

M19-5254 Using Administrative Data for Health Services Research (3 credits)

Spring 2023 (01/19/23 – 5/04/23)

Thursdays, 10:00am to 1:00 pm

Location: Taylor Avenue Building

2nd floor, Julius Richmond Room

INSTRUCTORS

Anne Mobley Butler, PhD (she/her)

Assistant Professor

Division of Infectious Diseases

Division of Public Health Sciences

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TEACHING ASSISTANTS

Alice Bewley, MS (she/her)

Bioinformaticist

Division of Infectious Diseases

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Katelin Nickel, MPH (she/her)

Senior Programmer Analyst

Division of Infectious Diseases

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PREREQUISITES

**Basic background in epidemiology and biostatistics required or required prerequisites (M19-501 Introductory Clinical Epidemiology; M19-511 Introductory Biostatistics for Clinical Research)

**R software required. Download freely available of R Studio software on laptop or desktop computer.

**Competency in data management with programming language (e.g., R, SAS, Stata).

COURSE DESCRIPTION & OBJECTIVES

The objective of this advanced graduate course is to prepare students to understand and use large administrative healthcare databases to perform epidemiologic / health services research. Lectures will cover the translation of clinical care into healthcare utilization data, review various types of national and state administrative databases, describe methods for administrative database research, and emphasize key issues related to data security and confidentiality. We will consider the strengths and limitations of observational studies using large databases to augment evidence from randomized clinical trials. Students will get hands-on experience with administrative data via programming with R statistical software. Students will develop and present to the class a research proposal in their own area of interest using administrative data. Students will further gain experience with healthcare database research by reviewing journal articles weekly.

COMPETENCIES

The objective of this advanced graduate course is to prepare students to understand and use large administrative healthcare databases to perform epidemiologic / health services research. Lectures will cover the translation of clinical care into healthcare utilization data, review various types of national and state administrative databases, describe methods for administrative database research, and emphasize key issues related to data security and confidentiality. We will consider the strengths and limitations of observational

studies using large databases to augment evidence from randomized clinical trials. Students will get hands-on experience with administrative data via programming with R statistical software. Students will develop and present to the class a research proposal in their own area of interest using administrative data. Students will further gain experience with healthcare database research by reviewing journal articles weekly.

EXPECTATIONS

- Attendance in lectures, which will be as interactive as possible.
- Required readings should be read before class each week; they will allow the students to understand the topics in greater depth and enable more active participation in class. Suggested readings provide more detailed information about particular subject areas selected as resources or guidance materials for a specific database or topic of interest.
- Students are required to use R statistical software and write basic code.
- There will be a series of short assignments over the course of the semester with a project due at the end of the course.
- Final grades will be based on the assignments below.

ATTENDANCE AND PARTICIPATION

Class attendance is required. As a courtesy to other students, you are expected to arrive on time. More than two unexcused absences from class may result in a lowered grade. Readings assigned for each class should be read ahead of the class and students should be prepared to discuss the material from readings.

REQUIRED SOFTWARE

R Studio (freely available at <https://www.rstudio.com/>)

RECOMMENDED TEXT

ICD-10-CM book (old) – strongly recommended. Available through Amazon for < \$10

- Example: https://www.amazon.com/ICD-10-CM-Complete-Code-Set-2016/dp/1626882827/ref=sr_1_5?keywords=icd+10+2016&qid=1639429047&sr=8-5
- Example: https://www.amazon.com/ICD-10-CM-2016-Official-Codes-Book/dp/1943009058/ref=sr_1_15?keywords=icd+10+2016&qid=1639429047&sr=8-15

Online resources for R:

- UCLA Website for Statistical Analysis: <https://stats.idre.ucla.edu/r/>
- R for Data Science: <https://r4ds.had.co.nz/index.html>
- An Introduction to R from the R Core Team: <https://cran.r-project.org/doc/manuals/R-intro.pdf>
- Overview of R: <https://www.statmethods.net/index.html>
- List of free e-books for R: <https://r-dir.com/learn/e-books.html>

GRADING

Each student's grade will be based on:

- Class participation (5%)
- Programming exercises (35%)
- Journal article review (5%)
- Preliminary project proposal (15%)
- Final project and oral presentation (40%)

Grading Scale: A+: 97-100; A: 93-96; A-: 90-92; B+: 87-89; B: 83-86; B-: 80-82; C+: 77-79; C: 73-76; C-: 70-72

ASSIGNMENTS

Formal Review of Journal Article

Students will review a journal article related to administrative data research (e.g., health services research or comparative effectiveness research). Students will present the information in class (~10 minutes). Guidelines for review of article will be provided in class.

