

PAUL WADDELL

Department of City and Regional Planning
University of California, Berkeley
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Berkeley, CA 94720-1850

EDUCATION:

- 1989 **Ph.D., University of Texas at Dallas**
Political Economy
- 1981 **M.S., University of Texas School of Public Health at Houston**
Human Ecology
- 1979 **B.S., Texas A&M University, *Magna Cum Laude***
Marine Sciences

ACADEMIC AND PROFESSIONAL EXPERIENCE:

- 2012- Founder and President, Synthicity (www.synthicity.com)
- 2011- Chair, Department of City and Regional Planning, University of California Berkeley
- 2010-2011 Vice Chair, Department of City and Regional Planning, University of California Berkeley
- 2009- Professor, Department of City and Regional Planning, University of California, Berkeley
- 2004-2009 Professor, Daniel J. Evans School of Public Affairs, University of Washington
Professor, Department of Urban Design and Planning
- 2004-2009 Adjunct Professor, Department of Civil and Environmental Engineering
Adjunct Professor, Department of Geography
- 2006-2009 Transportation Research Board, ADB40 Transportation Demand Forecasting, Member
- 2005-2009 Steering Committee Member, Interdisciplinary Ph.D. Program in Urban Design and Planning, University of Washington
- 2005-2008 Coordinator, Ph.D. Program in Public Policy and Management, Evans School of Public Affairs, University of Washington
- 2005 Visiting Professor, Swiss Federal Institute of Technology (ETH), Zürich
- 2004-2005 Visiting Professor, Centre National de la Recherche Scientifique, Paris
- 2003-2009 Director, Center for Urban Simulation and Policy Analysis
- 2002-2003 National Research Council, Committee on Review of GIS and Research at the Department of Housing and Urban Development
- 2002-2003 Governing Board, Program on the Environment, University of Washington
- 2000-2004 Director, Interdisciplinary Ph.D. Program in Urban Design and Planning
- 1997-2004 Associate Professor, Daniel J. Evans School of Public Affairs, University of Washington
Associate Professor, Department of Urban Design and Planning
- 1998-2004 Adjunct Associate Professor, Department of Geography, University of Washington
- 1999-2004 Adjunct Associate Professor, Department of Civil and Environmental Engineering

- 1996-1997 Associate Professor of Political Economy and Geographic Information Systems, Executive Director, Bruton Center for Development Studies, University of Texas at Dallas
- 1991-1996 Assistant Professor of Political Economy and Geographic Information Systems, Executive Director, Bruton Center for Development Studies, University of Texas at Dallas
- 1989-1991 Technical Director, Bruton Center for Development Studies and Lecturer in School of Social Sciences, University of Texas at Dallas.
- 1986-1989 Director, Department of Regional Services, North Central Texas Council Governments, Arlington, Texas.
- 1984-1986 Assistant Director, Department of Regional Services, North Central Texas Council of Governments.
- 1982-1984 Urban Analyst, Department of Regional Services, North Central Texas Council of Governments.

EDITORIAL BOARDS:

- 2010- *Cityscape*
- 2008- *Transportation Letters*
- 2008- *Transportation Research Part A: Policy and Practice*
- 2007- *Journal of Transport and Land Use*
- 2007- *Applied Spatial Analysis and Planning*
- 2006- *International Journal of Microsimulation*
- 2003-2008 *Journal of the American Planning Association*

DOCTORAL ADVISEES:

Graduated:

- Dimitrios Efthymiou (Member) National Technical University of Athens (2014)
- Fletcher Foti (Chair), UC Berkeley, City and Regional Planning (2014)
- Jake Wegmann (Member), UC Berkeley, City and Regional Planning (2014)
- Tierra Bills (Member), UC Berkeley, Civil and Environmental Engineering (2013)
- Ashkay Vij (Member), UC Berkeley, Civil and Environmental Engineering (2013)
- Guanyu Li (Member), UC Berkeley, City and Regional Planning (2012)
- Konrad Meister (Member), ETH, Zurich (2011)
- Austin Polebitski (Member), UW, Civil and Environmental Engineering (2010)
- David Hsu (Chair), UW, Interdisciplinary Program in Urban Design and Planning (2010)
- Cristian Angelo Guevara (Member) MIT, Civil and Environmental Engineering (2010)
- Brian Lee (Chair), UW, Interdisciplinary Program in Urban Design and Planning (2009)
- Bev Wilson, (Member), University of North Carolina, Chapel Hill (2009)
- Liming Wang (Chair), UW, Interdisciplinary Program in Urban Design and Planning (2009)

- Andrew Bjorn (Chair), UW, Interdisciplinary Program in Urban Design and Planning (2009)
- Ahsan Habib (External Examiner), University of Toronto, Civil and Environmental Engineering (2009)
- Kiarash Motamedi (Member), Université Cergy-Pontoise, Paris, France (2008)
- Guohui Zhang (Member), UW, Civil and Environmental Engineering (2008)
- David Jonsson (Opponent) KTH, Stockholm, Sweden (2008)
- Ilan Elgar (External Examiner), University of Toronto, Civil and Environmental Engineering (2007)
- Hyungtai Kim, (Chair), UW, Interdisciplinary Program in Urban Design and Planning (2006)
- Joel Franklin (Chair), UW, Interdisciplinary Program in Urban Design and Planning (2006)
- Rolf Moeckel (Member), University of Dortmund, Germany (2006)
- Shishir Mathur (Member), UW, Interdisciplinary Program in Urban Design and Planning (2004)
- Sungyop Kim (Chair), UW, Interdisciplinary Program in Urban Design and Planning (2004)
- John Carruthers (Member), UW, Interdisciplinary Program in Urban Design and Planning (2003)
- Kevin Krizek (Chair), UW, Interdisciplinary Program in Urban Design and Planning (2001)

Current:

- Pedro Peterson (Member), UC Berkeley, City and Regional Planning
- Aksel Olsen (Chair), UC Berkeley, City and Regional Planning
- Yizhen Gu (Member), UC Berkeley, City and Regional Planning
- Antje Kunze (Member) ETH Zurich
- Cristoff Zollig (Member) ETH Zurich
- Geoff Boeing (Chair), UC Berkeley, City and Regional Planning
- Samuel Maurer (Chair), UC Berkeley, City and Regional Planning

ENTREPRENEURIAL ACTIVITY

Founded Synthicity, Inc. in 2012 with 5 co-founders, as a Berkeley startup company (www.synthicity.com). The firm provides solutions and software products for use in city and regional planning. In addition to professional support for applications of the UrbanSim model system, Synthicity has developed state-of-the-art 3D visualization technology for visualizing massive amounts of urban data, and supporting urban analytics at scales ranging from the site to the metropolitan region. Synthicity has just been selected as one of 12 startups out of nearly 200 applicants for the San Francisco Entrepreneur in Residence Program, to work with startups to examine the potential to grow the market for information technology to address problems faced by cities.

