THE OHIO STATE UNIVERSITY
COLLEGE OF PUBLIC HEALTH

The Ohio State University College of Public Health
PUBHHMP 6625 – Leveraging Healthcare Data for Practice and Policy Change
3 credit hours – Spring, 2026

Instructor: Macarius Donneyong, PhD, MPH

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Class Time and Location: Online

Instructor's Virtual Office Hours: Every Wednesday, 6-7pm EST, via Zoom:
https://osu.zoom.us/j/92566179154?pwd=gi7lIBxtD1Xmi51kZf6C7gm10Zz5GY.1 .

Prequisites: PUBHLTH 6001 or permission from the instructor.

Course description:
Healthcare data is an overarching term for data on the effects of health interventions (such as benefits, risks or resource use) that are not collected in the context of conventional randomized controlled trials (RCTs). While there are several healthcare databases, administrative claims data and Electronic Medical Records (EMR) will be the focus of this course. These types of administrative healthcare databases have become important resources for studying the utilization patterns of medical products (drugs and devices), medical procedures and their associated outcomes in a wide variety of care settings. These databases are also effective for evaluating the impact of clinical programs or health policy changes. This introductory course will prepare students to understand the content and structure of claims databases and EMR and how basic data analytics and study designs can be applied to analyze these databases. Special attention will be devoted to existing databases (the MarketScan claims database, OSUWMC EMR, PCORnet). Practical issues in obtaining and analyzing these types of databases will be emphasized throughout the course, and basic analytic issues will be addressed. Students will prepare a study protocol for answering a specific research question that can be implemented with one of the local healthcare databases that will be covered in this course.

Course Expectations:
The course focuses on preparing students to identify and leverage healthcare databases to generate data that can positively influence healthcare practice and policy. It requires a basic understanding of observational study designs (cohort, case-control) and familiarity with the US healthcare system. It also requires a foundational understanding of biostatistics as basic analytical concepts will be discussed.

Class Format: The course will be conducted entirely via pre-recorded lectures and online learning methods. The online learning activities will focus on discussions, individual and group activities and guest speakers as appropriate. Participation in these online learning activities and discussions will be critical for student success. This course will use the Ohio State University's course management system, Carmen. Course content will be available and grades posted via Carmen.

Final Oral presentations*: All students enrolled in this course must be available to give an oral presentation of their final projects through a virtual live session on* ***April 10ht, 2026, from 5:00pm-8:30pm EST****. During this live final presentation session, students will serve as peer-reviewers of each other. To make it fair, all students are required to be present during the entire durations of the presentations in order to present as well as provide critiques and feedback to their colleagues using the*

rubric specified in Appendix A. In addition to the points received for the individual presentations, points will also be assigned for completion of the rubrics.

Course Objectives:
The primary objective of this course is to introduce students to the practical issues in obtaining and analyzing healthcare databases and to become familiar with the basic principles of observational study designs regarding the use of these databases. Students will prepare a study protocol for answering a specific research question that can be implemented with one of the healthcare databases that will be covered in this course.

1. Apply basic observational study design methods relevant to health outcomes research with a focus on healthcare database analyses.
2. Review the different sources, types and content of healthcare databases and the data privacy and security issues governing their use for research.
3. Discuss the types and sources of potential threats to the validity of healthcare database studies and how to avoid or control for these threats.
4. Formulate a research question, describe the proposed healthcare database to be used, a study methodology (study outcome, covariates, description of study design, outline of analysis plan and expected results [table and figure shells]).
5. Prepare an analytical study protocol highlighting the components listed in Objective # 4 above and present the protocol in an oral presentation.

Foundational Public Health Knowledge Areas Addressed in Course:

1. Explain the role of quantitative and qualitative methods and sciences in describing and assessing a population's health

MPH Core Competencies Addressed in Course:

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

MPH-PEP Specialization Competencies Addressed in Course:

PEP 7. Apply evidence-based decision-making techniques to understand population health concerns and assess population health programs.

