Land use and Transportation Planning

(URBP 619) Winter 2020

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Office hours: Monday from 12 p.m. to 1 (or by appointment).


Time and Place

Time: Lectures on Tuesdays, 9:35 am – 11:55 am
Place: Macdonald Harrington Building, Room 409

Course Description

This course is designed to provide graduate students from urban planning, civil engineering, and closely aligned disciplines with an overview of land use and transportation planning in the U.S., Canada and, where appropriate, international settings. The content covers theoretical, policy, and practical perspectives. We then use the knowledge gained from this theory to understand the merits of making specific planning policies or infrastructure investments to design places and networks consistent with the goals and objectives of community planning. Closely aligned with the lecture portion of the course is an OPTIONAL lab to provide students with a “hands-on” experience with necessary methods, software or approaches. This lab time will be arranged with students based on their needs.

Course Objectives

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. Understand the key influences of, and interactions between, land use and transportation,
2. Think critically about land use-transportation policies,
3. Develop research skills in locating and understanding past theories studying the relationship between land use and transportation policy,
4. Critically analyze research that tests such theories,
5. Understand the institutional and political barriers associated with coordinated land use-transportation planning,
6. Actively discuss and debate contested political planning issues,
7. Target resources toward effective change, and
8. Identify detailed elements of the land use/transportation sub-field that may be appropriate for future thesis/project work.
Course Structure

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

Assignment and Evaluation Methods

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Description</th>
<th>Weighting</th>
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</thead>
<tbody>
<tr>
<td>Case study</td>
<td>Student are expected to do a 2 to 3 minutes video (as group of 2 to 3) and submit a policy brief (as individuals)</td>
<td>15</td>
</tr>
<tr>
<td>Accessibility assignment</td>
<td>Generate a map of cumulative-opportunities measure</td>
<td>10</td>
</tr>
<tr>
<td>Midterm exam</td>
<td>In class, covering weeks 1-6</td>
<td>15</td>
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<tr>
<td>Mode-share model</td>
<td>Generate a simple statistical model for travel demand using origin-destination and land-use data</td>
<td>15</td>
</tr>
<tr>
<td>Research paper</td>
<td>On a land use and transportation topic of your choice</td>
<td>25</td>
</tr>
<tr>
<td>Paper critique</td>
<td>Criticizing a relevant land use and transportation article</td>
<td>5</td>
</tr>
<tr>
<td>Reading reflections</td>
<td>Responses to weekly reading through mycourses</td>
<td>10</td>
</tr>
<tr>
<td>Participation</td>
<td>Attendance &amp; appropriate comments/questions</td>
<td>5</td>
</tr>
</tbody>
</table>

Late Policy

In fairness to all students, late assignments will be penalized 10% for each day late. The only exception is for documented family and/or medical emergencies.

Lectures

The lectures are organized in two sections. The first section will typically discuss theory about the week's topic. The second section will include case study presentations by the groups.

Lecture Component: The first part of the lecture consists of discussions of the readings and therefore you must READ THE MATERIAL BEFORE CLASS. Students are expected to come to class ready to be active participants in the discussion. The second section concentrates on the case studies. 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.

If you miss a class you are required to write a 2 page summary of the readings and submit it to the instructor prior to the next lecture. Failing to do so will subject you to a 10% deduction from your reading reflection and participation marks.
## CLASS SCHEDULE

<table>
<thead>
<tr>
<th>Lecture/ Date</th>
<th>Topic</th>
<th>Case Study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>7/1/2020</td>
<td>Course Introduction: Forming Groups and Assigning Case Studies</td>
</tr>
<tr>
<td></td>
<td>14/1/2020</td>
<td>No Class (Annual TRB Meeting)</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>21/1/2020</td>
<td>Introduction to Land use and Transport Planning</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>28/1/2020</td>
<td>Measuring Accessibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SUBMIT TITLE AND COPY OF PAPER CRITIQUE ARTICLE TO PROFESSOR</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>4/2/2020</td>
<td>Land use development: Home Buying and Firm behavior</td>
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<tr>
<td></td>
<td></td>
<td>ACCESSIBILITY EXERCISE DUE</td>
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<tr>
<td><strong>5</strong></td>
<td>11/2/2020</td>
<td>Travel behavior and land use</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAPER CRITIQUE DUE</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td>18/2/2020</td>
<td>Transport and land use modelling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PROPOSAL FOR RESEARCH PAPER DUE TO PROFESSOR</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td>25/2/2020</td>
<td>Evaluation Tools and Equity Issues</td>
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<td></td>
<td></td>
<td>MIDTERM EXAM</td>
</tr>
<tr>
<td><strong>8</strong></td>
<td>3/3/2020</td>
<td>No Class: reading week</td>
</tr>
<tr>
<td><strong>9</strong></td>
<td>10/3/2020</td>
<td>Parking Policy, Design Elements and Transit-Oriented Development</td>
</tr>
<tr>
<td><strong>10</strong></td>
<td>17/3/2020</td>
<td>Current Debates in Land use and Transportation</td>
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<td></td>
<td>MODE-SHARE MODEL EXERCISE DUE</td>
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<tr>
<td><strong>11</strong></td>
<td>24/3/2020</td>
<td>Millennials and Generational Gaps</td>
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<tr>
<td><strong>12</strong></td>
<td>31/3/2020</td>
<td>Technology and Automation</td>
</tr>
<tr>
<td><strong>13</strong></td>
<td>7/4/2020</td>
<td>Conclusions &amp; Future Challenges</td>
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Readings and Reflections (10 points)

