Gregory S. Macfarlane

Brigham Young University
gregmacfarlane@byu.edu 801.422.8505
430 Engineering Building, Brigham Young University
Provo, UT 84602

EDUCATION

GEORGIA INSTITUTE OF TECHNOLOGY Atlanta, Georgia

Ph.D., Transportation Systems Engineering   May 2014
  Advisor: Laurie A. Garrow
  Dissertation: "Using Big Data to Model Travel Behavior: Applications to Vehicle Ownership
  and Willingness-to-Pay for Transit Accessibility"

M.S., Economics

BRIGHAM YOUNG UNIVERSITY Provo, Utah

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

ACADEMIC EXPERIENCE

BRIGHAM YOUNG UNIVERSITY
Assistant Professor   November 2018 -
Researching the application of passive data sets in transport and land use modeling, including spatial
and social effects on travel behavior.

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 grad-
uate travel demand analysis course.

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.

PROFESSIONAL EXPERIENCE

TRANSPORT FOUNDRY Atlanta, Georgia

Transportation Engineer   April 2017 — October 2018
Developed a data-driven travel demand model from big data sources including household credit
listings, cellular device traces, and GPS networks.

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.

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.

Courses
CEEn 662: Transport Simulation and Analysis Winter 2019
This course teaches students how to construct, specify, and analyze transport simulations. We begin with discussion of traffic flow theory relevant to traffic microsimulation, and then proceed into more general simulation topics. Students learn to use Vissim, MATSim, and rudimentary elements of SimPy.

CEE 6622: Travel Demand Analysis GT: Spring 2014
This course teaches graduate students to develop and use urban travel demand models, including trip-based and activity-based modeling methods and experience with a modern practicing regional model.

Journal Articles
Gregory S. Macfarlane, Nico Boyd, John E. Taylor, and Kari E. Watkins. Modeling the impacts of park access on health outcomes: a choice-based accessibility approach. *Under Review at Environment and Planning B: Urban Analytics and City Science*, 2019

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

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

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

CONFERENCE PAPERS	N. Boyd, G.S. Macfarlane, K.E. Watkins, and D. Ederer. Accessibility to urban parks and health outcomes on the neighborhood level. In *APHA Annual Meeting*, Atlanta, GA, 2017
	Josephine D Kressner, Gregory S. Macfarlane, Rick Donnelly, and Leta F Huntsinger. Using passive data to build an agile tour-based model: A case study in Asheville. In *Innovations in Travel Modeling Conference*, Denver, CO, 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
	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
	Gregory S. Macfarlane, Mitsuru Saito, and Grant G. Schultz. Delay underestimation at free right-turn channelized intersections. In *6th International Symposium on Highway Capacity and Quality of Service*, volume 16, pages 560–567, 2011
	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
PRESENTATIONS	Gregory S. Macfarlane and Josephine D. Kressner. Comparing the Daily Schedules in the NHTS from 2009 and 2017. In *National Household Travel Survey (NHTS) Data for Transportation Applications Workshop*, Washington, D.C., 2018
	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, North Carolina, 2017
	Gregory S. Macfarlane and Josephine D. Kressner. Modeling automated vehicles with a passive data model. In *Transportation Planning Applications Conference*, Raleigh, North Carolina, 2017
	Gregory S. Macfarlane and Josephine D. Kressner. Fusing Passive Data for Transportation Planning. In *Transportation Research Board Annual Meeting*, Washington, D.C., 2016
	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
	G.S. Macfarlane, M. Saito, and G.G. Schultz. Are free right-turn channelized intersections performing as they should. In *Institute of Transportation Engineers Annual Meeting and Exhibit 2011*, 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.

EXTERNAL CITIZENSHIP

Transportation Research Board — Young Members Council (2019 -). YMC Planning and Environment Subcommittee Co-chair (2019-). Member, ADB50: Standing Committee on Travel Forecasting Resources (2019-). Member and assistant paper review coordinator, ADD30: Transportation and Land Development (2016-2019).

Professional Organizations — Institute of Transportation Engineers (2009-2013, 2018-); webmaster and service coordinator of the Georgia Tech ITE student chapter (2010 - 2013); bice-president and service coordinator of the BYU ITE student chapter (2007 - 2009). Tau Beta Pi (Utah β '09). Young Professionals in Transportation (2013-2018); organizing co-chair of Triangle NC chapter. American Public Transportation Association scholar task force (2011 - 2013).

LEADERSHIP ACTIVITIES

Faculty Committees — Member, Faculty Development and Capital Improvement Committee (2018-). Member, Transportation group.

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, PTV Vissim / Visum, TransCAD, and Microsoft Office.