UP 430/CEE 417: Urban Transportation Planning

Department of Urban and Regional Planning
Department of Civil and Environmental Engineering
University of Illinois at Urbana-Champaign
Fall 2022

Instructor:	Dr. Lindsay Braun lmbraun@illinois.edu M208 Temple Buell Hall
Office Hours:	Tuesdays and Thursdays by appointment; please sign up at https://calendly.com/lmbraun/office-hours
Course Sessions:	Mondays and Wednesdays 2:00–3:20 PM, 125 David Kinley Hall
Teaching Assistant:	Amanda Merck, merck2@illinois.edu
TA Office Hours:	Tuesdays 4:30–5:30 PM, 224 Temple Buell Hall + virtual (open "Zoom room" here)
Credit Hours:	4.00

Course Description

UP 430/CEE 417 provides a broad overview of urban transportation planning in the United States, including historic and emerging issues faced in the field and the tools that are available to address these challenges. The course is designed for students who intend to specialize in transportation planning or engineering, as well as for those who would like an introduction to the field. The course content is divided into 12 learning modules that cover the following major topics:

- Context, History, and Foundational Concepts (Modules 1–3). The first section of the course describes the context of urban transportation planning in the United States, including travel patterns and trends; major phases and developments in transportation history; and key challenges that transportation planners and engineers currently face. This section also introduces concepts that are foundational to a thorough understanding of transportation planning, including the distinction between mobility and accessibility and the relationship between transportation and land use.
- Institutions and Key Impacts (Modules 4–8). The second section of the course outlines the institutional structure of transportation planning in the United States. This section describes the transportation planning process; introduces key decision makers and legislation at the federal, state, and regional levels; and considers past, present, and future mechanisms for financing transportation investments. Additionally, this section explores several impacts of the transportation system, including congestion, environmental justice and equity, safety and security, public health, air quality, and greenhouse gas emissions.
- Standards and Methods (Modules 9–11). The third section of the course introduces technical methods that planners and engineers commonly use to evaluate and plan for urban transportation systems. In particular, this section focuses on standards and practices related to parking, traffic impact analysis, street design, and travel demand modeling. These topics provide a strong skill basis for students interested in pursuing careers in transportation, in both the public and private sectors.

- The Future (Module 12). The final section of the course explores the future of transportation planning with a particular emphasis on connected and autonomous vehicles (CAVs). This section will examine CAV technology and regulations; key opportunities (benefits) and challenges (risks) associated with CAV development; and strategic paths forward for the transportation planning field.

Course Objectives

UP 430/CEE 417 is designed to establish a fundamental knowledge base for understanding and analyzing urban transportation systems. By the end of the semester, students will be able to:

- Explain the history and context of transportation planning in the United States
- Summarize travel patterns and trends in meaningful ways
- Interact with major secondary data sources in the transportation planning field
- Describe foundational concepts (e.g., transportation-land use connection, distinction between mobility and accessibility) and understand the implications of these concepts for policy and practice
- Recognize key decision makers and regulatory frameworks in the transportation planning process
- Understand how transportation investments are funded, the limitations of current finance structures, and potential alternatives to address these limitations
- Identify and describe key impacts of the transportation system (e.g., environment, health, safety, equity)
- Assess the effectiveness of MPO plans in addressing transportation impacts
- Understand the evolution and policy implications of parking and street design standards
- Describe and critique methods used to analyze urban transportation systems
- Summarize the challenges and opportunities associated with connected and autonomous vehicles
- Engage in meaningful dialogue about key policy issues and current events in transportation planning

Course Format

This course will be taught through a combination of lectures and in-class activities (e.g., exercises, discussions, debates). Students are expected and encouraged to actively engage in both lectures and in-class activities, contributing their questions, ideas, and experiences to a rich discussion of the course content.

Class sessions will be held **in person**. We may need to meet virtually on occasion for reasons related to COVID; if this becomes the case, students will be notified as soon as possible.