Readings for the course draw from various sources: (1) *A History of the Future in 100 Objects* authored by Adrian Hon (2015) available online as an e-book, (2) additional articles and book chapters that you can access online through the University’s library or elsewhere.

Every week, each student is required to submit on mycourses a paragraph of no more than 300 words reflecting on the assigned readings. Please use bullet points when possible. Among other things, your one-paragraph reflection can describe a point you liked in the reading and that you think is important for practice or can include a link to a relevant video you would like to watch and discuss in class. These reflections and questions should represent your thoughts about the readings and the take home lessons. It is important that your paragraph be directed toward practical applications and their relation to theories discussed in the readings. You need to be critical in your thoughts and ideas presented. Marks will be assigned based on content and completion.

A separate discussion session will be opened for every week’s reading. Students are encouraged to engage in interactive discussions but, remember, your initial reflection must be submitted before the discussion closes. Submissions must be completed by Monday (the day before class) at noon (12:00 pm).

Weekly Reading Assignments

Lecture 1: Introduction to course (7/1/2020)

Lecture 2: Introduction to Land use and Transport Planning (21/1/2020)

Lecture 3: Measuring Accessibility (28/1/2020)

**Lecture 4: Land use development: Home Buying and Firm behavior (4/2/2020)**

**Lecture 5: Travel behavior and land use (11/2/2020)**

**Lecture 6: Transport and land use modelling (18/2/2020)**

**Lecture 7: Evaluation tools and equity issues (25/2/2020)**

**Optional --**


Lecture 8: Parking Policy, Design Elements (10/3/2020)


Lecture 9: Current Debates in Land use and Transportation (17/3/2020)

Topic 1
1- https://www.wired.com/story/elon-musk-awkward-dislike-mass-transit/


Topic 2


**Lecture 10: Millennials and Generational Gaps (24/3/2020)**

**Lecture 11: Technology and Automation (31/3/2020)**
Hon, A. 2015. *History of the Future in 100 Objects.* (Chapter 10, 59 and 81)

**Lecture 12: Conclusions & Future Challenges (7/4/2020)**

**Case Study (15 Points)**

You will be working as an advisor for the Quebec Minister of Transport of Canada to help him in learning about experiences from around the world regarding certain topics that he would like to investigate for Canadian context. This is a group assignment as well as an individual one.

**Each group of students (2 to 4 students)** will do a 2 to 3 minutes video about a topic that the Minister would like to know more about and you will be discussing the land use and transport aspect of each topic. The following is the list of topics:

- BRT in Latin America
- Planning for mega events (Olympic games)
• Planning for sustainable transport in mid and small size cities
• High-speed rail
• Coexistence of Freight and Passenger networks
• Connecting to Airports
• Regulating ride-hailing

You can use materials from any of the assigned readings or do your own search and find materials from any other sources. The goal of the educational video is to educate policy makers in Canada about how to use land use and transport planning were used in the above mentioned topics around the world.

In addition to the video developed as a group, each student should draft a one-page policy brief (12-point font, one-inch margins) to the minister responsible for the issue discussed. This policy brief will cover the same area you discussed in your video. The goal of the policy brief is to help Canadian policy makers understand the importance of land use and transport in relation to case studies and recommend appropriate policies that can fit within a Canadian context. The policy brief is an individual assignment while the presentation is a group one. When more than one student is working on the same case study, they should coordinate to adopt a different perspective or focus in their policy briefs.

The Policy Brief is due online one hour before the class date as the topics are listed in the class schedule. Presentations are due one day prior to the class when you will be presenting and you should email it to the professor. The presentation will be followed by a question and answer period.

Please add one blank page at the end of the document to enable the professor to write comments on.

