TUMI E-bus Mission City Network - Profile

PORTO ALEGRE, BRAZIL

CITY FEATURES

Porto Alegre is a Brazilian municipality and the capital of Brazil's southernmost state, Rio Grande do Sul. It is home to the second largest urban concentration in the southern region and the fifth most populous city in Brazil, with almost 1.5 million inhabitants. The city has a diversified geography, with hills, lowlands, and a large lake, the Guaíba.

At the end of the 1950s, the first Master Plan was implemented, which accentuated the verticalization of the city, generating the largest building growth in its history, which significantly altered the urban morphology.

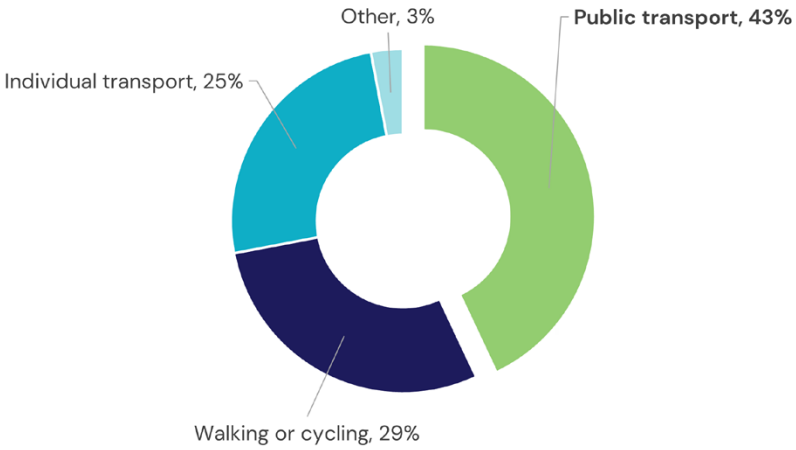
Population
1,492,530
(2021)

Land area
496.8 km²

Average temperature
20°C

TRANSPORT FEATURES

Modal Split[1]



GHG Emission Levels[2]

Total GHG emissions
2.4 million tCO_{2eq}

From road transport
1.606 million tCO_{2eq}

Air Pollutant Levels

PM 2.5	NO_2
—	—
PM 10	SO_2
—	—

Over 3.4 million daily trips took place in Porto Alegre at an average distance of 17.37 km. Most trips were made using sustainable transport modes: walking accounted for over a quarter of trips (29%), whereas modes of mass public transport (metro, tram, Bus Rapid Transit (BRT) and traditional buses) accounted for 43% of the total. The city has been seeking ways to establish more affordable transport fare for users through changes in the methodology of remuneration, subsidy and extra fare revenue. It has also invested in the qualification of transport infrastructure, such as bus stops and terminals.

1 Porto Alegre origin- destination survey, 2003
2 Porto Alegre Greenhouse Gas Inventory Report, 2021

BUS SYSTEMS OUTLOOK

Bus Trips Features[3]

Number of bus trips (non-BRT)
6,163,290 (2019)
3,446,041 (2020)

Average distance
17.38 km

Average time
1 h 24 min

Trips by purpose[4]

Work	75%
Study	20%
Recreation	11%
Health	8%
Shopping	5%
Others	1%

Trips by gender

Men	30%
Women	70%

Acording to the 2022 QualiÔnibus survey, more than 40% of users are up to 34 years old, and 13.5% are 65 years old or older. This indicates that most users are young, although there is elderly use as well. IIn addition, 59.2% of the users are women, and about 55.7% of the total users have family income of up to 2 minumum wages. This shows that transportation is widely used by part of low and middle economic classes, and more socially vulnerable populations. Another relevant fact is that almost 50% of the users own a car, showing the relevance of bus transportation in the city, which remains the choice of the population instead of the possibility of using car or motorcycle as mode of transport.

