

1. Teaching Pedagogy

My primary teaching focus is on the learning progression of students and, in turn those elements that best support that progression. For me this means that rather than focusing on economics as the end goal, I adjust the emphasis to the practice of economics, where the aim becomes about using economics to pursue understanding of real world issues. By focusing on the pursuit, there is an agency that develops between all of us in the classroom, and my effort in teaching usually has a basis in building that energy. Sometimes, depending on the context, this energy is harder to build, but gradually over time I gained techniques and experience that allow me to adjust in the moment to reestablish that engagement. Mirroring this, I design course deliverables as a way to double-down on that engagement. They become more than a way to assess final learning, but are also thoughtful inputs into learning along the way (as reflected in the student comments).

I believe that my success in this is because this approach seems suited to the goals of our students. Specifically, today's education is much less about "gathering" knowledge as it is about "using" it. The main gap I see in students' skills is higher order; it is in critical thinking and analytics. At the same time, I think economics is a great lens from which to view the world, providing all its students with a set of analytical tools, an eye for assumptions, and an understanding of opportunity cost. I design my teaching around using that lens, and in each course I aim to provide students with analytical tools relevant to the course, practice in thinking critically, and evidence of both of these in hand at the end of the course.

Using this focus as my overarching guide, I design the course lectures to first lay out core material and then to move to interactive discussion, where the main aim is to apply what we have learned to a real world issue. I design the deliverables to extend the interactive class discussion, give more practice using the analytical tools, and to build on writing and oral skills. This works differently depending on the level and size of the class. In larger courses based mostly on introductory material, I found discussion hard to come by until I started breaking up the class into smaller groups, giving them structured discussion points to consider, and then, once they loosened up, bringing them back to full class discussion. In courses with a course project (econometric or otherwise), I also add interactive peer review and self-editing exercises through out the year, which greatly improves the final projects and along the way gives practice in both critical appraisal of others and in refining one's own thinking.

For me, this process is first built on preparation and communication, and with each lecture or meeting, I come prepared with a foundation that forms the base of the discussion, and, more importantly, I come ready to communicate. I do not see the latter as a static ability, but rather as a dynamic process. Our audiences are always changing, and over my development as an academic, I realize that willingness to communicate, to angle concepts differently when you need to, is the key to effective dissemination.

This document proceeds as follows. First, I provide a summary of my teaching experience detailing the courses I have taught in the past and, for three example courses, a more detailed description of my approach to teaching in each case. Next, I provide a description of student feedback. This includes overall teaching effectiveness results from student course evaluations and written comments from students, which I summarize into main themes. These themes show my evolution in organization of course materials, whether the courses were challenging and/or useful, and whether the support I provided was effective. Lastly, I provide complete course packages for my 3 most recent courses including syllabi, sample lectures, course deliverables and student evaluations in section 4.

2. Summary of Teaching Experience

In total, I have taught 8 courses at Dalhousie University and the University of Toronto as summarized in Table 1. Half of these courses are field courses: Labour Economics (3rd year), Health Economics (2nd year), Topics in Health Economics (4th year) and Graduate Health Economics, and the other half are core

courses whose aim is to deliver requisite material to a larger program: Math-Stats Review for Master of Public Policy students at the School of Public Policy and Governance, Macroeconomics (1st year), Econometrics serving both undergraduates and graduate students in the Master of Development Economics (MDE) program, and Microeconomic Theory for the MDE program. In addition to these courses I have served as supervisor or committee member to 21 theses (6 Honours, 6 MDE, 5 MA and 4 PhD), with 10 of these in a supervisory role.

My research interests are well suited to courses in Labour, Health and Environmental economics, and my teaching skill is also particularly well suited to delivering core material in a way that emphasizes its ties to a larger program (see course descriptions and teaching assessments below for more details).

Table 1: Course Overview

University	Course	Level	Year	Session	Number of Students	Program Requirement*
U of T	Labour Economics	3rd yr	2007	Fall-Winter	99	.
U of T	Math-Stat Review	MPP at SPPG	2008	Fall	36	.
Dalhousie	Health Economics	2nd yr	2009	Fall	37	26%
Dalhousie	Macroeconomics	1st yr	2009	Winter	113	68%
Dalhousie	Health Economics	MA & PhD Econ	2010	Winter	4	.
Dalhousie	Econometrics	3rd yr & MDE	2010	Fall	38	92%
Dalhousie	Health Economics	2nd yr	2011	Winter	51	15%
Dalhousie	Health Economics	MA & PhD Econ	2011	Winter	14	0%
Dalhousie	Econometrics	3rd yr & MDE	2011	Fall	55	97%
Dalhousie	Micro Theory	Graduate: MDE	2011	Fall	11	90%
Dalhousie	Health Economics	2nd yr	2012	Winter	47	26%
Dalhousie	Health Economics	MA & PhD Econ	2012	Winter	10	0%
Dalhousie	Econometrics	3rd yr & MDE	2012	Fall	40	91%
Dalhousie	Econometrics	3rd yr & MDE	2012	Fall	32	95%
Dalhousie	Health Economics	2nd yr	2013	Winter	46	20%
Dalhousie	Health Economics	MA & PhD Econ	2013	Winter	4	.
Dalhousie	Econometrics	3rd yr & MDE	2013	Fall	33	100%
Dalhousie	Health Economics	2nd yr	2014	Winter	47	14%
Dalhousie	Health Economics	MA & PhD Econ	2014	Winter	4	.
Dalhousie	Micro Theory	MDE	2014	Fall	8	100%
Dalhousie	Health Economics	2nd yr	2015	Winter	45	21%
Dalhousie	Health Economics	MA & PhD Econ	2015	Winter	5	.
U of T	Topics in Health Econ	4th yr	2017	Winter	29	.
TOTAL	8 Course Preps		23 Courses		808	

SPPG: School of Public Policy and Governance

MPP: Masters of Public Policy

MDE: Masters of Development Economics

*This provides the percent of students who state that the course as a program requirement on their student evaluation.

In what follows, I provide a summary of three past courses and highlight the features of the course as they relate to the pedagogy described above.¹ For a more complete review, I have also provided course syllabi, sample lectures, and course deliverables in section 4.

Health Economics (2nd year) at Dalhousie University

Course Background

This is an introductory undergraduate course where students learn theoretical and empirical analysis relevant to health economics. The course is usually comprised of two groups of students: economics students and science students with an interest in health economics. I have designed the course to deliver to both these groups, and I do this by focusing each lecture on theory first and then transitioning into how we can use that theory as either “consumers” of health research or “producers” of health research. At the conclusion of each lecture topic, students actively participate in peer-discussion, where this discussion is structured in stages, and students reflect on specific questions.

The course design delivers to all types of students. For science students it provides an introduction to health economics and the main issues in this field, and for economics students it serves as a primer for the more rigorous methods they will see as they proceed through the rest of our programming. The course has become more popular over time and my primary feedback from students is that there is value in the content, both for continued study and in preparation for their career. For instance, I was nominated by biology student Shannon McCrary as a CIS Academic Mentor Professor after she interned in a physiotherapy program and saw many of the concepts we discussed in class “in action.” I describe general feedback on this course further in the Assessment Section of this dossier.

Course Development

Overtime, my main change in this course was to design each lecture to deliver on theory first and then transition into how we can use that theory to understand health research. I have included three sample lectures in the section 4 that illustrate this method. This first is designed around understanding health evidence. We start first by laying out a framework for understanding evidence. Then we move on to using this framework to “read the newspaper.” In this case, we look at current newspaper articles reporting on health evidence and we deconstruct it by answering the following: “What is the population of interest?” “What is the outcome of interest?” “What is the intervention/factor?” Once we have completed this process we discuss (in break away groups and then as a class) our interpretation of the results reported.

I have provided two other sample lectures in the appendix illustrating active learning. The first deals with the topic of cost benefit analysis, where we lay out the methods and go through a few “textbook” examples. Once we complete this, we use our knowledge by applying it to a “real world” decision. The example I have provided in the appendix deals with a NICE committee decision to fund a cancer drug through the National Health Service, but I have also used examples from my own work; for instance, discussing the clinical guidelines on when to medically intervene with preterm babies: we discuss the basis of those guidelines, and use real world data to see how closely these guidelines are followed in practice. In each case, we come back to the standard model for economic evaluation, and I focus the debate using this framework.

¹ I owe great thanks to the Centre for Learning and Teaching workshop series at Dalhousie. Specifically: “Secrets of Learning”; “Sharing Good Learning and Teaching Practices in Economics”; “Active Learning in Economics”; and “Optimizing the Success of International Students in Economics”. Additionally, I owe thanks to Lynn Taylor of the CLT who met with me one-on-one to discuss the use of evaluation rubrics and methods for student engagement.

The last lecture I have provided is nearer the end of the course when we have covered most of the material. At this point, we take a step back and look at health system performance. Most students are now ready to understand the complexity of evaluating different health care systems, but to illustrate this complexity and at the same time pull out the main aspects of system design we run a “horse race.” We start by organizing into teams representing countries. We then go through the recent health statistics on health systems resources, health outcomes, etc. assessing how each country stacks up against the others. Once we have sense for the cross-country differences, we move on to comparing the health systems of 5 different countries. In each case, the students are asked to come back to the topics we have addressed throughout the course: methods of physician payment, sources of competition in the system, design of the insurance scheme, possibilities for opt out, etc.

Course Challenges

Second year health economics is a larger introductory course, serving both students interested in the topic of health in general terms and students whose interest in the course stems from an interest in economics. The primary challenge in this larger diverse group is getting any discussion going. The course is usually taught in a lecture hall, where the students are far from the lectern, everyone can see everyone else’s screen, and they can more easily zone-out (...they think). To meet this challenge, I start the course right away with ice-breakers to set the tone, and then use the diversity of the class background to feed debate in the course examples.

Econometrics (3rd year and MDE) at Dalhousie University

Course Background

This is a compulsory course serving three groups of students: undergraduate students (mostly honours), students in the Masters of Development Economics (MDE) program, and students in the 2+2 program in their first semester upon arriving from China.

The course aim is to develop theoretical and empirical skills in econometrics. Throughout the course students engage in classroom-based peer discussion beginning with communication of course goals and expectations (mine and theirs). The centerpiece of the course is a term project (in section 4, I have attached the project description and the lectures structured around it), and final output is a formal exposition of analysis and research results: i.e. the Course Paper.

The course also focuses on the theoretical aspects of econometrics, and we spend the first part of the semester building this foundation. For instance, one of the most effective lectures in the early part of the year, is a discussion of the central limit theorem. To drive home the power of this theorem, I prime the students with Monte Carlo exercises. First, we start with a deck of cards and “draw” from the Bernoulli distribution. Once we get a few samples “collected”, I have the students calculate averages. When that gets a bit slow, we proceed by writing a program that will draw samples for us. Along the way, I have the students pick out elements of the theorem: Why do we need to reshuffle the deck between each draw? What would happen if we increased the sample size? By the time we plot the empirical distribution from our Monte Carlo simulations there is an intuition for what it will look like, and the statement of the theorem itself is already recognizable and familiar.

Course Development

My main area for development for this course is to link general course concepts to actual application. The term paper I assigned was a good start, but I wanted to take it further. My goal is to cultivate skills that students will rely on and use in their future scholarly work or in a future career.

My goals in this are highly aligned with those of the students. I tend to start each course with a peer discussion on course goals and in this course we usually pare down to these top two: “I want to understand the econometrics used in papers / in my other courses” and “I want to be able to do my own analysis.” This course is designed to deliver on this, and I think this is the primary reason why this course is highly valued by students.

My focus in this was to break down the barrier between the classroom and the real world. The strategy is related to the one I use for undergraduate health economics, but where we get to use statistical tools to fix ideas. Once we lay down the base theoretical tools, we arrive at the course midpoint, which describes strategies to move from understanding a statistical model in general terms, to using it to answer a specific question (in my experience, this is a non-trivial leap for students and one that can leave a gap between a methods course and other aspects of the program if not addressed somewhere). To do this, I pause in the midpoint of the course and lay out four strategies to link statistical modeling to the real world (see Lecture 14 and Lecture 18 in section 4)

1. The first strategy is to create a narrative for the use of econometrics in the real world. In the version of the lecture included in the course package, I point the students a book on Paul DePodesta, a student of econometrics, who went on to use statistical techniques to identify market inefficiencies in baseball recruiting (handily for students there is also a movie illustrating the story: Moneyball).
2. The second step is to practice distilling the statistical framework from the economic model. The goal is to see the common elements of the statistical framework and not get too distracted by the economics. We practice pulling this out using examples from recent journal publications.
3. After we have practiced this distillation, we go in the opposite direction: the third strategy is to take our statistical analysis back to an application. In the past I have used examples like Engel’s work on rolling regressions (several students have picked this up over the years in their term papers). The last time I taught this course, I booked a guest lecturer to give two examples of how OLS could be used on the trading floor.
4. The last strategy is to take that energy and lay out the structure of the term paper assignment, i.e., the “you can do this too” moment. The course follows up with students after they have produced a first draft of their term paper. Specifically, Lecture 18 is focused around peer review, and students evaluate their peers by, again, pulling out the statistical framework. This review process is highly structured and includes for instance, reverse outlining methods and peer evaluation of the initial draft.

Course Challenges:

This Econometrics course is a required course serving three very different groups of students: economics majors, graduate MDE students, and 2+2 program students from Shandong, and it can be a challenge to be effective for all students against the background of this diversity. My main strategy for meeting this challenge is through highly structured lectures and deliverables, and then I repeatedly tie that content back to its use outside the course, e.g., in understanding research methods in their field courses, in developing a thesis project, in simply reading the newspaper. With the proper support, even a diverse group of students can meet the same learning goals and, when they do, the experience for them has been an effective one. Particularly in the case of Econometrics, the act of tying course challenges to the rest of the program means this requisite material is more explicitly mapped into other courses.

Topics in Health Economics (4th year Capstone Course) at the University of Toronto

Course Background:

The fourth year capstone health course is made up of 11 course topics in the area of health economics, and for each topic, the lectures draw core material from research papers and then move to structured discussion. Because the course serves students with a great deal of economics already under their belt, I

add a challenging set of deliverables that aim at developing additional skills in public speaking, in giving and receiving critical feedback, and in developing an eye for open questions; all skills useful as they consider next steps on the job market or to graduate school.

In the lectures, I focus our materials on how the lens of economics can be applied to the topic of health, and the challenge I pose to them is to take simple economic frameworks to real world examples, e.g., using standard demand theory to pull out discussion on the difference between “health” and “health care”, taking models of monopoly to current controversies in pharmaceutical drug pricing, and taking simple models of insurance to understanding the implications of various proposals to repeal Obama care (Lecture 11). At first I found it nerve-racking to be so ambitious in an undergraduate course, but despite my own experience, it doesn't take a graduate degree to make these links.

Course Development:

Even though the course mostly involves group discussion, the course is highly structured. The main idea is to develop skills in writing and oration, while also providing knowledge of the field of health economics. The main design of the lectures and capstone project is to view knowledge as dynamic and the knowledge-frontier as evolving. Each lecture topic has three components: seminal research in the area (lecture base), discussion of subsequent contributions to seminal work, and relating that knowledge to real world examples. Students communicate their knowledge in four ways: blog-posts of related research, short oral presentation of a topic, and formal written reflection of learned materials. While this process provides good training for academic research, it also provides skill in summarizing knowledge and being able to focus the discussion (written or oral) on the “big picture.”

The centerpiece of the course is the capstone project (the so called the “Back-to-the-Future” project), which is developed over the course through structured course participation, presentation, peer feedback and written reflection. In the project, the students are asked to place a research article along a larger timeline, as reflecting the past and informing the future. We start by noting that relative to all but the most recent articles in health economics, we have one advantage over the authors: we are from the future. By traveling back to the future from some past point, not only can we anticipate innovations relative to a past article, in many cases we can observe the execution of subsequent innovation. The main goal for the students in this project is to investigate this progression through time for a chosen article and to pick an angle or specific thread of innovation upon which to base their narrative.

As I have my teaching skill has developed, I have been able to allow more flexibility in the direction of the discussion. This is an advantage because it means I am better able to integrate questions arising from a wide range of student projects, and by setting a tight structure on the interplay between course topics and student projects, discussion of any student's project has value for all. This has resulted in higher quality work by students, and the synthesis that students bring to the course generates an effective learning experience for all those in participation.

Brief Summary of Other Courses

Aside the three examples listed above, I have taught five other courses. Two are field courses (Undergraduate Labour Economics and Graduate Health Economics), and three focus on core material whose main function is to serve a larger program: Mathematics and Statistics Review for SPPG, first year Macroeconomics, and Microeconomic Theory for the Master of Development Economics program. My teaching effectiveness here has evolved and turned on the same strategy: to focus the content and deliverables on something that has resonance for the students. In methods, this is to focus on understanding and using mathematical and statistical tools with an explicit translation to use in the larger program. In Micro and Macro my focus has been similar to that of health economics but where the economic framework or the economic lens is focused on a broader set of real world examples.

3. Assessment of Teaching and Mentorship

Over time, I have used student feedback (i.e., course evaluation metrics, student comments, and department-solicited student evaluation letters) to assess what does and does not work in the classroom. In this section, I provide a summary of this feedback with some discussion on how it has impacted my teaching over time. In addition to this summary, I have also included the student evaluations for my three most recent courses in section 4 and department-solicited student assessments that were part of a successful tenure application at Dalhousie. Further, for all my courses, I provide a full set of all evaluations here: www.courtneyward.ca.

Overall, the student feedback I received highlights three themes where I do particularly well: organization (rated at a weighed average of 4.5 out of 5 across all courses), challenge (students were challenged by the deliverables and felt they met this challenge through the course), and support (students had the support they needed to meet the challenge). Looking through this feedback, I find that the order of these elements roughly tracks the development of my teaching over time. In the beginning of my career, I started by creating organized courses; each with obvious themes, cohesive evaluation, and a good set of notes. My next objective was to set challenging learning goals that were shared by both the students and myself, and were matched with deliverables that met those learning goals. The last layer was providing effective support. There is an art to knowing how much support to give, and my most recent focus is to design a good platform from which students can excel and, importantly, feel ownership over subsequent learning outcomes and course output. My evaluation and feedback supports continued success in these objectives and is described below.

Course Evaluations

Table 2 provides scores for questions related to overall teaching effectiveness by course and year (see table notes for question wording and scale across time and institution). On this metric, the tabulated results show a high degree of teaching effectiveness with scores generally averaging 4 and above on a five-point scale. They also show improvement within course after the first preparation and across time as I gained more experience teaching. Further, the underlying data show that over time I have displaced ratings of lower rank and essentially eliminated any ratings of 1 “Very Poor” in favour of ratings of 4 or 5 (“Very Good” and “Excellent”). For instance, in my three most recent courses, 0 percent gave a rating of 1 “Very Poor” whereas 92 percent of students gave me a rank of 4 “Very Good” or 5 “Excellent”.

While I improved on overall teaching effectiveness (4.5 in my three most recent course deliveries versus 4.3 in those before), the question where I show the most improvement is in whether students found the course intellectually stimulating (in this case a 4.5 versus the previous 4.1). I credit this change to how I have modified lectures and deliverables over time.

Table 2: Overall Effectiveness - Average Score Across Course and Academic Year

Course:	Math-Stats	Health Econ	Macro	Econometrics	Micro	Health Econ	Health Econ
Program:	SPPG	2nd yr	1st yr	3rd yr/MDE	MDE	MA/PhD	4th yr
University	U of T	Dal	Dal	Dal	Dal	Dal	U of T
Year & Prep							
2008-2009 1	4.74						
2009-2010 1		4.30	3.50			-	
2010-2011 1		4.70		4.00		4.10	
2011-2012 1		4.30		4.60	4.20	4.60	
2012-2013 1		4.24		4.56		-	
2012-2013 2				4.24			
2013-2014 1		4.07		4.50		-	
2014-2015 1		4.24			-	-	
2016-2017 1							4.80

Notes: The table reports average scores for overall teaching effectiveness as reported from my course evaluations (posted in full here: www.courtneyward.ca). For U of T Health Econ, the rating is based on the question "Overall, the quality of instruction provided by Courtney Ward in this course was:" and uses a five point scale: 1 "Poor", 2 "Fair", 3 "Good", 4 "Very Good", 5 "Excellent". For Dalhousie, the rating is based on the question "Overall, the instructor was a effective teacher" and uses a 5-point scale labeled differently: 1 "Poor", 2 "Very Poor", 3 "Satisfactory", 4 "Good", 5 "Excellent". Also of note, in 2012-2013, the Dalhousie student evaluation switched from a hard copy evaluation to an online assessment, which may lead to a selection effect in the reported means. For Math-Stats at SPPG, the rating is based on the question "How would you rank the overall ability of the instructor" and uses a 7 point scale: 1 "Very Low" 2 "Poor", 3 "Below Average", 4 "Average", 5 "Above Average", 6 "Very High" 7 "Outstanding". The latter score has been normalized to a five-point scale for comparison. The original number is 6.64 on a 7-point scale. "-" Indicates graduate courses with course enrolments too low to disclose evaluations. SPPG indicates School of Public Policy and Governance. MDE indicates Master of Development Economics. MA indicates Master of Arts, Economics.

Written Feedback

The following is a summary of the feedback I have received from students through course evaluations and department-solicited letters on teaching effectiveness.² What I think these data signify is my continued development of courses around three themes of organization, challenge, and support, and I have summarized student feedback below by rearranging comments along the lines of these categories. Following this, I discuss the constructive criticism I have received, and how I have addressed it. Lastly, I discuss the feedback I have received from course TAs.

a. Organization

Feedback From Course Evaluations

"She was extremely organized and enthusiastic about the subject matter. She took the time to get to know everyone's name and showed genuine concern for each of her students. She prepared the classes well and adjusted the structure as she went to suit everyone's needs. She made an incredible amount of effort to make things exciting and make sure people didn't get bored. Overall awesome prof and I wish I

² For each junior faculty member in economics, Dalhousie "solicits appraisals of his teaching effectiveness from those who have been taught, advised, and supervised by [that member]." This forms part of the assessment leading up to tenure.

wasn't graduating so I could have her again as a teacher." *2nd year Health Economics*

"Professor Ward has taught the class in an organized and effective way, stimulating learning while always addressing and helping with any student concerns." *Microeconomic Theory for MDE*

"She was very organized which made it very easy to follow her when teaching. She made every effort to aid us with extra materials that would help us get through the course. She did her best to provide every thing we would need to learn and do well in the course." *3rd year/ MDE Econometrics*

"Presented pertinent information that was also relevant to the climate of health economic debates today. Excellent professor who is enthusiastic and knows her content extremely well." *2nd year Health Economics*

Feedback From Department-Solicited Student Assessments

"From the very first class, Courtney gave a detailed outline of the course objectives and organization. She clearly communicated her expectations, methods of evaluation and provided advice for doing well in the class." *Graduate Student, Course: Health Economics*

"I had the pleasure of being taught by Dr. Ward for ECON 3338 in my very first semester at Dalhousie. With a finance background, this course was my first introduction into econometrics. A course such as introductory econometrics is not easy to teach, as most of the students equate their feelings towards the course with the workload and the difficulty level. I feel that Dr. Ward did an excellent job of systematically teaching the concepts and content of this challenging course" *Undergraduate, Course: Econometrics and Health Economics*

"Prof. Ward's lectures effectively strung together source material into a logical and coherent narrative; a teaching method that takes considerably more work than following a textbook. She frequently posed questions to the class as a way of keep us engaged and adjusting the level of details to our understanding of the material." *Graduate Student, Course: Microeconomic Theory for MDE*

"Dr. Ward is an excellent instructor. I found her Health Economics lectures to be highly organized, clear and concise. She encouraged active learning through class discussions, seminars and student presentations, which helped students such as myself, formulate research questions and develop thesis ideas. Her commentary of student presentations was constructive and thoughtful. *Graduate Student, Course: Health Economics*

I have found the course well organized and well structured. The outline was very well prepared; I found particularly useful the timelines (proposed weeks and topics) as well as the references to the literature for each topic. The structure of the course which consisted of lectures and seminars, as well as the course requirements (a presentation and a paper) have been well explained at the first lecture, and discussed several times throughout the course. This has helped me better manage my time and workload. I also liked the way Blackboard was used for submitting work and sharing material." *Graduate Student, Course: Health Economics*

"Another great advantage of the class was the organizational structure. I found her notes system, as well as the structure to be very beneficial to learning. I have had professors who had very unorganized class structures and notes – sometimes this appeared to be their style of education, other times it was an apparent lack of interest in the class. Dr. Ward excelled in very clearly laying out the structure of the class and tying all the separate sections together. The class was clearly very well thought out, and was designed in a way that it was challenging and stimulating but not frustratingly difficult. The class notes were also a great boon, easy to follow and very pedagogical." *Undergraduate, Course: Econometrics*

b. Challenge

As I gained more experience teaching, I started to build on my existing course structures, but instead of my standard-issue lectures and deliverables, I began to arrange this content to focus on critical thinking and using the economic framework at hand (be it a health field course, or a core course in econometrics, math-stat, or micro) to look at real world issues. I then redesigned deliverables that would have this focus and, in the process, teach skills in: discussion, presentation, peer evaluation, and writing. Where the courses served a thesis, I also added practice in developing questions and assessing feasibility. The following is student feedback on this approach.

