

PHCY 5990-41 Empirical Analysis for Health Services Administration 3 Credit Hours

Course Description: This course builds on a knowledge of research methods and statistical analysis to provide an overview of how research methods and data analysis can be used by researchers and clinicians to draw conclusions about health services, clinical technologies and programs, and policy analysis. The purpose of the course is to equip students with an understanding of research and policy debates related to economic, political, and administrative aspects of health services.

Course Goals: This course is designed to critically evaluate evidence to answer questions related to medical care, health policy, and health services research. Study attributes of interest include: identifying relevant research questions, selecting appropriate research methods, use of appropriate statistical procedures, interpreting findings, and making conclusions based on the evidence presented. By the conclusion of this course it is expected that students will become critical consumers of health care evidence.

Place and Time of Class Sessions

This course will be taught primarily in synchronous fashion. Virtual classroom sessions will be held live each week on Tuesday afternoon/evening (except October 31, Wednesday Nov 1 is the class date). Students will be responsible for completing course materials as their time permits, each week, during the 7 weeks of the course, with quizzes and exams being administered on weekends. Students are expected to actively participate in discussions and discussion board on a regular basis.

Prerequisites:

PHCY 5041 Health Services Administration Research Methods
PHCY 5042 Statistics for Health Services Administration

Course Objectives

Upon successful completion of this course, the student will be able to:

- Evaluate the scientific validity and reliability of a published research article.
- Evaluate the title of a research article.
- Assess the accuracy and completeness of a research article's abstract.
- Determine whether the introduction provides a clear explanation of the nature and scope of the problem being investigated.
- Determine whether the objective of the study has been clearly stated, including the intended outcomes of the research.
- Evaluate the design of the study to determine whether the methods used will result in data that can be analyzed in order to support study objectives.
- Determine whether the study design is described in a clear and detailed way that will allow replication of the research by subsequent investigators.
- Evaluate the data source(s) to determine if it is appropriate for answering the study's research question(s).

- Determine if the study population is adequately described.
- Evaluate internal and external factors that may introduce bias in the investigation.
- Determine whether the statistical tests used are appropriate, including potential errors in statistical analysis that may lead to invalid results and conclusions.
- Evaluate figures, tables, and charts to determine whether the results presented in these visual representations facilitate an understanding of the study and the data evaluated.
- Determine whether results have been appropriately presented and explained, including limitations of the study.
- Examine whether the discussion and conclusion are consistent with the study objectives and are justified by the results.
- Determine whether the research fits into the context of the conclusion.
- Evaluate the relationship between the analysis of study data and the conclusions of the researcher.
- Use the PICOS framework to determine if comparative studies have limited risk of bias.

Course Learning Resources:

- Required Readings
- Posted Video Lectures
- Posted Expert Videos
- Journal Articles

Course Structure & Outline

This course will be conducted live using an online virtual classroom. The first course session will contain a discussion of the course structure and introductory material related to evaluating a research article. For the following next six weeks of the course, students will present research articles and lead the discussion of these articles. Expect that more than 1 article will be discussed at each session.

The course will adhere to the following schedule:

- Class 1: Course Orientation--The Importance of Scholarly Literature Evaluation
 - Assigned Reading
- Class 2: Clinical Trials
- Class 3: Meta-Analyses
- Class 4: Observational Studies
- Class 5: Healthcare Leadership and Quality Improvement
- Class 6: Health Economics
- Class 7: Health and Pharmaceutical Policy Analysis

Evaluation Techniques:

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| Class participation | 25% |
| Weekly quizzes | 25% |
| Exams (2 – midterm and final) | 50% |

Grading:

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| A: | 90 - 100 |
| B: | 80 – 89 |
| C: | 70 – 79 |
| D: | 60 – 69 |
| F: | <60 |

Class Attendance Policy

Students must regularly attend online classes and/or participate in discussion board. Each student is expected to provide 1 “journal club” session lasting no more than 15 minutes. The purpose of the journal club is to provide a brief overview and critique of a published article. Each week up to 6 student presentations will be given. Papers for each week are provided below. Only 1 student may select each paper.

Students will earn 10 points for leading the journal club discussion for their selected paper. The remaining points (15) are earned by attending each class session, and participating in the discussion about the presented papers.

Quizzes

Each week students will be expected to complete an online quiz taken through the University of Wyoming’s Canvas course site. Quizzes will cover the papers and associated reading for the relevant week. Students will have 7 days after each session to complete the quiz for that week. Quizzes contribute 25% toward overall course grade. Each quiz is worth 10 points.

Inquiries regarding quizzes and exams should be directed to the course coordinator and within a week following the assessment. No grade appeals will be considered after this time has elapsed.

Exams

Two exams will be conducted. The mid-term exam will consist of a timed multiple choice and short answer online test. The final exam will be a take-home exam consisting of evaluating an assigned article. All exams (and quizzes) are independent activities. Contacting another student or sharing information about the quiz or exam is prohibited. This includes answering questions about the content, difficulty, format, or specific questions. All work is to be completely independent of any other person, including others not enrolled in the course.

