

# SOURCES AND ACKNOWLEDGEMENTS

## THE CIVIC DATA DESIGN LAB (CDDL)& NORMAN B. LEVENTHAL CENTER FOR ADVANCED URBANISM (LCAU) AT MIT

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## GTFS DATASETS AND TRANSIT MAPS

**Accra:**  
*Collected by the Ghana Urban Mobility and Accessibility Project (GUMAP) team led by Angela Teyvi between 2020 and 2022. The GTFS was built from open-source data and made available to planners.*

**Addis Ababa:**  
*Collected by World Resources Institute (WRI) Africa, AddisMap, and Addis Ababa University students between 2018 and 2024. The GTFS was entered into OpenStreetMap (OSM).*

**Amman:**  
*Collected by Ma'an Nasel volunteer mappers between 2016 and 2017, with map design by Syntax. The data was used to create the Khatoutna map.*

**Beirut:**  
*Collected by the Busmap Project team (Jad Baaklini and Chadi Faraj) between 2015 and 2018. The project produced a paper map and a digital platform.*

**Bogotá:**  
*Collected by students at Universidad de los Andes in 2016, in collaboration with New York University's Marron Institute. The data was used to create a GTFS dataset supporting Bogotá's SITP planning.*

**Cape Town:**  
*Collected by GoMetro between 2015 and 2022. The GTFS was developed for Cape Town's informal taxi system and public health interventions.*

**Cairo:**  
*Collected by Transport for Cairo (TfC) between 2015 and 2018. The GTFS dataset was created for public access and city planning.*

**Cochabamba:**  
*Collected by researchers from the Center for Research in Architecture and Urbanism (CAU) at UPB and San Simón University from 2017 to 2024. The data powered the Trufi app and supported GTFS-Flex development.*

**Dhaka:**  
*Collected by the Dhaka Transport Coordination Authority (DTCA) between 2016 and 2018. The GTFS data supported public transport planning.*

**Khartoum:**  
*Collected by KhartouMap volunteers between 2022 and early 2023. Funded by the World Resources Institute (WRI). The GTFS dataset stands as a pre-war record of Khartoum's transit system.*

**Lagos:**  
*Collected by Lagos Urban Development Initiative (LUDI) in collaboration with WhereIsMyTransport, Brown University, UC Berkeley, and LAMATA in 2022. Funded by the World Bank and project partners. The GTFS was created but not publicly released.*

**Managua:**  
*Collected by MapaNica volunteers between 2013 and 2016. Funded by the OpenStreetMap and free software community. The GTFS was entered into OpenStreetMap (OSM).*

**Manila:**  
*Collected by researchers and student volunteers as part of the Mapping Manila's Streets for Public Transport Project between 2015 and 2016. The GTFS data was made publicly available.*

**Mexico City:**  
*Collected by WhereIsMyTransport and local partners between 2018 and 2019. The GTFS was licensed to Google Maps.*

**Nairobi:**  
*Collected by the Digital Matatus project team (Civic Data Design Lab at MIT, Columbia University, University of Nairobi, and Groupshot) 2017. The GTFS data was published openly and became Nairobi's official transit map.*

**Santiago de los Caballeros:**  
*Collected by students from Pontificia Universidad Católica Madre y Maestra (PUCMM), UASD, INTEC, and ÚTESA in 2022–2023 under the Civic Data Design Lab at MIT. The GTFS was integrated into Google Maps.*

## MAP ANIMATION SCREEN FOOTAGE

Satellite images extracted from Mapbox, 2025.

Video Clips in map animations credits:  
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GTFS Data – see each city.

## ATLAS IMAGES

All images throughout the book are courtesy of each project team unless otherwise noted.

Nairobi thumbnails in the introduction:  
*iStock.com/ JOHN OLOO/ Forrest Walker/ EunikaSopotnicka*

## VIDEO FOOTAGE AND EDITING

Siemond Chan, *Video Editor*  
City video footage courtesy of each city's project team unless otherwise noted. See teams mentioned in City.  
Khartoum - AFP / Bas and The Fiends, Kian Broder Wang, Mohamed Hamad  
Mexico City - Bolívar Lopez Nelio Vazquez

## ACCRA

Angela Teyvi *has worked extensively as a geospatial transport specialist, with a focus on public transportation data and open-source mapping in Ghana. Member of Ghana Urban Mobility and Accessibility Project (GUMAP).*  
Accra Mobility Project  
Simon Saddier  
The Ghana Urban Mobility and Accessibility Project (GUMAP)