Programming Exercises

Students will be asked to complete a number of programming exercises to demonstrate mastery of R programming. The exercises must be turned in prior to class.

Project Proposal

Students will submit a 1- to 2-paragraph description of their proposed research project (see description below), including the primary research question, proposed study population, and database. Students will be provided timely feedback so that they can take comments into account before finalizing their project.

Final Project and Oral Presentation

Students will design a research study about healthcare utilization using HCUP data, ultimately preparing a small grant proposal and delivering an oral presentation. The students should choose a topic of sufficient personal interest, with the hope that the student can continue developing the study and submit the grant proposal after completion of the course. Students will define a study cohort based on demographic and/or clinical criteria, select relevant data elements from the database, and describe future statistical analyses to address the study question.

POLICY ON LATE ASSIGNMENTS

Late assignments will result in a deduction of one grade point (A+ down to A) for each day late (including weekends) unless prior approval is obtained from the instructor or a compelling situation prevents prior approval (i.e. documented health issues or family emergencies).

CLASS SCHEDULE

LECTURE 1 (January 19th)

Introduction to Administrative Data Research (Anne Mobley Butler)

Required Readings:

- Schneeweiss S, Avorn J. A review of the uses of health care utilization databases for epidemiologic research on therapeutics. *J Clin Epidemiol* 2005; 58: 323-337.
- Franklin JM, Platt R, Dreyer NA, London AJ, Simon GE, Watanabe JH, Horberg M, Hernandez A, Califf RM. When can nonrandomized studies support valid inference regarding effectiveness or safety of new medical treatments? *Clin Pharmacol Ther* 2022 Jan;111(1):108-115. doi: 10.1002/cpt.2255. Epub 2021 May 9.
- Hernán MA, Robins JM. Using Big Data to Emulate a Target Trial When a Randomized Trial Is Not Available. *Am J Epidemiol*. 2016 Apr 15;183(8):758-64. doi: 10.1093/aje/kwv254. Epub 2016 Mar 18.
- R for Data Science available at URL: <https://r4ds.had.co.nz/index.html>

Suggested Readings:

- Sturmer T, Jonsson Funk M, Poole M, Brookhart MA. Nonexperimental Comparative Effectiveness Research Using Linked Healthcare Databases. *Epidemiology*. 2011 May;22(3):298-301. doi: 10.1097/EDE.0b013e318212640c.
- Wang SV, Schneeweiss S. Assessing and interpreting real-world evidence studies: introductory points for new reviewers. *Clin Pharmacol Ther* Jan;111(1):145-149. doi: 10.1002/cpt.2398. Epub 2021 Sep 1.
- Haider AH, Bilimoria KY, Kibbe MR. A checklist to elevate the science of surgical database research. *JAMA Surg* 2018;153:505-7.

Student Presentation:

- None

LECTURE 2 (January 26th)

Discharge / Billing Data: Healthcare Cost and Utilization Project (HCUP) (Margaret Olsen)

R Lab – Using R to Analyze HCUP Data (John Sahrman)

Required Readings:

- Overview of the State Inpatient Databases (SID). Agency for Healthcare Research and Quality. Health Cost And Utilization Project. Access at <https://www.hcup-us.ahrq.gov/sidoverview.jsp> (note: please thoroughly explore the website)
- Andrews RM. Statewide hospital discharge data: collection, use, limitations, and improvements. *Health Serv Res* 2015;50(S1):1273-99.
- Lucyk K, Tang K, Quan H. Barriers to data quality resulting from the process of coding health information to administrative data: a qualitative study. *BMC Health Serv Res* 2017;17:766.
- Khera R, Angraal S, Couch T, et al. Adherence to methodologic standards in research using the National Inpatient Sample. *JAMA* 2017;318:2011-8.
- CMS Form 1500
- UB04 Form

Suggested Readings:

- Introduction to the HCUP State Inpatient Databases (SID). Agency for Healthcare Research and Quality. September 15, 2021.
- Introduction to the HCUP National Inpatient Sample (NIS) 2018. Agency for Healthcare Research and Quality. November 2020.
- Schoenman JA, Sutton JP, Elixhauser A, Love D. Understanding and Enhancing the Value of Hospital Discharge Data. *Med Care Res Rev* 2007;64:449-468.