Course Requirements

Participation. Active engagement with the course materials, with the instructor, and with other students in the class is essential for success in this course. In addition to strong attendance, engagement can be demonstrated in multiple ways. Students are expected to complete the assigned readings prior to class and to come to lectures prepared for thoughtful participation. Lectures will be interactive and students will be expected and encouraged to engage in active dialogue about key concepts and real-world examples. Additionally, all students can demonstrate engagement through proactive communication with the instructor and classmates. Note that regularly engaging in distracting behaviors (e.g., repeated tardiness, texting, laptop use unrelated to class) will result in a lower participation grade.
Projects. Students will complete four projects that require the use of analytical methods common in transportation planning. Two projects will be completed in small groups assigned by the instructor; peer

evaluations of individual contributions will form part of the grade for these two assignments. The remaining project will be completed individually. The projects will cover the following topics/techniques:

- Project 1 (group): Travel Data Analysis
- Project 2 (individual): MPO Plan Evaluation
- Project 3 (group): Vision Zero Strategy

Note that graduate students will serve as group leaders for Projects 1 and 3, and the specific requirements for Project 2 will differ for undergraduate and graduate students.

Homework assignments. Students will complete five homework assignments over the course of the semester. These assignments will consist of written responses and applied exercises designed to reinforce key course concepts. Discussion among students about these assignments is allowed (and encouraged!), but each student must turn in their own work. Whenever possible, class time will be given for students to discuss and ask questions about homework assignments.

Grading

Weights. Course requirements will be weighted in the final grade as follows:

Requirements	Weight (%)
Participation	15
Project 1 (group): Travel Data Analysis	15
Project 2 (individual): MPO Plan Evaluation	15
Project 3 (group): Vision Zero Strategy	20
Homework assignments (x5)	35
Total	**100%**

Grading Scale. Numeric grades will be converted into letter grades using the scale outlined below. The course will not be graded on a curve, and **there will be no rounding** applied to numeric grades.

A+: 97.0–100.0	**B+:** 87.0–89.99	**C+:** 77.0–79.99	**D+:** 67.0–69.99	**F:** Less than 60.0
A: 94.0–96.99	**B:** 84.0–86.99	**C:** 74.0–76.99	**D:** 64.0–66.99	
A-: 90.0–93.99	**B-:** 80.0–83.99	**C-:** 70.0–73.99	**D-:** 60.0–63.99	

Detailed instructions for completing each assignment will be provided. Submitted assignments will be graded and returned promptly with detailed feedback. The general grading rubric is as follows:

- An "A" assignment demonstrates original thought and synthesis of ideas and sophisticated, cogent analysis. It is clearly written and presented. Outstanding work.
- A "B" assignment includes above average analysis with appropriate evidence to support ideas. It is clearly written and presented. Good work.
- A "C" assignment shows a basic level of understanding, with analysis limited to obvious arguments. Writing is competent. Developing but adequate work.
- A "D" assignment misunderstands or misrepresents the material, or is so poorly written or presented as to obscure the analysis. Inadequate work.

Late Assignments. Students are expected to turn in all deliverables on time. However, I understand—now more than ever—that challenges, unanticipated obligations, and illnesses will arise. I will accommodate

these challenges in two ways. First, an **automatic grace period of 48 hours** will be applied to all assignments. I have generally set assignment deadlines to be on Fridays, but if you need the weekend to catch up, you may do so; within this grace period, there is no need to coordinate with me on an extension request. Second, **if you need more than the 48-hour grace period** to complete an assignment, it is your responsibility to **make prior arrangements** with me and your TA regarding the deliverable. Otherwise, work submitted past the deadline (i.e. past the 48-hour grace period) will receive a five-percentage-point deduction per day, and work submitted later than five days past the deadline may not be considered for grading. Please communicate with me and your TA proactively about any challenges, illnesses, or emergencies that arise—we are here to work with you and help you do your best!

Readings

There is no required text for this course. All readings will be posted on Canvas and/or available through the University of Illinois library. Readings for each session are listed at the conclusion of this syllabus.

Course Policies and Other Items/Resources

Attendance. Attendance and active participation are necessary for adequate performance in this course. Flexibility will be given for absences related to illness and quarantine. However, students are expected to **notify the instructor and/or TA in advance** of any sessions that will be missed. It is the instructor's decision as to when a student's absences, without proactive communication with the instructor, become excessive and should be reported. If in the opinion of an instructor the attendance of a student becomes so irregular that their scholarship is likely to be impaired, the instructor may submit an irregular attendance form to the Associate Dean of the student's college. A copy is forwarded to the student, who should contact the instructor immediately to work out a solution. If irregular attendance continues without excuse, the instructor may request the student be withdrawn from the course. This request for withdrawal would result in a grade of E for the course. Extenuating circumstances will always be considered when supporting evidence is presented. See Rule 1-501 and Rule 1-502 in the Student Code for more information.

