Transportation Economics
URBP (620) 3 credits

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Meeting: Monday 2:05 pm till 3:55 pm room 409 Macdonald
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Office Hours: Monday 10:00 to 12:00 or by appointment

Course Description

This course presents the economic and financial aspects of urban transportation policies and planning. The course introduces students to impact assessment techniques for major transportation projects and policies. In addition it discusses the political debates around transportation finance highlighting winners and losers in various financing policies.

Course Objective

The readings, lectures, case studies, class discussions, and assignments are designed so that by the end of this course, students will be able to:

1. Think critically about transportation economics,

2. Evaluate economic policies that affects the transportation system,

3. Apply basic econometric methods to the analysis of transportation data,

4. Understand the institutional and political barriers associated with transportation pricing and financing,

5. Actively discuss and debate contested transportation economic issues,

6. Have a solid understanding of transportation issues from the perspectives of engineering, planning, economics and other disciplines. As well as how all these fields are related,

7. Be familiar with the goals and assumptions that underlie debates about transportation finance and policy, and

8. Identify detailed elements of the transportation economics sub-field that may be appropriate for future thesis/project work.

Course Structure

The course is organized around one week lecture/class discussions.

Assignment and Evaluation Methods

Assignment	Description	Weighting
Reflections & Participation	Each student should submit one paragraphs (250 words max) discussing the assigned readings of the week on my courses	15
Weekly Question	Starting from week 5 each student will be required to contribute to **one question** to answer the weekly question using case studies to support your answers.	20
Assignment #1	Cost calculation of the capital and operating cost of a new Light Rail Line.	10
Midterm	Covering the first 4 lectures	5
Assignment #2	A surprise assignment to solve at home in 3 hours you must write a memo of 2 pages on the assigned topic.	15
Assignment #3	Write a blog post of 2000 words max or generate a video to propose an equitable source of funding for public transport in Montreal.	15
Assignment #4	Choose a planned transport project from the assigned list and write a policy brief 2 to 4 pages to build a business case for this project, Each student will give a 10 minutes presentation in class.	20

In fairness to all students, no late assignments will be accepted (read: this means "0" points will be assigned for work turned in after the deadline). The *only* exception is for documented family and/or medical emergencies. It is in your best interest to please respect this edict.

Lectures and Discussion

Discussion Component: The lecture component of this course consists of discussions of the readings and providing examples from real word related to the discussed topic from outside sources and criticizing them based on the readings. Therefore you should have **READ THE MATERIAL BEFORE CLASS** and be ready for the discussion. Students are expected to come to class ready to be active participants in the discussion. If you get behind, always do the readings for the next class first. You need to read carefully for the argument or main facts, but you do not need to memorize every detail. One or two students will be leading the discussion details mentioned below.

Main Readings

Levinson, D. (2015) Transportation Economics, Wiki Book. **Available online at**
https://en.wikibooks.org/wiki/Transportation_Economics

Kockelman, K., Chen, D., Larsen, K., and Nichols, B. (2013). The Economics of Transportation Systems: A reference for Practitioners. The University of Texas. **Available from amazon.com and from** http://www.utexas.edu/research/ctr/pdf_reports/0_6628_P1.pdf

Gomez-Ibenez, J., Tye, W., & Winston, C. editors (1999). Essays in transportation economics and policy. Washington DC USA: Brookings Institution Press. **Available in E-Book through McGill Library.**

Additional assigned readings

Button, K. (2010). Transport economics. Cheltenham UK: Edward Elgar; 3rd edition. **2 chapters Available at the McGill Library.**

Button, K. & Reggiani A. editors (2011). Transportation and economic development. Northampton, MA: Edward Elgar Publishing. **Available in E-Book through McGill Library.**

