Córdoba, Argentina

Sustainable Urban Mobility Plan — Completed

Basic information

Urban area	→	576 km²
Population	→	1,977,603
Growth rate	→	+0.4%
Region capital city		
GDP per capita	→	USD 12,000
Baseline motorisation rate	→	264 vehicles / 1,000 inhab.
Modal share		
Walking	→	29%
Cycling	→	3%
Urban public transport	→	13%
Inter-urban PT	→	2%
Taxi	→	2%
Car drivers	→	42%
Motorcycle	→	6 %
National GHG emissions per capita	→	0.23 (kg CO2eq)
Exposure to climate change	→	HIGH

Context

Córdoba is Argentina's second-largest metropolitan economy and a major industrial, educational and technological hub, with a diversified base in manufacturing, automotive production, services and higher education. It plays a central role in the economic integration of central Argentina, structuring regional labour markets and daily mobility flows across its metropolitan area. As a strategic node in national transport corridors, Córdoba connects the northern and western provinces with Buenos Aires and other major cities, reinforcing its role as a logistical, commercial, and academic crossroads within the country.

Support from the Partnership

Technical Assistance: Support to develop a Sustainable Urban Mobility Plan (SUMP) and a pilot project
Funded by: European Union (EU)
Funding amount: EUR 600,000
Implemented by: Agence Française de Développement (AFD) through the Euroclima+ Program
Local counterpart: Municipalidad de Córdoba
Consultant(s) involved: Transamo, DVDH, Suez
Final SUMP report: SUMP Córdoba | MobiliseYourCity

SUMP Summary

SUMP Status	Adopted
SUMP Development Timeline	Córdoba joined MobiliseYourCity in Q4 2019 MobiliseDays: 2021 Q2 Project completion: 2023 Q4
SUMP Vision	"A metropolitan, multiscale and evidence-based public mobility policy that uses the Mobility Observatory and the Metropolitan Mobility Model to guide planning and control, and strengthens the Intermunicipal Metropolitan Management Entity so Córdoba can offer a coherent, multimodal and sustainable mobility system at the metropolitan scale." (SUMP report, p.20)
Key expected results (GHG, modal share and access)	By 2030, at least 18% of trips should be made by public transport, 3.5% by bicycle, and around 29% on foot. The motorisation rate should be stabilised at about 265 vehicles per 1,000 inhabitants 501 tonnes of CO_2 (vs 450 t in 2022 and 528 t in a BAU scenario). Additional indicators include reducing public transport travel time, expanding network coverage (percentage of the population within 100– 500 m of a transit stop), lowering mobility costs for low-income households, and achieving gender balance in modal choice.
Total SUMP Investment Requirement	Mass-transit lines costing EUR 295–590 million Rail infrastructure renovations (EUR 200 million) Active-mode networks (EUR 50–100 million)

SUMP preparation process and stakeholder involvement

Geographic scope

The plan covers the Área Metropolitana de Córdoba (AMC), which includes the city of Córdoba and its surrounding municipalities. The functional area is defined by daily travel flows rather than administrative boundaries.

The SUMP development process also included an extensive consultation campaign with all stakeholders in the AMC, not only through a metropolitan forum but also through dozens of meetings. A total of 63 regular participants (38 men and 25 women) were recorded at these meetings, including ADEC, UNC, and the Province, of whom 38 were of apparent male gender and 25 of apparent female gender. This figure does not include approximately 10–15 individuals who attended a single meeting on an ad hoc basis and did not follow the process in its entirety.

The invited institutions were Secretariat for Metropolitan Development, Metropolitan Coordination; Secretariat of Economy and Finance, Budget Directorate; Secretariat for Metropolitan Development, Subsecretariat of Traffic, Secretariat of Transport, Subsecretariat of Transport and Mobility Observatory; Secretariat for Urban Development, Subsecretariat of Urban Planning; Secretariat of Environmental Management and Sustainability, Directorate of Environmental Impact Assessment and Climate Change; Secretariat of Social Policies; Inclusion

and Coexistence, Directorate of Community Management and Micro-planning and Directorate General of Disability and Social Intervention.

This process included data collection meetings, methodological and diagnostic presentation meetings, meetings to collect visions and initiatives, thematic presentations of the diagnosis, and thematic meetings with ADEC, UNC, and the province.

