PPDE 644: LAND USE AND TRANSPORTATION PLANNING

PPDE 644, Spring 2020
Day/Time: Monday, 2 p.m. – 5:20 p.m.           Seth Contreras, PhD
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DESCRIPTION:

This is a graduate seminar on land use and transportation. The land use – transportation link has become a staple of urban planning. Hardly a transportation plan is written nowadays that does not seek to integrate land use patterns and transportation or to leverage the interactions between transportation and land use. This is not a new idea. In 1954, Mitchell and Rapkin published *Urban Traffic: A Function of Land Use*, and the idea that traffic patterns depend on flows between trip origins and destinations (hence, land use) is obvious and as old as transportation itself. Yet the policy context, and our scientific knowledge of the topic, have both changed in ways that require careful study. Moreover, climate and equity measures are at the forefront of most governing bodies’ agendas, including resiliency and affordability. This course is built around four propositions.

1. **The ‘land use – transportation’ link is behavioral.** We will develop the key aspects of social scientific theory that illuminate how land use patterns influence travel and how transportation infrastructure influences the spatial pattern of urban growth.

2. **Economics is helpful.** This is not a course in economics, per se, but students must understand the markets involved in interactions between land use and transportation. There are two directions of the land use – transportation interaction: (a) the impact of transportation infrastructure on urban growth patterns, and (2) the influence of patterns of origins, destinations, and accessibility on travel decisions. Each involves different markets, and the theory and evidence for each will be discussed. Certainly those markets interact, but the modeling interaction between those markets is a frontier research topic and, interestingly, has been at the frontier for about four decades. For that reason, we will focus on understanding the causal links from transportation to land use and from land use to travel largely as separate paths, leaving the integration of those paths to the research community.

3. **Policy should be theoretically grounded.** We will focus on moving our learning from theory to practice. There is a broad body of theory that informs interactions between transportation and land use and mountains of empirical evidence. You will learn the key theories and the nature of the empirical results on land use and transportation in this class. The first few weeks, for that reason, will be abstract, but you will learn to apply that learning to practice.
4. **Planning must be holistic.** Land use – transportation planning is a comprehensive, holistic, and context sensitive endeavor. We learn the theories and the empirical relationships to build vibrant transit-oriented developments, or to improve mobility and air quality in specific places, or to support multi-modal travel in communities and neighborhoods. In each case, the sensibility of an urban designer and the concepts of sense of place and quality of life suggest that there is a totality to the urban experience that cannot be reduced to individual markets and a multitude of elasticities. Transportation is intimately bound up with our daily lived experience in the built environment. We will learn the constituent parts, in a scientific manner, but ultimately any good planner must integrate those parts into a larger totality – a plan. Students will be divided into group projects where you will be assigned to work in teams to put together the theory that you learned in the service of a small, skeleton land use – transportation plan.

**LEARNING OBJECTIVES:**

Students will learn:

1. The key theories that undergird land use – transportation interactions,
2. How an understanding of land markets and the derived-demand approach to travel behavior provide useful frameworks for land use – transportation planning,
3. How existing evidence can inform land use – transportation planning,
4. Travel data collection methods, with a focus on electronic technologies (you will not become expert in these technologies, but you will get an introduction),
5. Some of the policy and planning context for regional land use – transportation planning, and
6. Applications of land use – transportation planning in developing country contexts (most of the class will be focused on the U.S. and developed country contexts, though).

Additionally, through a group project, students will practice linking theory and evidence to holistic and context-sensitive land use – transportation planning efforts. In short, students will be trained in how to plan in ways that builds from a base of theory and evidence but that also grapples with the totality of the lived experience of a neighborhood land use – transportation plan – as much so as can be done in a short course.