Academic Accommodations. This course will accommodate students with documented disabilities. To obtain disability-related academic adjustments and/or auxiliary aids, students should contact both the instructor and the Disability Resources and Educational Services (DRES) as soon as possible. You can contact DRES at 1207 S. Oak Street, Champaign, by phone at (217) 333-1970, or via email at disability@illinois.edu.

Academic Integrity. This course follows the guidelines set forth by the University Student Code. See http://www.admin.uiuc.edu/policy/code/article_1/a1_1-401.html for specific guidelines, examples, and punishment associated with academic dishonesty. In written work, any ideas that are not your own must be properly cited. The consequences for plagiarism may include receiving no credit for an assignment or, at the discretion of the instructor, failure of the course.

Counseling. The University 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. https://counselingcenter.illinois.edu/.

Class Climate. The Department of Urban and Regional Planning (DURP) is committed to maintaining a learning environment that is rooted in the goals and responsibilities of professional planners. By enrolling

in a class offered by DURP, students agree to be responsible for maintaining an atmosphere of mutual respect in all DURP activities, including lectures, discussions, labs, projects, and extracurricular programs. See Student Code Article 1-Student Rights and Responsibilities, Part 1. Student Rights: §1-102.

Safety and Security in the Classroom. Emergencies can happen anywhere and at any time. It is important that we take a minute to prepare for a situation in which our safety or even our lives could depend on our ability to react quickly. When we're faced with any kind of emergency—like fire, severe weather, or if someone is trying to hurt you—we have three options: run, hide, or fight. For more information please refer to the General Emergency Response Recommendations at http://police.illinois.edu/emergency-preparedness/run-hide-fight/resources-for-instructors/.

Netiquette. In any social interaction, certain rules of etiquette are expected and contribute to more enjoyable and productive communication. The following are tips for interacting via email or other online messages, adapted from guidelines originally compiled by Chuq Von Rospach and Gene Spafford (1995):

- Remember that the person receiving your message is someone like you, deserving and appreciating courtesy and respect.
- Be brief; succinct, thoughtful messages have the greatest effect.
- Your messages reflect on you personally; take time to make sure that you are proud of their form and content.
- Use descriptive subject headings in your emails.
- Think about your audience and the relevance of your messages.
- Be careful when you use humor and sarcasm; absent the voice inflections and body language that aid face-to-face communication, internet messages are easy to misinterpret.
- Cite appropriate references whenever using someone else's ideas, thoughts, or words.

Course Schedule

(Subject to revision)

Module	Date	Topic	Notes
Section I: Context, History, and Foundational Concepts			
0	Aug 22	Course Overview and Major Themes	
1	Aug 24	Transportation Data 1: Travel Patterns and Trends	
	Aug 29	Transportation Data 2: Sources and Methods	
	Aug 31	Transportation Data 3: Sources and Methods (continued)	HW1 due Friday 9/2
—	Sep 5	**NO CLASS** – Labor Day	
2	Sep 7	Transportation History 1: Walking City + Transit	
	Sep 12	Transportation History 2: Rise of the Automobile	
3	Sep 14	Transportation and Land Use 1: T → LU	
	Sep 19	Transportation and Land Use 2: LU → T	
Section II: Institutions and Key Impacts			
4	Sep 21	Transportation Planning Process 1: Federal Role	**Project 1 due Friday 9/23**
	Sep 26	Transportation Planning Process 2: MPOs and States	
5	Sep 28	Transportation Finance 1: Current Status	
	Oct 3	Transportation Finance 2: Future Alternatives	
6	Oct 5	Congestion: A Problem or a Solution?	
	Oct 10	Congestion: A Problem or a Solution? (continued)	
	Oct 12	Equity, EJ, and Travel of Disadvantaged Groups	HW 2 due Friday 10/14
7	Oct 17	Transportation Safety	
	Oct 19	Transportation Safety (continued)	
	Oct 24	Transportation and Public Health	
8	Oct 26	Environmental Impacts 1: NEPA and Air Quality	HW 3 due Friday 10/28
	Oct 31	Environmental Impacts 2: Greenhouse Gas Emissions	
Section III: Standards and Methods			
9	Nov 2	Planning for Parking	**Project 2 due Friday 11/4**
	Nov 7	Traffic Impact Analysis	
	Nov 9	Traffic Impact Analysis (continued)	
10	Nov 14	Street Design 1: Traditional Standards	
	Nov 16	Street Design 2: New Approaches	HW 4 due Friday 11/18
—	Nov 21	**NO CLASS** – Fall Break	
	Nov 24	**NO CLASS** – Fall Break	
11	Nov 28	Transportation Modeling 1: Standard Practices	
	Nov 30	Transportation Modeling 2: Critiques and Alternatives	HW 5 due Friday 12/2
Section IV: The Future			
12	Dec 5	Autonomous Vehicles 1: Overview, Opportunities, Challenges	
	Dec 7	Autonomous Vehicles 2: Paths Forward	
—	Dec 13	Assignment 4 Due @ 1:30 PM	**Project 3 due Tuesday 12/13**