Text/Readings:
Required readings will be available via Carmen

Grading:

Assignment	Percent of Total Grade
Student Engagement	10%
Study Proposal Draft Submissions	10%
Study Proposal Final Submission	60%
Study Proposal Presentation	20%

COURSE GRADING SCALE*:

93% to 100%	A	77% to <80%	C+
90% to <93%	A-	73% to <77%	C
87% to <90%	B+	70% to <73%	C-
83% to <87%	B	60% to <70%	D
80% to <83%	B-	0 to <60%	E

The instructor reserves the right to adjust the grading scale if it appears necessary due to overall class performance. These adjustments will only raise a student grade, not lower it

GUIDELINES FOR COURSE GRADES

The following are guidelines for the assignment of grades to graduate students. Please note that the instructor reserves the right to adjust the grading scale if it appears necessary due to overall class performance. These adjustments will only raise a student's grade, not lower it.

A	Outstanding performance for a graduate student; consistently shows exceptional depth of understanding and/or capacity for creative application of course concepts
A-	Better than expected performance for a graduate student, with instances demonstrating additional depth of understanding and/or ability to apply course concepts
B+	Expected performance for a graduate student; work is complete and shows solid understanding and application of course concepts
B	Adequate performance for a graduate student; work is complete, but shows some limitations in grasp or ability to apply course concepts
B-	Marginally acceptable work for a graduate student; needs improvement, and is below the acceptable average standard of performance
C+	Work not acceptable for a graduate student; work is not complete and/or shows limited understanding of and/or ability to apply course concepts.
C	Work not acceptable for a graduate student; work is not complete and/or shows very limited understanding of and/or ability to apply course concepts.
C-	Work not acceptable for a graduate student; work is not complete and/or shows extremely limited understanding of and/or ability to apply course concepts
D	Work not acceptable for a graduate student; work is not complete and/or shows no understanding of and/or ability to apply course concepts.
E	Unacceptable performance; does not meet course requirements.

Engagement (10%)

Engagement will be assessed based on both the quantity and quality of students' contributions to online discussions, group activities, and other evidence that students are taking ownership of their own learning in class and through assignments. See appendix B for the guideline and rubric for online discussions.

Study proposal presentation and term paper

The term paper is a study protocol (not more than 10 pages) that outlines how a healthcare database will be used to address a specific question in health outcomes (e.g. comparative effectiveness of medications, impact of health policy on health outcomes, etc). Students will be required to present their proposal to the class during the final in-class meeting.

Presentation of Study Protocol (20%): Each student will be required to give an oral presentation (PowerPoint slides) of their study protocol on the final day of the semester. The rubric in the appendix will be used to evaluate your presentations.

Written Protocol Description (70%: 10% Draft and 60% Final): Students will be required to submit a draft/outline of each section by the assigned date. This allows the instructor to ensure students are progressing appropriately. A total of 10% of the Written Protocol grade will be earned by submitting drafts of each section (see below) on time. The following setup for the protocol is recommended:

- Background (Draft/outline due TBD) (***10pts***)
    - Brief background/motivation on your research question (0.5 - 1 page)
    - Research objectives
- Methods (Draft/outline due TBD) (***30pts***)
    - Note: This should be the *primary* emphasis of your assignment.
    - Study design selection
    - Study population and cohort identification with inclusion and exclusion criteria
    - Exposure and outcome definitions
    - Covariates and their definitions
    - Subgroups of interest (if applicable)
    - Analysis plan
        - Brief description and justification of the appropriate statistical model (e.g., linear regression, logisitic regression, Cox regression, etc).
- Anticipated results (Draft/outline due TBD) (***10pts***)

(*NB: Tableshells and figureshells will not count towards page count.)*

    - Provide a tableshell including all characteristics of your study population identified in your methods section
        - A tableshell of effect measurements of outcome(s)
    - Optional: A figureshell of effect measurements of outcome(s)

The most important aspect of this assignment is that you describe a valid study and **be able to defend all your design and analytic choices that you have made** for your analysis and to defend your approach.