Feedback From Course Evaluations

“The in-depth discussion of readings/articles in class, complimented by explanations of theoretical concepts etc., greatly enhanced learning. The tutorials, including the peer-review and econometrics workshops, were of additional value.” *4th year Topics in Health Economics*

“Excellent class! Methods are excellent. Material covered in class is extremely interesting. The subject is hard and Prof. Ward not only makes it understandable but also applicable and fun. Methods of evaluation are great! Midterms and assignments are excellent means for all students to learn rather than purely memorizing terms. Overall, excellent class and extremely well taught!” *Microeconomic Theory for MDE*

“Prof. Ward’s lectures were structured in a way that not only helped me understand econometrics but also all the statistics classes I had previously taken. Her assignments and tests were challenging but always assessed fairly. Thanks very much!” *3rd year/ MDE Econometrics*

“Very good professor, very knowledgeable of the course and material. I loved that she not only taught the course for academic purposes but also for practical use in the field. See made the course very practical and applicable to the real working world of economics and that made me want to learn because it would be very useful in my career.” *3rd year/ MDE Econometrics*

“Professor Ward is very knowledgeable and able to explain this material clearly. She facilitated class participation very well through class presentations and structured participation. The material covered is well balanced between theories and empirical work. No constructive criticism comes to mind.” *Graduate Health Economics*

“Courtney was an excellent prof. She conducted class well and in a way that was easily understood. She provided strong examples to back up theoretical ideas and was very good at explaining Stata commands. Her tests and assignments, though difficult, were excellent at promoting critical thinking about the subject matter. She was approachable and very friendly outside of class. Liked the online course notes as well. Overall great course!” *3rd year/ MDE Econometrics*

“Provided very detailed notes/slides: useful for references and future work. Covered a lot of very interesting material. Structured semester well. Start: Theory; End: Readings on theory in application. *Graduate Health Economics*

“Even though this course was extremely demanding (and more difficult than most in my opinion) Professor Ward made it as learnable as possible. I found having lecture slides to help base our learning off of was extremely helpful. I think I learned a lot of valuable information from this course, and in many ways that is due to Prof. Ward. Also I found her to be extremely helpful during her office hours. I always felt comfortable going to her if I had any questions. I have signed up for Health Econ because I liked her teaching methods so much.” *3rd year/ MDE Econometrics*

“Amazing class! The material covered in class is extremely interesting and informative. It is really helpful to have a theoretical component first and then a seminar component. The course is very challenging but not impossible which makes learning really effective than just memorizing everything. Perhaps change it to a different time as a 3-hour class in the afternoon may be a bit tiring” *Graduate*

Health Economics

“Very well done. Course was well organized, and you clearly cared about our learning. The initial draft submission and peer review for the term paper was brilliant. Even if peer review is not used, all professors should require a draft (let’s face it, with a full course load one must prioritize and papers get left until late; having to scramble to put together a draft , then being able to make it better later was the best thing that could have happened). Overall, best prof so far.” *3rd year/ MDE Econometrics*

“The term paper was a great addition to the course because it allowed us to apply our knowledge from the class. I also now do not feel as intimidated by writing a thesis next year as I have gained extremely beneficial experience.” *3rd year/ MDE Econometrics*

“Overall, best course I took this term. Quite helpful for other field courses.” *3rd year/ MDE Econometrics*

Feedback From Department-Solicited Student Assessments

“Dr. Ward liked to challenge all her students, so that they would get the most benefit out of the course. For example, about a month into the term Dr. Ward encouraged me to read a text that was beyond the scope of the class, during a conversation we had regarding the use of statistics to prove the direction of causality. Dr. ward also showed great concern for students who struggled with the material being covered in the course and did an excellent job of simplifying abstract concepts and providing tangible examples of how there econometric tools could be applied.” *Undergraduate, Course: Econometrics*

“With Introduction to Econometrics, Dr. Ward runs a tight ship. From day one I was completely motivated to learn. She is engaging like few others, her class is very structured, and it was clear that she had taught the course before. The class was challenging and it helped broaden my horizons. A clear example of this is the “peer review” process she had us go through after handing in a draft of our final papers., three week before the due date. I had never experienced that before, but it led me to read several of my friends’ papers and attempt to critically assess their worth. I have not read an academic paper the same way since. Econometrics was more than an economics class; it was as course on academia in general.” *Undergraduate, Course: Econometrics*

“Our method of evaluation included a presentation and written summary of a topic of our interest, along with a midterm and final exam. Her tests were challenging but fair. They cleverly tested knowledge, comprehension and application of the material. Prof. Ward provided timely and thoughtful feedback.” *Graduate Student, Course: Health Economics*

“From the first lecture Professor Ward tried to establish close communication with the students by, for example, asking each student about their expectations, research interests and then explaining whether the course would meet these expectations.” *Graduate Student, Course: Health Economics*

“Professor Ward managed to make me not only enjoy, but truly interested in the theory behind econometrics and what can be done with it. … Professor Ward also has high expectations for her students, but reasonably so. I found that her teaching was appropriately catered to the level of course that she was teaching. Both of her courses were challenging, without being overwhelmingly difficult. She pushes her students and is invested in the results.” *Undergraduate, Course: Econometrics and Health Economics*

“I appreciate that Dr. Ward is a demanding professor: her high standards have been a constant motivation for my growth. In particular, her challenging course in Econometrics pushed me to develop my potential in empirical methods and helped my to identify my research interests.” *MDE Graduate Student, Course: Econometrics and Health Economics*

“Dr. Ward’s classes were some of the most difficult that I was enrolled in as a student at Dalhousie. I also believe that it was in her classes that I learned and retained the most information that is relevant to my work

today.” *MDE Graduate Student, Course: Microeconomic Theory*

“She was always very supportive of me pursuing my own academic interests, and in pushing my development. In her class I was encouraged to take on an ambitious project but also given help with the process, and guidance in terms of not taking on too much work. I know that this has been the case for several other fellow students as well – when students show a further interest in a subject, she genuinely encourages pursuit of it, and has made her own time available outside of class to aid it.” *Undergraduate, Course: Econometrics*

Feedback Explicitly Assessing Content for its Use Beyond the Course

“In terms of lecture content and presentation, I really appreciated Professor Ward’s enthusiasm and vast knowledge of the topic. It was inspiring for me as a student to go to the lectures where the professor could comment on so many things beyond the main theoretical points. Another distinct feature of Professor Ward’s lectures was her desire to teach students to think as researchers, by properly identifying research questions and using the right methods. Irrespective of the topic of the lecture, Dr. Ward would keep a constant focus on the underlying methods and would provide very helpful intuitive explanations about how each method works. It was often eye-opening to me when I could finally understand certain econometric methods and the way they were used in applied research.” *Graduate Student, Course: Health Economics*

“This past year was a significant year in my life; it was the turning point where I realized that what I did everyday at school was in fact what I wanted to do for the rest of my life. The field of Economics had been fascinating up until then, but research was something even more challenging and rewarding for me. I started coming to the seminars every week, and slowly came to understand and appreciate the process of academic work, critical assessment, and brainstorming that it entailed. I came to realize there was no way I could end my studies after my undergrad, and I am applying for the Master’s program this year. This all started with one class; the one class where the rubber meets the road, Introduction to Econometrics, with Professor Ward.” *Undergraduate, Course: Econometrics*

“She can clearly explain economic issues not only theoretically but also practically, with a focus on business and government. She is also very clearly able to explain econometric methods that can be highly convoluted. Dr. Ward not only ensures that required readings cover seminal papers in the literature, but also touches on the progress of the literature in the field. Her assignments also develop skills that are necessary at the graduate level.” *Masters of Public Administration, Course: Health Economics*

“Dr. Ward’s lectures covered both the theoretical basis for econometrics as well as its practical applications, and she also encouraged students to bridge the divide between theory and practice with the work she assigned in class. For the term paper, Dr. Ward helpfully provided real-world datasets, as well as a list of possible research topics, to all students an opportunity to undertake econometric analyses without being side tracked by the need to find data from other sources. Outside of classes, Dr. Ward was always available to meet with students to provide clarification and guidance when needed.” *Undergraduate, Course: Econometrics*

“Professor Ward is confident in her delivery yet approachable, striking a balance between two of the most important characteristics that a successful educator must have. This teaching style allowed for many robust discussions during her class, which resulted in many students pursuing further research in the field of Health Economics. Currently working in the Healthcare Industry myself, I needed some direction for a key presentation and Professor Ward was happy to address my questions, even though months had passed since we had last spoken.” *Graduate Student, Course: Health Economics*

“In the classroom, she pushed students to hold themselves to a standard similar to other leading universities, and to try and build develop the analytic and critical-thinking skills that are necessary for advanced economics. Outside the classroom, Dr. Ward displayed a commitment to student success beyond the level demonstrated by most of the other lecturers I have had.” *Undergraduate, Course:*

Econometrics

“Dr. Ward was one of the best lectures I have had from the Economics Department, and from Dalhousie as a whole. Most of what I have retained from my time as an economics major at Dalhousie pertains to econometrics, and this is largely thanks to her effectiveness as an instructor.” *Undergraduate, Course: Econometrics*

“Dr. Ward has been a popular professor among students at Dalhousie University. The students find her lectures to be well-organized and relevant to their lives. For instance, in the undergraduate econometrics course, students are trained to write a paper with application of various statistics tools. This has been extremely effective in building students’ research skills for evidence-based approach to public policy. With Dr. Ward’s continued guidance, many students develop their term paper to a thesis or part of application to further education and job market.” *Graduate Student, TA: Econometrics*

“Dr. Ward is a dedicated lecturer who explains course material in a clear and organized manner to ensure that students are equipped with the essential skills. More importantly, Dr. Ward teaches students how to tackle solving problems from multiple angles and directions, which has benefitted me in higher-level economics classes and will also benefit me in graduate school.” *Undergraduate, Course: Econometrics*

“I met with her a few times to discuss course work and she was always intent on making sure I grasped the subject fully, which I greatly appreciated. The way she teaches the course makes the material very intriguing and highly applicable to real life and is reflected in her exams which ask you to apply the knowledge from the class to current economic situations like Obama’s soda tax.” *Undergraduate, Course: Health Economics*

“Awesome class – relevant subject matter taught by someone who knows the material well and cares about making sure her students are challenged and are learning the material. Brought in someone from industry to speak to the course as well which was great for connecting the material to the real world.” *Undergraduate, Course: Econometrics*

c. Support

One of the main issues I had to grapple with is how to support students through ambitious deliverables without it becoming overwhelming (to them or me). This took a longer time for me to develop because my approach to solving it depended on first recognizing common pitfalls in understanding and then heading them off directly in the lectures and discussion of deliverables. I got better at anticipating these pitfalls partly through accrued teaching experience, but I also rely heavily on in-the-moment class discussion, and in a quiet and/or large class I often use breakout discussion groups and check in with groups as I walk around the classroom. This gives me a sense of things, and, if needed, I can come back to the full class and directly tackle any emerging points of misunderstanding.

Feedback From Course Evaluations

“Ward was easy to understand. I appreciated the fact that when you didn’t understand, we didn’t move forward until the topic was clear. She provided thorough notes. I am taking another class solely because she is teaching it” *3rd year/ MDE Econometrics*

“Best professor I’ve had in all of undergrad. Economics department, if you can, steal her as she would be an amazing addition to the faculty. She is amazing at breaking down the material and making the content understandable. Her style of teaching is engaging.” *4th year Topics in Health Economics*

“Professor Ward is an excellent lecturer who presents (often complex) material in a manner that is both engaging and makes the material simple/straightforward to understand. UoFT would benefit greatly if she were a permanent member of the faculty, rather than just a visiting professor!” *4th year*

Topics in Health Economics

“Classes are always very well organized – makes it easy to follow. Assignments and tutorials were great in helping to understand econometrics. The hands-on approach of the course made econometrics seem a lot more realistic to a student who is used to memorising theorems. Professor is approachable and incredibly helpful.” *3rd year/ MDE Econometrics*

“Professor Courtney taught us how to use mathematical methods to prove classical economic theories, which is a required ability for an economics graduate student. She encourages us to work together to solve difficult questions. I learnt a lot from this class.” *Microeconomic Theory MDE program*

“Really seemed like she wanted everyone to not only know the subject but also understand it.” *3rd year/ MDE Econometrics*

“Made the challenging course material accessible and understandable.” *Microeconomic Theory MDE*

“It was such a pleasure to have the opportunity to be taught by Professor Ward, I think she did a fantastic job. I wasn't really sure to expect going into the course because everything about it was so new, but Professor Ward really surpassed my expectations. The topics and papers she chose were interesting and relevant and she did an excellent job in communicating the key course concepts to us. I particularly appreciated how patient and dedicated she was to ensuring that all students were on the same page despite coming from various streams and being at different levels in economics. Tests and assignments tested our knowledge of the course but were also very fair. You can tell that she spent a lot of time in keeping the course engaging and interesting and it is really appreciated by students. On top of all of her strengths as a teacher you can tell she is brilliant within her field. All the best going forward Courtney, have an excellent summer and thank you for an eye-opening semester, I really learned a lot! *4th year Topics in Health Economics*

Feedback From Department-Solicited Student Assessments

“In my opinion, Dr. Ward is one of the most skilled instructors in the economics department. She is able to communicate complex information to produce “light bulb moments” for her students; is willing to give advice and extra help if needed and is able to adapt her lessons to the skill level of her class to ensure that her students are able to understand the information, explain it to other and retain it as well.” *MDE Student, Courses: Microeconomic Theory and Econometrics*

“Our final paper for this class was unlike any papers I had written before. The objective of the assignment were to communicated clearly, and students had multiple options for writing We could chose from among a set group of topics (with attached datasets) or choose from our own interests. The provided topics gave us a closer view to the kinds of questions we could ask with our econometric skills, while we were also able to use these concepts to inform our personal research questions. Additionally, we were asked to submit a first draft, which we then exchanged with our classmates in a peer review session before completing a final draft. While some professors may simply let us loose, and allows us to do peer review on our own time (which, let's face it, we never do), Professor Ward's style was such that we were guided along the process, and were able to complete a better quality essay by the end of it, which proved helpful when writing our thesis the next year.” *Undergraduate, Courses: Health Economics and Econometrics*

“I must also emphasize, Dr. Ward's willingness to adjust the pacing of her teaching to accommodate students' needs. While lesser professors might not take the time to repeat the explanations for complicated concepts, Dr. Ward always walked us through the tricky math until we were more comfortable with the subject matter.” *Undergraduate, Course: Econometrics*

“Dr. Ward presented the material in an easy to understand relatable way and provided numerous in-class examples to aid student comprehension. She was particularly good at explaining concepts from multiple

perspectives, and answered in-class questions patiently and insightfully. *Undergraduate, Course: Econometrics*

“From my experience, Dr. Ward is a talented and capable instructor. When I took ECON 3338 (Econometrics I), it was a course that included undergraduate and graduate students with varying backgrounds in terms of their previous preparations in mathematics and statistics. Dr. Ward was able to provide an overview of econometrics in such a way that it was understandable to students who were less familiar with the subject while still being interesting to those with more knowledge of quantitative methods.” *MDE Student, Course: Econometrics*

“Dr. Ward had thorough understanding of both subjects, and was able to explain topics in a number of ways to help students gain a good foundation of knowledge. For both courses, she had put in significant work to develop detailed and useful notes in addition to textbook readings, and provided flexible office hours to be available to students seeking further insight on relevant subject areas. She was well spoken and took time to show examples backing up her explanation of challenging topics.” *Undergraduate, Courses: Health Economics and Econometrics*

d. Constructive Criticism

The most frequent critical comment I receive is about posting notes ahead of the lecture. In the past, I would often wait to post lecture notes because of an untested theory that students would download notes in lieu of coming to class. Things changed when I started augmenting econometrics lecture notes to include space to write and graph, which meant we would all have the basic lecture structure in front of us and we would break out the details live together in class. Of course, this also meant I had to post the notes ahead of time (...on the other hand, because of the live work, students still had an incentive to come to class). At this point, I have had students say they wish they had the notes ahead of time and say they appreciated having the notes ahead of time. Nobody has mentioned appreciating the notes not being posted ahead of time. I take the point.

Feedback From Course Evaluations

“she spoke clearly, and i really like that she used the projector with hand written notes that were posted before class” *Econometrics*

“Topics, especially in the seminar, were interesting. Lectures were enjoyable and very clear. It may be helpful to have all Powerpoints posted in advance however.” *Graduate Health Economics*

“There were some days that had very few handwritten parts to the slides, and it was difficult to stay focused” *Econometrics*

The second most common critical feedback I receive is that the lecture notes are dense. In this case, I also have a balance of comments with the opposite view. Posting notes ahead of time may be a way to get everyone on board here, as well as integrating more live work as I did with econometrics.

Feedback From Course Evaluations

e.g., comments from 4th year Topics in Health Economics where notes were not posted ahead of time:

“Very good. The slides and the notes are very helpful.” *4th year Topics in Health Economics*

“The lecture slides were filled with too much information for class, which made taking notes more difficult. Also, it was hard to study from them as well.” *4th year Topics in Health Economics*

"It was great. I wish Professor Ward was at U of T full time. The lectures were really dense and it was hard to stay focused for the whole 2 (or sometimes 3) hours. I would have preferred if the slides were posted before hand, so that I could have a baseline knowledge going into lecture - and be able to ask more in depth questions." *4th year Topics in Health Economics*

e.g., comments from Econometrics and undergraduate Health Economics after restructuring notes to include live work and posting ahead of time:

"She spoke clearly, and i really like that she used the projector with hand written notes that were posted before class" *3rd year/ MDE Econometrics*

"Class was good. Lectures became much better when prof started walking class through problems on the overhead rather than just going through slides." *2nd year Health Economics*

e. TA Supervision, i.e., another teaching opportunity

In many cases, effective course delivery also relies on teaching assistants, and teaching assistants are students in disguise: they want to learn the skills that go along with course delivery, such as using their economics knowledge to provide feedback, and presenting their knowledge to an audience. Of course, it is personally beneficial to provide good guidance on TA work (e.g. inconsistencies between myself and the TAs can take up time later on), but my own experience as a TA tells me that these benefits run both ways.

One example of these benefits is the TA assigned peer review and term paper evaluation. Integrating some of what I have learned through the Centre for Learning and Teaching at Dalhousie, I started using CLT evaluation rubrics to coordinate expectations among the TAs, the class, and myself. Further, I supplement the rubric by providing the course TA with strategies for evaluation and how to provide constructive feedback. For tutorials, I provide the basic structure of the tutorials so TAs don't get bogged down in prep, but then I make suggestions on how they might add to that structure using with their own examples and insight. Lastly, I check in frequently with students for feedback on TAs and then deliver this back to TAs as we move through the course. I was happy to see that this type of support was highlighted by several of my past TAs in the student letters of evaluation.

Feedback From Teaching Assistants (Department-Solicited Student Assessments)

"She was very proactive and organized in all matters related to the course. She was clear about her expectations for me as a teaching assistant. At the same time, she recognized that I was a student myself, and was understanding about scheduling conflicts. Dr. Ward gave me the appropriate resources to do my job effectively. And, she took time to support me in becoming a better teaching assistant, e.g. tips for delivering tutorials, best practices for grading."

"Her initiative to organization as an instructor are beneficial to colleagues and teaching assistants. When I was her teaching assistant for Introduction to Econometrics, Dr. Ward prepared all tutorial and computer lab lesson plans well in advance of scheduled meetings. This reduced my own preparation time and ultimately enhanced the quality of my time with the students."

"I often admired her ability to maintain a balance between supporting students through the learning process while holding us accountable for the work. The course evaluations [rubrics] were good metrics of learning. And, Dr. Ward gave great feedback. I still use a lot of her suggestions in my current work. Dr. Ward designed the course so as to keep students actively engaged throughout the semester. On balance, she was a knowledgeable, approachable instructor with a genuine interest in the betterment of students."

Continuing Motivation for Leadership in Teaching:

The process of summarizing ones previous work offers a great opportunity for self-reflection: “Why am I doing this?” In thinking about my personal motivation for teaching and mentorship, I frequently land on my very last moment as a student, standing on the street corner with my dissertation committee after celebrating a successful defense. Before my committee and I went our separate ways, my mind clamoured towards that final word of “thanks”, but, at the same time, the word, itself, didn’t seem up to the task. Instead I remarked on the lopsidedness of the student-mentor relationship and how it seemed impossible to repay the value of my committee’s mentorship during my years as a student. If I expected to be disappointed in any parting words of wisdom, I wasn’t. Without pause, one of my committee members said, “Yes, you can. You can pay it forward.” This wasn’t the only lesson I gleaned from my years as a student, but one I frequently come back to as the idea that most focuses my intentions and motivations as an academic.

4. Course Materials

This section provides course packages given in reverse chronological order. For space issues, I have included only my three most recent courses. For completeness, I also provide a comprehensive account on my website: www.courtneyward.ca. This includes, for instance, course syllabi, course evaluations, and department-solicited letters in their original form. The table below provides a list of the materials included here as described in section 2 Summary of Teaching Experience.

1. Topic in Health Economics (Eco 402); University of Toronto
 - a. Syllabus
 - b. Back-to-the-Future Project
 - c. Lecture 11: “Trumpcare” vs “Obamacare”
 - d. Student Evaluations
2. Econometrics (Econ 3338); Dalhousie University
 - a. Syllabus
 - b. Course Project Description
 - c. Lecture 14: From Econometrics to Application
 - d. Lecture 18: Peer Evaluation and Revision
 - e. Peer Review Worksheet
 - f. Student Evaluations
3. Introduction to Health Economics (Econ 2231); Dalhousie University
 - a. Syllabus
 - b. Lecture 11: Economic Evaluation
 - c. Lecture 20: Health Systems Comparison
 - d. Student Evaluations

ECO402H1-S Topics in Health Economics - Winter 2017

Professor: Courtney Ward
Office hours: TBA

Lectures: Wednesday	10 – 12	NL 004
Tutorials: Wednesday	12 - 1	NL 004

Course objectives:

This course introduces students to the role of economics in health, health care, and health policy. It comprises a survey of major topics in health economics and is designed to introduce you to the issues, theory and practice of health economics. Topics include the economic determinants of health, the role of moral hazard and adverse selection on the market for health insurance, the role of the government in health care, and health care reform.

Prerequisites: One of ECO200Y1/ECO204Y1/ECO206Y1; One of ECO202Y1/ECO208Y1/ECO209Y1; One of ECO220Y1/ECO227Y1/(STA220H1,STA255H1)/(STA257H1,STA261H1); At least one FCE in ECO at 300+.

Course outline:

Week 1: The Economics of Health and Health Care	
Week 2: Economic Evaluation	Tutorial: Econometrics workshop
Week 3: Pharmaceutical markets	Tutorial: Econometrics workshop
Week 4: Health Insurance	
Week 5: Physician Behaviour and Remuneration	
Week 6: Health Production	Tutorial: Oral summaries – group 1
Week 7: The Health Endowment	Tutorial: Oral summaries – group 2
Week 8: Choice: Business cycles, Pollution, Climate	Tutorial: Oral summaries – group 3
Week 9: Socioeconomic gradients in health	Tutorial: Writing workshop, peer feedback
Week 10: Health externalities	
Week 11: Choice: Smoking, Obesity or Health system comparisons	

For each course topic you will find lecture slides, discussion questions, and a detailed reading list posted on the course Blackboard page. Please check the website frequently for new announcements.

Tutorials are reserved for reviewing econometric and theoretical tools and discussion of the term project (oral presentations, peer review workshop), although it may also be used to cover course materials (if time constraints bind).

There is no required textbook for the course, but you may find the following useful introductory material:

- Sherman Folland, Allen Goodman and Miron Stano, *The Economics of Health and Health Care* (Prentice Hall), 7th edition.
- Jeremiah Hurley, *Health Economics* (McGraw-Hill Ryerson), 2nd edition.
- Jones, Andrew, *Applied econometrics for health economists: a practical guide*, Radcliff Publishing.

Course Deliverables:

Course deliverables include two exams and a capstone project. The project is due in phases including oral presentation (brief), self-editing assignments, and peer feedback. Details are provided in full on the course website. Note that peer review marks are given for your completion of a peer review and not based on feedback from your peers.

Additionally, there are weekly discussion questions that draw on each lecture topic. While ungraded, these questions form a reasonable basis for exam content and participation serves as an input into exam preparation.

The overall course grade will be determined as follows:

<u>Deliverable</u>	<u>Weight</u>	<u>Due Date</u>
Midterm	30%	February 15
Capstone Project	35%	
Phase 1: Topic selection (2%)		March 1
Phase 2: Oral presentation (2%)		March 1, 8, 15
Phase 3: Peer review and draft (5%)		March 22
Phase 4: Final project (26%)		April 5
Final	35%	TBA

Remarking: If a student believes a piece of work has not been graded correctly, the student may submit a request for re-marking no later than two weeks after the work is returned to the student. The request should explicitly state why the student believes more marks should be allocated, making direct references to the grading scheme. Please note that I will not accept a request for re-marking of a test written in pencil. In addition, keep in mind that the entire piece of work will be re-marked, therefore it is possible that the resulting overall grade may decrease relative to the original grade.

Missed due dates: Note that each paper Phase 1, 2, and 4 is due prior to the start of the lecture (i.e., no later than 10:10) and Phase 2 presentations are due on one of 3 assigned dates. Out of respect for those students who do submit material on time, these deadlines are strict. This means that failure to deliver material by the deadline will result in a grade of zero (no exceptions).

University disclaimer concerning turnitin.com: "Normally, students will be required to submit their course essays to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site"

Missed exams: Students who miss a term test should inform me via email prior to the test, and medical notes must be submitted no later than one week after the missed test. If a student misses a test, a cumulative make-up test will be given within two weeks. Medical note are accepted only if they satisfy the standard criteria: the note is a University of Toronto Medical Certificate, the note is from the day of the test, the note is completed by a qualified medical doctor, and the note contains doctor's OHIP registration number.

E-mail Policy: Since this course encourages discussion of issues in health economics, it is more fruitful if we save questions for the lecture period or by reserving a meeting time during my office hours. You should feel free to e-mail me, but please keep in mind that for most cases I will respond by setting an office meeting with you or addressing your question in the next lecture.

Eco 402 - Reading List (* indicates required)**Tutorials****Methods and interpretation of results in health research (Jan 18, Jan 25)**

* Goldacre, B. (2011 July). *Ben Goldacre: Battling bad science* [Video file].
Retrieved from http://www.ted.com/talks/ben_goldacre_battling_bad_science

Jones, Andrew, *Applied econometrics for health economists: a practical guide*, Radcliff Publishing. Chapter 1

Angrist, Joshua D. & Jörn-Steffen Pischke, *Mostly Harmless Econometrics: An Empiricist's Companion*. (Princeton University Press). Chapter 1, 2

Writing and presenting workshop (Mar 1 to Mar 22)

Dudenhefer, P. 2009. A Guide to Writing in Economics. Retrieved from
<http://lupus.econ.duke.edu/ecoteach/undergrad/manual.pdf>

Neugeboren, R and Mireille Jacobson. 2006. Writing Economics. Retrieved from
<https://writingproject.fas.harvard.edu/files/hwp/files/writingeconomics.pdf>

Lectures**Topic 1: The Economics of Health and Health Care (Jan 11)**

* Arrow, Kenneth (1963) "Uncertainty and the Welfare Economics of Medical Care" American Economic Review December 1963

Fuchs, Victor (2000) "The Future of Health Economics" Journal of Health Economics 19.

