Gregory S. Macfarlane

Brigham Young University
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430 Engineering Building
Provo, UT 84602

Education

Georgia Institute of Technology

Ph.D., Transportation Systems Engineering — May 2014
M.S., Economics — May 2014

Brigham Young University — December 2009

B.S. with University Honors, Civil Engineering
Minor degrees in Mathematics and Asian Studies

Academic Experience

Brigham Young University
Assistant Professor — November 2018 —

University of North Carolina, Chapel Hill
Adjunct Lecturer/Teaching Assistant — January 2017 — May 2017

Georgia Institute of Technology
Post-doctoral Researcher — January 2014 — May 2014

Research Interests

Transportation planning and engineering, travel demand modeling, passive transportation data, spatial and social correlation.

Professional Experience

Registered professional engineer in North Carolina, license #044518

Transport Foundry Atlanta, Georgia

Transportation Engineer — April 2017 — October 2018
Developed a data-driven travel demand model from passive data sources.

WSP | **Parsons Brinckerhoff** Raleigh, North Carolina

Technical Principal, Systems Analysis Group — June 2014 — April 2017
Developed advanced travel demand models for public sector clients.

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.

Papers in Production

These are manuscripts that have not been published, but are either under review or being prepared for submission. The marking †indicates BYU graduate student authors, *indicates BYU undergraduate authors. Throughout this document, work completed since my third year review appears in blue.

7 Erhardt, G.D., Guan, H.Z. Lee, D., **Macfarlane, G.S.**, Van Hentenryck, P. Comprehensive studies on on-demand multimodal transit systems with two case studies in San Francisco and Salt Lake City. Working paper. Anticipated submission in Winter 2026.

6 Tenenboim, E., Xu, Y., Erhardt, G.D., **Macfarlane, G.S.**, & Peeta, S. A model of ride-hailing driver participation: shift duration, start time, and start location. Working paper. Anticipated submission in Winter 2026.

5 Day, C.†, **Macfarlane, G.S.**, Atchley, S.H.*, Erhardt, G.D., Ven Hentenryck, P., Watkins, K.E. Implementation and quantitative evaluation of multi-modal optimization and simulation for transit and ridehail competitive analysis. Working paper. Anticipated submission in Winter 2026.

4 Lu, R., Ji, J.Y., Wang, L.M., Belkessa, L., Dong, Y., Madadi, B., Varotto, S., Saunier, N., **Macfarlane, G.S.**, Ghosh, B., Ameli, M., & Wu, C. Towards accelerating transportation research: measuring the practice of open science. Working paper. Anticipated submission in Fall 2025.

3 Sivakumar, A., Jones, P. Möckel, R., Moreno Chou, A.T., Erhardt, G., **Macfarlane, G.S.**. The 'activity-based' approach: a new perspective for addressing the major environmental and resource challenges faced by societies. Working paper. Anticipated submission in Summer 2025.

2 Youngs, E.K.†, **Macfarlane, G.S.**, Nielsen, J.A. Exploring the link between travel behavior and mental health. Working paper. Anticipated submission in Summer 2025.

1 **Macfarlane, G.S.**, Stucki, E.†, Redelfs, A.H., Spruance, L.A. (2025). Where's dinner coming from? A utility-based investigation of access to nutrition in Utah. Received second revise and resubmit at *Journal of Transport and Land Use*.

Refereed Journal Articles

These are manuscripts that have been published, or accepted for publication. The marking †indicates BYU graduate student authors, and *indicates BYU undergraduate authors.

First author or first faculty author on 12 of 21 total journal articles, indicating primary responsibility for the work. Paper 1 came from my undergraduate work, papers 2 through 6 were from my doctoral research, and papers 7 onward represent work completed during my time on the faculty at BYU. Number of citations are from Google Scholar as of August 2025. For recent papers, I provide a short description of my role in the work. Notes on the venues where I publish including impact factors and rankings are provided in the section following.

21 Voulgaris, C.T., **Macfarlane, G.S.**, Fjendbo-Jensen, A. (2025). You'll Never Walk Alone: Parental active escorting as an alternative to car travel to school. Forthcoming in *Journal of Transport & Health*.

I provided econometric support for this paper, which is the beginning of an international collaborative effort looking at the travel choices of children and families.

20 Gibbons, N.† & **Macfarlane, G.S.** (2025). Evaluating the impacts of parameter uncertainty in a practical transportation demand model. *Future Transportation*, 5 (1), 15. https://doi.org/10.3390/futuretransp5010015

This paper is the result of Natalie Gibbon's MS thesis which I supervised, and came as an outgrowth of my UDOT-funded research on transportation network resilience.

19 **Macfarlane, G.S.**, Barnes, M.†, & Gibbons, N.* (2025). A utility-based approach to modeling systemic resilience of highway networks with an application in Utah. *Journal of Transportation Engineering Part A: Systems*. 151 (1). https://ascelibrary.org/doi/10.1061/JTEPBS.TEENG-8534

This paper is drawn from the results of Max Barnes' MS thesis which I supervised; this was the first UDOT-funded project which I secured as a new faculty member.

18 Wang, B.†, Fulda, N., Huang, Z.Y.*, Schultz, G.G., **Macfarlane, G.S.**, Arnesen, J.*, Khayyat, A.* (2024). Predicting directional traffic volume at intersections with automated traffic signal performance measures data using machine learning algorithms. *Transportation Research Record*. https://doi.org/10.1177/03611981241252829

This paper was the result of a multidisciplinary collaboration with Grant Schultz's PhD student and multiple undergraduates in the Computer Science program. I helped the student researchers to frame the problem and evaluated the model output. **Citations: 2**

17 **Macfarlane, G.S.**, Riches, G.†, Youngs, E.K.†, Nielsen, J.A. (2024). Classifying location points as daily activities using simultaneously optimized DBSCAN-TE parameters. *Findings*. https://doi.org/10.32866/001c.116197

This paper is the result of exploratory work that comprised Gillian Riches' MS thesis, where she adapted an algorithm to process data that was then used in Emily Youngs' MS thesis. This paper was well-suited to the open-access, concise format of *Findings*.

16 Voulgaris, C.T., **Macfarlane, G.S.**, Kaylor, J. (2024). Whose miles are these anyway? Estimating site-generated vehicle miles traveled. *Journal of the American Planning Association*. 90(4), 593–609 https://doi.org/10.1080/01944363.2023.2298962

This is the result of a collaboration with Carole Voulgaris at Harvard and Joseph Kaylor of ARUP (a consulting firm) where we used data from my lab's travel demand model runs to comment on California's attempts to replace traffic Level of Service in impact assessments. **Citations: 1**

15 Wang, B.†, Schultz, G.G., **Macfarlane, G.S.**, Eggett, D.L., & Davis, M.C.* (2023) A methodology to detect traffic data anomalies in automated traffic signal performance measures. *Future Transportation*. 3(4), 1175-1194. https://doi.org/10.3390/futuretransp3040064

I was Co-PI on a UDOT-funded project that resulted in a portion of Bruce Wang's PhD and this related paper. I supported the data management and analysis tasks. **Citations: 3**

14 Daines, T.J.†, Schultz, G.G., **Macfarlane, G.S.**, & Ward, C.* (2022). Evaluating real time ramp meter queue length estimation. *Future Transportation*, 2(4), 807-827. https://doi.org/10.3390/futuretransp2040045

I was Co-PI on a UDOT-funded project that resulted in Tanner Daines' MS thesis and this related paper. I supported the data management and analysis tasks. **Citations: 3**.