Between March 2021 and December 2023, an exhaustive data collection campaign was carried out: 2,500 household origin-destination surveys, vehicle and pedestrian counts at 40 points, intercept surveys at 20 points, time measurements on 250 km of roads, parking inventories in seven sectors and freight surveys at 13 companies. Four air quality sensors were installed, and a metropolitan mobility model was developed using PTV Visum.

Diagnosis of urban mobility in Córdoba

Metropolitan expansion and the structural shift toward private vehicle use

Metropolitan expansion is the primary structural factor reshaping mobility in Córdoba. Between 1990 and 2020, the urban footprint expanded significantly toward the north, northwest and south, particularly into adjacent municipalities. This spatial growth reflects a strong process of metropolisation, where functional integration between Córdoba and surrounding municipalities has intensified. Each additional resident settling in municipalities such as Villa Allende or Unquillo generates additional mobility demand and public expenditure impacts within Córdoba itself. Demographically, the metropolitan area experienced a 22.4% population increase between 2009 and 2022, with growth significantly higher in surrounding municipalities (+44%) than in the capital of Córdoba (+18%). By 2022, the metropolitan population reached 1,977,603, and projections indicate it will reach 2,141,102 by 2030.

Figure 1 Evolution of Cordoba's footprint: 1990 – 2020

Despite strong demographic growth, the total number of daily trips declined slightly from 2,705,311 to 2,685,431 between 2009 and 2022. The report attributes this marginal reduction (−0.7%) to behavioural changes linked to the COVID-19 pandemic. However, travel behaviour reveals significant inequalities. Men undertake 1.4 trips per day compared to 1.3 for women. Individuals aged 35–49 have the highest mobility rate at 1.8 trips per day, while the highest-income group averages 2.1 trips per day, compared with 1.4 for the lowest-income group. Particularly striking is the mobility rate of persons with disabilities, at only 0.7 trips per day, indicating structural barriers to accessibility and inclusion. These figures demonstrate that mobility in Córdoba is not only spatially transforming but also socially differentiated.

The most dramatic structural transformation concerns the modal split. In 2009, private vehicles accounted for 26% of trips; by 2022, this share had risen to 42% (29% as drivers and 13%

as passengers). In parallel, public transport usage collapsed from 30% in 2009 to just 13% in 2022. Cycling remained constant at 3%, and walking maintained a significant share, but neither compensated for the loss in public transport. Motorisation rose sharply from 161 vehicles per 1,000 inhabitants in 2009 to 264 vehicles per 1,000 in 2022 (+64%). Without intervention, projections show that by 2030, private vehicles will account for 49% of trips and the vehicle fleet will reach 632,458 units, corresponding to 295 vehicles per 1,000 inhabitants.

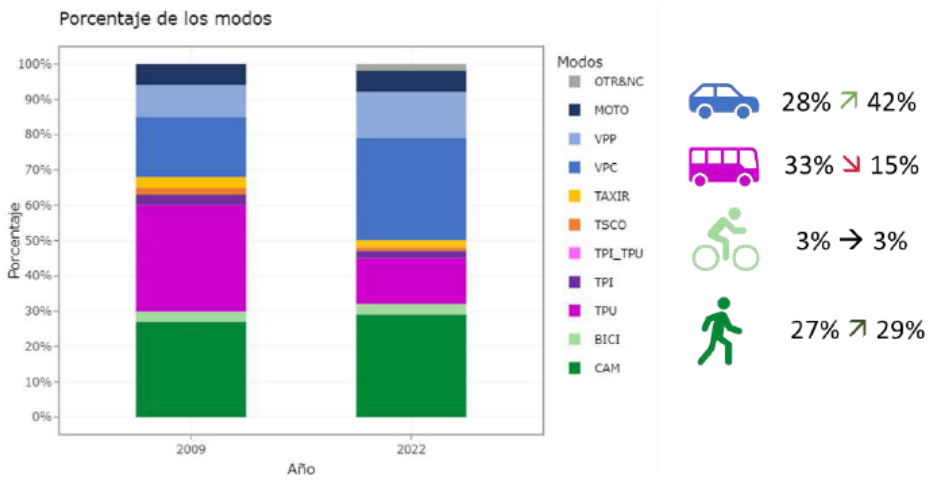

Figure 2 Cordoba's modal share in 2009 and 2022

Network imbalance and the structural advantage of the road system

The diagnosis emphasises that the existing infrastructure system structurally favours private vehicles. Road network modelling shows that the vast majority of urban roads have sufficient or excess capacity relative to peak-hour demand. Only extremely localised congestion points were identified. This indicates that past public investment in road infrastructure has produced a high-performing network capable of efficiently absorbing flows. However, this very efficiency has encouraged peripheral development and increased vehicle ownership per household, reinforcing motorisation.

