

Curriculum Vitae

JEAN-MICHEL GULDMANN

Professor Emeritus and Academy Professor
The Ohio State University

**BUSINESS
ADDRESS**

City and Regional Planning Section
Austin E. Knowlton School of Architecture
The Ohio State University (OSU)
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EDUCATION

Master's Degree in Industrial and Systems Engineering,
Ecole des Mines, Nancy, France, 1970
Specialization: Operations Research, Industrial Management.

Ph.D. in Urban and Regional Planning, Technion - Israel Institute of
Technology, 1977
Specialization: Quantitative Planning Methods, Urban Economics, Location
Theory, Mathematical Models of Land Use, Transportation Systems, and
Environmental Management.

ACADEMIC TEACHING POSITIONS

- October 2018 Visiting Professor, Department of City and Regional Planning, Gazi University,
Ankara, Turkey. Intensive course in Regional Economics and Decision
Analysis, Thesis Workshop, and Seminar.
- November 2013 – Visiting Professor, College of Resources, Environment, and Tourism, Capital
June 2016 Normal University, Beijing, China. Seminars: Decision Analysis Methods;
Optimization Methods and Applications.
- July 2012 – Professor Emeritus of City and Regional Planning, The Ohio State University.
- October 1987 - Full Professor of City and Regional Planning, The Ohio State University.
June 2012 Graduate courses taught at OSU: Introduction to Quantitative Methods,
Applications of Quantitative Methods, Urban Planning Data and Forecasting,
Static Optimization, Dynamic Optimization, Decision Analysis, Introduction to
Analysis of Energy Factors, Seminar on Mathematical Models of Energy
Management and Planning, Regional Planning Studio, Outlines of Regional
Planning.
- October 1985 - Berman Visiting Professor, Institute of Urban and Regional Studies,
August 1986 The Hebrew University of Jerusalem, Jerusalem, Israel
Seminars on optimization methods and energy planning.

October 1982 - September 1987 Associate Professor of City and Regional Planning, The Ohio State University

October 1977 - September 1982 Assistant Professor of City and Regional Planning, The Ohio State University

May-June 1977 Adjunct Lecturer, Ecole Nationale Superieure des Mines de Paris, Paris, France.
Course: Methodology for Air Pollution Control and Industrial Location in Urban Areas - graduate level (one quarter).

1975-1976 Adjunct Lecturer at the Louis Pasteur University, Strasbourg, France.
Courses: The Environment in the Process of Urban and Regional Planning (undergraduate - two semesters) - Models of Environmental Management (graduate - one semester).

1972-1973 Teaching Assistant in the Program of Urban and Regional Planning, Technion-Israel Institute of Technology. Courses: Quantitative Methods (two semesters) and Mathematical Models of Urban Structure (one semester).

1969-1970 Teaching Assistant in Mathematics at the Department of Mathematics, University of Nancy, France, Undergraduate level (one semester).

ACADEMIC ADMINISTRATIVE POSITION

October 1, 2005 - August 31, 2007 Interim Director, Austin E. Knowlton School of Architecture, The Ohio State University.

ACADEMIC RESEARCH POSITIONS

1978-1988 Senior Faculty Associate, The National Regulatory Research Institute, The Ohio State University. Regulatory modeling research on various natural gas distribution issues.

November 1975 - January 1976 Research Associate, Center for Urban and Regional Studies, Technion – Israel Institute for Technology.
Ford Foundation Research Grant: Economic Costs of Environmental Quality.

1974-1975 Research Associate, Louis Pasteur University, Strasbourg, France.
Research project: Natural Resources and Regional Land Use Planning in Alsace.

1971-1973 Senior Research Assistant, Center for Urban and Regional Studies, Technion - Israel Institute of Technology.

NON-ACADEMIC PROFESSIONAL POSITIONS

- 2017-2019 Consultant to California Energy Commission-funded project “Investigating Climate-Change-Induced Vulnerability of the California Northern Natural Gas Energy System and Identifying Resilience Options” (PI: Dr. Yihsu Chen, University of California – Santa Cruz)..
- 2017-2019 Consultant to Fair Shake Environmental Legal Services – Research and testimony related to Duke Energy’s application for pipeline extension.
- 2007 Consultant to ACP – Visioning and Planning.
Population forecasting for a large university town.
- 1998 Consultant to the President’s Commission on Critical Infrastructure Protection (PCCIP). R&D planning for the U.S. natural gas infrastructure.
- 1995-1996 Consultant to the Centerior Energy Corporation, Cleveland, Ohio.
Transmission lines projects evaluation.
- 1992 Consultant to the Enron Corporation, Houston, Texas. Spot and long-term natural gas pricing assessment.
- 1987- 2012 Consultant to the Information Science Division, Argonne National Laboratory, Argonne, Illinois: (1) Analysis of the random factors in sulfur dioxide emissions and air quality; (2) Studies of natural gas delivery infrastructure; (3) Development of a GIS/MIS for the natural gas industry, (4) Study of natural gas hubs. (Works sponsored by NAPAP, U.S. Department of Energy, Joint Program Office for Special Technology Countermeasures.)
- 1981-1982 Consultant to the U.S. National Bureau of Standards, Washington, D.C.
Development of the rate-making component of the Gas Analysis Modeling System.
- 1978 Consultant to Contract Research Corporation, Belmont, MA. Development and programming of a location-allocation model for the location of Small Business Administration agencies in the U.S.
- 1976-1977 Senior Planner, Regional Planning Agency for Alsace (O.E.D.A.), Strasbourg, France. Principal investigator in the field of environmental management: design of a regional environmental data bank; development of water quality models for the evaluation of wastewater treatment strategies; evaluation of the impact on air quality of alternative industrial site developments; design of solid waste treatment strategies at the regional level; assessment of the impacts of different siting alternatives for nuclear power plants in the Rhine Valley.
- 1976-1977 Consultant to the Commission of European Communities, Bruxelles, on the project: Ecological Mapping of the European Community.
- 1976-1977 Consultant to the French Ministry of the Environment, Paris, for the preparation of a Handbook for the Design of Regional Environmental Planning Strategies.

