

Adriana Castillo Castillo

Phd in Applied Economics

Curriculum Vitae

October 2025



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Education

2018-25	PhD in Applied Economics Minnesota, US	University of Minnesota
2022	Master of Urban and Regional Planning Minnesota, US	University of Minnesota
2013	Master of Economics Bogota, Colombia	Universidad de Los Andes
2010	Bachelor Economics Bogota, Colombia	Universidad del Rosario
2010	Exchange program Sao Paulo, Brazil	Universidade de Sao Paulo

Laboral Experience

2024-25	Assessment of Thermal and welfare Inequalities in Cities Consultant - Disaster Climate Risk Management, The World Bank * Leveraged large geospatial databases of high-resolution temperature layers across multiple cities to compute novel metrics of spatial thermal inequality in a context of climate change. *Reviewed academic literature to identify and incorporate additional indicators of inequality relevant to urban climate resilience. *Integrated welfare information from diverse sources—including remote sensing, censuses, household surveys, and poverty maps—to analyze associations between neighborhood socioeconomic status and exposure to extreme heat. *Conducted econometric and statistical analyses, including regression models, to uncover relationships between thermal inequality, welfare indicators, and city-level characteristics (e.g., baseline temperature, population, spatial extent, density, vegetation cover, and income status). *Synthesized findings into policy-relevant insights by documenting emerging stylized facts, methodologies, datasets, and literature on the links between spatial thermal and welfare inequalities.	
2024	Water and Sanitation Economics and Policy Research Consultant - Water and Sanitation Division, Inter-American Development Bank *Supported countries in Latin America and the Caribbean through technical assistance and financing of infrastructure programs that enhance climate resilience, improve living conditions, and reduce poverty. *Specialized in integrated water resources management, water supply and sanitation, stormwater drainage, and solid waste management, with a focus on climate adaptation and mitigation co-benefits. *Conducted empirical research, literature reviews, and policy analysis on water, sanitation, and climate resilience topics across the LAC region. *Designed and managed databases for climate- and water-related indicators, including data collection, coding, storage, and visualization for decision-making. *Developed complex code to implement advanced methodologies for both qualitative and quantitative climate and development analysis. *Performed econometric and spatial analyses of large datasets to assess the distributional and climate impacts of infrastructure investments. *Co-authored working papers, technical notes, policy briefs, and presentations highlighting the nexus between water, infrastructure, equity, and climate change for external dissemination.	
2024	Ghana Household Surveys Harmonization Consultant - University of Indiana *Evaluation of causal impacts of expanding healthcare access through drone technology on the health and socioeconomic welfare of rural households in Ghana. *Harmonization of Ghana Household Surveys and spatial analysis of health institutions.	
2024	Graduate Assistant - Department of Forestry, University of Minnesota *Use of machine learning techniques and spatial econometrics to forecast and evaluate water governance management in Minnesota, based on socio-economic information and water quality.	
2020-24	Data Analyst, South Asia Region: Poverty and Equity Global Practice - The World Bank *Conducted data analysis to support the operationalization of Welfare and Poverty Assessments with Shared Prosperity, providing inputs for senior management, briefs, reports, and policy dialogue with country economists, with a focus on inclusive growth. *Measured welfare and poverty using household surveys to assess vulnerabilities and inform strategies for equitable adaptation to climate and socio-economic shocks. *Applied advanced statistical and econometric methods to evaluate socio-economic indicators—including poverty, inequality, water and sanitation— and their trends in the context of development. *Designed interactive data visualization tools (R Shiny, Power BI with ArcGIS) to monitor and communicate key development and climate-related indicators across South Asia. *Contributed to the development of the qcheck Stata package to strengthen data quality assurance for large-scale household and climate-relevant socio-economic datasets.	