**COURSE PLAN:**

This course will be run as a seminar. Students are responsible for being actively engaged in learning the material. This will occur in three ways. First, half of each class will be devoted to discussions of the week's readings. Second, students will be required to read materials and present a summary of selected readings during the quarter. This requirement is discussed in more detail below. Third, students will work on a group project and will present their work to the class in Week 15. This also is described below.
Ph.D. STUDENTS:

Doctoral students are welcome in this class. Parts of the course – the group project in particular – are intended more to train future practitioners. Ph.D. students (and masters students) should note that the reading list includes several optional readings. Doctoral students will be expected to choose at least one third of the optional readings and to agree to read those and write an individual term paper in addition to other course assignments. Doctoral students must do all the required readings, of course, and all readings that are required for Ph.D’s but optional for masters students. The term paper should be chosen in conjunction with Professor Contreras by the end of the second week of class. Please give professor Contreras a written statement of your term paper by the end of Week 2 (again, this is doctoral students only.) The doctoral student term paper will be in lieu of the group project. The doctoral student term paper will include research that goes beyond the readings on this syllabus. Doctoral students will write approximately 15 to 20 pages for these papers, and the doctoral student papers will most likely be academic literature reviews on a topic in land use and transportation. Doctoral students will not participate in the group project – instead, for doctoral students, the 15-20 page term paper will be 55% of your grade.

READINGS

Many of the readings are available on the web. The readings will also be available on Blackboard.

The following web links will also be useful as background – these are not required but may provide portals to interesting information.

Bureau of Transportation Statistics – an exhaustive repository of data and reports:  www.bts.gov

National Transportation Library – excellent, searchable, catalog of articles and reports on transportation – includes one of the best catalogs of agency reports -- http://ntl.bts.gov/
GRADES:

Grades will be distributed as follows:

- Witten facilitator summaries: 20%
- Presentation of facilitator summaries: 15%
- Individual Written Portion of Group Project (~10 pages) 25%, due March 9 (week 9)
- Revision of individual paper (Note, revision is required for grades less that A- on draft, but is optional for draft paper grades of A- or A, in which case the revision grade can be the draft grade.): 15%, due April 20 (week 15)
- Group Project In-Class Presentation: 15%, in class, April 20 (week 15)
- Class Participation, including preparation for and participation in discussion questions: 10%

READINGS

Students are expected to read the assignments before the class and to come to class prepared to discuss those readings. There are a lot of readings, but not an excessive amount. To be able to effectively participate in class discussion, you should aim to read at least two-thirds of the assigned pages each week. There are many optional readings and those are, as the word suggests, optional, although some optional readings as indicated are required for Ph.D. students.

PRESENTATIONS ON READINGS (facilitator summaries and group presentations)

Each class will be divided into two halves. In the first half of class, students will discuss the week's readings. That discussion will be facilitated by a few students who will be chosen to summarize and critique the readings for that week. The second half of class will be devoted to class lectures on the week's topic. Students will be assigned to summarize readings. I will call those summaries “facilitator summaries.” Each week, the students assigned to that week will (1) write individual summaries of the readings, and (2) give a group presentation on their interpretation of the readings at the beginning of the class. A schedule will be developed on the first day of class. Each student will write three summaries, during three weeks of the class. Written individual summaries should be turned in via Blackboard by 6 p.m. on the Sunday before the class. Group presentations will be approximately 30 minutes in length, and each
student assigned to the presentation group for that week must speak during the group presentation.
Each summary will cover some (but not necessarily all) of the week's readings. The chosen readings must be very closely related to one another. The summaries will include the student's interpretation and critique of the readings, any extensions of the readings that the student wishes to mention, and unresolved issues that are good topics for discussion. **NOTE THAT THESE SUMMARIES SHOULD BE MORE THAN "BOOK REPORTS". THEY MUST ALSO INCLUDE YOUR INTERPRETATION OF THE MATERIAL.** Each student summarizing readings that week will bring a copy of their summary to class, in addition to the submission via Blackboard.
Groups of students writing the summaries are expected to coordinate their presentation in advance of each class session, and to prepare powerpoint and other visual aids as needed. After the group presentation, we will devote time to class discussion of the week’s topics. The entire class will be responsible for participating in class discussion, and 10% of the grade is based on participation in class discussion.