Initial Synthicity clients include the Denver Regional Council of Governments, the Metropolitan Transportation Commission (San Francisco Bay Area), the Mid-Region Council of Governments (Albuquerque), the Wasatch Front Regional Council (Salt Lake City), Oahu Metropolitan Planning Organization (Honolulu), and the Societe du Grand Paris (Paris, France). The Paris project involves using UrbanSim to evaluate the impacts of a 36 billion Euro rail project planned for the Paris region, on the spatial development patterns and economic agglomeration of the region.

Synthicity was also just awarded a new project by the Association of Metropolitan Planning

Organizations (AMPO) to develop a common software platform for activity-based travel modeling for use by MPOs.

RESEARCH GRANTS (\$18.6 million)

National Science Foundation IIS-0964412, Integrating Behavioral, Geometrical and Graphical Modeling to Simulate and Visualize Urban Areas, Collaborative Project with IIS-0964302. PI: Paul Waddell (UC Berkeley), Co-PI, Michael Jordan (UC Berkeley), Daniel Aliaga (PI Purdue), Bedrich Benes (Co-PI, Purdue). 2010-2013, \$900,000 for full project. (\$450K UCB)

European Research Council, SustainCity Project. Modeling sustainable transportation and land use policies in Paris, Brussels and Zurich. PI at UC Berkeley, Paul Waddell. PI at ETH Zurich and overall project coordinator: Kay Axhausen. 2009-2013, 2,700,000 Euros for full project (approximately \$3.5 million at current exchange rates). (\$165K UCB)

Metropolitan Transportation Commission, UrbanSim Visualization Application for Sustainable Communities Strategies. PI: Paul Waddell (UC Berkeley), Co-PI Daniel Aliaga, Purdue University. 2011-2013, \$1,250,000. (\$950K UCB)

University of California MRPI on Transportation Sustainability. Initial phase of a project to integrate land use and activity-based travel modeling to address sustainability goals and policies related to California Legislation such as AB32 and SB 375, which call for using land use policies to reduce Vehicle Miles Traveled (VMT) and greenhouse gas emissions (GHG). PI: Paul Waddell, Co-PIs: Joan Walker, Caroline Rodier. 2010, Approximately \$100,000/year UC Berkeley component of MRPI Track 2 on Land Use and Mobility Strategies, of MRPI total of \$6.25 million 5-year project. (\$260K UCB, with Joan Walker)

University of California Transportation Center (UCTC) grant for CommunityBuilder. This will develop a scenario analysis system that incorporates a user interface to input land development policies, and which generates inputs to UrbanSim and travel models, and presents indicator results for evaluating effectiveness. PI: Paul Waddell. 2010-2011, \$96,000.

Federal Highway Administration, Exploratory Advanced Research Program BAA DTFH61-07-R-00117: Modeling the Urban Continuum in an Integrated Framework: Location Choice, Activity-Travel Behavior, and Dynamic Traffic Patterns. PI: Ram Pendyala (ASU), co-PIs: Yi-Chang Chiu (University of Arizona), Paul Waddell, University of Washington. 2008-2011, \$800,000. (\$158K UCB)

National Science Foundation IIS-0705898: Dynamic Discrete Choice Networks -- An Artificial Intelligence Approach to Modeling Dynamic Travel Behavior. Robust Intelligence Program. PI: Alan Borning, Co-PIs: Dieter Fox, David Layton and Paul Waddell. 2007-2011, \$900,000. (\$215K UCB)

National Science Foundation EIA-0121326: Modeling Uncertainty in Land Use and Transportation Policy Impacts: Statistical Methods, Computational Algorithms, and Stakeholder Interaction. Digital Government Program. PI: Alan Borning, Co-PIs: Adrian Raftery, Paul Waddell. 2006-2010, \$700,000.

National Science Foundation BCS-508002: Emergent Patterns of Urban Landscapes. Biocomplexity

Program. PI: Marina Alberti, Co-PIs: Marty Anderies, Dieter Fox, Mark Handcock, Henry Kautz, Stephanie Madson, John Marzluff, Charles Redman, Paul Waddell. 2005-2009, \$1,400,000

Environmental Protection Agency R831837: Integrating Land Use, Transportation, and Air Quality Modeling. Science to Achieve Results Program. PI: Paul Waddell, Co-PIs: Chandra Bhat, David Layton, Maren Outwater, and Ram Pendyala. 2004-08, \$700,000.

National Science Foundation EIA-0121326: Interaction and Participation in Integrated Land Use, Transportation, and Environmental Modeling. Information Technology Research Program. PI: Alan Borning. Co-PIs: David Notkin, Zoran Popovic, Mark Gross, Batya Friedman, Paul Waddell. 2001-2006, \$3,500,000.

National Science Foundation EIA-0090832: Software Architectures for Microsimulation of Urban Development, Transportation, and Environmental Modeling. Digital Government Program. PI: Alan Borning, Co-PIs: David Notkin. Paul Waddell. 2001-2005, \$600,000.

National Science Foundation BCS-0120024: Modeling the Interactions between Real Estate Development, Land Cover Change, and Bird Diversity. Biocomplexity program. PI: Marina Alberti, Co-PIs: Mark Handcock, John Marzluff, Paul Waddell. 2001-2006, \$1,100,000.

National Science Foundation CMS-9818378 Reusable Modeling Components for Simulating Land Use, Transportation, and Land Cover. NSF Urban Research Initiative, PI: Paul Waddell, co-PIs: Marina Alberti, Alan Borning, and Scott Rutherford. 1999-2001, \$439,357.

Puget Sound Regional Council, Application of UrbanSim in the Puget Sound Region, Puget Sound Regional Council, PI: Paul Waddell. 2003-2007, \$900,000.

