TANNER REID PASSMORE

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EDUCATION

Georgia Institute of Technology **Aug. 2015 — Dec. 2024**

- Ph.D. Candidate in Transportation Systems Engineering, GPA 3.82 (expected Dec. 2024)
- M.S. Transportation Systems Engineering (Dec. 2021)
- B.S. Civil Engineering (Dec. 2018)

RESEARCH EXPERIENCE

ITS4US: Safe Trips in a Connected Transportation Network **May 2023 — Present**

Project Goal: Develop an app that provides step-by-step navigation that caters to people's mobility needs

- Advised graduate students on formatting queries for pedestrian infrastructure to the OpenStreetMap (OSM) Overpass API
- Created a workflow for systematically adding complete sidewalk data for OSM through JOSM, an OSM editor

Assessing Cycling Infrastructure Through Shortest Path Routing **Oct. 2022 — Present**

Project Goal: Model the least cost cycling route using cyclists' preferences for road attributes (e.g., bike lane presence, hilliness, speed limit, and the number of lanes) to understand the connectivity impacts of new cycling infrastructure by location and type

- Wrote SQL and Python scripts to clean and map match 28,000 cycling GPS traces
- Filtered and cropped OpenStreetMap PBF data into XML and GeoJSON format using the Osmium command line tool
- Created map matching and routing visualizations through Leaflet and QGIS
- Utilized particle swarm optimization to calibrate an impedance function for least cost cycling routing
- Conflated road network data from HERE, the Atlanta Regional Commission, and Georgia DOT to OSM using GIS operations, text comparison, and curve similarity metrics
- Web-scraped Georgia DOT traffic signal locations using Selenium
- Identified redundant GPS traces using DBSCAN and Frechét distance to reduce dataset size and speed up computational time during impedance function calibration

Simulating Combined Bicycle and Public Transportation (Bike-Transit) Trips **Oct. 2020 — Sept. 2023**

Project goal: Simulate bicycle trips as a first/last mile mode to/from public transportation across the Metropolitan Atlanta Rapid Transit Authority's (MARTA) service area

- Modeled the transit portion of trips using RAPTOR algorithm from the Transit-Routing Python library
- Modeled the bicycle portion of trips using Dijkstra's algorithm through the NetworkX Python library
- Created bike-transit access sheds from three distinct locations to up to 2,000+ possible destinations
- Visualized results in QGIS with attention to visual clarity to show the expansion of transit service areas
- Incorporated general transit feed specification (GTFS) schedule data to show how transit frequency impacted average travel times

BikewaySim Technology Transfer: City of Atlanta, Georgia **Apr. 2020 — Aug. 2021**

Project Goal: Develop an all viable paths network for bicycle routing and create a framework for assessing new cycling infrastructure through shortest path routing

- Conducted a systematic literature review of 19 bicycling route choice studies
- Developed a semi-automated network conflation process for resolving different street network datasets from the Georgia DOT and HERE
- Collaborated with local agencies such as the Atlanta Regional Commission, Georgia DOT, and City of Atlanta in gathering GIS data
- Calculated various network analysis metrics such as edge betweenness centrality using shortest path routing between locations
- Produced bikeshed visualizations to convey how cycling impedance impacted connectivity

Milton Walking School Bus App **Aug. 2019 — May 2020**

Project Goal: Provide research support for a smartphone app that facilitated Walking School Buses (WSBs), which are parent-led groups of children walking to/from school

- Performed a literature review summarizing findings from similar apps and WSB literature
- Created 1.5-mile walksheds around the schools using ArcGIS Network Analyst
- Designed a survey using Qualtrics to understand residents' current behaviors and perceptions regarding school travel
- Cleaned and analyzed survey results using R
- Geocoded resident addresses and designed initial WSB routes using Google My Maps
- Modeled likelihood to participate in WSB using multiple linear regression in R

User Preferences for Bicycle Infrastructure **Aug. 2016 — Dec. 2018**

- Assisted in analyzing data from a survey on preferences for bicycle facilities with consideration to sociodemographic information and cycling ability/comfort level
- Assisted in summarizing findings in a final report to the Georgia Department of Transportation

WORK EXPERIENCE

Institute of Transportation Studies, University of California Davis: *Visiting Scholar* **Jan. 2023 — Present**

- Collaborates with UC Davis researchers in the BicyclingPlus and TransitLab research groups