**LATE ASSIGNMENTS:**

The due dates will be shown on the syllabus or clearly indicated in class assignments. For the written facilitator summaries, those should be turned in via Blackboard before class per the instructions earlier in this syllabus. Exceptions will only be granted in cases of illness (with a health care provider’s note) or extraordinary emergencies (again with written documentation of the emergency, including evidence that the event could not have been anticipated in advance.) If you are ill and cannot attend class on the day of a facilitator summary presentation, you can make that up by doing an extra written facilitator summary. (While I want you in class, I don’t want you to risk bringing an illness and germs into the class or pushing yourself when you are sick and should be getting well.) More generally, class participation is part of your course grade, so I expect excellent attendance and participation, allowing for the occasional illness.

For the group projects, the written portion (an individual paper) is due on the due date indicated (*draft, Mar. 9, revision, Apr. 20*), and exceptions will only be granted in cases of illness (with a health care provider’s note) or emergencies such as a severe illness, death in the family, or sudden and unanticipated family crisis which required you to care for a relative within the few days before the due date for the written paper. You have a lot of time to plan your schedule, so understand that I will be unwilling to accept late individual papers unless illness intervened in ways that could not have been anticipated. Group presentations in Week 15 cannot be moved or rescheduled.

**USC DISABILITY SERVICES**

I am always happy to work with USC’s Office of Disability Services to accommodate student needs. Students should contact the Office of Disability Services in the first two weeks of the semester, or prior to the semester. I allow accommodations as recommended by the Disability
Services office, but I will only allow accommodations specifically recommended by that office in writing and in advance of assignment due dates. Please allow enough time for coordination between the Disability Services office and me. Consult this web page for more information: http://scampus.usc.edu/disability-services/.

ACADEMIC HONESTY

Students should consult USC’s academic honesty guidelines, available at http://www.usc.edu/student-affairs/student-conduct/grad_ai.htm and http://www.usc.edu/student-affairs/SJACS/forms/GradIntegrity.pdf. Penalties for violations of academic honesty will be as severe as are allowed by USC’s guidelines, and typically involve a minimum of a zero grade for the assignment for minor infractions, with larger penalties for more serious cases. Cutting and pasting material from the web is only acceptable if the material is indicated to be a direct quote, with the source attributed. All ideas and information from external sources must be properly attributed to that source.

Academic Conduct
Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Section 11, Behavior Violating University Standards https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity http://equity.usc.edu or to the Department of Public Safety http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us. This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage http://sarc.usc.edu describes reporting options and other resources.

Support Systems
A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the American Language Institute http://dornsife.usc.edu/ali, which sponsors courses and workshops specifically for international graduate students. The Office of Disability Services and Programs http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially
declared emergency makes travel to campus infeasible, *USC Emergency Information*
[http://emergency.usc.edu](http://emergency.usc.edu) will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.
GROUP PROJECT:

Students will be divided into groups to work on an integrated group project. Anticipate groups of three or four students, although exact numbers and groupings will be determined during the first two weeks of class. Each student will be responsible for an individual paper (approximately ten pages, double spaced) and a group presentation of an overall plan for your project area. Your individual paper is due in a very clean draft (which will really be final form, worth 25% of your course grade) on Mar. 9, and a revision of that paper for persons earning less than A- will be due Apr. 20.

Each group will choose from among a small set of projects suggested by the instructor. Alternative projects not suggested by the instructor can be pursued but require the instructor’s permission. All groups should select their project by the third class meeting (at the latest), and all group project topics must be approved by the instructor (even those from the suggested list) and topics cannot be changed without the instructor’s permission. In general, changing topics is not a good idea and will be discouraged.

Student groups will develop a land use – transportation plan. The plan will have distinct components that students should integrate into a comprehensive vision for their neighborhood or region. Each plan or vision must strive to be grounded in theory and evidence while also being cognizant of the local context and the comprehensive nature of land use – transportation planning. Understand that I know that in some cases you will not have time to build anything like a comprehensive plan, and instead you may have to work from the literature and adapt ideas to your project and study area as best you can.

