

# UP 460: *SUSTAINABLE* URBAN TRANSPORTATION AND LAND USE POLICY

Fall 2022, Department of Urban and Regional Planning, University of Illinois at Urbana-Champaign

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**CLASS MEETINGS:** Monday and Wednesday, 11:00 am – 12:20 am  
TBH 225

**INSTRUCTOR:** Bumsoo Lee, [bumsoo@illinois.edu](mailto:bumsoo@illinois.edu)  
**OFFICE HOURS:** 10:00 am – 10:50 am on Wednesday and by appointment

## COURSE OVERVIEW

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Congestion in auto-oriented US cities has been worsening for decades. However, the government's ability to finance new transportation infrastructure has become increasingly constrained. Further, the climate change and energy issues make any policy and public investments increasing automobile dependency unpopular. Instead, planners are increasingly turning to alternative policies that involve changing development patterns and land uses to solve transportation problems. There is ample evidence that downtown workers and residents drive less and use more sustainable modes than suburban residents. If we design and develop suburban neighborhoods like downtown neighborhoods, – with higher density, mixed land use, and transit and pedestrian friendly street layout – would people drive less?

This course is designed to discuss integrated approaches to sustainable urban transportation and land use planning and policy. It emphasizes the need to understand how the built environment and transportation system interact. How new investments on transportation infrastructure – highway or transit – subsequent development patterns? How do physical urban form and land use patterns affect the way people travel? To address these questions, students will learn land use/transportation theories and models, review empirical studies, compare different transportation/land use policies and planning techniques, and conduct their own research.

Topics to be covered in the course include:

1. Contemporary urban transportation and land use policy debates and issues
2. Theories of travel demand and behavior
3. Influences of urban form (land use) on travel patterns
4. Impacts of transportation investment on urban development
5. Integrated transportation/land use planning and smart growth
6. Travel demand management
7. Transit oriented development (TOD)

This course focuses on the interaction between transportation and land use, and is research oriented. Students who seek to learn more foundational transportation planning skills are advised to take UP 430 Urban Transportation Planning and UP 431 Travel Behavior Analysis.

## TEXTBOOK

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Giuliano, Genevieve and Susan Hanson eds. 2017. *The Geography of Urban Transportation*, 4<sup>rd</sup> ed. New York, NY: The Guilford Press.

- Additional readings or the links to them will be posted on the Canvas course website.
- In most sessions, a lecture will be accompanied by discussion often led by graduate students based on reading assignments. Students should read ALL reading assignments before class.

## PREREQUISITE

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There is no prerequisite for this course. However, this course is open only to juniors, seniors, and graduate students.

## EVLUATION

|   | Undergraduate students | Graduate students |
|---|------------------------|-------------------|
| Class Participation/Attendance                  | 10 %                   | 10 %              |
| Assignments                                     | 40 %                   | 40 %              |
| Research paper presentation & discussion leader | 0 %                    | 10 %              |
| Best practice presentation & discussion         | 20 %                   | 0 %               |
| Case study term paper & presentation            | 30 %                   | 0 %               |
| Research term paper & presentation              | 0 %                    | 40 %              |

