging issues of significance in global health from an interdisciplinary vantage point.
2. Apply a research method(s) and/or programmatic intervention(s) used to ameliorate health and developmental problems, particularly in low-resource settings.
3. Describe fundamentals of organizational behavior and change, particularly in low-resource settings.
4. Collaborate on a team with partners from multiple countries to develop a tool(s) that address an identified international public health need.
5. Integrate knowledge of cultural humility and health equity into global health research, policy, practice, or advocacy efforts.

Health Policy

1. Identify the main features and challenges related to the financing, incentives, and delivery of health care services and public health systems in the United States.
2. Describe the complementary roles of individualized health care services and population-based interventions in maintaining and improving health status.
3. Evaluate policies and apply theories of health insurance and the incentives that various approaches to coverage and provider payment create in the health system.
4. Analyze the impact of changes in public health policy and health care financing and service delivery on elements such as health care cost growth, quality of care, and access to services.
5. Conceptualize the data and research methods necessary to address questions of significance to policymakers and other relevant system actors.

Section 5: Examples of Culminating Experiences

Below are examples of previous MPH students' culminating experience final deliverables.

Student Name	Culminating Experience Title and Link to Product
Thesis Options	
Epidemiology	
Jim Antoon	Guideline Concordant Antiviral Treatment in Children at High-risk for Influenza Complications Publication: https://pubmed.ncbi.nlm.nih.gov/35867691
Jennifer Erves	Factors Influencing Parental HPV Vaccine Hesitancy from the Provider and Clinic Level: A Cross-Sectional Study Publication: https://pubmed.ncbi.nlm.nih.gov/31267976/
Keerti Dantuluri	Prevalence and Factors Associated with Inappropriate Antibiotic Prescription among Children Enrolled in Tennessee Medicaid Publication: https://pubmed.ncbi.nlm.nih.gov/33511228/
Heather Grome	Risk of HIV diagnosis following bacterial sexually transmitted infections in Tennessee, 2013–2017 Publication: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8514569/
Arlyn Horn	Initial Postpartum Opioid Exposure and Risk of Death Among TN Medicaid Opioid Naive Women: A Retrospective Cohort Study Publication: https://pubmed.ncbi.nlm.nih.gov/35640619/
Sophie Katz	An Assessment of Pediatric Outpatient Antibiotic Prescriptions Across Tennessee Publication: https://pubmed.ncbi.nlm.nih.gov/31937378/
Lindsey McKernan	Patient-Centered Treatment for Interstitial Cystitis/Bladder Pain Syndrome Publication: https://pubmed.ncbi.nlm.nih.gov/33367196/
Lucy Spalluto	Assessing the Impact of a Community Health Worker on Hispanic/Latina Women's Reported Measures of Processes of Care in the Screening Mammography Setting Publication: https://pubmed.ncbi.nlm.nih.gov/31268730/
Milner Staub	Association of antibiotics with veteran visit satisfaction and antibiotic expectations for upper respiratory tract infections Publication: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9726549/
Global Health	
Ben Acheampong	Evaluation of a Miniaturized Handheld Device for Ventricular Structure and Function in Children: A Pilot Study Publication: https://pubmed.ncbi.nlm.nih.gov/31879998
Wubishet Belay	Secondary Prophylaxis for Rheumatic Heart Disease in Ethiopia Publication: https://pubmed.ncbi.nlm.nih.gov/35109807
Ryan Belcher	Demographics and trends of cleft lip and palate patients born in Tennessee from 2000 to 2017 Publication: https://pubmed.ncbi.nlm.nih.gov/36257171/
Selorm Dei-Tutu	Correlating Maternal Iodine Status with Infant Thyroid Function in Two Hospital Settings in Ghana Publication: https://pubmed.ncbi.nlm.nih.gov/31964362/
Sarah Grossarth	Maternal Opioid Use Disorder and the Risk of Postneonatal Infant Mortality Publication: https://pubmed.ncbi.nlm.nih.gov/37155175/