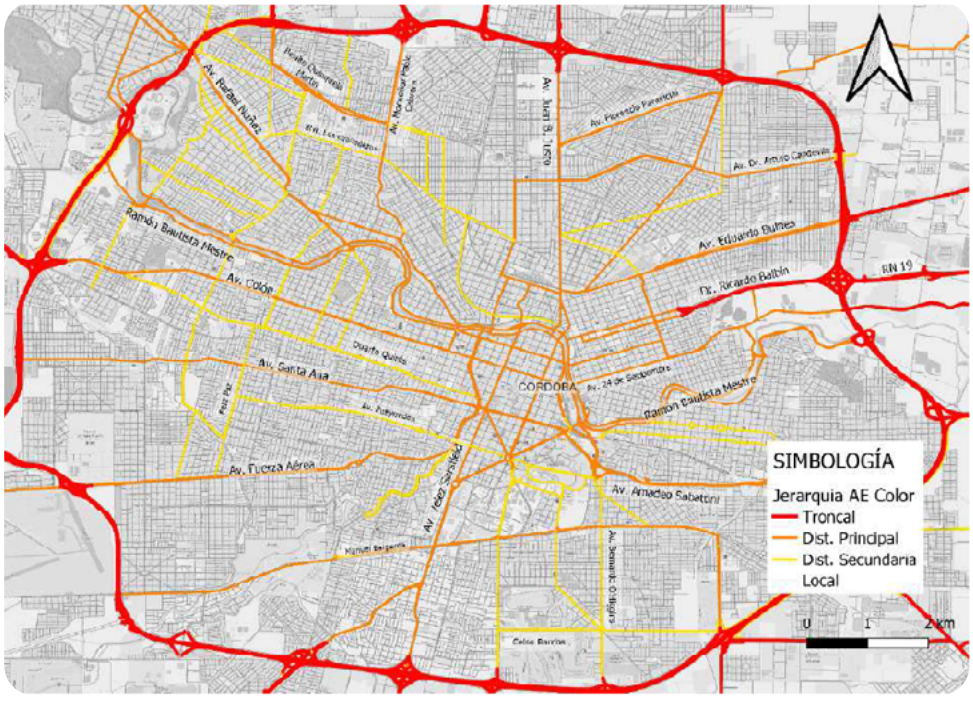

Figure 3 Cordoba's road network

In contrast, while the public transport network demonstrates high service density along main corridors and acceptable service frequency on many lines, its structural organisation limits its attractiveness. The network is primarily diametral, focusing on centre–periphery movements. This configuration fails to respond effectively to peripheral–peripheral or local neighbourhood trips, which constitute a significant portion of actual travel patterns. More than half of daily trips occur within the same neighbourhood, and only a limited share of movements are oriented toward the central area. The lack of efficient interchange and limited circular connectivity restricts the competitiveness of public transport in a polycentric metropolitan structure.

Active mobility networks have expanded in recent years, yet their impact on modal share has been minimal. Cycling remained constant at 3% between 2009 and 2022 despite infrastructure development. The report attributes this limited effect to the absence of comprehensive, multimodal integration and to planning choices that replicated public transport corridors rather than responding to actual origin–destination patterns. Infrastructure investments were therefore dispersed without generating systemic transformation. Still, without integration into a coherent multimodal system, these investments cannot significantly rebalance modal shares.

Environmental pressures and social equity challenges

The environmental dimension of mobility is central to the diagnosis. Private vehicles are the principal source of local pollution in Córdoba's urban area. Mobile and fixed sensors installed as part of the SUMP data collection campaign recorded significant concentrations of PM2.5 and PM10 near major arterial roads, especially the ring road and main urban avenues. Regarding GHG emissions, baseline emissions from mobility activities reached 450 tonnes of CO_2 in 2022. Although private vehicles accounted for 42% of trips, they generated 73% of emissions, demonstrating their disproportionate environmental impact.

