

Course Number:	CE 510/610
Title:	Theories and Methods of Travel Behavior
Section:	008
CRN(s)	44431/44432
Credits	4
Prerequisite(s)	Graduate Standing or Permission
Days/Time	Mondays & Wednesdays 10-11:50PM
Location	EB 315 (ITS Lab)
Final Exam Day/Time	No Final exam

Course Website	http://kellyjclifton.com/
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Instructor	Kelly J Clifton, PhD
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Office Hours	Mondays at 1pm or by appointment
Mailbox Location	CEE Office, EB 200 Suite

Required Text or Other Materials: All readings will be provided on the course website.

Catalog Course Description:

This introductory graduate seminar will cover the various theoretical perspectives on travel behavior and the methodological approaches used to analyze and understand behavior. Travel behavior includes the study of the set of transportation choices and outcomes, including: vehicle ownership, activity engagement and scheduling, mode choices, destination choices, and routing decisions. It is also closely aligned with other behaviors and choices such as where to live, work-life, overall lifestyle, and health. The field aims to understand the collective set of conditions and considerations that lead to these decisions, such as socio-demographics, economic conditions, the built and natural environment, attitudes, perceptions and cognition, experience and history and a wide range of other influences. As much of the theory and methods draw upon social science approaches to behavior and applied to transportation decisions, the study spans disciplines but has been primarily informed by theories from economics, psychology, sociology and geography and influenced by engineering and urban planning.

- Spatial and temporal behavior – geographers tend to think about the influence of space and time in organizing and shaping human activity
- Theories of planned behavior, social learning theory, cognition, perception and attitudes – psychology
- Utility maximization, behavioral economics, decision theory – Economics has heavily influenced the theoretical underpinnings of behavioral study, particularly the application of utility maximization, rational decision making, etc.

In addition, there are specific data and analytical methods used in these inquiries. In this course, we may focus on any or all of the following:

- Surveys - Travel diaries, choice experiments
- Qualitative methods – focus groups, ethnographies, life histories
- Mental maps
- GPS and other passive spatial routing information

Course Objectives – Students must demonstrate:

- Understand the various theories that intersect travel behavior
- Be able to identify how these theories are incorporated into planning research and practice
- Be familiar with the data and methods used to analyze travel behavior.

Course Requirements:

Class Participation (10%): Students are expected to actively engage in the seminar. This includes regular attendance, asking questions, providing examples and commentary, and contributing to the intellectual environment of the classroom.

Homework (10% x 4 = 40%): Students will apply the concepts, theories, methods, and empirical research from class via four short homework assignments, answering questions and synthesizing analysis results in the form of a three to five page memo. Assignments will require the application of travel behavior concepts and analysis methods to real-world travel behavior data. The homework will cover each of the major areas of the course: economics, planning, psychology, and geography. Specific homework instructions and questions will be provided during the term.

Research Paper (40%): In this paper, you will explore a topic of your choosing in depth, using a wide range of scholarly literature. Students may choose to do empirical work, analyzing data or applying a methodological approach to transportation and health; or, they may choose to examine the literature, making original arguments based upon the work of others. More detailed information about the final paper requirements (format, length, topics) will be provided.

Presentation (10%): Students will give a short 10 minute presentation on their term project that succinctly identifies the key thesis of the paper, summarizes the methods/approach used, and presents the preliminary findings.

