

MANIZALES, COLOMBIA



CITY FEATURES¹



Manizales, the capital of Caldas in central-western Colombia, is located at 2,153 meters above sea level in the Andean coffee region, a UNESCO World Heritage site. The city contributes approximately 68% of the region's GDP, with industry, commerce, and coffee cultivation as its main economic activities. Until the mid-1990s, urban growth was somewhat aligned with population growth. However, from the mid-1990s onward, the city experienced rapid expansion toward the periphery, nearly doubling its urban footprint in just 15 years. This shift, driven by the relocation of residential areas, has increased car dependency for commuting and other trips, posing challenges for sustainable urban mobility and infrastructure planning.



Population
434,403
(2018)



Land area
571.8 km²



Average temperature
21°C

TRANSPORT FEATURES

Status quo and urban mobility trends²

Comprising more than a third of daily trips, public transport, mostly buses, represents the main mode of transportation in Manizales. In recent years, however, this mode has been losing ground to private motorized modes. Compared to 2010 figures, the modal share of public transport decreased by about 20% in 2018. In contrast, the share of trips made by cars and motorcycles doubled and tripled, respectively, in the same time period. This trend seems to correlate with the motorization rate, which between 2011 and 2021, increased from 254 to 487 cars per 1000 inhabitants. Currently, there is an occupancy of 1.2 passengers per vehicle and about one vehicle for every 2 city inhabitants.

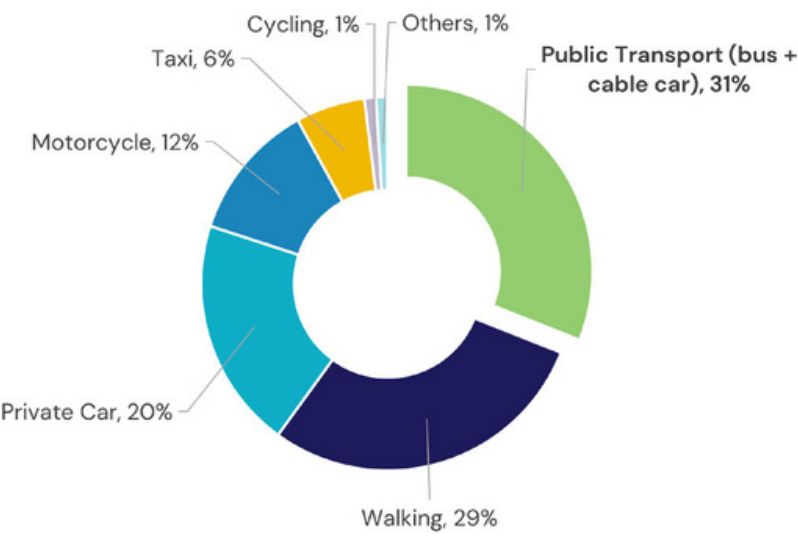


¹ Information provided by the city and Cifuentes, P and Londono, J.; Analysis of urban growth: an approach to the study of growth factors in the city of Manizales as a contribution to planning, 2010

² Manizales life quality report, 2011 and 2021

TRANSPORT FEATURES

Modal Split³

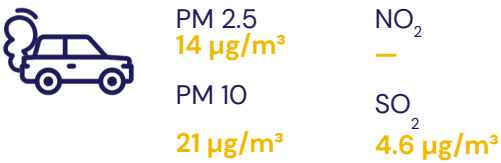


The modal split in Manizales reflects a diverse transportation landscape, with public transport (buses and cable cars) being the most used mode at 31% of trips, followed closely by walking at 29%. Private vehicles account for 20% of trips, while motorcycles represent 12%, highlighting a significant reliance on motorized transport. Taxis make up 6% of trips, while bicycles and other modes have minimal participation at 1% each. This distribution underscores the city’s dependence on public transport and walking, likely influenced by its steep terrain and compact urban layout. However, the notable share of private vehicles and motorcycles points to challenges in reducing congestion and emissions, as well as opportunities to promote sustainable alternatives like cycling and improved pedestrian infrastructure.