Without implementing the SUMP measures, CO_2 emissions are projected to rise to 528 tonnes by 2030. The plan, therefore, establishes a stabilisation objective of a maximum of 501 tonnes by 2030, linking emission control directly to modal shift and motorisation management. Without intervention, congestion, longer travel times, and air quality degradation would intensify as private vehicle use increases.

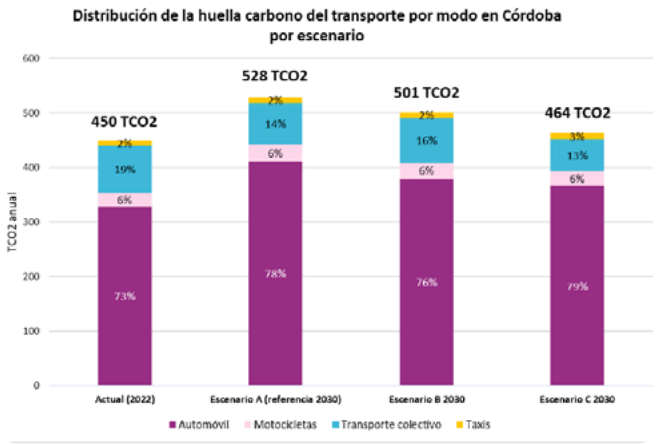

Figure 4 GHG emissions from Cordoba's urban mobility by mode, reference year and BAU and alternative scenarios

The polycentric and localised nature of mobility demand is also an issue. In 2022, 73% of trips occurred within the city of Córdoba, and more than half of those were intra-neighbourhood movements. Only 13% of trips occurred within surrounding municipalities, 8% between Córdoba and adjacent municipalities, and 6% between adjacent municipalities without passing through Córdoba. This confirms that the historic centrality model no longer fully reflects mobility realities. At the same time, social disparities remain significant, with low-income groups and persons with disabilities exhibiting reduced mobility rates.

SUMP visions and goals

> "Public policy for mobility: a metropolitan, multiscale and coherent policy that is fully evidence-based."

This vision translates into three overarching goals:

1. Evidence-based governance: Strengthen data collection and analytical capacity through the Metropolitan Mobility Observatory, deploy new airquality monitoring stations and institutionalise annual plan reviews.
2. Metropolitan integration: Establish a Metropolitan Mobility Authority by formalising the Comité de Coordinación "Movilidad Metropolitana" and integrating municipal and provincial actors. Reform publictransport contracts to improve service quality and financial sustainability.
3. Balanced modal share and sustainability: Achieve a modal shift such that active modes and public transport surpass private motorised modes by 2030. Targets include reducing the car-driver share from 29% to 27.7%, increasing urban public transport from 13% to 16.2%, increasing cycling from 3% to 3.5%, and keeping the walking share constant. Motorisation should stabilise at 265 vehicles/1 000 inhabitants, and transport CO_2 emissions should not exceed 501 t CO_2.

Test scenarios and selected scenario

The SUMP models three scenarios for 2030:

- Scenario A – Business as usual (BAU): The SUMP defines a Business as Usual (Scenario A) for 2030 as a projection of current trends without major policy changes. It shows strong growth in private car use, high congestion on ring roads and main corridors, deterioration of sustainable modes, and rising emissions: by 2030, 49% of trips would be by private car, public transport would fall to 14.6%, walking and cycling would drop to 23.5% and 2.3%, and CO_2 emissions would increase from 450 to 528 tonnes per year, with motorisation reaching 295 vehicles per 1,000 inhabitants.
- Scenario B – Estabilizar: integrates core measures to limit negative effects of the status quo: tactical bus lanes in congested sectors, new infrastructure for active modes, a circular boulevard around the centre, and a full restructuring of the public transport network into trunk, main and feeder lines with about fifteen mobility hubs, plus tariff integration of former provincial lines. It raises active modes to 32.7%, stabilises car use at 39.7% and increases public transport to 18.7%.
- Scenario C – Revertir: presents an ambitious vision reinforcing sustainable modes and stabilising CO_2 emissions. It adds a mass transit system, a dense cycling network, and strong restrictions on car access to the central area (limited to residents, taxis, and public services), while strengthening exclusive lanes, cycling infrastructure, and hubs. Provincial lines are restructured to serve new areas and connect to the mass transit network. In this scenario, active modes reach 33.7%, cars fall to 35.2%, and public transport rises to 21.2%, with more than 100,000 daily users on the two modelled mass-transit lines.