Schedule				
Week	Date	Topic	Task Due	Required/Optional Readings Due
1	5-Jan	Introduction		
	7-Jan	Introduction		Pendyala and Bhat, 2004; Beimborn & Kennedy, 1996; Hautzinger, 1997. Meyer and Miller, 1984.
2	12-Jan	No class – TRB		Domencich & McFadden, 1975: Chapters 1, 2, and 3; Beimborn & Kennedy, 1996
	14-Jan	Watch Daniel McFadden’s Nobel Lecture (2000)		McFadden, 2001; McFadden, 1973
3	19-Jan	No class – Holiday		-none- (think about project)
	21-Jan	Economics		Ben-Akiva & Lerman, 1985: Chapters 3; Chapters 4 and 5
4	26-Jan	Homework # 1 , Economics		Mokhtarian & Salomon, 2001; Ory & Mokhtarian, 2005
	28-Jan	Geography		Hägerstrand, 1970; Chapin, 1974: Chapter 2; Neutens, Schwanen, & Witlox, 2011
5	2-Feb	Geography	Homework #1	Kwan & Lee, 2003; Pas, 1985; McNally & Rindt, 2008; Harvey, 2003; Kitamura, 1988; Axhausen & Gärling, 1992
	4-Feb	Geography , Homework #2		-none- (work on project)
6	9-Feb	Planning		Ewing & Cervero, 2010; Saelens & Handy, 2008; Cervero & Kockelman, 1997
	11-Feb	Planning	Homework #2	Cao, Mokhtarian, & Handy, 2009; Mokhtarian & Cao, 2008; Cao & Chatman, 2012
7	16-Feb	Planning , Homework #3		-none- (work on project)
	18-Feb	Psychology		Montaño & Kasprzyk, 2008; Maslow, 1943; Ajzen, 1991
8	23-Feb	Psychology	Homework #3	Prochaska, Redding, & Evers, 2008; Pikora et al., 2003; Aarts, Verplanken, & van Knippenberg, 1998; Ogilvie et al., 2007; Yang et al., 2010
	25-Feb	Psychology , Homework #4		-none- (work on project)
9	2-Mar	Design		Ewing & Handy, 2009; Forsyth & Krizek, 2011; TBD (human factors); TBD (roadway safety)
	4-Mar	Policy	Homework #4	Forsyth & Krizek, 2010; TBD (policy)
10	9-Mar	Conclusion		Van Acker, van Wee, & Witlox, 2010; Singleton & Clifton, 2015
	11-Mar	Conclusion	Student Presentations	
Finals	16-Mar	Projects due	Project Due	

Readings:

Introduction

- Pendyala, R.M., and C.R. Bhat (2004), "Emerging Issues in Travel Behavior Analysis," Resource paper for workshop on Emerging Issues, National Household Travel Survey Conference, Washington, D.C., November.
- Beimborn, E., & Kennedy, R. (1996). *Inside the blackbox: Making transportation models work for livable communities*. Citizens for a Better Environment and The Environmental Defense Fund.
- Hautzinger, Heinz (1997). "Design and Analysis of Travel Surveys," *Understanding Travel Behaviour in an Era of Change*. Oxford, UK: Elsevier Science Ltd. Pages 437-468.
- Meyer, Michael and Eric Miller (1984). "Data Management and Diagnosis," *Urban Transportation Planning: A Decision-Oriented Approach*. New York: McGraw-Hill. Pages 110-158.

Economics

- Domencich, T. A., & McFadden, D. (1975). *Urban travel demand: A behavioral analysis*. New York, NY: American Elsevier Publishing Company, Inc.
- McFadden, D. (2001). Economic choices. *American Economic Review*, 91(3), 351–378. Retrieved from http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2000/mcfadden-lecture.html
- McFadden, D. (1973). Conditional logit analysis of qualitative choice behavior. In P. Zarembka (Ed.), *Frontiers in Econometrics* (pp. 105–142). New York, NY: Academic Press.
- Ben-Akiva, M., & Lerman, S. R. (1985). *Discrete choice analysis: Theory and application to travel demand*. Cambridge, MA: The MIT Press.
- Mokhtarian, P. L., & Salomon, I. (2001). How derived is the demand for travel? Some conceptual and measurement considerations. *Transportation Research Part A: Policy and Practice*, 35(8), 695–719.
- Ory, D. T., & Mokhtarian, P. L. (2005). When is getting there half the fun? Modeling the liking for travel. *Transportation Research Part A: Policy and Practice*, 39(2), 97–123.

Geography

- Hägerstrand, T. (1970). What about people in regional science? *Papers in Regional Science*, 24(1), 6–21.
- Chapin Jr., F. S. (1974). *Human activity patterns in the city: Things people do in time and in space*. New York, NY: John Wiley & Sons, Inc.
- Neutens, T., Schwanen, T., & Witlox, F. (2011). The prism of everyday life: towards a new research agenda for time geography. *Transport Reviews*, 31(1), 25–47.
- Kwan, M.-P., & Lee, J. (2003). Geovisualization of human activity patterns using 3D GIS: A time-geographic approach. In M. F. Goodchild & D. G. Janelle (Eds.), *Spatially integrated social science: Examples in best practice*. Oxford, UK: Oxford University Press.
- Pas, E. I. (1985). State of the art and research opportunities in travel demand: Another perspective. *Transportation Research Part A: General*, 19(5), 460–464.
- McNally, M. G., & Rindt, C. R. (2008). The activity-based approach. In D. A. Hensher & K. J. Button (Eds.), *Handbook of transport modelling (2nd ed.)*. Bingley, UK: Emerald, Inc.
- Harvey, A. (2003). Time-space diaries: merging traditions. Presented at the International Conference on Transport Survey Quality and Innovation, Kruger, South Africa.