Readings

Module 0: Course Overview and Major Themes

Course Overview and Major Themes

- *(skim)* Transportation Research Board (TRB). (2019). "Critical Issues in Transportation 2019."
- TRB. (2021). "COVID-19 Addendum to Critical Issues in Transportation."

Module 1: Transportation Data

Travel Patterns and Trends

- Manville, M., King, D.A., and M.J. Smart. (2017). The driving downturn: A preliminary assessment. *Journal of the American Planning Association* 83(1): 42-55.
- *(skim)* American Association of State Highway and Transportation Officials (AASHTO). (2021). "Commuting in America 2021: The National Report on Commuting Patterns and Trends." Brief 21.1: The Changing Nature of Work.
- *(skim)* AASHTO. (2021). "Commuting in America 2021: The National Report on Commuting Patterns and Trends." Brief 21.2: Vehicle Availability Patterns and Trends.

Sources and Methods

- *(skim)* McGuckin, N., and A. Fucci. (2018). "Summary of Travel Trends: 2017 National Household Travel Survey." U.S. Department of Transportation, Federal Highway Administration.

Module 2: Transportation History

Walking City and the Rise and Fall of Transit

- Muller, P. (2017). "Transportation and Urban Form: Stages in the Spatial Evolution of the American Metropolis" (pages 57-69 only), Chapter 3 in *The Geography of Urban Transportation*, Fourth Edition, Genevieve Giuliano and Susan Hanson, Editors. New York: The Guilford Press.
- Morris, E. (2007). From horse power to horsepower. *Access* 30: 2-9.

Rise of the Automobile

- Muller, P. (2017). "Transportation and Urban Form: Stages in the Spatial Evolution of the American Metropolis" (pages 69-83 only), Chapter 3 in *The Geography of Urban Transportation*, Fourth Edition, Genevieve Giuliano and Susan Hanson, Editors. New York: The Guilford Press.
- Brown, J., Morris, E., and B. Taylor. (2009). Paved with good intentions: Fiscal politics, freeways and the 20th century American city. *Access* 35: 30-37.
- Bliss, L. (2021). "Can America's Road Builders Break the Highway Habit?" Bloomberg CityLab. https://www.bloomberg.com/news/articles/2021-04-15/the-coming-battle-over-building-better-highways?srnd=citylab-transportation.
- *(optional)* Wells, C. (2006). The changing nature of country roads: Farmers, reformers, and the shifting uses of rural space, 1880-1905. *Agricultural History* 80(2): 143-166.

Module 3: Transportation and Land Use

Transportation → Land Use

- Guiliano, G. (2017). "Land Use Impacts of Transportation Investments: Highway and Transit," Chapter 9 in *The Geography of Urban Transportation*, Fourth Edition, Genevieve Giuliano and Susan Hanson, Editors. New York: The Guilford Press.
- Bruegmann, R. (2008). Point: sprawl and accessibility. *Journal of Transport and Land Use* 1(1): 5-11.
    - Crane, R. (2008). Counterpoint: accessibility and sprawl. *Journal of Transport and Land Use* 1(1): 13-19.