- 1972 Consultant to the Urban Renewal Authority, Ministry of Housing, Jerusalem, Israel. Data processing and analysis for a large-scale survey over two depressed neighborhoods in the City of Tiberias.
- 1970-1971 Transportation Planning Engineer. Haifa Area Transportation Planning Agency, Haifa, Israel. Public transportation planning and urban network analysis.

AWARDS

- 1974 Sagorski Prize, for outstanding thesis in the Social Sciences, Technion - Israel Institute of Technology
- 1979 Haifa Municipality Technology Prize, for the study "Centralized Air Pollution Treatment and the Optimal Location of Industries."
- 1982 Engineering Research Award, College of Engineering, The Ohio State University.
- 1985-86 Berman Visiting Professorship—The Hebrew University of Jerusalem.
- 1986 Local Government Scientific Research Prize, for the book "Industrial Location and Air Quality Control: A Planning Approach" - 8th National Congress on Local Government and Administration, Ministry of the Interior, Jerusalem.
- 1991 Ameritech Prize, Graduate School, Ohio State University.
- 2001 Lumley Research Award, College of Engineering The Ohio State University.
- 2014 Member, Emeritus Academy, The Ohio State University.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Economic Association
 Regional Science Association
 International Association for Energy Economics
 INFORMS (Operations Research/Management Science - full member)

PRESENTATIONS IN CONFERENCES, CONGRESSES, AND SYMPOSIA

Sixth Annual Conference of the British Section of the Regional Science Association, London, England, August 1973. Presentation: A Model of Air Quality Impact on Industrial Land Use Allocation, (with D. Shefer).

Fourteenth European Congress of the Regional Science Association, Karlsruhe, West Germany, August 1974. Presentation: Indivisibilities, Economies of Scale and Air Quality Management, (with D. Shefer).

Committee on Urban Economics, U.S.A. Annual Conference, Santa Fe, New Mexico, March 1976. Presentation: Dynamic Planning of Industrial Location and Design of Central Regional Air Pollution Control Systems (with D. Shefer).

Optimization Days, Ecole Polytechnique, Montreal, May 1978. Presentation: Visual Impact and the Location of Activities: A Combinatorial Optimization Methodology.

NARUC Biennial Regulatory Information Conference, Columbus, Ohio, October 1978. Presentation: Regulatory Simulation Model (RSM) for Gas Distribution Utilities, (with D.Z. Czamanski).

Twenty-fifth North American Meeting of the Regional Science Association, Chicago, November 1978. Presentation: Evaluation of Natural Gas Allocation Policies in Consuming Regions with a Simulation Model, (with D.Z. Czamanski).

Twenty-sixth North American Meeting of the Regional Science Association, Los Angeles, November 1979. Presentation: Solar Energy and Access to Sunlight: An Optimization Model of Energy Supply and Land-Use Design.

Canadian Regional Science Association Meeting, Montreal, June 1980. Presentation: A Chance-Constrained Programming Model for Air Quality Control and Locational Decisions.

Twentieth Regional Science Association European Congress, Munich (W. Germany), August 1980. Presentation: Modeling the Interactions Between Geothermal Energy Use and Urban Structure

V. Symposium Uber Operations Research, Koln (W. Germany), August 1980. Presentation: Meteorological Variability and Air Quality Management: A Stochastic Optimization Approach.

ORSA/TIMS Joint National Meeting, Colorado Springs, November 1980. Presentation: The Optimal Location of Vegetated Buffer Zones in Urban Areas as a Means for Air Quality Management.

Twelfth Annual Modeling and Simulation Conference, Pittsburgh, May 1981. Presentation: Econometric Modeling of Electricity Distribution Capacity Costs and Implications for Marginal Cost Pricing.

Twenty-eighth North American Meeting of the Regional Science Association, Montreal, November 1981. Presentation: Impacts of Market Size and Mix, Population Density, and Climate on Gas Distribution Networks Investments in Urban Areas.

ORSA/TIMS Joint National Meeting, Detroit, MI April 1982. Presentation: A Marginal Cost Pricing Model for Gas Distribution Utilities.

NARUC Biennial Regulatory Information Conference, Columbus, Ohio, September 1982. Presentation: The Allocation of Gas Distribution Plant Costs Based on Marginal Costs by Customer Class, (with C. Aki and K. Lee).

Twenty-ninth North American Meeting of the Regional Science Association, Pittsburgh, PA November 1982. Presentation: Modeling the Structure of Electricity Distribution Costs in Urban Areas.

Twenty-third European Congress of the Regional Science Association, Poitiers (France), August 1983. Presentation: A Structural Framework for the Design of Integrated Environmental and Land-Use Planning Optimization Models.

Thirtieth North American Meeting of the Regional Science Association, Chicago, November 1983.
Presentation: The Dynamics of Utility Systems at the Urban Fringe.

Fifteenth Annual Modeling and Simulation Conference, Pittsburgh, PA April 1984. Presentation: A Chance-Constrained Dynamic Model of Air Quality Management.

Twenty-fourth European Congress of the Regional Science Association, Milan (Italy), August 1984.
Presentation: Econometric Modeling of the Vintage Structure and Dynamics of Urban Gas and Electric Distribution Systems, (with Y.W. Lee).