Georgia Institute of Technology: *Graduate Research Assistant* **Aug. 2019 — Present**

- Co-Advised by Dr. Kari Watkins and Dr. Randall Guensler

Atlanta Regional Commission (ARC): *Bike Pedestrian Planning Intern* **Jan. 2019 — May 2019**

- Updated the ARC's four-year-old Regional Bicycle Facility Inventory, a GIS database documenting the location and attributes of all bicycle infrastructure in the Metro Atlanta Region
- Developed a data dictionary to accompany the updated 2019 Regional Bicycle Facility Inventory and assisted in streamlining future updates to the inventory
- Utilized the FHWA Multimodal Connectivity Guide to analyze the 2019 Regional Bicycle Facility Inventory on regional connectivity assessments
- Performed various GIS analyses such as calculating intersection density, buffering bicycling facilities to get miles of continuous bicycle facilities, and clipping by jurisdictional boundaries in ArcGIS

Georgia Department of Transportation (GDOT): *Bike and Pedestrian Program Intern* **Jul. 2017 — Jul. 2018**

- Assessed GDOT concept reports for inclusion of bicycle, pedestrian, or transit infrastructure accommodations per GDOT's Complete Streets Policies
- Routed a cross-state bike route for AASHTO's US Bike Route System, a national network of tourism-centered bicycle routes that connect primarily rural communities on roads with amenities but minimal traffic

SKILLS

- **Software:** Python, R, SQL, QGIS, ArcGIS, Qualtrics, Adobe Illustrator, Adobe InDesign, MS Office Suite, JOSM, Osmium
- **Coursework:** Urban Analytics, Complete Streets, Dutch Cycling Infrastructure Design, Discrete Choice Modeling, Survey Design, Road Design, Network Analysis, Transit Planning, NEPA, TRAIL International Autumn School on Cycling in Cities

OUTREACH AND SERVICE

- **California Transportation Commission Active Transportation Program (ATP)**: *Volunteer ATP Application Evaluator* (Jul. 2024)
- **Journal of Transport Geography**: *Peer Reviewer* (Nov. 2023 — Present)
- **Transportation Research Board Committee on Transportation and Public Health:** *Peer Reviewer* (Dec. 2020 — Dec. 2022)
- **Institute of Transportation Engineers Georgia Tech:** *Treasurer* (Aug. 2020 — May 2021), *Secretary* (Aug. 2019 — May 2020)
- **Davis Bike Collective:** *Volunteer Mechanic* (Feb. 2023 — Present)
- **Georgia Tech Starter Bikes:** *President* (Jan. 2022 — Dec. 2022), *Treasurer* (Aug. 2020 — May 2022)
- **Outdoor Recreation Georgia Tech (ORGT):** *President and Trip Leader of Bikepacking* (Jan. 2017 — Dec. 2022)

PUBLICATIONS

- **Passmore, R.**, K. Watkins, and R. Guensler (2024). Using Shortest Path Routing to Assess Cycling Networks. *Journal of Transport Geography*. doi.org/10.1016/j.jtrangeo.2024.103864
- **Passmore, R.**, K. Watkins, and R. Guensler (2024). Assessing Bike-Transit Accessibility. *Transportation Research Record*. doi.org/10.1177/03611981241234902
- **Passmore, R.**, K. Watkins, and R. Guensler (2024). Simulating Bike-Transit Trips Through BikewaySim and TransitSim. *National Center for Sustainable Transportation*. dx.doi.org/10.7922/G22R3Q0B
- **Passmore, R.**, K.E. Watkins, and R. Guensler (2021). BikewaySim Technology Transfer: City of Atlanta, Georgia. *National Center for Sustainable Transportation*. dx.doi.org/10.7922/G2CF9NDV.
- Watkins, K., P. Mokhtarian, C. Clark, and **R. Passmore** (2019). *BeltLine Bicyclist Facility Preferences and Effect on Increasing Trips*. Publication FHWA-GA-19-1638. GDOT. rosap.ntl.bts.gov/view/dot/40257.

AWARDS AND SCHOLARSHIPS

- Dwight David Eisenhower Transportation Fellow (2022 — 2024)
- Georgia Tech President's Fellowship (2019 — 2023)
- Center for Transportation Equity, Decisions, and Dollars (CTEDD) Student Thesis/Dissertation Scholarship (2020 — 2021)