13 **Macfarlane, G.S.**, Stucki, E.†, Redelfs, A.H., & Spruance, L.A. (2022). Beyond proximity: utility-based access from location-based services data. *International Journal of Environmental Research and Public Health*, 19(19), 12352. https://doi.org/10.3390/ijerph191912352.

This was preparatory work pursued by my MS Student Emma Stucki ahead of her MS thesis. **Citations: 1**

12 **Macfarlane, G.S.**, Voulgaris, C.T., & Tapia, T. (2022). City parks and slow streets: a utility-based access and equity analysis. *Journal of Transport and Land Use*. 15(1): 587-612. https://doi.org/10.5198/jtlu.2022.2009

This paper develops a new method to examine accessibility using location-based services data, and is notable for providing a policy analysis of COVID-19 related street-to-park conversions. **Citations: 10**

11 Wang, B.†, Schultz, G.G., **Macfarlane, G.S.**, & McCuen, S.* (2022). Evaluating signal systems using automated traffic signal performance measures. *Future Transportation*. 2(3): 659-674. https://doi.org/10.3390/futuretransp2030036.

This paper was the result of a UDOT-funded project and supported Bruce Wang's Ph.D. I supported the project's data analysis and modeling. **Citations: 9**

10 **Macfarlane, G.S.**, Sheffield, M.H.†, Bennet, L.S.†, & Schultz, G.G. (2021). The effect of transit signal priority on bus rapid transit headway adherence. *Findings*. https://doi.org/10.32866/001c.24499. **Citations: 2**

9 **Macfarlane, G.S.**, Hunter, C.*, Martinez, A.*, & Smith, E.* (2021). Rider perceptions of an on-demand microtransit service in Salt Lake County, Utah *Smart Cities* 4(2): 717-727. https://doi.org/10.3390/smartcities4020036 **Citations: 22**

8 **Macfarlane, G.S.**, Boyd, N., Taylor, J.E., & Watkins, K. (2021) Modeling the impacts of park access on health outcomes: A utility-based accessibility approach. *Environment and Planning B: Urban Analytics and City Science*, 48(8), 2289–2306. https://doi.org/10.1177/2399808320974027 **Citations: 31**

7 Glenn, J., Bluth, M.*, Christianson, M.*, Pressley, J.*, Taylor, A., **Macfarlane, G.S.**, & Chaney, R. A. (2020). Considering the potential health impacts of electric scooters: an analysis of user reported behaviors in Provo, Utah. *International Journal of Environmental Research and Public Health*, 17(17), 6344. https://doi.org/10.3390/ijerph17176344 **Citations: 79**

6 **Macfarlane, G.S.**, Garrow, L.A., & Moreno-Cruz, J. (2015). Do Atlanta residents value MARTA? Selecting an autoregressive model to recover willingness to pay. *Transportation Research Part A: Policy and Practice*, 78, 214–230. https://doi.org/10.1016/j.tra.2015.05.010 **Citations: 10**

5 **Macfarlane, G.S.**, Garrow, L.A., & Mokhtarian, P. L. (2015). The influences of past and present residential locations on vehicle ownership decisions. *Transportation Research Part A: Policy and Practice*, 74, 186–200. https://doi.org/10.1016/j.tra.2015.01.005 **Citations: 55**

4 Brakewood, C., **Macfarlane, G.S.**, & Watkins, K.E. (2015). The impact of real-time information on bus ridership in New York City. *Transportation Research Part C: Emerging Technologies*, 53, 59–75. https://doi.org/10.1016/j.trc.2015.01.021 **Citations: 231**

3 Binder, S., **Macfarlane, G.S.**, Garrow, L.A., & Bierlaire, M. (2014). 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. https://doi.org/10.1016/j.tra.2013.11.005 **Citations: 19**

2 Wall, T.A., **Macfarlane, G.S.**, & Watkins, K.E. (2014). Exploring the use of egocentric online social network data to characterize individual air travel behavior. *Transportation Research*

Record, 2400, 78–86. https://doi.org/10.3141/2400-09 **Citations: 15**

1 McBride, J.H., Keach, R. W., Macfarlane, R.T., De Simone, G.F., Scarpati, C., Johnson, D.J., **Macfarlane, G.S.**, & Weight, R.W.R. (2009). 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. https://portal.issn.org/resource/ISSN/0394-3356

Venue Notes

I publish in a wide variety of journals, including both traditional and open-access journals. The description of each journal includes Scopus CiteScore and relative ranking in the most relevant field; Clarivate Impact Factor, and Scimago journal quartile ranking.

Transportation Research Part C: Emerging Technologies is a leading international journal with robust peer review focusing on applications and implications of technology in transportation systems. CiteScore: 15.9; 9/407 in civil engineering. Impact Factor: 7.9. Scimago: Q1. Publisher: Elsevier.

Transportation Research Part A: Policy and Practice is a leading international journal with robust peer review focusing on transportation policy analysis and the planning of transportation systems. CiteScore: 11.3; 27/407 in civil engineering. Impact Factor: 6.8. Scimago: Q1. Publisher: Elsevier.

Smart Cities is an international, scientific, peer-reviewed, open access journal on the science and technology of smart cities. CiteScore: 14.7, 4/288 in urban studies. Impact Factor: 5.5. Scimago: Q1. Publisher: MDPI.

Journal of the American Planning Association is the quarterly journal of record for the planning profession. CiteScore: 7.3, 20/288 in urban studies. Impact Factor: 3.4. Scimago: Q1. Publisher: Taylor & Francis.

Environment and Planning B: Urban Analytics and City Science is a leading international journal with robust peer review publishing cutting-edge research in analytical methods for urban planning and design. CiteScore 7.3; 21/288 in urban studies. Impact Factor: 3.1. Scimago: Q1. Publisher: Sage.

Journal of Transport & Health is an international, peer reviewed journal devoted to publishing research that advances knowledge on the many interactions between transport and health and the policies that affect these. CiteScore: 6.3, 13/109 in safety research. Impact Factor: 3.3. Scimago: Q1. Publisher: Elsevier.

Journal of Transport and Land Use is the leading international journal that publishes original interdisciplinary papers on the interaction of transport and land use. CiteScore: 4.0; 67/279 in urban studies. Impact Factor: 2.2. Scimago: Q1. Publisher: University of Minnesota.

International Journal of Environmental Research and Public Health is an interdisciplinary, open access journal with peer review. CiteScore: 7.3; 104/665 in public health. Impact Factor: 8.5. Scimago: Q2. Publisher: MDPI.

Journal of Transportation Engineering Part A: Systems contains technical and professional engineering articles with robust peer review on the planning, design, construction, operation, and maintenance of air, highway, rail, and urban transportation systems and infrastructure. CiteScore: 4.0; 157/407 in civil engineering. Impact Factor: 2.1. Scimago: Q2. Publisher: ASCE.

Transportation Research Record is the Journal of the Transportation Research Board of the National Academies. Since 2020, the journal has undergone a transformation to institute more rigorous peer review. CiteScore: 3.4; 178/407 in civil engineering. Impact Factor: 2.1. Scimago: Q2. Publisher: Sage.