Land Use → Transportation

- Managan, E. (2020). "Driving Down Emissions: Transportation, Land Use, and Climate Change." Smart Growth America, Transportation for America.
- Stevens, M.R. (2016). Does compact development make people drive less? *Journal of the American Planning Association* 83(1), 7-18.
    - Ewing, R., and R. Cervero. (2017). "Does compact development make people drive less?" The answer is yes. *Journal of the American Planning Association* 83(1), 19-25.
    - Handy, S. (2017). Thoughts on the meaning of Mark Stevens's meta-analysis. *Journal of the American Planning Association* 83(1), 26-28.
- Crane, R. (1998). Travel by design? *Access* 12: 2-7.
    - Levine, J. (1999). Access to choice. *Access* 14: 16-19.

Module 4: Transportation Planning Process

Federal Role

- Federal Highway Administration. (2007). "Part I: Overview of Transportation Planning," in *The Transportation Planning Process Briefing Book: Key Issues for Transportation Decisionmakers, Officials, and Staff.* U.S. Department of Transportation.
- Nigro, N., and Burbank, C. (2014). "A Primer on Federal Surface Transportation Reauthorization and the Highway Trust Fund." Center for Climate and Energy Solutions.
- *(read page + skim resources)* U.S. House Committee on Transportation and Infrastructure. "The Infrastructure Investment and Jobs Act." https://transportation.house.gov/committee-activity/issue/infrastructure-investment-and-jobs-act.
- Transportation for America. (2021). "The Infrastructure Bill is Finished—What You Need to Know." https://t4america.org/2021/11/15/the-infrastructure-bill-is-finished-what-you-need-to-know/.

Metropolitan Planning Organizations (MPOs) and States

- Sciara, G., and S. Handy. (2017). "Regional Transportation Planning," Chapter 6 in *The Geography of Urban Transportation*, Fourth Edition, Genevieve Giuliano and Susan Hanson, Editors. New York: The Guilford Press.
- Handy, S. (2008). Regional transportation planning in the U.S.: An examination of changes in technical aspects of the planning process in response to changing goals. *Transport Policy* 15: 113-126.

Module 5: Transportation Finance

Current Status

- Taylor, B. (2017). "The Geography of Urban Transportation Finance," Chapter 10 in *The Geography of Urban Transportation*, Fourth Edition, Genevieve Giuliano and Susan Hanson, Editors. New York: The Guilford Press.
- Congressional Research Service. (2021). "Reauthorizing Highway and Transit Funding Programs."
- National Surface Transportation Infrastructure Financing Commission. (2009). Executive Summary (pages 1-16) of "Paying Our Way: A New Framework for Transportation Finance."

Future Alternatives

- Sorenson, P. (2013). From fuel taxes to mileage fees. *Access* 43: 13-19.
- Wachs, M. (2003). Local option transportation taxes: Devolution as revolution. *Access* 22: 9-15.
- Schweitzer, L., and B. Taylor. (2010). Just road pricing. *Access* 36: 2-7.
- *(skim)* Levine, D. (2015). "Capital Ideas II: State Transportation Funding Lessons from 2015 – Challenges for 2016." Transportation for America.
- National Surface Transportation Policy and Revenue Study Commission Report. (2007). Exhibit 5-21 (pages 5-39 to 5-51) in "Transportation for Tomorrow."

Module 6: Congestion and Equity

Congestion: A Problem or a Solution?

- Bellis, R. (2020). "The Congestion Con: How More Lanes and More Money Equals More Traffic." Transportation for America.
- Downs, A. (2004). Why traffic congestion is here to stay…and will get worse. *Access* 25: 19-25.
- Taylor, B. (2002). Rethinking traffic congestion. *Access* 21: 8-16.
- Harsman, B., and J. Quigley. (2011). Political and public acceptability of congestion pricing: Ideology and self-interest in Sweden. *Access* 38: 2-7.

Equity, Environmental Justice, and Travel of Disadvantaged Groups

- Bullard, R., and G. Johnson. (1997). "Just Transportation," Chapter 1 (pages 7-14 only) in *Just Transportation: Dismantling Race and Class Barriers to Mobility*. Stony Creek, CT: New Society Publishers.
- Cairns, S., Greig, J., and M. Wachs. (2003). "Environmental Justice and Transportation: A Citizen's Handbook." Institute of Transportation Studies, UC Berkeley.
- Blumenburg, E., and G. Pierce. (2016). A driving factor in moving to opportunity. *Access* 48: 13-19.
- O'Regan, K., and J. Quigley. (1998). Cars for the poor. *Access* 12: 20-24.
- Bliss, L. (2021). "Like Basic Income, But for Transportation." Bloomberg City Lab. https://www.bloomberg.com/news/articles/2021-11-11/u-s-cities-test-effects-of-universal-basic-mobility?srnd=citylab-transportation.