Lectures

		Topic Discussed	Weekly Question
1	10/9/2018	Introduction: Basics of microeconomics (demand and supply, and consumer surplus)	No question
2	17/9/2018	No Class	
3	24/9/2018	Transport and the economy & transport and local economic development.	No question
4	1/10/2018	No Class Quebec Elections	
5	8/10/2018	Demand for transport

Distribution of Assignment 1 | Demand for shared electric scooters, who is using them? |
| 6 | 15/10/2018 | Costs and benefits of transport services

Assignment 1 due | HOT lanes who benefits from them the most? |
7	22/10/2018	**Midterm**	**Discussion of Assignment 2**
8	29/10/2018	Pricing of transport services	Pricing of bicycle sharing systems, do they need subsidy?
9	5/11/2018	Regulations and competition in transport	Is privatizing public transport a valid option?
10	12/11/2018	Movement and location

Assignment 2 (Sunday afternoon) | Tolling bridges, for how long and why? |
| 11 | 19/11/2018 | Investment and financing, and revenues of transport

Assignment 3 | Financing transit from road pricing, is it fair? |
| 12 | 26/11/2018 | Freight logistics | What is future of short distance delivery vehicles? |
| 13 | 3/12/2018 | Transport project evaluation, forecasting, and positive externalities. | Can Uber replace public transport? What will be the cost? |
| 14 | 4/12/2018 | Economic impact analysis and negative externalities

Assignment 4 due | Presentations of Assignment 4 |

Readings Reflections

Every week each student is required to submit a reflection (one paragraph on my courses) on the assigned readings of the week (250 characters max). Reading reflections are due Saturday at 11:00 am. These reflections should represent your thoughts about the readings and the take home lesson it. You need to be critical in your thoughts and ideas presented in this one paragraph. During the term three reflections will be selected randomly from the submitted ones and evaluated. Students will be assigned the higher mark of two of the three reflections. The reflections are only required for the assigned readings during the week. One or two questions can be added below the 250 words, some of these questions will be answered during the lecture on Monday.

If you miss a class you are required to write a minimum of 2 page summary of the readings and submit to the instructor prior to the next lecture. Failing to do so will lead to 10% deduction of your final grade in the attendance and participation for every summary you did not submit.

Weekly Question and Case Studies:

Each week starting from **8/10/2018** through **3/12/2018** two or three students will be answering the question of the week stated in the table of content, the answer should depend on case studies from around the world. These students are expected to prepare a PowerPoint presentation based on the question and prepare a case study to support their answers and send it to the professor on Monday at 11:00 am. The case study presentation time will be 30 minutes including discussions at the beginning of the class.

Each student is expected to participate in answering at least **1 question with case studies**.

The students leading the discussion on answering the questions related to the case study of the week are expected to provide examples related to the discussed topics from different sources. Students are expected to link the theory being read to the examples used.

Assignment 1 (due 15/10/2018)

Assignment 1 will be a simple case of calculating the fare for a Light Rail line that will open in a City. You will be provided with the capital cost, operating costs, and expected ridership. Your goal will be to calculate the cost of the fare for the city should charge to pay back the loan and the amount of subsidy needed to keep operating and maintaining it.

Midterm (22/10/2018)

The midterm will cover materials from the first 4 lectures in addition to a case study similar to assignment 1 to calculate some kind of fare or do an impact assessment for a bus line.

Assignment 2 (11/11/2018)

This is a surprise assignment, you will receive an email from the professor with the assignment and you will have 3 hours to draft a 2 pages memo and respond to this assignment. Assignment will start at 5:00 pm on 11/11/2018 (Sunday) and will be due in the same day at 8 pm. If this date and time and not convenient to all students other dates will be determined in class.

Assignment 3 (19/11/2018)

Assignment 3 will examine the current financing policies of public transport operations in Montreal. Students are expected to either criticize the current model while proposing a modified version or support the current model and state the reasons why the existing model is good and if any modifications are needed. Equity issues associated with the existing model or the proposed one should be discussed. It is important to show the effectiveness of the proposed policies using examples from other parts of the world. You are hired by an advocacy organization and your objective is to write for them a blog post of 2,000 words max or create a video of 3 minutes to show your opinion about the public transport operation financing and its prospects in Quebec please give evidence to support your arguments and case studies.