Future Transportation is an international, peer-reviewed, open access journal on the civil engineering, economics, environment and geography, computer science and other transdisciplinary dimensions of transportation. CiteScore: 3.8; 92/264 in engineering (miscellaneous). Impact Factor: 1.7. Publisher: MDPI.

Findings is an interdisciplinary, independent, community-led, peer-reviewed, open access journal focused on short, clear, and pointed research results. This is a unique journal with short papers and fast peer review focused on quickly disseminating important transportation science. Though it is a non-traditional journal, some of the most important names in my field have published here and I support the efforts of the transportation community to move to new forms of scientific publishing. Scimago: Q2. Publisher: University of Sydney and McGill University.

Peer- Reviewed Conference Papers

All listed conference papers are full papers and include at least a single-blind review process with multiple expert reviewers for consideration. This includes presentations at conferences where the requirement for submission is a full paper with peer review, some of which do not publish an indexed proceeedings. Papers 1 and 2 resulted from my undergraduate honors thesis, papers 3 through 5 work completed in graduate school, and subsequent work since joining the faculty at BYU. The marking †indicates BYU graduate student authors, *indicates BYU undergraduate authors.

13 Hyer, J.C.†, Schultz, G.G., **Macfarlane, G.S.** (2025). An analysis of UDOT's expanded incident management team program. In *International Conference on Transportation & Development (ICTD 2025).* ASCE. https://doi.org/10.1061/9780784486207.037

12 Atchley, S.H.†, Mansfield, K.A.*, **Macfarlane, G.S.** (2025). A comparative illustration of trip- and activity-based modeling methods. In *International Conference on Transportation & Development (ICTD 2025).* ASCE. https://doi.org/10.1061/9780784486207.002

11 Jarvis, D.L.†, **Macfarlane, G.S.**, Woolley, B.*, Schultz, G.G. (2024). Simulating incident management team response and performance. *Procedia Computer Science.* 238, pp. 91-96. https://doi.org/10.1016/j.procs.2024.06.002

10 Apelu, D.*, **Macfarlane, G.S.**, Guthrie, W.S., Adams, N.*, Mazzeo, B. (2023). Measuring Pavement Smoothness From the Perspective of E-Scooters. *IEEE XPlore*, https://doi.org/10.1109/IETC57902.2023.10152077

9 **Macfarlane, G.S.**, Lant, N.† (2023). How Far Are We From Transportation Equity? Measuring the Effect of Wheelchair Use on Daily Activity Patterns. In: Antoniou, C., Busch, F., Rau, A., Hariharan, M. (eds) Proceedings of the 12th International Scientific Conference on Mobility and Transport. *Lecture Notes in Mobility.* Springer, Singapore. https://doi.org/10.1007/978-981-19-8361-0_10

8 Voulgaris, C.T., **Macfarlane, G.S.**, Kaylor, J., Su, T., Bauranov, A. (2022). Whose emissions are these anyway? Estimating vehicle miles traveled to account for site-level climate impacts. In *Transportation Research Board Annual Meeting.* Washington, D.C.

7 **Macfarlane, G.S.**, Stucki, E.†, & Copley, M.*. (2021). Utility-Based Accessibility to Community Resources: An Application of Location-Based Services Data. In *North American Regional Science Conference.* Denver, Colorado.

6 **Macfarlane, G.S.**, & Tapia, T. (2020). Developing a Park Activity Location Choice Model from Passive Origin-Destination Data Tables. In *Transportation Research Board Annual Meeting.* Washington, D.C.

5 **Macfarlane, G.S.**, & Moreno-Cruz, J. (2015). The Association Between Public Transportation Infrastructure and Home Price Growth and Stability. *North American Regional Science Conference*. Portland, Oregon.

4 Zhang, B., **Macfarlane, G.S.**, Wall, T.A., & Watkins, K.E. (2014). Friendship Influences on Air Travel: A Social Autoregressive Analysis. In *North American Regional Science Conference*. Washington, D.C.

3 **Macfarlane, G.S.**, Moreno-Cruz, J., & Garrow, L. A. (2013). Does Atlanta value MARTA? Selecting an autoregressive model to recover willingness-to-pay. In *North American Regional Science Conference*. Atlanta, Georgia.

2 **Macfarlane, G.S.**, Saito, M., & Schultz, G.G. (2011). Delay underestimation at free right-turn channelized intersections. In *6th International Symposium on Highway Capacity and Quality of Service* (Vol. 16, pp. 560–567). https://doi.org/10.1016/j.sbspro.2011.04.476 Citations: 6

1 **Macfarlane, G.S.**, Saito, M., & Schultz, G.G. (2011). Driver perceptions at free right-turn channelized intersections. In *T&DI Congress 2011: Integrated Transportation and Development for a Better Tomorrow* (Vol. 398, pp. 108–108). ASCE. https://doi.org/10.1061/41167(398)108 Citations: 5

Reports

These are technical reports completed under contract for the sponsoring agency; each report was reviewed by a technical advisory committee prior to publication. Item 1 resulted from postdoctoral activities at Georgia Tech, items 2 and 3 from my consulting practice, and items 4 through the present from my work since joining BYU.

17 **Macfarlane, G.S.**, Atchley, S.H.†, Mansfield, K.A.*, Baird, T. & Gresham, C. (2024). *Activity-based Model Implementation and Analysis Considerations.* (No. UT-24.16). Utah Dept. of Transportation. Division of Research. `https://rosap.ntl.bts.gov/view/dot/77610`

16 **Macfarlane, G.S.**, Jarvis, D.L.†, Woolley, B.*, & Schultz, G.G. (2024). *Simulating Incident Management Team Response and Performance.* (No. UT-23.22). Utah Dept. of Transportation. Division of Research. `https://rosap.ntl.bts.gov/view/dot/74034`

15 **Macfarlane, G.S.**, Stucki, E.†, Redelfs, A.H., Spruance, L.A. (2023). *Equitable Access to Nutrition in Utah* (No. UT-23.23). Utah Dept. of Transportation. Division of Research. `https://drive.google.com/file/d/1n1wK_9PtFW9l1ytaDEfJhzG2mr5ws0Bw`

14 Schultz, G.G., Hyer, J.†, Holdsworth, H.*, Eggett, D.L., & **Macfarlane, G.S.** (2023). *Analysis of Benefits of UDOT's Expanded Incident Management Team Program.* (No. UT-23.05). Utah Dept. of Transportation. Division of Research. `https://doi.org/10.21949/1528563`

13 **Macfarlane, G.S.**, Atchley, S.H.† (2023). *Identifying Microtransit Service Areas through Microsimulation.* (No. UT-23.01). Utah Dept. of Transportation. Division of Research. `https://rosap.ntl.bts.gov/view/dot/66312`

12 Guan, H.Z., Van Hentenryck, P., Goyal, V., Hoque, J., Day, C.S., **Macfarlane, G.S.**, Erhardt, G.D., Watkins, K.E. (2023). *T-SCORE Project M1—- Multi-Modal Optimization: Development of Optimization Frameworks on On-demand Multimodal Transit Systems.* Transit-Serving Communities Optimally, Responsively, and Efficiently Center (T-SCORE); Office of the Assistant Secretary for Research and Technology. `https://trid.trb.org/view/2320639`