Colloque de l'Association de Science Regionale de Langue Francaise (ASRDLF), Lugano (Switzerland), September 1984. Presentation: Couts et Tarification d'un Service Public Urbain: le Cas de la Desserte Gaziere.

Thirty-third North American Meetings of the Regional Science Association, Columbus, Ohio, November 1986. Presentation: Cross-Subsidizations in the Provision of Urban Utility Services.

ORSA/TIMS Joint National Meeting, Washington, D.C., April 1988. Presentation: Optimal Gas Contract Portfolio Selection Methodologies.

Twenty-eighth European Congress of the Regional Science Association, Stockholm (Sweden), August 1988. Presentation: Modeling the Cost Structure of Local Telephone Networks.

Telecommunications Costing in a Dynamic Environment Conference, San Diego, April 1989.
Presentation: Disaggregate Capital and Operating Cost Functions for Local Exchange Companies.
(Paper also presented at the CAST symposium Alternative Methods for Telecommunications Regulation: Price Caps?, The Ohio State University, June 1989).

Eleventh Annual North American Conference of the International Association for Energy Economics, Los Angeles, October 1989. Presentation: Optimal Capacity Expansion and Peak Load Pricing: A Case Study of the New England Gas Market (with D.A. Hanson).

Symposia on Marginal Cost Techniques for Telephone Services, Seattle, July 1990, and Columbus, August 1990. Presentations: (1) Disaggregate Capital and Operating Marginal Costs for Local Exchange Companies, and (2) Point-to-Point Marginal Costs for the Switched Network.

Thirtieth European Congress of the Regional Science Association, Istanbul (Turkey), August 1990.
Presentation: Spatial Interaction Models of Sectoral Telecommunication Flows.

Thirty-second European Congress of the Regional Science Association, Louvain-la-Neuve (Belgium), August 1992. Presentation: Input-Output Modeling of Regional Telecommunication Flows.

Thirty-fourth Annual Meeting of the Association of Collegiate Schools of Planning, Columbus (Ohio), October 1992. Presentation: Assessing the Regional Economic Impacts of the Clean Air Act Amendments of 1990.

1993 National Telecommunications Forecasting Conference, Washington, D.C., June 1993. Presentation: Analysis of Intersectoral Business Telecommunications Demand: A Combined Input-Output/Gravity Model Approach.

Thirty-fourth European Congress of the Regional Science Association, Groningen (The Netherlands), August 1994. Presentation: Telecommunications, Information Exchange, and Spatial Interaction: Theoretical Framework and Empirical Results.

Forty-first North American Meeting of the Regional Science Association International, Niagara Falls (Canada), November 1994. Presentation: A Spatial Equilibrium Model for City Size, Urbanization Ratio and Rural Structure (with Fahui Wang).

Forty-second North American Meeting of the Regional Science Association International, Cincinnati, November 1995. Presentation: Simulating Urban Population and Employment Densities with a Garin-Lowry Model (with Fahui Wang).

Thirty-sixth European Congress of the Regional Science Association, Zurich (Switzerland), August 1996. Presentation: Urban Transportation Network Design, Traffic Allocation, and Air Quality Control: An Integrated Optimization Approach (with W.S. Kim).

Forty-fourth North American Meeting of the Regional Science Association International, Buffalo, New York, November 1995. Presentation: Hub-and-Spoke Network Design: A General Model and Numerical Results (with Guoqiang Shen).

Thirty-eighth European Congress of the Regional Science Association, Vienna (Austria), August 1998. Presentation: Competing Destinations and Intervening Opportunities Interaction Models of Inter-City Telecommunication Flows.

Fortieth European Congress of the Regional Science Association, Barcelona (Spain), August 2000. Presentation: Spatial Interaction Models of International Telecommunication Flows.

Forty-first European Congress of the Regional Science Association, Zagreb (Croatia), August 2001. Presentation: Impacts of Telecommunication Infrastructure on Rural Development.

Forty-second European Congress of the Regional Science Association, Dortmund (Germany), August 2002. Presentations: (1) International Water Resources Allocation and Conflicts - The Case of the Euphrates and the Tigris (with M. Kucukmehmetoglu), and (2) Spatial Interaction Modeling of Interregional Commodity Flows (with M. Celik).

American Geophysical Union (AGU) Chapman Conference on Ecosystem Interactions with Land Use, Santa Fe, New Mexico, June 14-18, 2003. Presentation: Development of the Optimal Land-Use Pattern with Minimal Non-point Source Pollution (with I. Yeo and S.I. Gordon).

Fiftieth North American Meeting of the Regional Science Association International, Philadelphia, Pennsylvania, November 2003. Presentation: Geography and the Cost of Network Infrastructure: The Case of Local Telephone Systems (with M. Cubukcu).

American Geophysical Union (AGU) Annual Fall Meeting, San Francisco, California, December 10-14, 2003. Presentation: Hierarchical Regression Approach to the Global Optimal Solution (with I. Yeo and S.I. Gordon).

Forty-Sixth Annual Meeting of the Association of Collegiate Schools of Planning, Portland (Oregon), October 2004. Presentation: Land Use Optimization for Nonpoint Source Water Pollution Control (with I. Yeo and S.I. Gordon).

Forty-Fifth European Congress of the Regional Science Association, Amsterdam (The Netherlands), August 2005. Presentations: Multi-Objective Programming for the Allocation of Trans-Boundary Water Resources - The Case of the Euphrates and the Tigris (with M. Kucukmehmetoglu).