David Cutler, Angus Deaton and Adriana Lleras-Muney "The Determinants of Mortality" The Journal of Economic Perspectives Vol. 20, No. 3 (Summer, 2006), pp. 97-120

Topic 2: Economic Evaluation (Jan 18, Jan 25)

* Wishart A. (2009 June). BBC Documentary: Price of Life [Video file].
Retrieved from <http://www.bbc.co.uk/programmes/b00l9dmw>
Alternative: <https://vimeo.com/4796083>

* Chandra, Amitabh, Anupam B. Jena and Jonathan S. Skinner. 2011. "The Pragmatist's Guide to Comparative Effectiveness Research." Journal of Economic Perspectives, 25(2): 27-46. DOI: 10.1257/jep.25.2.27

Drummond MF, Sculpher MJ, Torrance GW, O'Brien BJ, Stoddart GL. *Methods for economic health evaluation of health care programmes*. 3rd ed. Oxford: Oxford University Press; 2005.

Topic 3: Pharmaceutical markets (Jan 25)

* Howard, David H., Peter B. Bach, Ernst R. Berndt and Rena M. Conti. 2015. "Pricing in the Market for Anticancer Drugs." *Journal of Economic Perspectives*, 29(1): 139-62.
DOI: 10.1257/jep.29.1.139

* Hollis, Aidan, and Paul Grootendorst. 2016. "A comparison of mechanisms for setting generic drug prices in Canada." *Journal of Generic Medicines*, 1741134316669967.

Topic 4: Health Insurance (Feb 1, Feb 8)

* Einav, Liran and Amy Finkelstein. 2011. "Selection in Insurance Markets: Theory and Empirics in Pictures." *Journal of Economic Perspectives*, 25(1): 115-38.
DOI: 10.1257/jep.25.1.115

* Manning, W. et al, 1987. "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment," *American Economic Review*, June: 251-277.

* Aron-Dine, Aviva, Liran Einav, and Amy Finkelstein. 2013. "The RAND Health Insurance Experiment, Three Decades Later." *Journal of Economic Perspectives*, 27(1): 197-222.

Akerlof, George. 1970. "The Market for Lemons," *Quarterly Journal of Economics*, 84, August: 488-500.

Pauly, M. 1968. "The Economics of Moral Hazard," *American Economic Review*, June: 58(3).

Kaestner, Robert and Darren Lubotsky. 2016. "Health Insurance and Income Inequality." *Journal of Economic Perspectives*, 30(2): 53-78. DOI: 10.1257/jep.30.2.53

Cohen, Jessica and Pascaline Dupas. 2010. "Free Distribution or Cost-Sharing? Evidence from a Randomized Malaria Prevention Experiment" *Quarterly Journal of Economics*. CXXV: 1.

Gruber, Jonathan, 2008. "Covering the Uninsured in the United States" *Journal of Economic Literature*. 46:3, 571–606. <http://www.aeaweb.org/articles.php?doi=10.1257/jel.46.3.571>

Hackmann, Martin B., Kolstad, Jonathan T. and Kowalski, Amanda Ellen, Health Reform, Health Insurance, and Selection: Estimating Selection into Health Insurance Using the Massachusetts Health Reform (January 2012). NBER Working Paper Series, Vol. w17748, pp. -, 2012. Available at SSRN: <http://ssrn.com/abstract=1985081>

Anderson, Michael, Carlos Dobkin, and Tal Gross. 2012. "The Effect of Health Insurance Coverage on the Use of Medical Services." *American Economic Journal: Economic Policy*, 4(1): 1–27. DOI:10.1257/pol.4.1.1

Cutler, David. and Reber, Sara. 1998. "Paying for Health Insurance: The Trade-Off Between Competition and Adverse Selection," *Quarterly Journal of Economics*, May 1998:434- 466.

Topic 5: Physician Behaviour (Feb 8)

* Rudoler, David, Audrey Laporte, Janet Barnsley, Richard H. Glazier, and Raisa B. Deber. 2015. "Paying for primary care: A cross-sectional analysis of cost and morbidity distributions across primary care payment models in Ontario Canada." *Social Science & Medicine*, 124: 18–28.

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The Economics of Bads: Smoking, Obesity

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Econ 402: Topics in Health Economics

Guidelines for the Back-to-the-Future Project

Aim of Project

The purpose of the project is to give you an opportunity to develop critical thinking and research skills while introducing you to pertinent topics in health economics. Following Northrop Frye's notion that: "poetry can only be made out of other poems; novels out of other novels," we arrive at the idea that articles can only be made out of other articles. This project gives you the opportunity to track innovation in the ideas of other economists and, in doing so, develop skills in critical appraisal and an eye for future innovation.

Why do we call it the Back-to-the-Future project? Notice that most of what we study deals with the past, be it context or method. This means that relative to all but the most recent articles in health economics, we have one advantage over the author(s): we are from the future. By traveling back to the future from some past point, not only can we anticipate innovations relative to a past article, in many cases we can observe the execution of subsequent innovation.

Structure of Project

Your project will be structured around a published research article in the field of Health Economics. To put you in the right frame of mind, consider each article as a piece of research at a point in time, reflecting the past and informing the future. A good research article adds a significant contribution to the field or topic (the past) and will also serve as a basis for subsequent research (the future). This path is easily documented using the reference list and "cited-by" lists, and your aim in the project is to investigate this progression through time for your chosen article. Since progress is often multi-faceted, part of the assignment is to pick an angle or specific thread of innovation upon which to base your project.

The project is designed to develop written and oral communication skills. The oral presentation is a precursor to the written project; it follows the general format of the written project and hence allows you to discuss your project with your classmates and refine your thinking during the writing process. The final written project demands more than a simple article summary but is less involved than a full literature survey on the topic of that article.

Due Dates

The project is due in four phases including oral presentation, self-editing assignments, and peer feedback. The first phase, topic selection, is due on March 1. Oral presentations will be held in three separate groups during the tutorial period in the weeks running from March 1 to March 15. A complete draft is due on March 22, and at this time we will be holding a peer review and self-editing workshop in the tutorial period. The final project is due on April 5. Details on each phase are given below.

Phase 1 - Topic Selection (6% of grade)

By now you are aware that the course is made up of 11 topics in Health Economics.¹ These topics form the basis of selection for your project. Once you have chosen a topic, start researching the literature in this area in search of a candidate research article. To align with Tutorial 2 and 3's focus on understanding empirical evidence in health economics, your choice of article should have an empirical component to the analysis. I also strongly suggest you restrict your choice of articles to "higher quality" economics journals (a search on journal rankings in economics will inform this list). NBER working papers, or other

¹ For the purposes of the project, topic 11 will include only "The Economics of Bads: Smoking, Obesity" (i.e. not "Health System Comparisons").

reputable working papers, are also acceptable sources. Articles without an * on the reading list are fair game.

You will post the chosen article's reference information to the course website, and to avoid replication of articles among your peers, your chosen article cannot already be listed on the group forums (i.e. time is of the essence). You can subscribe to the discussion board if you would like to be updated on your classmates' posts in real time. Before you select your article, you may wish to consult the list of common Phase 1 pitfalls given at the end of this document.

Here is an overview of the Phase 1 deliverables:

1. Research and choose one article related to a course topic.
2. Post the article on the course blog at any time before 10am on March 1st.

To post your article, go to the "Discussions" tab on the course website and choose your assigned group. Click "Create Thread" and post the following information (see example post):

- a. Subject: topic and article title.
- b. Message: citation (including doi) and abstract.

Phase 2 – Oral presentation (6% of grade)

By this point you would have chosen an article on one of the course topics. This article will be the focus of both the oral presentation and written project. The idea behind the presentation is to give you a chance to practice giving a short verbal summary with limited time and without reliance on aids like presentation slides. A rubric for presentation evaluation will be provided to aid in your preparation.

Your presentation will comprise a discussion of:

1. Motivation: introduce the topic, identify shortcomings in previous literature in the area, and discuss how the article addresses these shortcomings.
2. Empirical analysis: state the population of interest, the treatment variable of interest, the outcomes considered, describe the nature of the variation in treatment variable, and the empirical method used.
3. Conclusions: what is the bottom line message of the article?
4. Future work: identify one constructive criticism regarding the article and phrase this criticism as a question.

Logistics

The allotted time of each presentation is 3 minutes. There is no need to prepare slides nor will they be permitted. Your delivery will take place in the tutorial period of your assigned group (groups 1, 2, and 3 are assigned to March 1, 8, and 15, respectively), and you need only attend the presentation day assigned to you. If you are unable to present for valid reasons (see syllabus), you will be given the option to present in the next scheduled lecture period (e.g., to the whole class if space in subsequent tutorial presentations does not permit). While preparing your presentation, you may wish to consult the list of common Phase 2 pitfalls given at the end of this document.

Phase 3 – Draft and peer review (14% of grade)

Your written project more completely fleshes out your presentation. It should follow the aim and structure described in the first section of this guideline, and, in terms of content, should be comprised of the following:

With reference to your chosen paper (i.e. past + present):

1. Motivation:

- Introduce the topic, discuss its importance, and describe previous evidence *relative* to the given paper.
 - Provide and explanation of the shortcomings of previous work and argue why these shortcomings are significant.
 - Discuss how the chosen paper addresses the shortcomings of previous work and describe the contributions of the paper.
2. Empirical model:
- Provide a formal statement of the empirical problem and main estimation equation.
 - In doing so, state the population of interest, the treatment variable of interest, the outcomes considered, and describe the nature of the variation in the treatment variable.
 - You may want to briefly highlight potential difficulties in estimation/analysis of the relationship of interest.
3. Results:
- Describe the following: regression results, economic interpretation of results and comparison to previous results.
 - This may include discussion of results for different sub-groups, robustness checks, and evidence addressing the shortcomings of previous work.
4. Conclusion
- Conclude by reemphasizing what can be learned from the paper, what contributions have been delivered on, and the bottom line message of the paper.

With reference to subsequent work or extensions (i.e. future):

5. Future Work
- Find *two* subsequent papers that address/follow from the current research paper. Provide a short description of each of your chosen papers delivering the main contributions and findings.
 - Identify *one* future direction for the research topic that you think is interesting.

Logistics

The written project should be no more than 6 pages (single-spaced, 12pt font, Times New Roman, 1 inch margins) and should be succinct and well written. References, tables and/or figures are not included in the page limit and should be included after your 6 pages of text in the order: reference, tables (if any), figures (if any). A title page with your title, name, student number, course number, and date should preface your project (the title page is not included in the 6 page limit). When referencing, please follow the Chicago Manual of Style's "Author-Date" format. Footnotes (at 10pt font) may be used for explanatory information but not references.

The project will be evaluated on components 1-5 listed in the section above. In case it is helpful, I have posted some reference information on writing in economics on the course website. You also have the writing centre available to you. Two versions of your complete project are due on March 22: an electronic copy posted through Turnitin by 10am and written copy due in class between 10:00-10.10am. Because of the way Phase 3 is graded you need to satisfy both deadlines to receive a full grade for the completeness of your draft and for your peer review work. Needless to say, both versions should be identical and both will be assessed through the review process. For your electronic file, please use the following naming convention: "Topic" + "Your name" + "Lead Author". Example: 06WardAlmond.pdf. Before you submit your first draft, you may wish to consult the list of common Phase 3 pitfalls given at the end of this document.

We will be going through peer review and self-editing tasks in the tutorial period on March 22. Attendance is necessary to the part of your grade that depends on completing a peer review assessment. If you cannot attend for valid reasons (see syllabus), you will be given the option of completing your review

in the next tutorial session. The deadline on submitting your draft, however, is strict, and delay will not be excused for *any* reason. I recommend you start working steadily on the project now to insure against any major/minor catastrophes that could bar completion near the deadline. If you are unable to attend the class on March 22, post your electronic copy and have a friend deliver the hard copy in your stead.

Phase 4 – Final project (74% of grade)

In the final project you have an opportunity to use the self-editing techniques and to address useful comments from your peer review. Again, please submit both an electronic and hard copy by the start of class on April 5. The details and logistics regarding the draft in Phase 3 apply the same to Phase 4. Before you submit your final draft, you may wish to consult the list of common Phase 4 pitfalls given below.

Common pitfalls

Common pitfalls at the paper selection stage:

- 1. The paper is primarily a theoretical or a review paper making it difficult to complete the empirical component of the project.**

Solution: if you want to select a theoretical or a review paper, please see me first so that we can discuss how you can meet the content requirements for the project. Alternatively, you may wish to choose an empirical paper referenced by your chosen paper, and then use the referenced paper as your selected article. In this case, you can discuss your originally chosen paper as one of the articles under “future work”.

- 2. The paper is too “new” meaning there is very little follow up research.**

Solution: similar to the second strategy above: you may wish to choose an empirical paper referenced by your chosen paper, and then use the referenced paper as your selected article. In this case, you can discuss your originally chosen paper as one of the articles under “future work”.

Common pitfalls at the presentation stage:

- 1. The presentation focuses too much on the details and not enough on conveying a higher order summary of the material.**

Solution: leading up to the presentation, you focused on understanding all the details of your chosen article. If you’re having trouble summarizing from here, try coming at it from the opposite direction: write down in one sentence what the paper is about. Then work by adding details to the sentence according to the content outline.

- 2. You are not able to identify the population of interest, the variable of interest, or the outcomes considered.**

Solution: The ability to quickly identify who the analysis is about and what's being related is very useful interpretive skill. This information is usually summarized in the abstract or even in the title. If you are still unsure, a quick conversation with me can usually resolve this.

- 3. Referring to notes or your computer while presenting.**

Solution: how do you get comfortable discussing your material without notes? Easy: practice running through it over and over (e.g. to yourself, to the mirror, to your friends, etc.). Usually by the fifth time you’ll notice you don’t need your notes anymore.

Common pitfalls at the first draft stage:

1. Elements of the content guide are not met.

Solution: Review the content guideline before printing out your draft for submission and double check that you've met each point. Remember, in this stage we are evaluating your paper for completeness, which is a lower bar than evaluation on content and exposition. Coming with an incomplete project (in any way) is an unfortunate loss of easy marks.

2. Style and page limit guidelines are not met.

Solution: Review the logistical guidelines before printing out your draft for submission and double check that you conform to style and page limit specifications. Not conforming to these at the second submission would be judged as a major flaw in your project.

Common pitfalls at the second draft stage:

- 1. All elements of the content guide are met, but the product lacks a central focus, e.g.,**
 - Each section is isolated and doesn't relate to a common thread.
 - The "future work" section is an afterthought.
 - The project focuses exclusively on the chosen paper and not on the evolution of knowledge over time.
- 2. The project is not well organized or lacks flow.**
- 3. The writing is not clear or error-prone.**

ECO 402: TOPICS IN HEALTH ECONOMICS

Lecture 11

Topics in Health Economics

[1]

The Final Application of our Course Materials

- Health System Comparison
 - Here's our final discussion!
 - Using the concepts we've developed throughout the course, we can assess the recently proposed American Health Care Act (i.e., Trumpcare).
 - We can benchmark using the Canadian health care system
 - Then we can compare the AHCA changes to the Affordable Care Act (i.e., Obamacare)
 - Course topics you'll need at the forefront of your mind:
 - Risk aversion
 - Adverse selection
 - Moral hazard
- Topics in Health Economics
- [2]

"Nobody knew health care would be so complicated"

- Donald Trump

<https://www.youtube.com/watch?v=5oQLf65N-AU>

Topics in Health Economics

[3]

Health Insurance

- Through out the course we learned three key bits of information about health insurance:
 - Risk averse individuals have positive demand for health insurance and risk neutral firms are willing to supply it
 - Inability to insure in this case gives rise to market failure
 - Adverse selection
 - Public policy: mandated coverage, subsidize insurance, limit characteristics over which insurance company can price discriminate
 - Moral hazard:
 - Public policy:
 - Demand side cost sharing: copays, deductibles, etc.
 - Supply side cost sharing: policies that lead supply side to manage the care given to consumers
- Topics in Health Economics
- [4]

Comparison of Canada and U.S.

- Who is covered?
- What is covered?
- How it's covered?

Topics in Health Economics

[5]

Changes to the U.S. health care system

- The Affordable Care Act: The federal Patient Protection and Affordable Care Act (P.L. 111-148), signed March 23, 2010,
- The 900+ page act contains many provisions, with various effective dates.



Topics in Health Economics

[6]

The Affordable Care Act

- Expand Access to Insurance Coverage
 - Require employers to cover their workers, or pay penalties, with exceptions for small employers.
 - Provide tax credits to certain small businesses that cover specified costs of health insurance for their employees, beginning in tax year 2010.
 - Provide tax credits based on age, income, geography
 - Require individuals to have insurance, with some exceptions, such as financial hardship or religious belief.
 - Require creation of state-based (or multi-state) insurance exchanges to help individuals and small businesses purchase insurance. Federal subsidies that scale with incomes.
 - Expand Medicaid to cover people with incomes below 133 percent of federal poverty guidelines.
 - Require creation of temporary high-risk pools for those who cannot purchase insurance on the private market due to preexisting health conditions, beginning July 1, 2010.
 - Require insurance plans to cover young adults on parents' policies, effective Sept. 23, 2010.

Topics in Health Economics

[7]

The Affordable Care Act

- Increase Consumer Insurance Protections
 - Prohibit lifetime monetary caps on insurance coverage and limit the use of annual caps.
 - Prohibit insurance plans from excluding coverage for children with preexisting conditions.
 - Prohibit rating based on anything other than age, geography and tobacco use
 - Prohibit insurance plans from cancelling (rescinding) coverage, except in cases of fraud.
 - Establish state-based rate reviews for "unreasonable" insurance premium increases.
 - Mandate coverage for certain "essential" services

Topics in Health Economics

[8]

The legislative process for each bill

- In considering the ACA in 2009 and 2010:
 - The House:
 - held 79 hearings over the course of a year,
 - heard from 181 witnesses
 - accepted 121 amendments.
 - The Senate adopted ACA after:
 - approximately 100 hearings, roundtables, walkthroughs and other meetings, and
 - after 25 consecutive days in continuous session debating the bill.
 - <http://www.cbc.ca/news/world/dr-danielle-martin-gives-washington-a-lesson-on-canadian-health-care-1.2570872>
- In considering the AHCA,
 - The hope was to get through the House in three weeks.
 - Bill was withdrawn from consideration on expectation of failure

Topics in Health Economics

[9]

The AHCA

- Main areas of reform relative to ACA:
 - Coverage
 - Tax credits and regulation on premiums
 - Medicaid



Topics in Health Economics

[10]

Coverage

- Individual and small group insurance markets
 - Historically a non-functional market
 - Rates based on health status (among other characteristics)
 - Coverage not mandated
 - Note: under the ACA these markets are still not functioning well
- What do the ACA and AHCA propose?:
 - ACA: individual mandate requiring insurance
 - Penalty for non-compliance paid to government
 - AHCA: 30 percent surcharge (for 1 year) for people who let insurance lapse
 - Incentive for healthy young people to stay in risk pool
 - No incentive for uninsured to insure
 - Penalty is paid to insurance company

Topics in Health Economics

[11]

Coverage

- Any health policy posed should try to fix the issues with the individual / small-group markets.
- What the ACA lacks?
 - Trouble pricing premiums with changing enrolment projections and uncertain regulatory climate
 - fewer employers than expected dropped coverage following ACA
 - many consumers were unaware that they were eligible for subsidies
 - opposition to the law led many states to discourage outreach and enrollment
 - Lack of balance between premium subsidies and penalties for not taking up coverage
 - affordability issues for people with higher incomes (400% of the poverty line who then don't qualify for tax credits)
 - penalties for failing to get insurance have been minimal — less than the cost of buying coverage in many cases.
- What does the AHCA do to solve this?
 - Gets rid of mandates and leaves little incentive for enrolment among the uninsured
 - It's mere existence also introduces more uncertainty in the insurance market

Topics in Health Economics

[12]

Coverage: ACA mandates include “Essential Health Benefits”

- The ACA defined the EHB as consisting of ten categories:
 - Ambulatory patient services,
 - Emergency services,
 - Hospitalization,
 - Maternity and newborn care,
 - Mental health and substance use disorder services, including behavioral health treatment,
 - Prescription drugs,
 - Rehabilitative and habilitative services and devices,
 - Laboratory services,
 - Preventive and wellness services and chronic disease management, and
 - Pediatric services, including oral and vision care.
- E.g. Prior to the ACA, 62 percent of individual market plans lacked maternity coverage, 34 percent substance use disorder coverage, 18 percent mental health services, and 9 percent prescription drug coverage.
- AHCA eliminates EHB but only for Medicaid

Topics in Health Economics

[13]

Regulation on premiums and tax credits

- Regulation on premiums
 - ACA:
 - Can charge older customers up to 3 times as much as younger customers
 - But can only rate based on age, geography and tobacco use
 - AHCA:
 - Can charge older customers up to 5 times as much as younger customers
 - Leaves in place the ACA's rules prohibiting the use of health status in setting premiums or determining what is covered by insurance (note: health status may still vary substantially within pool)
 - So now different health status within pools but no mandates to stay in pool
- Tax credits:
 - ACA: tax credits based on age, income, geography
 - Subsidized premiums
 - AHCA: tax credits paid on age which phase out at higher incomes
 - Relative to the ACA, lower income individuals in high premium areas are worse off.
 - Likely less affordable for those that tend to be uninsured
 - Tax credits can not be used for plans that cover abortions (funds to planned parenthood would also be frozen)

Topics in Health Economics

[14]

Medicaid

- ACA: entitlement program for qualified people
 - State funds matched with federal funds (no caps)
 - Federal funds last until 2020
 - Mandated coverage for “essential benefits”: preventative health, substance abuse, mental health.
 - Planned parenthood eligible Medicaid expense
 - Under ACA, 31 states expanded Medicaid
- AHCA
 - Get rid of mandates for essential benefits
 - Able bodied Medicaid recipients must prove they are working or looking for work or they are disqualified.
 - Limit in a complicated way the enhanced funding from ACA

Topics in Health Economics

[15]

Discussion

- What now?
 - ACA individual markets are performing poorly in several states
 - Some sort of health reform is likely
- Relative to the ACA, do you think the AHCA as posed would increase or decrease the proportion of the population with insurance?
 - Congressional Budget Office predicts short run and long run decreases in the number insured
- Relative to the ACA, do you think the AHCA as posed would increase or decrease premiums?
 - Congressional Budget Office predicts short run increase in premiums
 - (e.g., as the healthy opt out of risk pools)

Topics in Health Economics

[16]

In summary:

- Who wins:
 - tax cuts will be very attractive to the wealthy Americans and health insurers and providers, who would get a trillion dollars in tax breaks.
- Who loses:
 - Medicaid recipients and state Medicaid programs, which would see federal funding for Medicaid steadily diminish, potentially thinning out coverage.
 - Recipients of current tax credits who are older, sicker, and poorer, and who live in areas where care is expensive.
 - They may be able to afford low actuarial value coverage with the tax credits the bills would provide them, but they are unlikely then to be able to afford the cost sharing that coverage will impose.

Section 1 Course Evaluation Executive Summary

Course Name: Topics Health Econ ECO402H1-S-LEC0101
 Course Code: ECO402H1

Instructor: Courtney Ward
 Section: LEC0101

FAS Winter 2017 Undergrad

Raters	Students
Responded	17
Invited	29

Part A. Core Institutional Items

Scale: 1 - Not At All 2 - Somewhat 3 - Moderately 4 - Mostly 5 - A Great Deal

Question	Summary	
	Mean	Median
I found the course intellectually stimulating.	4.5	5.0
The course provided me with a deeper understanding of the subject matter.	4.6	5.0
The instructor (Courtney Ward) created an atmosphere that was conducive to my learning.	4.7	5.0
Course projects, assignments, tests, and/or exams improved my understanding of the course material.	4.7	5.0
Course projects, assignments, tests and/or exams provided opportunity for me to demonstrate an understanding of the course material.	4.5	5.0
Institutional Composite Mean	4.6	-

Scale: 1 - Poor 2 - Fair 3 - Good 4 - Very Good 5 - Excellent

Question	Summary	
	Mean	Median
Overall, the quality of my learning experience in this course was:	4.4	5.0

7. Please comment on the overall quality of the instruction in this course.

See Section 2

8. Please comment on any assistance that was available to support your learning in this course.

See Section 2

Part B. Divisional Items

Scale: 1 - Not At All 2 - Somewhat 3 - Moderately 4 - Mostly 5 - A Great Deal

Question	Summary	
	Mean	Median
FAS_001 The instructor (Courtney Ward) generated enthusiasm for learning in the course.	4.8	5.0

Scale: 1 - Very Light 2 - Light 3 - Average 4 - Heavy 5 - Very Heavy

Question	Summary	
	Mean	Median
FAS_002 Compared to other courses, the workload for this course was...	3.3	3.0

Scale: 1 - Not At All 2 - Somewhat 3 - Moderately 4 - Mostly 5 - Strongly

Question	Summary	
	Mean	Median
FAS_003 I would recommend this course to other students.	4.4	5.0

Part C: Departmental Items

Scale: 1 - Poor 2 - Fair 3 - Good 4 - Very Good 5 - Excellent

Question	Summary	
	Mean	Median
UNIT(OQI) Overall, the quality of instruction provided by (Courtney Ward) in this course was:	4.8	5.0

Please comment on the value of time spent in class toward your overall learning experience in the course.

Comment
Great. Lots of info transmitted!
The in-depth discussion of readings/articles in class, complimented by explanations of theoretical concepts etc..., greatly enhanced learning. The tutorials, including the peer-review and econometrics workshops, were of additional value.
Very well spent.
Basically everything in the lectures was also in the slides so sometimes I didn't feel motivated to come to class, even though I did end up going to every class.
The lectures are very useful. Professor explains things clearly in class.

Please comment on the value of the required readings toward your overall learning experience in the course.

Comment
They were very helpful, but I would like the statistic equation expectation from each reading to be made clear in advance.
Readings formed an important part of the learning experience. There was a reasonable amount of reading, however the readings alone would present much less value without the in depth in-lecture discussions about them.
The readings were tough to get through. Most of the time I would try to read a few key sections to gain a basic understanding of the paper, as the lecture would usually cover the important parts.
Helpful.
It didn't seem worth it to do the readings because we talked about them in great detail in class.
The readings are a little bit difficult but are useful to help understand the materials.

Please comment on the extent to which course assignments and tests required you to think and apply course concepts rather than memorize them.