PS: Submissions will be shared with an advocacy organization in Montreal.

Assignment 4 (4/12/2018)

The fourth assignment, you will pick any of the below public transport project and complete a **business case** for this project stating why it's important, and how to make it a successful one. You can predict the demand for this new project and generate any kind of analysis needed to make the case for this project to go ahead or propose modifications to it from a demand or equity or environmental or social perspectives. For this assignment, you should bring case studies examples from other cities. The assignment will be written in a policy brief format (2 to 4 pages), and will be followed by 10 minutes in class presentation for each student during the final class date. You will have a time budget of 40 hours, all students should maintain a time log and should not exceed the 40 hours of work on the assignment. You won't be penalized if you do

pass the hours, yet it's an indication that you need to work on your time management skills. **Time logs should be submitted** with the final assignment in an additional sheet.

Project Name	CMA
Reseau Express Metropolitain	Montreal
Blue Line Extension	Montreal
Ottawa LRT Stage 2	Ottawa
Broadway subway + Surrey LRT	Vancouver
Green Line Stage 1	Calgary
Edmonton LRT Valley Line	Edmonton
London BRT	London
SmartTrack (including Eglinton West)	GTHA
Scarborough Subway Extension	GTHA
Regional Express Rail	GTHA
Eglinton LRT Planning and Design	GTHA
Relief Line Planning and Design	GTHA
Finch West LRT	GTHA

All submissions has to be printed and handed to the professor at the beginning of the class. In addition to a pdf version to be uploaded on my courses for all assignments.

In Accord with McGill University's Charter of Students' Right, students in this course have the right to submit in English or in French any written work that is to be graded.

Academic Integrity
McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/integrity for more information).

Disabilities
If you have a disability please contact the instructor to arrange a time to discuss your situation. It would be helpful if you contact the Office for Students with Disabilities at 398-6009 (online at http://www.mcgill.ca/osd) before you do this.

Dealing with Stress
If you feel stressed during the term do not hesitate to speak with any of the class instructors to discuss any possible needs around academic accommodations; students can also seek support from McGill's professional counseling services at: https://mcgill.ca/counselling/about.

Safety

McGill University shall strive to be recognized as an environmentally safe and responsible institution, and as a model of environmentally responsible living. (see www.mcgill.ca/tls/policy/environmental_policy). For all emergencies please contact McGill security Services at 514-398-3000.

Acknowledgment

Thanks to Prof. Kara Kockelman and Prof. David Levinson for providing many of the materials used in the class lectures and in the course outline. Thanks to Marie-Pier Viellette for her help in updating the reading materials and course contents.

Detailed Weekly Readings

Week 1: Introduction to course outline.

Gwilliam, K. (2008). A review of issues in transit economics. Research in Transportation Economics, 23:4-22.

Levinson, D. (2014). Wiki Book, Introduction
https://en.wikibooks.org/wiki/Transportation_Economics/Introduction

Week 3: Transport and the economy & transport and local economic development.

Vickerman, R. (2008). *Transit investment and economic development. Research in Transportation Economics, 23:107-115.*

Dev Bhatta, S. & Drennan. P. (2003). The economic benefits of public investment in transportation: A review of recent literature. Journal of Planning Education and Research, 22(3), 288–296.

Eno Center for Transportation and Bipartisan Policy Center, (2012). The Consequences of Reduced Federal Investment in Transportation. Washington, DC: Eno Center for Transportation and Bipartisan Policy Center. http://bipartisanpolicy.org/wp-content/uploads/sites/default/files/BPC-Eno%20Transportation%20Report.pdf

Goetz, A. (2011). The global economic crises, investment in transport, and economic development. In Button, K. & Reggiani A. editors. Transportation and economic development. Northampton, MA: Edward Elgar Publishing.