11 Tenenboim, E., Xu, Y., **Macfarlane, G.S.**, Erhardt, G.D., Peeta, S. *T-SCORE Project M2 — Multi-Agent Simulation: A Model of Ride-Hailing Driver Participation.* Transit-Serving Com-

munities Optimally, Responsively, and Efficiently Center (T-SCORE); Office of the Assistant Secretary for Research and Technology. https://trid.trb.org/view/2320640

10 Day, C.S., **Macfarlane, G.S.**, Erhardt, G.D., Watkins, K.E. (2023). *T-SCORE Projects M3 — MMOS Integration: Forecasting Ride-Hailing Across Multiple Model Frameworks.* Transit-Serving Communities Optimally, Responsively, and Efficiently Center (T-SCORE); Office of the Assistant Secretary for Research and Technology. https://trid.trb.org/view/2149944

9 Erhardt, G.D., **Macfarlane, G.S.**, Atchley, S.A. Lant, N., Mucci, R.A., Watkins, K.E. (2023). *T-SCORE Project M4 — Implementation and Quantitative Evaluation: Case Studies on Microtransit and Ride-Hailing.* Transit-Serving Communities Optimally, Responsively, and Efficiently Center (T-SCORE); Office of the Assistant Secretary for Research and Technology. https://trid.trb.org/view/2320637

8 Schultz, G.G. **Macfarlane, G.S.**, Wang, B.†, & Davis, M.C.* (2022). *Detecting Traffic Data Anomalies in Longitudinal Signal Performance Measures.* (No. UT-22.21). Utah Dept. of Transportation. Division of Research. https://rosap.ntl.bts.gov/view/dot/65833

7 Schultz, G. G., **Macfarlane, G.S.**, Daines, T.J.†, Ward, C.K.*, Umphress, J.* (2022). *Evaluating Ramp Meter Wait Time in Utah.* (No. UT-21.06). Utah Dept. of Transportation. Division of Research. https://rosap.ntl.bts.gov/view/dot/61507

6 **Macfarlane, G.S.**, Lant, N.J.†, (2021). *Estimation and Simulation of Daily Activity Patterns for Individuals Using Wheelchairs* (No. UT-21.10). Utah Dept. of Transportation. Division of Research. https://rosap.ntl.bts.gov/view/dot/54639/dot_54639_DS1.pdf

5 Schultz, G. G., **Macfarlane, G.S.**, Wang, B.†, & McCuen, S.* (2020). *Evaluating the Quality of Signal Operations Using Signal Performance Measures* (No. UT-20.08). Utah Dept. of Transportation. Division of Research. https://rosap.ntl.bts.gov/view/dot/54639/dot_54639_DS1.pdf

4 **Macfarlane, G.S.** & Copley, M.J.* (2020). *A Synthesis of Passive Third-Party Data sets used for Transportation Planning.* (No. UT-20.20). Utah Dept. of Transportation. Division of Research. https://rosap.ntl.bts.gov/view/dot/54890/dot_54890_DS1.pdf

3 Zalewski, A., Sonenklar, D., Cohen, A., Kressner, J., & **Macfarlane, G.S.** (2019). *Public Transit Rider Origin–Destination Survey Methods and Technologies.* TCRP Synthesis of Transit Practice 138. Transportation Research Board. http://www.trb.org/Main/Blurbs/179008.aspx Citations: 1

2 Miller, H., O'Kelly, M., Jaegal, Y., Bachman, W., Huntsinger, L., & **Macfarlane, G.S.** (2017). *Estimating External Travel Using Purchased Third-Party Data.* Research Report 134877, the Ohio Department of Transportation, Office of Statewide Planning & Research. Citations: 1

1 Cruz, J., **Macfarlane, G.S.**, Xu, Y., Rodgers, M.O., & Guensler, R. (2015). *Sustainable Transportation Curricula.* National Center for Sustainable Transportation. https://escholarship.org/uc/item/3c13q43c.

Conferences Organized

This includes conferences and symposia for which I served on an organizing or scientific committee.

1 *Activity-based Modeling Symposium* (2024). Möckel, R. (host), Shaw, A., Bhat, C.R., Erhardt, G.D., **Macfarlane, G.S.**, & Mokhtarian, P.L., scientific committee. Hosted in Raitenhaslach,

Germany with funding from the German Research Foundation. https://www.mos.ed.tum.de/en/tb/workshops/abm2024/

Presentations

This includes invited presentations to academic and non-academic audiences, as well as presentations resulting from abstract-only submission. Includes both lectern sessions and posters. Item 1 came from my undergraduate honors thesis, items 2 through 4 from doctoral research, items 5 through 10 from my work as a consultant, and items 11 through the present represent work completed during my time at BYU.

41 **Macfarlane, G.S.**, Assmussen, K., Schiffer, R., Lawe, S., Vyas, G. (2025). Anticipating the future of travel forecasting practice. In *Modeling Mobility Conference*. University of Minnesota. Moderator for opening plenary panel. Minneapolis, Minnesota.

40 Admundsen, H., Stathopoulous, A., **Macfarlane, G.S.**, Handy, S., Ory, D. (2025). Induced demand is hogwash. In *Modeling Mobility Conference*. University of Minnesota. Invited participant in moderated debate. Minneapolis, Minnesota.

39 Lu, R., Ji, J.Y., Wang, L.M., Belkessa, L., Dong, Y., Madadi, B., Varotto, S., Saunier, N., **Macfarlane, G.S.**, Ghosh, B., Ameli, M., & Wu, C. (2025). Towards accelerating transportation research: Measuring the state of transparency practices. In *Transportation Research Symposium*, Elsevier. Lectern presentation. Rotterdam, Netherlands.

38 South, A., **Macfarlane, G.S.** (2025) Sustainable community development. BYU Masters of Public Administration – Mongolian government exchange program, Marriott School of Business. Invited lecture. Provo, Utah.

37 **Macfarlane, G.S.**. (2025) The potential for transit to improve access to quality nutrition. In *ITS Graduate Seminar*. University of California, Davis Institute of Transportation Studies. Invited lecture. Davis, California.

36 **Macfarlane, G.S.**, Sheffield, M.†, Bennett, L.† and Schultz, G.G. (2025). Signal Priority on BRT Lines in Provo, Utah. In *4th Annual Transit Research Symposium*. University of California, Davis Institute of Transportation Studies. Lectern presentation. Davis, California.

35 **Macfarlane, G.S.** (2024). A multiple modeling sandbox. In *Activity-based models symposium*. Technische Universität München. Lectern presentation. Raitenhaslach, Germany.

34 Lawe, S. & **Macfarlane, G.S.** (2024). Why travel forecasting is more complex and more important than ever before. In *Utah Transportation Conference*. Lectern presentation, Sandy, Utah.

33 **Macfarlane, G.S.**, Baird, T., & Atchley, S.H.† (2024). Activity-based models in Utah: A comparative illustration. In *Utah Model User's Group Meeting*. Working group presentation. Orem, Utah.

32 Voulgaris, C.T., Jensen, A.F., **Macfarlane, G.S.** (2024). Children's mode choice and independence for the journey to school. In *17th International Conference on Travel Behavior Research*. Lectern presentation. Vienna, Austria.

31 Baird, T., Gresham, C., Atchley, S.H.† & **Macfarlane, G.S.** (2024). A Clearer Crystal Ball? Practitioner perspectives on improving travel models. In *Mountain District ITE Meeting*. Lectern presentation. Big Sky, Montana.