## ADDIS ABABA

Agraw Ali Beshir *is an urban planner at World Resources Institute (WRI) Africa.*  
Alazar Tekle *is a digital mapping specialist and founder of AddisMap.*  
Esthelyne Dusabe *is a transport specialist at WRI Africa.*  
Iman Abubaker *is an urban development expert at WRI Africa.*  
Rabra Hierpa *is a software developer and GIS technician who helped lead data collection and mapping for Addis Ababa's first GTFS-compliant transit dataset.*  
AddisMap  
Addis Ababa University  
Addis Ababa Transport Authority  
Transport for Cairo  
World Resources Institute Africa (WRI)

## AMMAN

Ali Attari *is an environmental scientist and campaign organizer with Ma'an Nasel.*  
Hazem Zureiqat *is a transport planner and co-founder of Ma'an Nasel.*  
Hana Bilbeisi  
Sahar Aloul *is gender advocate and community organizer with Ma'an Nasel and co-founder of Sadaga.*  
Ma'an Nasel *is a dedicated team of student volunteers and community members who led data collection and outreach.*  
Syntax *is a local design firm led by Ahmad Humeid, who collaborated with the campaign to produce the map's visual design.*

## BEIRUT

Jad Baaklini *is a communications worker and community organizer based in Seattle.*  
Chadi Faraj *is a telecom engineer turned social entrepreneur, bus rider, advocating for mobility justice and innovating solutions for popular mobility.*  
Sergej Schellen *is a graphic designer who created the first paper map with the team.*  
SwitchMed Program of the United Nations Environment Program

## BOGOTÁ

**PROJECT LEAD**  
Erik Vergel-Tovar, *Urban planning professor at Universidad de los Andes; led the Mapatón projects in Bogota and Cartagena and mentored the student team when he was a Faculty member of the Urban Planning and Management program at Universidad del Rosario.*

**MAIN STUDENT RESEARCH TEAM**  
Nicolás Gutiérrez, *Alumni Urban Planning and Management program at Universidad del Rosario; participated in mapping and fieldwork.*  
Maria Camila Roa, *Alumni Urban Planning and Management program at Universidad del Rosario; contributed to field research and interviews.*  
Maryfely Rincon, *Alumni Urban Planning and Management program at Universidad del Rosario; involved in riding buses and documenting routes.*  
Paulo Martínez, *Alumni Economics program at Universidad del Rosario Urban planning and management student; helped shape the narrative of the project and engaged with policymakers.*  
Martin Ricardo Silva, *Alumni Urban Planning and Management program at Universidad del Rosario; participated in mapping and fieldwork.*

Maria Fernanda Cortes Duran, *Alumni Urban Planning and Management program at Universidad del Rosario; participated in mapping and fieldwork.*  
Other Urban Planning and Management Alumni from the Universidad del Rosario that participated in mapping and fieldwork as students:  
Sebastian Orjuela, Carlos Andres Patino, Laura Sofia Morales, Anderson Julian Acevedo, Camilo Hernando Arenas, Laura Daniela Ujueta, Juan David Galeano and Daniel Santiago Mayorga.

**COLLABORATORS**  
Eric Goldwyn, *Researcher at NYU's Marron Institute; co-designed the project and drew from related research like Nairobi's Digital Matatus; secured funding for the Mapton Bogota Project*  
Chris Zegras, *Professor at MIT; helped transform the collected data into policy-relevant formats.*  
Jonathan Leape, *MIT researcher; assisted with creating GTFS datasets and advising on data use. Creation of accessibility and collinearity analyses that revealed where the informal system complements vs. competes with the formal; Workshops with Transmilenio to understand results.*

**OTHER COLLABORATORS IN THE MAPATON BOGOTA PROJECT**  
Vipassana Vijayarangan, Alex Blei,

Nicolas Galarza, Kelly Miller, Brandon Fuller, Clayton Gillette and Dr. Solly Angel from New York University's Marron Institute of Urban Management  
Zolangwi Garzon, Diego Bermudez and Alix Herrera from Universidad del Rosario  
Transmilenio Agency  
Mobility Department of Bogota  
City Planning Department of Bogota