ASCE/EWRI Watershed Conference, Williamsburg, VA, July 2005. Presentation: Multistage Hierarchical Optimization for Land Allocation to Control Nonpoint Source Water Pollution (with I. Yeo and S.I. Gordon).

Mid-Continent Regional Science Association Conference, Indianapolis, June 2006. Presentation: Estimating Suppressed Data in Regional Economic Databases: A Goal-Programming Approach (with S. Zhang).

Forty-Seventh Annual Meeting of the Association of Collegiate Schools of Planning, Fort Worth (Texas), November 2006. Presentation: Impacts of Urban Containment Policies (Urban Growth Boundaries, Urban Service Areas, and Greenbelt) on the Regional Economy (with M. Woo).

Annual Meeting of the Association of American Geographers, San Francisco, CA, April 2007. Presentation: Analysis of Urban Spatial Structure under Urban Containment Land Use Policies (with M. Woo).

Forty-Eighth Annual Meeting of the Association of Collegiate Schools of Planning, Milwaukee (Wisconsin), October 2007. Presentation: Urban Air Pollution, Traffic Volumes, and Road Congestion (with Y. Kim).

American Geophysical Union Conference, San Francisco (CA), December 2007. Presentation: Is the Relationship Between Peak Runoff Discharge and Land-Use Patterns Convex? Numerical Experiment with the IHLUO Model (with I. Yeo).

Energy Systems Modeling Symposium, The Ohio State University, December 2007. Presentation: Natural Gas Infrastructure Modeling: From Local Distribution to Trans-boundary Networks.

Annual Meeting of the Association of American Geographers, Boston, MA, April 2008. Presentation: Urban Vegetation: Is It Really Helpful for Air Pollution Mitigation? (with Y. Kim and Y.T. Leem).

Annual Meeting of the Association of American Geographers, Boston, MA, April 2008. Presentation: Textural Analysis on NDVI for Land Cover Change Detection (with B. Chun).

ACSP-AESOP 4th Joint Congress, Chicago, IL, July 6-11, 2008. Presentation: No Driving for a Day per Week: Collective Actions for Urban Traffic Congestion (with Y. Kim).

Seventh Annual CMAS Conference, Chapel Hill, NC, October 2008. Presentation: Impacts of Traffic Volumes and Wind Directions on Air Pollution Concentrations in Seoul, Korea (with Y. Kim and H-M Ra).

Forty-Eighth Annual Meeting of Western Regional Science Association, Napa, California, February 2009. Presentation: Accessibility, Diversity, and Dynamics of Locations of Jobs and Population (with S. Zhang).

Third World Conference of Spatial Econometrics, Barcelona, July 8-10, 2009. Presentation: Modelling the Spatial Dependence of Shopping Center Trade Areas (with B. Ozuduru).

Thirty-Ninth Annual Meeting of the Urban Affairs Association: Contesting and Sustaining the City: Neighborhood, Region, or World, Chicago, Illinois, March 2009. Presentation: Incorporating College Population into Cohort-Component Population Forecasting (with S. Zhang).

UKC2009, Korean-American Scientists and Engineers Association (KSEA) Conference, Raleigh, North Carolina, July 16-19, 2009. Presentation: Three-Dimensional City Model Based on Data Fusion for Virtual Environments (with B. Chun).

Fiftieth Annual Meeting of the Association of Collegiate Schools of Planning, Crystal City, Virginia, October 2009. Presentation: Reduced Traffic During The Weekend: Is It Good for Urban Air Quality? (with Y. Kim).

Annual Meeting of the Association of American Geographers, Washington, DC, April 2010. Presentation: Relationship Between High-rise Building Patterns and Land Values, using LiDAR, GIS, and Appraisal Data (with B. Chun).

Fifty-First Annual Meeting of the Association of Collegiate Schools of Planning, Minneapolis, Minnesota, October 2010. Presentation: Two- and Three-Dimensional Urban Core Determinants of the Urban Heat Island: A Statistical Approach (with B. Chun).

Fifty-First Annual Meeting of the Association of Collegiate Schools of Planning, Minneapolis, Minnesota, October 2010. Presentation: A Computable General Equilibrium Model of the City: Impacts of Locational Restrictions and Zoning (with C. Olwert).

Fifty-Second Annual Meeting of the Association of Collegiate Schools of Planning, Salt Lake City, Utah, October 2011. Presentation: Urban Core Determinants of the Urban Heat Island: Spatial Statistical Approach (with B. Chun).

Ohio Transportation Engineering Conference (OTEC), Columbus, Ohio, October 2011. Presentation: Transportation Trends: How Do We Explain VMT? (with G. Akar).

Transportation Research Board 91st Annual Meeting (TRB), Washington, D.C., January 2012. Presentation: Another Look at VMT: Determinants of Vehicle Use in Two-Vehicle Households (with G. Akar).

Fifty-Third Annual Meeting of the Association of Collegiate Schools of Planning, Cincinnati, Ohio, November 2012. Presentation: A Spatial Panel Modeling Approach for the Assessment of Seismic Losses and Land-Use Planning (with C.-H. Wang).

Transportation Research Board 92nd Annual Meeting (TRB), Washington, D.C., January 2013. Presentation: Do your Neighbors Affect your Mode Choice: A Spatial Probit Model for Commuting to The Ohio State University (with C.-H. Wang and G. Akar).

Fifty-Second Annual Meeting of the Western Regional Science Association (WRSA), Santa Barbara, California, February 2013. Presentation: Macro-Level Analysis of the Impacts of Urban Factors on Traffic Crashes: A Case Study of Central Ohio (with D. Lee and B. Von Rabenau).