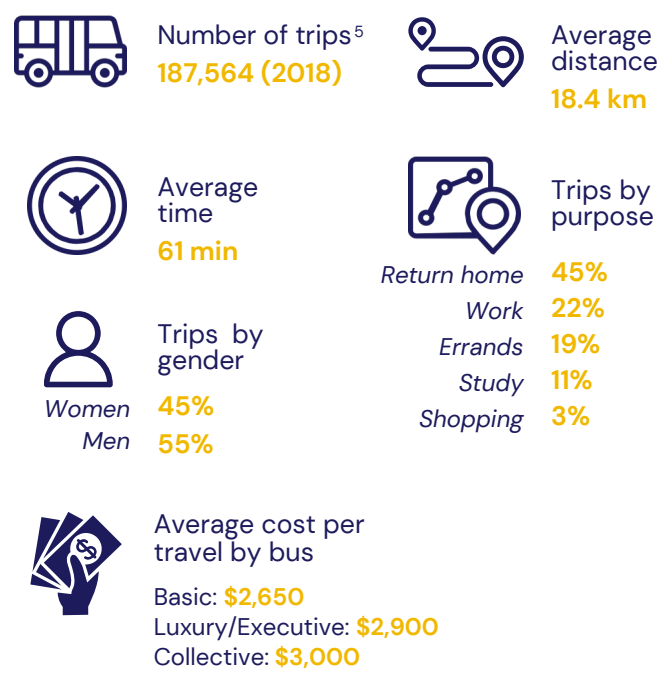
GHG Emission Levels⁴



Air Pollutant Levels



Bus Trips Features



Manizales has a well-distributed bus network with 83 routes operated by six transport companies, ensuring connectivity to peripheral areas throughout the day. However, service availability significantly decreases at night. Peak-hour bus trips take around 88 minutes, with an average speed of 18 km/h. While 75% of users expressed satisfaction with the service in 2021, buses also had the highest dissatisfaction rate (9%) compared to taxis, private cars, motorcycles, and bicycles (1-2%). Traffic congestion and accessibility barriers remain key challenges. Public transport in Manizales handles over 180,000 daily trips, including buses, cable cars, jeeps, and intercity transport, with 10% of trips occurring during the morning peak period. Travel times increased compared to 2020.

3 Retrieved from Ecologistics City Profiles, 2018
4 GHG 2018, developed under UrbanLEDS II project, ICLEI – Local Governments for Sustainability
5 Note: the number includes all trips done by bus, midibus, minibus taxis and aerial cable 6 TPC – Privately-run public transport system

BUS SYSTEMS OUTLOOK

Fleet and Infrastructure



Number of buses

983



Number of bus routes

83

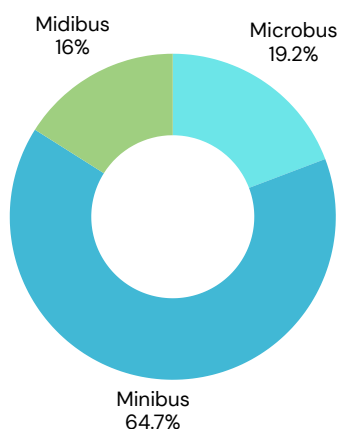


1270 bus stops

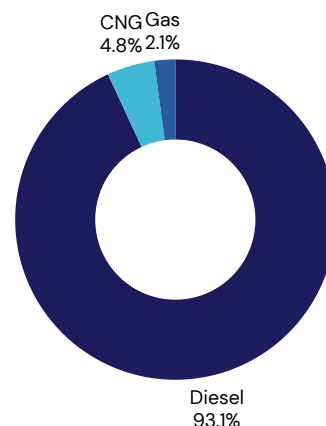
6 bus depots

3 dispatch terminals

Buses by fleet type



Buses by fuel type



Manizales has a fleet of 983 buses, primarily categorized under the Colombian transport classification as type C (545 buses, 20–39 passengers), type B (162 buses, 10–19 passengers), and type D (135 buses, over 40 passengers). Private transport operators mainly use diesel-powered buses, which make up 92.9% of the fleet. A small portion (4.8%) runs on compressed natural gas (CNG), with one company operating around 20 CNG microbuses. Gasoline-powered buses account for 2.1%, while electric, hydrogen, and hybrid buses are not present. Despite this reliance on fossil fuels, improving fleet efficiency and exploring cleaner alternatives remain key challenges for urban transport in Manizales.