Student Presentation:

- None

LECTURE 3 (February 2nd)

Research Studies Using HCUP Data (Karen Joynt Maddox)

HCUP Study Examples (Katelin Nickel)

R Lab – Data Processing in the Tidyverse (John Sahrman)

****Homework #1 due before class**

Required Readings:

- Hammond G, Luke AA, Elson L, Towfighi A, Joynt Maddox KE. [Urban-Rural Inequities in Acute Stroke Care and In-Hospital Mortality](#). *Stroke*. 2020 Jul;51(7):2131-2138. doi: 10.1161/STROKEAHA.120.029318. Epub 2020 Jun 17.
- Jain NB, Ayers GD, Peterson EN, Harris MB, Morse L, O'Connor KC, Garshick E. [Traumatic spinal cord injury in the United States, 1993-2012](#). *JAMA*. 2015 Jun 9;313(22):2236-43. doi: 10.1001/jama.2015.6250.

Suggested Readings:

- von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP; STROBE Initiative. [The Strengthening the Reporting of Observational Studies in Epidemiology \(STROBE\) statement: guidelines for reporting observational studies](#). *Epidemiology*. 2007 Nov;18(6):800-4. doi: 10.1097/EDE.0b013e3181577654.
- STROBE Statement—Checklist of items that should be included in reports of cohort studies
- Wang X, Luke AA, Vader JM, Maddox TM, Joynt Maddox KE. [Disparities and Impact of Medicaid Expansion on Left Ventricular Assist Device Implantation and Outcomes](#). *Circ Cardiovasc Qual Outcomes*. 2020 Jun;13(6):e006284. doi: 10.1161/CIRCOUTCOMES.119.006284. Epub 2020 May
- Chang DC, Parina RP, Wilson SE. [Survival After Endovascular vs Open Aortic Aneurysm Repairs](#). *JAMA Surg*. 2015 Dec;150(12):1160-6. doi: 10.1001/jamasurg.2015.2644.
- Talutis SD, Chen Q, Wang N, Rosen AK. [Comparison of Risk-Standardized Readmission Rates of Surgical Patients at Safety-Net and Non-Safety-Net Hospitals Using Agency for Healthcare Research and Quality and American Hospital Association Data](#). *JAMA Surg*. 2019 May 1;154(5):391-400. doi: 10.1001/jamasurg.2018.5242.

Student Presentation:

- Thangam M, Luke AA, Johnson DY, Amin AP, Lasala J, Huang K, Joynt Maddox KE. [Sociodemographic differences in utilization and outcomes for temporary cardiovascular mechanical support in the setting of cardiogenic shock](#). *Am Heart J*. 2021 Jun;236:87-96. doi: 10.1016/j.ahj.2020.12.014. Epub 2021 Feb 26.
- Johnston KJ, Thorpe KE, Jacob JT, Murphy DJ. [The incremental cost of infections associated with multidrug-resistant organisms in the inpatient hospital setting-A national estimate](#). *Health Serv Res*. 2019 Aug;54(4):782-792. doi: 10.1111/1475-6773.13135. Epub 2019 Mar 12.

LECTURE 4 (February 9th)

Validation studies (Anne Mobley Butler)

R Lab – Merging data with the dplyr package (John Sahrman)

****Homework #2 due before class**

Required Readings:

- Rhee C, Murphy MV, Li L, et al. Comparison of trends in sepsis incidence and coding using administrative claims versus objective clinical data. *Clin Infect Dis* 2015;60:88-95.
- Lund JL, Stürmer T, Harlan LC, Sanoff HK, Sandler RS, Brookhart MA, Warren JL. Identifying specific chemotherapeutic agents in Medicare data: a validation study. *Med Care*. 2013 May;51(5):e27-34. doi: 10.1097/MLR.0b013e31823ab60f.