Beijing Forum 2013, Beijing, China, November 1-3, 2013. Invited presentation: Urban Heat Island Reduction through Urban Design and Planning Decisions: Combining Spatial Statistics and Simulation Models.

Sixtieth Annual North American Meeting of the Regional Science Association International (RSAI), Atlanta, Georgia, November 2013. Presentation: A Spatial Analysis of the Impact of Urban Environment Factors on Age-related Crashes in the Central Ohio Region (with D. Lee and B. Von Rabenau).

Sixtieth Annual North American Meeting of the Regional Science Association International (RSAI), Atlanta, Georgia, November 2013. Presentation: A land-use allocation optimization model to mitigate potential seismic losses (with C.-H. Wang).

Sixtieth Annual North American Meeting of the Regional Science Association International (RSAI), Atlanta, Georgia, November 2013. Presentation: Solar Energy Access and Complex Urban Cores Three-Dimensional Morphology: A Spatial Statistical Approach (with B. Chun).

Fifty-Fourth Annual Meeting of the Association of Collegiate Schools of Planning (ACSP), Philadelphia, PA, October 2014. Presentation: Driver Demographics and Car Crashes: Implications for Urban Planning (with D. Lee and B. von Rabenau).

Fifty-Fourth Annual Meeting of the Association of Collegiate Schools of Planning (ACSP), Philadelphia, PA, October 2014. Presentation: Statistical Modeling and Simulation of Parcel-Level Land Development Dynamics (with E. Tepe).

INFORMS 2014 Annual Meeting, San Francisco, November 2014. Presentation: Optimization of Roof and Ground Greening Strategies to Mitigate the Urban Heat Island (with B. Chun).

INFORMS 2014 Annual Meeting, San Francisco, November 2014. Presentation: A Chance-Constrained Optimization Model of Urban Land-Use Allocation under Seismic Hazard (with C.-H. Wang).

Fourth Forum of Chinese Energy and Resources Economics and Management (CEREM), Xuzhou, China, July 2015. Invited keynote presentation: Optimization of Green Roof and Green Space Allocation to Mitigate the Urban Heat Island.

Fifty-Fifth Annual Meeting of the Association of Collegiate Schools of Planning (ACSP), Houston, TX, October 2015. Presentation: Impact of Driver Demographics, Built Environment, and Road Conditions on Crash Severity: A Logit Modeling Approach (with D. Lee and B. von Rabenau).

Fifty-Fifth Annual Meeting of the Association of Collegiate Schools of Planning (ACSP), Houston, TX, October 2015. Presentation: Mitigation of the urban heat island with greening strategies: a nonlinear programming model (with B. Chun).

Sixty-Second Annual North American Meeting of the Regional Science Association International (RSAI), Portland, Oregon, November 2015. Presentation: Parcel-Level Land Development Dynamics: A Spatial and Temporal Autologistic Model (with E. Tepe).

American Association of Geographers Annual Meeting, New Orleans, LA, April 2018. Presentation: Measuring Urban Resilience from Space: A Case Study of the 2010 Haiti Earthquake (with D. Liu, R. Qin, L. Hao, A. Julius).

Fifty-Eighth Annual Meeting of the Association of Collegiate Schools of Planning (ACSP), Buffalo, NY, October 2018. Presentation: Interregional Virtual Water Trading: Implications for Regional Economic Development Under Climate Change (with M.G. Bhatia).

Fifty-Eighth Annual Meeting of the Association of Collegiate Schools of Planning (ACSP), Buffalo, NY, October 2018. Presentation: The Green Morphology of Neighborhoods and Disparities in Urban Green Space Access: A Comparative Analysis of Metro Atlanta and Metro Columbus (with Y. Park).

Fifty-Ninth Annual Meeting of the Association of Collegiate Schools of Planning (ACSP), Greenville, SC, October 2019. Presentation: A Three-Dimensional Digital City Approach to Assess the Role of Urban Shades in Microclimatic Moderation (with Y. Park).

Symposium on Energy Transition and Decarbonization, Sustainability Institute, The Ohio State University, Columbus, OH, February 11, 2021. Presentation: Urban Heat Islands.

Fifty-Second Mid-Continent Regional Science Association Annual Conference, June 9-10, 2022. Presentation: Assessing the Landscape Factors of an Urban Park Cooling Effect: A Simultaneous Equations Modeling Approach (with W. Liao, L. Hu, Q. Cao, D. Gan, X. Li).

INVITED LECTURES

Environmental Data Banks, Environmental Modeling, and Regional Planning: The Case of Alsace. Lectures given at the Seminar of Applied Ecology, organized by the Ecole Nationale du Genie Rural, des Eaux et des Forets at Bandol, France (May 26, 1977; November 18, 1976; May 30, 1976).

Pollution Standards and Optimal Location of Activities in a Metropolitan Area: The Particular Case of Air Pollution. Lecture given at the Transportation Research Center, University of Montreal (Nov. 19, 1976).

Natural Resources and Regional Planning in Alsace. Lecture given at the Colloquium Architecture, Landscape and the Environment in Alsace, Institut Qualite Alsace (June 8, 1977), Strasbourg, France.

Technical and Environmental Problems of Using High-Sulfur Coal. Lecture given at the Department of City and Regional Planning, The Ohio State University, Columbus (April 12, 1977).

Where to Put the Collector: Land-Use and Planning Implications of Solar Energy. Lecture given at The Ohio State University Union, Solar Seminar Series (November 17, 1980).

Evaluation of Expansion and Pricing Policies for a Gas Distribution Utility -Simulation and Mathematical Programming Approaches. Lecture given at the Transportation Research Center, University of Montreal (December 17, 1980).