## COURSE AT A GLANCE

|   |         |   |                         |
|---|---------|---|-------------------------|
| 1   | Aug 22  | Course overview   |                         |
| 1   | Aug 24  | Contemporary issues and debate—Land use/transportation connection                   | Assignment #1 due       |
| 2   | Aug 29  | Transportation, energy, and the environment   |                         |
| 2   | Aug 31  | The context of urban travel, mobility to accessibility [1 SLD]                      |                         |
| 3   | Sep 5   | No class, Labor Day   |                         |
| 3   | Sep 7   | Theories of travel demand [2 SLD]   |                         |
| 4   | Sep 12  | Influence of land use on travel—Case study & cross-sectional study [2 SLD]          | Assignment #2 due       |
| 4   | Sep 14  | Influence of land use on travel—More on operationalizing urban form [1 SLD]         |                         |
| 5   | Sep 19  | Influence of land use on travel—Longitudinal & meta-analysis [2 SLD]                |                         |
| 5   | Sep 21  | Influence of land use on travel—Self-selection & regional spatial structure [1 SLD] |                         |
| 6   | Sep 26  | Influence of land use on travel—Market for smart growth [2 SLD]                     | Assignment #3 due       |
| 6   | Sept 28 | Influence of land use on travel—Integrated T/LU planning [3 BPP]                    |                         |
| 7   | Oct 3   | Transportation investment and urban development—A longer view                       | Term paper abstract due |
| 7   | Oct 5   | Transportation investment and urban development—Case studies [1 SLD]                |                         |
| 8   | Oct 10  | Transforming cities with transit, global best cases [3 BPP]                         |                         |
| 8   | Oct 12  | TOD—Definition, impacts & design principles [1 SLD]                                 |                         |
| 9   | Oct 17  | TOD—Strategic, regional & corridor planning   |                         |
| 9   | Oct 19  | TOD—Tools, finance & affordable housing   |                         |
| 10  | Oct 24  | TOD—Best cases [3 BPP]  | Assignment #4 due       |
| 10  | Oct 26  | Road pricing—Fundamental economics  |                         |
| 11  | Oct 31  | Road pricing—Equity [2 SLD]   | Progress report due     |
| 11  | Nov 2   | Road pricing—Case studies [3 BPP]   |                         |
| 12  | Nov 7   | Travel demand management & nudge—Case studies [1 SLD] [1-2 BPP]                     |                         |
| 12  | Nov 9   | Travel demand management & nudge  |                         |
| 13  | Nov 14  | Minimum parking requirement & alternatives [1 SLD] [1-2 BPP]                        |                         |
| 13  | Nov 16  | Parking pricing [1-2 BPP]   |                         |
| 14  | Nov 21  | Fall Break  |                         |
| 14  | Nov 23  | Fall Break  |                         |
| 15  | Nov 28  | Term Paper Presentation   |                         |
| 15  | Nov 30  | Term Paper Presentation   |                         |
| 16  | Dec 5   | Term Paper Presentation   |                         |
| 16  | Dec 7   | Term Paper Presentation   |                         |
| Final Paper due on Dec 12, Monday by NOON |         |   |                         |

[SLD] Graduate student-led research paper presentation and discussion.

[BPP] Best practice presentation led by undergraduate students.

## COURSE REQUIREMENTS

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The format for this course is a combination of lecture and discussion. Required reading and student-led presentation & discussion are central to the learning experience of this course.

**Research Paper Presentation and Discussion Leader (Graduate Students):** Each graduate student is required to present and lead discussion on one chosen research paper that is included in reading assignments. These papers are marked as **[SLD]** in the course schedule below. A written report is not a part of the requirement. Detailed guidelines and a sign-up Google Sheet will follow.

**Best Practice Presentation and Discussion (Undergraduate Students):** Each undergraduate student is required to present one case study of best practices and lead discussion in a chosen area in the following: integrated transportation and land use planning, transforming cities with transit, TOD, travel demand management (TDM) and nudge for sustainable transportation, congestion pricing, and parking policy & program. These presentation schedules are marked as **[BPP]** in the course schedule below. A written report is not a part of the requirement. Detailed guidelines and a sign-up Google Sheet will follow.

**Homework Assignments (All Students):** Four homework assignments will be given throughout the semester, including short essays and analysis papers. All homework assignments are due **by 11am** on due dates and late submission of homework assignments will be penalized by 10% per day, up to 30%.

**Term Paper Case Study & Presentation (Undergraduate Students):** Undergraduate students are required to conduct and present a case study, and submit a 10-page report. A study case can be a specific policy program, project, or city that highlights a successful (or not successful) implementation of sustainable transportation and land use policies. Students can choose the same topic as in their best practice presentations, but should demonstrate further development, including in-depth first-hand analysis and evaluation. Detailed instructions will follow. Students are strongly encouraged to discuss with the instructor as often as needed about the term paper research topic.

**Term Paper Research & Presentation (Graduate Students):** Graduate students are required to conduct and present term paper research, and submit a 15-page paper. The term paper must address a topic on sustainable transportation and land use. Students can do a case study, an empirical study, policy evaluation, or any other type of research or analysis on the topics covered in class. Detailed instructions about the term paper will follow. Students are strongly encouraged to discuss with the instructor as often as needed about the term paper research topic, methods, data sources, etc.

