

SPPH 514 – DECISION ANALYSIS IN HEALTH CARE

2023W TERM 2 (3 CREDITS)

ACKNOWLEDGEMENT

The School of Population and Public Health (SPPH) at the University of British Columbia's Vancouver Point Grey campuses respectfully acknowledge that it is situated on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (Musqueam) Nation.

COURSE DATES AND LOCATION

Wednesdays 9-12 in Room B112

INSTRUCTORS

Nick Bansback, PhD (Pronouns: He/Him/His)
Professor, MHA Director, School of Population and Public Health, UBC
Scientist, Centre for Advancing Health Outcomes
Email: nick.bansback@ubc.ca
Office Hours: Fridays (by appointment) or feel free to email me.

COURSE OVERVIEW

The purpose of this course is to learn the methods and real-world application of decision analysis to improve individual and population level health from the perspectives of the health professionals, policy makers and patients.

Short description: The methods and application of decision analysis to improve health from the perspective of the policy maker, health professional, and patient.

Course description: Most fields of health research focus on producing new knowledge through better evidence and the development and testing of new treatments strategies. Decision analysis explores how people make choices and how better choices can be made through a better understanding of uncertainty, complexity, and competing values. As such, decision analysis provides key insights for disseminating knowledge that can lead to important improvements in population and public health.

In the health care, as in other aspects of life, individuals have to make choices: health professionals must decide which treatment is most appropriate for their patients; policy-makers must decide which services should be used; and patients who must decide whether to follow advice from health professionals and policy makers. This course will teach principles and practical tools that can assist in these types of decisions.

LEARNING OUTCOMES

By the end of this course, students will be able to:

1. Describe the principles of how individuals should make good decisions, and why they often fail to do so.
2. Differentiate between a well and poorly conducted decision analysis in the literature
3. Determine which decision analysis approach is most appropriate for different health contexts
4. Develop a decision analysis for a health care problem relevant to the student's interest.

COURSE STRUCTURE AND LEARNING ACTIVITIES

The first half of the course will focus on normative decision-making theories –i.e. standards for how people should make decisions. The second half of the course will focus on descriptive decision-making theories – seeking to explain how people actually make decisions and how these deviate from normative theories often leading to poor choices. The course will finish by promoting prescriptive decision-making theories. Through the use of decision tools and a better understanding of human limitations, prescriptive decision theories provide a guide as to how health professionals, their patients, and health care policymakers can make good decisions in practice.

Each week, the class will include interactive lecture content providing theory on a specific topic. Viewing or reading the required material will be important for students to fully understanding the lecture content and to ensure beneficial participation in the class discussions. Each class will also use a problem-based learning approach to apply knowledge to real-world scenario. This will include computer exercises where students will have exposure to decision analysis software and hypothetical scenarios that will encourage students to evaluate the evidence, value the outcomes, and make decisions. No prior software experience will be necessary.

LEARNING MATERIALS

Readings and videos have been assigned under each module and are accessible through the Canvas course site and UBC Library Course

The primary text book is "Decision Making in Health and Medicine" by Myriam Hunink and Milt Weinstein. It is available as an ebook at the UBC library.

We will also be reading "Thinking fast and slow" by Daniel Kahneman. It is available in all good bookstores and on kindle/kobo and I have some hardcopies if you would like to borrow.

SCHEDULE OF TOPICS

Topics and learning activities of this course will be organized as follows:

