David Vasquez

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EDUCATION

Yale University, New Haven, CT   2023 - 2027
    B.A. in URBAN STUDIES   GPA: 3.98 / 4.00
    Certificate in COMPUTER PROGRAMMING

RESEARCH INTERESTS

Urban scientist that studies cities by using data and computational methods (GPS, remote sensing, computer vision) to understand the relationship between the built environment, sustainability, human behavior, and mobility.

SELECTED RESEARCH EXPERIENCES

Tobin Undergraduate Research Assistantships   New Haven, CT
AI for Public Spaces   Fall 2025 -
- I'm using videos of plazas in Poland, Czechia, and Hungary to analyze human behavior in public spaces with an emphasis among interactions between genders
- First I'm fine-tuning a YOLO computer vision model to accurately detect people in the context of a plaza and under the limitations of challenging camera angles
- Next I'm training a YOLO classification model to accurately classify gender
- Also I'm analyzing the trajectories of people by mapping video coordinates to geospatial coordinates to then be able to calculate walking speed and identify group formation

Yale Livable City Lab   New Haven, CT
Research Assistant   Spring 2025 -
- Mentored by PI Arianna Salazar-Miranda
- We want to understand why people are living so far from the places they most frequent
- I've used SQL to query anonymized Spectus GPS data from devices across 356 MSAs to identify accurate home, work, and stop locations
- I then quantify the mismatch between where people actually live and where they should ideally live (using Webber optimization) in order to minimize their travel distances
- I have calculated the cost (in kilometers, time, and emissions) people face because of mismatch and am running regressions to try to determine possible explanations of mismatch (transit accessibility, housing prices, housing regulations)
- Contributing as a co-author to an ongoing research paper

Herb Scarf Summer Research Fellowship   New Haven, CT
Deploying Geospatial AI Models for Impact Evaluation in Kenya   Summer 2025
- I helped train a geospatial foundation model (called Clay) to be able to predict population density in Kenya from satellite imagery

- I assessed the model's performance against Kenyan Census data and worked on adjusting the model accordingly
- These predictions will then be used to quantify the impact that large-scale resettlement schemes in Kenya had on changing population densities

Yale Center for Geospatial Solutions   New Haven, CT
Geospatial AI Analyst   Fall 2024
- Processed high-resolution Planet Labs imagery in ArcGIS Pro, including cloud-cover removal and data preparation
- Trained a machine-learning land-cover classification model to identify high-, medium-, and low-density vegetation
- Integrated US Forest Inventory & Analysis carbon-density datasets to estimate carbon stocks by vegetation class
- Analyzed changes in forest carbon density from 2017–2022 to assess the impacts of wildfire activity and deforestation in Olympic Nation Forest in Washington State

Working Papers

Salazar-Miranda, A., **Vasquez, D.** "Living Too Far: Analyzing the Mismatch Between Housing and Daily Destinations Using GPS Data"

Technical Skills

- **Programming:** Python, R, SQL, Stata, JavaScript (D3)
- **Geospatial:** ArcGIS Pro, QGIS, ArcPy, GeoPandas, sf
- **Data Science:** Pandas, Matplotlib, Snowflake, Excel
- **Machine Learning:** Ultralytics, PyTorch, Roboflow
- **Computing:** GitHub, Unix/Linux, High-Performance Computing (HPC), Overleaf
- **Datasets:** US Census, Cuebiq, Veraset
- **Languages:** Spanish (Native)

Awards & Fellowships

2025   Tobin Undergraduate Research Fellowship
2025   Saybrook College Research Fellowship
2025   Bruce M Babcock '62 Fellowship
2025   Herbert Scarf Summer Research Fellowship
2025   Dwight Hall Summer Fellow
2025   Summer Experience Award
2024   International Study Award