Gregory S. Macfarlane

Transport Foundry
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Raleigh, NC 27609

Education

Georgia Institute of Technology Atlanta, Georgia

Ph.D., Civil Engineering — May 2014
M.S., Economics

Dissertation: "Using Big Data to Model Travel Behavior: Applications to Vehicle Ownership and Willingness-to-Pay for Transit Accessibility"
Committee: Laurie A. Garrow (Chair - CEE), Juan Moreno-Cruz (Economics), Patricia L. Mokhtarian (CEE), Kari E. Watkins (CEE), Patrick S. McCarthy (Economics), Jeffrey P. Newman (CEE)

Brigham Young University Provo, Utah

B.S. with University Honors, Civil Engineering — December 2009
Minor degrees in Mathematics and Asian Studies (including advanced Mandarin)

Research Interests — transportation demand modeling and forecasting, land use modeling and forecasting, data science and visualization.

Academic Experience

Brigham Young University

Assistant Professor — November 2018 -
Lectured on transportation data, discrete choice econometrics, and mode choice models in the graduate travel demand analysis course. Also developed a mode choice laboratory module to enhance the existing curriculum.

University of North Carolina, Chapel Hill

Adjunct Lecturer/Teaching Assistant PLAN 739 — Travel Demand — January 2017 - May 2017
Lectured on transportation data, discrete choice econometrics, and mode choice models in the graduate travel demand analysis course. Also developed a mode choice laboratory module to enhance the existing curriculum.

Georgia Institute of Technology

Post-doctoral Researcher — January 2014 - May 2014
Developed a curriculum to teach sustainable transportation engineering and analysis, in partnership with the National Center for Sustainable Transportation.

Instructor/Teaching Assistant CEE 6622 – Travel Demand Analysis — Spring 2014
Developed course materials for a graduate course on developing and using urban travel demand models; provided grading, homework assistance, and laboratory instruction. Taught with Dr. Kari Watkins in spring semester 2012; Served as instructor of record spring semester 2014.

Publications

Gregory S. Macfarlane, Laurie A. Garrow, and Juan Moreno-Cruz. Do Atlanta residents value MARTA? Selecting an autoregressive model to recover willingness to pay. *Transportation Research Part A: Policy and Practice*, 78:214–230, 2015

Gregory S. Macfarlane, Laurie A. Garrow, and Patricia L. Mokhtarian. The influences of past and present residential locations on vehicle ownership decisions. *Transportation Research Part A: Policy*

and Practice, 74:186–200, 2015

Candace Brakewood, Gregory S. Macfarlane, and Kari E. Watkins. The impact of real-time information on bus ridership in New York City. *Transportation Research Part C: Emerging Technologies*, 53:59–75, 2015

Stefan Binder, Gregory S. Macfarlane, Laurie A. Garrow, and Michel Bierlaire. Associations among household characteristics, vehicle characteristics and emissions failures: An application of targeted marketing data. *Transportation Research Part A: Policy and Practice*, 59:122–133, 2014

Thomas A. Wall, Gregory S. Macfarlane, and Kari E. Watkins. Exploring the use of egocentric online social network data to characterize individual air travel behavior. *Transportation Research Record*, 2400:78–86, 2014

Gregory S. Macfarlane, Mitsuru Saito, and Grant G. Schultz. Delay underestimation at free right-turn channelized intersections. *Procedia - Social and Behavioral Sciences*, 16:560–567, 2011

J. H. McBride, R. W. Keach, R. T. Macfarlane, G. F. De Simone, C. Scarpati, D. J. Johnson, J. R. Yaede, Gregory S. Macfarlane, and R. W. R. Weight. Subsurface visualization using ground-penetrating radar for archaeological site preparation on the northern slope of Somma-Vesuvius: a Roman site, Pollena-Trocchia, Italy. *Il Quaternario, Italian Journal of Quaternary Sciences*, 22(1):39–52, 2009

In Progress

Gregory S. Macfarlane, Bingling Zhang, Thomas A. Wall, and Kari E. Watkins. Peer effects in air travel behavior. *Working paper, Georgia Institute of Technology*, 2017

Nico Boyd, Kari E. Watkins, and Gregory S. Macfarlane. A socio-spatial analysis of urban parks and public health. *Working paper, Georgia Institute of Technology*, 2017

Other Work

Gregory S. Macfarlane, Alexander O. Bettinardi, and Rick Donnelly. swimr: Visualizing complex longitudinal indicators for a statewide integrated land use and transport model in Oregon. In *Transportation Planning Applications Conference*, Raleigh, NC, 2017

Gregory S. Macfarlane and Josephine D Kressner. Modeling automated vehicles with a passive data model. In *Transportation Planning Applications Conference*, Raleigh, NC, 2017

Josephine D Kressner, Gregory S. Macfarlane, Rick Donnelly, and Leta F Huntsinger. Building a pattern-based demand model from passive data sources. In *Innovations in Travel Modeling Conference*, Denver, CO, 2016