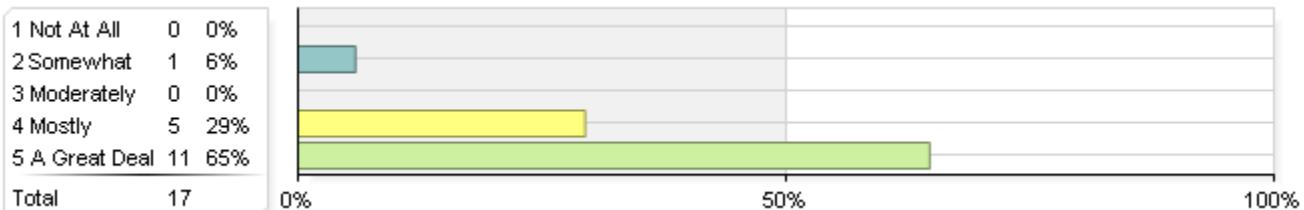
Comment
Assignment was SUPERB. But the midterm was a bit closer to the memorization side.
Overall, thinking about course concepts was very much required. However, in some instances on the midterm, it felt as if memorization (e.g. of cut-off \$ amounts, various factors presented in articles, etc..) was rewarded slightly too much.
When I was studying for the midterm, I mainly was memorizing, but the essay requires application.
50%
A good amount. I liked that the test wasn't trying to trick us, instead it used concepts that we had learned and just expanded on them.
The capstone project
The capstone project gave me opportunity to analyze using materials learned in class.

Section 2 Course Evaluation Details and Summaries

Response Distributions and Associated Statistics

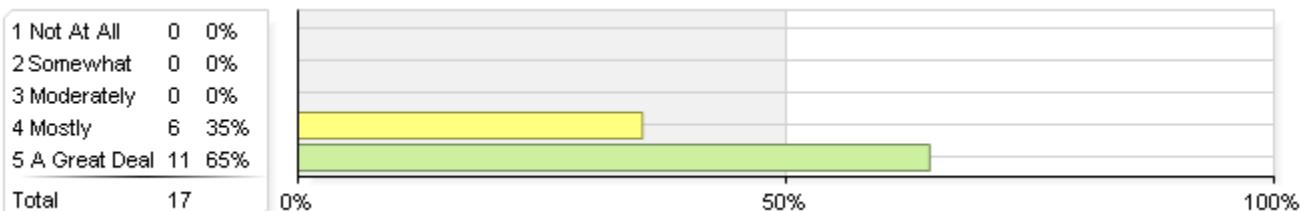
Part A. Institutional Items

1. I found the course intellectually stimulating.



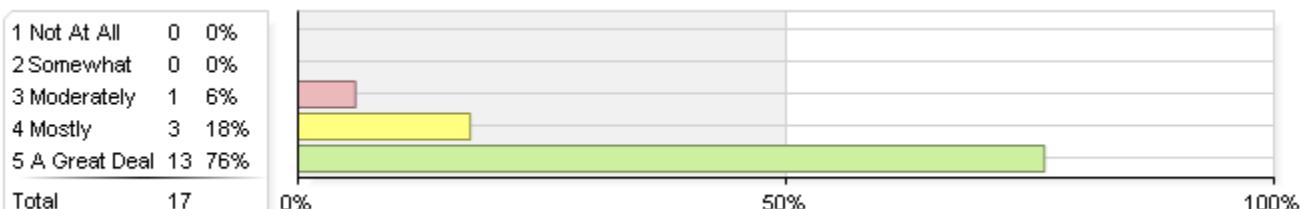
Statistics	Value
Mean	4.5
Median	5.0
Mode	5
Standard Deviation	+/-0.8

2. The course provided me with a deeper understanding of the subject matter.



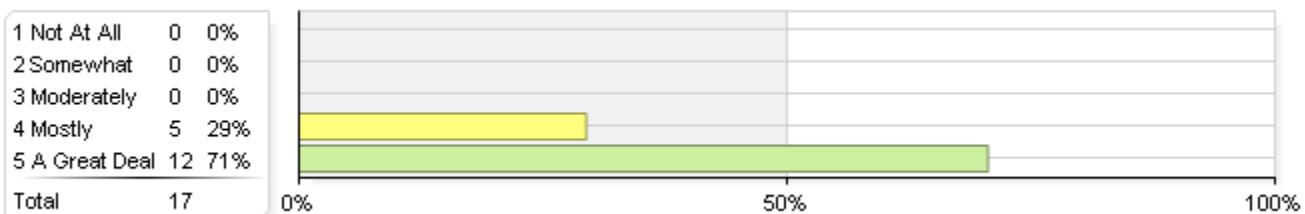
Statistics	Value
Mean	4.6
Median	5.0
Mode	5
Standard Deviation	+/-0.5

3. The instructor ([Courtney Ward](#)) created a course atmosphere that was conducive to my learning.



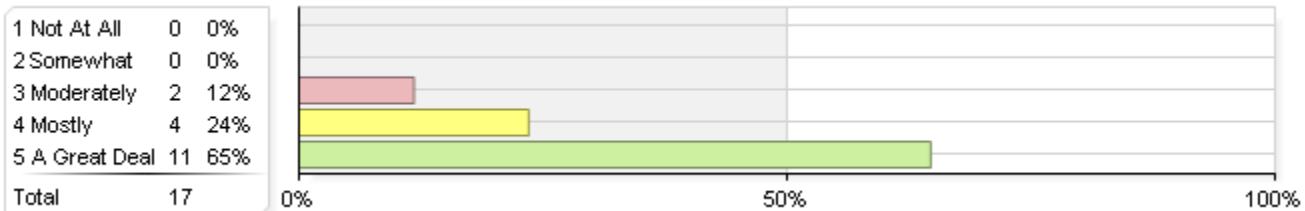
Statistics	Value
Mean	4.7
Median	5.0
Mode	5
Standard Deviation	+/-0.6

4. Course projects, assignments, tests and/or exams improved my understanding of the course material.



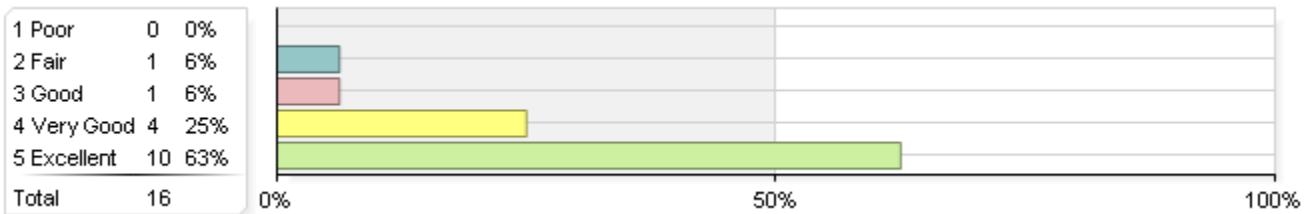
Statistics		Value
Mean		4.7
Median		5.0
Mode		5
Standard Deviation		+/-0.5

5. Course projects, assignments, tests and/or exams provided opportunity for me to demonstrate an understanding of the course material.



Statistics		Value
Mean		4.5
Median		5.0
Mode		5
Standard Deviation		+/-0.7

6. Overall, the quality of my learning experience in this course was....



Statistics		Value
Mean		4.4
Median		5.0
Mode		5
Standard Deviation		+/-0.9

7. Please comment on the overall quality of the instruction in this course.

Comment

The lecture slides were filled with too much information for class, which made taking notes more difficult. Also, it was hard to study from them as well.

very good. the slides and the notes are very helpful.

Amazing professor, really enthusiastic about the material in the course, always very helpful, easy to understand and follow

Great course. Clear and easy to follow lectures.

It is a great course with deep and interesting content.

It was great. I wish Professor Ward was at U of T full time. The lectures were really dense and it was hard to stay focused for the whole 2 (or sometimes 3) hours. I would have preferred if the slides were posted before hand, so that I could have a baseline knowledge going into lecture - and be able to ask more in depth questions.

she is very nice considering prof i ever have

fantastic prof!!

Best professor I've had in all of undergrad. Economics department, if you can, steal her as she would be an amazing addition to the faculty. She is amazing at breaking down the material and making the content understandable. Her style of teaching is engaging.

It was such a pleasure to have the opportunity to be taught by Professor Ward, I think she did a fantastic job. I wasn't really sure to expect going into the course because everything about it was so new, but Professor Ward really surpassed my expectations. The topics and papers she chose were interesting and relevant and she did an excellent job in communicating the key course concepts to us. I particularly appreciated how patient and dedicated she was to ensuring that all students were on the same page despite coming from various streams and being at different levels in economics. Tests and assignments tested our knowledge of the course but were also very fair. You can tell that she spent a lot of time in keeping the course engaging and interesting and it is really appreciated by students. On top of all of her strengths as a teacher you can tell she is brilliant within her field. All the best going forward Courtney, have an excellent summer and thank you for an eye-opening semester, I really learned a lot!

Professor Ward is an excellent lecturer who presents (often complex) material in a manner that is both engaging and makes the material simple/straightforward to understand. UofT would benefit greatly if she were a permanent member of the faculty, rather than just a visiting professor!

8. Please comment on any assistance that was available to support your learning in this course.

Comment

Always willing to extend office hours if needed!

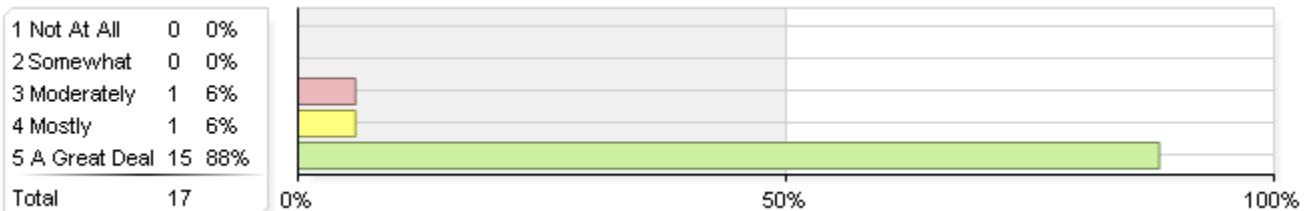
Prof was always willing to help and explain concepts.

I went to the office hours of the professor for a few times and the professor helped me a lot in understanding the materials. She is very patient and friendly. The explanation she gave was very useful and was very clear. I like her very much.

Professor Ward had office hours once a week and we could make an appointment if need be.

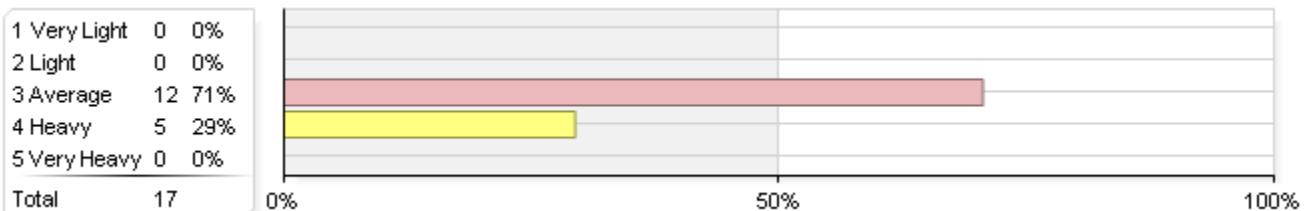
Part B. Divisional Items

The instructor (**Courtney Ward**) generated enthusiasm for learning in the course.



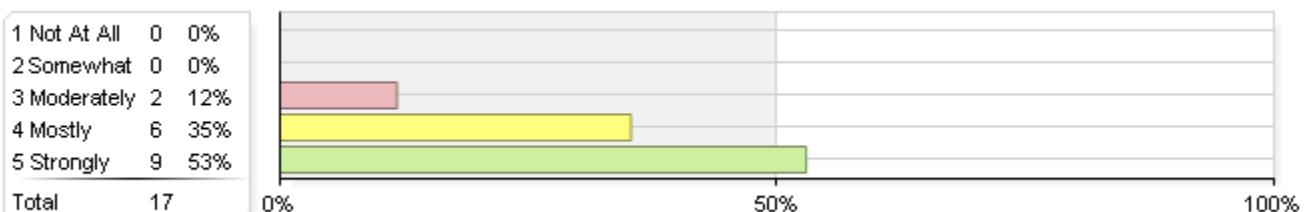
Statistics		Value
Mean		4.8
Median		5.0
Mode		5
Standard Deviation		+/-0.5

Compared to other courses, the workload for this course was...



Statistics		Value
Mean		3.3
Median		3.0
Mode		3
Standard Deviation		+/-0.5

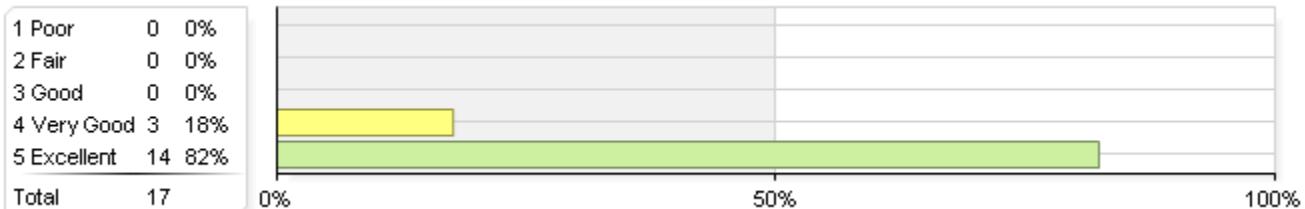
I would recommend this course to other students.



Statistics		Value
Mean		4.4
Median		5.0
Mode		5
Standard Deviation		+/-0.7

Part C. Departmental Items

UNIT(OQI) Overall, the quality of instruction provided by (Courtney Ward) in this course was:



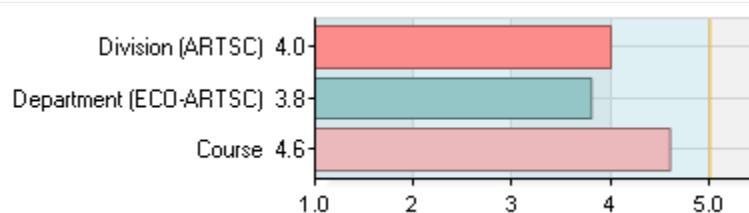
Statistics	Value
Mean	4.8
Median	5.0
Mode	5
Standard Deviation	+/-0.4

Section 3. Comparative Data

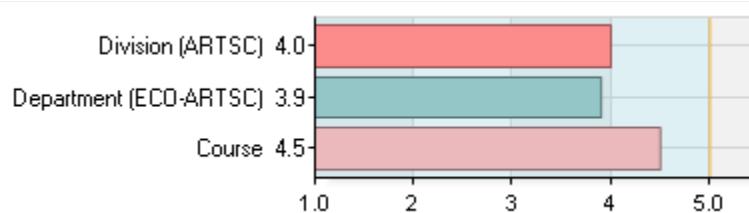
Part A. Core Institutional Items

Scale: 1 - Not At All 2 - Somewhat 3 - Moderately 4 - Mostly 5 - A Great Deal

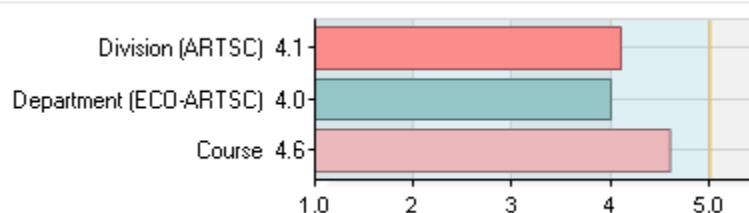
Core Institutional Mean



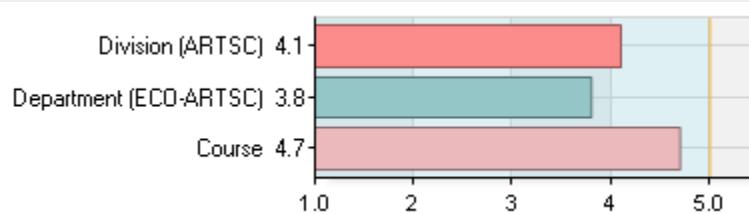
1. I found the course intellectually stimulating.



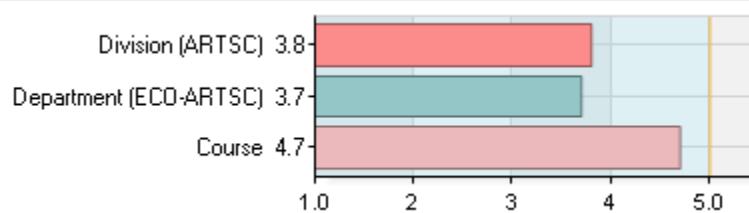
2. The course provided me with a deeper understanding of the subject matter.



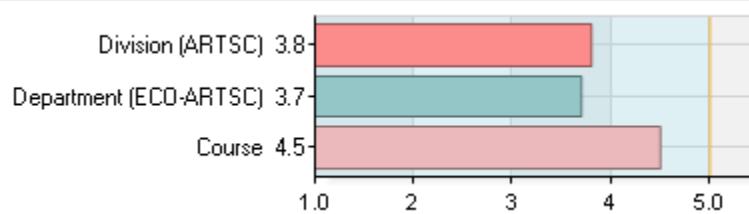
3. The instructor ([Courtney Ward](#)) created an atmosphere that was conducive to my learning.



4. Course projects, assignments, tests, and/or exams improved my understanding of the course material.



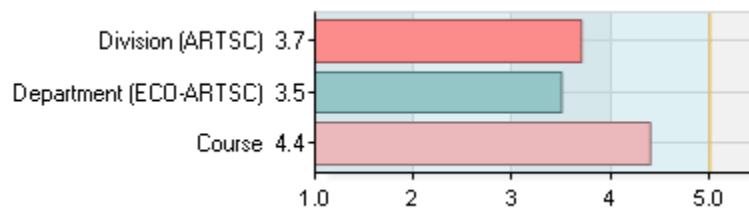
5. Course projects, assignments, tests and/or exams provided opportunity for me to demonstrate an understanding of the course material.



Section 3. Comparative Data (continued)

Scale: 1 - Poor 2 - Fair 3 - Good 4 - Very Good 5 - Excellent

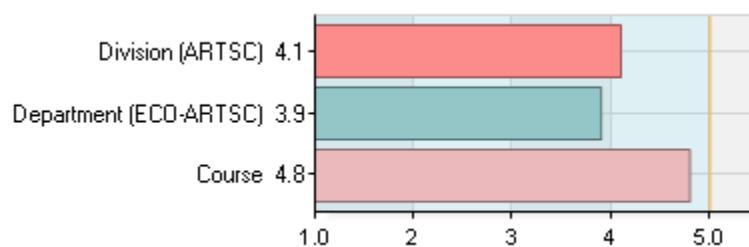
6. Overall, the quality of my learning experience in this course was:



Part B. Divisional Items

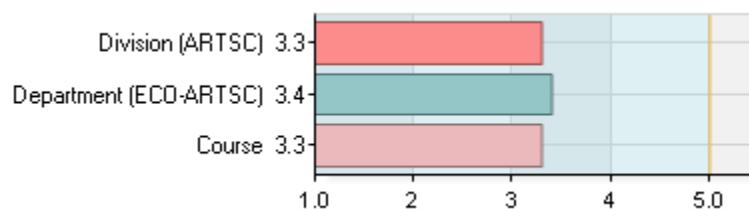
Scale: 1 - Not At All 2 - Somewhat 3 - Moderately 4 - Mostly 5 - A Great Deal

9. The instructor generated enthusiasm for learning in the course.



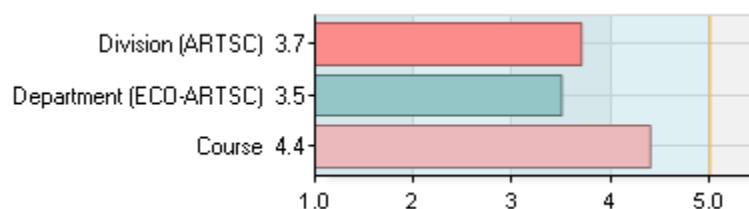
Scale: 1 - Very Light 2 - Light 3 - Average 4 - Heavy 5 - Very Heavy

10. Compared to other courses, the workload for this course was:



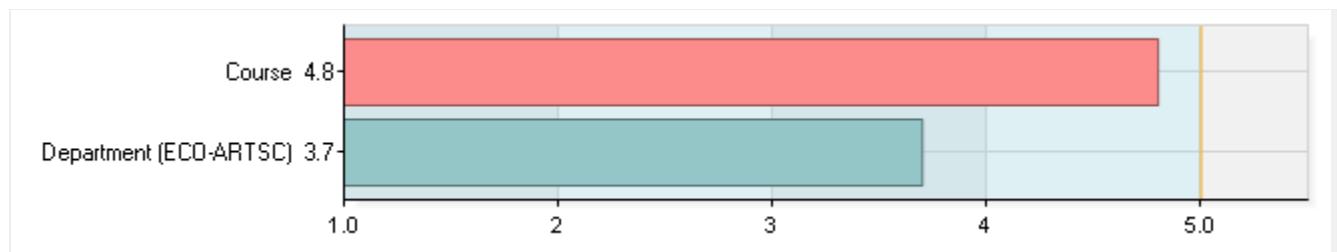
Scale: 1 - Not At All 2 - Somewhat 3 - Moderately 4 - Mostly 5 - Strongly

11. I would recommend this course to other students.



Part C: Departmental Items

UNIT(OQI) Overall, the quality of instruction provided by (Courtney Ward) in this course was:



Economics 3338
 Introductory Econometrics I
 Fall ?

Professor: Courtney Ward

Office hours: Tuesday 1:15 to 4:15 by appointment
 6220 University Ave, C13

Lectures: Tuesday/Thursday
 Tutorials: Tuesday
 Office hours: Thursday

Section 2: 10:05 – 11:25
 11:35-12:55
 11:35-12:55

McCain 2102
 Henry Hicks 212
 McCain 2022

Prerequisites: MATH 1000.03 and ECON 2280.03/MATH 2080.03/STAT 2080.03

This course is an introduction to the statistical analysis of economic relationships. Students are expected to be familiar with calculus and statistics. The course has a dual focus on theoretical foundations and the application of empirical techniques to “real world” data. By the conclusion of the course, students should have a solid theoretical and practical foundation for the interpretation and investigation of empirical evidence in economics.

Textbook: James H. Stock and Mark W. Watson, Introduction to Econometrics, Third Edition, Addison-Wesley

Software: The course work involves use of a statistical software package. While you may use other software, STATA will be supported by the course staff.

STATA is available in McCain computer labs and students may also choose to purchase a personal Intercooled Stata license, available at reduced rates through the gradplan program:

<http://www.stata.com/order/new/edu/gradplans/sites-canada.html>

Once you place an order online, you can pick up your software at the Help Desk at Killam Library.

Evaluation: There will be two exams and a term paper required as deliverables for the course. Additionally, there will be short weekly assignments due in class prior to the start of the lecture. These assignments will be graded on “pass/fail” basis and will serve to prepare students for the graded components of the course (i.e the exams, and the term paper). Further details of the structure of the term paper and the short assignments will be provided in class.

The overall course grade will be determined as follows:

Deliverable	Weight	Due Date
Midterm	30%	October 22nd
Assigned Problems	10%	Due each Thursday
Term Paper	30%	Draft due Nov. 14th final version due Dec. 3rd
Final	30%	TBA

The grading scheme for this course is as follows:

A+	A	A-	B+	B	B-	C+	C	C-	D	F
90-100	85-89	80-84	75-79	70-74	65-69	62-64	58-61	55-57	50-54	<50

Policy on missed materials: There is a very strict policy concerning a missed exam. Only original medical notes, complying with university guidelines on illness will be considered. If exemption is not granted, a grade of zero will stand. If an exemption is granted for the midterm, the weight of the midterm will be allocated to the final. If an exemption is granted for the final, the student must write a *comprehensive* make-up examination.

Note that a draft of the term paper is due in class prior to the start of the lecture on November 14th, and a final version of the term paper is due in class on December 3rd. Out of respect for those students who do submit material on time, these deadlines are strict. Failure to hand in the first draft on November 14th will result in a 10% penalty on the term paper grade. Term papers that are not submitted by December 3rd will result in a grade of zero (no exceptions).

Course Website: The course should be listed under the course section of your my.dal.ca page. Access to the course website requires enrolment in the course. Please check the website frequently for announcements. You may also post comments or questions to your colleagues or to me.

A note on my e-mail policy: I will respond to e-mail as a form of communication *only* where questions are not better addressed in class, during tutorials, during office hours, or on the course web page (i.e. posted in the syllabus or in the lecture notes). These cases are rare but if they occur, I will try to respond within 2 days.

Other general notes:

Please note the Department of Economics Statement on Academic Integrity posted on the course website. As part of an academic community it is your responsibility to be aware of appropriate conduct. Any academic offence will be reported and acted upon immediately by Dalhousie administration.

On Student Accessibility: Students may request accommodation as a result of barriers related to disability, religious obligation, or any characteristic under the Nova Scotia Human Rights Act. Students who require academic accommodation for either classroom participation or the writing of tests and exams should make their request to the Advising and Access Services Center (AASC) prior to or at the outset of the regular academic year. Please visit www.dal.ca/access for more information and to obtain the Request for Accommodation - Form A. A note taker may be required as part of a student's accommodation. There is an honorarium of \$75/course/term (with some exceptions). If you are interested, please contact AASC at 494-2836 for more information. Please note that your classroom may contain specialized accessible furniture and equipment. It is important that these items remain in the classroom, untouched, so that students who require their usage will be able to participate in the class.

Course Coverage:

1. Introduction to econometrics - Chapter 1
2. Review of probability and statistics –Chapter 2 and 3
3. Simple linear regression and inference - Chapter 4 and 5
4. Multiple regression and inference - Chapter 6 and 7
5. Nonlinear regression functions - Chapter 8
6. External and internal validity – Chapter 9
7. Discussion of further topics in regression analysis

**Econometrics
Dalhousie University
Department of Economics
Term Paper Assignment**

Aim of Project

Following the econometric methodology discussed in class, the term paper entails applying the econometric and empirical tools learned throughout the course, to a well-defined problem. The term paper thus provides you with practice applying the econometrics methodology to a specific topic, and in doing so aims to prepare you for future writing in economics.

Structure of Project

Students have the choice of two options:

1. You may choose one of several assigned topics with corresponding datasets.
2. You may choose your own topic and gather your own data.