No "selected scenario" was formally selected. Still, the indicator framework states that implementation of the plan should, at a minimum, stabilise modal shares at Scenario B levels. At the same time, the measures of Scenario C are presented as the way to reverse current trends and increase the share of sustainable modes by 2030. The action plan and its three time-based axes (restructuring of contracts, metropolitan reorganisation of the public transport network and active modes, and implementation of a mass transit system with accompanying measures in the central area) correspond to the package of interventions developed for the more ambitious Scenario C.

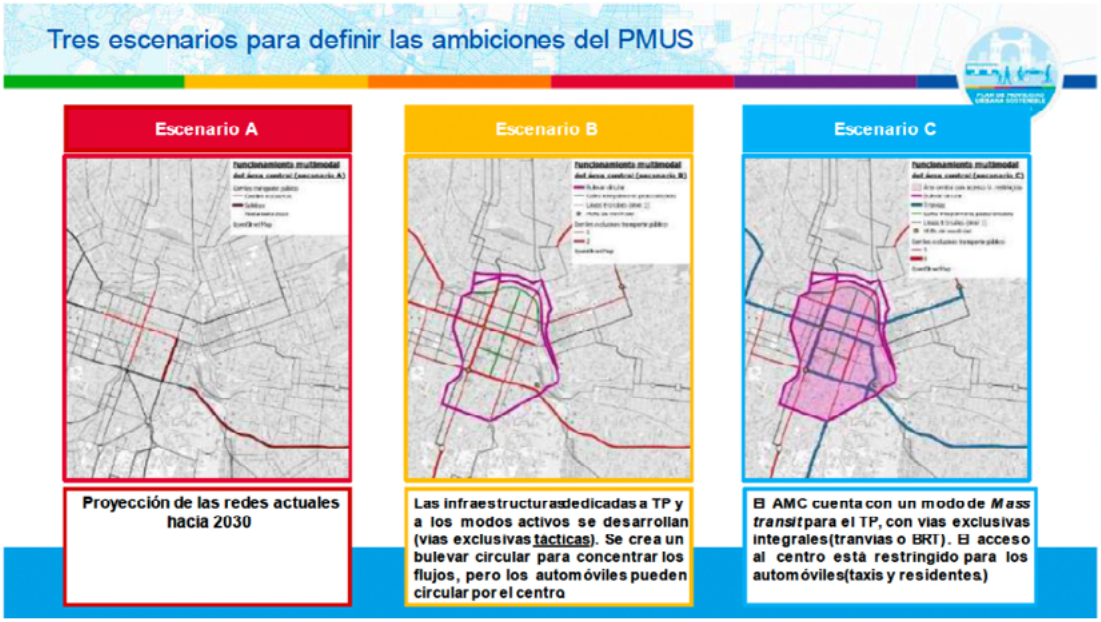

Ilustración 25 : Los tres escenarios evaluados por el PMUS (Elaboración propia).

Figure 5 The three scenarios to build Cordoba's SUMP

Identification of integrated packages of measures: The SUMP for Córdoba structures its interventions as a coherent and interlinked set of initiatives designed to maximise cross-impacts and efficiency. Each measure has its own specific objectives, but the SUMP emphasises systemic interactions and synergies between them: the more initiatives are implemented together, the greater the overall effectiveness and cost-efficiency of public action. Implementation is conceived as flexible and adaptive, allowing the municipality to adjust timing and priorities depending on available resources. However, the report recommends a clear sequencing to ensure impact and coherence:

- Accessibility and inclusion first: prioritise immediate improvements that directly benefit citizens, such as accessible urban furniture, facilities for people with reduced mobility, and the reorganisation of the bus network to ensure competitive travel times.
- Reform of service contracts: restructure concession contracts before deploying new networks, ensuring effective management control and fair remuneration of operators.
- Metropolitan governance and management base: Establish strong metropolitan coordination and technical capacity before implementing mass transit systems to ensure multimodal integration and operational viability.
- Pedestrianisation strategy: only apply major pedestrian schemes in the central area once effective redistribution of traffic and access solutions via public transport are secured. This integrated approach ensures that measures reinforce one another, linking infrastructure, governance, accessibility, and service quality to achieve a coherent transition toward sustainable metropolitan mobility in Córdoba.