Suggested topics include:

1. Pershing Square Redevelopment
   Contact: Shruti Shankar, LEED AP ND, EcoDistricts AP. Senior Urban Designer at StudioOneEleven.
   Contact Information: Shruti.Shankar@studio-111.com, 245 east 3rd St., Long Beach, CA 90802,

2. Amazon HQ2 in Culver City
   Contact: Elenna Salcido, Transportation Planner at HNTB.
   Contact Information: Elenna.Salcido@gmail.com

The students in each group will write an individual paper, 8 to 10 pages, double spaced. Paper possibilities are listed below, in ways that allow each student to have an individual piece of a larger whole. Possible individual papers, focused around the group project, include:
1. Background on the project, the idea, the vision, the place, and the literature. For example, for transit-oriented development, there is a large amount of information both in the academic literature and in agency reports or other sources that give specifics about plans in Los Angeles. Your paper will describe both the general findings and issues on TOD (from the academic literature) and the Los Angeles plans and planning context. The same point would hold for other topics – the background paper gives the background of the idea (from the academic literature) and the specifics of the project and planning context. This kind of paper sets the stage for the rest of the analysis by other group members.

2. Land use – travel impacts, or broader circulation issues. What does the evidence show about how these projects, TOD, bikeshare, high speed rail, and transportation network companies, work and what impacts might be expected in travel and/or circulation? This would include careful reference to the literature, evidence, and possibly quantitative analysis as set forth under the new CEQA guidelines – SB743 – which replaces LOS analysis with VMT.

3. Policy issues (e.g. project financing, inter-governmental cooperation, compliance with Clean Air Act or SB 375 or other legal requirements, prospects for public opposition or support) related to your group’s project. A high-level budget estimate should also be produced, along with a tentative project schedule (1-3 years) and science-based performance metrics and targets for tracking progress.

4. Environmental impacts. For example, what does the evidence and literature say about possible impacts on air quality, or greenhouse gas emissions, or other environmental impacts? Here you should be specific and either give evidence and analysis or carefully (and with reference to the literature) explain how you would get evidence.

5. Neighborhood impacts. What might be the impact of your group’s project – TOD, HSR, transportation network companies, bikeshare – on the neighborhood quality of life, including equity? On housing or economic development or the pedestrian environment and sense of place? Again, reference the literature clearly and describe how you might assess potential positive and negative impacts.

6. Urban design principles. What principles might you suggest, based on the literature and your analysis, for your project? Sustainability should be a primary design principle, including elements of mitigation, adaptation and resilience. Also, the planning and design framework processes should be inclusive. Groups should think about creative ways to include local community groups in order to co-create a project that is sensitive to the local context. This may involve more of a graphic approach than the other papers, but please make it a paper.

Each paper must be immersed in your project area. These papers should be practical and practice-focused applications of our learning, and while I certainly want you to clearly reference the literature I want you to do that while making a link to how you adapt our class learning to
your group’s project and project area.

Each group will synthesize the findings of their individual papers into an overall presentation. The presentation will, in some ways, have elements of a plan but it may not be comprehensive. It must, though, be substantive, grounded in theory and empirical learning, and specific to your project’s location, context, and needs. Groups will present their synthesis in a professional manner, using powerpoint and, as appropriate, other visual aids, in class during the last two weeks of class. Each group will have approximately 20 to 30 minutes for this presentation.

Contact names are listed above. These are persons who can be helpful, and you should contact them while respecting their time. You are encouraged to find other contacts, also.
SCHEDULE OF TOPICS AND READING LIST:

I.  Theoretical Foundations


* Marlon Boarnet and Randall Crane, Travel by Design: The Influence of Urban Form on Travel, Oxford University Press, 2001, Chapter 2.

Week 2, January 20:  NO CLASS, in observation of Dr. Martin Luther King, Jr. Day

Week 3, January 27:  Economic Fundamentals and the Land Use – Transportation Link. NO facilitator summaries this week.

A.  Agglomeration Economies


Paul Krugman, Geography and Trade, 1991, pp. 59-67

Optional (required for Ph.D. students):


Optional for all

Week 3 (continued)

B. Monocentric Model


C. Transportation Infrastructure and Urban Growth

Masters students should read the introduction and conclusion of Baum-Snow and skim to become familiar with methods and results. Doctoral students should read these more closely.


Week 4, February 3: Transportation and Regional Economic Development.
Group 2 facilitator summaries.