- 2020-23 **Graduate Assistant - University of Minnesota**
 *Analyzed how urban green space characteristics influence housing prices in Minnesota, integrating GIS-based spatial analysis with socio-economic data (e.g., poverty and race) to assess equity and environmental justice implications. *Applied advanced econometric methods—including spatial econometrics and machine learning—to study interactions between natural ecosystems, human activity, and climate-related vulnerabilities in urban settings. *Designed and developed an R package for the Minnesota Well Owners Organization (MNWOO) to facilitate the integration of GIS and socio-economic data (via OpenStreetMaps and GoogleMaps), enabling staff to generate maps, visualizations, and advocacy materials supporting equitable access to clean water and climate-resilient communities. *Conducted spatio-temporal econometric analysis using GIS, housing market, and water quality data to evaluate the impacts of invasive species on water resources and property values, highlighting the socio-economic and climate-related risks of ecosystem degradation.
- 2022 **Collaboration for Design-Preservation Rapid Assistance Team for the design of public spaces for the City of Milan, MO (US).**
 *Developed an urban planning proposal for the City of Milan (Missouri) to improve accessibility and resilience of public spaces, enhance quality of life for residents, and promote equitable and sustainable economic growth.
- 2020-21 **Social Protection and Health Department Consultant - Inter-American Development Bank**
 *Economic, statistical, and spatial analysis of childcare and maternal health public policies in Central America.
- 2018-22 **Graduate Assistant - IPUMS, University of Minnesota**
 *Harmonization and cleaning and of censuses and labor surveys databases from around the world. *Definition of key indicators such as household wellness and access to basic infrastructure services (electricity, drinking water, sanitation).
- 2017-18 **Analytical and Survey Expert Social Department - Inter-American Development Bank**
 *Conducted research, analysis, and program design on disability and inclusive development across Latin America, contributing to evidence-based social policy. *Harmonized household surveys and census data from multiple countries to enable cross-country comparisons on poverty, inequality, and inclusion. *Led data collection for the impact evaluation of a program supporting 2,400 rural female micro-entrepreneurs in Peru, aimed at strengthening socioemotional and entrepreneurial skills. *Adapted and refined survey instruments to ensure methodological rigor and policy relevance. *Trained and supervised field teams to ensure high-quality data collection and compliance with research protocols.
- 2016-17 **Learning and Evaluation Specialist. Porticus Brazil**
 *Designed, managed, and implemented evaluations of sustainable development programs in Latin America—including water security, agricultural education, rural education, and migration—ensuring alignment with donor requirements and organizational MEL standards. *Led data collection strategies across multiple countries, overseeing both quantitative (RCTs, quasi-experimental designs) and qualitative (focus groups, interviews) methods to generate reliable evidence of program outcomes. *Developed and refined context-appropriate indicators and verification mechanisms to monitor program performance and climate-relevant outcomes. *Conducted data verification and ensured high-quality inputs from the field to strengthen the accuracy of monitoring systems and enable ongoing visibility of program impact against targets. *Built the MEL capacity of field teams and local partners through training, technical assistance, and development of communication and capacity-building materials. *Synthesized findings into policy-relevant reports and learning products, strengthening evidence-based decision-making and supporting continuous improvement throughout the program cycle.
- 2013-16 **Research Fellow Social Department - Inter-American Development Bank**
 *Designed, implemented, and evaluated government youth programs across Latin America (violence prevention, pregnancy prevention, vocational training), ensuring alignment with policy priorities and evidence-based approaches. *Prepared terms of reference and evaluation frameworks for projects, including context-specific indicators and means of verification to monitor program performance. *Led the design, management, and implementation of large-scale data collection efforts, ensuring data quality and consistency across multiple countries. *Trained and supervised evaluation teams in Colombia and Brazil, strengthening MEL capacity and ensuring methodological rigor in fieldwork. *Identified, compiled, and organized impact evaluation databases, conducting econometric and psychometric analyses to assess program effectiveness. *Synthesized and presented impact evaluation results to evaluation teams and national/local governments, facilitating learning and informing decision-making. *Produced research papers, reports, and policy briefs on youth development and social inclusion, contributing to regional knowledge-sharing and policy dialogue. *Conducted literature reviews and actively participated in discussions to integrate research findings into program design and continuous improvement.
- 2013 **Consultant, Enlaza**
 *Analyzed the impacts of private sector economic activity on local environments and community development, assessing effects on livelihoods, equity, and climate resilience. *Developed and applied indicators to evaluate environmental externalities (e.g., resource use, emissions, land use change) and socio-economic outcomes, providing evidence to inform sustainable business practices and climate-smart local development strategies. *Produced policy-relevant findings to support dialogue between private companies, local governments, and communities on balancing economic growth with environmental protection and poverty reduction.

