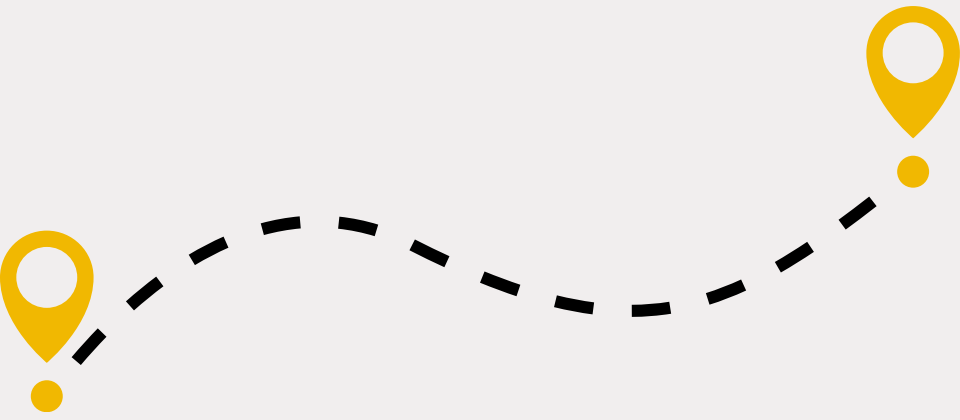




Car availability per household

What is it?

Average number of cars available per household.

What does it measure?

Cars registered to or regularly available for use by a household, not necessarily owned outright. Typically collected via household travel surveys or vehicle registration data.

What is the unit problem?

Reporting per household conflates household size. A couple with one car and a single person with one car show the same rate, but have different per-person access.



Car availability per household

⚠ Always check: is it cars per household or cars per adult?



Sources: City travel surveys and national vehicle registries, 2022–2023

Household car ownership distribution — Berlin (2023)



The distribution matters as much as the mean: 43% car-free and 16% multi-car is a very different city than 100% single-car households with the same average.



What shapes car ownership

#MobilityIndicators



Urban density and public transport quality: Where PT is frequent, safe, and affordable, car ownership drops sharply.



Parking supply and cost: Freely available parking subsidises car ownership. Cities that price or restrict parking directly reduce vehicle ownership rates over time.



Income, but in two directions: High income enables more cars; low income in car-dependent areas forces car ownership as the only way to access jobs.



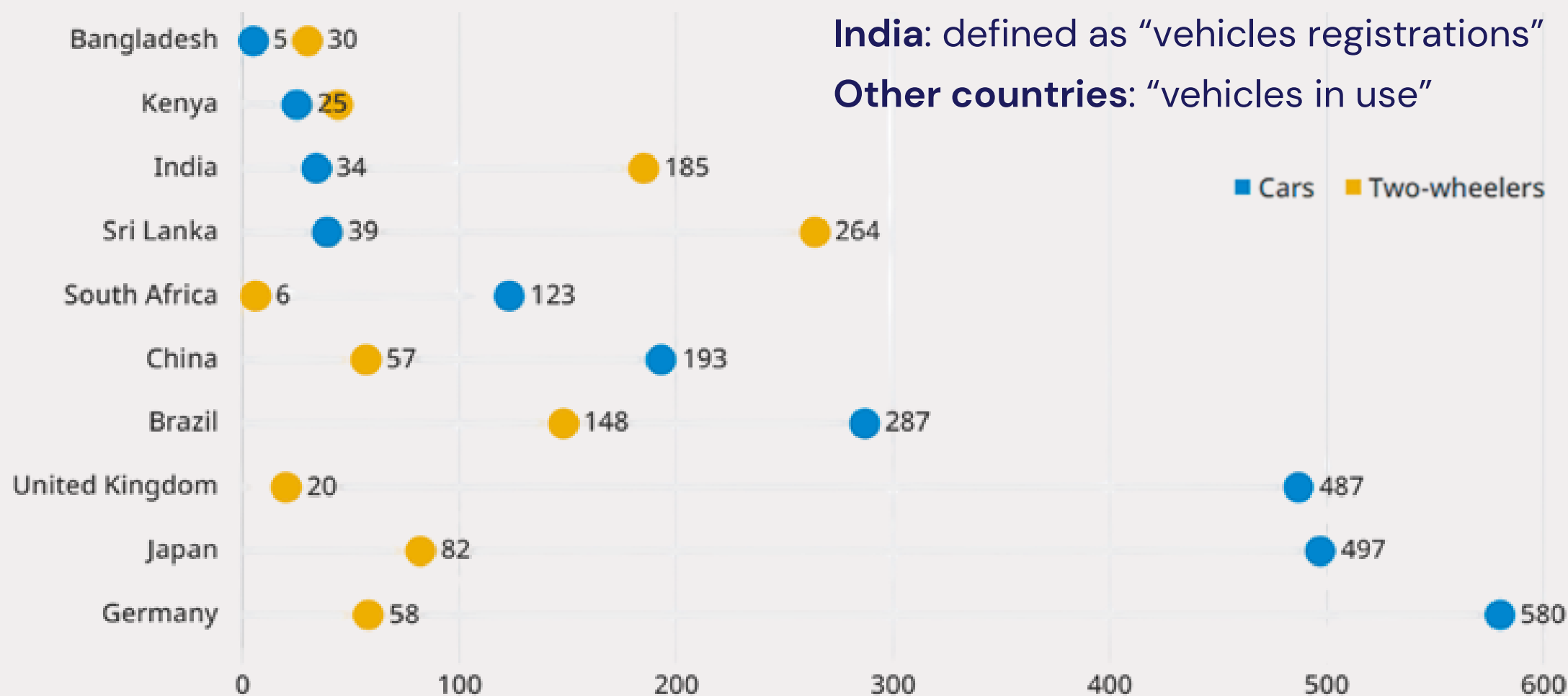
Location and sprawl: Suburban and rural households have structurally higher ownership because PT alternatives are absent.

