Economics 282A — Winter 2012
Transportation Economics I — Kenneth Small

SYLLABUS

Instructor information:
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Class meetings:*
Tues., Thurs. 2:00 – 3:20
Room: SSPB 3218

*** Note: no class on Tues. Jan. 10**

Description:
Microeconomic tools used in transportation analysis, and applications of them. Travel demand, cost functions, pricing, investment, and project evaluation.

Prerequisites:
Graduate standing in economics, transportation engineering, transportation science, or urban planning. Suggested guideline: best if have any two of the following:

(1) intermediate undergraduate microeconomics;
(2) calculus including basics of matrix algebra and calculus of several variables;
(3) prior study of transportation

Course Requirements:
In addition to the readings, there will be several class presentations, four problem sets, two short essays (4-5 pages each), and a final exam. Final grades will be based on the following percentages:

Class participation	35%
Problem sets	20%
Essays	20%
Final exam	25%

WORKING TOGETHER: You may work together on problem sets in groups of up to 3; however, the solutions must be written up independently in your own words and style. Note: if you work in a group, write the name(s) of the other group member(s) on your problem set.

Required Texts:
Essays: José A. Gómez-Ibáñez, William B. Tye, and Clifford Winston, eds., *Essays in Transportation Economics and Policy: A Handbook in Honor of John R. Meyer*, Brookings Institution (1999).
Small & Verhoef: Small, Kenneth A., and Erik T. Verhoef, *Urban Transportation Economics*, 2nd edition, 2007.

Recommended Supplement:
Handbook: A. de Palma, R. Lindsey, E. Quinet, & R. Vickerman, eds., *A Handbook of Transport Economics*, Edward Elgar, 2011. A superb reference if you intend to use transportation economics in your future work; contain further details on many topics covered here. Available on Google eBook store for $48; also will be on reserve, Langston Library (after a few weeks).

Other readings are available on line from links in this syllabus; you may need to download them from a UCI computer or use a VPN in order to have UCI's library subscription status.

COURSE OUTLINE AND READING LIST
* indicates optional reading

I. INTRODUCTION (**Week 1b)**

Small & Verhoef, ch. 2

Handbook, "Foreword" (by Daniel McFadden)

II. DEMAND **(Weeks 1b-3)**

Essays, ch. 2 (Small and Winston: "Demand")

Small & Verhoef, ch. 2

Abrantes, Pedro A.L., and Mark R. Wardman (2011), "Meta-analysis of UK values of travel time: An update," *Transportation Research A*, 45(1): 1-17.

Bates, John, John Polak, Peter Jones, and Andrew Cook (2001), "The Valuation of Reliability for Personal Travel," *Transportation Research E: Logistics and Transportation Review,* 37E, pp. 191-229 (omit sections 4, 6).

Fosgerau, Mogens, and Leonid Engelson (2011) "The value of travel time variance," *Transportation Research B*, 45(1): 1-8.

Brownstone, David, and Kenneth A. Small (2005), "Valuing Time and Reliability: Assessing the Evidence from Road Pricing Demonstrations," *Transportation Research Part A*, 39(4): 279-293.

* Li, Zheng, David A. Hensher, and John M. Rose (2010) "Willingness to pay for travel time reliability in passenger transport: A review and some new empirical evidence," *Transportation Research Part E: Logistics and Transportation Review*, 46: 384–403.

Vovsha, Peter, Mark Bradley, and John L. Bowman (2005) "Activity-Based Travel Forecasting Models in the United States: Progress since 1995 and Prospects for the Future," in: H. Timmermans (ed.), *Progress in Activity-Based Analysis*, Elsevier, pp. 389-414.

* Handbook, ch. 8 (Walker & Ben-Akiva, "Advances in discrete choice: mixture models")

* Handbook, ch. 7 (Hensher, "Valuation of travel time savings")

* Handbook, ch. 10 (Pinjari & Bhat, "Activity-based travel demand analysis")

* Brownstone, David and Kenneth Train (1999) "Forecasting new product penetration with flexible substitution patterns," *Journal of Econometrics* 89: 109-129.

III. COSTS **(Weeks 4-5)**

Essays, ch. 3 (Brauetigam: "Costs")

Bailey, Elizabeth E., and Ann F. Friedlaender (1982), "Market Structure and Multiproduct Industries," *Journal of Economic Literature*, 20(3): 1024-1048. [Except pp. 1033-1048, which are optional]

Small & Verhoef, ch. 3. [Except for the following sections, which are optional: "*Analysis of Shock Waves*"; "*Car-Following Models*"; 3.4.2; 3.4.4; 3.5.1; 3.5.2.]

Bitzan, John D. (2003), "Railroad Costs and Competition: The Implications of Introducing Competition to Railroad Networks," *Journal of Transport Economics and Policy*, 37(2), pp. 201-225.

Wei, Wenbin, and Mark Hansen (2003), "Cost Economics of Aircraft Size," *Journal of Transportation Economics and Policy*, 37(2): 279-296.

Essays, ch. 11 (Kain: "The Urban Transportation Problem")

Campos, Javier, and Ginés de Rus (2009) "Some stylized facts about high-speed rail: A review of HSR experiences around the world," *Transport Policy*, 16(1): 19-28.

* Handbook, ch. 12 (Basso, Jara-Diaz, & Waters, "Cost functions for transport firms")
* Handbook, ch. 15 (Delucchi & McCubbin, "External costs of transport in the U.S.")

