USP 570-670: TRANSPORTATION AND LAND USE
SPRING 2007

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COURSE OVERVIEW AND REQUIREMENTS

Overview and Objectives

This course will examine the interactions of the transportation system with land use. We will be defining "land use" broadly to include many dimensions and scales of the built environment. We will only be looking at topics and issues where transportation and land use intersect. Other classes cover transportation and land use policy and planning more broadly and specifically, but separately, e.g. USP 556, 544, and 542. This course tries not to duplicate what is covered in those courses. The course is intended for second-year MURP and PhD students and assumes some previous coursework, including micro-economics (e.g. USP 515) and statistics (e.g. USP 535). In addition, knowledge of GIS is useful for some of the paper options, but not required.

By the end of the course, students should

- Understand the theories behind transportation and land use interactions, including accessibility, urban structure, and location theory;
- Know about the historical evolution of cities related to transportation infrastructure;
- Understand the impacts of transportation infrastructure on land use and the impacts of land use and the built environment on travel patterns;
- Be able to critically evaluate policies aimed to influence transportation and land use jointly; and
- Know about various policy instruments that aim to influence travel through land use or land use through transportation infrastructure.

Grading

Reading Reflections	24%
Seminar discussion	16%
Analytical research paper	60%

READING REFLECTIONS/SEMINAR DISCUSSION

For each topic listed, there are required and optional readings. For each topic everyone is expected to read the required readings **and one** of the optional readings. You will prepare a 1-3 page (single-spaced) reflection on the readings to hand in during class (one written reflection for the entire week's readings). The reflection should very briefly summarize or highlight the key points in the readings and then reflect on them, for example by critically evaluating the findings, raising questions about their

applicability, or suggesting further evaluation or research. Then, be prepared to discuss the readings in class, in a seminar format. In particular, you should be prepared to describe and discuss the optional reading that you did, so that you can share this knowledge with the rest of the class. If you want to read something that is not on the syllabus list, but is applicable to the topic, check with me as least one week ahead. Reflections start on Week 2 (April 9) with the Week 2 readings (Theory and History). ***On-line participation can also count.***

Each week's written reflection is worth up to 3 points. Your participation in the discussion, in class or on-line, is worth up to 2 points. There are eight weeks (weeks 9 & 10 are combined), totaling 24 and 16 points, respsectively.

ANALYTICAL RESEARCH PAPER

In this paper, you will explore a question in depth, using the literature and your own data analysis. There are five topics to choose from, plus one group option. If you want to do something else, you must get my approval by April 23. Each paper will take time, so do not wait until the week before. You can work in pairs to obtain and organize the data required for each paper. But, the analysis and write-up must be done individually.

Details: 15-20 pages, double-spaced, not including figures, tables, and references.

Initial literature review due in class on April 30. This should also include a brief description of what else you plan to do in the paper, e.g. what data you will be analyzing.

Final paper due Monday June 11 (finals week) when we meet (exact time to be determined by class, likely 6:40 pm, but could be earlier if everyone is available).

Topic 1: How should we measure sprawl?

Several researchers, ranging from *USA Today* to leading academicians, have attempted to measure sprawl. Two of the more thorough examples are:

- Burchell, et al, *The Costs of Sprawl* (TCRP Report #74) http://gulliver.trb.org/publications/tcrp/tcrp_rpt_74-a.pdf
- Ewing, Pendall & Chen, *Measuring Sprawl and Its Impact,* http://www.smartgrowthamerica.org/sprawlindex/sprawlindex.html

There is also a discussion of the topic on Prof. Randy Crane's blog (http://planningresearch.blogspot.com/2006/02/meaning-and-measure-of-sprawl.html) with a link to a new article on the topic using remote sensing.

Your paper should:

- Include a review of the literature on the topic of measuring sprawl. This should enlighten your entire discussion and evaluation.
- Describe how the two sprawl measures were created. You can use the two above or choose another pair. Your description should be understandable to a general audience, e.g. an elected official. Explain the outcomes of the rankings. Use examples of specific areas that rank as expected or not. Evaluate the indices in terms of explanatory power. Does the index measure what it claims to measure? Is it a good basis for evaluating sprawl?

- Create your own measure of sprawl. You can use the data from either source or find additional data. Explain why you did what you did and compare the results to the other rankings.

- Consider this issue: Historically, both rail and highways have helped disperse the population. In the future, telecommunications might as well. Do either of the sprawl measures control for the possibility that any motorized transit can disperse human activity? Why should this problem with the index concern us? Or shouldn't it? How do you think transit should be factored in to measures of sprawl?

- Draw some conclusions and recommendations. What would you propose as a reasonable way to measure sprawl?

(Credit to Prof. Brian Taylor, UCLA, for pieces of this assignment.)

Topic 2: Does urban form affect commuting behavior?