\* **Plagiarism:** Plagiarism in this class is unacceptable. Any accidental or willful use of words, work, or ideas of another without attribution (e.g. quotation and citation) will be penalized by a failing grade on the paper and/or a failing grade in the course. Please see the definition of plagiarism here: <https://studentcode.illinois.edu/article1/part4/1-402/>. Be reminded that all your submissions to the Canvas will go through plagiarism checking.

Schedules for term paper deadlines:

[Oct 3] One-page study plan (abstract).

[Oct 31 ] Three-page progress report documenting what has been done and what needs to be done, expected findings, and expected content in the final paper.

[Nov 28&30, Dec 5&7] Research/Case Study presentation. PPT file is due by 10am on the presentation day.

[Dec 12, Monday] Term paper due by Noon.

## POLICIES

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|------------------------------------|--|
| COVID-19                           | <p>If you feel ill or are unable to come to class or complete class assignments due to issues related to COVID-19, including but not limited to testing positive yourself, feeling ill, caring for a family member with COVID-19, or having unexpected child-care obligations, you should contact your instructor immediately, and you are encouraged to copy your academic advisor. For more on COVID-19 related policy, see <a href="https://covid19.illinois.edu/">https://covid19.illinois.edu/</a></p>  |
| SPECIAL ACCOMMODATIONS             | <p>This course will accommodate students with documented disabilities. Please refer to <a href="https://www.disability.illinois.edu/">https://www.disability.illinois.edu/</a> for more information and provide the appropriate documentation in the beginning of the semester.</p>  |
| ACADEMIC INTEGRITY                 | <p>This course follows the guidelines set forth by the University student code. See <a href="https://studentcode.illinois.edu/article1/part4/1-402/">https://studentcode.illinois.edu/article1/part4/1-402/</a> for specific guidelines, examples, and punishment associated with academic dishonesty. Pay special attention to 1-402 b. <b>Plagiarism</b>.</p>  |
| CLASS CLIMATE                      | <p>The Department of Urban and Regional Planning (DURP) is committed to creating an environment of inclusion and opportunity that is rooted in the very goals and responsibilities of practicing planners. Conduct that interferes with the rights of another or creates an atmosphere of intimidation or disrespect is inconsistent with the environment of learning and cooperation that the program requires. By enrolling a course in the Department of Urban and Regional Planning, students agree to be responsible for maintaining a respectful environment in all DURP activities, including lectures, discussions, labs, projects, and extracurricular programs. We will be governed by the University Student Code. See Student Code Article 1—Student Rights and Responsibilities, Part 1. Student Rights: §1-102 In the Classroom.</p> |
| EMERGENCY RESPONSE RECOMMENDATIONS | <p>The Department of Homeland Security and the University of Illinois at Urbana-Champaign Office of Campus Emergency Planning recommend the following three responses to any emergency on campus: <b>RUN &gt; HIDE &gt; FIGHT</b>. For more information, <a href="https://police.illinois.edu/em/run-hide-fight/">https://police.illinois.edu/em/run-hide-fight/</a></p>   |
| COUNSELING CENTER                  | <p>The Counseling Center is committed to providing a range of services intended to help students develop improved coping skills in order to address emotional, interpersonal, and academic concerns. The Counseling Center provides individual, couples, and group counseling. All of these services are paid for through the health services fee. The Counseling Center offers primarily short term counseling, but they do also provide referrals to the community when students could benefit from longer term services. <a href="https://counselingcenter.illinois.edu/">https://counselingcenter.illinois.edu/</a></p>  |

## COURSE SCHEDULE

[SLD] Graduate student led presentation & discussion.

[BPP] Best practice presentations by undergraduate students.

\* Optional reading for undergraduate; strongly suggested for graduate students.

### Week 1

#### *Aug 22 Introduction and Course Overview*

#### *Aug 24 [Discussion] Contemporary Issues and Debates – Does transportation-land use connection matter? [Assignment #1 due]*

Giuliano, Genevieve. 1995. The weakening transportation-land use connection. *Access* (6):3-11.

Cervero, Robert, and John Landis. 1995. The transportation-land use connection still matters. *Access* (7):2-11.