Student Name	Culminating Experience Title and Link to Product
Thesis Options	
Kidane Sarko	Influence of HIV Status Disclosure on Facility-based Delivery and Postpartum Retention of Mothers in a Prevention Clinical Trial in Rural Nigeria Publication: https://pubmed.ncbi.nlm.nih.gov/28810669/
Health Policy	
Hannah Griffith	Changes in Time to First Occurrence of Otitis Media in Young Children in Tennessee and Associated Antibiotic Prescriptions Following the Introduction of the 13-valent Pneumococcal Conjugate Vaccine Publication: https://pubmed.ncbi.nlm.nih.gov/32141424/
Diane Haddad	Health System Predictors of Post-Acute Care Use after Major Operation Publication: https://journals.lww.com/journalacs/
Wali Johnson	Associations between social determinants of health and abdominal solid organ transplant wait-lists in the United States Publication: https://pubmed.ncbi.nlm.nih.gov/35894259/
Allan Peetz	Resuscitating the Dead: A Qualitative Analysis of Trauma Surgeons' Resuscitation Decisions for Organ Preservation Publication: https://pubmed.ncbi.nlm.nih.gov/33436273/

Student Name	Culminating Experience Title and Link to Product
Capstone Options	
Epidemiology	
Danielle Gibson	Reducing community partner reporting burden: Developing a Redcap surveillance system to integrate reporting requirements for community-led HIV prevention activities funded by the Tennessee Department of Health ePortfolio: https://sites.google.com/view/danniellegibson/home
Global Health	
Raphael Abayateye	Assessing How International Trade of Primary Products Shapes Health in Sub-Saharan Africa ePortfolio: https://raphaelabayateye.wordpress.com
Megan Davis	Operationalizing Equity: Evidence-Based Grantmaking Strategies for Reducing Racial and Geographic Health Disparities ePortfolio: https://meganelise9492.wixsite.com/megan-davis
Justin McClain	Forming Good Leaders in a World of Wicked Problems: An Evaluation Plan for an Undergraduate Leadership Class ePortfolio: https://justinmcclain.my.canva.site/
Harriett Myers	Improving Child Diet Quality through a Family-Based Behavioral Intervention for Childhood Obesity ePortfolio: https://my.vanderbilt.edu/harriettmyers
Caitlin Washburn	Utilizing Community Health Workers During COVID-19: A Sustainable Vision for a Productive Future ePortfolio: https://sites.google.com/view/caitlinwashburn
Health Policy	
Graham Hancock	Centralizing and Strengthening LGBTQ+ Health Resources Through Coalition-Building ePortfolio: https://sites.google.com/view/grahamphancock

Student Name	Culminating Experience Title and Link to Product
Capstone Options	
Olivia Lawson	Leadership in Health Care: Education, Evaluation, and Quality Improvement Tools ePortfolio: https://oliviaplawson.wixsite.com/my-site
Lauren Mitchell	EHR-Related Clinician Burnout ePortfolio: http://www.publichealthnut.com/
Vicky Waithe	A Roadmap to Bundle Implementation: Operationalizing a Value-Based Care Program in a Dynamic Health System ePortfolio: http://www.waithe.me

Section 6: Written and Oral Evaluation Rubric

VANDERBILT School of Medicine

Vanderbilt MPH Program

MPH Culminating Experience

Written and Oral Evaluation Rubric

Instructions for Faculty Evaluators

Faculty evaluators will use this rubric to assess the competencies expected to be covered in the conduct of a thesis or a capstone project. The rubric is used for both the final written product and the oral presentation, and it contains three sections:

- *Section 1: Foundational Competencies*
- *Section 2: Track-Specific Competencies*
- *Section 3: Optional Competencies*

While each student has selected three (3) to four (4) foundational and track-specific competencies to be the primary focus of their MPH culminating experience, they must demonstrate proficiency in at least seven (7) of the nine (9) *foundational* competencies listed in the table below. Many students will also cover *additional* competencies in the conduct of their culminating experience.

