Sofía Pérez-Guzmán

Ph.D. Candidate and Graduate Research Assistant at Rensselaer Polytechnic Institute
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RESEARCH INTERESTS

Fields: Humanitarian logistics; food systems and supply chains; urban freight transportation; transportation economics; behavioral economics; human behavior under disruptive events; social justice and equity issues.
Methods: Applied optimization and simulation; empirical research, econometrics and data analytics.

EDUCATION

Rensselaer Polytechnic Institute (RPI), Troy, NY, United States

Ph.D. in Transportation Engineering   Dec 2022
Advisor: José Holguín-Veras, GPA: 3.93/4

M.S. in Economics   May 2022
GPA: 3.93/4

M.S. in Transportation Engineering   Dec 2020
Advisor: José Holguín-Veras, , GPA: 3.93/4

Universidad del Valle, Cali, Colombia

B.S. in Industrial Engineering, GPA: 4.77/5, highest GPA of cohort   Jun 2017

HONORS AND AWARDS

- **CEE Rising Stars Scholarship** at Massachusetts Institute of Technology, Boston, MA, Oct 2021.
- **Second place at the NIJ Challenge** of the US Department of Justice, category Year 3, Female Parolees, Small Groups, Sep 2021.
- **First place at the poster competition in the Graduate Research Symposium** at RPI, May 2021.
- **First place at the Supply Chain Data Analytics Competition** hosted by the Quinlan School of Business at Loyola University Chicago, Apr 2021.
- **Invitation and travel grant to the WTS Leadership Training**, Oct 2019.
- **NYS Legacy Leadership Award** from WTS, in Oct 2018.
- **Biannual scholarship: top GPA** in Industrial Engineering. Cali, Colombia, 2012 – 2016.
- **Mention of honor: highest and second highest GPA** of undergraduates in Engineering students, and of the University, respectively. Cali, Colombia, Nov 2015.
- **Nomination to "Portfolio Awards 2015".** Cali, Colombia Oct 2015.
- **"Prest&Gio" scholarship** from Procter & Gamble. Bogota, Colombia, Jun 2015.
- **Mention of honor: top five GPA** of undergraduates in Engineering. Cali, Colombia, Dec 2013.

RESEARCH EXPERIENCE

Department of Civil and Environmental Engineering, RPI   Troy, NY
Doctoral Dissertation   2021-Currently
Theses titled: "Disaster Relief Distribution with Mobile Beneficiaries"
Developing analytical tools for the **distribution of relief goods** in post-disaster scenarios, considering the movements of beneficiaries and the related suffering costs.

Masters Dissertation   2019-2020
Theses titled: "Eliminating Food Under-Served Areas: A Price-Collecting Traveling Salesman Problem with Profits Approach"
Developed an analytical formulation that helps investigate **food under-served areas** based on the interaction between food distributors and food outlets.

<u>Center for Infrastructure, Transportation, and the Environment (CITE), RPI</u>   Troy, NY
       Graduate Research Assistant

NSF Project Award 2110986 - Collaborative Research: Urban Goods Movements, Pricing, and Social Justice   2021-Currently

Developing analytical tools and carrying empirical research to mitigate **food under-served areas**, focusing on the interaction between food distributors and food outlets.

Additional research, partially funded by the VREF Center of Excellence for Sustainable Urban Freight Systems   2021-Currently

Carrying empirical research to investigate influencing factors, impacts and operation management implications of **disaster-related buying behaviors** enacted during the COVID-19 pandemic.

DOE Project DE-EE0008259 - Collaborative Approaches to Foster Energy-Efficient Logistics in the Albany - New York City Corridor   2017-Currently

Redesigning a **Behavioral Micro Simulation** (BMS) tool to assesses impacts of policy interventions in urban freight systems, considering various echelons in the supply chain, freight trip generation patterns and flow interactions.

NCFRP 08-111 - Effective Decision-Making Methods for Freight-Efficient Land Use   2017-2020

Assessed the impacts of emerging market and technological trends for **freight-efficient land-uses** (FELU). Developed an evaluation framework of trends and stakeholders' decisions on supply chains and FELU. Assessed the impacts of interventions on FELU using the BMS tool.

NYSERDA Project No. 104513 - Research and Development of an Eco-Transfer System to Foster Sustainable Last-Leg Delivery Modes   2017-2019

Led the project development and designed the work plan for successful completion. Investigated the market acceptability and legal issues of implementing **Eco-Transfer System** in New York City. Designed the main features of the system. Planned, designed and evaluated a pilot test plan.

USPS Project - Coordination and Optimization Technologies Identification of Use Cases   2018

Developed a comprehensive list of use cases, one-pagers, and research notes to protect and grow **USPS' last mile parcel delivery operations**. Designed and deployed a web-based survey and in-depth interviews with worldwide experts.