30 Jarvis, D.L.[†], **Macfarlane, G.S.**, Woolley, B.[*], Schultz, G.G. (2024). Simulating incident management team response and performance. In *The 15th International Conference on Ambient Systems, Networks and Technologies (ANT)*. Hasselt, Belgium. Lectern presentation.

29 **Macfarlane, G.S.**, Barnes, M.[†], & Gray, N.M.[*] (2024). A utility-based approach to modeling systemic resilience of highway networks with an application in Utah. In *Transportation Research Board Annual Meeting*. Poster presentation. Washington, D.C.

28 Brown, N., **Macfarlane, G.S.**., Baird, T., & Gresham, C. (2023). Activity-based models: A clearer crystal ball? in *Utah Transportation Conference*. Lectern presentation. Sandy, Utah.

27 **Macfarlane, G.S.** Modeling with Big Data. (2023) At *Technische Universität München*, invited lecture in Dr. Rolf Möckel's travel modeling course. Munich, Germany.

26 Guan, H.Z., Van Hentenryck, P., Erhardt, G.D., **Macfarlane, G.S.**, & Watkins, K.E. (2023). Lessons from the design of on-demand multimodal transit systems in two cities. In *Innovations in Transportation Analysis and Planning Conference*. Lectern presentation. Indianapolis, Indiana. *Winner, best presentation by a student author.*

25 Ducuara, A. Holtrop-Kohl, L., Begay, S., Spruance, L., Redelfs, A., **Macfarlane, G.S.** (2023). Hungry for change: how cutting-edge research is helping to reduce food deserts in Utah. In *Move Utah Summit*. Moderated panel discussion. Salt Lake City, Utah.

24 Singh, G., Young, S., **Macfarlane, G.S.**, Katsikides, N., Granato, S. (2023). Travel Data Users Forum: Innovative Usage of GPS Trajectory Data: Present and Future. In *Transportation Research Board Annual Meeting*. Invited panel discussion. Washington, D.C.

23 **Macfarlane, G.S.**, Barnes, M.[†], & Gray, N.[†]. (2022). Evaluating systemic resiliency in Utah. In *Utah Dept. of Transportation Annual Conference*. Lectern presentation. Sandy, Utah.

22 **Macfarlane, G.S.**, Day, C.S.[†], & Atchley, S.H.[†]. (2022). Modeling novel transport modes. In *Utah Dept. of Transportation Annual Conference*. Lectern presentation. Sandy, Utah.

21 Antoniou, C., Möckel, R., **Macfarlane, G.S.**, Kotsopoulous, H., Llorca-Garcia, C., Erhardt, G.D., Mahajan, V., Schmöcker, J.D., & Pereira, F. (2022). Transport Modeling using Publicly Available Data. Invited participants to a workshop hosted by Technische Universität München and the German Research Foundation.

20 **Macfarlane, G.S.**, & Lant, N.J.[†] (2022). How far are we from transportation equity? Measuring the effect of wheelchair use on daily activity patterns. In *mobil.TUM 2022 – 12th International Scientific Conference on Mobility and Transport*. Lectern presentation. Singapore.

19 **Macfarlane, G.S.**, & Atchley, S.H.[*], Day, C.S.[†], Erhardt, G., & Needell, Z. (2022). Simulating and prioritizing service areas for regionally exclusive microtransit operations. In *mobil.TUM 2022 – 12th International Scientific Conference on Mobility and Transport*. Lectern presentation. Singapore.

18 Anderson, S.[*], **Macfarlane, G.S.**, & Schultz, G.G. (2022). Developing a New Method to Analyze Speed and Braking Data Using V2X Technology. In *Utah Conference of Undergraduate Research*. Poster. St. George, Utah.

17 **Macfarlane, G.S.** (2022). Using Big Data to Evaluate Equitable Access to Community Resources. In *Transportation Research Board Annual Meeting*. Invited lectern presentation. Washington, D.C.

16 **Macfarlane, G.S.**, Stucki, E.†, & Copley, M.*. (2021). Utility-Based Accessibility to Community Resources: An Application of Location-Based Services Data. In *North American Regional Science Conference*. Denver, Colorado.

15 **Macfarlane, G.S.**, Lant, N.J.†, (2021). Estimation and Simulation of Daily Activity Patterns for Individuals Using Wheelchairs. In *Utah Dept. of Transportation Annual Conference*. Lectern presentation. Sandy, Utah.

14 **Macfarlane, G.S.** & Copley, M.J.* (2020). A Synthesis of Passive Third-Party Data sets used for Transportation Planning. In *Utah Dept. of Transportation Annual Conference*. Poster. Sandy, Utah.

13 Voulgaris, C.T., **Macfarlane, G.S.**, Kaylor, J., Su, T., Bauranov, A. (2021). Whose emissions are these anyway? Estimating vehicle miles traveled to account for site-level climate impacts. In *Association of Collegiate Schools of Planning Annual Conference*. Lectern presentation. Miami, Florida.

12 **Macfarlane, G.S.**, Boyd, N., Taylor, J.E., & Watkins, K.E. (2019). Modeling the impacts of park access on health outcomes: a choice-based accessibility approach. In *Greater and Greener 2019*. Workshop presentation. Denver, Colorado.

11 Bernardin, V., Gallup, A., Lee, B., Johnson, C., **Macfarlane, G.S.**, Elgar, I., Wertman, R. (2019). How to be a Good Big Data Consumer. In *Transportation Planning Applications Conference*. Panel discussion. Portland, Oregon.

10 **Macfarlane, G.S.**, & Kressner, J.D. (2018). Comparing the Daily Schedules in the NHTS from 2009 and 2017. In *National Household Travel Survey (NHTS) Data for Transportation Applications Workshop*. Poster. Washington, D.C.

9 **Macfarlane, G.S.**, Bettinardi, A.O., & Donnelly, R. (2017). SWIMR: Visualizing complex longitudinal indicators for a statewide integrated land use and transport model in Oregon. In *Transportation Planning Applications Conference*. Lectern presentation. Raleigh, North Carolina.

8 Boyd, N., **Macfarlane, G.S.**, Watkins, K.E., & Ederer, D. (2017). Accessibility to urban parks and health outcomes on the neighborhood level. In *American Public Health Association Annual Meeting*. Poster. Atlanta, Georgia.

7 **Macfarlane, G.S.**, & Kressner, J.D. (2017). Modeling automated vehicles with a passive data model. In *Transportation Planning Applications Conference*. Poster. Raleigh, North Carolina.

6 Kressner, J.D., **Macfarlane, G.S.**, Donnelly, R., & Huntsinger, L.F. (2016). Using passive data to build an agile tour-based model: A case study in Asheville. In *Innovations in Travel Modeling Conference*. Lectern presentation. Denver, Colorado. Citations: 7

5 **Macfarlane, G.S.**, & Kressner, J. D. (2016). Fusing Passive Data for Transportation Planning. In *Transportation Research Board Annual Meeting*. Poster. Washington, D.C.

4 **Macfarlane, G.S.**, & Moreno-Cruz, J. (2015). The association between public transportation infrastructure and home price growth and stability. *In Transportation Research Board Annual Meeting*. Washington, D.C.