	THESIS OPTION	**CAPSTONE OPTION**
Grading Basis	The final course grades for *PUBH 5599 Thesis Research I* and *PUBH 7999 Thesis Research II* are noted as **Pass/Fail**.	The final course grades for *PUBH 5531 Capstone ePortfolio Development, Part 1* and *PUBH 5532 Capstone ePortfolio Development, Part 2* are noted as **Pass/Fail**.
Evaluation	To receive a final course grade of "Pass," the student must demonstrate *Advanced, Skilled*, or *Adequate* proficiency in at least 7 out of 9 (77%) of the following Foundational competencies:	To receive a final course grade of "Pass," the student must demonstrate *Advanced, Skilled*, or *Adequate* proficiency in at least 7 out of 9 (77%) of the following Foundational competencies:
	Apply epidemiological methods to settings and situations in public health practice. (CEPH 1)	**Assess population needs, assets and capacities that affect communities' health.** (CEPH 7)
	Select quantitative and qualitative data collection methods appropriate for a given public health context. (CEPH 2)	**Apply awareness of cultural values and practices to the design, implementation, or critique of public health policies or programs.** (CEPH 8)
	Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate. (CEPH 3)	**Design a population-based policy, program, project or intervention.** (CEPH 9)
	Interpret results of data analysis for public health research, policy or practice. (CEPH 4)	**Propose strategies to identify relevant communities and individuals and build coalitions and partnerships for influencing public health outcomes.** (CEPH 13)
	Design a population-based policy, program, project or intervention. (CEPH 9)	**Apply leadership and/or management principles to address a relevant issue.** (CEPH 16)
	Select methods to evaluate public health programs. (CEPH 11)	**Select communication strategies for different audiences and sectors.** (CEPH 18)
	Evaluate policies for their impact on public health and health equity. (CEPH 15)	**Communicate audience-appropriate public health content, both in writing and through oral presentation to a non-academic, non-peer audience with attention to factors such as literacy and health literacy**. (CEPH 19)

	Select communication strategies for different audiences and sectors. (CEPH 18)	**Integrate perspectives from other sectors and/or professions to promote and advance population health.** (CEPH 21)
	Communicate audience-appropriate public health content, both in writing and through oral presentation to a non-academic, non-peer audience with attention to factors such as literacy and health literacy. (CEPH 19)	**Apply a systems-thinking tool to visually represent a public health issue in a format other than standard narrative.** (CEPH 22)
	For each competency, follow the *additional* evaluation guidance noted in yellow.	For each competency, follow the *additional* evaluation guidance noted in blue.

Use the scale below to grade each competency:

	Advanced	**Skilled**	**Adequate**	**Emerging/Minimal**	**N/A Did Not Observe**
Description	Expert in this skill or competency; can teach and supervise others	Can perform this skill or competency without direct oversight	Can perform this skill or competency, but only with direct supervision	Has some knowledge, but cannot perform this skill or competency independently	This skill or competency was not demonstrated in the student's work
Corresponding grade	*Pass*	*Pass*	*Pass*	*Fail*	

Section 1: Foundational Competencies

How well did the student demonstrate the foundational competencies in their culminating experience?
Evaluate THESIS students on the competencies with additional guidance in yellow. Evaluate CAPSTONE students on the competencies with additional guidance in blue.

		Advanced	**Skilled**	**Adequate**	**Emerging/Minimal**	**N/A Did Not Observe**
		Expert in this skill; can teach and supervise others	*Can perform this skill without direct oversight*	*Can perform this skill, but only with direct supervision*	*Has some knowledge, but cannot perform this skill independently*	*This skill was not demonstrated in the student's work*
1	**Apply epidemiological methods to settings and situations in public health practice.** (CEPH 1) THESIS Study design. Selects design that is appropriate for the study question. Describes design using proper epidemiologic terminology.					
2	**Select quantitative and qualitative data collection methods appropriate for a given public health context.** (CEPH 2) THESIS Describes validity and reliability of measurements for exposure, disease and covariates. Describes data source and suitability to address research question.					