Additional details regarding the assignments will be posted on Carmen.

Carmen
The course website will provide access to all course-related documents including course background material, assignments, class presentations, and some required readings. The course website will also be used for submission of class assignments (through the dropbox on Carmen) and posting of assignment grades.

Class Policies

1. **Attendance**
   There is no attendance policy because this course will be delivered in a fully asynchronous online format **except** for the one-time virtual session for the presentation of final projects as specified above.
2. **Changes in Course Outline**
   Through the semester, changes may be made to the course outline. The instructor will notify students in advance of any such changes. These changes might include assignment of supplemental reading, modifying lecture contents to suite the background of enrolled students, etc.

Office of Student Life: Disability Services

Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office of Student Life: Disability Services at 614-292-3307 in Room 098 Baker Hall 113 W. 12th Ave. to coordinate reasonable accommodations for students with documented disabilities (http://www.ods.ohio-state.edu/).

Mental Health Services

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614¬-292--5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614¬-292-¬5766 and 24 hour emergency help is also available 24/7 by dialing 988 to reach the Suicide and Crisis Lifeline.

Religious Beliefs or Practices Accommodations

It is Ohio State's policy to reasonably accommodate the sincerely held religious beliefs and practices of all students. The policy permits a student to be absent for up to three days each academic semester for reasons of faith or religious or spiritual belief.

Students planning to use religious beliefs or practices accommodations for course requirements must inform the instructor in writing no later than 14 days after the course begins. The instructor is then responsible for scheduling an alternative time and date for the course requirement, which may be before or after the original time and date of the course requirement. These alternative accommodations will remain confidential. It is the student's responsibility to ensure that all course assignments are completed.

Academic integrity

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University, the College of Public Health, and the Committee on Academic Misconduct (COAM) expect that all students have read and understood the University's *Code of Student Conduct* and the School's *Student Handbook*, and that all students will complete all academic and scholarly assignments with fairness and honesty. The *Code of Student Conduct* and other information on academic integrity and academic misconduct can be found at the COAM web pages (http://oaa.osu.edu/coam/home.html). Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct*, the *Student Handbook*, and in the syllabi for their courses may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Please note that the use of material from the Internet without appropriate acknowledgement and complete citation is plagiarism just as it would be if the source were printed material. Further examples are found in the *Student Handbook*. Ignorance of the *Code of Student Conduct* and the *Student Handbook* is never considered an "excuse" for academic misconduct.

If I suspect a student of academic misconduct in a course, I am obligated by University Rules to

report these suspicions to the University's Committee on Academic Misconduct. If COAM determines that the student has violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in the course and suspension or dismissal from the University. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Course Outline (Schedule)

Week/unit	**Topic(s)**	**Module Learning outcome(s)**	**Major course assignments**	**Readings and learning activities**
Week 1: 1/12 – 1/18	Introductions, overview of course, goals, and expectations	Understand the primary goals and expectations of this course	None	N/A
Module 1: Week 2 1/19 – 1/26	Working with healthcare databases, data privacy/security, data use agreements	Understand data privacy, security and how to access and use data in a responsible manner	1. Data security/privacy concerns with the use of EHR and claims data 2. Completion of HIPAA certification 3. Come up with a topic that can be investigated with EHR or claims data	1. Ensuring Patient Privacy in Data Sharing: Sarpatwari(2014)_Ensuring patient privacy in data sharing.pdf 2. A review of uses of health care utilization databases (**focus on pages 323 – 329**): Schneeweiss(2005)_Review of healthcare utilization databases for epidemiologic research on therapeutics.pdf 3. A Practical Guide to Healthcare Data: https://support.sas.com/resources/papers/proceedings17/0831-2017.pdf
Module 1: Week 3 1/26 – 2/01	Sources, content and basic structure of healthcare databases (EHR and health insurance claims) and how they can be used for research.	Get familiar with the structure and contents of EHR and claims data and know their strengths and limitations for research	1. DISCUSSION: Patient data - Privacy or Profit?	1. Review the content and structure of: MarketScan claims data: https://truvenhealth.com/Portals/0/Assets/2017-MarketScan-Databases-Life-Sciences-Researchers-WP.pdf PCORnet: https://pcornet.org/pcornet-data/