3 **Macfarlane, G.S.**, & Garrow, L. A. (2012). Estimating a vehicle ownership model from targeted marketing data. In *Travel Surveys: Moving from Tradition to Practical Innovation*. Poster. Dallas, Texas.

2 Kressner, J.D., & **Macfarlane**, G.S. (2012). Evaluating household credit reports as a replacement for episodic travel surveys. In *Transportation Research Board Annual Meeting*. Committee presentation. Washington, D.C.

1 **Macfarlane, G.S.**, Saito, M., & Schultz, G.G. (2011). Are free right-turn channelized intersections performing as they should? In *Institute of Transportation Engineers Annual Meeting and Exhibit 2011*.

External Funding

As Principal Investigator, totalling $503,000:

9 **Macfarlane, G.S.** & Atchley, S.H. 2025. *Establishing Performance Measures for Transportation and Quality of Life*. $68,000, Utah Department of Transportation.

8 **Macfarlane, G.S.** & Schultz, G.G. 2024. *Effectiveness of Temporary Portable Rumble Strips*. $60,000, Utah Department of Transportation.

7 **Macfarlane, G.S.** & Brown, N.M. 2022. *Activity-based Model Implementation and Analysis Considerations*. $70,000, Utah Department of Transportation.

6 **Macfarlane, G.S.** & Schultz, G.G. 2021. *Optimizing Traffic Incident Management Deployment in Utah*. $70,000, Utah Department of Transportation.

5 **Macfarlane, G.S.**, Redelfs, A.H., & Spruance, L.A. 2021. *Equitable Access to Nutrition in Utah*. $70,000, Utah Department of Transportation.

4 **Macfarlane, G.S.** 2020. *Identifying Microtransit Service Areas through Microsimulation*. $20,000, Utah Department of Transportation.

3 **Macfarlane, G.S.** 2019. *A synthesis of passive third-party datasets used for transportation planning*. $25,000, Utah Department of Transportation

2 **Macfarlane, G.S.** 2019. *Modeling the demand and operating characteristics for wheelchair-accessible, on-demand mobility services*. $60,000, Utah Department of Transportation

1 **Macfarlane, G.S.** 2019. *Evaluating the Systemic Redundancy of Critical Highway Facilities*. $60,000, Utah Department of Transportation

As Co-Principal Investigator, totalling $1.44 million ($320,000 to BYU):

5 Watkins, K.E. (PI), Erhardt, G.D., & **Macfarlane, G.S.** 2024. *The Potential for Behavioral Change in New High Speed Rail Lines*. $280,000, California High Speed Rail Authority and Deutsche Bahn.

4 Schultz, G.G. & **Macfarlane, G.S.**. 2021. *Analysis of performance measures of UDOT's traffic incident management program: Phase III*. $30,000. Utah Department of Transportation.

3 Watkins, K.E. (PI), Hunter, M.S., Van Hentenryck, P., Peeta, S., Brakewood, C., Cherry, C., Erhardt, G.D., & **Macfarlane, G.S.** 2020. *T-SCORE: Transit Serving Communities Optimally, Responsibly, and Efficiently*. $1,000,000, United States Department of Transportation.

2 Schultz, G.G. (PI), **Macfarlane, G.S.** 2020. *Evaluating Signal Performance Measures: a Longitudinal Analysis*. $70,000, Utah Department of Transportation

1 Schultz, G.G. (PI), **Macfarlane, G.S.** 2019. *Evaluating ramp meter delay in Utah.* $65,000, Utah Department of Transportation

Unfunded Proposals:

3 Dashti, S. (PI), Torres-Machi, C., Mooney, M., Misra, A., Crow, D., Mallet, S., Esteghemati, M, **Macfarlane, G.S.**, Zlatkovic, M., Kack, D. (2023). *Resilient, Equitable, and Sustainable Environment through Transportation (RESET).* $3,000,000. United States Department of Transportation.

2 Erhardt, G.D. (PI), Watkins, K.E., Brakewood, C., Pike, S.C., **Macfarlane, G.S.**, Chavis, C., Tal, G., Hunter, M., Van Hentenryck, P., McDonald, N. (2022). *T-SCORE 2.0: Transit – Sustainable, Competitive, Responsive, and Equitable Center.* $2,000,000. United States Department of Transportation.

1 Voulgaris, C.T. (PI), Forsyth, A., Pandey, V., Park, H., Handy, S., **Macfarlane, G.S.**, Pande, A., Braun, L.M., Noland, R.B. (2023). *Chester: Consortium for Healthy, Equitable, and Sustainable Transportation Systems for Environmental Resilience.* $2,000,000, United States Department of Transportation

Pending Proposals:

Internal Competitive Funding

Funded research:

- Sowby, R.B. & **Macfarlane, G.S.** (2024). *Wildfire Solutions for Western Water Utilities.* $25,000, Mentored Research Grant, Brigham Young University.
- **Macfarlane, G.S.**, Guthrie, W.S., & Mazzeo, B. (2021). *Measuring pavement smoothness from the perspective of e-scooters.* $25,000, Mentored Research Grant, Brigham Young University.

Unfunded proposals:

- **Macfarlane, G.S.**, Hooley, C., Redelfs, A., South, M. 2020 *Using Mobile Device Data to Measure Isolation and Mental Health.* $40,000, Brigham Young University Interdisciplinary Research Grant.

Courses

CCE 102: Sustainable Infrastructure

The inter-related aspects of the different civil engineering disciplines of environmental, geotechnical, structural, transportation, and water resources and how they come together to develop an infrastructure system. Time value of money and application to the infrastructure investment alternatives. Converted from CCE 201 in Fall 2024.

Semester	Enrolled	Student Rating (Historical)	Average GPA
Fall 2020	33	4.1–4.7 (4.1)	3.41
Fall 2021	64	4.1–4.5 (4.3)	3.25
Fall 2022	60	3.6–4.2 (4.3)	3.26
Fall 2023	59	3.9–4.3 (4.2)	3.24
Spring 2024 (Study Abroad)	20	3.9–4.9 (4.2)	3.32
Fall 2024 (Section 1)	58	3.4–4.0 (3.5)	3.53
Fall 2024 (Section 3)	47	3.2–3.8 (3.5)	2.96
Winter 2025 (Section 1)	61	3.7–4.3 (3.7)	3.02
Winter 2025 (Section 3)	66	3.9–4.3 (3.7)	3.24

CE 361: Introduction to Transportation Engineering

Transportation systems characteristics, traffic engineering and operations, transportation planning, geometric design, pavement design, transportation safety, freight, public transport, sustainable transportation.

Semester	Enrolled	Student Rating (Historical)	Average GPA
Winter 2020	42	4.4–4.8 (4.4)	3.13
Winter 2021	38	4.1–4.7 (4.4)	3.21
Winter 2022	42	3.9–4.5 (4.5)	3.42
Winter 2023	37	4.2–4.6 (4.5)	3.28
Winter 2024	43	3.9–4.5 (4.4)	3.39

CE 565: Urban Transporation Planning

Characteristics of urban transportation planning and decision making, intermodal transportation, land-use transportation interrelationships, transportation demand modeling, site impact analysis, sustainable transportation, and livable cities.