Make-up Quiz/Exam Policy

Students who miss an exam will receive a grade of zero on that missed assessment. Any student who misses quizzes and/or exams of a sufficient number that indicate the student has not completed enough coursework to achieve the objectives of the course will be given failing grade for the course.

Academic Dishonesty Statement:

The University of Wyoming is built upon a strong foundation of integrity, respect and trust. All members of the university community have a responsibility to be honest and the right to expect honesty from others. Any form of academic dishonesty is unacceptable to our community and will not be tolerated. Teachers and students should report suspected violations of standards of academic honesty to the instructor, department head, or dean.

Other University regulations can be found at:

<http://uwadmnweb.uwyo.edu/legal/universityregulations.htm>

Disability Support Statement:

The University of Wyoming is an affirmative action/equal opportunity educator and employer. If you have a physical, learning, or psychological disability and require accommodations, please let the instructor know as soon as possible. You will need to register with, and provide documentation of your disability to University Disability Support Services (UDSS) in SEO, room 330 Knight Hall. The University Disability Support Services website, which may be found at:

<http://uwadmnweb.uwyo.edu/udss/facultyandstaff/tipsforteaching.asp> or you may contact UDSS for more information at (307) 766-6189, TTY: (307) 766-3073

Readings by Week:

Week 1 – Course introduction

Krousel-Wood et al. Clinician's guide to statistics for medical practice and research: part I. *The Ochsner Journal* 2006; 6:68-83.

Krousel-Wood et al. Clinician's guide to statistics for medical practice and research: part II. *The Ochsner Journal* 2007; 7:3-7.

Week 2 – Clinical Trials

*Guyatt et al. Users' guide to medical literature: how to use an article about therapy or prevention. *JAMA* 1993; 270:2598-2601.

*Begg et al. Improving the quality of reporting of randomized controlled trials. *JAMA* 1996; 276:637-639.

Bombardier et al. Comparison of upper gastrointestinal toxicity with rofecoxib and naproxen in patients with rheumatoid arthritis. *New England Journal of Medicine* 2000; 343:1520-1528.

Buettner et al. Simvastatin and vitamin D for migraine prevention: a randomized, controlled trial. *Annals of Neurology* 2015; 78:970-981.

Facco et al. Traditional acupuncture in migraine: a controlled randomized study. *Headache* 2008; 48:398-407.

Lindson-Hawley et al. Gradual versus abrupt smoking cessation: a randomized, controlled noninferiority trial. *Annals of Internal Medicine* 2016; 164:585-592.

Muir et al. Allopurinol use yields potentially beneficial effects on inflammatory indices in those with recent ischemic stroke: a randomized, double-blind, placebo controlled trial. *Stroke* 2008; 39: 3303-3307.

Raskob et al. Edoxaban for venous thromboembolism in patients with cancer: results from a non-inferiority subgroup analysis of the Hokusai-VTE randomized, double-blind, double dummy trial. *Lancet Haematology* 2016; 3:e379-87.

Week 3 – Meta-Analysis

*Moher et al. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of Internal Medicine* 2009; 151:264-269.

Farrer et al. Hyperglycemia and risk of adverse perinatal outcomes: systematic review and meta-analysis. *BMJ* 2016; 354:i4694.

Hodson et al. Antiviral medications to prevent cytomegalovirus disease and early death in recipients of solid-organ transplants: a systematic review of randomized controlled trials. *Lancet* 2005; 365:2105-2115.

Jones et al. Health information technology: an updated systematic review with a focus on meaningful use. *Annals of Internal Medicine* 2014; 160:48-54.

Kamal et al. A systematic review of the effects of cancer treatment on work productivity in patients and caregivers. *Journal of Managed Care & Specialty Pharmacy* 2017; 23:136-162.

Schottker et al. Vitamin D and mortality: meta-analysis of individual participant data from a large consortium of cohort studies from Europe and the United States. *BMJ* 2014; 348:g3656.

Zomahoun et al. Effectiveness and content analysis of interventions to enhance oral antidiabetic drug adherence in adults with type 2 diabetes: systematic review and meta-analysis. *Value-in-Health* 2015; 18:530-540.

Week 4 – Observational Studies

*Randolph et al. Users' guide to medical literature: how to use an article evaluating the clinical impact of a computer-based clinical decision support system. *JAMA* 1999; 281:67-74.

Feeney et al. Prehospital HMG Co-A reductase inhibitor use and reduced mortality in ruptured abdominal aortic aneurysm. *Journal of the American College of Surgeons* 2009; 209; 41-46.

Fox et al. A medication therapy management program's impact on low-density lipoprotein cholesterol goal attainment in Medicare Part D patients with diabetes. *Journal of the American Pharmacists Association* 2009; 49:192-199.