Gender perspective: the household unit hides inequality

"One car per household" does not mean equal car access for all household members. In mixed-gender households with one car, men are often more likely to be the primary driver, particularly for commute trips. Women's access is often conditional, secondary, and dependent on household scheduling. Car availability per household is an access indicator; actual car access by gender requires asking who uses the car and when.

Car ownership ≠ vehicle ownership

Two terms often used interchangeably measure fundamentally different things — and produce incomparable motorisation rates when confused.



Car ownership

Passenger cars only

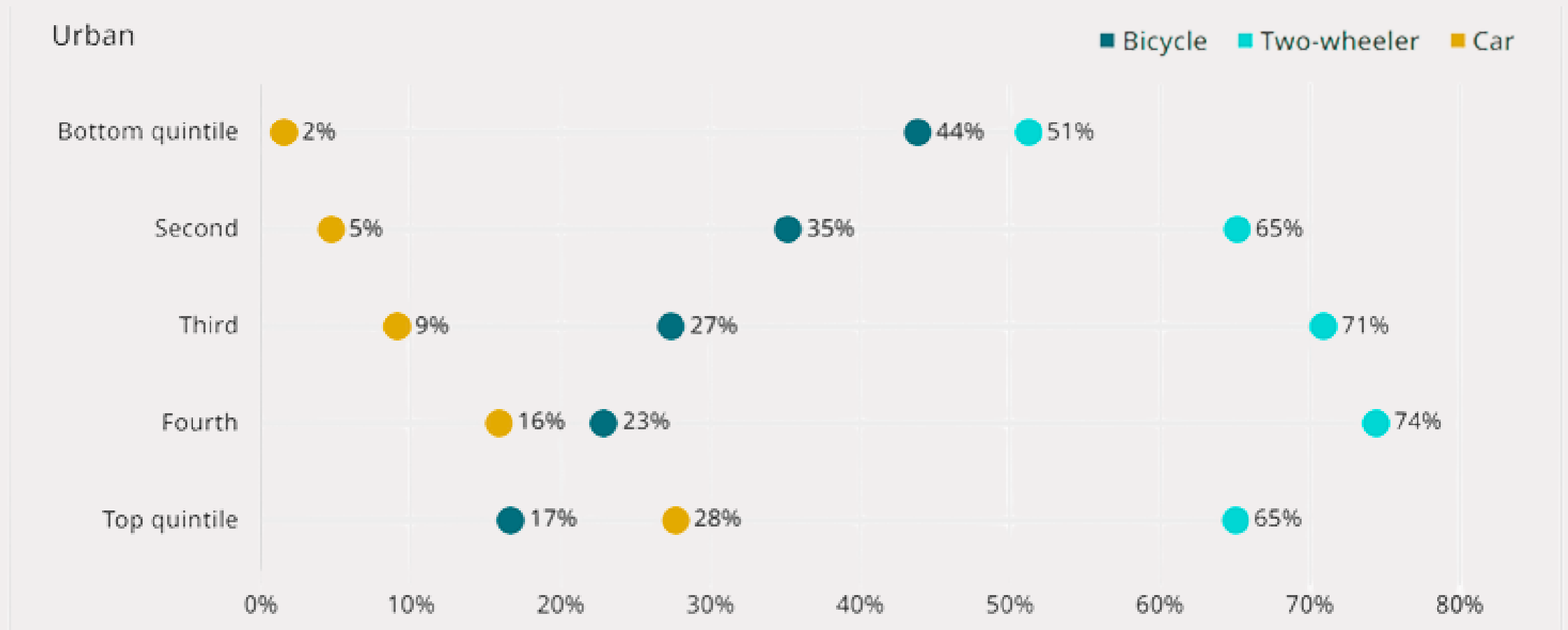
- Registered passenger cars
- Excludes motorcycles, mopeds
- Excludes vans, trucks, buses
- Germany 2024: 49.1M cars