Suggested Readings:

- Ehrenstein V, Petersen I, Smeeth L, Jick SS, Benchimol EI, Ludvigsson JF, Sørensen HT. Helping everyone do better: a call for validation studies of routinely recorded health data. *Clin Epidemiol*. 2016 Apr 12;8:49-51. doi: 10.2147/CLEP.S104448. eCollection 2016.
- Layton JB, Butler AM, Brookhart MA, Panozzo CA. Variation in rotavirus vaccination coding in state US Medicaid data. *Vaccine*. 2016 May 16;37(22):2892-2895. doi: 10.1016/j.vaccine.2019.02.074. Epub 2019 Mar 12.
- Birman-Deych E, Waterman AD, Yan Y, Nilasena DS, Radford MJ, Gage BF. [Accuracy of ICD-9-CM codes for identifying cardiovascular and stroke risk factors](#). *Med Care*. 2005 May;43(5):480-5. doi: 10.1097/01.mlr.0000160417.39497.a9.
- Wahl PM, Rodgers K, Schneeweiss S, et al. Validation of claims-based diagnostic and procedure codes for cardiovascular and gastrointestinal serious adverse events in a commercially-insured population. *Pharmacoepidemiol Drug Saf* 2010;19:596-603.
- Rhee C, Murphy MV, Li L, et al. Improving documentation and coding for acute organ dysfunction biases estimates of changing sepsis severity and burden. *Crit Care* 2015;19:338.

Student Presentation:

- None

LECTURE 5 (February 16th)

Claims Data: CMS Medicare Data (Anne Mobley Butler)

R Lab – Identifying Diagnosis and Procedure Codes with R (John Sahrman)

****Project proposal outline due before class**

Required Readings:

- Mues KE, Liede A, Liu J, Wetmore JB, Zaha R, Bradbury BD, Collins AJ, Gilbertson DT. [Use of the Medicare database in epidemiologic and health services research: a valuable source of real-world evidence on the older and disabled populations in the US](#). *Clin Epidemiol*. 2017 May 9;9:267-277. doi: 10.2147/CLEP.S105613. eCollection 2017.
- Assimon MM, Pun PH, Wang LC, Al-Khatib SM, Brookhart MA, Weber DJ, Winkelmayr WC, Flythe JE. Analysis of Respiratory Fluoroquinolones and the Risk of Sudden Cardiac Death Among Patients Receiving Hemodialysis. *JAMA Cardiol*. 2022 Jan 1;7(1):75-83. doi: 10.1001/jamacardio.2021.4234.

Suggested Readings:

- Samson LW, Finegold K, Ahmed A, Jensen M, Filice CE, Joynt KE. [Examining Measures of Income and Poverty in Medicare Administrative Data](#). *Med Care*. 2017 Dec;55(12):e158-e163. doi: 10.1097/MLR.0000000000000606.

Student Presentation:

- Tsai TC, Joynt KE, Orav EJ, Gawande AA, Jha AK. Variation in surgical-readmission rates and quality of hospital care. *N Engl J Med*. 2013 Sep 19;369(12):1134-42. doi: 10.1056/NEJMs1303118.
- Izurieta HS, Lu M, Kelman J, Lu Y, Lindaas A, Loc J, Pratt D, Wei Y, Chillarige Y, Wernecke M, MaCurdy TE, Forshee R. Comparative Effectiveness of Influenza Vaccines Among US Medicare Beneficiaries Ages 65

Years and Older During the 2019-2020 Season. *Clin Infect Dis*. 2021 Dec 6;73(11):e4251-e4259. doi: 10.1093/cid/ciaa1727.

LECTURE 6 (February 23rd)

Claims Data: Private Insurer Data (Anne Mobley Butler)

R Lab – Experimental Design with the HCUP SID (John Sahrman)

****Task order tables due before class**

Required Readings:

- Butler AM, Nickel KB, Overman RA, Brookhart MA. IBM MarketScan Research Databases. In: Sturkenboom MC, Schink T., eds. *Databases for Pharmacoepidemiological Research*. Springer; 2021:243-251.
- Ailes EC, Summers AD, Tran EL, Gilboa SM, Arnold KE, Meaney-Delman D, Reefhuis J. [Antibiotics Dispensed to Privately Insured Pregnant Women with Urinary Tract Infections - United States, 2014](#). *MMWR Morb Mortal Wkly Rep*. 2018 Jan 12;67(1):18-22. doi: 10.15585/mmwr.mm6701a4.