Maricopa Association of Governments, Development of the AZ_SMART land use model system for the Maricopa Association of Governments (Phoenix) and the Pima Association of Governments (Tucson), PI: Paul Waddell. 2007-2008, \$275,000.

Case Study on the Application of UrbanSim in Salt Lake City, Federal Highway Department, PI: Paul Waddell, co-PI: Alan Borning, \$150,000. 2003.

Refinement of Puget Sound Regional Council Land Use and Transportation Models. Puget Sound Regional Council. With Cambridge Systematics and Chandra Bhat, 2000-2001, \$350,000.

Development of UrbanSim for the Puget Sound Regional Synthesis Model (PRISM) Project at the University of Washington, with Marina Alberti and Alan Borning.

Development of an Urban Systems Model for the Governor's Office of the State of Utah.

Development of a Prototype Metropolitan Land Use Model for the State of Oregon, Department of Transportation.

Development of a model of urban development in Honolulu, Hawaii, as part of a land use and transportation modeling and planning project for the Oahu Metropolitan Planning Organization.

Integration of Land-Use Planning with Multimodal Transportation Planning, a nationwide study funded by the National Cooperative Highway Research Program (NCHRP) 8-32(3), in conjunction with Parsons Brinckerhoff, and the Lusk Center at the University of Southern California.

Equity in Transportation Investments, a study of transportation investments from 1950 to 1990 in the Dallas-Fort Worth, Cleveland, and Chicago metropolitan areas, for the Surface Transportation Policy Project (\$18,000), funded by the Federal Transit Administration. (1996-1997)

Appraisal Ratio Study: real appreciation trends in residential property values within the Dallas area, and the spatial relationship between assessed values and current market values. Dallas Central Appraisal District (\$25,000). (1997).

Development and coordination of the North Texas Geographic Information System (GIS) Consortium, an association of local, regional, state and federal governments, school districts, and public utilities to develop shared regional databases and mapping.

National Spatial Data Infrastructure Framework Demonstration Project, a project funded by the Federal Geographic Data Committee to implement a regional on-line clearinghouse for geospatial data (\$125,000).

Principal investigator in "Community Needs Assessment, Dallas County 1995," a study of human service needs and the service delivery system within Dallas County, funded by the United Way of Metropolitan Dallas, the Meadows Foundation, and other local service providers (\$180,000). Study involved collection of 4,000 household surveys, survey of community leaders, and survey and inventory of service providers (1994-95).

Principal Investigator in a study of housing conditions in the City of Dallas, funded by the City of Dallas and the Department of Housing and Urban Development (\$178,000), that included a survey of 5,000 housing units within the city (1993-94).

Co-Principal Investigator in a research project funded by the Texas Advanced Research Program (\$53,000) on Intra-Urban Firm Location Choice in the Dallas-Fort-Worth Metropolitan Area (1990-1992)

Developed a Health Needs Assessment Information System (\$50,000) for the City of Dallas Health and Human Services Department (1992).

Principal Investigator in a series of pilot studies on residential and commercial real estate submarkets, to undertake preliminary analysis necessary to develop a long-term plan to implement a county-wide computerized mass appraisal system using hedonic pricing techniques and a parcel Geographic Information System, funded by the Dallas Central Appraisal District (\$18,000).

Conducted studies of residential real estate market under in Dallas county funded by Dallas Central Appraisal District (\$20,000 annually), designed to identify trends in appreciation of property values for geographic submarkets, and to identify areas of under or over-appraisal of property values. On retainer to assist in developing long-term program to develop mass appraisal system based on this research and the development of a parcel-based geographic information system. (1987-1992)

Developed and Chaired the North Central Texas GIS Consortium of public agencies, developed a shared regional land base, and procedures and standards for the maintenance and exchange of this information. (1989-1997)

* Published during this period of review 7/1/2011 – 6/30/2014.

BOOKS

- *2. Michel Bierlaire, Andre de Palma, and Paul Waddell, Editors (forthcoming) State of the Art in Integrated Land Use and Transportation Modeling. Routledge and EPFL Press.
1. Waddell, P. *Household Choice and Urban Structure*, Avebury: Brookfield, Vermont. 1997.

PEER-REVIEWED JOURNAL PAPERS

Forthcoming

Published

- *54. Frick, Karen, David Weinzimmer and Paul Waddell (2014). The Politics of Sustainable Development Opposition: State Legislative Efforts to Stop the United Nation's Agenda 21 in the United States. *Urban Studies*. Published Online April 7, 2014.
- *53. Simmonds, David, Paul Waddell and Michael Wegener (2013) Equilibrium v. Dynamics in Urban Modelling. *Environment and Planning B: Planning and Design*. 40(6), pp. 1051-1070. January, 2014.
- *52. Efthymiou, Dimitrios, Constantinos Antoniou and Paul Waddell (2013), Factors Affecting the Adoption of Vehicle Sharing Systems. *Transport Policy* 29, pp. 64-73. September 2013.
- *51. Pendyala, Ram, Karthik Konduri, Yi-Chang Chiu, Mark Hickman, Hyunsoo Noh, Paul Waddell, Liming Wang, Daeyun You, Brian Gardner (2012), Integrated Land use – Transport Model System with Dynamic Time-Dependent Activity-Travel Microsimulation. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2303, pp. 19-17. December, 2012.
- *50. Vanegas, Carlos, Ignacio Garcia-Dorado, Daniel G Aliaga, Bedrich Benes, Paul Waddell (2012), Inverse design of urban procedural models, *ACM Transactions on Graphics (TOG)* 31 (6), 168. November, 2012.