Other recommended readings:

Ansar et al. (2012). Does infrastructure investment lead to economic growth or economic fragility? Evidence from China. Oxford Review Of Economic Policy, (32)3: 360-390.

World Bank, (2015). Transport: Sector Results Profile: Sustainable Transport for All: Helping People to Help Themselves.
http://www.worldbank.org/en/results/2013/04/14/transport-results-profile

Week 5: Demand for Transport

Button, K. (2010). Transport economics. Cheltenham UK: Edward Elgar; 3rd edition. **Chapter 4.**

Lemp, J.D.& Kockelman, K.M. (2009). Understanding and Accommodating Risk and Uncertainty in Toll Road Projects. A review of the literature. Transportation Research Record (2132), 106-112.

Rahman S. & Balijepalli, C.(2016). Understanding the determinants of demand for public transit: Evidence from suburban rail operations in five divisions of Indian Railways. Transport Policy, 48: 13-22.

Miller, C.& Savage, I. (2017). Does the demand response to transit fare increases vary by income? Transport Policy, 55: 79-86.

Other recommended readings:

Steer, davies, gleave(2017). REM Forecasting demand
https://www.cdpqinfra.com/sites/default/files/pdf/rem_forecasting_2017_appendices.pdf

Small, K. & Winston, C. (1999). The Demand for Transportation Models and Applications. In Gomez-Ibenez, J., Tye, W., & Winston, C. editors. Essays in transportation economics and policy. Washington DC USA: Brookings Institution Press.

*11- 55. **Concentrate in the section starting from page 24 titled Advanced disaggregate demand models.***

Börjesson (2014). Forecasting demand for high speed rail. Transportation Research Part A, 70: 81-92.

Chiang et al. (2011). Forecasting ridership for a metropolitan transit authority. Transportation Research Part A, 45, 696-706.

Week 6: Costs and benefits of transport services

*Kockelman, et al (2013). **Chapter 1***

Levinson, D. (2014). Wiki Book, Costs *https://en.wikibooks.org/wiki/Transportation_Economics/Costs*

Harford, J.D. (2006).Congestion, Pollution, and benefit-to-cost ratios of US public transit systems. Transportation Research Part D, 11: 45-58.

Van Wee, B. (2007). Large Infrastructure projects: a review of the quality of demand forecasts and cost estimations. Environment and Planning B: Planning and Design, 34: 611- 625.

Other recommended readings:

Tirachini, A.& Hensher, A.D. (2011). Bus congestion, optimal infrastructure investment and the choice of a fare collection system in dedicated bus corridors. Transportation Research Part B, 45:828-844.

De Grange, L. et al. (2018). Cost, production and efficiency in local bus industry : An empirical analysis for the bus system of Santiago. Transportation Research Part A, 108:1-11.

Flyvberg, B. (2007). Cost overruns and Demand Shortfalls in Urban Rail and Other Infrastructure. Transportation Planning and Technology ,30 (1): 9-30.

Metrolinx (2017). 2017-2018 Metrolinx Business Plan *http://www.metrolinx.com/en/docs/pdf/board_agenda/20170628/20170628_BoardMtg_BusinessPlan_Report_EN.pdf*

Week 8: Pricing of transport services

Delucchi, M. (2000). Should we try to get the prices right? Access, 16: 14–21.

Levinson, D. (2014). Wiki Book, Pricing
https://en.wikibooks.org/wiki/Transportation_Economics/Pricing

Kockelman, et al (2013). **Chapter 2**

Inci, E. (2015). A review of the economics of parking. Economics of Transportation, 4: 50-63.

Batarce, M. & Galilea, P. (2018). Cost and fare estimation for the bus transit system of Santiago. Transport Policy,64:92:101.