Module 7: Safety and Health

Transportation Safety

- Cambridge Systematics, and M. Meyer. (2008). Executive Summary (pages ES1-ES6) of "Crashes vs. Congestion: What's the Cost to Society?" American Automobile Association.
- Engel, A., and B. Freer. (2021). "Pedestrian Safety Doesn't Have to Be a Nightmare." Bloomberg CityLab. https://www.bloomberg.com/news/articles/2021-10-27/how-to-end-the-u-s-pedestrian-safety-crisis-in-7-steps?srnd=citylab-transportation.
- Vision Zero Network. (2018). "How Does Vision Zero Differ from the Traditional Traffic Safety Approach in U.S. Communities?"
- Vision Zero Network. (2018). "Core Elements for Vision Zero Communities."
- Smart Growth America. (2021). "Dangerous By Design 2021." https://smartgrowthamerica.org/dangerous-by-design/.
- Barrett, D.E. (2021). "Unsafe Streets in Marginalized Communities Lead to Inequitable Traffic Enforcement." Transportation for America. https://t4america.org/2021/03/03/unsafe-streets-in-marginalized-communities-leads-to-inequitable-traffic-enforcement/.

Transportation and Public Health

- Frank, L., Kavage, S., and T. Litman. (2006). "Land Use and Transportation Impacts on Health Objectives," pages 24-40 of PDF in "Promoting Public Health through Smart Growth: Building Healthier Communities through Transportation and Land Use Policies and Practices." Smart Growth BC.
- Hanzlik, M. (2019). "The State of Transportation and Health Equity." Smart Growth America.
- Wolch, J.R., Byrne, J., and J.P. Newell. (2014). Urban green space, public health and environmental justice: The challenge of making cities 'just green enough.' *Landscape and Urban Planning* 125: 234-244.

Module 8: Environmental Impacts

NEPA and Air Quality

- Federal Highway Administration. "Environmental Review Toolkit: NEPA and Project Development." Read the following two tabs (plus sub-tabs under each): "NEPA and Transportation Decisionmaking" and "NEPA Documentation." https://www.environment.fhwa.dot.gov/projdev/index.asp.
- Federal Highway Administration. (2010). "Transportation Conformity: A Basic Guide for State and Local Officials." U.S. Department of Transportation.

Greenhouse Gas Emissions

- U.S. Department of Transportation. (2010). Executive Summary (pages ES1-ES11) of "Transportation's Role in Reducing U.S. Greenhouse Gas Emissions." Report to Congress.
- National Climate Assessment. (2018). "Transportation." U.S. Global Change Research Program. https://nca2018.globalchange.gov/chapter/12/.
- *(review reading from previous session)* Managan, E. (2020). "Driving Down Emissions: Transportation, Land Use, and Climate Change." Smart Growth America, Transportation for America.
- Joshua, J. (2021). "Public Transit Use Must Double to Meet Climate Targets, City Leaders Warn." Bloomberg CityLab. https://www.bloomberg.com/news/articles/2021-11-10/transit-use-must-double-to-meet-1-5-c-goal-mayors-warn.
- Lutsey, N. (2012). New automobile regulations. *Access* 41: 2-9.

Module 9: Parking and Traffic Impact Analysis

Planning for Parking

- Shoup, D. (1997). High cost of free parking. *Access* 10: 2-9.
- Shoup, D. (2007). Cruising for parking. *Access* 30: 16-22.
- Ewing, R. et al. (2017). "Empty Spaces: Real Parking Needs at Five TODs." Smart Growth America.
- *(skim)* Chester, M., et al. (2015). Parking infrastructure: A constraint on or opportunity for urban redevelopment? A study of Los Angeles County parking supply and growth. *Journal of the American Planning Association* 81(4): 268-286.
- Shoup, D. (2002). Roughly right or precisely wrong. *Access* 20: 20-25.