SUMP key measures

Cluster	Measure description	CAPEX (total or range, EUR)	Funding source	Implementation horizon
1.1 Governance	Employ the Ente Intermunicipal de Gestión Metropolitana and establish a Comité de Coordinación "Movilidad Metropolitana" to oversee the SUMP	200,000	Municipality & Province	18 months
1.2 Contract reform (EMAC)	Restructure public transport service contracts at municipal and metropolitan levels to prepare for future network evolution	500,000	Municipality	18 months
1.3 Modelling	Generalise use of the Metropolitan Mobility Model for ex ante evaluation of policies	100,000	Municipality & donors	12 months
1.4 Air-quality monitoring	Implement new air-quality stations for SUMP indicators	100,000	Municipality	12 months
2.1 Mobility authority	Create a technical coordination body within the metropolitan entity to contract and manage all metropolitan transport services	500,000–1,000,000	Municipality, Province	2 years
2.2 Multilevel financing architecture	Establish a multilevel financing architecture within the metropolitan entity	500,000	Municipality, Province	2 years
2.3 Integrated urban planning	Implement integrated urban planning to align mobility, urban development and social policies	1,000,000–3,000,000	Municipality, Province	3 years
2.4 Unified branding and ticketing	Develop a common commercial brand, integrated ticketing and passenger information system for the metropolitan transport network	500,000–2,000,000	Municipality, Province	2 years
2.5 Public-private partnership model	Explore PPP models for procuring assets necessary for operations	500,000	Municipality, Province & private sector	3 years
2.6 Compensation fund	Create a compensation fund to manage revenue pooling and tariff redistribution	Not specified	Municipality & Province	3 years
2.7 Activemode networks-mode networks	Build interconnected walking and cycling networks with safe crossings and integration with public transport	50,000,000–100,000,000	Municipality & donors	5–10 years
2.8 Rail transport upgrade	Conduct feasibility studies and invest in rail-based urban transport; includes a pilot study (EUR 1 million) and infrastructure investments (≈EUR 200 million for rolling stock and infrastructure)	1,000,000 (study) + 200,000,000 (investment)	Municipality & donors	2024-2030
2.9 Bus fleet and network modernisation	Renew bus fleet (electric or low-emission), implement priority corridors and expand services	50,000,000–100,000,000	Municipality & private operators	2024-2030
3.1 Mobility hubs	Build mobility hubs (HUBs) and 2,000 bus stops; 10 % fully equipped	50,000,000	Municipality & donors	2024-2029
3.2 Park-and-ride facilities-and-ride facilities	Develop park-and-ride lots at metropolitan gateways-and-ride lots at metropolitan gateways	50,000,000–70,000,000	Municipality & private sector	2024-2029
3.3 Mass transit corridors	Implement 27 km of high-capacity mass transit lines; cost range: EUR 295–590 million, depending on mode (e.g., BRT vs rail).	OPEX not provided		2024-2035 Largest investment; modal choice (BRT or tram/metro) will determine final cost.