Eliasson, J.&Mattson, L-G (2006). Equity effects of congestion pricing. Quantitative methodology and a case study for Stockholm, Transportation Research Part A, 40: 602-620.

Other recommended readings:

Fabusuyi, T. & Hampshire, R.C. (In press). Rethinking performance based on parking pricing: A case study of SFpark. Transportation Research Part A.

Proost et al. (2002). How large is the gap between present and efficient transport prices in Europe. Transport policy, 9:41-57.

Miller, C.& Savage, I. (2017). Does the demand response to transit fare increases vary by income? Transport Policy, 55: 79-86.

Sharaby, N. & Shiftan, Y. (2012). The impact of fare integration on travel behavior and transit ridership. Transport Policy, 21:63-70.

Week 9: Regulations and competition in transport (20/10/2017)

Levinson, D. (2014). Wiki Book, Regulation
https://en.wikibooks.org/wiki/Transportation_Economics/Regulation

Kockelman, et al (2013). **Chapter 3**

Hensher, D.A.& Stanley, J. (2010). Contracting regimes for bus services: What have we learnt after 20 years? Research in Transportation Economics, (29)1:140-144.

Mouwen, A.&Rietveld, P. (2013). Does competition tendering improve customer satisfaction with public transit? A case study for the Netherlands. Transportation Research Part A, 51:29-45.

Other recommended readings:

Aarthaug et al. (2018). 20 years of competitive tendering in the Norwegian bus industry- An analysis of bidders and winning bids. Research in Transportation Economics, In Press.

Amaral et al. (2009). Auction procedures and competition in public services: The case of urban public transport in France and London, Utilities Policy, (17)2:166-175.

Week 10: Movement and Location (27/10/2017)

Kockelman, et al (2013). **Chapter 4**

O'Regan, K. & Quigley, J. (1999). Accessibility and economic opportunity. In Gomez-Ibenez, J., Tye, W., & Winston, C. editors. Essays in transportation economics and policy. Washington DC USA: Brookings Institution Press. 437- 466.

Pickrell, D. (1999). Transportation and land use. In Gomez-Ibenez, J., Tye, W., & Winston, C. editors. Essays in transportation economics and policy. Washington DC USA: Brookings Institution Press. 403- 435.

Other recommended readings:

Kennedy et al. (2006). The four pillars of sustainable urban transportation. A Transdisciplinary Journal, (25) 4: 393-414.

Cervero, R. & Dai, D. (2014). BRT TOD: Leveraging transit oriented development with bus rapid transit investments. Transport Policy, 36: 127-138

Week 11: Investment, financing of transport, and revenues of transport

Levinson, D. (2014). Wiki Book, Revenue
   https://en.wikibooks.org/wiki/Transportation_Economics/Revenue

Kockelman, et al (2013). **Chapter 5**

Levinson, D. (2014). Transportist, A different way to evaluate new transport investment subsidy.
https://transportist.org/2014/11/04/a-different-way-to-evaluate-new-transport-investment-subsidy/

Medda, F. (2012). Land value capture finance for transport accessibility: a review. Journal of Transport geography, 25:154-161.

Chang, Z. & Phang, S.-Y. (2017). Urban rail transit PPPs : Lessons from East Asian cities. Transportation Research Part A, 105 :106-122.

Other recommended readings:

Sharma, R. & Newman, P. (2018). Can land value capture make PPP's competitive in fares? A Mumbai case study. Transport Policy, 64:123-131.

Roukouni, A. & Medda, F. (2012). Evaluation of Value Capture mechanisms as a funding source for urban transport: the case of London's Crossrail. Procedia Social and Behavioral Sciences, 48:2393-2404.

Greene, D.L. (2011).What is greener than a VMT tax? The case for an indexed energy user fee to finance us surface transportation. Transportation Research Part D, 16: 451-458.