Module 2: Week 4 2/02 – 2/08	Introduction to basic observational study designs using healthcare databases	Gain knowledge on the observational study designs that are used for analyzing claims and EHR data	1. Discussion: Reflect on your understanding of the different study designs used in pharmacoepidemiology and how you can apply them to your proposed study	1. Schneeweiss(2005)_Review of healthcare utilization databases for epidemiologic research on therapeutics.pdf
Module 2: Week 5 2/09 – 2/15	Protocol summary review	To make sure the proposed study topics can be feasibly implemented with claims or EHR data	1. Study protocol summary due	None
Module 2: Week 6 2/16 – 2/22	Visualization of study designs using healthcare database	Know how to visually depict study designs	1. Submit a visualization of your proposed study design	Schneeweis (2019): Graphical Depiction of Longitudinal Study Designs in Health Care Databases
Module 2: Week 7 2/23 – 3/01	Measuring variables	Be able to specify and guide a data analyst to operationally define variables of interest from EHR or claims data	1. Submit the background/introduction section of your proposed study	None
Module 2: Week 8 3/02 – 3/08	Creating analytic protocol	Be able to create your own analytic protocol that is clear and easy to follow for implementation by a data analyst	1. Analytic Protocol	None
Module 3: Week 9 3/09 – 3/15	Basic guide to selecting a statistical analysis method for observational data analysis		None	Steinke (2016): Basic statistical methods in drug utilization research
Module 3: Week 10 3/16 – 3/22	SPRING BREAK			
Module 3: Week 11 3/23 – 3/29	Interrupted-time series analysis for assessing the impacts of healthcare policies, programs, interventions, etc			1. Wagner (2002): Segmented regression analysis of interrupted time series studies in medication research use 2. Kesselheim (2017): Changes in prescribing and healthcare resource utilization after FDA Drug Safety Communications

Module 3: Week 12 3/30 – 4/05	Independent work time for final project.			
Module 4: Week 13 4/06 – 4/12	**Oral presentation of study protocol on Friday, April 10th, 2026**			
Module 4: Week 14 4/13 – 4/19	Independent work time			
Module 4: Week 15 4/20 – 4/26	Independent work time for final project.			
Module 4: Week 16 4/27 – 5/03	**Submission of finalized study protocols**			

APPENDIX A: RUBRIC FOR FOR EVALUATION OF FINAL PRESENTATION OF STUDY PROTOCOLS.

1. **Organization and content.** Did the presentation follow a logical sequence that the audience could follow? Were any important points left out? Were the important points fully supported with convincing arguments, ideas and data? Was the rationale and 'take home message' explained clearly for each experiment?

1 . . . . 2 . . . . 3 . . . . 4 5
poor . . . . . outstanding

2. **Subject knowledge.** Did the student have a good understanding of the subject? Was he/she able to answer questions and explain technical details?

1 . . . . 2 . . . . 3 . . . . 4 5
poor . . . . . outstanding

3. **Graphics.** Did the student use clear and instructive figures in presenting the background information, data, and conclusions? Were the slides easy to follow (font size, image size, amount of information per slide)?

1 . . . . 2 . . . . 3 . . . . 4 5
poor . . . . . outstanding

4. **Presentation skills.** Did the student speak clearly and at a sufficient volume, maintain eye contact with the audience, and avoid using distracting hand movements and such? Was the student receptive to questions and handle the questions well?