Several of the articles in the syllabus look at the question of how urban form at the city or regional scale affects travel and commuting in particular. Two examples are:

Gordon, P., A. Kumar, et al. (1989). "Congestion, Changing Metropolitan Structure, and City Size in the United States." *International Regional Science Review* 12(1): 45-56.

Crane, R. (2003). "Traffic and Sprawl: Evidence from U.S. Commuting, 1985 To 1997." *Planning and Markets* 6(3).

Since both of these were written, more recent data has become available – the 2001 NHTS, the 2000 Census, and newer American Housing Survey (AHS) data. Your paper should:

- Review and critically analyze the existing literature examining commuting and urban form at a large scale

- Conduct your own evaluation, using more recent data. You can use similar data and techniques as one of the articles cited, or go off on your own. But, your analysis must be national in scale; you can not just look at one region.

- Present your results and draw conclusions.

Topic 3: Does light rail transit (or a bike/walk trail) influence property values?

Several researchers have attempted to assess the affect of proximity to light rail stations on property values. A few examples from the Portland area include:

Al-Mosaind, M., K. Dueker, et al. (1994). "Light Rail Transit Stations and Property Values: A Hedonic Price Approach." *Transportation Research Record* 1400: 90-94.

Chen, H., A. Rufolo, et al. (1998). "Measuring and Impact of Light Rail Systems on Single-Family Home Values: A Hedonic Approach with Geographic Information System Application." *Transportation Research Record* 1617.

Knaap, G. J., C. Ding, et al. (2001). "Do Plans Matter? The Effects of Light Rail Plans on Land Values in Station Areas." *Journal of Planning Education and Research* 21: 32-39.

There are far fewer studies looking at the influence of bike/walk trails on property values.

Your paper should:

- Review and critically analyze the existing literature examining the effect of rail (or trail) on property values
- Conduct your own evaluation for one of the MAX lines (or trails) in the Portland area, using RLIS data and GIS. You will need to conduct a multiple regression analysis.
- Present your results and draw conclusions.

Topic 4: Can rail succeed in the suburbs?

There are two rail projects underway in the Portland region that are focused in the suburbs: the I-205 MAX green line and the Washington County commuter rail. Critics of new rail systems often point to low ridership and high costs (see, for example, Prof. Mildner's op-ed piece in *The Oregonian* on March 30, 2006). There are plenty of examples in the US of high-cost light rail systems that have fallen far short of expectations and many of these systems focus on downtown. Can Portland expect rail to work in the suburbs? Your paper should:

- Review and analyze the academic literature evaluating new rail systems. There are several classic articles on ridership projections.
- Pick either the I-205 MAX or Washington County commuter rail and carefully review the planning document(s) for the project, including ridership projections and land use analyses. Explain the project, ridership expectations, how those projections were made, and assumptions about land use and land use planning.
- Conduct your own evaluation of the potential for success for the project. To do so, you will need to use some data. This might include the Census, RLIS, and/or site visits. You will also need to define "success." Your definition must include ridership, but can go beyond that.
- Critically evaluate the plans and projections for the project, using your own evaluation. Draw conclusions about what is likely to happen and what should to be done.

Topic 5: How does parking influence travel and urban form?

Don Shoup, in his new book *The High Cost of Free Parking*, makes a strong case that cities have required developers to build too much parking, which encourages more driving, which, in turn, promotes less dense development and sprawl. His arguments are based on his own research, as well as others, such as:

Willson, R. (1995). "Suburban Parking Requirements: A Tacit Policy for Automobile Use and Sprawl." *Journal of the American Planning Association* 61(Winter): 29-42.

Jia, Wenyu, and Martin Wachs (1998). "Parking Requirements and Housing Affordability: A Case Study of San Francisco," UCTC Research Paper #380.

The Portland region is unique, in that Metro has set parking *maximums* that all cities and counties must follow.

Your paper should:

- Review and analyze the academic literature on parking and its impact on travel and land use.

- Choose at least three case studies of developments in the Portland area. Focus on a single land use type, such as offices, multi-family residential, grocery stores, etc. The developments should not be in downtown Portland and should not be single-family homes. Find out as much as you can about the projects, including when they were built, what the auto parking requirements were, and how much parking was built.

- Conduct at least two parking occupancy counts at each project, during a peak parking time, to see how much parking is used. Explain your methodology in the paper.

- Present and evaluate your findings in light of the literature.

Option: TOD Analysis

If a small group of students is interested in conducting a survey and pedestrian audit of a suburban TOD in the region I am open to discussing that option. This would build upon the TOD surveys I have already conducted. Possible TODs include Russelville Commons (102nd & Burnside), Center Commons (60th & Glisan), Gresham Central Apartments, LaSalle Apartments (Beaverton), and Central Point (Gresham). The group would be responsible for resident survey distribution, data input, and analysis. Depending upon the size of the group and the TOD selected, you would also conduct a pedestrian audit of the area and/or conduct surveys of commercial establishments.