SUMP expected results and impacts

Indicator	Impact 2030 (SUMP vs BAU)	Baseline - 2022	Projected 2030 BAU	Projected 2030 SUMP scenario
Total annual transport-related GHG emissions (t CO_2eq)	-5.1% vs. BAU	450 t CO_2	528 t CO_2	≤ 501 t CO_2 (stabilisation target)
Annual transport-related GHG emissions per capita (kg CO_2eq/capita)	SUMP gives per-capita values for 2022 and 2035 BAU only; no 2030 or SUMP scenario breakdown	214.5 kg CO_2 per capita per year	330kg CO2eq / capita	N/A
Access to public transport The proportion of the population living 500 meters or less from a public transport stop	Maintain or improve already high access; no quantified 2030 target	87% of the population lives ≤ 300 m of a public transport stop	N/A	N/A
Air pollution Mean urban air pollution of particulate matter (in µg PM2.5) at road-based monitoring stations.	SUMP documents hot-spots and maps $PM_{2.5}$/ PM_{10}, but no single aggregated baseline or 2030 projections	N/A	N/A	N/A
Road safety Annual traffic fatalities in the urban area, per 100,000 inhabitants	Strengthen road safety monitoring and reduce crashes; no quantified baseline or targets for the whole metropolitan area	N/A	N/A	N/A
Modal share Increase in the modal share of trips by public transport, walking, and cycling	Walking & cycling +27% Public transport +28% Car drivers -19%	Walking & cycling 32% Public transport 15% Car drivers 29%	Walking & cycling 25.8% Public transport 14.6% Car drivers 49%	Walking & cycling 32.7% Public transport 18.7% Car drivers 39.7%
Affordability of public transport Percentage of disposable household income spent on public transport for the second quintile household income group.	Ensure transport costs for low-income households remain affordable	Between 8.8% and 9.5% of household income is spent on transport for the lowest income brackets (≤ ARS 60,000/ month)	N/A	N/A

Insights from practice: lessons learned from the SUMP development process

Córdoba's SUMP relied on existing data and stakeholder engagement to overcome COVID-19 challenges and Argentina's fragmented transport governance.

The formulation of Córdoba's SUMP, implemented by AFD, began during the COVID-19 crisis, limiting opportunities for in-person meetings and field surveys. The consulting team relied on existing documentation, primarily the 2014 Mobility Plan, and engaged extensively with stakeholders from Córdoba and its surrounding cities. This was crucial given Argentina's fragmented responsibility for urban transport, where municipalities oversee local transport, provinces manage interurban transport, and national authorities handle the railway system.

Córdoba's SUMP prioritises gender and inclusion, integrating "mobility of care" to support vulnerable groups. Córdoba's SUMP emphasises gender and inclusion, prioritising vulnerable groups such as children, older adults, individuals with disabilities, and especially women. The concept of "mobility of care" was integrated into the project and supported by data-driven decision-making. Studies revealed that care-related travel, such as accompanying or assisting others, accounts for 12% of total trips in the area. However, disparities remain—individuals with disabilities, for instance, undertake just 0.68 trips daily, half that of individuals without disabilities.

A strong private sector link drives sustainable mobility through innovation and investment, while solid governance ensures a well-defined SUMP to prioritise actions.

For developing a project such as a SUMP, the link with the private sector is crucial to promoting sustainable mobility, as companies can offer innovative solutions, infrastructure investments, and sustainable transport services. It is also necessary to have a solid, effective governance scheme that promotes sustainable mobility through a comprehensive approach that involves all actors in the territory, both public and private. Additionally, based on a solid diagnosis, the SUMP must be consolidated as a roadmap to prioritise actions and measures for more sustainable mobility.

SUMP finance leverage

No finance leverage reported.

Perspectives for implementation

With 16 transport authorities involved, interinstitutional dialogue led to the creation of the Intermunicipal Metropolitan Management Entity in 2022.

Córdoba's transport governance includes 16 authorities, necessitating interinstitutional dialogue, supported by surveys of 2,500 households, traffic counts, stakeholder interviews, and the Gran Córdoba Forum. Regular virtual meetings fostered collaboration, aligning stakeholders' perspectives. Initially hesitant to involve neighbouring cities, Córdoba's municipal government shifted its approach, establishing a Metropolitan Affairs Secretariat and creating the Intermunicipal Metropolitan Management Entity, which was launched on 4 March 2022 with nine neighbouring municipalities. This collaboration became a cornerstone of the SUMP process.

Highlights in the past year

Córdoba is progressing in data-driven mobility management and strategic planning linked to the SUMP.

Over the past year, Córdoba has continued to advance its SUMP by strengthening institutional tools and deepening evidence-based decision-making. The city's Observatorio de la Movilidad has become an increasingly central platform for real-time monitoring of public transport operations and traffic flows, allowing for improved service quality, responsiveness and transparency for users, including through mobile interfaces that show bus locations and estimated wait times, an essential step toward operationalising SUMP indicators on service reliability and accessibility.

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