\*Moore, A., S. Staley, and R. Poole. 2010. The role of VMT reduction in meeting climate change policy goals. *Transportation Research A 44* (8), 565–574.

\*Winkelman, S. and A. Bishins. 2010. Planning for economic and environmental resilience. *Transportation Research A 44* (8), 575–586.

### Week 2

#### *Aug 29 Transportation, Energy, and the Environment*

Greene, David. Ch.12 Transportation and energy. In Giuliano & Hanson (2017).

Le Vine & Lee-Gosselin. Ch. 11 Transportation and environment impacts and policy. In Giuliano & Hanson (2017).

#### *Aug 31 Context of Urban Travel, Mobility to Accessibility*

Hanson, Susan. Ch.1 Introducing Urban Transportation. In Giuliano & Hanson (2017).

[SLD] Levine J, Grengs J, Shen Q, 2012, "Does Accessibility Require Density or Speed?" *Journal of the American Planning Association* 78: 157-172.

### Week 3

#### *Sep 5 No Class, Labor Day*

#### *Sep 7 Theories of Travel Demand*

Miller, Harvey. Ch. 5 Theories and Models in Transportation Planning. In Giuliano & Hanson (2017).

[SLD] Dill et al. 2014. How can psychological theory help cities increase walking and bicycling? *Journal of the American Planning Association* 80: 36-51.

[SLD] Schneider, Robert J. 2013. Theory of routine mode choice decisions: An operational framework to increase sustainable transportation. *Transport Policy* 25: 128-137.

### WEEK 4

#### *Sep 12 Influence of Land Use on Travel—Introduction, case study & cross-sectional study*

[SLD] Handy, S. 1996. Understanding the link between urban form and non-work travel behavior. *Journal of Planning Education and Research*, 15, 183-198.

[SLD] Cervero, Robert, and Kara Kockelman. 1997. Travel demand and the 3Ds: density, diversity, and design. *Transportation Research D* 2 (3):199-219.

#### *Sep 14 Influence of Land Use on Travel—more on operationalizing urban form*

Krizek, K. 2003. Operationalizing neighborhood accessibility for land use-travel behavior research and regional modeling. *Journal of Planning Education and Research*, 22, 270-287.

[SLD] Hamidi, S., Ewing, R., Preuss, I., & Dodds, A. 2015. Measuring Sprawl and Its Impacts: An Update. *Journal of Planning Education and Research*, 35(1), 35-50.

## **WEEK 5**

### ***Sep 19 Influence of Land Use on Travel—longitudinal and meta-analysis***

- [SLD] Krizek, K. 2003. Residential relocation and changes in urban travel: Does neighborhood-scale urban form matter? *Journal of American Planning Association*, 69(3), 265-281.
- [SLD] Ewing, R., & Cervero, R. 2010. Travel and the built environment--A Meta-Analysis. *Journal of the American Planning Association*, 76(3), 265-294.

### ***Sep 21 Influence of Land Use on Travel—residential self-selection, regional spatial structure***

- [SLD] Handy, S., X. Cao, and P. Mokhtarian. 2009. Self-selection and the effect of the built environment on active travel. *Policy Brief for Active Living Research*.
- Ewing R & Hamidi S. 2015. Compactness versus Sprawl: A Review of Recent Evidence from the United States. *Journal of Planning Literature* 30(4): 413-432.
- \* Lee, S. and B. Lee. 2020. Comparing the impacts of local land use and urban spatial structure on household VMT and GHG emissions. *Journal of Transport Geography* 84, 1-14.

## **WEEK 6**

### ***Sep 26 Influence of Land Use on Travel—market for smart growth***

- [SLD] Talen, E., & Knaap, G. 2003. Legalizing Smart Growth: An Empirical Study of Land Use Regulation in Illinois. *Journal of Planning Education and Research*, 22(4), 345-359.
- [SLD] Levine, J., & Inam, A. 2004. The market for transportation-land use integration: Do developers want smarter growth than regulations allow? *Transportation*, 31(4), 409-427.
- \* Levine, J., Inam, A., & Torng, G.-W. 2005. A Choice-Based Rationale for Land Use and Transportation Alternatives: Evidence from Boston and Atlanta. *Journal of Planning Education and Research*, 24(3), 317-330.
- \* Lee, H. 2018. Are Millennials Coming to Town? Residential Location Choice of Young Adults. *Urban Affairs Review*. <https://doi.org/10.1177/1078087418787668>.