2011-13

Graduate Assistant - CEDE, Universidad de Los Andes

*Conducted econometric analysis to assess the relationship between water quality and mortality in Colombia, generating evidence on how environmental and service provision inequalities affect vulnerable populations. *Evaluated the socio-economic impacts of violence on land property in Colombia (in collaboration with USAID), analyzing implications for poverty, livelihoods, and community resilience. *Developed and applied robust indicators to quantify program and policy impacts, supporting evidence-based decision-making for interventions targeting vulnerable and marginalized groups. * Produced reports and visualizations translating complex analysis into actionable insights for policymakers, donors, and program teams.

Publications

1. Urdiales, M. P., López-Luzuriaga, A., Castillo, A., & Ribeiro, B. C. (2025). Fragmentation, scale, and management: Determinants of public spending efficiency in colombia's water and sanitation sector. *Working Papers, Inter-American Development Bank*.
2. Castillo-Castillo, A., El-Khatib, A., & Ramírez, J. (2025). A spatial-temporal analysis of the efficiency in water investment in colombia and its consequences in drinking water safeness. *Environmental Research Letters*, 20(3). <https://doi.org/10.1088/1748-9326/adb0e0>
3. Castillo-Castillo, A., Keeler, B., Lonsdorf, E., Walker, R., & Ramer, H. (2025). Race and income moderate the effect of parks on housing prices in a segregated city. *Landscape and Urban Planning*, 259, 105340. <https://doi.org/10.1016/j.landurbplan.2025.105340>
4. Derickson, K., Walker, R., Hamann, M., Anderson, P., Adegun, O. B., Castillo-Castillo, A., Guerry, A., Keeler, B., Llewellyn, L., Matheney, A., Mogosetsi-Gabriel, N., Mundoli, S., Pahwa Gajjar, S., Sitas, N., & Xie, L. (2024). The intersection of justice and urban greening: Future directions and opportunities for research and practice. *Urban Forestry and Urban Greening*, 95, Article 128279. <https://doi.org/10.1016/j.ufug.2024.128279>
5. Castillo-Castillo, A. (2023). Safe drinking water at the kitchen tap. *Center for Urban and Regional Affairs (CURA), Regional Sustainable Development Partnerships (RSDP), and Minnesota Well Owners Organization (MNWOO)-University of Minnesota*.
6. Swedberg, K., Cardoso, D., Castillo-Castillo, A., Boyle, K., Nolte, C., Phaneuf, D., & Polasky, S. (2023). Spatial heterogeneity in hedonic price effects for lake water quality. *Land Economics*. <https://doi.org/10.3368/le.100.1.102122-0086R>
7. Mamun, S., Castillo-Castillo, A., Swedberg, K., Zhang, J., Boyle, K. J., Cardoso, D., & Polasky, S. (2023). Valuing water quality in the united states using a national dataset on property values. *Proceedings of the National Academy of Sciences*, 120(15), e2210417120. <https://doi.org/10.1073/pnas.2210417120>
8. Alemán, X., Insfrán, S., & Castillo, A. (2015). *Youth pregnancy in latin america* (Technical Note IDB-TN-1441). Inter-American Development Bank. <https://publications.iadb.org/publications/english/document/Youth-Pregnancy-in-Latin-America.pdf>
9. Palacios, I., Gaitán, B., Valderrama, D., Castillo, A., Ardila, L., & Cantor, N. (2011). *Count to sustainable development goals 2015*. Facultad de Administración, Universidad del Rosario; Gobernación del Huila.
10. Villaveces, J., Rodríguez, P., Ávila, O., Bárcenas, E., Bermúdez, A., Bocanegra, D., Camargo, D., Castillo, A., Córdoba, H., Miranda, M., Montenegro, C., Moreno, D., Otálora, A., Ortégón, P., Piñeros, C., Prieto, D., & Rangel, P. (2011). *Economic cartoons: A look at colombian economic history* (No. 97; Borradores de Investigación). Universidad del Rosario, Facultad de Economía.

Publications in progress

1. Castillo-Castillo, A. (2025). *On government, guerrilla and water resources in a post-conflict scenario*.
2. Perez-Urdinales, A., Maríá; Castillo-Castillo. (2025). *Public expenditure review – colombia: Water and sanitation sector*.
3. Perez-Urdinales, M. et al. (2025). *Efficiency of public spending of the water and sanitation sector in colombia*.
4. Castillo-Castillo, A., & Vela, M. (2025). *Corruption and water quality in colombia: Changes over time and space*.
5. Avner, P. et al. (2025). *Assessment of thermal and welfare inequalities in cities (the world bank)*.