		Advanced	Skilled	Adequate	Emerging/Minimal	N/A Did Not Observe
		Expert in this skill; can teach and supervise others	*Can perform this skill without direct oversight*	*Can perform this skill, but only with direct supervision*	*Has some knowledge, but cannot perform this skill independently*	*This skill was not demonstrated in the student's work*
3	**Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate.** (CEPH 3)					
	THESIS Selects proper statistical test(s) for the study. Examines fulfillment of assumptions in statistical analyses.					
4	**Interpret results of data analysis for public health research, policy or practice.** (CEPH 4)					
	THESIS Uses proper terminology to describe distribution of health-related states in the study. Uses clear tables and graphs to summarize findings efficiently. Interprets study findings appropriately and within study context.					
5	**Assess population needs, assets and capacities that affect communities' health.** (CEPH 7)					
	CAPSTONE Background: Reflects and applies thoughtful consideration on the need for the tool. Explains the public health need or gap that the tool addresses or fills. Methods: Describes external stakeholders who will use the tool. Results: Describes impacts (or potential impacts if the tool has not been implemented yet) of the tool.					
6	**Apply awareness of cultural values and practices to the design, implementation, or critique of public health policies or programs.** (CEPH 8)					
	CAPSTONE Methods: Describes the considerations for cultural values and practice in the development of the tool and in working with stakeholders.					
7	**Design a population-based policy, program, project or intervention.** (CEPH 9)					
	THESIS Research Question: Clearly states the main study question and hypothesis. Identifies key design elements. Describes the conceptual framework or directed acyclic graph (DAG) of the study question and relationships. Describes section criteria and rationale.					

		Advanced	Skilled	Adequate	Emerging/Minimal	N/A Did Not Observe
		Expert in this skill; can teach and supervise others	*Can perform this skill without direct oversight*	*Can perform this skill, but only with direct supervision*	*Has some knowledge, but cannot perform this skill independently*	*This skill was not demonstrated in the student's work*
	CAPSTONE Methods: Describes clearly the development of a public health tool (i.e., policy, program, project, or intervention).					
8	**Select methods to evaluate public health programs.** (CEPH 11)					
	THESIS Describes the conceptual framework or directed acyclic graph (DAG) of the study question and relationships.					
9	**Propose strategies to identify relevant communities and individuals and build coalitions and partnerships for influencing public health outcomes.** (CEPH 13)					
	CAPSTONE Focus area: Explains the connection between the focus area, past experiences, and career interests. Displays evidence of knowledge and skills in the focus area. Briefly provides an overview of each item and lessons learned during its creation.					
10	**Evaluate policies for their impact on public health and health equity.** (CEPH 15)					
	THESIS Policy context: Explains policy implications, provides review of prior research					
11	**Apply leadership and/or management principles to address a relevant issue.** (CEPH 16)					
	CAPSTONE Describes one's leadership and management in working with stakeholders to develop a tool. References specific leadership practices and theories as applicable.					
12	**Select communication strategies for different audiences and sectors.** (CEPH 18)					
	THESIS Professional communication: Presents results clearly, uses effective tables and figures, supports statements with data.					
	CAPSTONE Selects written, oral, and visual strategies, tools, and methods to communicate clearly to different audiences including researchers, practitioners, lay public, and mixed groups.					
13	**Communicate audience-appropriate public health content, both in writing and through oral presentation to a non-academic, non-peer**					

		Advanced	Skilled	Adequate	Emerging/Minimal	N/A Did Not Observe
		Expert in this skill; can teach and supervise others	*Can perform this skill without direct oversight*	*Can perform this skill, but only with direct supervision*	*Has some knowledge, but cannot perform this skill independently*	*This skill was not demonstrated in the student's work*
	audience with attention to factors such as literacy and health literacy. (CEPH 19) THESIS Professional communication: Presents results clearly, uses effective tables and figures, supports statements with data. For written products, writes in a clear, succinct manner with no spelling or grammatical errors. CAPSTONE Communicates clearly and demonstrates tool rationale, development, and impact to lay audiences through the e-portfolio. For written products, writes in a clear, succinct manner with no spelling or grammatical errors.					
14	**Integrate perspectives from other sectors and/or professions to promote and advance population health.** (CEPH 21) CAPSTONE Field experiences: Summarizes practicum, and other relevant public health experiences. Explains connection to focus area and professional goals.					
15	**Apply a systems-thinking tool to visually represent a public health issue in a format other than standard narrative.** (CEPH 22) CAPSTONE E-portfolio: Through demonstration of tools related to a public health issue/area, explains the connection between the focus area, past experiences, and professional interests. Displays evidence of knowledge and skills in the public health focus area/issue. Provides an overview of each item, lessons learned during its creation, and connection to the larger health system/community.					