The Use of Mathematical Models in Environmental Quality Management and Land Use Planning. Lecture given at the Department of Geography, Tel-Aviv University (November 12, 1985).

Statistical Models for Urban Infrastructure Planning. Lecture given at the Department of Geography, Haifa University (January 23, 1986).

A Stochastic Approach to the Interactions between Meteorological Variability, Location of Pollution Sources, and Air Quality Control. Lecture given at the Department of Geography, Ben Gurion University of the Negev (March 23, 1986).

Chance-Constrained Models for Air Quality Management. Lecture given in The Environmental Economics Seminar, Policy and Economic Analysis Group, Argonne National Laboratory (April 24, 1987).

Research on the Gas Industry - A Regulatory Perspective. Lecture given at the ANR Pipeline Company Annual CD-1 Meeting, Scottsdale, Arizona (May 14, 1987).

Natural Gas supply in the 1990s: Contracting, Reliability, and Pricing Issues. Lecture given at the Ohio Energy Strategy Forum, Public Utilities Commission of Ohio, Columbus, Ohio (January 13, 1992).

Uncertainty and Randomness in Environmental Planning Optimization Models. Lecture given at the ORSA Roundtable, Department of Industrial and Systems Engineering, The Ohio State University, Columbus, Ohio (February 3, 1992).

Modeling Inter-industry Telecommunications Flows: Spatial Equilibrium Framework and Empirical Estimates. Lecture given at the Geography Graduate Colloquium, Northern Illinois University, DeKalb, Illinois (April 1997).

Telecommunications and the Regional Economy. Lecture given at the Faculty Colloquium, Faculty of Architecture and Town Planning, Technion - Israel Institute of Technology, Haifa, Israel (December 20, 1999).

Telecommunications Flows in a Regional Economy: A Geographical Perspective. Lecture given at the Departmental Seminar, Department of Geography, The Hebrew University of Jerusalem, Jerusalem, Israel (December 22, 1999).

Statistical Models of Urban and Regional Air Quality: The cases of Ozone and Carbon Monoxide. Lecture given at the Departmental Seminar, Department of Geography, University of Haifa, Haifa, Israel (December 30, 1999).

Modeling Telecommunications Infrastructure and Usage in Rural Areas. Lecture given at the Center for Urban and Regional Analysis (CURA), The Ohio State University (January 18, 2002)

An Empirical Analysis of Shopping Center Locations in Ohio. Lecture given at the DAAP School of Planning Ph.D. Program Colloquium, University of Cincinnati (November 28, 2006).

Optimal Allocation of Stormwater Pollution Control Technologies in a Watershed. Lecture given at the School of Urban and Public Affairs, University of Louisville, Louisville, Kentucky (September 9, 2009).

Spatial Statistical Modeling of the Urban Heat Island in Urban Centers and Suburban Environments. Lecture given at: (1) College of Resources, Environment and Tourism, Capital Normal University, Beijing, China, July 2, 2013; (2) School of Management, Xi'an University of Architecture and Technology, Xi'an, China, July 9, 2013.

Data Mining: Optimization Methods to Estimate Missing Data in Regional Economic Databases. Lecture given at the Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing, China, July 4, 2013.

Solar Energy Access and Urban Morphology in Complex Central Core Urban Areas. Lecture given at the Institute of GIS and Remote Sensing, Peking University, Beijing, China, July 8, 2013.

Urban Heat Island Mitigation through Urban Planning: Combining Spatial Regression and Simulation, Center for Urban and Regional Analysis (CURA), The Ohio State University, October 2, 2014.

Spatial Modeling of Earthquake Impacts and Damage Minimization through Land-Use Planning, College of Resources, Environment and Tourism, Capital Normal University, Beijing, China, October 10, 2014.

Optimal Allocation of Land Uses to Minimize Earthquake Damages: Application to Taichung, Taiwan. Lecture given at: (1) Institute of GIS and Remote Sensing, Peking University, and (2) Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing, China, October 2014.

Green Roofs and Green Spaces for the Mitigation of the Urban Heat Island in High-Density Cities. Department of City and Regional Planning, Faculty of Architecture, Middle East Technical University, Ankara, Turkey, October 8, 2015.

Quantitative Methods in Planning: (1) The Urban Heat Island and Green Spaces, and (2) Earthquake Mitigation and Land Use. Lectures given at: (1) Department of City and Regional Planning, Middle East Technical University (METU), Ankara, Turkey, October 8, 2015 (2) Department of City and Regional Planning, Gazi University, Ankara, Turkey, October 9, 2015; (3) Department of City and Regional Planning, Dokuz Eylul University, Izmir, Turkey, October 12, 2015; and (4) Department of City and Regional Planning, Istanbul Technical University, Izmir, Turkey, October 14, 2015. Presentation at Gazi University available at: <https://www.youtube.com/watch?v=c4xJlaP5Gbs>

Mitigation of the Urban Heat Island with Greening Strategies: An Optimization Model. Chinese Academy of Sciences, Institute of Geographic Sciences and Natural Resources Research, State Key Laboratory of Resources and Environmental Information Systems, Beijing, China, May 27, 2016.

Creating 3D City Models with Building Footprints and LiDAR Point Cloud Classification: A Machine Learning Approach. Department of City and Regional Planning, Gazi University, Ankara, Turkey, October 19, 2018 (with Y. Park).

Impacts of Greenery, Water, and Imperviousness on the Urban Heat Island in Beijing's Olympic Area: Spatial and Uncertainty Analyses. Department of City and Regional Planning, Gazi University, Ankara, Turkey, October 25, 2018.