Accessibility exercise (10 points)

This is a hands-on exercise to generate accessibility measures by walking in a Montreal neighborhood. This exercise requires mastering of Excel pivot tables and basics of geographic information systems (GIS). Students will be provided with a travel time or a distance matrix, a shapefile of the neighborhood, and number of destinations in each dissemination area in the studied neighborhoods. The goal of the exercise is to generate two accessibility to shopping maps for two neighborhoods (cumulative opportunities 10 minutes walking). Deliverables should be two pages maximum, which includes 2 maps and 500 words maximum of text explaining the maps and assumptions used to generate these maps. We expect that students include the essential cartographic elements required to effectively communicate with maps. A printed version of the assignment is due to the professors on February 4th 2020 at the beginning of the class and a pdf version of the submission is due online in my courses at the same time.
Please add one blank page at the end of the document to enable the professor to write comments on.

**Mode-share model exercise (15 points)**

This brief assignment is designed to familiarize you with working with origin-destination data, one of the most common types of data used by transport planners, and to allow you to practice basic statistical analysis. At their simplest, origin-destination surveys collect information from people about their travel activities during specific periods of time, often a typical weekday. Survey questions cover, among other things, where people went, how they got there and key sociodemographic characteristics for the individual and household. Montreal’s O-D survey is conducted once every five years and collects data from 5% of households in the larger metropolitan area. Each individual trip is a separate observation. In this assignment, you will use data from the 2013 Montreal O-D survey to construct a basic public-transit mode share model. You will have to use Excel pivot tables (which you used for your accessibility assignment) to tally and summarize household and Census tract-level travel information.

You will need to select a mode to analyze, walking, cycling, or public transport based on your interest. You are trying to answer the following research question: To what extent does land use impact mode choice?

You will limit your analysis to households with 2 or more individuals. So all one person household should be removed from the analysis. You will have to create a so-called “dummy” variable with a value of 0 or 1 to indicate whether someone in the household took at least one trip by your selected mode of choice to analyze. You will then have to calculate the percentage of households in each census tract that meet the criterion of taking of at least one trip using your mode of interest (your 1st dependent variable) and another variable of those household that meet the criterion of taking at least 3 trips by your mode of choice (your 2nd dependent variable). Your goal is to generate two simple linear regression models to explain how a selection of household and land-use factors influence the percentage of households in each census tract that took at least one trip with your mode of interest during the survey period (model 1) and the percentage of households in each census tract that took at least three trips with your mode of interest during the survey period. For your explanatory variables (independent variables), select at least two census-tract level sociodemographic variables—such as median household income or percent unemployment—and at least two land-use variables—such as population density, diversity of land use and distance to nearest rail stop. You can use any publicly available data source, such as the Census or Open Street maps, and some basic GIS calculations to prepare your explanatory variables. Your deliverable should be two to three pages maximum and include the regression results table and a map of your choosing. It should be 600 words maximum of text explaining the key results. Assignment is due March 17, 2020 at the beginning of the class as a pdf version submitted online in my courses. If needed, we will arrange lab time during the week before the assignment is due to help with this assignment if needed.
Please add one blank page at the end of the document to enable the professor to write comments on.

**Paper Critique (5 points)**

Each student will select an article from an academic journal on a land use and transportation topic (for example Journal of Transport and Land Use, the Journal of the American Planning Association, Transportation Research Record, Journal of Planning Literature, Environment and Planning part A and B, Transportation). The aim of this exercise is to get familiar with the literature and be able to criticize an article constructively. It is better to select papers on the same topic as your final research paper. Papers must be published after 2015

- A hard copy of the selected paper is due to the professors on due: **January 28, 2020 as well as online through mycourses at 9:30 am.**
- A one-page maximum (double-spaced, 12 point font, one-inch margins) paper critique due online **February 11, 2020 at 9:30 am.**

The one page review should be critical about the paper—not just copying and pasting the abstract. Concentrate on the lessons learned, points of strength in the paper and points of weaknesses, if any. Critical appraisal of a paper requires in-depth reading. The following is a list of critical appraisal points. Some of these points were obtained from Heller, R., Verma, A., Gemmell, I, Harrison, R., Hart, J. & Edwards, R. (2008). Critical appraisal for public health: A new checklist. *Public Health*, 122, 92-98.

