

# Natalia Zuniga

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## Education

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### The University of Texas at Austin

- *Ph.D. in Civil Engineering – Transportation Engineering* (GPA: 4.00) 2018 - Present
  - Dissertation: "Characterizing emerging urban transportation modes: Statistical models and methods."
  - Obtained the *Graduate Certificate in Engineering Education* for coursework in STEM education teaching and learning.
  - Received 10+ competitive scholarships and awards for research, teaching, and leadership excellence, including:
    - 2020 Graduate Research Award, Airport Cooperative Research Program (ACRP) (10 awards, ~150 applicants)
    - 2020 GLUE Mentor Award, Women in Engineering Program (WEP) (2 awards, ~80 mentors)
    - 2018 Leadership Legacy Scholarship, Women's Transportation Seminar (WTS) International (1 award, ~150 applicants)
- *M.Sc. in Statistics and Data Sciences* (GPA: 3.81) May 2018
  - Full scholarship. Coursework in the area of statistics, data sciences, big data, and machine learning.
- *M.Sc. in Civil Engineering – Infrastructure Materials* (GPA: 3.71) May 2017
  - Full scholarship. Coursework in the area of transportation operations, pavement engineering, and public asset management.

### University of Costa Rica

- *B.Sc. and Licentiate in Civil Engineering* (GPA: 8.46/10) December 2012

## Professional Experience

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- *Center for Transportation Research (CTR) – UT Austin* 2015 - Present
  - Research Assistant** — Performed data analysis and transport-operation evaluations for several funded research projects.
  - Responsible for delivering oral and written presentations to the sponsors, including final or partial products.
  - Led and collaborated in the preparation of several research proposals (budget of \$300k+ each) with an awarded rate of 75%.
  - Published 4 first-authored and 2 co-authored peer-reviewed papers, and 19 conference proceedings [[Google Scholar](#)].

### Relevant Projects

1. **Machine learning for e-scooter trips: Gradient Boosting Machine (GBM) regression**  
A negative binomial regression is used to model e-scooters as first/last mile solution to transit access using 12+ million trips in Austin, TX. A methodological framework is implemented to solve confounding variables problems using GBM.
  2. **Big data statistical models for e-hailing taxis: Graph-Fused Lasso (GFL) spatial smoothing**  
The problem of measuring the spatial and temporal variation in driver productivity is considered proposing an analytical framework that integrates a big data spatial smoothing approach to tackle data-sparsity problems.
  3. **Intelligent transportation systems (ITS) for airport congestion management** [*Federal Aviation Administration (FAA)*]  
Developed airport congestion management procedures using ITS and open-data sources to evaluate the impact of e-hailing taxis on ground-access to airports. ANOVA models were implemented to test mean speed differences across periods.
- *Department of Civil Engineering – UT Austin* 2016 - 2019
    - Teaching Assistant** — Courses: Public Transportation Engineering and Pavement Design and Performance.
  - *Department of Statistics and Data Sciences – UT Austin* Fall 2017
    - Statistical Consultant (Student)** — Provided statistical consulting services to students, faculty, and private companies.
    - Used neural networks, ARIMA, and multiple linear regression models to forecast electric demand in Texas.
    - Developed a growth curve analysis to evaluate age and sex differences in laboratory-controlled experiments with animals.
  - *Sustainable Urban Development Program (ProDUS) – University of Costa Rica* 2013 - 2014
    - Transport Engineer** — Collaborated in the preparation of urban planning evaluations for several public-funded projects.
    - Designed, implemented, and analyzed surveys and field data collection processes for transportation and urban studies.

## Extra-Curricular Achievements

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- **Chair:** *Tenant Advisory Board (TAB), University Housing and Dining – UT Austin* 2019-2020
  - Lead the proposal of community improvement projects (\$500k+) that affected ~800 students residents of the university.
- **Committee Volunteer:** *Artificial Intelligence Committee (AED50) – Transportation Research Board (TRB)* 2019-2020
  - Improved the communication channels by developing updates to the committee website that reaches 200+ members.
- **President:** *Women's Transportation Seminar (WTS), Student Chapter – UT Austin* 2017-2018
  - Reactivated the student chapter, successfully engaging 100+ students and professionals by promoting diverse activities.

## Additional Skills

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**Languages:** English (*Full professional*) | Spanish (*Native*) | Portuguese (*Elementary*)

**Programming:** R | Python | SQL | MATLAB | (*Basic:*) JAVA | C++ **Tools:** Tableau | SAS | ArcGIS | GCP | AWS | L<sup>A</sup>T<sub>E</sub>X