JOURNAL PUBLICATIONS

- **Pérez-Guzmán S.**, Wang X., Conway A., Arrieta-Prieto M., Ding Y., Zuman G., Escand P., Chen Q. (2022) Methodology for the Feasibility Assessment of an Eco-Transfer System. *Transportation Research Part A: Policy and Practice*. DOI: https://doi.org/10.1016/j.tra.2022.04.002
- Holguin-Veras J., Ramírez-Ríos D.*, **Pérez-Guzmán S.*** (2021) Time-Dependent Patterns in Freight Trip Generation. *Transportation Research Part A: Policy and Practice*. DOI: https://doi.org/10.1016/j.tra.2021.03.029
- Holguín-Veras J., Encarnación T., **Pérez-Guzmán S.**, Yang X. (2020) Mechanistic Identification of Freight Activity Stops from Global Positioning System Data. *Transportation Research Record: Journal of the Transportation Research Board*. DOI: https://doi.org/10.1177/0361198120911922
- Holguín-Veras J., Encarnación T., Ramirez-Rios D., He X., Kalahasthi L., **Pérez-Guzmán S.,** Sanchez-Díaz I., González-Calderón C. (2020) A Multi-Class Tour-Flow-Model and its Role in Multi-Class Freight Tour Synthesis. *Transportation Science*. DOI: https://doi.org/10.1287/trsc.2019.0936

*Equal contribution

PUBLICATIONS IN PRESS

- *Submitted* in *Transportation Research Part E: Logistics and Transportation* on May 29th, 2022: "The Role and Potential of Trusted Change Agents and Freight Demand Management in Mitigating "Panic

Buying" Shortages" Holguín-Veras J., Encarnación T., **Pérez-Guzmán S.**, Cantillo V., Calderón O., Wachtendorf T.

- *1ˢᵗ round of review* in *Transportation Research Part A: Policy and Practice* (Target reply in Spring 2022): "Multi-Criteria Assessment Framework for the Feasibility of Cargo Cycle Operation: Using New York City as an Example" Ding Y., Wang X., **Pérez-Guzmán S.**, Wojtowicz J., Conway A.

PUBLICATIONS IN PREPARATION

- *To be re-submitted* in *Transportation Science* in Summer 2022*:* "Modeling Food Under-served Areas: The Distributor and the Policy-Maker Problems" **Pérez-Guzmán S.**, Holguín-Veras J.
- *To be submitted* in Summer 2022: "An Investigation of Disaster-Related Buying Behaviors and Individuals' Inventory Levels During the COVID-19 Pandemic in Latin America" **Pérez-Guzmán S.**, Holguín-Veras J., Serrano I., Cantillo V., Calderon O., Ismael A., Encarnación T.
- *To be submitted* in Summer 2022: "Beyond "Panic Buying": An International Investigation of Disaster-Related Buying Behaviors During the COVID-19 Pandemic" Encarnación T., Holguín-Veras J., **Pérez-Guzmán S.**, Ismael A., Amaral J.

MENTORING

Undergraduate Research Program (URP), at the CITE at RPI   2020-Currently
- Have mentored 19 undergraduate students, and worked closely with 12, to help them advance research activities within the CITE.

TEACHING EXPERIENCE

Virtual lecture: **Case Study on the Operations of Feeding America**   Apr 2022
     In the Global Supply Chain Analytics (MIS 753) course, by Dr. Carlos D. Paternina at San Diego State University. Students: 17. Session evaluation**: 4.64/5.

Virtual lecture: **Behavioral Economics in Disaster Management**   Feb 2022
     In the Catastrophic Readiness (CDM-4015) course, by Dr. Diego Otegui at University of Central Missouri. Students: 6. Session evaluation**: 4.84/5.

Lecture: **Modeling Food Under-Served Areas: The Food Distributor Problem**   Oct 2021
     In the Operations Research Methods (ISYE-4600-01) / Systems Modeling in Decision Sciences (ISYE-6610-01), by Dr. Diana Ramirez-Rios at RPI. Students: 21. Session evaluation**: 4.64/5.
** Based on 17 criteria in a post-session online questionnaire.

Teaching interests: Operations research; supply chains and logistics; transportation planning; transportation economics; empirical research methods; data analytics; economic decision analysis; behavioral and experimental economics.

JOURNAL REVIEWS

Transportation Research Part A: Policy and Practice; Transportation Research Part E: Logistics and Transportation; Transportation Research Record: Journal of the Transportation Research Board; Networks and Spatial Economics; XXI PANAM 2021 Conference; TRB Annual Meetings 2020-2022.