Gregory S. Macfarlane and Josephine D. Kressner. Fusing Passive Data for Transportation Planning. In *Transportation Research Board Annual Meeting*, Washington, D.C., 2016

Gregory S. Macfarlane and Juan Moreno-Cruz. The association between public transportation infrastructure and home price growth and stability. In *Transportation Research Board Annual Meeting*, Washington, D.C., 2015. Transportation Research Board, National Research Council

Judith Cruz, Gregory S. Macfarlane, Yanzhi Xu, Michael O. Rodgers, and Randall Guensler. Sustainable Transportation Curricula. Technical Report March, National Center for Sustainable Transportation, Davis, California, 2015

Bingling Zhang, Gregory S. Macfarlane, Thomas A. Wall, and Kari E. Watkins. Friendship Influences on Air Travel: A Social Autoregressive Analysis. In *North American Regional Science Conference*,

Washington, D.C., 2014. Regional Science Association International

Gregory S. Macfarlane and Laurie A. Garrow. Estimating a vehicle ownership model from targeted marketing data. In *Travel Surveys: Moving from Tradition to Practical Innovation*, Dallas, 2012. Texas A&M University Transportation Institute

Josephine D. Kressner and Gregory S. Macfarlane. Evaluating household credit reports as a replacement for episodic travel surveys. In *Transportation Research Board Annual Meeting*, Washington, D.C., 2012

Gregory S. Macfarlane, Mitsuru Saito, and Grant G. Schultz. Driver perceptions at free right-turn channelized intersections. In *T&DI Congress 2011: Integrated Transportation and Development for a Better Tomorrow*, volume 398, pages 108–108. ASCE, 2011

Awards and Honors

Dwight David Eisenhower Graduate Fellowship Full doctoral funding from the Federal Highways Administration 2011-2013, one of five awards nationally. Awarded supplemental grant in 2013.

Eno Center for Transportation Leadership Development Conference Participated in the 2012 program; nominated by the Ivan Allen, Jr. College of Liberal Arts at Georgia Tech.

Parsons Brinckerhoff - Jim Lammie Engineering Scholarship Awarded to the top engineer in the 2011 American Public Transportation Foundation (APTF) competition. Sponsored by Mike Allegra, general manager of the Utah Transit Authority. Renewed in 2012.

Gordon W. Schultz Graduate Fellowship Given to the Georgia Tech student in travel demand modeling who exhibits innovation, problem-solving, and practical application.

National Science Foundation Graduate Fellowship Program Honorable Mention in 2011 and 2012, as a first- and second-year graduate student.

Office of Research and Creative Activities (ORCA) Grant Competitive research grant to survey Chinese transportation planning practices, one of several undergraduate research awards from Brigham Young University.

Freeman-Asia Award Grant to study Chinese finance and globalized engineering at Nanjing University in the People's Republic of China from the Institute for International Education.

Leadership Activities

Advisory Committees — Member, Transportation Research Board ADD30: Transportation and Land Development (2016-). American Public Transportation Foundation Scholar Task Force (2011-2013).

Professional Organizations — Webmaster and service coordinator of the Georgia Tech Institute of Transportation Engineers student chapter (2010 - 2013); Vice-president and service coordinator of the BYU ITE student chapter (2007 - 2009); Member, Tau Beta Pi (Utah β '09) and Young Professionals in Transportation.

Professional Experience

Transport Foundry Atlanta, Georgia

Transportation Engineer April 2017 — October 2018

Building a data-driven travel demand model from big data sources including household credit listing, cellular device traces, and GPS networks. The microsimulation framework we've applied may successfully supplement or replace household travel surveys and existing travel demand models in many contexts.

WSP | Parsons Brinckerhoff Raleigh, North Carolina

Technical Principal, Systems Analysis Group June 2014 — April 2017

Major projects include: model development and testing of a statewide integrated activity-based

transport and land use model for the Oregon Department of Transportation; recalibration and redesign of an activity-based model for Reno, Nevada; development of a series of trip-based models for the Virginia Department of Transportation; a microsimulation of national truck trips based on Freight Analysis Framework commodity flow forecasts.

Utah Transit Authority Salt Lake City, Utah

Strategic Planning Intern May 2009 - June 2010
Developed transit operating scenarios for the Wasatch Front long-range transportation plan and for UTA's internal scenario planning and programming purposes.

Hales Engineering Lehi, Utah

Engineering Intern July 2008 - May 2009
Prepared traffic impact analyses for commercial and residential developments, and a Major League Soccer stadium.

Singapore Mission of the Church of Jesus Christ of Latter-day Saints

Missionary June 2004 - June 2006
Served as volunteer cleric in Singapore, Malaysia, and Sri Lanka.

Licensure Professional Engineer, North Carolina #044518

Skills Significant computer software and programming ability, including expert skills in R, LaTeX, and git. Also experienced with Java, QGIS, C, Python, Cube/Voyager, GISDK, Matlab, Synchro, ArcGIS, and Microsoft Office (including Visual Basic for Applications).