- *49. Wang, Liming, Paul Waddell and Maren Outwater. (2011), Incremental Integration of Land Use and Activity-based Travel Modeling: Work-at-Home and Out-of-Home Workplace Choices. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2255, pp. 1-10. December, 2011.
- *48. Pinjari, Abdul, Ram Pendyala, Chandra Bhat, Paul Waddell (2011), Modeling the Choice Continuum: An Integrated Model of Residential Location, Auto Ownership, Bicycle Ownership, and Commute Tour Mode Choice Decisions, *Transportation*, Vol. 38, No. 6, pp. 933-958. November, 2011.
- *47. Polebitski, Austin, Richard Palmer and Paul Waddell (2011), Evaluating Water Demands Incorporating Climate Change and Transitions in the Urban Environment, *Journal of Water Resources Planning and Management*, Vol. 137, No. 3, pp. 249–257. July 2011.
- *46. Sevcikova, H., A. Raftery and P. Waddell (2011), Uncertain benefits: Application of Bayesian melding to the Alaskan Way Viaduct in Seattle. *Transportation Research Part A*, Vol. 45, pp 540-553. July 2011.
- 45. Waddell, Paul (2011), Integrated Land Use and Transportation Planning and Modeling: Addressing Challenges in Research and Practice, *Transport Reviews*, Vol. 31, No. 2, pp 209 – 229. March 2011. (reprinted as a book chapter in 2013)
- 44. Felsenstein, Daniel, Kay Axhausen and Paul Waddell. Land Use-Transportation Modeling with UrbanSim: Experiences and Progress. *Journal of Transportation and Land Use*. Vol. 3, No. 2, pp 1-3. September 2010.
- 43. Waddell, Paul, Liming Wang, Billy Charlton and Aksel Olsen. Integration of a Parcel-Level Land Use Model and an Activity-Based Travel Model. *Journal of Transportation and Land Use* Vol. 3, No. 2, pp 65-84. September 2010.
- 42. Lee, Brian, Paul Waddell, Liming Wang and Ram Pendyala. Re-examining the Influence of Work and Non-work Accessibility on Residential Location Choices with a Micro-analytic Framework. *Environment and Planning A*, Volume 42, issue 4, pp 913-930. July 2010.
- 41. Lee, Brian and Paul Waddell (2010) Residential Mobility and Location Choice A Nested Logit Model with Sampling of Alternatives, *Transportation*, Volume 37, Issue 4 (2010), pp 587-601. July 2010.
- 40. Vanegas, Carlos, Daniel Aliaga, Bedřich Beneš, Paul Waddell. Interactive Design of Urban Spaces using Geometrical and Behavioral Modeling. *ACM Transactions on Graphics (TOG)*, also *ACM SIGGRAPH Asia*, 28(5): 10 pages. December 2009.
- 39. Aliaga, Daniel, Carlos Vanegas, Bedřich Beneš, Paul Waddell. Visualization of Simulated Urban Spaces: Inferring Parameterized Generation of Streets, Parcels, and Aerial Imagery. *IEEE Transactions on Visualization & Computer Graphics*. May-June, 2009.

38. Vanegas, Carlos, Daniel Aliaga, Pascal Müller, Paul Waddell, Ben Watson, Peter Wonka. Modeling the Appearance and Behavior of Urban Spaces", *Computer Graphics Forum*, Vol. 28, No. 2 (pp 1-18). April 2009.
37. Kim, H., Waddell, P., V. Shankar and G.F. Ulfarsson. Modeling Micro-Spatial Employment Location Patterns: A Comparison of Count and Choice Approaches. *Geographical Analysis* 40, (123-151). March 17, 2008.
36. de Palma, A., K. Motamedi, N. Picard, P. Waddell. Accessibility and Environmental Quality: Inequality in the Paris Housing Market. *European Transport* No. 36, (47-64). 2007.
35. Waddell, P., C. Bhat, N. Eluru, L. Wang, R. Pendyala. Modeling the Interdependence in Household Residence and Workplace Choices. *Transportation Research Record* Vol. 2003 (84-92). 2007.
34. Pinjari, Abdul, Ram Pendyala, Chandra Bhat, P. Waddell. Modeling Residential Sorting Effects to Understand the Impact of the Built Environment on Commute Mode Choice. *Transportation* Vol 34, No. 5 (557-573). 2007.
33. de Palma, A., N. Picard, P. Waddell. Discrete Choice Models with Capacity Constraints: An Empirical Analysis of the Housing Market of the Greater Paris Region. *Journal of Urban Economics* Vol. 62 (204-230). 2007.
32. Sevcikova, H., A. Raftery and P. Waddell. Assessing Uncertainty in Urban Simulations Using Bayesian Melding. *Transportation Research Part B: Methodology* Vol. 41, No. 6 (652-659). 2007.
31. Waddell, P., G.F. Ulfarsson, J. Franklin and J. Lobb. Incorporating Land Use in Metropolitan Transportation Planning, *Transportation Research Part A: Policy and Practice* Vol. 41 (382-410). 2007.
30. Davis, J., P. Lin, A. Borning, B. Friedman, P. Kahn and P. Waddell. Value Sensitive Design of Interactions with UrbanSim Indicators. *Computer*, October, 2006. 2006.
29. de Palma, A., N. Picard, P. Waddell. Residential Location Choice with Endogenous Prices and Traffic in the Paris Metropolitan Region. *European Transport*. No. 31 (67-82). 2005.
28. Waddell, Paul and Alan Borning. A Case Study in Digital Government: Developing and Applying UrbanSim, a System for Simulating Urban Land Use, Transportation and Environmental Impacts. *Social Science Computer Review* Vol. 22, No. 1 (37-51). 2004.
27. Mathur, S., H. Blanco and P. Waddell. The Effect of Impact Fees on the Price of New Single Family Housing. *Urban Studies* Vol. 41, No. 7 (1303-1312). 2004.
26. Noth, M., A. Borning and P. Waddell. An Extensible, Modular Architecture for Simulating Urban Development, Transportation, and Environmental Impacts. *Computers, Environment and Urban Systems* Vol. 27, No. 2, (181-203). 2003.