Grant Proposal Writing Experience

2016

Reducing aggression and violence in young people through an integrated program

Inter-American Development Bank together with the State of Rio de Janeiro – Secretariat of Social Assistance and Human Rights.
PIs: Suzanne Duryea. Role: Member of the research team. Granted.

2015

Emerging and Sustainable Cities Initiative

Inter-American Development Bank. PIs: Xiomara Aleman. Role: Member of the research team. Granted.

2015

Increase access, use and sustainable community health and nutritional services in rural areas of Guatemala.

Inter-American Development Bank. PIs: Xiomara Aleman. Role: Member of the research team. Granted.

- 2014 **Replica of the National System of Youth and Children's Orchestras and Choirs of Venezuela.**
Inter-American Development Bank. PIs: Xiomara Aleman. Role: Member of the research team. Granted.
- 2014 **Training Program for the Work of Young Victims of the Colombian Armed Conflict.**
Inter-American Development Bank together with the Ministry of Labor of Colombia. PIs: Suzanne Duryea. Role: Member of the research team. Granted.
- 2014 **Promotion of social change through the media in Mexico: Evaluation of Televisa's programming related to domestic violence.**
Inter-American Development Bank. PIs: Suzanne Duryea. Role: Member of the research team. Granted.
- 2014 **Intervention Model for the prevention and care of pregnancy at an early age and in adolescents in the Bolivarian Republic of Venezuela.**
Inter-American Development Bank. PIs: Xiomara Aleman. Role: Member of the research team. Granted.

Awards

- 2021 **Water, Equity, and Justice. Institute for Advanced Studies.**
University of Minnesota.
- 2019 **Representative of International Students.**
University of Minnesota.
- 2013 **Excellence master's Dissertation in Economics (PEG).**
Universidad de Los Andes
- 2010 **Scholarship for a master's degree.**
Colciencias, Colombia.
- 2007 **Scholarship for Graduate Studies.**
Universidad del Rosario.

Conference presentations

- 2023 **Incentives: How can we use them for improving participation in water quality testing? 2023** Private Well
Forum, organized by the Minnesota Department of Health
Minneapolis, US
- 2022 **Milfoil Economics: Improving estimates of invasive species impacts on property values** Upper Midwest
Invasive Species Conference
Minneapolis, US
- 2022 **Milfoil Economics: Improving estimates of invasive species impacts on property values** North American
Lake Management Society Conference
Minneapolis, US

Fellowships

- 2018-22 **Graduate Assistantship. Minnesota Population Center. IPUMS**
University of Minnesota, US
- 2013-16 **Research Fellow. Inter-American Development Bank**
Washington DC, US

Teaching experience

- 2019 **Professora assistant – Microeconomia**
Johns Hopkins University, EUA
- 2013 **Professora assistant – Història Econòmica General**
Universidad de Los Andes, Colòmbia
- 2008 **Professora assistant – Microeconomia**
Universidad del Rosario, Colòmbia

Workshops

- 2024 **Global Earth Engine for Water Resources Management** Spatial Thoughts
Remote-India
- 2021 **Spatial Econometrics Advance Institute - Summer School** Spatial Econometrics Advance Institute
Remote-Italy

2017	Social Programs-Impact Evaluation Nairobi, Kenya	J-Pal & MIT University
2016	Water Resources Management and Policy Genova-Remote	University of Geneva
2015	Impact Evaluation Methods Washington, DC-US	Banco Interamericano de Desarrollo
2015	Project Management for Development Programs Washington, DC-US	Banco Interamericano de Desarrollo
2014	Impact Evaluation Methods Washington, DC-US	Banco Interamericano de Desarrollo

Technical Skills

1. Statistical & Econometric Tools: R, Stata, Python, SPSS, EViews, MATLAB, LaTeX
2. GIS & Remote Sensing: ArcGIS Pro, ArcMap, QGIS (Quantum GIS), ENVI, Google Earth Engine
3. Data Visualization & Design: R Shiny, Power BI, Adobe Illustrator, Microsoft Office

Languages

1. Spanish: Native
2. English and Portuguese: Advanced
3. Catalan: Intermediate
4. Italian: Basic