Gershon et al. Combination long-acting β -agonists and inhaled corticosteroids compared with long-acting β -agonists alone in older adults with chronic obstructive pulmonary disease. *JAMA* 2014; 312: 1114-21.

Schelleman et al. Warfarin with fluoroquinolones, sulfonamides, or azole antifungals: interactions and the risk of hospitalization for gastrointestinal bleeding. *Clinical Pharmacology & Therapeutics* 2008; 84:581-588.

Southworth et al. Dabigatran and postmarketing reports of bleeding. *New England Journal of Medicine* 2013; 368:1272-74.

Walcher et al. Vitamin C supplement use may protect against gallstones: an observational study on a rarely selected population. *BMC Gastroenterology* 2009; 9:74-83.

Week 5 - Healthcare Leadership and Quality Improvement

*Fan et al. How to use an article about quality improvement. *JAMA* 2010; 304:2279-2287.

Bradley et al. Quality improvement efforts and hospital performance: rates of beta-blocker prescription after acute myocardial infarction. *Medical Care* 2005; 43:282–92.

Meyer, S.M., and D.A. Collier. An Empirical Test of the Causal Relationships in the Baldrige Health Care Pilot Criteria. *Journal of Operations Management* 2001; 19:403–26.

Nembhard and Edmondson. Making it safe: the effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams. *Journal of Organizational Behavior* 2006; 27:941-966.

O'Shea et al. Comprehensive medication reviews in long-term care facilities: history of process implementation and 2015 results. *Journal of Managed Care & Specialty Pharmacy* 2017; DOI: <https://doi.org/10.18553/jmcp.2017.23.1.22>

Racine et al. The Canadian STOP-PAIN project: the burden of chronic pain – does sex really matter? *Clinical Journal of Pain* 2014; 30:443-452.

Schweikert et al. Quality of life several years after myocardial infarction: comparing the MONICA/KORA registry to the general population. *European Heart Journal* 2009; 30:436-443.

Week 6 - Health Economics

*Drummond et al. Users' guide to medical literature: how to use an article on economic analysis of clinical practice. *JAMA* 1997; 277:1552-1557.

*Husereau et al. Consolidated health economic evaluation reporting standards (CHEERS) – explanation and elaboration: a report of the ISPOR health economic evaluation publication guidelines good reporting task force. *Value in Health* 2013; 16:231-250.

*Sanders et al. Recommendations for conduct, methodological practices, and reporting of cost-effectiveness analyses: second panel on cost-effectiveness in health and medicine. *JAMA* 2016; 316:1093-1103.

Barzey et al. Ipilimumab in 2nd line treatment of advanced melanoma: a cost-effectiveness analysis. *Journal of Medical Economics* 16:2, 202-212. DOI: 10.3111/1369998.2012.739226.

Chhatwal et al. Cost-effectiveness and budget impact of Hepatitis C virus treatment with sofosbuvir and ledipasvir in the United States. *Annals of Internal Medicine* 2015; 162:397-406.

Chit et al. Cost-effectiveness of high-dose versus standard-dose inactivated influenza vaccine in adults aged 65 years or older: an economic evaluation of data from a randomized controlled trial. *The Lancet* 2015(December); 15:1459-1466

Osterhoff et al. A cost-effectiveness analysis of reverse total shoulder arthroplasty versus hemiarthroplasty for the management of complex proximal humeral fractures in the elderly. *Value in Health* 2017; 20:404-411.

Moran et al. Cost-effectiveness of a national opportunistic screening program for atrial fibrillation in Ireland. *Value in Health* 2016; 19:985-995.

Wheeler et al. Cost-effectiveness of pre participation screening for prevention of sudden cardiac death in young athletes. *Annals of Internal Medicine* 2010; 152:276-286.

Week 7 - Health and Pharmaceutical Policy Analysis

*Wagner et al. Segmented regression analysis of interrupted time series in medication use research. *Journal of Clinical Pharmacy and Therapeutics* 2002; 27:299-309.

Brook et al. Does free care improve adults' health? Results from a randomized trial. *New England Journal of Medicine* 1983; 309:1426-34.

Chen et al. Evaluation of patient migration patterns and related health care costs within a national Medicare advantage prescription drug plan after implementation of an oxycodone HCL extended release access restriction. *Journal of Managed Care & Specialty Pharmacy* 2017; DOI: <https://doi.org/10.18553/jmcp.2017.16307>.

Morden et al. Prescription opioid use among disabled Medicare beneficiaries: intensity, trends, and regional variation. *Medical Care* 2014; 52:852-859.

Pedan et al. Assessment of drug consumption patterns for Medicare Part D patients. *American Journal of Managed Care* 2009; 15:323-327.

Schwartz et al. Association of a community campaign for better beverage choices with beverage purchases from supermarkets. *JAMA Internal Medicine* 2017; 118:66-674.

Soumerai et al. Effects of Medicaid drug-payment limits on admission to hospitals and nursing homes. *New England Journal of Medicine* 1991; 325:1072-1077.