Option 1 has the feature of allowing you to focus on empirical techniques and the interpretation of results without getting “bogged down” in topic selection and data collection. This focus allows you to hone empirical and data manipulation skills, and works to prepare you for the more comprehensive research required in any subsequent econometrics course (or for a thesis).

Option 2 is for students who already have a particular research interest they wish to pursue. This option allows you to get a head start on developing your interest, while taking advantage of the resources available to you throughout the course.

For either option, the course staff and I are available to help you with issues on empirical modeling, software (STATA) and interpretation. For those choosing the second option, we are available for guidance on topic choice and data sources. Each week, 6 hours of tutorial time and office hours are devoted to the development of empirical skills and student projects.

A “finished product” will be comprised of a concise abstract; at least two tables: (1) descriptive statistics, and (2) regression results; and no more than 5 pages (1.5-spaced) of corresponding text outlining and interpreting the empirical results. The paper should be organized as follows:

Page 1: Title page

Including course and student information, and a concise abstract.

Page 2-6: Text

Formal academic composition with a 5 page limit, 12 point font, and 1.5 line spacing. The text should NOT include tables or figures.

Page 7: References

Includes a list of references relevant to your topic and cited in your paper.

Page 8- :

Tables and figures are appended after the list of references. At minimum, this will include two tables, but you may include additional tables and figures where appropriate. All included tables and figures must be discussed in the text. DO NOT include undigested STATA output! Results, if presented in tabular form, should follow the expositional guidelines and examples discussed in class. Figures should be well labeled and clear.

Overall, the project should demonstrate application of tools discussed throughout the course from Chapters 1 through 9. You may also read ahead and use techniques that are covered in Part 3 of the textbook.

Due Date

A draft (hard copy) of the assignment is due **in class November 14th at 10:05 AM.**

A revised and final version (hard copy) of the paper is due **in class** on December 3rd. A final electronic version of your paper along with your “.do” file and your “.dta” file **must also** be uploaded (i.e. submitted electronically) to the course website by the same deadline.

Out of respect for those students who do submit material on time, these deadlines are strict. Failure to hand in the first draft on November 14th will result in a 10% penalty on the term paper grade. Term papers that are not submitted by December 3rd will result in a grade of zero (no exceptions). Please note that for the final deadline (Dec 3rd), failure to respect the hard copy *and* electronic deadlines will lead us to consider the submission late.

Note that **no extensions will be granted** due to illness, computer problems, or any other excuse, as more than ample time has been provided. I also strongly recommend that you make a solid start on the project in October and make use of a back-up hard drive to prevent loss of work.

Plagiarism

Plagiarism (even inadvertent plagiarism) is a serious offense in university writing, and when it occurs, in every case, it is dealt with severely. You should familiarize yourself with the rules of proper citation. A note on Academic Integrity is posted on the course website.

Details of the project

For those choosing Option 1, details (and data sets) will be provided. For those choosing Option 2, I suggest you begin with a topic you are interested in and start searching relevant literature. You may wish to direct your search to journals that have data submission requirements (e.g. the AEA journals). Here, you can often download the data used in an article directly from the journal website, and you can use it to perform your own related analysis. Option 2 is a riskier option given time constraints, but, when executed effectively, I will heavily reward the creativity required for Option 2. In the past, several students choosing Option 2 have used their term paper as a basis for further work in that topic area (i.e. honours or masters thesis). Regardless of which option you choose (i.e. 1 or 2), your project should address the following points:

1. Specify the base equation to be analyzed, including a brief introduction / motivation based on related literature.
2. Explain and outline the hypotheses that you plan on testing. You must specify your own hypotheses, explain why they are potentially interesting, and sketch the mechanics of how you plan to implement the tests.
3. Briefly describe the data, with reference to a table of descriptive statistics (means, etc.)
4. Present and discuss regression estimates from a variety of pertinent specifications.
 - a. Be sure to interpret key coefficients, as well as the results of the hypothesis tests.
 - b. Place your estimates in the context of the existing literature.
 - c. Discuss possible problems with your specification, especially omitted variables that may exist in the residual (i.e. do you interpret your results as causal or are they purely descriptive?).

Self-editing and peer evaluation exercises

Throughout the course we will be engaging in several self-editing and peer evaluation exercises. In these exercises, we will make use of evaluation rubrics to gauge the completeness and quality of your paper. Correspondingly, these rubrics will also form the basis for our final evaluation of the project. You are strongly encouraged to attend these lectures and to download the rubrics from the course website.

Announcements:

Tutorials

- This week:**
- Suggested problems: E8.1, 8.8 a-c
 - Problem due in office hours on Thursday: E7.1

Readings

- Tuesday:** Chapter 7
Thursday: Guest Lecturer

How can we learn to link general course concepts to actual application?

At the end of the course (even now), you will have competency in understanding the multiple regression framework

For example: Given $y = \beta_0 + \beta_1 x_1 + u$, you have no trouble with answering the following:

- Derive the OLS estimator of β_1 .
- Conditional on the least squares assumptions, what is the distribution of $\hat{\beta}_1$?
- What are the least squares assumptions?
- Conditional on the least squares assumptions, how would you test the hypothesis that $\beta_1 = 0$?
- Interpret β_1 .

The problem? Most likely, in your future career, you will never get asked this question in terms so general.

Questions will look more like:

“Should we fund improved cook stoves?”

“Should we invest in hedge fund X?”

“What is the economic outlook for country Y?”

My question: how can we learn to link general course concepts to actual application?

Five strategies to break down the barrier between course concepts and actual application

(other suggestions are welcome!)

1. Over the weekend:

Read/watch the story of an undergraduate in economics who used econometrics to change the game of baseball.

2. Rest of today:

Distill the “econo” from the “metrics”

3. Next class:

Consult with an industry practitioner

4. And then:

Peruse the work of previous econometrics 3338 students

5. Finally:

Perform your own analysis!

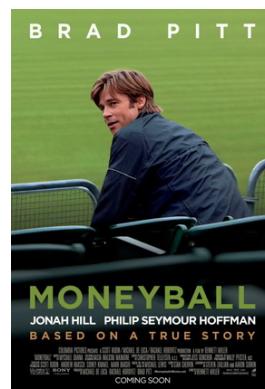
1. Read/watch the story of an undergraduate in economics who used econometrics to change the game of baseball.

Harvard trained, Paul DePodesta, was ahead of the curve in using statistical analysis to exploit market inefficiencies in recruiting for the Oakland A's (and others). Take a look at how he did it.

Book: The Art of Winning an Unfair Game by Michael Lewis

Or

Movie: Moneyball



2. Distill the “econo” from the “metrics”

The econometrics game seems simple and straightforward, but analysis in published papers is complex and seems unrelated to the framework discussed in class.

What’s the problem?: changing the context, changes the economic model and obscures the statistical framework.

How do we distill the framework? Well, most empirical analysis will answer the following questions in very short order:

- What is the dependent variable?
- What are the independent variables?
- What is the population of interest?
- What is the unit of analysis?
- What is the base specification?

Usually this is sandwiched between discussion of the economic model and interpretation of results. The economic model and interpretation of results changes with the context, but the statistical framework is standard. The key is to look for it and recognize it for what it is.

Let’s look at an example *distilled* of economic modeling and interpretation. The point is to show that regardless of how complex or simple the analytical model is, the empirical component of any analysis is pretty much the same and can be applied to a wide range of questions.

The question I’ll use is one about my Dad’s favourite dog: the Borzoi:



Question: What makes a Borzoi fast?

Any empirical analysis on this question will require answers to:

What is the dependent variable?

What are the independent variables?

What is the population of interest?

What is the unit of analysis?

What is the base specification?

In fact, Anne Midgarden, D.V.M. was interested in this very question and her focus was on physical conformation.

She measured a bunch of Borzoi. The data are here: <http://www.nktelco.net/teine/ssdata191.htm>

Then, the data were analyzed by John McGinnis at Penn State University.

Their report is given here: <http://www.nktelco.net/teine/speed2.htm>

Even if you don't know anything about dogs, you currently have the skills to figure out the statistical framework used.

Collected Data		height at withers (cm)	height at elbow (cm)	width of chest (in)	depth of chest (in)	width of loin (in)	depth of tuck up (in)	width of rear (in)	length of back (cm)	length of loin (cm)	length of croup (cm)	width of ear set (mm)	width of foreleg (mm)	depth of foreleg (mm)	length of foot (mm)	elasticity of skin (degrees)	angle of croup (degrees)	angle of hock (degrees)	angle of shoulder (degrees)	angle of pastern (degrees)	Speed seconds	
borzoi #	gender	age (yrs)																				
1	m	5	78.5	41.5	6.25	13	5.5	7	10	26	36	20	44	35	44	70	65	156	144	137	141	3.392
2	m	2.5	85	45	7.25	14.25	6	8.25	9.25	23	38	23.5	33	30	49	81	34	152	142	120	148	3.005
3	m	3.5	79	41	6.5	12.5	5	6	9.75	22.5	37	21.5	32	26	45	67	58	152	145	131	166	3.012
4	f	2	73	38.5	6.5	11.75	6	7.25	10	18	34	17	29	29	42	58	52	149	152	120	171	3.014
5	f	2.5	72	40	7.25	12	5.25	6	9.25	20.5	34.5	21.5	39	30	44	78	29	155	132	133	160	3.029
6	f	2	73	40	6	11.5	5.5	6	9.5	18	33	21	33	25	44	62	41	154	142	130	169	3.043
7	m	6.5	78.5	41	6.75	12.5	5.5	7	10	23	34	20.5	40	32	45	73	82	156	142	119	163	3.106
8	m	3	78	42	7.5	12.5	5.75	7	9.75	23	34	21.5	34	30	44	79	49	155	153	131	170	3.124
9	m	4	78.5	42	6.75	13	5.5	6.5	9.75	20	33	23	36	32	45	75	54	150	133	130	161	2.949
10	m	4	77.5	41.5	7.25	12.5	6	6.25	9.75	20.5	34	23	38	29	44	85	42	160	148	129	161	2.959
11	f	2	74.5	40.5	7	12	6	6.5	9.25	22	35	21.5	30	30	44	64	49	153	147	138	166	3.059
12	m	3	81.5	45	7	12.75	6.5	6.5	10.25	21	37	21	29	32	46	62	89	149	156	136	164	3.068
13	f	2.5	73.5	38.5	6.5	12	5	6	9.75	20.5	36.5	20	33	22	39	70	96	158	149	138	162	3.081
14	m	2	78	40	6.75	12.5	5.5	5.5	10.25	22	37	24	32	33	49	72	55	155	142	141	161	3.047
15	m	3.75	81.5	42	8	13.5	6	7	9.5	24	38	23	29	33	45	77	60	157	148	132	158	3.31
16	f	3	77.5	41	5.75	12	5.25	6	9.5	22.5	35	19	36	29	42	66	69	156	135	129	161	3.273
17	f	5.5	74	42	7	11.75	5.25	6.5	8.5	22	31.5	20	33	28	41	72	92	153	133	160	161	3.326
18	f	2.5	72	38	7.5	11.5	5.25	8	10	24	33	21.5	26	30	42	65	44	158	136	140	175	3.33
19	f	4	77	42	6.5	12.25	5.5	6	9.5	20	36	20.5	29	29	39	78	64	155	147	126	170	2.993
20	m	3	78	42	6.5	12.25	5.5	6.25	10	20	34.5	21	39	29	46	66	56	150	148	137	158	2.993
21	m	3.75	80.5	42	7.75	12.5	6.25	7.75	9.5	24.5	35.5	21	29	30	44	80	61	153	144	122	152	3.174
22	m	2.5	81	44	7.25	13	6.75	7.5	10.5	26	36	23	48	36	42	70	77	150	164	130	161	3.408
23	m	2	76	40	6.5	13	5	6	10	20.5	34.5	20.5	35	32	50	80	62	150	152	120	163	3.095
24	m	2	78	41	6.5	12	5.5	6.5	10	20	37	20	44	30	45	78	80	154	154	117	168	3.131
25	m	4.5	80	43	5.75	12.5	4.75	6.5	9.5	29	35	22	42	28	49	82	49	158	148	124	157	3.147
26	m	2	83	43	6.5	13	5.25	7.5	9.5	23	39.5	23	33	34	50	77	46	147	162	139	164	3.088
27	f	2	74	40	7.25	12.5	6	7	10	25	34	21	26	28	50	78	80	152	139	122	155	3.205
28	m	5	80	43.5	7	12.75	6.25	6	10.25	24	34	21	34	30	47	75	100	158	149	124	168	3.133
29	f	3	77	42	6.5	12.5	5.5	7	10	23.5	33.5	19	28	32	43	78	86	146	158	136	135	3.135
30	f	6	72.5	37	6.25	12	4.5	7.25	8	24.5	35	18.5	35	28	40	66	59	149	146	125	159	3.146
31	f	4.5	73	37.5	6.25	12.5	5	6.25	10	21	31	20.5	26	28	41	78	76	152	146	129	166	3.147
32	m	2.5	84	45	5.25	13.25	4.75	7	9.5	28	35	22	32	35	44	80	75	148	137	130	162	3.225
33	m	2	81	43	6.5	13	5.25	6.5	10.25	21	43	22.5	30	32	51	80	49	146	150	133	167	2.993
34	f	4	72	40	6.75	11.25	5	5	10	19	36	20	32	27	40	70	54	150	161	129	168	3.001
35	f	3	73	40.5	6	12	5	7	9.5	19	36	15	36	32	40	68	50	141	139	134	164	3.003
36	f	5	72	40	6.75	11.5	6	7	9.5	17	34	20	30	47	68	46	156	140	125	171	2.946	
37	m	4	81	45	7	13	5.25	7	10	19	39	23.5	32	32	49	84	60	151	148	119	168	3.009
38	m	3	84	46	6.5	13.5	6	7	10	29	30	21	33	34	45	85	91	145	156	123	166	3.4
39	f	6	73	40	6.75	12	5.25	5.75	10	20	34	20	37	29	44	73	66	154	142	128	169	3.241
40	f	4	73	37.5	6.75	12	6	6	9	19	32	18	33	25	46	65	61	151	154	130	165	3.145
41	f	4	76	40	6	12	5.25	7.25	9	20.5	35	19.5	32	28	38	73	70	146	151	133	166	3.25
42	f	6	71	39	6.75	11.25	5.5	6.5	9	17	34	21	24	28	43	77	48	148	145	125	159	2.889
43	f	3.5	77	41	7	11.5	5.5	6.5	9	23	31	21	40	31	46	74	71	158	156	129	148	3.4

Let's take out our pens and underline the answers to those 5 questions in Midgarden's report

"A STUDY COMPARING CONFORMATION TO SPEED IN BORZOI

Anne Midgarden, D.V.M. (available at www.nktelco.net/teine/speed2pdf.pdf)

Even the word "borzoi" means swift in Russian. The borzoi was developed over centuries by wealthy noblemen to be a dog with great speed and power... Speed was the essential characteristic that made a borzoi a borzoi. This study was designed to help understand what physical characteristics are most essential to borzoi speed.

The American and FCI (2000) borzoi standards were used to determine what anatomical features were measured. Such descriptions as "forelegs somewhat flattened like blades with the narrower edge forward" were measured as width and depth of foreleg at 2 cm above the carpus. Most cosmetic details such as teeth, color, tails and head shape were excluded.

Borzoi included in the study were 2 to 6 years old, in excellent health and condition, bitches not within 30 days post a heat cycle. Borzoi were volunteered by their owners from a wide variety of kennels in England, Germany, and across the United States. Each borzoi in the study was measured standing in show position with hocks perpendicular. Time was measured with a Polaris FarmTek Rodeo Sprint Timer to one-thousandth of a second. 191 borzoi qualified to be included in the study...

[Regression analysis] reveals variables that have a linear impact on speed. (The speed changes directly with the measured value). Table 3 lists the independent variables from top to bottom in order of their relative impact on speed as measured by the change in the standard deviation of speed associated with a one standard deviation change in the variable of interest."

Extensions: account for nonlinearities in relationship (in this case, the authors include second order polynomials).

There's no real economics here so we can ask all the dumb questions we want about interpretation:

Does a 2 km long back make a really fast dog? (non-linear model)

How do we compare an inch longer leg to an inch longer nose? (standardized coefficients)

Table 3

Regression Output of Conformation Variables on Speed. Variables are arranged by relative impact (beta coefficients) from the largest on top to the smallest on the bottom.

variables	coefficients	std. error	t-statistic (df=181)	p-value	95% confidence interval		relative impact*
					lower	upper	
Intercept	33.9654	3.8579	8.804	0.0000	26.3532	41.5776	
% loin	35.8468	4.2457	8.443	0.0000	27.4694	44.2242	0.432

Number of Observations = 191

Adjusted R2 = 69.4%

*Relative impact measures the change in speed measured in standard deviations for a one standard deviation change in the independent variable.

The statistical framework here is standard

It's the rest of the analysis that changes depending on the given context.

My suggestion for reading (performing) any analysis:

Isolate (develop) the statistical framework first (e.g. answer the questions above)

Then come back to interpretation

3. Consult with an industry practitioner

Let's go to the other extreme: we'll put "econo" back in "metrics" and invite an industry practitioner to discuss economic models and regression analysis in a work setting.

Guest for Thursday: Dr. Bobey, External Portfolio Manager at the Canadian Pension Plan Investment Board (EPM-CPPIB).

CPPIB is a large pension fund (165 Billion AUM).

The job of EPM-CPPIB? Simply put, to answer the question: "should we invest in X"

Dr. Bobey has agreed to discuss applications of regression analysis in the finance setting

The two applications:

- a. Return decomposition: reframing systematic and idiosyncratic risk in the OLS framework
- b. Fixed income relative value trade analysis

Side note: Dr. Bobey will also be giving a Mackay Seminar in the Faculty of Management on Thursday. The title of the talk is: *Portfolio Construction with Alternatives: A Pay-off Profile Approach*.

4. Peruse the work of previous econometrics 3338 students

Lastly, lets bring things back to what you have the skills to do right here, right now, in this course.

To give you a sense of what you can accomplish in the term paper, former students of Econ 3338 have happily agreed to share their papers with you.

1. Sample term papers (from last year)
2. Theses developed after completion of 3338 (from the last two years)

These are posted online under the TermPaper_Information folder.

Note: The papers posted here are used as examples only. The intention is not that these papers indicate hard and fast rules on what is complete or correct, but merely that they be used as examples of work that has been previously submitted (if you are looking for hard and fast rules, consult the term paper document). Simply put, it is entirely possible to exceed the quality of the papers posted here.

Nonlinear Regression Functions

- Everything so far has been linear in the X 's
- But the linear approximation is not always a good one (e.g., as we saw in the Borzoi example)
- The multiple regression framework can be extended to handle regression functions that are nonlinear in one or more X .

Outline

1. Nonlinear regression functions – general comments
2. Nonlinear functions of one variable
3. Nonlinear functions of two variables: interactions

Announcements:

Tutorials

- Next week (Nov 20):**
- Suggested problems: 9.2, 9.3, 9.5
 - Problem due in office hours on Thursday: E9.1

Readings

- Thursday (Nov 15):** Term paper due/ peer review
- Next week (Nov 20):** Conclude Chapter 8, Chapter 9 (validity)

Effort into term paper and concern about grade

Effort,
Concern

Time

Peer review: Logistics

Note: Participation counts towards your course grade

Step 1: Organize yourselves into group of 2

- your partner SHOULD NOT have the same “Option 1” topic as you
- (i.e. peer review credit will not be given if you have worked on the same topic)

Step 2: Fill out the peer review sheet provided

- put your name and student number at the top of the page as indicated
- put your **partner’s** name underneath as indicated

Step 3: Fill out the “scantron” with your **partner’s** name and student number

- please DO NOT put your own name
- please use pencil

Peer review: Reverse Outline

Step 1: Read through the your partner’s abstract. **Underline** the main research question or thesis statement of the paper.

Step 2: Read through your partner’s first paragraph. **Underline** the main research question or thesis statement of the paper. Does it match the abstract? If not, make a note on the term paper.

Step 3: Read through the rest of your partner’s paper. As you proceed through:

- **Underline** the topic sentence of each paragraph (this is your “reverse outline”). Does the rest of the paragraph support the topic sentence? If not, make a note on the term paper.
- **Circle** any results discussed in the paper. Do the tables support these results? If not, make a note on the term paper.
- **Include** comments where appropriate (i.e. when something is unclear or unsupported)

Peer review: Feedback

On the peer review sheet

- Step 1: Write down your partner's research question
- Step 2: Jump to the model specification. Write down the dependent variable(s), the independent variables, the unit of observation, and the number of observations used in the analysis.
If any of these are not clearly stated, leave that line blank.
- Step 3: Skim through your partner's paper again. This time pay attention only to the underlined topic sentences. These form the "bones" of the paper. Does the paper structure follow a logical line of reasoning? Develop several questions or comments for your partner about his/her work.
- Step 4: **Discussion:** drawing from your notes, query your partner about his/her term paper. Fill in any missing information on your peer review sheet. Try to be as constructive and helpful as possible.

Peer review: Evaluation

Use the rubric and the scantron sheet

- Step 1: Look at the rubric provided. The sheet provides details about how evaluate the term paper.
- Step 2: Please indicate on your scantron sheet your assessment for each of the 18 points, where possible assessment values are:

a = Needs revision
b = Acceptable, but improvement is possible
c = Good. Demonstrates competence.
d = Very Good. Demonstrates higher level understanding of material.

Note: These scores are in no way related to your or your partner's grade. The point of this exercise is to be constructive. That is, to give your partner a "second opinion" on where to focus energy for the second submission.

Your name

Your student number:

Partner's name:

Partner's student number:

Research question:

Dependent variables (Y):

Independent variables (X):

Unit of observation:

Number of observations (base specification):

Questions / comments for your partner:

→

→

→

→

→



Individual Report for Intro Econometrics I ECON 3338 2 (Courtney Ward)

Student Ratings of Instruction (SRI) Fall 2013-2014

Project Audience 33

Responses Received 12

Response Ratio 36.36%

Subject Details

YEAR 2014

TERM Fall

FACULTY Faculty of Science

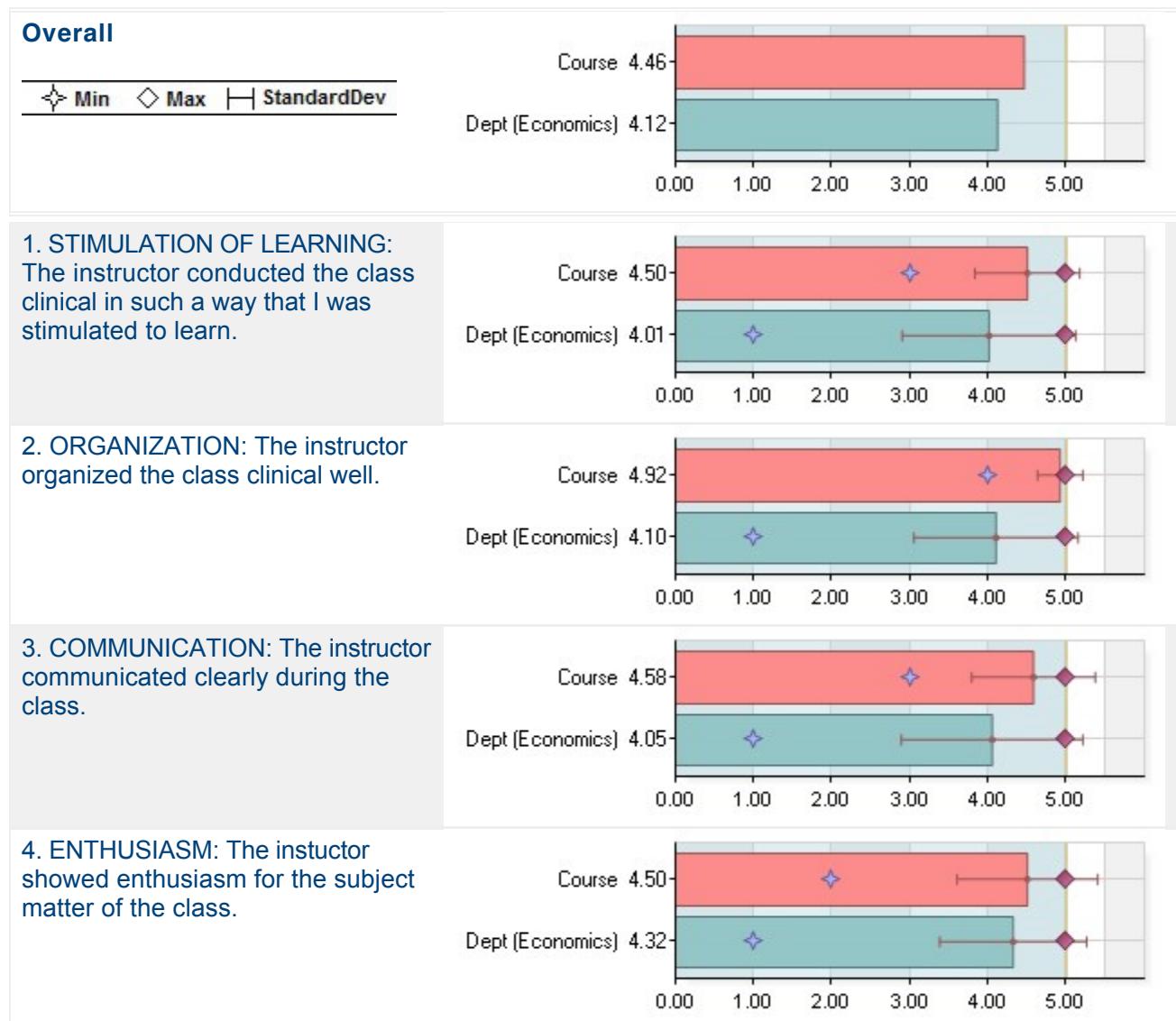
DEPARTMENT Economics

Creation Date Tue, Jan 14, 2014

Common Questions

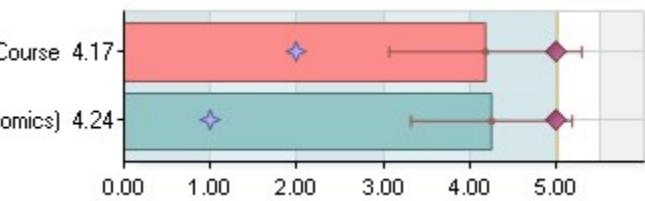
This Section displays the Common questions used for the evaluation. These questions were displayed for every course/department.