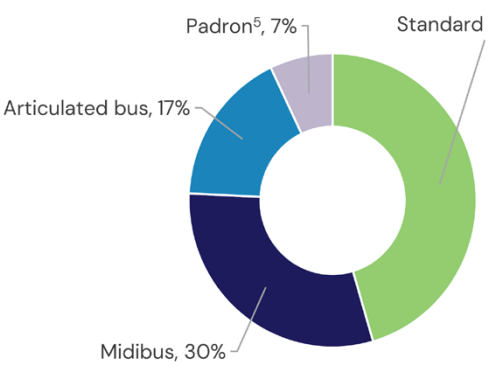
Fleet and Infrastructure

Number of buses
1,479

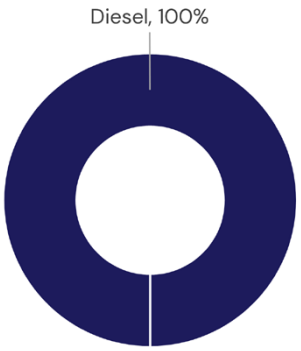
Number of routes
274

5,519 Bus stops
8 Bus depots

Buses by fleet type



Buses by fuel type



Quality of Service

The 2019 QualiÔnibus survey evaluated the satisfaction or dissatisfaction of users in 17 categories. The overall satisfaction score was 5.9/10, with the categories with the highest satisfaction being "customer service" and "traffic accidents safety"; and with the highest dissatisfaction being "public safety", "bus stops confort" and "exposure to noise and pollution". The latter accounted for, therefore, the main challenges of the municipal administration.

We also highlight the category "speed" with the subcategory "waiting time", in which 48% of respondents said they were dissatisfied or very dissatisfied. Of these, almost 53% believe that what makes the trip longer than expected are traffic jams, while about 21% believe it is the distance of the displacement.

3 QualiÔnibus Survey 2019
4 Respondents could choose up to two alternatives
5 Padrón - non-articulated bus with capacity for 90-100 persons; 12 meters length

Existing Business Model[6]

A	B	C	D	E
Model A: *Vertically integrated, private operator in BRT/integrated system*	***Model B:*** *Divided responsibilities in BRT/ integrated system*	***Model C:*** *Large, more formal, private operator in traditional service*	***Model D:*** *Small, informal, private operator in traditional service*	***Model E:*** *Government-run system*

C The public transport system in Porto Alegre has four operational consortia (11 private companies) and one public company. The city has a fleet of 1370 buses with GPS, real time tracking application and facial recognition system in 100% of the vehicles. Currently, 271 bus lines are active on working days (data from August 2022). The city has an electronic ticketing system, which allows integration and discounts for users who use more than one bus on the same route.

D The Selective Transport by Lotação is a modal that complements the Public Transport System of Porto Alegre, through the execution of the service in lines by micro-bus vehicles. Nowadays, 207 micro-buses are operated (data from November 2022). The tariff of the selective service by Lotação, fixed by decree, has a value equivalent to, at least 1.4x the value of the tariff of the traditional collective transport service by bus. (Law 13.168/2022).

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

OPPORTUNITIES AND CHALLENGES FOR ADOPTION OF E-BUS FLEETS

Opportunities

- Possibilities of developing new business models and incentive policies for public transportation, especially in the current scenario of deployment of an Integrated Structural Network.
- Reduction of operational costs since the operation of electric vehicles are up to 70% lower than those powered by fossil fuels.
- Non dependence of fossil fuel flutuation prices.
- The increased comfort for passengers and the driver with the reduction of noise pollution - a theme that has one of the highest dissatisfaction scores given by the population (QualiÔnibus Survey, 2022).

Challenges

- Investment required for the purchase of the electric vehicles and to the infrastructure for the operation, since the energy transition of the fleet represents a profound change in the logic of the fossil fuel systems, requiring a complete restructure.
- Finding bus operators willing to take the necessary risks for operating with new technology.
- Setting an economical model that alleviates pressure on tariffs. Current prices are already above the national average.

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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/

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