OTHER SERVICE ACTIVITES

- Co-lead Editor at the INFORMS ORMS Tomorrow Student Magazine. May 2022 – May 2024
- Junior Vice-President of Programs – Minorities Issues Forum at INFORMS. Jan 2022 – Dec 2024
- President – Women in Transportation Seminar (WTS) RPI Student Chapter. July 2020 – May 2021
- Vice-President –WTS RPI Student Chapter. July 2019 – May 2020
- Communications Chair – WTS RPI Student Chapter. Oct 2017 – May 2019

OUTSTANDING CONFERENCE PRESENTATIONS

- Time-Dependent Patterns in Freight Trip Generation. **2022 I-NUF 9th METRANS International Urban Freight Conference.** Long Beach, CA. May 26th, 2022.
- Modeling Food Under-Served Areas: The Food Distributor and the Policy-Maker Problems. **2022 POMS Annual Conference**. Virtual. April 23rd, 2022.
- Eliminating Food Under-Served Areas: A Prize-collecting Travel Salesman Problem with Profits Approach. **2021 DSI Annual Conference**. Virtual. Nov 20th, 2021.
- Disaster relief distribution location-allocation with multi-period planning and beneficiaries' choices. **2021 INFORMS Annual Meeting**. Virtual. Oct 27th, 2021.
- Beyond "Panic Buying": An Investigation of Disaster-Related Buying Behaviors During the COVID-19 Pandemic in Latin America. **2021 XXII PANAM Conference**. Virtual. Aug 12th, 2021.
- Beyond "Panic Buying": An International Investigation of Disaster-Related Buying Behaviors During the COVID-19 Pandemic. **2021 POMS Annual Conference**. Virtual. May 5th, 2021.
- Eliminating Food Under-served Areas: A Price-collecting Travel Salesman Problem with Profits Approach. **2020 INFORMS Annual Meeting**. Virtual. Nov 11th, 2020.
- A 2-Stage Stochastic Model to Allocate Water in Post-Disaster Environments. **2019 INFORMS Annual Meeting**. Seattle, Washington. Oct 23rd, 2019.
- Eco-Transfer System to Foster Sustainable Last-Leg Delivery Modes. **2019 I-NUF 8th METRANS International Urban Freight Conference.** Long Beach, CA. Oct 16th, 2019.
- Emerging Market and Technological Trends Impacting Freight Landscape. **2018 3rd VREF Conference on Urban Freight.** Gothenburg, Sweden. Oct 17th, 2018.

INVITED TALKS

- XXIII – III Seminario de Logística, Universidad Nacional de Colombia, SEPRO. Talk: "Modelación de áreas desatendidas de alimentos: Los problemas del distribuidor y del legislador". Dec 9th, 2021
- Seminario Internacional de Ingeniería, Universidad del Valle and Universidad Autónoma de Cuidad Juarez. Talk: "Eliminación de Áreas Desatendidas de Alimentos: Un Problema del Agente Viajero con Recolección de Premios con Ganancias". Jul 14th, 2021

CERTIFICATIONS

Specialization in English for Research Publication Purposes, Moscow Institute of Physics and Technology on Coursera: academic literacy, scholarly communication, grant proposal and technical writing. July 2021

WORKING EXPERIENCE

Camp Vega   Portland, ME
        Arts and Crafts Department Head   May – Aug 2017

Vice-rectory of University Wellbeing at Universidad del Valle   Cali, Colombia
        Restructuring Leader of Processes   Nov 2016 – Apr 2017

Industrial Engineering School at Universidad del Valle   Cali, Colombia
        Administrative Assistant   2012-2015 / Aug - Nov 2016

Procter & Gamble   Bogota, Colombia
        Finance Intern   Jan – July 2016

Camp Vega   Portland, ME
        Summer Camp Counselor   June – Aug, 2014 and 2015

LENGUAGES AND TESTS

Spanish – Native; English – TOEFL 107/120 (Oct – 2016); Italian – Beginner, level A1; French – Basic User, level A1; GRE General Test: 316/340, percentile 89-quantitative (Oct – 2016)

SOFTWARE SKILLS

- Advanced: Stata, R, Microsoft Excel + VB, Python, Gurobi, Latex, GAMS, AMPL, QGIS, NLOGIT
- Intermediate: MATLAB, @Risk, Vensim, Microsoft Project, TransCad
- Basic: AutoCad

ADDITIONAL ACTIVITIES AND VOLUNTEERING

- Organized 2018 VREF Advanced Studies Institute on Sustainable Urban Freight Systems. Aug 2018
- Assisted a partially blind psychologist. October – Dec 2015 / Jul 2016 – May 2017
- Organized and developed an academic mission to Chile. Sep 2015
- Taught English lessons to low-income kids. Sep 2012 – Dec 2013
- Was a student representative during undergraduate studies. Aug – Dec 2012
- Planned and ran "C-LIDER 2012" conference. Aug – Dec 2012
- Created a homemade sandals venture. Jun 2011 – Mar 2013
- Participated in swimming team and tango professional team