25. Waddell, P., A. Borning, M. Noth, N. Freier, M. Becke, G. Ulfarsson. UrbanSim: A Simulation System for Land Use and Transportation. *Networks and Spatial Economics* 3 (43-67). 2003.
24. Waddell, P., M. Outwater, C. Bhat, and L. Blain. Design of an Integrated Land Use and Activity-Based Travel Model System for the Puget Sound Region, *Transportation Research Record* No. 1805 (108-118). 2002.
23. Waddell, P. and F. Nourzad. Incorporating Non-motorized Mode and Neighborhood Accessibility in an Integrated Land Use and Transportation Model System, *Transportation Research Record* No. 1805 (119-127). 2002.
22. Krizek, K. and P. Waddell. Analysis of Lifestyle Choices: Neighborhood Type, Travel Patterns, and Activity Participation, *Transportation Research Record* No. 1807 (119-128). 2002.
21. Waddell, P. UrbanSim: Modeling Urban Development for Land Use, Transportation and Environmental Planning. *Journal of the American Planning Association*, Vol. 68, No. 3, (297-314). 2002.
20. Waddell, P. and G.F. Ulfarsson. Dynamic Simulation of Real Estate Development and Land Prices Within an Integrated Land Use and Transportation Model System: Theory, Specification and Application. *Transportation Research Board*. 2002.
19. Waddell, P. and G.F. Ulfarsson. Accessibility and Agglomeration: Discrete-Choice Models of Employment Location by Industry Sector. *Transportation Research Board*. 2002.
18. Alberti, M. and P. Waddell. An Integrated Urban Development and Ecological Simulation Model, *Integrated Assessment* Vol 1, No 3 (215-227). 2000.
17. Waddell, P. A behavioral simulation model for metropolitan policy analysis and planning: residential location and housing market components of UrbanSim. *Environment and Planning B: Planning and Design* Vol 27, No 2 (247 – 263). 2000.
16. Dale, L., J. Murdoch, M. Thayer and P. Waddell. Do Property Values Rebound from Environmental Stigmas? Evidence from Dallas, *Land Economics*, Vol 75, No 2 (311-326). 1999.
15. Bielefeld, W., J. Murdoch and P. Waddell. The Influence of Demographics and Distance on Nonprofit Location, *Nonprofit & Voluntary Sector Quarterly*, Vol. 26, No. 2 (207-226). 1997.
14. Chung, S., P. Waddell and B.J.L. Berry. Spatiotemporal Controls in Hedonic Housing Price Models, *Urban Geography*, Vol. 18, No. 4 (347-352). 1997.
13. Waddell, P., B.J.L. Berry and K. Chung. Variations in Housing Price Depreciation: the 'Taste for Newness' Across Heterogeneous Submarkets, *Urban Geography*, Vol 17 (269-280). 1996.

12. Berry, B.J.L, K. Chung and P. Waddell. Widening Gaps: the Behavior of Submarket Housing Price Indexes in the Dallas Area, 1979-93, *Urban Geography*, Vol. 16 (722-733). 1995.
11. Waddell, P. Dallas: Will Suburban Dispersion Ever Cease? *Built Environment*, Vol. 20, No. 1 (25-38). 1994.
10. Waddell, P. and V. Shukla. Manufacturing Location in a Polycentric Urban Area: a Study in the Composition and Attractiveness of Employment Sub-centers, *Urban Geography*, Vol. 14, No. 3 (277-296). 1993.
9. Waddell, P., B.J.L. Berry and I. Hoch. Residential Property Values in a Multinodal Urban Area: New Evidence on the Implicit Price of Location, *Journal of Real Estate Finance and Economics*, Vol. 7, No. 2. (117-141). 1993.
8. Waddell, P. Exogenous Workplace Choice in Residential Location Models: is the Assumption Valid in a Multinodal Metropolis? *Geographical Analysis*, Vol. 25, No. 1 (65-82). 1993.
7. Waddell, P., B.J.L. Berry and I. Hoch. Housing Price Gradients: the Intersection of Space and Built Form, *Geographical Analysis*, Vol. 25, No. 1 (5-19). 1993.
6. Hoch, I. And P. Waddell. Apartment Rents: Another Challenge to the Monocentric Model, *Geographical Analysis*, Vol. 25, No. 1 (20-34). 1993.
5. Waddell, P. and V. Shukla. Employment Dynamics, Spatial Restructuring and the Business Cycle, *Geographical Analysis*, Vol. 25, No. 1 (35-52). 1993.
4. Waddell, P. (1993). Does Berg Understand the Relevance of Race in Urban America? A Reply to Berg's Comment. *Urban Geography*, Vol. 14, No. 2 (201-203). 1993.
3. Waddell, P. A Multinomial Logit Model of Race and Urban Spatial Structure, *Urban Geography*, Vol. 13, No. 2 (127-141). 1993.
2. Shukla, V. and P. Waddell. Firm Location and Land Use in Discrete Urban Space: a Study of the Spatial Structure of Dallas-Fort Worth, *Regional Science and Urban Economics*, Vol. 21 (225-253). 1991.
1. Berry, B.J.L and P. Waddell. The Processes Driving Residential Differentiation, in *Residential Differentiation*, L. Deben, W. Heinemeijer and D. van der Vaart, (eds.), University of Amsterdam. 1990.

PEER REVIEWED CHAPTERS IN BOOKS AND CONFERENCE PROCEEDINGS

Forthcoming

1. Waddell, Paul, Liming Wang, Hana Sevcikova, and Alan Borning (forthcoming) Agile Modeling: Adapting UrbanSim to the European Context Using the Open Platform for Urban

Simulation. In *State of the Art in Integrated Land Use and Transportation Modeling*. Routledge and EPFL Press.