A. Perspectives from the New Economic Geography


Week 4 (continued)

Optional (mostly for the Ph.D. students):


B. Economic Analysis of SCAG’s Regional Transportation Plan (required of everyone in Week 3)


Week 5, February 10: Land Use and Travel Behavior.
Group 1 facilitator summaries.

Note: Those of you who have taken PPD 634 have had this introduction and we will not cover the below “introductory” material. Please read below two items on your own if you have not covered this.

* Marlon Boarnet and Randall Crane, Travel by Design: The Influence of Urban Form on Travel, Oxford University Press, 2001, pp. 3-14.


How to Assess Land Use – Travel Evidence (this is the key idea for this week)


For a web-based, publicly available version of the information summarized in the Salon et al., article, see: http://arb.ca.gov/cc/sb375/policies/policies.htm and click on “policy brief” by topic; the “background technical document” for each topic gives detailed additional information.

Walking in the Suburbs


Parking


Health

James F. Sallis, Lawrence D. Frank, Brian E. Saelens, M. Katherine Kraft, “Active Transportation and Physical Activity: Opportunities for Collaboration on Transportation and

Required for Ph.D. students, optional for masters students


II. Trends and Topics

**Week 6, February 17: NO CLASS, in observation of President’s Day**

**Week 7, February 24: Multi-Modalism, Beyond the Automobile City.**
Discuss group projects.
**Group 2 facilitator summaries.**


Required for Ph.D. students, optional for masters students


**Week 8, March 2: Bicycle Programs and Active Travel.**
**Group 1 facilitator summaries.**


**Week 9, March 9: GUEST SPEAKER: Adam Gromis, Sustainability lead at Uber, Inc.**

**Technology, Autonomous/Connected Vehicles, Sharing, and Transportation Network Companies**

PhD students lead facilitator summaries.

**Note:** Draft individual papers from group projects & PhD research topics are due today.

*Background on Market Structure in Transportation*


*Market Dynamics in Transportation Network Companies*

Autonomous and Connected Vehicles, Planning


Autonomous and Connected Vehicles, Labor Market Impacts


Sharing and Transportation


Week 10, March 16: Spring Recess!

III. Methods

Week 11, March 23: Travel Data Collection.
Group 2 facilitator summaries.

Examples of travel diaries (to be distributed)

Bricka, Stacey, Johanna Zmud, Jean Wolf, and Joel Freedman (2009). Household Travel Surveys with GPS; An Experiment. Transportation Research Record: Journal of the Transportation Research Board, No. 2105, pp. 51–56.


Optional:


* David R. Bassett Jr., Alex Rowlands, and Stewart G. Trost, “Calibration and Validation of Wearable Monitors” Medicine & Science in Sports & Exercise: *January 2012 - Volume 44 - Issue 1S.*

**Week 12, March 30:** Travel Demand Estimation.

**Group 1 facilitator summaries.**

*Methods of Travel Demand Estimation*


*Travel Demand Analysis: Some Really Important Background on Systematic Errors in Travel Demand Estimation*


*Political Pressures and Place-Based Economic Competition as an Explanation for Systematic Travel Demand (and Project Cost) Forecasting Errors*

Week 13, April 6  Transportation Project Benefit-Cost Analysis and High Speed Rail. PhD students lead facilitator summaries.


Note: We may have some time in this class to discuss group projects. It depends on how quickly we get through the lecture material.


Optional (some thoughts on cost-benefit analysis, which link to Week 12 topic):


Week 14, April 13 GUEST SPEAKER – Shruti Shankar, LEED AP ND, EcoDistricts AP. Senior Urban Designer, StudioOneEleven.

Lecture: Transportation and the Geography of Economic Opportunity. NO facilitator summaries.


Kate Lowe and Mariana Marmol, Worker Experiences of Accessibility in Post Katrina New Orleans, University of New Orleans working paper, available at http://scholarworks.uno.edu/cgi/viewcontent.cgi?article=1015&context=unoti_pubs.

Optional:


**Discuss group projects**

**V. Present Group Projects and PhD papers**

**Week 15, April 20: Present Group Projects (2) and PhD papers (2)**