Semester	Enrolled	Student Rating (Historical)	Average GPA
Fall 2019	12	3.9–4.9 (4.4)	3.41
Fall 2020	19	4.1–4.7 (4.4)	3.46
Fall 2021	19	3.9–4.9 (4.4)	3.63
Winter 2023	14	4.4–5.0 (4.6)	3.24
Winter 2024	14	3.9–4.7 (4.5)	3.03
Winter 2025	10	4.2–5.0 (4.5)	3.46

CE 594R: Data Science for Engineers

A first-semester graduate course in programming and data science techniques: literate programming in Markdown and LaTeX, version control with git, data manipulation and visualization with R, object-oriented programming with Java.

Semester	Enrolled	Student Rating (Historical)	Average GPA
Fall 2019	4	4.8–5.0 ()	3.85
Fall 2020	9	3.5–4.7 ()	3.81
Fall 2021	6	4.5–5.0 ()	3.68

CE 662: Transport Simulation and Analysis

An advanced graduate course in traffic flow theory and simulation. Topics include shock wave analysis, discrete event simulation of queues and daily activity pattern choices, car following models, and traffic simulation. Laboratory assignments use MATSim and PTV Vissim simulation softwares.

Semester	Enrolled	Student Rating (Historical)	Average GPA
Winter 2019	2	4.6 (4.3)	3.70
Winter 2020	3	5.0–5.0 (4.4)	3.00
Winter 2022	7	3.3–5.0 (4.3)	3.44
Fall 2023	8	4.1–5.0 (4.4)	3.48

CE 694R: Advanced Choice Modeling

An advanced graduate course in discrete choice modeling. Theory of choice models, including estimation and validation techniques. Mode choice models for work and non-work trip purposes using multinomial and nested logit models.

Semester	Enrolled	Student Rating (Historical)	Average GPA
Winter 2021	5	4.0–5.0 ()	3.48

Graduate Mentoring

Students mentored as graduate committee chair (10 total, all MS):

10 Erin Christesen. MS expected December 2026.

9 Emily Youngs. *Exploring the Link between Travel Behavior and Mental Health.* MS granted August 2024. Pursuing Ph.D. at University of Michigan.

8 Hayden Atchley. *A Comparative Illustration of Trip- and Activity-Based Modeling Techniques.* MS granted August 2024.

7 Daniel Jarvis. *Simulating Incident Management Team Response and Performance.* MS granted December 2023.

6 Natalie Gray, *Evaluating parameter uncertainty in transportation demand models.* MS granted June 2023.

5 Emma Stucki, *Evaluating equitable access to nutrition in Utah.* MS granted December 2022. Pursuing Ph.D. at Waikato University, New Zealand.

4 Gillian Riches, *Transforming GPS points to daily activities using simultaneously optimized DBSCAN-TE parameters.* MS granted December 2022.

3 Christopher Day, *Forecasting ride-hailing across multiple model frameworks.* MS granted December 2022.

2 Max Barnes, *Resiliency of Utah's road network: a logit-based approach.* MS granted December 2021.

1 Nate Lant, *Estimation and simulation of daily activity patterns for individuals using wheelchairs.* MS granted June 2021.

Students mentored as graduate committee member (22 total, 2 current, 3 non-BYU, 3 Ph.D.):

22 Cambrie Ball. MS in Construction Management scheduled December 2025.

21 Samuel McKinnon, Ph.D. in Mechanical Engineering pre-proposal.

20 Adam W. Hill, *Using unmanned aerial vehicles to facilitate traffic incident management.* MS granted April 2024.

19 Ian MacGregor, *Implementing the safe system approach at intersections in Utah.* MS granted December 2024.

18 Sam Runyan, *Effect of roadway lighting on safety in Utah.* MS granted December 2024.

17 Joel Hyer, *Analysis of benefits of UDOT's expanded incident management team program.* MS granted April 2024.

16 Matthew Davis, *Effectiveness of intelligent transportation systems on Utah roadways.* MS granted December 2023.

15 William Charlton, *Web-based data visualization in support of agent-based microsimulation models.* Ph.D. granted October 2023 (at Technische Universität Berlin).

14 Wang Bangyu (Bruce), *Evaluating and advancing automated traffic signal performance measures: Statistical and machine learning approaches.* Ph.D. granted August 2023.

13 Tomas Barriga, *Using severity weighted risk scores to prioritize safety funding in Utah.* MS granted August 2023.

12 Benjamin Meek, *Load-deformation behavior of tension-only X-brace roof truss diaphragms.* MS granted April 2023.

11 Mylan Cook, *Physics-guided modeling of acoustic environments using limited spatio-spectro-temporal data.* Ph.D. in Physics granted June 2023.

10 Cory Ward, *An evaluation of the safe speed limit setting procedure and tool for Utah* (Project). MS granted December 2022.

9 Samantha Lau, *Analysis of using V2X DSRC equipped snowplows to request signal preemption.* MS granted August 2022.

8 Tanner Daines, *Evaluating ramp meter delay in Utah.* MS granted April 2022.

7 Logan Bennett, *Analysis of benefits of an expansion to UDOT's incident management program.* MS granted August 2021.

6 Camille Lunt, *Crash analysis methodology for segments of Utah highway.* MS granted April 2021.

5 Chad Vickery, *Quantifying the conditioning period for geogrid-reinforced aggregate base materials through cyclic loading.* MS granted August 2020.

4 Michael Sheffield, *Impacts of changing the transit signal priority requesting threshold on bus performance and general traffic: a sensitivity analysis.* MS granted June 2020.

3 Michael Adamson, *An analysis of decision boundaries for left-turn treatments.* MS granted April 2019.

2 Nico Boyd, *Accessibility to urban parks and health outcomes on the neighborhood level.* MS granted August 2018 (at Georgia Institute of Technology).

1 Zhang Bingling, *Friendship influences on air travel: a social autoregressive analysis.* MS granted August 2014 (at Georgia Institute of Technology).

Undergraduate Mentoring

Students mentored on funded research projects (28 total):

30 Tyler Carruth, undergraduate research assistant in work zone safety (2024 -).

29 Benjamin Hailstone, undergraduate research assistant in work zone safety (2024 -).

28 Connor Williams, undergraduate research assistant in demand microsimulation (2024 -).

27 Kaleigh Squires, undergraduate research assistant in demand microsimulation (2024 -).

26 Kamryn Mansfield, undergraduate research assistant in demand microsimulation (2023 - 2024). Ph.D. student at University of Tennessee.

25 Brynn Woolley, undergraduate research assistant in demand microsimulation (2022 - 2024). Ph.D. Student at University of Michigan.

24 Jeremy Raine, undergraduate research assistant in community resources (2022).

23 Harrison Holdsworth, undergraduate research assistant in demand microsimulation (2021 - 2022).

22 Jonathan Orton, undergraduate research assistant in e-scooters and pavements (2022).

21 Dylan Apelu, undergraduate research assistant in e-scooters and pavements (2021 - 2023). Completed MS at Georgia Institute of Technology.

20 Matthew Davis, undergraduate assistant in signal performance data, jointly mentored with Grant Schultz (2021 - 2022). Ph.D. student at University of Tennessee.

19 Hayden Atchley, undergraduate research assistant in demand microsimulation (2020 - 2022). Completed MS at BYU.

18 Nicole Adams, undergraduate research assistant in e-scooters and pavements (2021 - 2022).

17 Liv Neeley, undergraduate research assistant in e-scooters and pavements (2021 - 2022).

16 Kaeli Monahan, undergraduate research assistant in community resources and passive data (2020 - 2022).

15 Shannon Anderson, undergraduate research assistant in V2X data, jointly mentored with Grant Schultz (2020 - 2022).

14 Corey Ward, undergraduate research assistant in ramp meter evaluation, jointly mentored with Grant Schultz (2020 - 2021). Completed MS at BYU.