Published

- *32. Wang, Liming and Paul Waddell. A Disaggregated Real Estate Demand Model with Price Formation for integrated Land Use and Transportation Modeling. In *Proceedings of the 92nd Annual Meetings of the Transportation Research Board*. Jan, 2013.
- *31. Kunze, Antje, Julia Dyllong, Jan Halatsch, Paul Waddell and Gerhard Schmitt (2012). Parametric building typologies for San Francisco Bay Area: A conceptual framework for the implementation of design code building typologies towards a parametric procedural city model. In proceeding of: Achten, Henri; Pavlicek, Jiri; Hulin, Jaroslav; Matejdan, Dana (eds.), *Digital Physicality - Proceedings of the 30th eCAADe Conference - Volume 1* / ISBN 978-9-4912070-2-0, Czech Technical University in Prague, Faculty of Architecture (Czech Republic) 12-14 September 2012, pp. 187-193
- *30. Waddell, Paul (2013). Integrated Land Use and Transportation Planning and Modeling: Addressing Challenges in Research and Practice, in *Transport Models in Urban Planning Practices: Tensions and Opportunities in a Changing Planning Context*. Edited by Marco te Brömmelstroet, Luca Bertolini. Routledge. July, 2013. (reprinted from *Transport Reviews*, Vol. 31, No. 2, pp 209 – 229. March 2011.)
- *29. Konduri, Karthik, Ram Pendyala, Daehyun You, Yi-Chang Chiu, Mark Hickman, Hyunsoo Noh, Brian Gardner, Paul Waddell, Liming Wang, Network-Sensitive Transport Modeling Framework for Evaluating Impacts of Network Disruptions on Traveler Choices Under Varying Levels of User Information Provision, *Transportation Research Board 92nd Annual Meeting*, January, 2013.
- *28. Konduri, Karthik, Ram Pendyala, Daehyun You, Yi-Chang Chiu, Mark Hickman, Hyunsoo Noh, Paul Waddell, Liming Wang, Brian Gardner, Reflecting Impacts of Systemwide Pricing Strategies in an Integrated Continuous-Time Prism-Constrained Activity-Travel Simulator of Demand and Supply, *Transportation Research Board 92nd Annual Meeting*, January, 2013.
- *27. Wang, Liming and Paul Waddell. Disaggregated Real Estate Demand Model with Price Formation for Integrated Land Use and Transportation Modeling, *Transportation Research Board 92nd Annual Meeting*, January, 2013.
- *26. Kunze, Antje, Julia Dyllong, Jan Halatsch, Paul Waddell, Gerhard Schmitt. Parametric building typologies for San Francisco Bay Area: A conceptual framework for the implementation of design code building typologies towards a parametric procedural city model. Achten, Henri, Jiri Pavlicek, Jaroslav Hulin, Dana Matejdan (eds.), *Digital Physicality - Proceedings of the 30th eCAADe Conference - Volume 1* / ISBN 978-9-4912070-2-0, Czech Technical University in Prague, Faculty of Architecture (Czech Republic) 12-14 September 2012, pp. 187-193.
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- *24. Vanegas, Carlos, Ignacio Garcia-Dorado, Daniel G Aliaga, Bedrich Benes, Paul Waddell, Inverse design of urban procedural models. SIGGRAPH Asia, July 2012.
 - *23. Foti, Fletcher, Paul Waddell and Dennis Luxen. A Generalized Computational Framework for Accessibility: From the Pedestrian to the Metropolitan Scale. 4th Transportation Research Board Conference on Innovations in Travel Modeling (ITM), April 20-May 2, 2012.
 - *22. Efthymiou, Dimitrios, Constantinos Antoniou and Paul Waddell, Which Factors Affect the Willingness to Join Vehicle Sharing Systems? Evidence from Young Greek Drivers. Transportation Research Board 91st Annual Meeting, January, 2012.
 - *21. Nicolai, Thomas, Liming Wang, Kai Nagel and Paul Waddell. Coupling an Urban Simulation Model with Travel Model – A First Simulation Test. *Computers in Urban Planning and Urban Management (CUPUM)*, Lake Louise, Canada. May, 2011 (not included in previous review)
 - *20. Simmonds, David, Paul Waddell and Michael Wegener. Equilibrium vs. Dynamics in Urban Modeling. *Symposium on Applied Urban Modeling*, University of Cambridge, May, 2011 (not included in previous review)
 - 19. Kriplean, Travis, Alan Borning, Paul Waddell, Christoffer Klang, and James Fogarty. Supporting Agile Modeling through Experimentation in an Integrated Urban Simulation Framework. *Proceedings of the 11th Annual International Digital Government Research Conference on Public Administration Online: Challenges and Opportunities*. Puebla, Mexico, May 17 - 20, 2010.
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 - 17. Ye, Xin, Karthik Konduri, Ram Pendyala, Bhargava Sana and Paul Waddell. A Methodology to Match Distributions of Both Households and Person Attributes in the Generation of Synthetic Populations. Transportation Research Board 88th Annual Meeting Compendium of Papers DVD. January 11-15, 2009.
 - 16. Waddell, Paul, Liming Wang and Xuan Liu. UrbanSim: An Evolving Planning Support System for Evolving Communities. *Planning Support Systems for Cities and Regions*. Richard Brail, Editor. Cambridge, MA: Lincoln Institute for Land Policy. pp. 103-138. October 2008.
 - 15. Borning, Alan, Paul Waddell and Ruth Förster. UrbanSim: Using Simulation to Inform Public Deliberation and Decision-Making. In *Digital Government: Advanced Research and Case Studies*. Hsinchun Chen, Lawrence Brandt, Sharon Dawes, Valerie Gregg, Eduard Hovy, Ann Macintosh, Roland Traunmüller, and Catherine A. Larson, Eds. Springer. pp. 439 – 463. May 2008.

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13. Waddell, P. and G. F. Ulfarsson. Introduction to Urban Simulation: Design and Development of Operational Models. In *Handbook 5: Transport Geography and Spatial Systems*, K. Haynes, P. Stopher, K. Button & D. Hensher eds. Pergammon Press. 2004.
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10. Waddell, P. Towards a Behavioural Integration of Land Use and Transportation Modelling. In D. Hensher, (Ed.), *Travel Behavior Research: The Leading Edge*. New York: Pergamon (pp. 65-95). 2001.
9. Waddell, P. Between Politics and Planning: UrbanSim as a Decision Support System for Metropolitan Planning. In, R. Brail & R. Klosterman (Eds.). *Planning Support Systems: Integrating Geographic Information Systems, Models, and Visualization Tools*. Redlands, CA: ESRI Press and Center for Urban Policy Research (pp. 201-228). 2001.
8. Waddell, P. Monitoring and Simulating Land Capacity at the Parcel Level, in *Monitoring Land Supply with Geographic Information Systems: Theory, Practice and Parcel-Based Approaches*. Vernez-Moudon, A. and M. Hubner, eds., John Wiley & Sons, Inc.: New York. (pp. 201-214). 2000.
7. Waddell, P. and M. Alberti. Integrated Simulation of Real Estate Development and Land Cover Change, Paper prepared for the *4th International Conference on Integrating Geographic Information Systems (GIS) and Environmental Modeling*, Banff, Canada, September, 2000. 2000.
6. Alberti, M., and P. Waddell. An Integrated Urban Development and Ecological Model. Part I: Rationale for a Synthesis. In P. Rizzi (Ed.) *Computers in Urban Planning and Urban Management*, Franco Angeli, Milan. 1999.
5. Alberti, M. and P. Waddell. An Integrated Urban Development and Ecological Model. Part II: The Strategy. In P. Rizzi (Ed.) *Computers in Urban Planning and Urban Management*, Franco Angeli, Milan. 1999.