Translink (2013). Overview of Potential Transportation funding Sources.
https://www.translink.ca/-/media/Documents/plans_and_projects/regional_transportation_strategy/Research/Overview%20of%20Potential%20Transportation%20Funding%20Sources.pdf

Chang, Z. (2014). Financing new metros – The Beijing metro financing sustainability study. Transport Policy, 32, 148-155.

Ljungberg, A. (2016). Marginal cost-pricing in the Swedish transport sector – An efficient sustainable way of funding local and regional public transport in the future ?Research in Transportation Economics, 59:159-166.

Week 12: Freight logistics

Button, K. (2010). Transport economics. Cheltenham UK: Edward Elgar; 3rd edition. **Chapter 10.**

Bhoopalam et al. (2018). Planning of truck platoons: A literature review and directions for future research. Transportation Research Part B, 107: 212-228.

Allen et al.(2018). Understanding the impact of e-commerce on last-mile light goods vehicle activity in urban areas: The case of London. Transportation Research Part D, 61: 325-338.

Goodchild, A. & Toy, J. (2018.) Delivery by drone: An evaluation of unmanned aerial vehicle technology in reducing Co_2 emissions in the delivery service industry. Transportation Research Part D, 61:58-57.

Malik et al. (2017). Urban freight-parking practices: The cases of Gothenburg (Sweden) and Delhi (India). Research in Transportation business & Management, 24:37-48.

Other recommended readings:

Levinson, M. (2006). The box. How Shipping Container Made the World Smaller and the World Economy Bigger. UK: Princeton University Press, **Chapter 2**, *p. 16 to 35 (Book available online - McGill library Website)*

Wygonik, E.& Goodchild A.V. (2018). Urban form and last-mile goods movement: Factors affecting vehicle miles travelled and emission. Transportation Research Part D ,61:217-229.

Week 13: Transport project evaluation, forecasting, and positive externalities

Levinson, D. (2014). Wiki Book, Positive Externality https://en.wikibooks.org/wiki/Transportation_Economics/Positive_externalities

Kockelman, et al (2013). **Chapter 6**

Thomopoulos, S. et al. (2009). Incorporating equity considerations in transport infrastructure evaluation: Current practice and a proposed methodology. Evaluation and Program Planning, 32:351-359.

Macharis, C. & Bernardini, A. (2015). Reviewing the use of Multi-Criteria Decision Analysis for the evaluation of transport projects : Time for a multi-actor approach. Transport policy, 37: 177-186.

Croft McKenzie, E. & Durango-Cohen (2012). Environment life-cycle assessment of transit buses with alternative technology. Transportation Research Part D, 17: 39-47.

Tudela, A. et al. (2006). Comparing the output of cost benefit and multi-criteria analysis: An application to urban transport investments. Transportation Research Part A, (40)5:414-423.

Other recommended readings:

Ward, E.J. et al. (2016). Theory and background of multi-criteria analysis : Toward a policy-led approach to mega transport infrastructure project appraisal. Research in Transportation Economics, 58:21-45.

Van Wee, B. (2012). How suitable is CBA for the ex-ante evaluation of transport projects and policies? A discussion from the perspective of ethics. Transport Policy, 19:1-7.

Rothengatter, W. (2017). Wider economic impacts of transport infrastructure investments: Relevant or negligible? Transport Policy,124-133.

Vickerman, R. (2017). Beyond cost-benefit analysis: the search for a comprehensive evaluation of transport investment. Research in transportation Economics, 63:5-12.

Week 14: Economic impact analysis and negative externalities

Levinson, D. (2014). Wiki Book, Negative externality
   https://en.wikibooks.org/wiki/Transportation_Economics/Negative_externalities

Kockelman, et al (2013). **Chapter 7**

City of Ottawa (2017) Transportation Impact Assessment Guidelines.
https://documents.ottawa.ca/sites/documents.ottawa.ca/files/tia_guidelines_en.pdf

Laird, J.J & Venables, A.J. (2017). Transport investment and economic performance: A framework for project appraisal. Transport Policy, 56:1-11.