TEACHING EFFECTIVENESS

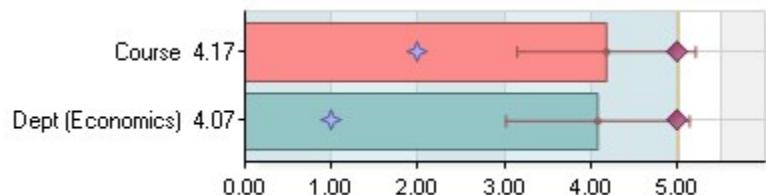


TEACHING EFFECTIVENESS (continued)

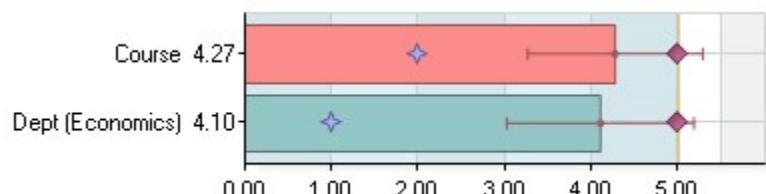
5. FAIRNESS: The instructor used fair evaluation methods to determine grades.



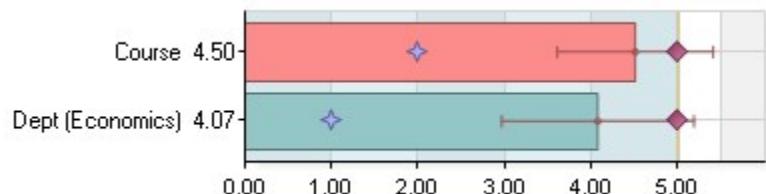
6. FEEDBACK: The instructor provided constructive feedback (considering the class size).



7. CONCERN FOR LEARNING: The instructor showed genuine concern for my learning.



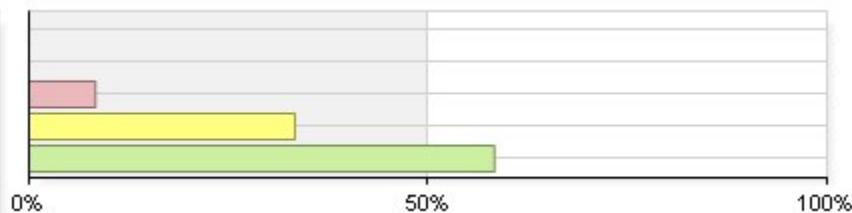
8. OVERALL TEACHING EFFECTIVENESS: Overall, the instructor was an effective teacher.



TEACHING EFFECTIVENESS

1. STIMULATION OF LEARNING: The instructor conducted the class clinical in such a way that I was stimulated to learn.

Strongly Disagree	0	0.00%
Moderately Disagree	0	0.00%
Neither Disagree nor Agree	1	8.33%
Agree	4	33.33%
Strongly Agree	7	58.33%
Total	12	

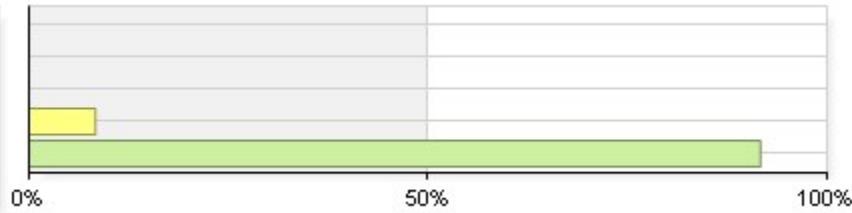


Statistics

Mean	4.50
Standard Deviation	+/-0.67

2. ORGANIZATION: The instructor organized the class clinical well.

Strongly Disagree	0	0.00%
Moderately Disagree	0	0.00%
Neither Disagree nor Agree	0	0.00%
Agree	1	8.33%
Strongly Agree	11	91.67%
Total	12	

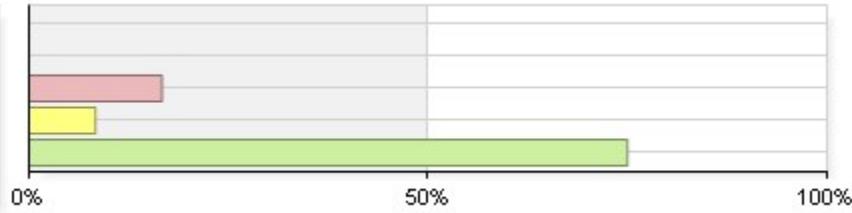


Statistics

Mean	4.92
Standard Deviation	+/-0.29

3. COMMUNICATION: The instructor communicated clearly during the class.

Strongly Disagree	0	0.00%
Moderately Disagree	0	0.00%
Neither Disagree nor Agree	2	16.67%
Agree	1	8.33%
Strongly Agree	9	75.00%
Total	12	

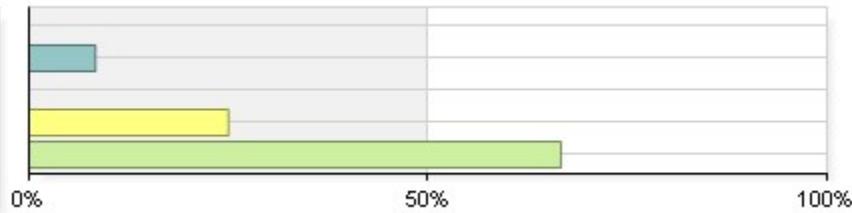


Statistics

Mean	4.58
Standard Deviation	+/-0.79

4. ENTHUSIASM: The instructor showed enthusiasm for the subject matter of the class.

Strongly Disagree	0	0.00%
Moderately Disagree	1	8.33%
Neither Disagree nor Agree	0	0.00%
Agree	3	25.00%
Strongly Agree	8	66.67%
Total	12	

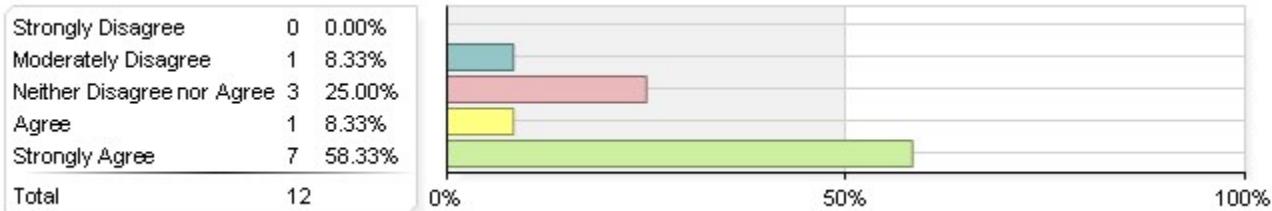


Statistics

Mean	4.50
Standard Deviation	+/-0.90

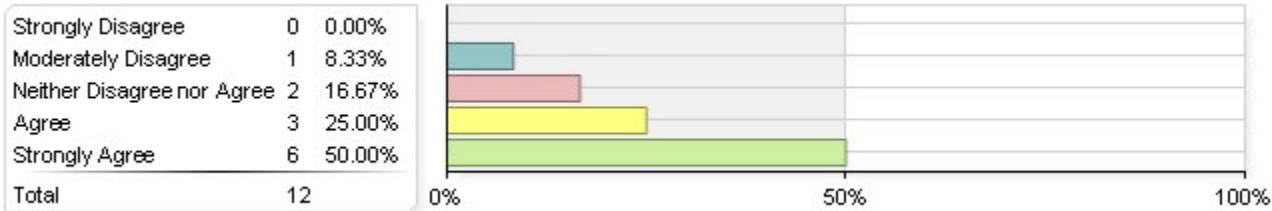
TEACHING EFFECTIVENESS (continued)

5. FAIRNESS: The instructor used fair evaluation methods to determine grades.



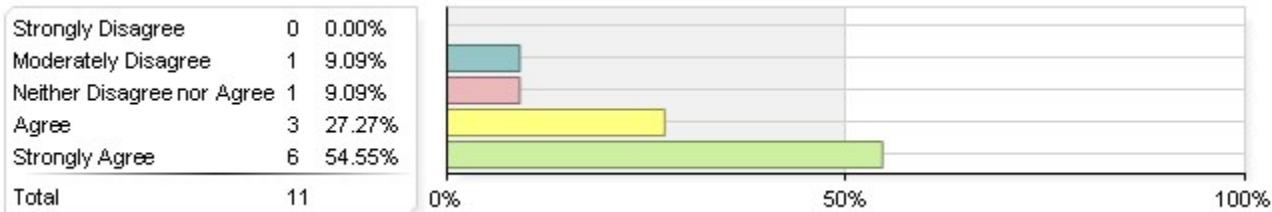
Statistics		Value
Mean		4.17
Standard Deviation		+/-1.11

6. FEEDBACK: The instructor provided constructive feedback (considering the class size).



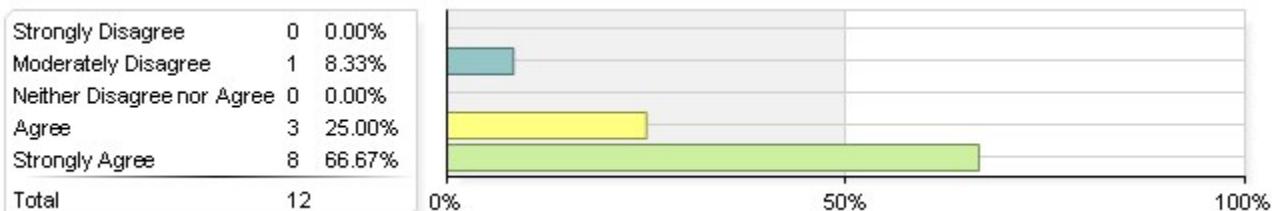
Statistics		Value
Mean		4.17
Standard Deviation		+/-1.03

7. CONCERN FOR LEARNING: The instructor showed genuine concern for my learning.



Statistics		Value
Mean		4.27
Standard Deviation		+/-1.01

8. OVERALL TEACHING EFFECTIVENESS: Overall, the instructor was an effective teacher.

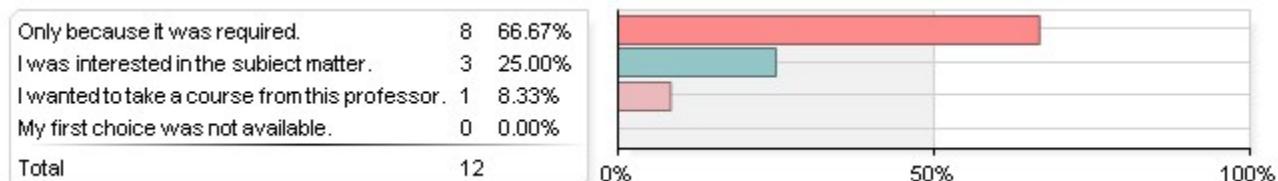


Statistics		Value
Mean		4.50
Standard Deviation		+/-0.90

REQUIRED/ELECTIVE



MOTIVATION FOR TAKING THIS CLASS



Department Questions

This Section displays the department level questions entered by the department heads/chairs/Academic Directors. If no questions are found, it implies department level questions were either not included for this department or those questions were not answered by students.

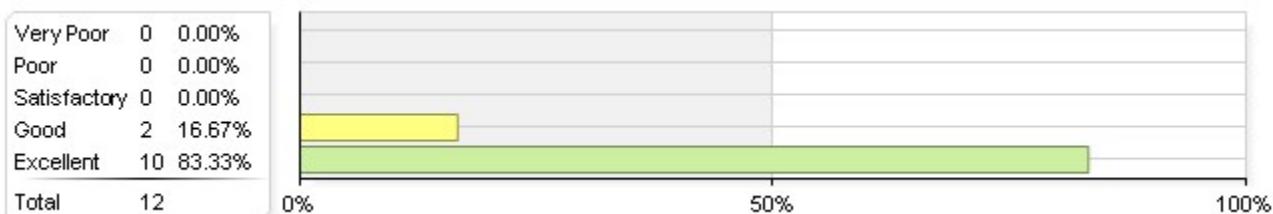
Instructor Questions

This Section displays the Instructor level questions entered by the Instructors for their courses. If no results are found, it implies Instructor level questions were either not included for this course by this instructor or those questions were not answered by students.

How would you describe your attendance record at lectures? (Excellent = 0 missed lectures, Good = 1-2 missed lectures, Satisfactory = 3-5 missed lectures, Poor = 6-10 missed lectures, Very Poor = more than 10 missed lectures)



How would you describe your attendance record at lectures? (Excellent = 0 missed lectures, Good = 1-2 missed lectures, Satisfactory = 3-5 missed lectures, Poor = 6-10 missed lectures, Very Poor = more than 10 missed lectures)

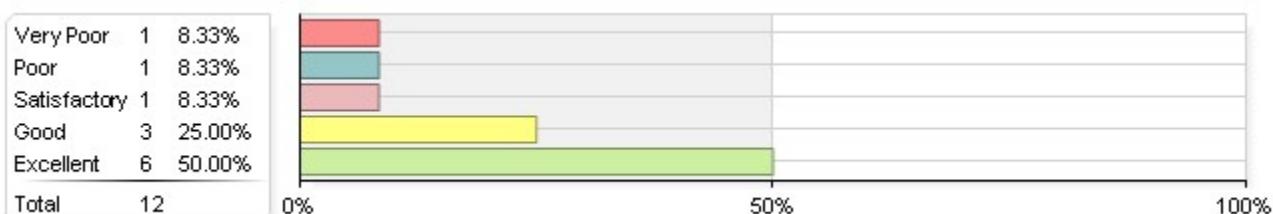


Statistics	Value
Mean	4.83
Standard Deviation	+/-0.39

How would you describe your attendance record at tutorials? (Excellent = 0 missed tutorials, Good = 1 missed tutorial, Satisfactory = 2-4 missed tutorials, Poor = 5-7 missed tutorials, Very Poor = more than 7 missed tutorials)



How would you describe your attendance record at tutorials? (Excellent = 0 missed tutorials, Good = 1 missed tutorial, Satisfactory = 2-4 missed tutorials, Poor = 5-7 missed tutorials, Very Poor = more than 7 missed tutorials)

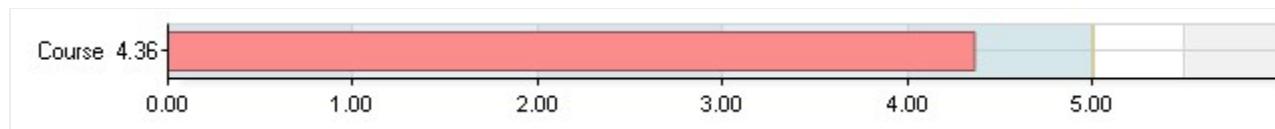


Statistics	Value
Mean	4.00

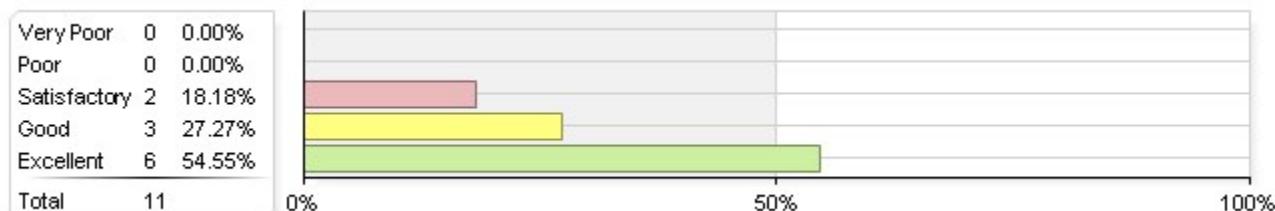
Standard Deviation

+/-1.35

This course requires coordination of delivery across a team of TA's, and we would like feedback on how this aided your learning in econometrics. First, how helpful was the Tuesday tutorial leader?

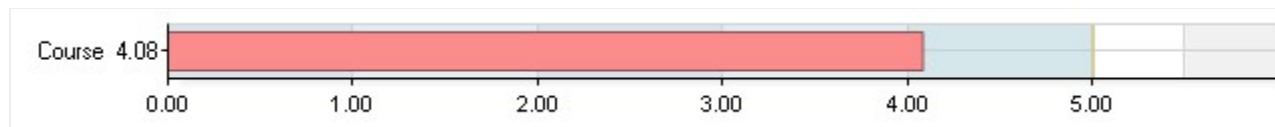


This course requires coordination of delivery across a team of TA's, and we would like feedback on how this aided your learning in econometrics. First, how helpful was the Tuesday tutorial leader?

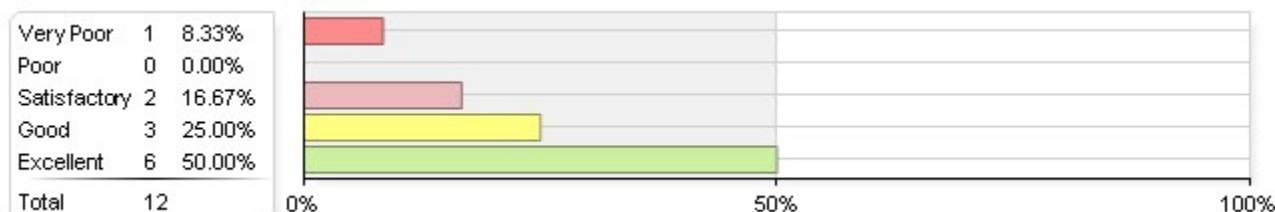


Statistics	Value
Mean	4.36
Standard Deviation	+/-0.81

How helpful was the Thursday office hour leader?

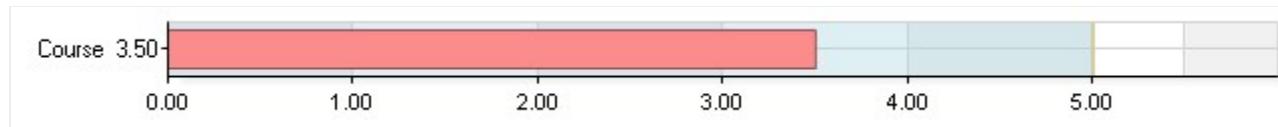


How helpful was the Thursday office hour leader?

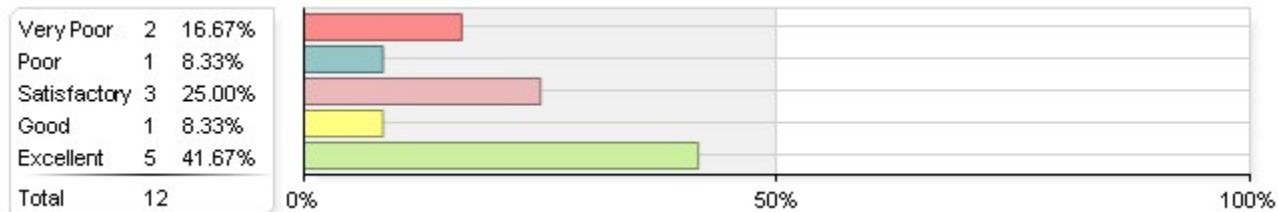


Statistics	Value
Mean	4.08
Standard Deviation	+/-1.24

Did the TA's provide useful and satisfactory feedback on graded materials?



Did the TA's provide useful and satisfactory feedback on graded materials?



Statistics	Value
Mean	3.50
Standard Deviation	+/-1.57



Unsigned Comments for Intro Econometrics I ECON 3338 2 (Courtney Ward)

Student Ratings of Instruction (SRI) Fall 2013-2014

Project Audience 33

Responses Received 7

Response Ratio 21.21%

Subject Details

YEAR 2014

TERM Fall

FACULTY Faculty of Science

DEPARTMENT Economics

Creation Date Fri, Jan 17, 2014

Comments

This report displays the Unsigned Comments provided by the students. All the Comments provided here were not signed and approved by students. Hence these comments will not be displayed for department heads/chairs/Academic Directors.

What did your instructor do that helped your learning in this class or clinical setting?

Students

She is a good professor, knowledgeable, easy to understand but strict. I really learnt a lot from her.

Really seemed like she wanted everyone to know only know the subject but also understand it.

She was very organized which made it very easy to follow her when teaching. She made every effort to aid us with extra materials that would help us get through the course. She did her best to provide every thing we would need to learn and do well in the course.

Do you have any suggestions for what the instructor could have done differently to further assist you in your learning?

Students

Could you make final a little bit easier?

For the second language learner, her speaking is kind of fast. Sometime I can't follow professor immediately.

More examples would have been helpful. I understand that there is a lot of material to get through but without a few examples it feels as though you're being bombarded with knowledge for an hour and a half. In addition to making it difficult to take in everything we are presented with, lack of examples really hurt midterm performance. Nothing on the midterm was new but due to the fact that we had only really seen one example for each question, it was difficult to prepare for.

Which ties in with another problem: it seemed as though, at least until the midterm, that assignments weren't really linked to the class but had more to do with familiarizing us with Stata in order to prepare us for the term paper. This is understandable but the disconnect between what we were being taught and what we had to do was hard to deal with.

The solution to all of this would be more examples or simply more assignments, some meant to familiarize students with Stata while others relate to exam material. Preparing for tests doesn't just include studying but also repetition in order to become used to doing the problems and not blanking on an exam.

Additional comments:

Students

all in all, excellent professor

Very good professor, very knowledgeable of the course and material. I loved that she not only taught the course for academic purposes but also for practical use in the field. She made the course very practical and applicable to the real working world of economics and that made me want to learn because it would be very useful in my career.

**Department of Economics
Dalhousie University**

ECO2231 – Health Economics

Contact:

Professor: Courtney Ward

Lectures: Tuesday 10:05 – 11:25 LSC P4258
 Thursday 10:05 – 11:25 LSC P4258

Office hours: Tuesday 11:30 - 1:30 (by appointment) 6220 University Ave, A14

Each week I book appointments on a first come first serve basis. You can access my current availability in real-time by booking an appointment using the following scheduler:

<https://www.timetrade.com/book/Z77LN>

Course objectives:

This course introduces students to the role of economics in health, health care, and health policy. It comprises a survey of major topics in health economics and an introduction to the ongoing debate over health care policy. Topics include the economic determinants of health, the market for medical care, the market for health insurance, the role of the government in health care, and health care reform.

Course materials:

Required: Sherman Folland, Allen Goodman and Miron Stano, *The Economics of Health and Health Care* (Prentice Hall), 7th (or 6th) edition.

The text is available at the campus bookstore (new and used).

If you do not wish to purchase the textbook, a (cheaper) online rental option is available through course smart: http://www.coursesmart.com/IR/2290698/9780132832755?_hdv=6.8

Additional readings will be available on the course home page as we progress through the course.

Course Website:

The course webpage is listed under the course section of the “my.dal.ca” page. Access to the course website requires enrolment in the course. Please check the website frequently for new announcements.

You should feel free to e-mail me, but please keep in mind that in most cases I will not respond by return e-mail but will instead address your questions in the next lecture period or office meeting. Since this course encourages discussion of issues in health economics, it is more fruitful if we save our questions for the lecture period or by reserving a meeting time during my office hours.

Prerequisites: Eco 1101/1102

Prerequisites are strictly checked and enforced and must be completed before taking a course. By taking this course you acknowledge that you will be removed from the course at anytime if you do not meet all requirements set by the Department of Economics.

Grade allocation:

The course will have 2 in class midterms worth 20% each, 2 writing assignments worth 10% each and a final exam worth 40%.

Midterm 1 February 10th

Midterm 2: March 5th

Writing Assignment 1: due in class at 10:05am February 3rd

Writing Assignment 2: due in class at 10:05am February 26^{t h}

Further details on the writing assignments will be distributed in class.

Final Exam: TBA

Missed Material:

Missed Exams: There is a very strict policy concerning any missed exam. Only original medical notes, complying with university guidelines on illness will be considered. If an exemption is not granted, a grade of zero will stand. If an exemption is granted, the weight of the midterm will be allocated to the final.

Late Assignments: Assignments are due in class at 10:05am on the due date. Out of respect for those students who do submit assignments on time, late assignments will be refused in every case (i.e. there are **no** exceptions to this policy).

The grading scheme for this course is as follows:

A+	A	A-	B+	B	B-	C+	C	C-	D	F
90-100	85-89	80-84	75-79	70-74	65-69	62-64	58-61	55-57	50-54	<50

Academic misconduct:

Students should note that copying, plagiarizing, or other forms of academic misconduct will not be tolerated. Any student caught engaging in such activities will be subject to academic discipline ranging from a mark of zero on the assignment, test or examination to dismissal from the university as outlined in the academic handbook. Any student abetting or otherwise assisting in such misconduct will also be subject to academic penalties.

Please note the Department of Economics Statement on Academic Integrity posted on the course website. As part of an academic community it is your responsibility to be aware of appropriate conduct. Any academic offence will be reported and acted upon immediately by Dalhousie administration.

Student Accessibility Services

All student requests for either academic accommodation or non-academic accommodation are to be directed to the Office of Student Accessibility & Accommodation (OSAA), previously known as Student Accessibility Services. Website: www.studentaccessibility.dal.ca. Students may request accommodation as a result of barriers related to disability, religious obligation, or any characteristic under the Nova Scotia Human Rights Act.

Detailed Course Outline:

1. The Economics of Health and Health Care. Why Health and Economics?
* Text, ch.1
 2. Review of Microeconomic and statistical tools for the course.
* Text, ch.2, 3
 3. Economic Evaluation of Health Care Programs
*Text, ch. 4
 4. The Demand for Health and Medical Care
* Text, ch. 5, 7
 5. Prices, Insurance and Consumer Behaviour
* Text, ch. 8, 10
 6. Physician Behaviour and the Supply of Medical Care
* Text ch. 15,16
 7. Technological Change
*Text, ch. 6
 8. The Pharmaceutical Industry
* Text, ch 17
 9. Equity , Efficiency and Need
* Text, ch. 19, 21
 10. The Canadian Health Care System and Health Care Systems Around the World
* Text, ch 12, 22
 11. Choice of Special Topics: Obesity, Smoking, Mental Health, HIV/AIDs
-

Econ 2231: Introduction to Health Economics
Lecture 06

Intro to Health Economics [2]

Course Announcements

- Dates for Assignments and Exams:
 - Feb 3, Assignment 1, due in class at 10:05am
 - Feb 10, Midterm 1
 - Feb 26, Assignment 2, due in class at 10:05am
 - Mar 5, Midterm 2
- Katy Wyatt will hold office hours leading up to assignments and midterms. Drop in office hours schedule and location:
 - Jan 29, 11:30-1:00, LSC C334
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 - Feb 25, 11:30-1:00, LSCBIOER B5009
 - Mar 2, 11:30-1:00, LSCBIOER B5009

Recap and Agenda for the day

Intro to Health Economics [3]

- Course coverage to date:
 - Chapter 1, 2, 3
- Road map:
 - Practicing the Essential Statistical Competencies (this week)
 - Economic efficiency (next week)
 - Deviations of health & health care from "standard" economic goods
 - Cost benefit analysis (Chapter 4)

Before we begin... a look back

Intro to Health Economics [4]

- Let's assess the policy of taxing cigarettes:
 - Theory:
 - See notes
 - Estimation:
 - $Q = 16.83 - 3.24 * \text{tax per pack}$
 - Computing elasticity
 - What is the tax elasticity at a tax price of \$1?
 - See notes
- Now you are ready for assignment 1 (released online later today).