- Kitamura, R. (1988). An evaluation of activity-based travel analysis. *Transportation*, 15(1–2), 9–34.
- Axhausen, K. W., & Gärling, T. (1992). Activity-based approaches to travel analysis: Conceptual frameworks, models, and research problems. *Transport Reviews*, 12(4), 323–341.

Planning

- Ewing, R., & Cervero, R. (2010). Travel and the built environment: A meta-analysis. *Journal of the American Planning Association*, 76(3), 265–294.
- Saelens, B. E., & Handy, S. L. (2008). Built environment correlates of walking: A review. *Medicine and Science in Sports and Exercise*, 40(7 Suppl), S550–S566.
- Cervero, R., & Kockelman, K. (1997). Travel demand and the 3Ds: Density, diversity, and design. *Transportation Research Part D: Transport and Environment*, 2(3), 199–219.
- Cao, X., Mokhtarian, P. L., & Handy, S. L. (2009). Examining the impacts of residential self-selection on travel behaviour: A focus on empirical findings. *Transport Reviews*, 29(3), 359–395.
- Mokhtarian, P. L., & Cao, X. (2008). Examining the impacts of residential self-selection on travel behavior: A focus on methodologies. *Transportation Research Part B: Methodological*, 42(3), 204–228.
- Cao, X., & Chatman, D. G. (2012). How will land use policies affect travel? The importance of residential sorting. Presented at the 91st Annual Meeting of the Transportation Research Board, Washington, DC.

Psychology

- Montaño, D. E., & Kasprzyk, D. (2008). Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. In K. Glanz, B. K. Rimer, & K. Vizwanath (Eds.), *Health behavior and health education: Theory research, and practice (4th ed.)* (pp. 67–96). San Francisco, CA: John Wiley & Sons, Inc.
- Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370–396.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Prochaska, J. O., Redding, C. A., & Evers, K. E. (2008). The transtheoretical model and stages of change. In K. Glanz, B. K. Rimer, & K. Vizwanath (Eds.), *Health behavior and health education: Theory research, and practice (4th ed.)* (pp. 97–121). San Francisco, CA: John Wiley & Sons, Inc.
- Pikora, T., Giles-Corti, B., Bull, F., Jamrozik, K., & Donovan, R. (2003). Developing a framework for assessment of the environmental determinants of walking and cycling. *Social Science & Medicine*, 56(8), 1693–1703.
- Aarts, H., Verplanken, B., & van Knippenberg, A. (1998). Predicting behavior from actions in the past: Repeated decision making or a matter of habit? *Journal of Applied Social Psychology*, 28(15), 1355–1374.
- Ogilvie, D., Foster, C. E., Rothnie, H., Cavill, N., Hamilton, V., Fitzsimons, C. F., & Mutrie, N. (2007). Interventions to promote walking: Systematic review. *BMJ*, 334(7605).
- Yang, L., Sahlqvist, S., McMinn, A., Griffin, S. J., & Ogilvie, D. (2010). Interventions to promote cycling: Systematic review. *BMJ*, 341(5293).

Design

- Ewing, R., & Handy, S. (2009). Measuring the unmeasurable: Urban design qualities related to walkability. *Journal of Urban Design*, 14(1), 65–84.
- Forsyth, A., & Krizek, K. (2011). Urban design: Is there a distinctive view from the bicycle? *Journal of Urban Design*, 16(4), 531–549.

Policy

- Forsyth, A., & Krizek, K. J. (2010). Promoting walking and bicycling: Assessing the evidence to assist planners. *Built Environment*, 36(4), 429–446.
- TBA

Conclusion

- Van Acker, V., van Wee, B., & Witlox, F. (2010). When transport geography meets social psychology: Toward a conceptual model of travel behaviour. *Transport Reviews*, 30(2), 219–240.
- Singleton, P. A., & Clifton, K. J. (2015). The theory of travel decision-making: A conceptual framework of active travel behavior. Presented at the 94th Annual Meeting of the Transportation Research Board, Washington, DC.