Suggested Readings:

- Butler AM, Durkin MJ, Keller MR, Ma Y, Powderly WG, Olsen MA. Association of adverse events with antibiotic treatment for urinary tract infection. *Clin Infect Dis* 2021 Jul 19;ciab637. doi: 10.1093/cid/ciab637. Online ahead of print.
- McGrath LJ, Spangler L, Curtis JR, Ehrenstein V, Sorensen HT, Saul B, Levintow SN, Reams D, Bradbury B, Brookhart MA. Using negative control outcomes to assess the comparability of treatment groups among women with osteoporosis in the United States. *Pharmacoepidemiol Drug Saf*. 2020 Aug;29(8):854-863. doi: 10.1002/pds.5037. Epub 2020 Jun 14.
- Seamans MJ, Carey TS, Westreich DJ, Cole SR, Wheeler SB, Alexander GC, Pate V, Brookhart MA. Association of household opioid availability and prescription opioid initiation among household members. *JAMA Intern Med* 2018 Jan 1;178(1):102-109. doi: 10.1001/jamainternmed.2017.7280.

Student Presentation:

- Gaber CE, Kinlaw AC, Edwards JK, Lund JL, Stürmer T, Peacock Hinton S, Pate V, Bartelt LA, Sandler RS, Peery AF. Comparative Effectiveness and Harms of Antibiotics for Outpatient Diverticulitis : Two Nationwide Cohort Studies. *Ann Intern Med*. 2021 Jun;174(6):737-746. doi: 10.7326/M20-6315. Epub 2021 Feb 23.

LECTURE 7 (March 2nd)

Veterans Administration Data (Benjamin [Charlie] Bowe)

R Lab – Demo of Elixhauser comorbidities common code (John Sahrman)

Required Readings:

- Wang V, Maciejewski ML, Patel UD, Stechuchak KM, Hynes DM, Weinberger M. [Comparison of outcomes for veterans receiving dialysis care from VA and non-VA providers](#). BMC Health Serv Res. 2013 Jan 18;13:26. doi: 10.1186/1472-6963-13-26.

Suggested Readings:

- Al-Aly Z, Xie Y, Bowe B. [High-dimensional characterization of post-acute sequelae of COVID-19](#). Nature. 2021 Jun;594(7862):259-264. doi: 10.1038/s41586-021-03553-9. Epub 2021 Apr 22.
- Xie Y, Bowe B, Yan Y, Xian H, Li T, Al-Aly Z. Estimates of all cause mortality and cause specific mortality associated with proton pump inhibitors among US veterans: cohort study. BMJ. 2019 May 29;365:l1580. doi: 10.1136/bmj.l1580.

Student Presentation:

- Suda KJ, Fitzpatrick MA, Gibson G, Jurasic MM, Poggensee L, Echevarria K, Hubbard CC, McGregor JC, Evans CT. Antibiotic prophylaxis prescriptions prior to dental visits in the Veterans' Health Administration (VHA), 2015-2019. Infect Control Hosp Epidemiol. 2022 Feb 22:1-10. doi: 10.1017/ice.2021.521.

LECTURE 8 (March 9th)

Medicaid data (Derek Brown)

R Lab – Demo of assigning dates to procedures in the HCUP SID (John Sahrman)

****Homework #3 due before class**

Required Readings:

- Enders D, Schink T, Sturmer T. Medicaid and Medicare. In: Sturkenboom MC, Schink T., eds. *Databases for Pharmacoepidemiological Research*. Springer; 2021:231-242.
- Liberty A, Yee K, Darney BG, Lopez-Defede A, Rodriguez MI. Coverage of immediate postpartum long-acting reversible contraception has improved birth intervals for at-risk populations. Am J Obstet Gynecol. 2020 Apr;222(4S):S886.e1-S886.e9. doi: 10.1016/j.ajog.2019.11.1282. Epub 2019 Dec 14.

Suggested Readings:

- Huybrechts KF, Hernandez-Diaz S, Straub L, et al. Association of first-trimester ondansetron use with cardiac malformations and oral clefts in offspring. JAMA 2018;320:2429-2437.

Student Presentation:

- Ji X, Wilk AS, Druss BG, Cummings JR. Effect of Medicaid Disenrollment on Health Care Utilization Among Adults With Mental Health Disorders. Med Care. 2019 Aug;57(8):574-583. doi: 10.1097/MLR.0000000000001153.