### ***Sep 28 Influence of Land Use on Travel—integrated transportation and land use planning***

- [BPP] 3 *Best practice presentations selected from Litman (2016) and Sabouri, et al. (2019)*.
- Litman, T. 2016. Smart Growth Reforms: Changing Planning, Regulatory and Fiscal Practices to Support More Efficient Land Use. Victoria Transport Policy Institute. pp. 2-64.
- Sabouri, S., Dillon, A., Proffitt, D., Townsend, M., & Ewing, R. (2019). State-of-the-Practice in Connecting and Coordinating Transportation and Land Use Planning in the U.S.A. *Transportation Research Record*.
- \* Smart Growth America (2015). *The Innovative DOT: A Handbook of Policy and Practice*. Ch. 7 Integrating transportation and land use decision-making. Washington, DC: Smart Growth America. 189-223.

## **Week 7**

### ***Oct 3 Transportation Investment and Urban Development—a longer view***

- Muller, Peter O. 2017. Ch.3 Transportation and urban form: Stages in the spatial evolution of the American metropolis. In Giuliano & Hanson (2017).
- Giuliano, Genevieve. Ch.9 Land use impacts of transportation investments. In Giuliano & Hanson (2017).

### ***Oct 5 Transportation Investment and Urban Development—case studies***

- Landis, J. and Cervero, R. (1999). BART and urban development. *Access*, 14, 2-15.
- [SLD] Baker, D. M., and Lee, B. (2019). How does light rail transit (LRT) impact gentrification? Evidence from fourteen US urbanized areas. *Journal of Planning Education and Research*, 39(1), 35-49.

## **Week 8**

### ***Oct 10 Transportation Investment and Urban Development—transforming cities with transit***

Suzuki, H., R. Cervero, and Iuchi, K. 2013. *Transforming Cities with Transit*. The World Bank. Overview (pp. 1-23).

**[BPP] 3** *Best practice presentations selected from Suzuki, et al. (2013) or other sources.*

Suzuki, Cervero & Iuchi. 2013. *Transforming Cities with Transit: Transit and Land Use Integration for Sustainable urban Development*. Ch. 2 Lessons from sustainable transit-oriented cities (pp. 49-91).

### ***Oct 12 TOD—definition, impacts & design principles***

Center for TOD. 2008. TOD202 Station area planning: How to make great transit-oriented places  
Transit Cooperative Research Program. 2002. *Transit-Oriented Development and Joint Development in the United States: A Literature Review*. Washington, DC: Transportation Research Board. Ch. I Introduction.

**[SLD]** Zamir et al. 2014. Effects of transit-oriented development on trip generation, distribution, and mode share in Washington, D.C., and Baltimore, Maryland. *Transportation Research Record* 2413: 45-53.

\* Florida Department of Transportation. 2009. *Transit Oriented Development Design Guidelines*.

## **Week 9**

### ***Oct 17 TOD—strategic planning, regional planning & corridor planning***

Center for TOD. 2011. TOD204 Planning for TOD at the regional scale.

Center for TOD. 2011. TOD203 Transit corridors and TOD: Connecting the dots.

\* City of Denver 2014 *Transit Oriented Development Strategic Plan*.

### ***Oct 19 TOD—tools, finance & affordable housing***

Transit Cooperative Research Program. 2002. *Transit-Oriented Development and Joint Development in the United States: A Literature Review*. Washington, DC: Transportation Research Board. Ch. IV Implementation.

Center for TOD. 2009. TOD201 Mixed income housing near transit: Increasing affordability with location efficiency.

## **Week 10**

### ***Oct 24 TOD—Best Practices***

**[BPP] 3** *Best practice presentations on successful TOD*

### ***Oct 26 Road Pricing—Fundamental Economics***

Moore, T. and P. Thorsnes. 2007. *The Transportation/Land Use Connection, 2nd edition*. Chicago, IL: American Planning Association. Appendix C. Surface transportation: how it works.