MAIN TAKE AWAY FROM REGRESSION ANALYSIS

The good, the bad, and what to do about it

Intro to Health Economics

[5]

Regression analysis: the good news

- First: regression analysis helps us to estimate (under certain assumptions) the causal relationship between variables
 - Example: estimate a demand elasticity
 - Generally: there are many other possible relationships we could be interested in...
 - Does health insurance change the demand for health care?
 - How do patent policies affect drug prices?
 - Does prenatal care lead to healthier babies?
 - etc...
- Second: regression analysis helps us say something probabilistic about what we observe in a sample in reference to the population effect
 - Is our estimate in the sample significantly different from zero, for example

Intro to Health Economics

[6]

Regression analysis: the bad news

- Invalid results and/or incorrect interpretation
- As “consumers” of health research
 - We need to pay attention to study validity and interpretation of results
- As “producers” of health research
 - We need to make sure our methods are valid for analyzing the relationship of interest
 - We need to make sure our interpretation of our results is correct

Intro to Health Economics

[7]

What to do we need to do: pay attention!



Intro to Health Economics

[8]

What to pay attention to:

- The population of interest (**POI**)
 - Females in Denver, rats in a lab, etc.
- Measurement of variables, importantly, the independent variable of interest (**VOI**) and outcomes
 - People's education measured in years, drug XYZ against placebo
- How does variation in the **VOI** manifest?
 - In thinking about variation in the VOI, we need to ask if there is potential for an omitted variable to drive the estimated relationship, and if so how this may bias results (i.e. potential for **OVB**?)
 - The answer to this question is usually germane to
 - general interpretation
 - policy implications

Intro to Health Economics

[9]

What to do as “producers” of health research

- Answer the POI and the VOI questions at the outset
- Solve any OVB problem you might have (...sometimes a toughie)
- Common OVB solutions
 - Include the omitted variable
 - Use variation in the VOI that is “uncorrelated” with the “unobserved” OV
 - Randomize the VOI among individuals (i.e. an experiment)
 - Identify “naturally occurring” uncorrelated variation VOI

Intro to Health Economics

[10]

What were those OVB solutions again?

1. Include omitted variables (all potential omitted variables)
2. Randomize the VOI (i.e. an experiment)
3. Identify “naturally occurring” uncorrelated variation VOI (e.g. policy changes)

Intro to Health Economics

[11]

Example: OVB, cigarettes and prices

- Theory versus measurement ([see notes](#))
 - What does theory say about the relationship between cigarettes and prices?
 - How do we measure this relationship?
- OVB problem?
- OVB solution: variation in prices due to tax differences
 - What type of solution is this?
 - When/why would it work?

Intro to Health Economics

[12]

EXTENDED EXAMPLES

Intro to Health Economics
[13]

Example 1: Cigarettes and education

- Theory:
 - Education makes you a more efficient producer of health (Grossman)
 - Individuals with more education may be exposed to more (and/or better understand) information about the harms of cigarette smoking, all else equal;
- Measurement:
 - What's the direction and magnitude of this relationship?
 - Specifically we can test:
 - Do smokers with more years of education, smoke less cigarettes per day controlling for other demographic factors?

Intro to Health Economics
[14]

Example 1: Cigarettes and education

TABLE 3-1 Excise Taxes and Cigarette Demand

Variable	Coefficient	a - Simple		b - Multiple		c - Interactive			
		Std Error	t-stat	Coefficient	Std Error	t-stat	Coefficient	Std Error	t-stat
Intercept	16.83	0.19	86.78	17.22	0.63	27.34	17.15	0.63	27.19
Excise Tax	-3.24	0.34	-9.42	-2.28	0.33	-6.96	-2.29	0.33	-7.00
Income (\$ × 1,000)				-0.0020	0.0025	-0.80	-0.0021	0.0025	-0.85
Male				2.23	0.21	10.68	2.38	0.22	10.80
African American (AA)				-5.05	0.34	-15.04	-4.29	0.49	-8.77
Age				0.13	0.01	19.11	0.13	0.01	19.10
Educational Level				-0.67	0.05	-12.42	-0.67	0.05	-12.41
Hispanic				-6.50	0.37	-17.55	-6.51	0.37	-17.58
AA + Male							-1.43	0.67	-2.14
R^2	0.0092						0.1136		
Elasticity	-0.0989						-0.0701		
N	9,555						9,555		

source: Computations from National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) by A. Goodman, 2008.

Intro to Health Economics
[15]

NESARC participants came from all walks of life and a variety of ages. They represented all regions of the United States and included residents of the District of Columbia, Alaska, and Hawaii. In addition to sampling people living in traditional households, NESARC investigators questioned military personnel living off base and people living in a variety of group accommodations such as boarding or rooming houses and college quarters. They included three different types of housing: the interviews were done in certain areas on people not formally classified by household size.

Example 1: Cigarettes and education

- POI?
 - U.S. residents in 2001-2002 who report smoking
- Measurement of variables and VOI?
 - Outcome = Cigarette consumption measured in cigarettes per day
 - VOI = Self reported education measured in years
 - Other control variables include: income, sex, race, and age
 - The variation in VOI used is: differences in educational attainment holding income, sex, race, and age constant
- OVB?
 - Are we estimating a causal effect?
 - Will one more year of education lead to 0.67 less cigarettes smoked ceteris paribus?

Intro to Health Economics
[16]

Example 1: continued

- Example of a potential OV:
 - Suppose those with more education have lower discount rates for the future.
 - Is relationship between education and cigarettes driven by differences in discount rates across people?
 - Here, education need not have a causal effect on smoking for us to observe a correlation.
 - Bottom line: the "discount rate" is an omitted variable (i.e. correlated with both education and cigarette consumption)
- How could this bias our results?
 - Those with lower discount rates will attain **more** education (forgoing current consumption for future earnings) and will smoke **less** (forgoing instant smoking high for future health).
 - Given the data and the model, the result will be biased **downward** and we will estimate an effect that is smaller (more negative) than it should be.
- Solutions:
 - control for "discount rate" (...but hard to measure);
 - randomize levels of education (...but expensive, ethics hurdle);
 - identify uncorrelated variation in education (changes in school leaving age laws?...)

Intro to Health Economics

[17]

Example 2: Health and prenatal care

- Theory:
 - Production function: prenatal care is an input into production of infant health
- Measurement:
 - What's the direction and magnitude of this relationship?
 - Do more prenatal care visits lead to "healthier" babies?, where health is measured as:
 - Less likely to die within the first year
 - Less likely to be born low birth weight (<2500 g),
 - Higher APGAR scores (score out of 10 on Appearance, Pulse, Grimace, Activity, Respiration)
- Let's do this!
 - We'll download some data and take a look.

Intro to Health Economics

[18]

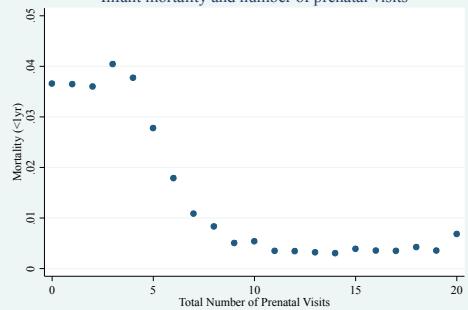
Example 2: continued

- POI?
 - Population: Babies born in the U.S.
 - Today's sample: all babies born in 1995 (that's about when you were born, isn't it?)
 - More specifically: all babies with birth records, born alive, in the U.S., in 1995
- Measurement of variables and VOI?
 - Outcome = Death within a year, low birth weight, APGAR scores
 - VOI = Prenatal Visits
 - Other control variables could include: smoking, education, age, marital, race
 - The variation in VOI used is: differences in Prenatal Visits holding all included controls constant
- OVB?...

Intro to Health Economics

[19]

Infant mortality and number of prenatal visits



Intro to Health Economics

[20]

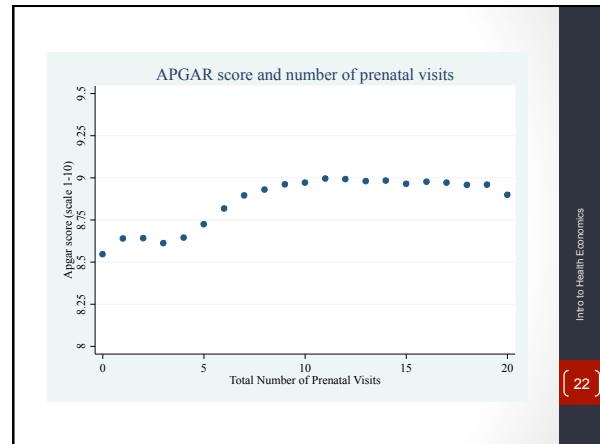
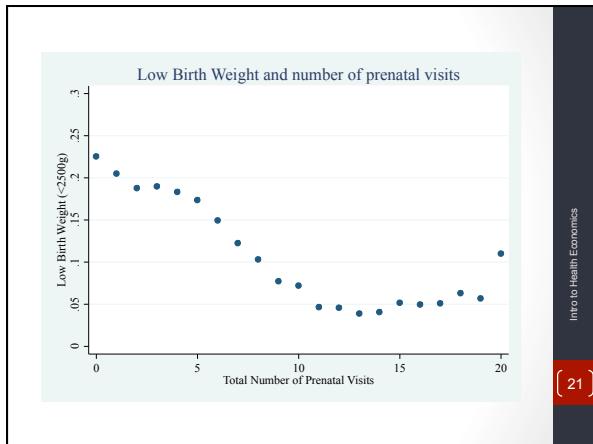


Table 1: infant health and prenatal care (Nativity file 1993 U.S. birth cohort)

	Death (<1yr)	Low BW	APGAR
Number of prenatal visits	-0.0016 *** percent change from mean -22.95%	-0.0085 *** -11.58%	0.0142 *** 0.16%
Smokes (0/1)	N	N	N
point estimate			
percent change from mean			
Demographic controls (age, education, marital, race)	N	N	N
Mean of Outcome	0.007	0.074	8.940

*** Indicates statistically different from zero at the 1% significance level (standard errors are not reported)
Source: NCHS Linked Natality-Mortality File

Intro to Health Economics [23]

Example 2: continued

- OVB?

- Are we estimating a causal effect?

- Will one more prenatal visit lead to:

- -0.0016 percentage point change in probability of dying within a year ceteris paribus?
 - 23 percent decrease from the mean (i.e. $-0.0016/0.007$)
 - 12 percent decrease from the mean (i.e. $-0.0085/0.074$)
- -0.0085 percentage point change in probability of low birth weight (<2500 g) ceteris paribus?
- 0.0142 change in APGAR scores ceteris paribus?
 - 0.16 percent increase from the mean (i.e. $0.0142/8.94$)

Intro to Health Economics [24]

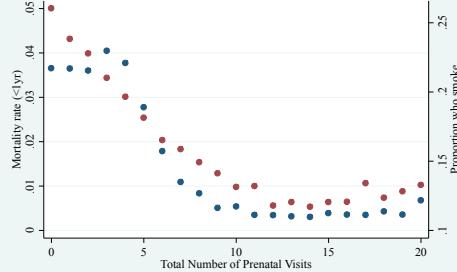
Example 2: continued

- Example of potential OV:
 - Suppose those mothers who go to more prenatal care visits, have a higher "taste" for healthy living.
 - Example: Is relationship between prenatal visits and infant health driven by differences in **prenatal smoking** across mothers?
 - Bottom line: "prenatal smoking" may be an omitted variable (i.e. correlated with both prenatal visits and infant health) ... there could be others... education, etc.
- How could this bias our results?
 - Mothers who do not smoke may also be **more** likely to engage in prenatal classes and may be **more** likely to give birth to healthier babies (less likely to die within 1 year, less likely to be born low birth weight, higher APGAR scores)
 - Given the data and the model, the results will be **upward** biased and will indicate that prenatal care is more productive of health than it is (the bias is downward for all "un"-healthy outcomes like mortality and low birth weight)
- Solutions:
 - control for smoking (and other factors that could be OV's);
 - randomize prenatal care;
 - identify uncorrelated variation in prenatal care

Intro to Health Economics

[25]

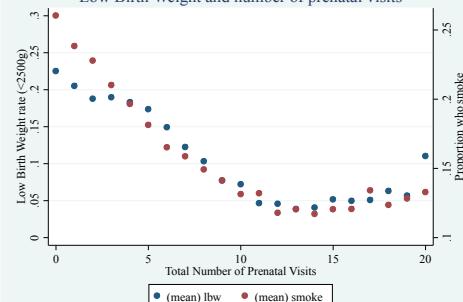
Infant mortality and number of prenatal visits



Intro to Health Economics

[26]

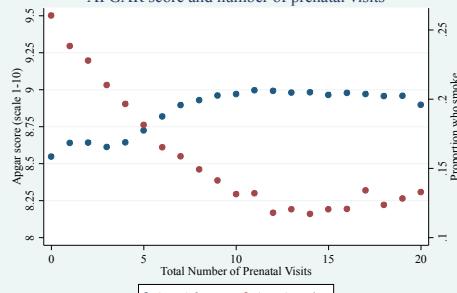
Low Birth Weight and number of prenatal visits



Intro to Health Economics

[27]

APGAR score and number of prenatal visits



Intro to Health Economics

[28]

Practice Question

- We draw relationships between things everyday (in conversation, on T.V, in newspapers, in class).
- A survey of the newspaper on any given day will report many statistics done in many studies. Choose 1 and answer the following for yourself:
 1. What is the population of interest?
 2. What variables that are being related?
 - What is outcome? What is the VOI? How are they measured?
 3. Is the relationship causal?
 - What is the nature of variation in VOI? Is there anything else that could explain what we see? (i.e. is there something in ϵ that is correlated with the outcome and VOI?)

Econ 2231: Introduction Health Economics Lecture 07

Course Announcements

- Dates for Assignments and Exams:
 - Feb 3, Assignment 1, due in class at 10:05am
 - Feb 10, Midterm 1
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Intro Health Economics

[2]

Recap and Agenda for the day

- Course coverage to date:
 - Chapter 1, 2, 3
- Road map:
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 - Deviations of health & health care from "standard" economic goods
 - Cost benefit analysis (Chapter 4)

Intro Health Economics

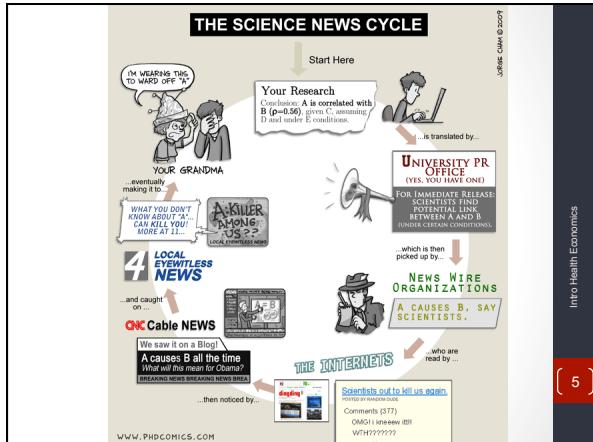
[3]

What were we doing again?

- Last class we developed a framework for "consuming" and/or "producing" health research
- Is it important to take a critical view of health research?
 - Yes; a critical eye is what puts the "re" into "research"
 - And; we do not want to over-generalize or incorrectly interpret relationships from any analysis

Intro Health Economics

[4]



Aside: in health economics, why do we talk about smoking anyway?

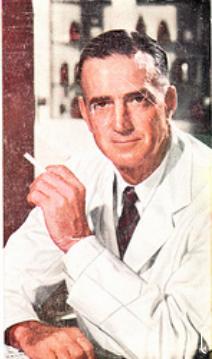
- It's a great example!
- 1. Example of market failure: external (social) costs
 - There is a great case to be made for large social costs from smoking
 - This has pretty clear-cut policy implications that come straight out of the simple demand-supply framework (i.e. think about the standard graph and cig. taxes)
- 2. Example of how knowledge (i.e. health research) changes over time
 - We know smoking is bad for your health, but this is a relatively recent innovation to knowledge (in the grand scheme of things)
 - 3. ...
 - 4. ...

Intro Health Economics [7]



According to repeated nationwide surveys,

More Doctors Smoke CAMELS than any other cigarette!



Intro Health Economics [9]

J. A. M. A.
June 15, 1946, Adv.

'smoke'...

E HARD FOR
PATIENTS TO SWALLOW!

May we suggest, instead,
SMOKE "PHILIP MORRIS"?
Tests showed 3 out of every
4 cases of smokers' cough
cleared on changing to
PHILIP MORRIS. Why not
observe the results for

TO THE PHYSICIAN WHO SMOKES A PIPE: We suggest an unusually fine new blend—COUNTRY
DOCTOR PIPE MIXTURE. Made by the same process as used in the manufacture of Philip Morris Cigarettes.

Intro Health Economics

Surgeon General's Report on Smoking

- June 1957
 - Surgeon General L. Burney declares the official position of the U.S. Public Health Service: causal relationship between smoking and lung cancer.
- 1958: 44% of Americans believe smoking causes cancer (Gallup poll)
- June 1961
 - The American Cancer Society, the American Heart Association, the National Tuberculosis Association, and the American Public Health Association address letter to President John F. Kennedy, in which they called for a national commission on smoking
- June 1962
 - Surgeon General L. Terry convenes committee of experts, representing a wide swath of disciplines in medicine, surgery, pharmacology, and statistics (though none in psychology or the social sciences). They study over 7,000 articles.
- January 1964
 - Commission's final report issued Saturday to minimize the effect on the stock market and to maximize coverage in the Sunday papers.
 - Report highlights the deleterious health consequences of tobacco use
- 1968: 78% of Americans believe smoking causes cancer (Gallup poll)

Intro Health Economics [11]

Some old cigarette commercials (for fun)

- <http://www.youtube.com/watch?v=qCMzJjuxQI>
- <http://www.youtube.com/watch?v=-fPwpymO1bs>
- What were we thinking:
http://www.youtube.com/watch?v=6_caR1bkOEg

Intro Health Economics [12]

Aside: so, why do we talk about smoking anyway?

- It's a great example!
- 1. Example of market failure: External (social) costs
 - There is a great case to be made for large social costs from smoking
 - This has pretty clear-cut policy implications that come straight out of the simple demand-supply framework: taxes!
- 2. Example of how knowledge (i.e. health research) changes over time
 - We know smoking is bad for your health, but this is a relatively recent innovation to knowledge (in the grand scheme of things)
- 3. Example of how people are willing to tradeoff health against other things
 - We know smoking is bad for your health, but... people still smoke!!!
- 4. Example of the role behaviour plays in individual (and societal) health
 - Medical care (and the medical care system) are not the only aspects of health production that matter

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[13]

- Aside over...
- Back to our framework for "producing" or "consuming" health research...

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[14]

Extended examples:
Acting as a "producer" of health research

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[15]

Example 2: Health and prenatal care

- Theory:
 - Production function: prenatal care is an input into production of infant health
- Measurement:
 - What's the direction and magnitude of this relationship?
 - Do more prenatal care visits lead to "healthier" babies?

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[16]

Example 2: continued

• POI?

- Population: Babies born in the U.S.
- Today's sample: all babies born in 1995 (that's about when you were born, isn't it?)
- More specifically: all babies with birth records, born alive, in the U.S., in 1995

• Measurement of variables and VOI?

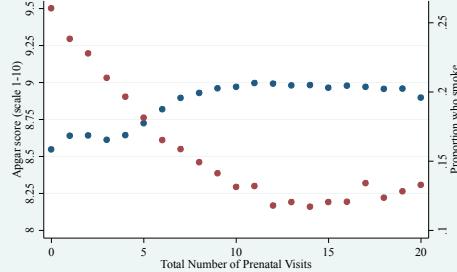
- Outcome = Death within a year, low birth weight, APGAR scores
- VOI = Prenatal Visits
- Other control variables could include: smoking, education, age, marital, race
- The variation in VOI used is: differences in Prenatal Visits holding all included controls constant

• OVB?...

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[17]

APGAR score and number of prenatal visits



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[18]

Shorter examples:
Acting as a "consumer" of health research

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[19]

Some practice?

- We draw relationships between things everyday
 - e.g., in conversation, on T.V, in newspapers, in class.
- Now you have the tools assess these things yourself.
- Practice with the newspaper
 - In a survey of the newspaper on any given day, you will find reports of statistics from research studies.
 - Your homework was to report one of these and now we're going to go through a few examples
 - First we will discuss in groups then together

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Practice using newspaper examples

- In your group, first introduce your newspaper article in general terms
- Next, we'll isolate the an example statistic and in each case we are going to:
 - (1) identify the population of interest?
 - (2) identify the variables that are being related (i.e. what is outcome what is the VOI? How are they measured?)
 - (3) assess what is driving the relationship. Is there anything else that could explain what we see? (i.e. is there something in ε that is correlated with the outcome and VOI?)

(21)

THE GLOBE AND MAIL

A multivitamin a day may keep heart attacks away

Leslie Beck | Columnist profile | E-mail

From Wednesday's Globe and Mail
Published Tuesday, Sep. 28, 2010 4:10PM EDT
Last updated Thursday, Sep. 30, 2010 11:39AM EDT

In an effort to guard against heart disease, you may consider adding a multivitamin supplement to your menu of fatty fish, nuts and oat bran.

According to new a study published online in the American Journal of Clinical Nutrition, women who took a one-a-day supplement were 40 per cent less likely to suffer a heart attack than their peers who didn't use multivitamins.

Earlier studies that investigated the link between multivitamin use and heart risk have turned up conflicting results.

The current study included 33,933 Swedish women aged 49 to 89 years, the vast majority (93 per cent) having no history of heart disease. After 10 years of follow up, 1201 women had suffered a heart attack.

Among women who were free of heart disease upon enrolling in the study, taking a daily multivitamin reduced the risk of heart attack by 27 per cent. The protective effect was stronger among women who used multivitamins for at least five years. Compared with women who didn't take supplements, those who took multivitamins for five years or longer were 40 per cent less likely to have a heart attack.

When the researchers accounted for body weight, physical activity, smoking status and other heart risk factors, the results remained unchanged.

Home > Life > Health & Fitness > Health



Study shows link between antioxidant supplements and lung cancer

Using mice with early stages of lung cancer, the researchers analyzed differences in cell growth between untreated mice and those given antioxidants.

They found that lung tumours in the antioxidant group became more invasive and killed the mice twice as fast compared with lung tumours in mice that did not receive antioxidants.

Researchers at the University of Gothenburg, Sweden, set out to investigate why previous studies have shown increases in lung cancer in smokers who took antioxidant supplements compared to smokers given placebos.

(3)

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King says the unpublished study was clearly a factor in the decision to change the sequence of the vaccination program.

That study, based on research ongoing in British Columbia, Ontario and Quebec, suggests that people who have received seasonal flu shots last year may be at greater risk of catching H1N1 flu this year.

While the study is still being peer-reviewed in an unnamed journal, King said it had a direct influence on the policy for this year's flu vaccination program in Ontario.



Unpublished study influences Ont.'s vaccine plan

Updated Thu. Sep. 24, 2009 9:08 PM ET
CTV.ca News Staff

Ontario says it is changing its approach to seasonal flu vaccine administration this year. Drawn from a series of studies from British Columbia, Quebec and Ontario, the findings appear to suggest that people who got a seasonal flu shot last year are about twice as likely to catch swine flu as people who didn't.

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Seasonal Vaccine

- OVB: sicker people tend to get the flu shot and also tend to... well, get sick
 - Side note: In summer months when flu is not circulating, vaccinated individuals are 16% more likely to be recently ill
- Suppose we believe the results, how should we react?
 - Note: seasonal flu = ¼ million deaths per year
 - Swine flu = 5000 deaths during the 2009 epidemic
- Possibly: this study ‘caused’ more flu than the seasonal vaccine itself!

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[25]

thebmj Research ▾ Education ▾ News & Views ▾ Campaigns

Editorials

Preventing bad reporting on health research

BMJ 2014 ; 349 : doi: <http://dx.doi.org/10.1136/bmj.g7465> (Published 10 December 2014)
Cite this as: *BMJ* 2014;349:g7465

Academics should be made accountable for exaggerations in press releases about their own work

For anyone with medical training, mainstream media coverage of science can be an uncomfortable read. It is common to find correlational findings misrepresented as denoting causation, for example, or findings in animal studies confidently exaggerated to make claims about treatment for humans. But who is responsible for these misrepresentations?

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[26]

thebmj Research ▾ Education ▾ News & Views ▾ Campaigns

Sumner and colleagues identified all 462 press releases on health research from 20 leading UK universities over one year. They traced 668 associated news stories and the original academic papers that reported the scientific findings. Finally, they assessed the press releases and the news articles for exaggeration, defined as claims going beyond those in the peer reviewed paper.

Since coding for exaggeration could be subjective, the authors' structured appraisal focused on three areas: making causal claims from correlational findings in observational data, making inference about humans from studies on other animals, and giving direct advice to readers about behaviour change. This allowed an assessment of where each exaggeration first appeared. If a news story claimed a new treatment for humans, for example, but the study was on mice—and the academic paper made no claim about humans—then did the exaggeration first appear in the press release, or the newspaper article?