1 . . . . 2 . . . . 3 . . . . 4 5
poor . . . . . outstanding

Total score: ____/20

Positive comment(s):

_____

_____

_____

Advice for improvement:

_____

_____

Appendix B: Guidelines and Rubric for Online Discussion Boards

In this class, online discussions will count towards your Assignments grade in the course (see syllabus). The purpose of the discussion board is to frame and promote collaborative learning. Active and regular participation is not only important for me to see, but also important for you in learning the course contentand in developing your thoughts and positions on various topics.

The three cardinal rules for Discussion Boards:
1. Please remember that the culture of mutual respect that is part of this course extends into the virtual classroom environment. 2. Participation in these discussion boards is required. 3. Participation alone is not enough; a thoughtful and meaningful approach in your posts is required. (Quality counts!)

Here is the protocol for posting and contributing to an online discussion:

a. You are expected to participate on at least 3 different days.
b. You should begin at least one thread and provide at least three posts in response to other participants' threads.

c.	Posting should be a minimum of one short paragraph and a maximum of two paragraphs.Word totals for each post should be in the **100-200 words range**. Whether you agree or disagree explain why with supporting evidence and concepts from the readings or a related experience. Include a reference, link, or citation when appropriate.
d.	Be organized in your thoughts and ideas.
e.	Incorporate correlations with the assigned readings or topics.
f.	Stay on topic.
g.	Provide evidence of critical, college-level thinking and thoughtfulness in your responses or interactions. Avoid summarizing.
h. i.	Contribute to the learning community by being creative in your approaches to topics, being relevant in the presented viewpoints, and attempting to motivate the discussion.
j.	Be aware of grammar and sentence mechanics.
k.	Use proper etiquette. Remember that being respectful is critical.

Discussion Rubric:

Participating is measured by posting on different days. You should make a minimum of 4 postings in total: one new thread and three thoughtful responses to *different* members. Your participation will be graded on a ten point scale as follows.

A Discussion (9-10 points) – participated 3 times, minimum of 4-5 posts

A-level postings:

- Are made in a timely fashion, giving others an opportunity to respond.
- Are thoughtful and analyze the content or question asked.
- Make connections to the course content and/or other experiences.
- Extend discussions already taking place or pose new possibilities or opinions not previously voiced.
- Are from participants aware of the needs of the community, motivate group discussion, and present acreative approach to the topic.

*If these criteria are met but the 100-200 word count is not met, the score will drop two points.

B Discussion (8-9 points) – participated 2 times, minimum of 3-4 posts

B-level postings:

- Are made in a timely fashion, giving others an opportunity to respond.
- Are thoughtful and analyze the content or question asked.
- Make connections to the course content and/or other experiences, but connections are unclear, not firmlyestablished or are not obvious.
- Contain novel ideas, connections, and/or real-world application but lack depth, detail and/or explanation.
- Are from participants who interact freely and occasionally attempt to motivate discussion.

*If these criteria are met but the 100-200 word count is not met, the score will drop two points.

C Discussion (7-8 points) – participated 2 times, minimum of 3 posts

C-level postings:

- Are usually, but not always, made in a timely fashion.
- Are generally accurate, but the information delivered is limited.
- Make vague or incomplete connections between class content and posting by other students.

- Summarize what other students have posted and contain few novel ideas.
- Show marginal effort to become involved with group.

*If these criteria are met but the 100-200 word count is not met, the score will drop two points.

D Discussion (6-7 points) – participated 1 time, minimum 2 posts

D level postings:

- Are not made in timely fashion, if at all.
- Are superficial, lacking in analysis or critique.
- Contribute few novel ideas, connections, or applications.
- May veer off topic.
- Show little effort to participate in learning community as it develops.

*If these criteria are met but the 100-200 word count is not met, the score will drop two points.

F Discussion (0 points).

- Participant was rude or abusive to other course participants. In this case, the number and quality of otherposts is irrelevant.

OR

- Participant failed to meet the basic criteria for the "D Discussion".