Moore, T. and P. Thorsnes. 2007. *The Transportation/Land Use Connection, 2nd edition*. Chicago, IL: American Planning Association. Ch.4 Framework for evaluation and Appendix F. Congestion pricing: case studies.

\* Taylor, Brian D. 2017. Ch.10 The geography of urban transportation finance. In Giuliano & Hanson (2017).

## **Week 11**

### ***Oct 31 Road Pricing—Equity***

**[SLD]** Levinson, D. 2010. Equity effects of road pricing: A review. *Transport Reviews* 30: 33-57.

**[SLD]** Zhang, W., & Zhang, M. 2017. Incorporating land use and pricing policies for reducing car dependence: Analytical framework and empirical evidence. *Urban Studies*

\* Schwitzer, L. and Brian Taylor. 2008. Just pricing: the distributional effects of congestion pricing and sales taxes. *Transportation* 35: 797-812.

### ***Nov 2 Road Pricing—Case Studies***

Santos, G. 2008. London congestion charging. *Brookings-Wharton Papers on Urban Affairs*, pp. 177-234.

**[BPP] 3** *Best practice presentations on successful road pricing related programs.*



## Week 12

### **Nov 7 Travel Demand Management & Nudge**

Arizona DOT. 2012. *Travel Demand Management: A Toolbox of Strategies to Reduce Single-Occupant Vehicle Trips and Increase Alternate Mode Usage in Arizona*. Final Report 654.

\* Garling, T. and G Schuitema. 2007. Travel demand management targeting reduced private car use: Effectiveness, public acceptability and political feasibility. *Journal of Social Issues* 63(1): 139-153.

### **Nov 9 Travel Demand Management & Nudge—Case Studies**

[SLD] Anagnostopoulou, et al. 2020. From mobility patterns to behavioral change: leveraging travel behavior and personality profiles to nudge for sustainable transportation. *Journal of Intelligent Information Systems* 54, 157-178.

[BPP] 1-2 *Best practice presentations on travel demand management and nudge programs*

\* Thaler, Richard H., and Cass R. Sunstein. 2009. “Biases and Blunders” (Chapter 1). In *Nudge*. New York: Penguin.

## Week 13

### **Nov 14 Parking—minimum parking requirement & alternatives**

Manville, Michael and Donald C. Shoup. 2004. People, parking and cities. *Access* 25: 2-8.

Spivak, J. 2022. A business case for dropping parking minimums. *Planning*.

<https://www.planning.org/planning/2022/spring/a-business-case-for-dropping-parking-minimums/>

[SLD] Shoup, D. 1999. The trouble with minimum parking requirements. *Transportation Research Part A* 33: 549-574.

\* Li, F., & Guo, Z. (2014). Do parking standards matter? Evaluating the London parking reform with a matched-pair approach. *Transportation Research Part A*, 67, 352-365.

\* Tian, G., Park, K., Ewing, R., Watten, M., & Walters, J. (2020). Traffic generated by mixed-use developments—A follow-up 31-region study. *Transportation Research Part D: Transport and Environment*, 78.

\* Hess, D. B., & Rehler, J. (2021). Minus Minimums. *Journal of the American Planning Association*, 87(3), 396-408.

[BPP] 1-2 *Best practice presentations on successful parking programs*.

### **Nov 16 Parking—pricing parking**

Shoup, D. 2007. Cruising for parking. *Access*, 30, 16-22.

Pierce, Gregory and Donald Shoup. 2013. Getting the prices right. *JAPA* 79 (1): 67-81.

\* Gabbe, C. J., & Pierce, G. 2017. Hidden Costs and Deadweight Losses: Bundled Parking and Residential Rents in the Metropolitan United States. *Housing Policy Debate*, 27(2), 217-229.

[BPP] 1-2 *Best practice presentations on successful parking programs*.

## Week 14 Fall Break

## Week 15

**Nov 28 TERM Paper Presentations**

**Nov 30 TERM Paper Presentations**

## Week 16

**Dec 5 TERM Paper Presentations**

**Dec 7 TERM Paper Presentations**

**Final Paper due on Dec 12 Monday by NOON**