Neighbors, City and County Against Duke Energy Inc. Gas Pipeline Extension in Cincinnati: Technological, Environmental, Land-Use, and Safety Dimensions of a Local Energy Distribution Fight. City and Regional Planning Colloquium, The Ohio State University, October 7, 2019.

Green Infrastructure, Urban Planning and Design, and the Urban Heat Island: Mitigation Strategies in the Era of Climate Change. Emeritus Academy Lecture Series, The Ohio State University, October 7, 2020.

PUBLICATIONS

A. BOOK

Industrial Location and Air Quality Control: A Planning Approach. (Co-author: D. Shefer). John Wiley and Sons, New York, 1980.

B. CHAPTERS IN BOOKS

1. Air Quality Control, Industrial Siting and Fuel Substitution: An Optimization Approach, in Advances in Environmental Science and Technology, Vol. 10, pp. 301-367, 1980, Wiley (with D. Shefer).
2. Spatial Interaction Models of International Telecommunication Flows. In Spatially Integrated Spatial Science: Examples in Best Practice, M.F. Goodchild and D.G. Janelle (eds.), Oxford University Press, pp. 100-119, 2004

C. PEER-REVIEWED ARTICLES PUBLISHED/IN PRESS

1. Mathematical Models of Industrial Plant Location and Pollution Abatement Strategies, Environment and Planning, Vol. 5, No. 5, 1973, pp. 577-588 (with D. Shefer).
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D. WORKING PAPERS UNDER REVIEW OR REVISION

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Program for Energy Research, Education, and Public Service, The Ohio State University, for the study: Probabilistic Optimization Models for the Dynamic Control of Air Pollution Generated by High-Sulfur Coal Burning Facilities. \$4,615. July 1, 1980 - March 31, 1981. (PI).

U.S. Department of Energy for the study: Gas Marginal Cost Applications. \$104,553. November 15, 1980 - February 28, 1982. (PI).

National Association of Regulatory Utility Commissioners (NARUC) for the study: State Regulatory Options for Dealing with Natural Gas Wellhead Price Deregulation. \$119,000. October 1, 1982 - August 31, 1983. (Research Associate).

National Association of Regulatory Utility Commissioners for the study: Analysis of Bypass in Telecommunications. \$ 140,000. October 1, 1983 - December 31, 1984. (Research Associate).

National Association of Regulatory Utility Commissioners (NARUC) for the study: Gas Rate Design under Gas Deregulation: \$ 120,000. October 1, 1984 - December 31, 1985. (Research Associate).

National Science Foundation for the study: The Cost Structure and Investment Dynamics of Gas and Electricity Distribution Systems in Urban Areas. \$ 31,000. March 15, 1985-March 15, 1987. (PI).

Office of Research and Graduate Studies, OSU. Small grant of \$ 667 for obtaining data from the Federal Energy Regulatory Commission. May 1985.

National Association of Regulatory Utility Commissioners (NARUC) for the study: Regulatory Treatment of Direct Gas Purchases. \$ 150,000. October 1, 1986 - December 31, 1987. (Research Associate).

National Association of Regulatory Utility Commissioners (NARUC) for the study: A Feasibility Study of a Point-to-Point Marginal Cost Model for Local Telephone Service. \$ 28,000. January 1, 1988 - September 30, 1988. (PI).

Ameritech Foundation for the study: Economies of Scale and Productivity Growth in Local Telephone Systems: A Cost Function Approach. \$ 21,658. July 1988 - June 1989. (PI)

Ohio Board of Regents - Urban Affairs and Urban Assistance Program, for the study: Modeling Inter-Industry Telecommunication Flows: New Tools for Regional Analysis and Development Policy. \$ 19,902. April 1, 1990 - June 30, 1991. (PI)

Ohio Board of Regents - Urban Affairs and Urban Assistance Program, for the study: Assessing the Economic Impacts of the Clean Air Act Amendments of 1990 on the State of Ohio. \$ 19,744. April 8, 1992 - June 30, 1993. (PI)

Ameritech Foundation for the study: Modeling Telecommunication Demand in the Business Sector: A Disaggregate Production Function Approach. \$ 18,000. July 1992 - June 1993.

Argonne National Laboratory, for the study: Natural Gas Database Development. \$ 28,217. April - June 1993.

Ohio Board of Regents - Urban Affairs and Urban Assistance Program, for the study: Urban Structure and Dynamics in Ohio: Population and Employment Density Functions Revisited. \$ 20,000. July 1994 - June 1995. (PI)

Ohio Board of Regents - Urban Affairs and Urban Assistance Program, for the study: Central Place Structure and Scale Economies in the Ohio System of Cities. \$ 20,450. July 1995 - June 1996. (PI)

Ameritech Foundation for the study: Modeling the Interactions between International Telecommunications and Trade Flows. \$ 14,139. October 1996 - September 1997.

Ohio Board of Regents - Urban Affairs and Urban Assistance Program, for the study: Commuting Flows and the Hierarchy of Employment Centers in Ohio's Metropolitan Areas. \$ 20,000. July 1997 - June 1998. (PI)

National Science Foundation for the study: Telecommunications Demand and Impacts in the Regional Economy. \$ 85,514. July 15, 1998 - June 30, 2000.

Ohio Board of Regents - Urban Affairs and Urban Assistance Program, for the study: Using Geographical Information Systems to Estimate Models of Urban and Regional Air Quality. \$ 20,000. July 1999 - June 2000. (PI)

Ameritech Foundation for the study: Telecommunications Infrastructure, Business Location, and Local Economic Development. \$ 21,098. October 2000 - September 2001.

SBC Faculty Research Grant for the study: Internet Broadband Service Demand Analysis: Qualitative Choice Models of Household and Firm Behavior. (with E. Malecki), \$28,681. July 2003- June 2004.