Section 2: Track-Specific Competencies

How well did the student demonstrate the <u>track specific</u> competencies in their culminating experience?

		Advanced *Expert in this skill; can teach and supervise others*	Skilled *Can perform this skill without direct oversight*	Adequate *Can perform this skill, but only with direct supervision*	Emerging/Minimal *Has some knowledge, but cannot perform this skill independently*	N/A Did Not Observe *This skill was not demonstrated in the student's work*
EPIDEMIOLOGY TRACK						
1	**Compare the strengths and weaknesses of observational study designs and select an appropriate observational study design for population-based research.**					
2	**Evaluate sources for confounding, and selection and information bias from a causal-inference perspective and through the use of directed acyclic graphs.** THESIS Limitations: Identifies and addresses major study limitations.					
3	**Build multivariable regression models and interpret statistical output from these models to make appropriate statistical inference.**					
4	**Perform regression diagnostics, including residual analyses to assess how well models fit the data, inspect the presence of outliers, and assess the fulfillment of model assumptions.** THESIS Examines fulfillment of assumptions in statistical analyses.					
5	**Develop a study protocol that addresses a specific research question and includes appropriate selection of a study design and adequately accounts for potential sources of bias.**					
GLOBAL HEALTH TRACK						
1	**Identify historical and emerging issues of significance in global health from an interdisciplinary vantage point.**					
2	**Apply a research method(s) and/or programmatic intervention(s) used to ameliorate health and developmental problems, particularly in low-resource settings**. THESIS Designs an analysis of a study in a low- or middle-income country (LMIC). CAPSTONE Methods and Results: Describes the development and implementation of a tool to address a health challenge in a low- or middle-income country (LMIC).					
3	**Describe fundamentals of organizational behavior and change, particularly in low-resource settings.**					
4	**Collaborate on a team with partners from multiple countries to develop a tool(s) that address an identified international public health need.**					
5	**Integrate knowledge of cultural humility and health equity into global health research, policy, practice, or advocacy efforts.** CAPSTONE Discusses cultural considerations and issues of equity in the development of the tool.					

HEALTH POLICY TRACK						
1	**Identify the main features and challenges related to the financing, incentives, and delivery of health care services and public health systems in the US.**					
2	**Describe the complementary roles of individualized health care services and population-based interventions in maintaining and improving health status.**					
3	**Evaluate policies and apply theories of health insurance and the incentives that various approaches to coverage and provider payment create in the health system.**					
4	**Analyze the impact of changes in public health policy and health care financing and service delivery on health care cost growth, quality of care, and access to services.**					
5	**Conceptualize the data and research methods necessary to address questions of significance to policymakers and other relevant system actors.** THESIS Describes data source and suitability to address research question.					

Section 3: Optional Competencies

How well did the student demonstrate the <u>optional</u> competencies in their culminating experience?

		Advanced *Expert in this skill; can teach and supervise others*	**Skilled** *Can perform this skill without direct oversight*	**Adequate** *Can perform this skill, but only with direct supervision*	**Emerging/Minimal** *Has some knowledge, but cannot perform this skill independently*	**N/A Did Not Observe** *This skill was not demonstrated in the student's work*
1	**Compare the organization, structure and function of health care, public health and regulatory systems across national and international settings.** (CEPH 5)					
2	**Discuss the means by which structural bias, social inequities, and racism undermine health and create challenges to achieving health equity at organizational, community and systemic levels.** (CEPH 6)					
3	**Explain basic principles and tools of budget and resource management.** (CEPH 10)					
4	**Discuss the policy-making process, including the roles of ethics and evidence.** (CEPH 12)					
5	**Advocate for political, social or economic policies and programs that will improve health in diverse populations.** (CEPH 14)					
6	**Apply negotiation and mediation skills to address organizational or community challenges.** (CEPH 17)					
7	**Describe the importance of cultural humility in communicating public health content.** (CEPH 20)					

Additional Comments:

Required Elements of the **MPH Culminating Experience Presentation**

All elements listed may not apply to all MPH culminating experiences, but try to use this framework.