13 Michael Copley, undergraduate research assistant in third-party passive data (2018 - 2021). Completed MS at University of Illinois.

12 James Umphress, undergraduate research assistant in ramp meters, jointly mentored with Grant Schultz (2020-2021). Completed MS at Oregon State University.

11 Christopher Day, undergraduate research assistant in demand microsimulation (2020 - 2021). Completed MS at BYU.

10 Emma Stucki, undergraduate research assistant in community resources (2020 - 2021). Completed MS at BYU.

9 Gillian Martin Riches, undergraduate research assistant in community resources (2020 - 2021). Completed MS at BYU.

8 Natalie Gray, undergraduate research assistant in network resiliency (2019 - 2021). Completed MS at BYU.

7 Max Barnes, undergraduate research assistant in network resiliency (2019 - 2020). Completed MS at BYU.

6 Kim Munseok, undergraduate research assistant in demand microsimulation (2020 - 2021).

5 Christian Hunter, undergraduate research assistant in demand microsimulation (2018 - 2019). Completed MS at University of Texas at Austin.

4 Christian Vanderhoeven, undergraduate research assistant in demand microsimulation (2019). Completed MS at University of Washington.

3 Hayden Anderson, undergraduate research assistant in e-scooters (2019 - 2020). Completed MS at University of California, Davis.

2 Emily Andrus, undergraduate research assistant in signal peformance data, jointly mentored with Grant Schultz (2019).

1 Sabrina McCuen, undergraduate research assistant in signal peformance data, jointly mentored with Grant Schultz (2019 - 2020).

Honors students mentored as department honors coordinator (3 total).

3 Becca Apgar, *Development and demonstration of an apparatus for assessing frost-heave susceptibility of soil* (2024).

2 Daria Sofia Velasco-Vega, *Thermal performance of thin-shell concrete dome structures* (2023). Pursuing Ph.D. at Purdue University.

1 Emma Kratz-Bailey, *Accessible methods, novel arrangement: Developing self-centering composite structural frames for highly resilient buildings* (2022).

Other mentoring activities.

1 Grace Gibson, *Gendered Journeys: analyzing the context, barriers, and solutions for women in public transit* (2024). Mentor for BYU Global Women's Studies Minor capstone project.

Students mentored as civil engineering capstone team mentor (26 total):

2024–2025 Land development capacity system design. Sponsored by UDOT. Students: George Cicotte, Emily Jacobsen, Tacoma Parkinson.

2023–2024 BYU household travel survey. Sponsored by BYU Sustainability Office. Students: Megan Hungerford, Ellie Johns, Kamryn Mansfield, and Myrranda Salmon.

2022–2023 SR-140 Corridor alternatives. Sponsored by Bluffdale City. Students: Clinton Childers, Robert Mickelson, Trevor Mickelson, and Joseph Wells.

2021–2022 BYU household travel survey. Sponsored by BYU Sustainability Office. Students: Nicole Adams, Hayden Atchley, Kyle Leatham, and Daniel Jarvis.

2020–2021 Forecasting demand for future FrontRunner scenarios. Sponsored by Utah Transit Authority. Students: Gillian Martin Riches, Tomas Barriga, Landon Pratt, and Cole Larsen.

2019–2020 UTA microtransit pilot evaluation. Sponsored by Utah Transit Authority. Students: Christian Hunter, Austin Martinez, and Elizabeth Smith.

2018–2019 Demand for wheelchair-accessible vehicles. Sponsored by Utah Transit Authority. Students: Nate Lant, Byron Yates, Cody Irons, and Matthew Strong.

Awards and Honors

Most Influential Faculty Given to the faculty member in the Civil Engineering program whom graduating seniors name as the most influential on their undergraduate education. Awarded by 2022 graduating class.

TUM Global Visiting Professor Selected to enrich the vibrant research culture at the Technische Universität München by virtue of innovative approaches and to explore new, cutting-edge research fields. Awarded in 2023.

ASCE ExCEEd Teaching Fellow Participated in week-long intensive teacher development program. Class of 2022.

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.

External Citizenship

Peer review panel member, NCHRP 08-184, *Framework for Assessing Induced Demand Effects of Various Roadway Investments*. (2023 —)

Transportation Research Board of the National Academies of Science:

- AEP50: Travel Demand Forecasting Member of the committee (2019 — 2025) on travel demand forecasting. Chair of the travel forecasting resources subcommittee and editor of `tfresource.org`.
- AMS20: Economics and Land Development Member of the committee (2014 — 2022).
- Young Members Council (2019 — 2021). Planning and Environment subcommittee chair.

Reviewer for the following journals:

- Transportation Research Part A: Policy and Practice
- Smart Cities
- Transportation Research Record
- Environment and Planning B: Urban Analytics and City Science
- International Journal of Sustainable Transport
- Journal of Public Transportation

Member, Provo City Transportation and Mobility Advisory Commission (2022 —). Appointed by Mayor Michelle Kaufusi.

Member of the following professional organizations:

- American Society of Civil Engineers (2022 —)

- Zephyr Foundation (2020 — 2022).
- Institute of Transportation Engineers (2009—2013, 2018—2020)
- 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).

Media

Anderson, T.W. (2025). Shadow lobbying, an AI paper and a willing Senator. The story behind the bill that took SLC's streets away. *Building Salt Lake*. Quoted expert opinion. July 7, 2025. `https://buildingsaltlake.com/shadow-lobbying-an-ai-paper-and-a-willing-senator-the-story-behind-the-bill-that-took-slcs-streets-away/`

DeBrule, D. (2024). E-scooter safety top of mind after mother's death. *Fox 13 Salt Lake City*. Quoted expert opinion. March 27th, 2024. `https://www.fox13now.com/news/local-news/e-scooter-safety-top-of-mind-after-mothers-death`

Carlisle, N. (2022). Here's what it might cost to ride the Little Cottonwood Canyon gondola. *Fox 13 Salt Lake City*. Quoted expert opinion. November 16th, 2022. `https://www.fox13now.com/news/fox-13-investigates/heres-what-it-might-cost-to-ride-the-little-cottonwood-canyon-gondola`.

McCann, A. (2021). Best and worst cities to drive in. *WalletHub*. Quoted expert opinion. August 31, 2021. `https://wallethub.com/edu/best-worst-cities-to-drive-in/13964#expert=Gregory_Macfarlane`

Macfarlane, G.S.. (2020). No, Utah County does not have to choose between preservation and growth. *Deseret News*. Guest Opinion, August 21, 2020. `https://www.deseret.com/opinion/2020/8/21/21376479/`

Internal Citizenship

Department undergraduate committee Co-Chair (2023 —), Member (2021 —). Lead curriculum revisions for civil engineering program and ABET accreditation / continuous improvement efforts.

Office of Civic Engagement Faculty advisory committee member (2023 —). Participate in decisions related to the civic engagement minor and advise on campus activities.

Department honors coordinator (2019 —). Encourage students to participate in the honors program, and participate on honors thesis committees in the department.

Department faculty development and capital improvement committee (2018 — 2021).