Over a third of press releases contained exaggerated advice, causal claims, or inference to humans. When press releases contained exaggeration, 58% to 86% of derived news stories contained similar exaggeration, compared with exaggeration rates of 10% to 18% in news articles when the press releases were not exaggerated. This was an onerous piece of research,

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Potential for small ‘metrics project here?

thebmj Research ▾ Education ▾ News & Views ▾ Campaigns

- Sumner and colleagues were good enough to share 462 individual coding sheets online
- Questions one could ask:
 - How do the different universities rank in terms of exaggeration in press releases?
 - Selection story: not all press releases are picked up by the media. What is associated with a press release getting picked up? Exaggeration? Source university? Exceptional causes of death? Observational vs. trials? “Good news” vs. “Bad news”?

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[28]

Further examples...

- Let's go back the Ben Goldacre's Ted Talk:
 - http://www.ted.com/talks/ben_goldacre_battling_bad_science.html
- This time while you watch, ask yourself:
 - What is the outcome?
 - What is the VOI?
 - Who is being compared to who? Are there any other reasons that outcomes for the different groups would differ besides differences in VOI?

Econ 2231: Health Economics Lecture 11

Course Announcements

- Dates for Assignments and Exams:
 - Mar 3, Assignment 2, due in class at 10:05am
 - Mar 5, Midterm 2
- Katy Wyatt will hold office hours leading up to assignments and midterms. Drop in office hours schedule and location:
 - Feb 25, 11:30-1:00, LSCBIOER B5009
 - Mar 2, 11:30-1:00, LSCBIOER B5009

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Recap and Agenda for the day

- ▶ Course coverage to date:
 - ▶ Chapter 1, 2, 3
 - ▶ Practicing interpretation of “health research” results
 - ▶ Chapter 4
- ▶ Road map:
 - ▶ Economic Evaluation: the quest for Efficiency
 1. Cost-Benefit Analysis
 2. Valuing Human Life
 3. Cost-Effectiveness Analysis
 4. Cost-Utility Analysis, QALYs
 5. QALYs: Praise and Criticism

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{ 3 }

ECONOMIC EVALUATION

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{ 4 }

What is an Economic Evaluation?

- Systematic comparison of two or more alternatives to identify which is efficient
 - Comparison of costs (inputs) vs. consequences (outputs)
 - Comparison across program alternatives
- Decisions that must be made before the analysis begins
 - The policy objective
 - The program alternatives to be compared
 - The viewpoint to be adopted (society, ministry of health)
- The Three Stages of an Economic Evaluation
 - Identification of costs and consequences
 - Measurement of costs and consequences
 - Valuation of costs and consequences

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[5]

The Three Methods of Economic Evaluation

1. Cost-Benefit Analysis
 - Measuring outcomes in monetary terms
 - Human Capital Approach
 - Willingness-to-pay
 - Net-Benefit Criterion
2. Cost-Effectiveness Analysis
 - Cost-effectiveness ratio
 - Possible outcomes of a cost-effectiveness analysis
3. Cost-Utility Analysis
 - Quality-Adjusted Life-Year

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[6]

Cancer screening example

- Consider a hypothetical three- stage screening test for a cancer with the following rates of detection and costs:

	Number of Cases		
Stage	Detected	Total Costs	
1	100	\$ 200,000	
2	105	\$ 260,000	
3	106	\$ 300,000	

1. Calculate the average cost per cancer detected in the three stages.
2. Calculate the marginal cost per cancer detected in the three stages.
3. Suppose that the marginal benefit per treated case is \$12,000 per person. What would be the optimal screening, given the costs?

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[7]

COST-UTILITY ANALYSIS AND QALYS

(like CEA but where units of "E" are given in "QALYS" – quality adjusted life years)

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[8]

What's cost-utility analysis?

- Cost-utility analysis is a more practical/comparable variation of cost-effectiveness analysis.
 - We have to measure $E_1 - E_0$ in some way
- Quality-adjusted life-year (QALY) is the leading type of CUA.
 - QALY = quality adjusted life year
 - To get a QALY we use a weighting system
 - q is quality ranging from 0 to 1
 - 1 is perfect health
 - 0 is death
 - The quality measure can be thought of a preferences (utility) for different health states
 - Note the departure from standard welfare economics

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[9]

Measurement

- Projects are evaluated on the basis of their incremental costs per extra QALY delivered to the patients or other subjects (Garber and Phelps, 1997; Ried, 1998).
- For each person, QALY is:

$$\text{QALY} = \sum_{i=1}^{\max} \frac{F_i q_i}{(1+d)^i}$$

- F_i - the probability that the person is still alive at age i ;
- d - the time discount factor;
- q_i - the quality weight;

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[10]

Example:

- Suppose, for example, that a patient has the opportunity for a treatment that will extend life:
 - by one year with a probability of 0.9
 - by two years with a probability of 0.5
 - The patient will die with certainty after two years.
 - Quality weight:
 - q_1 is 0.8 in year 1
 - q_2 is 0.6 in year 2.
 - The discount rate is 0.05 per year
- What is QALY for this patient?

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[11]

Praise for QALYs

- Uses common units for analyzing cost effectiveness
- Provides another technique for judging public projects.
- Accounts for the notion that each person is entitled to a life in which he or she can use a basic set of capabilities to achieve personal goals in life.
- Importantly, these capabilities would include basic health and functioning.

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[12]

Critique of QALYs

- QALYs are not consistent with standard Pareto based welfare economics.
- A developing criticism of CUA with QALYs focuses on the method's linear valuation of medical interventions as the simple sum of quality gains times life-years saved times the number of people treated.
- It has long been pointed out that QALYs tend to place a reduced value on older people when evaluating a medical intervention.

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[13]

Economic Evaluation and Efficiency

- The different methods answer different efficiency questions
 - CEA and CUA assume objective worthwhile and identify lowest-cost method of achieving the objective. Answer questions of **cost-effectiveness** efficiency
 - CBA can in principle answer whether an activity produces net benefit for society. Answers questions of **allocative** efficiency.

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[14]

QALY Example:

- Suppose, for example, that a patient has the opportunity for a treatment that will extend life:
 - by one year with a probability of 0.9
 - by two years with a probability of 0.5
- The patient will die with certainty after two years.
- Quality weight:
 - q1 is 0.8 in year 1
 - q2 is 0.6 in year 2.
- The discount rate is 0.05 per year

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[15]

Use of the Three Methods in the Health

- CEA and CUA dominate
 - many reject in the health sector the principle of allocation according to willingness-to-pay
- CEA easiest but limitations
 - Best-suited to situations with single, dominant outcome
 - Can only compare against interventions targeted at same outcome
 - No adjustment for differences in quality of life
- CUA
 - Incorporates quantity and quality
 - Broader set of comparisons possible
- CBA
 - Integrate the most comprehensive set of concerns

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[16]

Use of the Three Methods in the Health Sector II

- Cannot avoid placing a dollar value on life-years gained
 - CBA
 - premised on the view that policy should be guided by individual-level monetary valuations (as happens in markets).
 - CEA and CUA
 - premised on the view that, when deciding how to allocate health resources, the dollar value of a health gain should be equal across all members of society.
 - Such a judgment is confronted only at the decision stage
 - In principle the same value can be applied across all programs and interventions, regardless of the social status of the beneficiaries.

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[17]

Some practice:

- Comparing the “cost/cancer” saved of various screening programs is an example of what type of analysis?
- QALYs evaluates interventions in what units?
- CBA analysis evaluates benefits in what units?
- True or false: Cost-effectiveness analysis is poorly suited for programs with multiple types of health outcomes.

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[18]

Economic Evaluation: case study

- Case Study on the NHS and cancer drugs:
<http://www.adamwishart.info/2009/06/the-price-of-life-bbc-documentary.html>
- Points for discussion
 - Identify:
 - The viewpoints adopted in the documentary
 - The policy objective
 - The program alternatives compared
 - Questions:
 - If you were the committee chairman at the end, how would you have voted?
 - Do we need to deny some patients treatment? Why?
 - How should these decisions be made?

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[19]

Econ 2231: Intro to Health Economics
Lecture 20

Recap and Agenda for the day

- ▶ Course coverage to date:
 - ▶ Chapters 1, 2, 3, 4, 5, 7, 8, 10, Policy topics (15, 17, 22)

[2]

Recap and Agenda for the day

- ▶ Agenda for Remainder of Course
 - ▶ Four policy topics
 - ▶ Physician remuneration
 - ▶ Pharmaceutical markets
 - ▶ Obesity epidemic
 - ▶ Comparative health systems
- ▶ Agenda for today
 - ▶ Comparison of health statistics
 - ▶ Documentary: U.K., Japan, Germany, Taiwan, Switzerland

[3]

COMPARISON OF HEALTH STATISTICS

[4]

Health Systems Comparisons

- Reference: Chapter 22
- Difficult to compare health systems
 - Even with objective measures like health statistics
 - Main trouble: complexity, causation versus correlation

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[5]

Running a “horse race”

- Nice thing about an actual horse race: it is clearly defined
 - Inputs: horses and jockeys
 - Outputs: running fast
 - Metric: units of time
 - Objective: run the fastest
- We want to run a “horse race” among health care systems but:
 - Lack of accurate, consistent data
 - Hard to tell what health care resources have the biggest effect relative to cost
 - Health care resources are not the only factors impacting health
- We will try to run a horse race anyway...

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[6]

Class discussion

- 1. We'll get into groups and assign a country to each group
- 2. Familiarize yourself with the handbooks provided
- 3. For each group of statistics we'll identify the “best” and the “worst” (i.e. who had the lowest rate of infant mortality, etc.)
- 4. Last, let's discuss what we've found using some of the tools we've learned throughout the course.
- (see in class notes)

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[7]

For the curious...

- Country Rankings - Health, WHO
 - <http://www.photius.com/rankings/healthranks.html>
 - http://www.allcountries.org/ranks/preventable_deaths_country_ranks_1997-1998_2002-2003_2008.html
 - http://www.photius.com/rankings/healthy_life_table2.html
 - http://www.photius.com/rankings/world_health_performance_ranks.html

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[8]

Curiosity in general...

- Country Info - Overall
 - WHO
 - <http://www.photius.com/rankings/>
- The Economist
 - <http://countryanalysis.eiu.com/>
- Google Public Data
 - <http://www.google.com/publicdata/directory>

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[9]

IHE Handbook of statistics

- Costs
- Health Resources
- Health Behaviors
- Health Status
- System Performance

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[10]

DOCUMENTARY:
U.K., JAPAN, GERMANY, TAIWAN, SWITZERLAND

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[11]

“Sick around the world” PBS Documentary

- The documentary we'll look at provides a brief description of the health care systems across 5 countries.
- As we go through keep these questions in mind:
 - What group/groups are covered?
 - How are hospitals or physicians paid?
 - Is there competition among providers?
- We will discuss each as a group so take notes!

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[12]

U.S. Senate Committee's debate on Obamacare

- Dr. Danielle Martin was the Canadian voice on an international panel at a committee studying what the U.S. can learn from other countries.
- The link to her part of the debate is here:
 - <https://www.youtube.com/watch?v=iYOf6hXGx6M>
- What do you identify as the main issue at debate here?

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Questions?

- Now is your chance to ask any remaining questions...

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(14)

Individual Report for Health Economics. ECON2231-01 (Courtney Ward)

Student Ratings of Instruction (SRI) Winter 2014-2015

Total Enrolment 45

Responses Received 29

Response Ratio 64.44%

Subject Details

Name Health Economics. ECON2231-01

Department Economics

Creation Date Wed, May 13, 2015

Common Questions

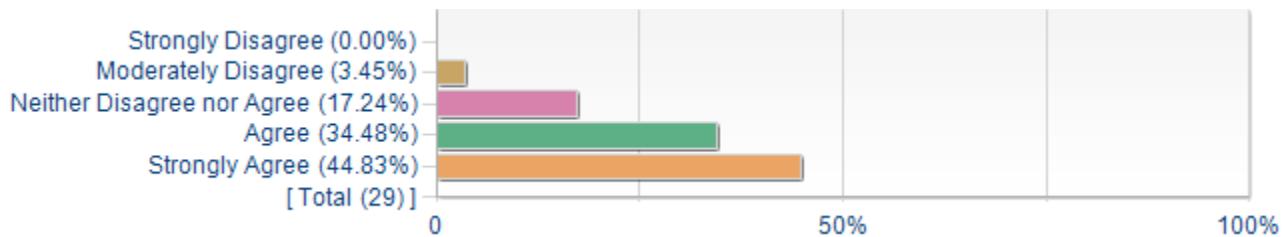
This Section displays the Common questions used for the evaluation. These questions were displayed for every course/department.

TEACHING EFFECTIVENESS

Question	Course				Dept			
	Mean	Min	Max	Standard Deviation	Mean	Min	Max	Standard Deviation
STIMULATION OF LEARNING: The instructor conducted the class clinical in such a way that I was stimulated to learn.	4.21	2.00	5.00	0.86	4.09	1.00	5.00	1.15
ORGANIZATION: The instructor organized the class clinical well.	4.24	3.00	5.00	0.74	4.17	1.00	5.00	1.10
COMMUNICATION: The instructor communicated clearly during the class.	4.28	3.00	5.00	0.70	4.19	1.00	5.00	1.10
ENTHUSIASM: The instuctor showed enthusiasm for the subject matter of the class.	4.28	2.00	5.00	0.75	4.36	1.00	5.00	0.99
FAIRNESS: The instructor used fair evaluation methods to determine grades.	4.14	2.00	5.00	0.92	4.34	1.00	5.00	0.97
FEEDBACK: The instructor provided constructive feedback (considering the class size).	4.31	3.00	5.00	0.71	4.14	1.00	5.00	1.08
CONCERN FOR LEARNING: The instructor showed genuine concern for my learning.	4.03	1.00	5.00	0.98	4.18	1.00	5.00	1.07
OVERALL TEACHING EFFECTIVENESS: Overall, the instructor was an effective teacher.	4.24	2.00	5.00	0.87	4.21	1.00	5.00	1.12
Overall	4.22	-	-	0.81	4.21	-	-	-

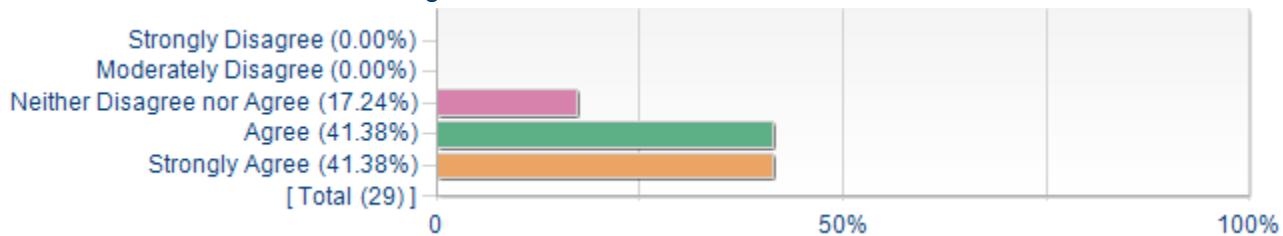
TEACHING EFFECTIVENESS

1. STIMULATION OF LEARNING: The instructor conducted the class clinical in such a way that I was stimulated to learn.



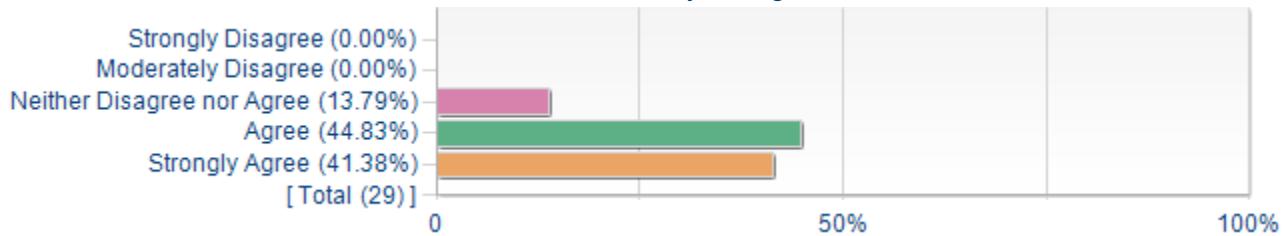
Statistics	Value
Mean	4.21
Standard Deviation	+/-0.86

2. ORGANIZATION: The instructor organized the class clinical well.



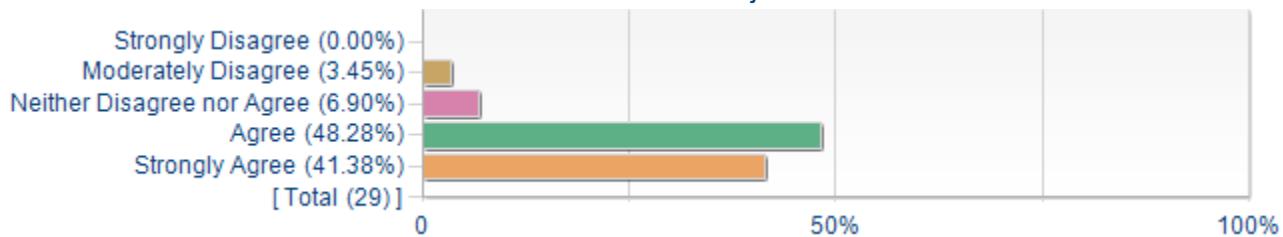
Statistics	Value
Mean	4.24
Standard Deviation	+/-0.74

3. COMMUNICATION: The instructor communicated clearly during the class.



Statistics	Value
Mean	4.28
Standard Deviation	+/-0.70

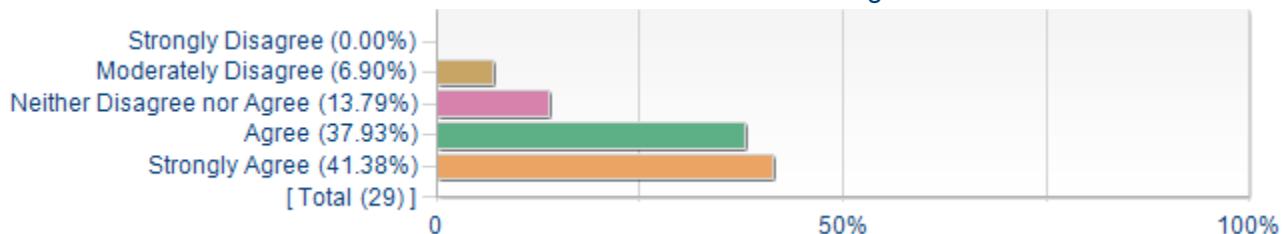
4. ENTHUSIASM: The instructor showed enthusiasm for the subject matter of the class.



Statistics	Value
Mean	4.28
Standard Deviation	+/-0.75

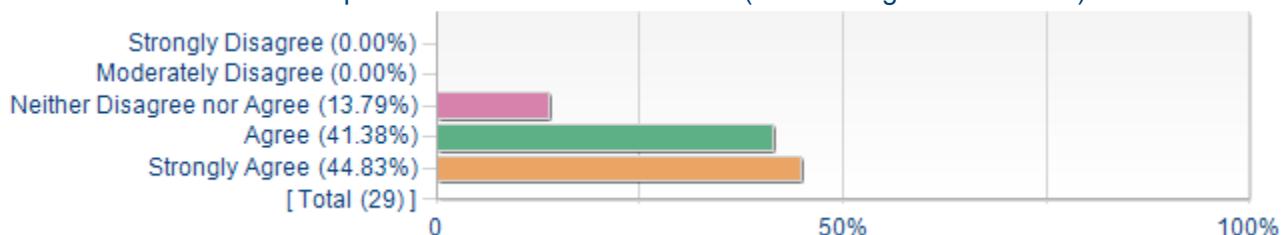
TEACHING EFFECTIVENESS (continued)

5. FAIRNESS: The instructor used fair evaluation methods to determine grades.



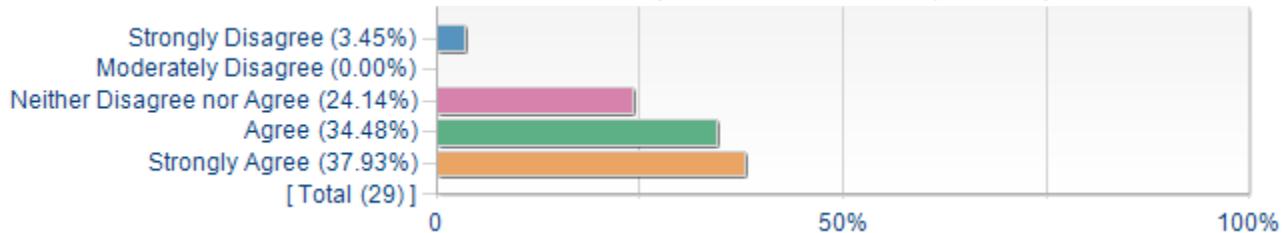
Statistics	Value
Mean	4.14
Standard Deviation	+/-0.92

6. FEEDBACK: The instructor provided constructive feedback (considering the class size).



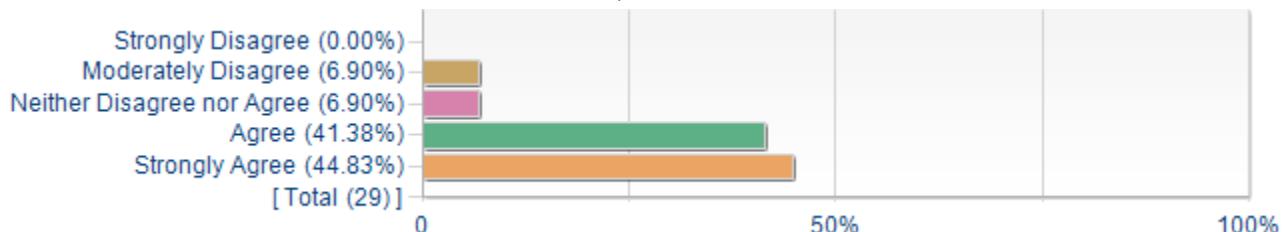
Statistics	Value
Mean	4.31
Standard Deviation	+/-0.71

7. CONCERN FOR LEARNING: The instructor showed genuine concern for my learning.



Statistics	Value
Mean	4.03
Standard Deviation	+/-0.98

8. OVERALL TEACHING EFFECTIVENESS: Overall, the instructor was an effective teacher.

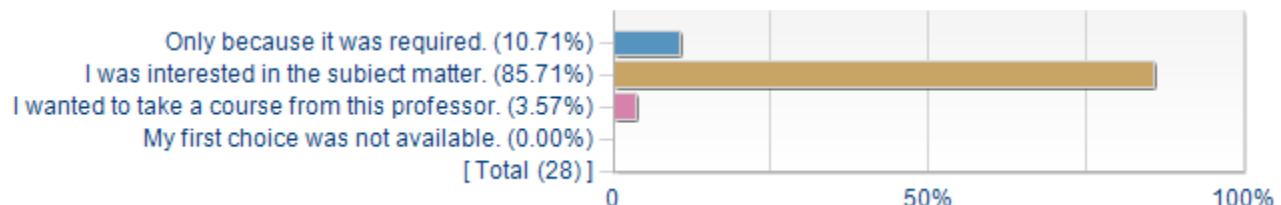


Statistics	Value
Mean	4.24
Standard Deviation	+/-0.87

REQUIRED/ELECTIVE



MOTIVATION FOR TAKING THIS CLASS



Department Questions

This Section displays the department level questions entered by the department heads/chairs/Academic Directors. If no questions are found, it implies department level questions were either not included for this department or those questions were not answered by students.

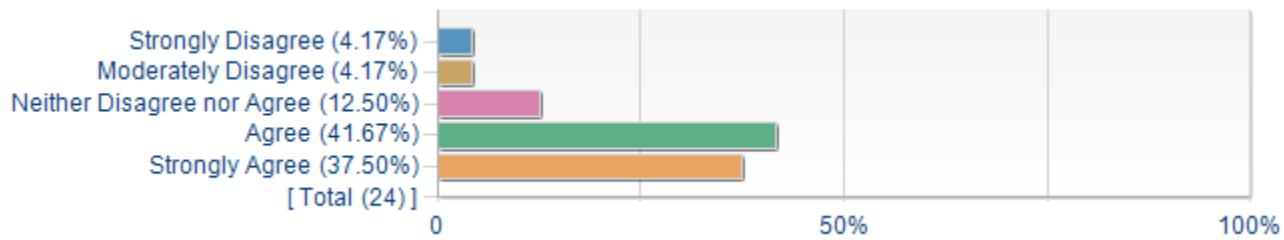
Instructor Questions

This Section displays the Instructor level questions entered by the Instructors for their courses. If no results are found, it implies Instructor level questions were either not included for this course by this instructor or those questions were not answered by students.

The TA (i.e. teaching assistant) provided useful feedback when grading course material

Question	Course			
	Mean	Min	Max	Standard Deviation
The TA (i.e. teaching assistant) provided useful feedback when grading course material	4.04	1.00	5.00	1.04

The TA (i.e. teaching assistant) provided useful feedback when grading course material



Statistics	Value
Mean	4.04
Standard Deviation	+/-1.04

Unsigned Comments for Health Economics. ECON2231-01 (Courtney Ward)

Student Ratings of Instruction (SRI) Winter 2014-2015

Subject Details

Name	Health Economics. ECON2231-01
Year	2015
Term	Winter
Faculty	Faculty of Science
Department	Economics
Subject	ECON
Course_Number	2231
Section	1

Creation Date Fri, May 15, 2015

Comments

This report displays the Unsigned Comments provided by the students. All the Comments provided here were not signed and approved by students. Hence these comments will not be displayed for department heads/chairs/Academic Directors.

NOTE: The SRI team has not reviewed the following comments. If any comment indicates that a student is in distress; that is, in danger of hurting themselves or others, please report it to the SRI Administrator so that appropriate action can be taken.

The Dalhousie University Guide to identifying and responding to students in distress states that "Regardless of the circumstances or context, any reference to wanting to die/ suicide should be taken seriously and a health professional should be contacted."

What did your instructor do that helped your learning in this class or clinical setting?

Students

gave some example.

She can tell the materials briefly and give us some feedbacks when we finished midterms in time.

Her voice is clear and class notes is enough for us to understand the course.

The class is well organized, she gives a good review of the previous class at the beginning of each lecture.

No

Do you have any suggestions for what the instructor could have done differently to further assist you in your learning?

Students

give more questions to practice.

Please speak slowly and write the notes clearly.

Please write clear when you write on the white board.

For the assignments and tests, it would be great if we can get more feedback on them.

No

Additional comments:

Students

I disagree with the marking scheme for the tests, some of the points were not equally distributed or weighted for the knowledge/material.

No