4. Waddell, P. The Oregon Prototype Metropolitan Land Use Model. In S. Easa & D. Samdahl (Eds.), *Transportation, Land Use and Air Quality: Making the Connection*. Reston, VA: American Society of Civil Engineers (pp. 549-558). 1998.
3. Waddell, P., T. Moore and S. Edwards. (1998). Exploiting Parcel-Level GIS for Land Use Modeling. In S. Easa & D. Samdahl (Eds.), *Transportation, Land Use and Air Quality: Making the Connection*. Reston, VA: American Society of Civil Engineers (pp. 632-641). 1998.
2. Waddell, P. and M. Alberti. Integration of an Urban Simulation Model and an Urban Ecosystem Model, *Proceedings of the International Conference on Modeling Geographical and Environmental Systems with Geographical Information Systems*, Hong Kong. 1998.
1. Borning, A. and P. Waddell. Participatory Design of an Integrated Land Use – Transportation Modelling System” First Steps, *Proceedings of the 1998 Participatory Design Conference*, Computer Professionals for Social Responsibility and Association for Computing Machinery, Seattle, November 1998, 181-182. 1998.

CONFERENCE PRESENTATIONS

- *19. Foti, Fletcher, Paul Waddell and Dennis Luxen, A generalized computational framework for accessibility: From the pedestrian to the metropolitan scale, Presented at the Western Regional Science Association Meetings, Kauai, Hawaii, February 8-11, 2012.
- *18. Pendyala, Ram, Karthik Konduri, Yi-Chang Chiu, Mark Hickman, Hyunsoo Noh, Paul Waddell, Liming Wang, Daehyun You, and Brian Gardner (2012) An Integrated Land Use-Transport Model System With Dynamic Time-Dependent Activity-Travel Microsimulation. Presented at the 91st Annual Meeting of the Transportation Research Board, January 22-26, 2012.
- *17. Wang, Liming and Paul Waddell, A Real Estate Development Model Incorporating Latent Information. *American Collegiate Schools of Planning Conference* Salt Lake City, October 2011.
- *16. Carlton, Ian, Pedro Peterson, Liming Wang and Paul Waddell, A Behavioral Simulation of Real Estate Development and Redevelopment at the Parcel Level. *American Collegiate Schools of Planning Conference* Salt Lake City, October 2011.
- *15. Waddell, Paul. UrbanVision: Designing, Simulating, and Visualizing Sustainable Communities, *American Collegiate Schools of Planning Conference*, Salt Lake City, October 2011.
- *14. Foti, Fletcher and Paul Waddell, Measuring Access at a Parcel Level to Improve Land Use and Transportation Modeling. *European Regional Science Association Conference*, Barcelona, Spain, August 2011.

- *13. Thomas Nicolai, Liming Wang, Kai Nagel and Paul Waddell (2011) Coupling an Urban Simulation Model with a Travel Model – A First Sensitivity Test. *Computers in Urban Planning and Urban Management Conference*, July 2011.
- *12. Simmonds, David, Wegener, Michael and Paul Waddell (2011) Beyond Equilibrium: Advances in Urban Modelling. *Computers in Urban Planning and Urban Management Conference*, July 2011.
- 11. Simmonds, David, Paul Waddell, and Michael Wegener. Equilibrium v. dynamics in urban modelling. Paper presented at the *Symposium on Applied Urban Modelling (AUM 2011) "Innovation in Urban Modelling"* at the University of Cambridge, 23-24 May 2011.
- 10. Waddell, Paul. Making and Measuring Progress: From Zonal to Parcel Level Integrated Land Use and Transportation Models, *Transportation Research Board Planning Applications Conference*, Reno, NV, May 2011. Nominated for the *Best Paper Award*. May 2011.
- 9. Pendyala, Ram M., Yi-Chang Chiu, Paul Waddell, Mark Hickman, Karthik C. Konduri, Bhargava Sana. The Design of an Integrated Model of the Urban Continuum – Location Choices, Activity- Travel Behavior, and Dynamic Traffic Patterns. Paper presented at the *12th World Conference on Transport Research*, Lisbon, Portugal, July 11-15, 2010.
- 8. Lee, Brian and Paul Waddell. Incorporating residential mobility into residence location choice model in a microsimulation context. Paper presented at the *12th International Conference on Travel Behavior Research*, Jaipur, India, December, 2009.
- 7. Pendyala, Ram, Paul Waddell, Yi-Chang Chiu, Mark Hickman. Integrated modeling of the urban built environment and activity-travel behavior in complex multimodal networks: conceptual framework, model design, and operational procedures. Paper presented at the *12th International Conference on Travel Behavior Research*, Jaipur, India, December, 2009.
- 6. Sana, Bhargava, Karthik Konduri, Ram M. Pendyala, Xin Ye, Paul Waddell. An evolutionary model of population synthesis that controls for household and person-level attribute distributions. Paper presented at the *12th International Conference on Travel Behavior Research*, Jaipur, India, December, 2009.
- 5. Waddell, Paul. Parcel-Level Microsimulation of Land Use and Transportation: The Walking Scale of Urban Sustainability. Resource Paper presented in the *Workshop on Computational Algorithms and Procedures for Integrated Microsimulation*, *12th International Conference on Travel Behavior Research*, Jaipur, India, December, 2009.
- 4. Wang, Liming and Paul Waddell. Microsimulating Housing Markets: A Bayesian Random Bidding Model with Endogenous Screening Rules. Paper presented at the *56th North American Meetings of the Regional Science Association International*, San Francisco. November 2009.

3. Waddell, Paul. Appropriation of Advanced Research in Urban Modeling: Lessons Learned from the UrbanSim Project. Paper presented at Transport Knowledge and Planning Practice, Amsterdam, October, 2009.
2. Wang, Liming and Paul Waddell. Development Project Proposal Model: A New Approach to Model Real Estate Development (presented at the American Collegiate Schools of Planning Conference, 2008). 2008.
1. Waddell, P., L. Wang and B. Charlton. Integration of a Parcel-Level Land Use Model and an Activity-Based Travel Model. *World Conference on Transport Research*, Berkeley, CA., June 2007. 2007.

