

David Alejandro Ramírez Cajigas

Civil Engineer · Transport and Mobility Researcher · PhD Candidate

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Professional profile

Civil engineer with a degree officially recognised in Spain and an MSc in Transport, Territory and Urban Planning. PhD candidate at the University of Castilla-La Mancha, specialising in accessibility, territorial analysis and demand-responsive transport. I combine scientific programming, mobility data analysis and route optimisation with experience in residential construction and business project evaluation. I develop tools to support transport planning and data-informed decision-making.

Professional experience

Researcher in transport and mobility

Since 24 Feb 2026

University of Castilla-La Mancha · Ciudad Real, Spain

- Full-time, open-ended research contract. Project SBPLY/24/180225/000129 on rural public transport accessibility and mobility, with improvements based on demand-responsive services.
- Development of transport models and analysis of demand, accessibility and service inefficiencies through programming and mobility data processing.

R&D Researcher · EsMaaS Project

20 Apr 2023 - 21 May 2025

University of Castilla-La Mancha · Mob&UP Research Group

- Analysis of access to essential services and rural mobility patterns using mobile-phone data; territorial classification through Ward hierarchical clustering.
- Python and MATLAB programming, GIS analysis and OSRM routing; preparation of results for scientific publications and conference presentations. Project TED2021-129623A-I00.

Civil Engineer · Independent Projects

2021

Cali, Colombia

- Management and supervision of residential construction; drawing review, quality control support and monitoring of site works using AutoCAD and Revit.

Technical and Project Evaluation Support · Founding Member

9 May 2016 - 29 Mar 2019

Fundación Productivos / Productivos.org · Cali, Colombia

- Programming, maintenance and administration of the web platform and its databases; resolution of technical issues and user support.
- Support for the assessment of business ideas and investment proposals: information review, evaluation criteria, diagnostic tools and preparation of feedback.

Civil Engineering Intern

12 Dec 2016 - 11 Jun 2017

Constructora Bolívar · Cali, Colombia

- Supported the resident engineering team on housing construction sites: monitoring of activities and review of specifications, materials and construction processes.
- Assisted with quality control, coordination with site staff and contractors, and preparation of technical documentation.

Technical skills

Programming and data: Python, Pandas, GeoPandas, JupyterLab and MATLAB; processing of large mobility datasets and automation of analyses.

Transport and GIS: ArcGIS Pro, QGIS, OSRM, Docker and PTV Visum; accessibility analysis, Mobility as a Service (MaaS) and demand-responsive transport (DRT).

Engineering and reporting: AutoCAD, Civil 3D, Revit and Microsoft Office; technical review, documentation and communication of findings.

Education

PhD in Territory, Infrastructure and Environment · In progress

2023 - Ongoing

University of Castilla-La Mancha · School of Civil Engineering, Ciudad Real

- Research on rural demand-responsive transport, accessibility and route optimisation. Ongoing work on genetic algorithms for the Dial-a-Ride Problem with time windows, applied to Campo de Montiel.

MSc in Transport, Territory and Urban Planning

Awarded 17 Jan 2022

Universitat Politècnica de València · Spain

- Studies completed on 22 Dec 2021. 75 ECTS; overall grade: 7.812/10. Master's thesis: 10/10.
- Development of DGIS to assess public transport accessibility, applied to Santiago de Cali. Coursework in territorial planning, transport, logistics, road safety and urban planning.

Degree in Civil Engineering · Ingeniero Civil

2012 - 2018

Pontificia Universidad Javeriana · Cali, Colombia

- Degree awarded on 6 Apr 2018. Thesis on the spatial distribution of MIO transit routes and perceived service quality in Comuna 18, Cali.
- Official recognition in Spain (homologación) of the Colombian degree as the qualifying master's degree for the regulated profession Ingeniero de Caminos, Canales y Puertos: decision dated 9 May 2025, file /2025/H06782.

Software and applied research

DGIS · Accessibility Analysis Software Original MATLAB tool for assessing accessibility in urban and interurban public transport. Materials, tutorial and academic work are available on my personal website.

Demand-Responsive Transport Optimisation · Ongoing Research Route modelling with time windows and genetic algorithms; assessment of waiting time, travel time, costs and emissions to explore rural service alternatives.

Selected publications · Co-author

2025 Caracterización de las estructuras territoriales en zonas rurales y su influencia en los servicios de transporte. El caso de Castilla-La Mancha, España. *EURE*, 51(153), 1-21.

2024 Reorganización empresarial: Modelo para valorar y recuperar empresas antes o después de una crisis. *Editorial UNAL*. ISBN 9789585056992.

2022 El punto de equilibrio avanzado (Pea): herramienta para asegurar la sostenibilidad empresarial. *Criterio Libre*, 20(37).

2020 Claves emprendedoras: un simulador para crear empresas sostenibles. *Espacios*, 41(19), article 15.

Selected conference presentations

Presenter at the 35th International Geographical Congress (Dublin, 2024), V Scientific Campus of the Spanish Transport Engineering Forum (Cercedilla, 2024), EUGEO (Barcelona, 2023) and XV Spanish Transport Engineering Congress (La Laguna, 2023). Work on accessibility, rural mobility and territorial inequalities.

Additional training

2025 University Expert Certificate in Technologies and Tools for Transport Digitalisation · Universidad Politécnica de Madrid.

2022 English as a Second Language · University of Calgary: two semester programmes of 275 hours each (550 hours total), April-July and September-December.

2023 / 2020 / 2019 MATLAB Onramp (MathWorks); Airport Engineering: Airside Design (UPValenciaX / edX); Basic Revit Architecture (UPV).

Spanish: native · English: CEFR B2 (self-assessed) · Spanish and Colombian citizenship · Category B driving licence · Member no. 37028, Colegio de Ingenieros de Caminos, Canales y Puertos, Spain.