Week	Topic(s)
Week 1:	<i>Course introduction:</i> This class will discuss the course expectations and format including assignments and evaluation plan. It will then introduce an overview of decision analysis in health through considering common day to day decisions.
Week 2	<i>Understanding uncertainty:</i> This class will introduce probabilities, risk and imprecision – how these influence decisions and how they can be obtained from evidence. The way uncertainty is often misconstrued by patients and public will be covered along with exercises to understand how best to communicate uncertainty.
Week 3	<i>Measuring values:</i> How values can be understood from measuring preferences for trade-offs will be the focus of this class. Multiple methods will be described for health professionals wanting to elicit patient values, and policy makers wanting to elicit population values.
Week 4	<i>Choosing the best option:</i> With an understanding of the evidence, uncertainty and values, this class will describe how best to incorporate this information to make optimal decisions. Exercises using decision trees and multi criteria approaches will be used. Real-world applications used by drug safety agencies will be described.
Week 5	<i>When to screen and test:</i> Diagnostic tests have specific characteristics that can complicate decision making. This class will focus on who to screen, when to screen, and how to deal with multiple tests.
Week 6	<i>Introduction to cost-effectiveness analysis:</i> This class will discuss briefly how costs can be incorporated into the decision analysis frameworks already covered. We will consider how health professionals and policy makers should use CEA with real examples from the literature.
Week 7	<i>Interpreting results of decision analysis:</i> This class will cover how to understand how confident you can be in results of decision analysis. It will also discuss ways of presenting the results – from nomograms for health professionals, to acceptability curves for policy makers.
Week 8	<i>Integrating the patient voices:</i> This class will discuss briefly the rationale for listening to patients in both policy and clinical decisions, and give examples of how this can be done from both perspectives. Particular focus will be given to shared decision-making.
Week 9	<i>How individuals really make decisions:</i> Recent research has explored how and why individuals actually make decisions. This class will provide an overview to the descriptive theories of decision making.

Week 10	<i>Common biases and heuristics:</i> Biases and heuristics can often lead to individuals to making decision errors. This class will introduce some of the most common errors and consider how we have been influenced by them in the past. Various case studies will demonstrate the power of biases and heuristics.
Week 11	<i>Prescriptive decision making:</i> With an understanding of the normative (weeks 1 to 5) and descriptive theories (weeks 10 and 11), this class will conclude the course by providing practical ways to make decisions in clinical practice and at the policy level.
Week 12	<i>Student presentations:</i> Each student should identify an important decision problem in one of their areas of expertise or interest, review any relevant literature, and explain how they are going to use decision analysis to improve health or health care in that situation. Through class discussion, the intent is that this will inform the topic and methods for each students final assignment
Week 13	<i>Workshop:</i> An opportunity for students to work on their final projects and get support and feedback on their decision analyses.

ASSESSMENTS OF LEARNING

Assessments of student learning include the following components and weights. Letter grades will be assigned according to [UBC's policy on academic progress](#). **Refer to Canvas for the assignment due dates.** Extensions will be considered only if requests are made before the assignment deadlines pending extenuating circumstances. Assignments submitted later than the due date will be penalized 10% of the possible grade for each calendar day past due.

Component	Weight	Description
In-Class Participation	20%	<ul style="list-style-type: none"> Students will be expected to participate actively in class discussions and are encouraged to apply concepts and issues being presented in relation to their own research interests. Students will be expected to prepare for (and participate in) a variety of exercises that focus on applying course concepts to their own research interests, presenting these in class, and providing constructive peer feedback. Some weeks this will involve quizzes (which will not be graded) Each student will need to prepare a 'decision of the week' short discussion once over the course
Student presentations	30%	<ul style="list-style-type: none"> Students will be asked to complete a blog post presenting a decision analysis study they identified from the peer reviewed literature. They will then be asked to

		give a 10 minute oral presentation about their proposed final assignment (week 12).
Final Assignment	50%	<ul style="list-style-type: none"> For the final paper, each student should identify an important decision problem in a topic they are interested in, review the relevant literature, and conduct a basic decision-analysis using material covered in the course.

UNIVERSITY POLICIES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available on [the UBC Senate website](#).

RESPECTFUL ENVIRONMENTS

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GENERATIVE ARTIFICIAL INTELLIGENCE (AI)

The use of ChatGPT or other generative AI tools is NOT permitted for assignments or blog posts in this course. Failure to follow this policy will be considered a violation of UBC's policy on academic misconduct. ChatGPT or other generative AI tools can be used for other learnings and tasks in the course, but students must state when and how they have used it.