Traffic Impact Analysis

- Papacostas, C., and P. Prevedouros. (2001). "Traffic Impact and Parking Studies," Chapter 9 (pages 456-479) in *Transportation Engineering and Planning*, Third Edition. Upper Saddle River, NJ: Prentice-Hall.
- Institute of Transportation Engineers. (2006). "Transportation Impact Analyses for Site Development."
- Schneider, R., Handy, S., and K. Shafizadeh. (2014). Trip generation for Smart Growth projects. *Access* 45: 9-15.
- Millard-Ball, A. (2014). Phantom trips. *Access* 45: 3-8.

Module 10: Street Design

Traditional Standards

- Southworth, M., and E. Ben-Joseph. (2003). "Street Standards and the Built Environment," Introduction to *Streets and the Shaping of Towns and Cities*. Washington, DC: Island Press.
- MacDonald, E. (2007). The intersection of trees and safety. *Access* 31: 20-26.
- *(optional)* Southworth, M., and E. Ben-Joseph. (2004). Reconsidering the cul-de-sac. *Access* 24: 28-33.

New Approaches

- *(skim)* Dumbaugh, E., and M. King. (2018). Engineering livable streets: A thematic review of advancements in urban street design. *Journal of Planning Literature* 33(4): 451-465.
- Noland, R.B., et al. (2015). Costs and benefits of a road diet conversion. *Case Studies on Transport Policy* 3, 449-458.
- Surico, J. (2021). "Anatomy of a Bad Road." Bloomberg CityLab. https://www.bloomberg.com/news/features/2021-12-08/how-to-fix-brooklyn-s-worst-intersection?srnd=citylab-transportation.
- MacDonald, E. (2006). Building a boulevard. *Access* 28: 2-9.

Module 11: Transportation Modeling

Standard Practices

- Beimborn, E.A. (2006). "A Transportation Modeling Primer." Center for Urban Studies, University of Wisconsin-Milwaukee.

Critiques and Alternatives

- *(skim)* TRB. (2007). "Shortcoming of Current Forecasting Processes," Chapter 5 in "Metropolitan Travel Forecasting: Current Practice and Future Direction," TRB Special Report 288.
- Flyvbjerg, B., Holm, M., and S. Buhl. (2005). How (in)accurate are demand forecasts in public works projects? The case of transportation. *Journal of the American Planning Association* 71(2): 131-146.
- Bliss, L. (2021). "Why U.S. Infrastructure Costs So Much." Bloomberg CityLab. https://www.bloomberg.com/news/articles/2021-12-08/why-building-roads-and-transit-costs-more-in-the-u-s.
- *(optional)* Cervero, R. (2006). Alternative approaches to modeling the travel-demand impacts of Smart Growth. *Journal of the American Planning Association* 72(3): 285-295.

Module 12: Autonomous Vehicles

Overview, Opportunities, and Challenges

- Anderson, J.M., et al. (2016). "Autonomous Vehicle Technology: A Guide for Policymakers" (read Chapters 1 and 2). RAND Corporation.
- Freemark, Y., Hudson, A., and J. Zhao. (2019). Are cities prepared for autonomous vehicles? Planning for technological change by U.S. local governments. *Journal of the American Planning Association* 85(2): 133-151.
- Zipper, D. (2021). "The Dangerous Promise of the Self-Driving Car." Bloomberg CityLab. https://www.bloomberg.com/news/articles/2021-10-12/the-dangerous-promise-of-the-self-driving-car?srnd=citylab-transportation
- *(skim)* Sandt, L., and J.M. Owens. (2017). "Discussion Guide for Automated and Connected Vehicles, Pedestrians, and Bicyclists." Pedestrian and Bicycle Information Center.
- *(skim)* Creger, H., Espino, J., and A.S. Sanchez. (2019). "Autonomous Vehicle Heaven or Hell? Creating a Transportation Revolution that Benefits All" (read pages 6-20). The Greenlining Institute.

Paths Forward

- Schlossberg, M., et al. (2018). "Rethinking the Street in an Era of Driverless Cars." Urbanism Next.
- Speck, J. (2017). "Ten Rules for Cities about Automated Vehicles." Congress for the New Urbanism. https://www.cnu.org/publicsquare/2020/02/27/ten-rules-cities-about-automated-vehicles.
- Links to policy statements on autonomous vehicles:
    - Human Factors and Ergonomics Society (HFES)
    - National Association of City Transportation Officials (NACTO)
    - Institute of Transportation Engineers (ITE)
    - Association of Pedestrian and Bicycle Professionals (APBP)