LECTURE 9 (March 16th)

Propensity scores (Anne Mobley Butler)

R Lab – Basic Plotting with the ggplot2 package (John Sahrman)

****Homework #4 due before class**

Required Readings:

- Brookhart MA, Wyss R, Layton JB, Stürmer T. [Propensity score methods for confounding control in nonexperimental research](#). *Circ Cardiovasc Qual Outcomes*. 2013 Sep 1;6(5):604-11. doi: 10.1161/CIRCOUTCOMES.113.000359. Epub 2013 Sep 10.
- Sturmer T, Wyss R, Glynn RJ, Brookhart MA. Propensity scores for confounder adjustment when assessing the effects of medical interventions using nonexperimental study designs. *J Int Med* 2014;275:570-80.

Suggested Readings:

- Austin PC. [Balance diagnostics for comparing the distribution of baseline covariates between treatment groups in propensity-score matched samples](#). *Stat Med*. 2009 Nov 10;28(25):3083-107. doi: 10.1002/sim.3697.
- Ali MS, Groenwold RHH, Belitser SV, et al. Reporting of covariate selection and balance assessment in propensity score analysis is suboptimal: a systematic review. *J Clin Epidemiol* 2015;68:122-31.

Student Presentation:

- Butler AM, Layton JB, Dharnidharka VR, Sahrman JM, Seamans MJ, Weber DJ, McGrath LJ. [Comparative Effectiveness of High-Dose Versus Standard-Dose Influenza Vaccine Among Patients Receiving Maintenance Hemodialysis](#). *Am J Kidney Dis*. 2020 Jan;75(1):72-83. doi: 10.1053/j.ajkd.2019.05.018. Epub 2019 Aug 1.

LECTURE 10 (March 23rd)

No class

LECTURE 11 (March 30th)

Survey and other data – Medicare Current Beneficiary Survey (Kenton Johnston)

R Lab – Facetting in ggplot2 and a Mapping Example (John Sahrman)

****Homework #5 due before class**

Required Readings:

- Johnston KJ, Wen H, Joynt Maddox KE, Pollack HA. Ambulatory Care Access And Emergency Department Use For Medicare Beneficiaries With And Without Disabilities. *Health Aff (Millwood)*. 2021 Jun;40(6):910-919. doi: 10.1377/hlthaff.2020.01891.

Suggested Readings:

- Johnston KJ, Hockenberry JM. Are two heads better than one or do too many cooks spoil the broth? *Health Serv Res* 2016;51:2176-205.
- Johnston KJ, Wen H, Hockenberry JM, Joynt Maddox KE. Association between patient cognitive and functional status and Medicare total annual cost of care: implications for value-based payment. *JAMA Int Med* 2018;178:1489-97.

Student Presentation:

- Young JC, Sturmer T, Lund JL, Funk MJ. Predictors of prevalent statin use among older adults identified as statin initiators based on Medicare claims data. *Pharmacoepidemiol Drug Saf.* 2016 Jul;25(7):836-43. doi: 10.1002/pds.3991. Epub 2016 Mar 15.

LECTURE 12 (April 6th)

Thinking outside the box – additional data for enrichment (Anne Mobley Butler)

R Lab – Introduction to R Modeling Functions (John Sahrman)

Required Readings:

- Hong J-L, Jonsson Funk M, Buse JB, Henderson LM, Lund JL, Pate V, Stürmer T. Comparative Effect of Initiating Metformin Versus Sulfonylureas on Breast Cancer Risk in Older Women. *Epidemiology.* 2017 May;28(3):446-454. doi: 10.1097/EDE.0000000000000635.PMID: 28166101

Suggested Readings:

- Anthony CA, Peterson RA, Polgreen LA, et al. The seasonal variability in surgical site infections and the association with warmer weather: a population-based investigation. *Infect Contr Hosp Epidemiol* 2017;38:809-16.
- Phillips AZ, Rodriguez HP. Adults with diabetes residing in "food swamps" have higher hospitalization rates. *Health Serv Res.* 2019 Feb;54 Suppl 1(Suppl 1):217-225. doi: 10.1111/1475-6773.13102. Epub 2019 Jan 6.

Student Presentation:

- Wartko PD, Weiss NS, Enquobahrie DA, Chan KCG, Stephenson-Famy A, Mueller BA, Dublin S. Association of Antidepressant Continuation in Pregnancy and Infant Birth Weight. *J Clin Psychopharmacol.* 2021 Jul-Aug 01;41(4):403-413. doi: 10.1097/JCP.0000000000001410.