Emeritus Academy Small Grant for the study: Long-Term Microclimatic Changes in the Columbus Metropolitan Area, \$2,400. January 2018 - December 2019.

Natural Science Foundation of China for the project: “Spatial and Temporal Modeling of PM2.5 Concentrations Combining Land-Use Regression and the Spatial Durbin Model,” Co-PI. 230,000 Yuan. 2019-2022. (PI: Dr. Zhaoxin Dai, Chinese Academy of Surveying and Mapping, Beijing).

DOCTORAL STUDENTS SUPERVISION – DISSERTATIONS COMPLETED

1. Sadoun, Balqies I., 1992. A Modeling Methodology for Energy-Conserving Site Design.
2. Hegazy, Youssef, 1993. Reliability-based Pricing of Electricity Service.
3. Kim, WoonSoo, 1995. Combined Transportation Network Optimization and Spatial Allocation of Pollution Emissions.
4. Wang, Fahui, 1995. Spatial Equilibrium Models of Systems of Cities with Interurban Transportation Costs.
5. Shen, Yung-Tang, 1996. Studies in Fuel Supply and Air Quality Planning by Electric Utilities.
6. Shen, Guoqiang, 1998. Hub Location and Network Design: Model Formulation and Numerical Analyses.
7. Kim, Hag-Yeol, 1999. GIS-Based Statistical Models of Urban and Regional Air Quality: The Cases of Ozone and Carbon Monoxide.
8. Celik, H. Murat, 2001. Spatial Interaction Modeling of Interregional Commodity Flows.
9. Kucuknehmetoglu, Mehmet, 2002. Water Resources Allocation and Conflicts: The Case of the Euphrates and the Tigris.
10. Cubukcu, Mert K., 2003. Geography and the Cost of Network Infrastructure: The Case of Local Telephone Systems.
11. Shen, Kang-Ping, 2003. Airshed-Based Statistical Modeling of the Spatial Distribution of Air

Pollution: The Case of Sulfur Dioxide.

12. Kim, Tae-Kyung, 2004. Dynamic Analysis of Sulfur Dioxide Monthly Emissions in U.S. Power Plants.
13. Beydoun, Mustapha, 2004. Vehicular Characteristics and Urban Air Pollution: Socio-Economic and Environmental Policy Issues.
14. Yeo, In-Young, 2005. Multistage Hierarchical Optimization for Land Allocation to Control Nonpoint Source Water Pollution. (Co-adviser: S.I. Gordon).
15. Sucahyono, Hadi, 2006. Neighborhood Impacts on Suburban Housing Values. (Co-adviser: B. von Rabenau).
16. Ozuduru, Burcu, 2006. An Empirical Analysis of Shopping Center Locations in Ohio.
17. Chen, Wei-Bin, 2006. Optimal Allocation of Stormwater Pollution Control Technologies in a Watershed. (Co-adviser: S.I. Gordon).
18. Woo, Myungje, 2007. Impacts of Urban Containment Policies on Urban Growth and Structure.
19. Zhang, Sumei, 2008. Metropolitan Dynamics of Accessibility, Diversity, and Locations of Population and Activities.
20. Lu, Jia, 2008. Land-Use Structure and Population and Employment Densities: Empirical Analysis of the Columbus (Ohio) Metropolitan Area.
21. Kim, Jun-Pill, 2009. Land-Use Planning and the Urban Heat Island Effect.
22. Kim, Youngkook, 2010. Impacts of Transportation, Land Uses, and Meteorology on Urban Air Quality.
23. Olwert, Craig T., 2010. A Computable General Equilibrium Model of the City with Optimization of its Transportation Network: Impacts of Changes in Technology, Preferences, and Policy.
24. Lee, David Jung-Hwi, 2010. Optimal Regional Allocation of Population and Employment: Application of a Spatial Interaction Commuting Model.
25. Chun, BumSeok, 2011. Three-Dimensional City Determinants of the Urban Heat Island: A Statistical Approach.
26. Wang, Chih-Hao, 2013. Land-Use Allocation and Earthquake Damage Mitigation: A Combined Spatial Statistics and Optimization Approach.
27. Senyel, Muzeyyen Anil, 2013. Geography and the Costs of Urban Energy Infrastructure: The Case of Electricity and Natural Gas Capital Investments.
28. Lee, Dongkwan, 2015. Driver Demographics, Built Environment, and Car Crashes: Implications for Urban Planning.

29. Guliani, Manraj, 2015. Interregional Commodity and Virtual Water Trade: Impact of Changing Climate and Water Supply.
30. Tepe, Emre, 2016. Statistical Modeling and Simulation of Land Development Dynamics.
31. Park, Yujin, 2020. Essays in Geospatial Modeling of Urban Green Infrastructure.

VISITING SCHOLARS – HOSTED AND MENTORED

1. Qi, Song. 2011-2012. School of Management, Xi'an University of Architecture and Technology, Xi'an, China.
2. Li, Zhi. 2014-2015. School of Management, Xi'an University of Architecture and Technology, Xi'an, China.
3. Dai, Zhaoxin. 2016-2017. Institute of Geographic Science and Natural Resources Research, Chinese Academy of Science, Beijing, China.
4. Zheng, Senlin. 2017-2019. State Key Laboratory of Subtropical Building Science, South China University of Technology, Guangzhou, China.
5. Li, Jingye. 2019-2020. Department of Land Resources Management, China University of Geosciences, Wuhan, China.
6. Soydan Gurdal, Ayse Gul. 2020-2021. Department of City and Regional Planning, Gazi University, Ankara, Turkey.