1- Does the paper title reflect the contents?
2- Does the abstract summarize the study adequately?
   a. Does it include the research question?
   b. Does it briefly explain the methods?
   c. Does it briefly explain the findings and policy implications?
3- What is the main research question? And what is the expected hypothesis?
   a. Is the research question stated clearly
   b. Are there any sub-questions
4- Relevance of the research question or hypothesis (Who cares)
5- Is the relation between this research paper and previous studies stated clearly in the paper? (appropriate literature review)
6- Is the study design appropriate for the research question? Did the authors use the appropriate methods?
7- Did the study use the appropriate data needed to answer the research question?
8- Is the study looking at a sample or an entire population?
   a. Sampling methods
   b. Is it a representative sample
9- What kind of statistical methods, if any, is used? Is this the most appropriate method?
10- Are the statistics easy to read and understand?
11- If the study includes a GIS component was it well explained?
12- If the study includes maps do they follow the appropriate cartographic rules (scale bar, north arrow, easy to understand and to differentiate legend etc.)?
13- Clarity of graphics and tables?
14- Can and should the results of this study influence the urban planning field?
15- What is the Policy relevance of the study?
16- To what extent the study can address a wider audience?
17- The conclusion section summarizes the paper in an appropriate manner?
18- Is the paper well organized and written? Does it flow smoothly or the authors jump from one point to the other without adequate transitions?

Of course, you are not expected to reply to each of these points; these questions are provided to give you are sense of how you may want to organize your criticism.

Please add one blank page at the end of the document to enable the professor to write comments on.

Research Paper (25 points)

No more than 11 pages (double spaced, 12 point font, one-inch margins) on a topic of the student’s choice (due: April 14, 2020 at 11:30 pm) including the abstract.

• A 2-page maximum proposal including a title, one to three paragraphs describing the topic(s) to be covered, the specific issue to be researched, and the literature to be synthesized (at least 3 articles to be included as references), and the data (if any) to be analyzed (due: February 18, 2020). If you are planning to use Conveyal software please indicate so in your proposal and the region you want to do accessibility research for.

Below is a list of possible topics; please do not limit yourself to these topics

• Deterrents of using a certain mode of travel
• Effects of transportation externalities on land values (example noise and pollution)
• Measuring Sprawl. Is it possible?
• Effects of Urban forms on commuting behavior
• Effects of rail on property values
• Effects of parking policies on travel behavior
• How land use planning can benefit from Intelligent Transportation Systems
Effects of events on land use and transportation planning
Modeling the growth of Montréal’s freeways
Pedestrian and bicycle safety in downtown
Travel behavior of university students and staff
Measurements of neighborhood accessibility
Monitoring pedestrian movements in downtown
Analyzing origin destination surveys
Understanding public transit demand and/or ridership trends
Comparative analysis of transport policies between cities
Car ownership around transit hubs
Freight movement in cities
Transport and its relation to individual energy and productivity at work
Urban social dynamics and transport
Transport planning for seniors
Transport planning for people with disabilities
Analyzing and visualizing bicycle counter data (requires special communication with EcoCounter)
Identifying systematic errors in survey design
Assessing the ordering of questions in transport and land use surveys and its impacts on quality of responses
Effects of fluctuation in schedules on accessibility measures.

A special agreement is made with Conveyal to get access to their online software to generate accessibility measures for Montreal for free. Students interested in using this software as part of their final project should communicate with the Professor to grant them access. More about the software can be found here, https://www.conveyal.com/transit-data-tools/

Your paper could be a single case study analysis, comparative or multiple case study analysis, or statistical investigation using a large data set. You will need to clearly define the units of observation and approach that you plan to take in your proposal. Speak to us early in the course if you are unclear about your topic.

Before working on your papers please read: Ten simple rules for structuring papers by Konrad Kording and Brett Mensh,
http://www.biorxiv.org/content/biorxiv/early/2016/11/28/088278.full.pdf

Please add two blank page at the end of the document to enable the professor to write comments on.
Submission Rules

In Accordance 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. If you plan on submitting your paper in a language other than English please send us an email stating so.

Please format all written submissions as follows:

- Double-spaced,
- 12 point font,
- One-inch margins
- References APA 6th edition

Please add one blank page at the end of all submissions to enable the professor to write comments on.

Mid-term (15 Points)

An in-class mid-term will ask you to answer several questions about the readings and the material discussed in class. The questions may ask you about one text, or ask you to compare texts on a specific issue (short answer). You will not be quizzed on esoteric details, but you will need to call upon the specific information in the texts or lectures. To do well on the exams it is better to know some of the material very well, rather than all of the material superficially. You need to construct well-crafted arguments. The midterm exam (February 25, 2020) will test your ability to accurately engage in a close reading of the texts and to think critically about them.

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. Accommodations will be organized through the OSD office, yet you will need to inform the instructors.

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 a safe and responsible institution. Please see this link for more information regarding campus safety programs and services in place to ensure the safety of McGill students (https://www.mcgill.ca/campussafety/security-services/services). For all emergencies please contact McGill security Services at 514-398-3000 or call 911.