Quality of Service

The public bus service in Manizales offers broad coverage, especially in peripheral areas, thanks to a 2015 route restructuring based on transport demand. Despite this, efficiency remains a challenge as buses share the road network with private vehicles, leading to congestion and long travel times. The system lacks dedicated bus lanes, making reliability an issue. There is no fare integration between routes or with the city's cable car, limiting seamless travel. Economic accessibility is a concern, as fares are high relative to travel distances. Comfort varies by vehicle type and fare category, with standard buses often overcrowded. Accessibility for people with disabilities is limited, with some buses equipped with lifts but inadequate pedestrian infrastructure at stops. While reports of gender-based violence are low, ensuring safety for all passengers remains a priority. A multimodal integration plan is expected by 2027.



© Manizales Mobility Secretary

Existing Business Model⁶

A

Model A: Vertically integrated, private operator in BRT/integrated system

B

Model B: Divided responsibilities in BRT/integrated system

C

Model C: Large, more formal, private operator in traditional service

D

Model D: Small, informal, private operator in traditional service

E

Model E: Government-run system

C

6 transportation companies are duly authorized by the Municipalities of Manizales and Villamaría. The service providers own, operate, maintain, and scrap the buses whereas the infrastructure is managed by the municipal administration. Fares are charged in cash by the driver of each vehicle. The municipal government establishes and assigns routes, fares, defines schedules and fleet specifications, and monitors operation. Currently, there is no fare subsidy in place.



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OPPORTUNITIES AND CHALLENGES FOR ADOPTION OF E-BUS FLEETS



Opportunities

- Pioneering articulation with cable lines and significant reduction of pollutant emissions.
- Improved operating efficiency on slopes thanks to regenerative braking technology.
- International support from ICLEI with technical expertise.
- Proven economic and environmental benefits: lower operating costs and improved public health.
- High regional visibility as a reference project in Latin America, with optimizable infrastructure for recharging.



Challenges

- Fragmented structure and lack of integration in the current transport system, including tariffs and connections with overhead wires.
- Resistance and distrust of the population and transporters
- Lack of public policies and specific regulatory framework for transport electrification.
- High initial investment costs (CAPEX)
- Limited institutional capacities to operate electricity systems.

⁶ Based on Accelerating a market transition in Latin America: New business models for electric bus deployment, P4G, Zebra and Dalberg, 2020

OVERALL FRAMEWORK

Policy

The promotion of sustainable mobility in Manizales involves entities such as Central Hidroeléctrica de Caldas (CHEC), Confa, Efigas, and the Secretaría de Movilidad. However, electrification of bus fleets faces challenges as the transport system is privately owned. While the city has a Plan Maestro de Movilidad (2017) and a Sistema Estratégico de Transporte Público (2020), there is no national government support or local commitments beyond national regulations. No official targets exist for electric bus adoption, and alternative efforts focus on private initiatives using compressed natural gas (CNG). A multimodal integration plan is expected by 2027 to enhance sustainable transport options.

Financing

Manizales has not secured financing for transport electrification or sustainable mobility initiatives, as national government support was requested but not granted. Since the bus fleet is privately owned, investment sources remain unclear. The city follows national climate policies but has set no additional local goals for emissions reduction or sustainable mobility. While greenhouse gas (GHG) assessments have been conducted, they have not led to specific targets. There is no defined strategy to ensure an equitable transition, support affected workers, or engage vulnerable communities in decision-making. Sustainable mobility projects lack structured funding and implementation plans, making future advancements uncertain.

Impact

Manizales has no specific local goals for sustainable mobility beyond national regulations. GHG assessments exist, but no targets or impact estimates have been set.



TUMI E-bus Mission City Network – Profile

MANIZALES, COLOMBIA



Acknowledgements

Author:

Leticia Borges (ICLEI SAMS)
Juan E. Martinez (Consultant, ICLEI)

Contributors:

Leonardo Leal García (Secretaría de Movilidad)

Editors:

Ana Maria Cruz Ochoa (ICLEI World Secretariat)
Tu My Tran (ICLEI World Secretariat)

Design:

Andreina Garcia Grisanti, Olga Tokareva, Laura López
(ICLEI World Secretariat)

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About the TUMI E-Bus Mission

Funded by the German Ministry for Economic Cooperation and Development (BMZ), a core group of organizations supports cities in their transition toward electric bus deployment.

For more information please contact:
tumi-network@iclei.org or visit
<https://sustainablemobility.iclei.org/tumi/>

Contact

ICLEI

Local Governments for Sustainability e.V.
Kaiser-Friedrich-Str. 7
53113 Bonn | Germany
Tel. +49-228 / 97 62 99-00
Fax +49-228 / 97 62 99-01
Website: www.iclei.org
<https://sustainablemobility.iclei.org/>