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RESEARCH MONOGRAPHS

17. Waddell, P., Peter Caballero, Rob Duisberg, Hyungtai Kim, Chris Peak, David Socha, Liming Wang. UrbanSim: Model Estimation for the Puget Sound Region. Technical Report CUSPA – 04-02. 2004.
Available at: http://www.urbansim.org/estimation_archive/estimation_main_2004_09_17.pdf
16. Waddell, P., Chris Peak and Peter Caballero. UrbanSim: Database Development for the Puget Sound Region. Technical Report CUSPA –04-01. 2004.
Available at: http://www.urbansim.org/projects/psrc/documentation/tex/main_doc.pdf
15. Waddell, Paul, John Britting and Joel Franklin. UrbanSim: Development, Application and Integration with the Wasatch Front Regional Travel Model. Technical Report CUSPA-03-01. 2003.
14. Waddell, P., E. Schroer and M. Outwater. *Assessment of Model Requirements: Final Report to the Puget Sound Regional Council on Land Use and Travel Demand Forecasting Models*. 2001.
Available at: www.psrc.org/datapubs/pubs/model_modelrequirements.pdf
13. Waddell, P., C. Bhat, E. Ruiter, S. Bekhor, M. Outwater, and E. Schroer. *Review of the Literature and Operational Models: Final Report to the Puget Sound Regional Council on Land Use and Travel Demand Forecasting Models*. 2001.

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12. Waddell, P., M. Outwater and C. Bhat. *Recommendations for Integrated Land Use and Travel Models: Final Report to the Puget Sound Regional Council on Land Use and Travel Demand Forecasting Models*. 2001.
Available at: www.psrc.org/datapubs/pubs/model_designrecommendations.pdf
11. Waddell, P. Formal Land Use Models, in *Land Use Impacts of Transportation: A Guidebook, NCHRP Report 423A*, Transportation Research Board, National Academy Press, Washington, D.C. 1999.
10. Waddell, P. Appraisal Ratio Study: A Comparison of Assessed and Market Values in the Dallas Central Appraisal District, Bruton Center for Development Studies, UTD. 1997.
9. Waddell, P. *Community Needs Assessment, Dallas County, 1995*, Bruton Center for Development Studies, University of Texas at Dallas, 1995.
8. Waddell, P. *Housing Conditions in the City of Dallas*, Bruton Center for Development Studies, University of Texas at Dallas. 1994.
7. Waddell, P. Where the jobs are going: economic restructuring and employment dispersion in the Metroplex, *State of the Region, 1992*, Bruton Center for Development Studies, University of Texas at Dallas. 1992.
6. Waddell, P. Explaining the Dallas housing market, *State of the Region, 1992*, Bruton Center for Development Studies, University of Texas at Dallas. 1992.
5. Waddell, P. The Metroplex in transition: population, ethnicity, age and households 1980-1990, *State of the Region, 1992*, Bruton Center for Development Studies, University of Texas at Dallas. 1992.
4. Waddell, P. *The Metroplex in Transition: Population and Ethnicity 1980-1990*, Bruton Center for Development Studies, University of Texas at Dallas. 1991.
3. Waddell, P. and B.J.L. Berry. *The Metroplex in Maps: A Social Baseline, 1980*, Bruton Center for Development Studies, University of Texas at Dallas. 1990.
2. Waddell, P. and I. Hoch. *The Influence of Neighborhood Characteristics on Residential Property Values: A Pilot Study*, Bruton Center for Development Studies, 1990.
1. Waddell, P. *Regional Outlook: Population and Employment Forecasts 1986-2010*, North Central Texas Council of Governments, Regional Data Center. 1989.

COURSES TAUGHT:

University of California, Berkeley

CP 207: Land and Housing Market Economics
CP 255: Urban Planning Applications of GIS

Prior Institutions

Doctoral Seminar in Urban Design and Planning
Empirical Research Workshop
Introduction to Urban Simulation
Quantitative Analysis II
Microeconomic Policy Analysis
Urban Economics
Land Use and Transportation Models
Transportation Theory, Policy and Politics
Urban Spatial Analysis
Urban and Regional Affairs
Introduction to Geographic Information Systems
Geographic Information Systems Workshop
Management and Implementation of Geographic Information Systems
Graduate Proseminar: Urban Policy Models
PhD Proseminar: Public Policy and Management
Graduate Workshop: Neighborhoods
Graduate Workshop: Urban Housing Markets
Urban Development
Urban and Regional Development

CONSULTING:

San Francisco County Transportation Authority (2005-2006). Developed land use modeling application for SFCTA and Planning Department of City of San Francisco.

Federal Highway Administration, Travel Model Improvement Program (2000-2006). Taught seminars in Land Use Forecasting in selected cities throughout the U.S.

Governor's Office of the State of Utah (1998-2000). Developed an Urban Systems Model for the Greater Wasatch Front, including the Salt Lake City metropolitan area.

Oregon Department of Transportation, Salem Oregon (1996-1998). Developed prototype land use model for metropolitan land use and transportation planning and policy analysis.

Oahu Metropolitan Planning Organization (OMPO), Honolulu, Hawaii (1994-2000). Developing metropolitan land use development model for regional land use and transportation planning, in conjunction with new travel survey data collection and development of new travel demand forecasting models.

Ministry of Public Works, Government of Chile, Santiago, Chile (1992-93). Advisor on a strategic planning study of infrastructure and development in the 'Macrozona Central', encompassing the metropolitan region of Santiago and regions V and VI.

Metropolitan Washington Council of Governments (WASHCOG), Washington, D.C. (1992). Review of land use models and linkages between land use and transportation models, and recommendations for improving the feedback between land use and transportation.

Southeast Michigan Council of Governments (SEMCOG), Detroit, Michigan (1992). Review of land use, population, and employment forecasting models, and recommendations for improvements.

Houston-Galveston Council of Governments (HGAC), Houston, Texas (1992). Review and analysis of implementation of land use forecasting procedures, and technical and managerial recommendations for improvement.

Ministry of Finance, Department of Property Tax, Government of Indonesia, Jakarta Indonesia (1991). Evaluation of land records and property tax valuation methods, and recommendations for use of GIS to improve land records management and property valuation.

PROFESSIONAL ORGANIZATIONS:

Transportation Research Board
American Planning Association
American Association of Geographers
Association for Public Policy Analysis and Management
International Regional Science Association
Urban and Regional Information Systems Association
(President, Texas Chapter, 1989)