LECTURE 13 (April 13th)

Overview of Pharmacoepidemiology (Anne Mobley Butler)

Work on final project

Required Readings:

- Stürmer T, Wang T, Golightly YM, Keil A, Lund JL, Jonsson Funk M. Methodological considerations when analysing and interpreting real-world data. *Ann Intern Med.* 2021 Jun;174(6):737-746. doi: 10.7326/M20-6315. Epub 2021 Feb 23.
- Levesque LE, Hanley JA, Kezouh A, Suissa S. Problem of immortal time bias in cohort studies: example using statins for preventing progression of diabetes. *BMJ* 2010;240:907-11.

Suggested Readings:

- Funk MJ, Landi SN. Misclassification in administrative claims data: quantifying the impact on treatment effect estimates. *Curr Epidemiol Rep* 2014;1:175-85.
- Shrank WH, Patrick AR, Brookhart MA. Healthy user and related biases in observational studies of preventive interventions: a primer for physicians. *J Gen Int Med* 2011;26:546-50.
- Jackson BE, Greenup RA, Strassle PD, Deal AM, Baggett CD, Lund JL, Reeder-Hayes KE. Understanding and identifying immortal-time bias in surgical health services research: An example using surgical resection of stage IV breast cancer. *Surg Oncol*. 2021 Jun;37:101539. doi: 10.1016/j.suronc.2021.101539. Epub 2021 Mar 5.

Student Presentation:

- Jackson LA, Jackson ML, Nelson JC, et al. Evidence of bias in estimates of influenza vaccine effectiveness in seniors. *Int J Epidemiol* 2006;35:337-44.

LECTURE 14 (April 20th)

Work on final project

Student Presentation:

- Johnston KJ, Hammond G, Meyers DJ, Joynt Maddox KE. Association of Race and Ethnicity and Medicare Program Type With Ambulatory Care Access and Quality Measures. *JAMA* 2021 Aug 17;326(7):628-636. doi: 10.1001/jama.2021.10413.

LECTURE 15 (April 27th)

****Student presentations of final project**

LECTURE 16 (May 4th)

****Student presentations of final project**

****Written final project due May 5th by midnight**

HCUP DATA PRIVACY & DATA USE AGREEMENTS

The course is taught using HCUP State Databases from the Healthcare Cost and Utilization Project (HCUP), which are maintained by the Agency for Healthcare Research and Quality (AHRQ). Although direct patient identifiers have been removed from the data, the data contain information that may make it possible to identify individual patients. **For this reason, the data MUST REMAIN ON THE SERVER and cannot be copied onto individual computers for any reason.** All users of HCUP data must complete the HCUP Data Use Agreement (DUA) Training Course and sign an HCUP DUA before accessing the data. Please complete the ~15 minute training available at https://hcup-us.ahrq.gov/tech_assist/dua.jsp Deliberate violation of the terms of

this agreement will have serious consequences for researchers at Wash U using the HCUP data for research and will expose you to potential civil and/or criminal penalties. Please talk to the course instructor if you have any questions about appropriate use of data.

COMPUTING SYSTEM

Students will receive temporary access to the research computing environment. The students will be sharing this resource with other faculty and research teams, therefore students are requested to use the server for class work only. All use of the system is logged. Student accounts will be closed at the end of the semester and all files saved on the computer will be deleted. If students want to keep copies of statistical software programs, they should download these programs before the last day of the semester. **However, as noted above, data CANNOT be removed from the server.**

CHANGES TO SERVER

Although this course has been taught for years, there have been recent changes to the server access. These changes are beneficial to the students because it eliminates the student course fee (which was required in previous years). We have worked hard to create and provide a new secure computing environment that will permit all students in the class to simultaneously access the database. However, we recognize that this is a technologically challenging course and it is possible that there will be technological/computing problems that will occur during the semester. If problems arise (e.g., problems accessing data or running programs), please let the instructor and TAs know as soon as possible. We will work to resolve the problems or develop work-around solutions. In the event of problems with the data or computing system that cannot be fixed, we will modify expectations and/or due dates of assignments.

DROP DATES

You may drop for any reason during the course of the semester. However, you may only receive a partial or no tuition reimbursement depending upon how far into the semester you drop the course. See the [MPHS Student Handbook](#). Late withdrawals will appear on your transcript as a withdrawal.

MPHS ACADEMIC POLICY GUIDELINES:

Guidelines regarding MPHS course registration and enrollment, grades, tuition obligation, and academic leave are consolidated in the [MPHS Student Handbook](#). Please review this document.