COURSE WEB SITE

There is a WebCT web site for the course. You must have an ODIN account to access WebCT. WebCT course sites can be accessed at *webct.pdx.edu*. If you're registered for the class and have an ODIN account, you'll be added to the course web site automatically. The readings will be on the web site, so access is very important.

Bulletin Boards: This is a place you can bring up relevant topics and issues. Undoubtedly during the quarter you will come across articles in the newspaper or other information that relates to the class. Please share these with everyone via the web site. There will be section set up for each week's readings. You can post your thoughts and questions about the readings here.

Course Content: This section of the site will have lecture materials, additional information and references, and links to readings.

Grading Policies

Incomplete grades. I will only assign an incomplete (I) grade when circumstances are consistent with PSU's policy on incomplete grades, shown below. "Circumstances must be unforeseen or beyond [your] control." In other words, I do not give incompletes for poor planning on your part, e.g. you got too busy with work and your other classes. If you do encounter unforeseen circumstances, approach me as soon as possible about entering into a written agreement for an incomplete grade.

> From the PSU Bulletin:
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> "A student may be assigned an I grade by an instructor when all of the following four criteria apply:
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> 1) Quality of work in the course up to that point must be C level or above.
>
> 2) Essential work remains to be done. "Essential" means that a grade for the course could not be assigned without dropping one or more grade points below the level achievable upon completion of the work.

3) Reasons for assigning an "I" must be acceptable to the instructor. The student does not have the right to demand an "I". The circumstances must be unforeseen or be beyond the control of the student. An instructor is entitled to insist on appropriate medical or other documentation. In no case is an “Incomplete” grade given to enable a student to do additional work to raise a deficient grade.

4) A written agreement, signed by both the student and the instructor, should include a statement of the remaining work to be done to remove the "I" grade, and the date, not to exceed one year from the end of the term of enrollment for the course, by which work must be completed in order to earn credit toward the degree. The instructor may specify the highest grade which may be awarded upon completion; the grade awarded should not exceed the level of achievement attained during the regular course period.”

Late assignments will be marked down – one-third of a grade per day late. “One-third of a grade” is, for example, from A to A-, B+ to B, etc. (or 3.3% using the scale below). As with incomplete grades, I generally do not allow students to turn things in late without assessing this penalty, except in unusual circumstances, e.g. medical emergencies. Having too much work in other classes or at work/internship does not count. All students have those challenges.

OTHER STUFF

Plagairism and Citations

You must cite all of your sources in your work. Please review this web site about citations: http://www.lib.pdx.edu/instruction/survivalguide/writeandcitemain.htm

I am flexible about which style of citations you use, e.g. MLA, APA, Chicago, etc. – just be consistent. The general rule is that you must include enough information that the reader could find the original source. I discourage the use of numbered footnotes for the types of writing you will do for this class. I recommend a style that places the author’s name and the year of the publication in parentheses after the quote or reference, e.g. (Dill, 2005).

Transportation Seminar

I encourage you to attend the weekly Transportation Seminar held on Fridays, noon to 1:30 pm in 304 Urban Center. The schedule of speakers and topics is at http://www.cts.pdx.edu/seminars.htm. You can also watch the seminars on-line, live or archived. You may also take the seminar for one credit (USP 407/507).

COURSE SCHEDULE

Each week's readings will be listed on the WebCT site. The required readings will be available on-line, either through the WebCT site, PSU Library's Electronic Reserves or original on-line sources. Most of the optional readings will also be available on line or in the Library. **I will be updating the reading lists**, particularly the optional readings, during the quarter on the WebCT site.

Week 1 (April 2) **Course Overview**

Required reading
Deakin, Elizabeth (1991), "Jobs, Housing, and Transportation: Theory and Evidence on Interactions Between Land Use and Transportation," in Transportation Research Board, "Transportation Urban Form, and the Environment." Special Report 231.

Optional
Giuliano, G. (1995). "The Weakening Transportation-Land Use Connection." Access(Spring): 3-11.

Cervero, R. and J. Landis (1995). "The Transportation-Land Use Connection Still Matters." Access 7(Fall): 2-10.

Week 2 (April 9) **Theory and History (2 separate topics)**

Week 3 (April 16) **Three Debates**
Jobs-Housing Balance
Sprawl
Spatial Mismatch, Access to Employment

Week 4 (April 23) **The Impact of Transportation Infrastructure on Land Use**

Week 5 (April 30) **Impacts of Land Use on Travel (Part 1)**

Week 6 (May 7) **Impacts of Land Use on Travel (Part 2)**
Transit-Oriented Development
New Urbanism
Health & Physical Activity
Self-Selection, Residential Choice

Week 7 (May 14) **Specific Elements of Urban Form**
Streets
Parking
Crime/Safety

Week 8 (May 21) **International Comparisons**

Weeks 9 & 10 (May 28 holiday, June 4) **Decision-making, Planning Tools, Implementation**

Week 11 (June 11) **Discussion of analytical paper findings**
Monday evening