**OTHER COLLABORATORS IN THE MAPATON CARTAGENA PROJECT**  
Monica Villegas Carrasquilla, *Funding acquisition, Project administration, Writing - original draft*  
Maria Claudia Penas Arana, *Project administration*  
Daniel Toro Gonzalez, *Resources, Supervision, Writing - review & editing*  
Leonardo Canon Rubiano, *Funding acquisition, Resources*  
Eliana Salas, *Project administration, Resources*  
Paulo Martinez, *Data curation, Visualization, Formal analysis, Writing - review & editing*  
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*The Mapatón Bogotá project resulted in a publication in Environment and Planning B: Urban Analytics and City Science (available at: <https://journals.sagepub.com/doi/abs/10.1177/23998083221117831>), along with an open dataset hosted by the Universidad de los Andes (available at: <https://datahub.uniandes.edu.co/dataset.xhtml?persistentId=doi:10.57924/HAS8UZ>).*

*The Mapatón Cartagena project produced a publication in the Journal of Transport Geography (available at: <https://www.sciencedirect.com/science/article/abs/pii/S0966692322002071>), accompanied by an open dataset also hosted by the Universidad de los Andes (available at: <https://datahub.uniandes.edu.co/dataset.xhtml?persistentId=doi:10.57924/TOHB9A>).*

CAIRO

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Yasmine Sabek, Project Manager at TfC  
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CAPE TOWN

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Nigel Zhuwaki, Civil Engineer and Project Lead at GoMetro  
Jacques Pretorius  
Johan Muller  
Rudi Kriel

COCHABAMBA

Juan Cabrera is a professor at San Simón University and Universidad Privada Boliviana (UPB) in Cochabamba, Bolivia. He is deeply rooted in the city and has studied informal transport for many years.  
Lucas Méndez is a civil engineer and a member of the Center for Research in Architecture and Urbanism (CAU). He is from Cochabamba and has lived in both central and rural parts of the city.  
Stefanie Gamarra is an architect and researcher affiliated with CAU at UPB. She has lived in Cochabamba for most of her life and specializes in urban development and transportation systems.  
Leandro Gantier is an urban planner and part of the CAU group. He has lived in Cochabamba, and his professional and personal experiences have shaped his interest in sustainable transport

DHAKA

Albert Ching, Research Lead, Master’s Student in Urban Planning, MIT, Singapore-MIT Alliance for Research and Technology (SMART)  
Muntasir Mamoon, Local Project Lead, Founder, Kewkradong Bangladesh, Electrical and Electronic Engineer, Dhaka  
Saad Bin Hossain, Field Researcher & Volunteer Coordinator, University Student, Electronic and Telecommunication Engineering  
Chris Zegras, Faculty Advisor, Professor of Urban Planning and Mobility, MIT, Lead Researcher, Future Urban Mobility Project (SMART)  
Stephen Kennedy, Map Designer, Master’s Student in Urban Planning, MIT

KHARTOUM

Abubakr Ziedan, transit planner and KhartouMap project lead; formerly worked at Sudan’s Ministry of Infrastructure.  
Ilham Ali, MIT Technology and Policy student and KhartouMap co-initiator, focused on mobility, data, and equity.  
Awad Abdelhalim, civil engineer specializing in transportation systems; helped design and implement KhartouMap’s digital transit mapping.  
Razan Osmana, Validation Lead Khartou-Map  
Jehad El-Mamoon, Head of Onground Operations  
Shukran Badr, Communications Lead  
Ahmed Yassir, Ahmed Abbas, and Abdulrahman Anas, Mapping Leads  
KhartouMap was funded by Digital Transport for African and the World Resources Institute  
Mohamed Hamad, video footage credits  
Bas and The Fiends, video footage credits  
Kian Broder Wang, video footage credits

LAGOS

Olamide Udoma-Ejorh is executive director of the Lagos Urban Development Initiative (LUDI)  
Adeposi Adeogun, currently a PhD student at MIT  
Miriam Adenuga, Project Associate at LUDI during the Danfo Mapping Project  
Oghenetega Esedere, Data Processor for the Danfo Mapping Project  
Lagos Urban Development Initiative (LUDI) carried out the mapping in collaboration with WhereIsMyTransport, the World Bank, Lagos Metropolitan Area Transport Authority (LAMATA), and academic partners from Brown University and the University of California at Berkeley.