Adapted from slides by Carlos Grijalva, M.D., M.P.H.

VANDERBILT School of Medicine

Title Slide

- Use a concise by descriptive title
- Include your co-investigators and study mentor(s)
- List sources of funding and potential conflicts of interest, if any

MPH Competencies

- List the MPH competencies you selected for your culminating experience to address
- This should not be *all* MPH competencies, just the ones *you* chose for your culminating experience
- Full list of MPH competencies can be found on the MPH website (medschool.vanderbilt.edu/mph) under Academics > Competencies

Introduction, Background, Significance

- Tell us about the significance of the problem you have addressed in your culminating experience
  - Introduce problem and its burden
  - Identify the gap in knowledge that you planned to fill with your study or project

- Why was it necessary to conduct the proposed study or project?
  - What are the limitations of available evidence or resources, if any?
  - How could findings influence our knowledge / practice?

Research Questions

- Present hypothesis if applicable
- State research question(s) – clearly identify **E**xposure, **D**isease, and target population

Study or Project Design

- What study (or project) design was used to address your research question?
  - Cohort, case-control, randomized controlled trial, cross- sectional, etc.

Population

- Present selection criteria and their rationale

Data Source(s)

- If the study or project used information already collected, describe the data or information source(s), key data elements and describe the suitability of using those data to address the research question

Exposure (or intervention)

- Describe exposure measurement
- Is the measurement the accepted standard?
  - Potential risk for misclassification?
- Describe timing of measurement
  - E.g., single measurement at baseline, sequential measurements (monthly), etc.

Disease (or outcome)

- Describe disease measurement
- Is the measurement the accepted standard?
  - Potential risk for misclassification?
- Describe timing of measurement
  - E.g., single measurement at baseline, sequential measurements (monthly), etc.

Follow-up (if applicable)

- Identify beginning of follow-up
- Identify reasons for ending follow-up
  - Did disease occurrence determine the end of follow-up?
  - Other reasons for loss to follow-up?
- Could disease status for each subject be established throughout the follow-up period (if cohort)?

Covariates

- Based on E and D, describe potential confounders identified
- Describe strategies used to measure covariates
- If effect modification (interaction) was explored, present rationale and variables for evaluation

Statistical Analyses

- Make sure your group's biostatistician has reviewed your analysis
- Describe main analytical strategy
  - How did you account for confounding factors?
- Were sensitivity analyses performed?
  - E.g., to evaluate robustness of exposure measurement could compare whether measuring exposure using approach A or B makes a difference in conclusions
- Were subgroup analyses performed (especially when interested in study of effect modification)
  - E.g., if vaccine prevents disease in adults, would it work equally well among younger and old adults?

Ethical Considerations

- Indicate if IRB approval was obtained
- Indicate if major protocol modifications were required by the IRB

Results

- Present main results following sequence of research questions
- Use tables / figures when possible to help illustrate findings
- Avoid busy tables and excessive text and small font sizes

Limitations

- Identify potential threats to the validity of the findings
- For each limitation listed, describe what was done to overcome the limitation, if applicable

Conclusions

- Start with research question(s)
- Summary of main findings
- Avoid claims that are not supported by the data shown
- Next steps?

Acknowledgements

- Thank the people and resources that helped with your study or project
  - Examples could include: formal and informal mentors and advisers, consultants, biostatisticians, translators, proof-readers, study participants, colleagues, scholarships, grants, and other funding sources, and resources like the Writing Studio and REDCap clinic.