IV. PRICING & INVESTMENT **(Weeks 6-8a)**

Small & Verhoef, ch. 4 [except for the following sections: *First-best Pricing for Networks of Bottlenecks*; *First-best Pricing with Alternative Dynamic Congestion Technologies*; *Two bottlenecks in parallel*; *Some Extensions*; Sections 4.2.2 - 4.2.4].
Small & Verhoef, sections 5.1.1, 6.1.1

Congested Highways

Essays, ch. 6, pp. 198-215 only (Mohring: "Congestion")

May, Anthony D., S.P. Shepherd, A. Sumalee, and A. Koh (2008) "Design tools for road pricing cordons," in Harry W. Richardson and Chang-Hee Christine Bae, eds., *Road Congestion Pricing in Europe: Implications for the United States*. Cheltenham, UK: Edward Elgar, pp. 138-155.

Parking, Heavy Vehicles

Wilson, Richard W., and Donald C. Shoup (1990) "Parking subsidies and travel choices: Assessing the evidence," *Transportation*, 17(2): 141-157.

* Small, Kenneth A., and Clifford Winston (1988), "Optimal Highway Durability," *American Economic Review,* 78(3), pp. 560-569.

* Handbook, ch. 31 (Arnott, "Parking Economics")

Investment & Induced Travel

Keeler, Theodore E., and Kenneth A. Small (1977), "Optimal Peak-Load Pricing, Investment, and Service Levels on Urban Expressways," *Journal of Political Economy,* 85, pp. 1-25.

Arnott, Richard, and Kenneth A. Small (1994) "The Economics of Traffic Congestion," *American Scientist,* 82, pp. 446-454.

Hymel, Kent, Kenneth A. Small, and Kurt Van Dender (2010) "Induced Demand and Rebound Effects in Road Transport," *Transportation Research Part B – Methodological,* 44(10): 1220-1241.

Duranton, Gilles, and Matthew A. Turner (2011) "The Fundamental Law of Road Congestion: Evidence from US Cities," *American Economic Review,* 101: 2616-2652.

Transit, Rail

Parry, Ian, and Kenneth A. Small (2009) "Should Urban Transit Subsidies Be Reduced?" *American Economic Review,* 99(3): 700-724.

* Nash, Chris (2009) "When to invest in high-speed rail links and networks?" Discussion paper No. 2009-16, International Transport Forum, Paris (November).

Fuel Taxation

Parry, Ian, and Kenneth A. Small (2005), "Does Britain or The United States Have the Right Gasoline Tax?" *American Economic Review,* 95(4): 1276-1289.

V. PROJECT EVALUATION **(Weeks 8b-10)**

Methods

Essays, ch. 5 (Small: "Project Evaluation")

Examples

Kay, John, Alan Manning, and Stefan Szymanski (1989), "The Economic Benefits of the Channel Tunnel," *Economic Policy,* 4(8): 212-234.

"Under Water," *The Economist,* February 14, 2004, p. 59 (financial update on Channel Tunnel)

Boardman, Anthony E., David H. Greenberg, Aidan R. Vining, and David L. Weimer (1996), "Summary of the CBAS of the Coquihalla Highway," in *Cost-Benefit Analysis: Concepts and Practice*, Prentice Hall, pp. 433-444.

Incidence

Mohring, Herbert (1961), "Land Values and the Measurement of Highway Benefits," *Journal of Political Economy*, 69(3), pp. 236-249.

* Boyd, J. Hayden (1976), "Benefits and Costs of Urban Transportation: He Who is Inelastic Receiveth and Other Parables," *Transportation Research Forum Proceedings*, 17: 290-297.

* West, Sarah (2009) "The Incidence of Public Finance Schemes," written for Committee on Equity Implications of Alternative Transportation Finance Mechanisms, National Research Council (October). http://onlinepubs.trb.org/onlinepubs/sr/sr303West.pdf

Forecasting

Flyvbjerg, Bent, Matte Skamris Holm, and Søren Buhl (2002), "Underestimating Costs in Public Works Projects: Error or Lie?" *Journal of the American Planning Association*, 68(3): 279-295.

* Flyvbjerg, Bent, Matte Skamris Holm, and Søren Buhl (2006), "Inaccuracy in Traffic Forecasts," *Transport Reviews*, 26(1), 1-24.

Land-Use Impacts

Baum-Snow, Nathaniel (2007) "Did Highways Cause Suburbanization?" *Quarterly Journal of Economics*, 122(2): 775-805. (If you have trouble getting the full pdf file, try this link in Internet Explorer.)

External Benefits

Jara-Diaz, Sergio R. (1986), "On the Relation Between Users' Benefits and the Economic Effects of Transportation Activities," *Journal of Regional Science*, 26(2), pp. 379-391.

Graham, Daniel (2007) "Agglomeration, productivity and transport investment," *Journal of Transport Economics and Policy*, 41(3): 317-343. (Try this link if above doesn't work right.)

*Melo, P., Daniel J. Graham, and Robert Noland (2009) "A meta-analysis of estimates of urban agglomeration economies," *Regional Science and Urban Economics*, 39(3): 332-342.

* Fernald, John G. (1999), "Roads to Prosperity? Assessing the Link Between Public Capital and Productivity," *American Economic Review*, 89(3), pp. 619-638.

* Handbook, ch. 21 (Mackie, Graham, & Laird, "The direct and wider impacts of transport projects: a review") – especially pp. 513-523.

* Venables, Anthony J. (2007), "Evaluating Urban Transport Improvements: Cost-Benefit Analysis in the Presence of Agglomeration and Income Taxation," *Journal of Transport Economics and Policy*, 41(2): 173-188.