Computer and E-mail Accounts

- If you haven't done so already, please go to the CadLab located in EB 325 to activate your engineering account. If you need help in using this account, please see the attendant or send an e-mail to support@cecs.pdx.edu
- If you choose not to check your CECS e-mail account regularly (yourname@cecs.pdx.edu) then please forward it to an e-mail account that you do check. Important information and announcements are delivered via this e-mail address.

Code of Conduct

The PSU Student Conduct Code prohibits all forms of academic cheating, fraud, and dishonesty. Further details can be found in the PSU Bulletin. Allegations of academic dishonesty may be addressed by the instructor, and/or may be referred to the Office of Student Affairs for action. Acts of academic dishonesty may result in a failing grade on the exam or assignment for which the dishonesty occurred, disciplinary probation, suspension or dismissal from the University. The students and the instructor will work together to establish optimal conditions for honorable academic work. Questions about academic honesty may be directed to the Office of Student Affairs: <http://www.ess.pdx.edu/osa/>.

Classroom Rules and Behavior Expectations

The classroom is a professional space and professional conduct is expected. Please silence your cell phone and refrain from text messaging during class and exam times. Treat your fellow students and the instructor with respect and please use appropriate language at all times. Additional rules may be added at the instructor's discretion.

Ethics and Professionalism

As future professional engineers you should plan to take the FE Exam (see the Oregon State Board of Examiners for Engineering and Land Surveying at www.osbeels.org), and you should be familiar with the ASCE Code of Ethics (www.asce.org/inside/codeofethics.cfm), which includes the following:

Engineers shall act in such a manner as to uphold and enhance the honor, integrity and dignity of the engineering profession.

Campus Resources

As a PSU student, you have numerous resources at your disposal. Please take advantage of them while you are here. A small sample is listed below:

- CEE Website: <http://www.cce.pdx.edu>
- Career Center: <http://www.career.pdx.edu/>
- Center for Student Health & Counseling: <http://www.shac.pdx.edu/>
- The Writing Center: <http://www.writingcenter.pdx.edu/>
- PSU Disability Resource Center: 435 SMU - The PSU Disability Resource Center is available to help students with academic accommodations. If you are a student who has need for test-taking, note-taking or other assistance, please visit the DRC and notify the instructor at the beginning of the term.

Participation in student and professional groups can be a valuable part of your education experience. Membership gives students opportunities to get to know fellow students better, meet and network with professionals, collaborate in solving real engineering problems, learn about internship or job possibilities, socialize and have fun. Consider becoming active with a student organization, such as the following:

- American Society of Civil Engineers Student Group (ASCE): <http://www.asce.pdx.edu>
- Institute of Transportation Engineers Student Chapter (ITE): <http://www.its.pdx.edu/ite/>

Most professional organizations have monthly meetings and encourage student participation by providing discounts for lunch and dinner meetings. These meetings provide opportunities to network with potential future employers, learn about scholarships, and increase your technical knowledge. Take a look at these organizations as a starting point:

- American Society of Civil Engineers (ASCE) Oregon Section: www.asceor.org
- Institute of Transportation Engineers (ITE) Oregon Section: www.oregonite.org
- Society of Women Engineers (SWE) Columbia River Section - <http://www.swe-columbia-river.org>
- Structural Engineers Association of Oregon (SEAO): www.seao.org

Library and Literature Research

With the advent of the Internet it is very tempting to think that all necessary resources for a term project will be available in full text after typing in a few words at Google.com. This is not the case. You will often need to go to the library, use real library search tools and access real books and articles contained in refereed/archival journals.

Be sure to make use of the Vikat library catalog accessed via the PSU library home page at <http://www.lib.pdx.edu/>. Also available on the library home page are Full Text Electronic Journals and a list of on-line Databases. Databases to try are EI Compindex (<http://www.ei.org/ev2/ev2.home>) and Lexis-Nexis. Note that access to these databases is free for PSU students, but you must be using a computer on campus or via a dial-in service. See <http://www.lib.pdx.edu/services/distance/proxyserver.html> for instructions on how to gain off-campus access using a proxy server.

Campus Safety

The University considers student safety paramount. The Campus Public Safety Office is open 24 hours a day to assist with personal safety, crime prevention and security escort services. Call 503-725-4407 for more information.

For Campus emergencies call 503-725-4404.