MANAGUA

Rodrigo Rodríguez and Felix Delattre, co-founders of the MapaNica project, and members of Nicaragua’s OpenStreetMap and free software communities.  
MapaNica was a citizen-led initiative to map the public bus system in Managua, Nicaragua, between 2013 and 2016. The project involved over 200 volunteers, including students, technologists, bus drivers, designers, and community members who participated in data collection, training sessions, and mapatones (mapping parties). The printed transit map was created in collaboration with a local design studio in Managua and distributed to thousands of residents across the city. The project also contributed open-source tools and data to the global mapping community.

MANILA

Holly Krambeck is a transportation specialist with the World Bank, whose work supports infrastructure loans and provides technical assistance in the East Pacific Region.  
Patricia Mariano was a project development officer at the Philippines DOTr at the time of the project, she is currently a Senior Associate at Vriends and Partners.  
Kyle Aguirre  
Chin Leobrerá

NAIROBI

Sarah Williams, Civic Data Design Lab, MIT  
Jacqueline Klopp, Center for Sustainable Urban Development, Columbia Climate School, Columbia University  
Peter Waiganjo, Department of Computing and Informatics and C4D Lab, University of Nairobi  
Daniel Orwa, Department of Computing and Informatics and C4D Lab, University of Nairobi  
Adam White, Groupshot

MEXICO CITY

Yohnny Raich  
Former Head of Growth, WhereIsMyTransport Raich oversaw international expansion for WhereIsMyTransport and led the company’s work on mapping informal transit systems in Latin America, including the Mexico City project. He provided insight into the company’s methodology, its local partnerships, and the development of the Rumbo app.  
Humberto Fuentes Pananá García  
Founder, Invernaideas Consultoría  
Fuentes is an urban planner based in Mexico City and the creator of the original “Mapatón” citizen mapping initiative. He later served as the local operations lead for WhereIsMyTransport during its Mexico City mapping project, managing hiring, logistics, and field team coordination.

FUNDERS

Inter-American Development Bank (IDB)  
Organization for Economic Cooperation and Development (OECD)  
Google later licensed the dataset produced by WhereIsMyTransport, integrating Mexico City’s informal transit routes into Google Maps, making the data publicly visible and accessible to riders.

Bolivar Lopez Nelio Vazquez

SANTIAGO DE LOS CABALLEROS

LEAD PARTNERS  
Inter-American Development Bank (IDB):  
Patricio Zambrano-Barragán, Urban Development Specialist  
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Martin Quiroga, Urban Consultant  
Julia Hollnagel, Transportation Consultant

Civic Data Design Lab at MIT:  
Sarah Williams, Director  
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LOCAL UNIVERSITY PARTNERS  
Pontificia Universidad Católica Madre y Maestra (PUCMM)  
Universidad Autónoma de Santo Domingo (UASD)  
Instituto Tecnológico de Santo Domingo (INTEC)  
Universidad Tecnológica de Santiago (UTESA)  
STUDENT MAPPERS  
César Ballast, mapathon, data processing, audit and focus groups  
Miguel Moya, mapathon, data processing, audit and focus groups  
Dolphy De León, mapathon, data processing, audit and focus groups  
Luis Shephard, mapathon, data processing, audit and focus groups  
Jennifer Sánchez, mapathon, and audit  
Cindia Jimenez, mapathon, and audit  
Junior Martes, mapathon, and audit  
And over 28 local university students who participated in the four-day Mapathon

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David Escalante, Coordination  
Tania Perez, Mobility Consultant  
Anamaria Martinez, Consultant  
Céline Jacquin, Consultant  
Marco Mendoza, Consultant

SPECIAL COLLABORATORS  
Local organization representing blind residents of Santiago: Asociación de Ciegos del Cibao (ACICIRD)  
Women’s advocacy group in Santiago: Coordinadora de Mujeres del Cibao (CMC) (Coordinator Sentola Batista)

City of Santiago de los Caballeros (Mayor’s Office and local planning staff)  
Community leaders from Cienfuegos neighborhood (Ermes Batista - President of the Cienfuegos Residents’ Federation)  
National Institute of Transit and Land Transportation: Instituto Nacional de Tránsito y Transporte Terrestre (INTRANT)

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Google Maps, GTFS data integration support

VISUAL & MAP DESIGN  
Natalia Vidigal Coachman, lead designer, physical map production  
Civic Data Design Lab team

MEDIA & DOCUMENTATION  
Short documentary film produced in partnership with IDB, MIT, and local partners  
Public launch event and recognition ceremony hosted by the Mayor’s Office of Santiago