MPHS Guidelines for Academic and Non-Academic Transgressions:

By registering for this course you have agreed to the terms of the **MPHS Academic Integrity Policy, outlined below and in more detail in the [MPHS Student Handbook](#)**. Please review this policy before submitting your first graded assignment.

Academic Integrity/Plagiarism Policy:

- Academic dishonesty is a serious offense that may lead to probation, suspension, or dismissal from the University. Academic dishonesty includes plagiarism (the use of someone else's ideas, statements, or approaches without proper citation). Academic dishonesty also includes copying information from another

student, submitting work from a previous class for a new grade without prior approval from your instructor, cheating on exams, etc. You are responsible for reviewing [WashU's academic integrity resources](#) to become aware of all the actions that constitute academic dishonesty.

- All instances of academic dishonesty will be reported to the Office of the Registrar for investigation and potential disciplinary action. In addition, the instructor will make an independent decision about the student's grade on any assignment in question. The MPHS process regarding academic dishonesty is described in the [MPHS Student Handbook](#)

DISABILITY RESOURCES

It is the goal of Washington University to assist students with disabilities in removing the barriers their disabilities may pose and provide support in facing the challenge of pursuing an education at Washington University. Washington University recognizes and accepts its professional, legal and moral responsibility to avoid discrimination in the acceptance and education of qualified students with disabilities and to provide reasonable accommodations to such students consistent with the principles embodied in the law. These guidelines apply to students seeking admittance as well as to those who become disabled while they are enrolled. Washington University makes every effort to insure that all qualified applicants and students can participate in and take full advantage of all programs and opportunities offered within the university. Washington University encourages and gives full consideration to all applicants for admission. Washington University does not discriminate in access to its programs and activities on the basis of age, sex, sexual orientation, race, disability, religion, color or national origin. To learn more about services provided to students with disabilities, initiate the process of formal documentation and/or to arrange for accommodations, please review the [Disability Resources](#) for the Med School at the start of the course.

MENTAL HEALTH RESOURCES

Mental Health Services' professional staff members work with students to resolve personal and interpersonal difficulties, many of which can affect the academic experience. These include conflicts with or worry about friends or family, concerns about eating or drinking patterns, and feelings of anxiety and depression. See: shs.wustl.edu/MentalHealth. Mental Health Services are available for full-time students enrolled on the Medical School campus. Students can self-refer to a counselor by making an appointment with **Dr. Karen Winters** through **Student Health Services (SHS)**, telephone: **314-362-3523**, and follow the prompts. There are also contractual mental health service providers who are available off-campus. More information regarding this coverage and a list of participating providers are accessible via <https://wumhealth.wustl.edu/> and then clicking on **Students** and scrolling down to **Mental Health Information** <https://wumhealth.wustl.edu/students/mental-health-information/>. Please do not hesitate to reach out to Dr. Winters, 314-362-3523, or to any of our off-campus providers <https://wumhealth.wustl.edu/>

SEXUAL ASSAULT RESOURCES

You can also speak confidentially and learn about available resources by contacting [Dr. Gladys Smith, PhD](#), Sexual Violence Prevention Therapist and Licensed Psychologist at the Medical Campus, (314) 362-2404. Additionally, you can report incidents to the Office of Student Affairs or by contacting WUSM Protective Services 314-362-4357 or your local law enforcement agency.

BIAS RESOURCES

The University has a process through which students and staff who have experienced or witnessed bias, prejudice or discrimination against a student can report their experiences to the University's Bias Report and Support System (BRSS) team. For details see: diversityinclusion.wustl.edu/brss/.

Office of the Associate Vice Chancellor for Diversity, Equity and Inclusion (DEI)

The DEI Training Team designs, facilitates and leads diversity education programming for faculty, staff and students on a wide range of topics including: creating a climate of respect, the value of diversity and the role of biases in our day-to-day lives.

<https://diversity.med.wustl.edu/training/>

The Office of Diversity Programs promotes diversity among and prepares medical students to lead in a global society. A priority for the Office of Diversity Programs is to cultivate and foster a supportive campus climate for students of all backgrounds, cultures and identities.

mdiversity.wustl.edu/

The Diversity and Inclusion Student Council promotes an inclusive campus environment for all School of Medicine students.

<https://mdiversity.wustl.edu/>

The Office for International Students and Scholars embraces the university's mission of welcoming promising students from around the world.

<https://wumma.wustl.edu/>