Vehicle ownership

All motorised vehicles

- Passenger cars + motorcycles
- + mopeds, scooters, e-bikes (if registered)
- + trucks, vans, buses
- Germany 2024: ~69M vehicles

Car ownership ≠ vehicle ownership



Bottom quintile is poorest 20% and top quintile is richest 20% of population. Numbers represent extent of vehicle ownership within each quintile in India

Source: Household Consumption Expenditure Survey, National Statistics Office

Source: Vehicle ownership in India by Abhishek Waghmare, Data For India (September 2024):

<https://www.dataforindia.com/vehicle-ownership/>

Never compare motorisation rates without checking the definition

Germany at 590 (cars/1,000) and Indonesia at ~600 (all vehicles/1,000) look similar on a chart. They describe entirely different transport realities — one car-dominant, one motorcycle-dominant — with different safety profiles, emissions characteristics, and infrastructure needs.

Low ownership: choice or constraint?

Low car availability per household is not automatically a sustainability success. The same number can reflect a well-served urban household choosing car-free life or a rural household locked out of car ownership by poverty and left without alternatives. **The 2×2: ownership level × PT availability**

Good PT available

Low ownership + good PT:

Genuine sustainable choice. Car-free living enabled by alternatives. The target state for urban mobility policy.

→ Berlin inner city, Paris core, Amsterdam

Poor or no PT

Low ownership + poor PT:

Constrained immobility. People cannot afford a car and have no alternative. Associated with social exclusion and suppressed trip rates.

→ Deprived rural areas, peripheral urban estates

High ownership + good PT:

Car available but not always used — PT competitive for some trips. Transition zone: targeted pricing can shift behaviour.

→ German suburbs with S-Bahn access

High ownership + poor PT:

Structural car dependency. Cars are not a preference — they are the only option. Reducing ownership here without PT investment causes harm.

→ US suburbs, rural Germany, outer ring cities

What it's used for and how to collect it

Car availability per household feeds into transport demand forecasting, parking policy, mode choice modelling, and equity assessment

Four core applications



Transport demand forecasting:

Car availability is the strongest predictor of car trip generation in most four-step models.



Parking demand management:

Parking supply and car ownership are in a feedback loop. Minimum parking standards inflate ownership; maximum standards or paid parking reduces it.



PT investment targeting:

Areas with high car ownership and poor PT reveal where investment would most reduce dependency. Areas with low ownership and poor PT flag where people are already being failed.



Emissions scenario modelling:

Car availability drives fleet size projections. Combined with EV adoption rates, it determines whether electrification reduces emissions enough.



The parking–ownership feedback loop

Car availability per household feeds into transport demand forecasting, parking policy, mode choice modelling, and equity assessment

Why parking supply is a car ownership policy:



Breaking this loop, e.g. through maximum parking standards, residential parking permits, or unbundled parking costs is one of the most effective long-run levers for reducing car ownership in urban areas.



Data sources and their trade-offs

Source	Strengths	Limitation
Gold standard: Household travel survey	Captures availability (not just ownership), links to trip behaviour, allows disaggregation by income, gender, age	Expensive ; conducted every 5–10 years in most countries
Administrative: Vehicle registration	Annual, comprehensive, low cost. Every registered vehicle counted	Shows ownership address , not where car is actually available or used; misses company cars and shared vehicles
Supplementary: Census housing question	Large sample, fine geographic detail, links to household size and composition	Typically only collected every 10 years ; question wording varies between censuses



Data sources and their trade-offs

Three measurement traps to avoid



Company cars

Up to 30% of cars in some European countries are company-owned. Including them inflates household ownership; excluding them understates car access.



Shared and pooled vehicles

Car-sharing memberships give households effective car access without ownership. This is growing fast in cities and is invisible to registration-based measures.



Comparing cities without controlling for household size

US households average 2.5 people; German urban households average 1.8. Per-household rates are not directly comparable without this adjustment.

What surveys should ask but usually don't

Standard surveys ask "how many cars does your household have?" — but not "who has priority use of each car?" or "do you have independent access to a car when you need one?" These follow-up questions would reveal the intra-household gender access gap. Without them, a single-car household looks identical regardless of who actually drives it.

Reducing car dependency: Levers, sequence, and targets

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Policy levers and realistic timescale

Lever	Mechanism	Timescale
Residential parking reform	Remove minimum standards; introduce permits; unbundle parking from housing cost. Directly raises effective ownership cost.	3–7 years
PT frequency and coverage	Makes car-free living viable. The single strongest predictor of car ownership reduction in dense areas.	5–10 years
Car-sharing infrastructure	One shared vehicle can replace 8–10 private cars. Provides access without ownership – especially relevant for occasional users.	2–4 years
Safe cycling infrastructure	Perceived safety is the primary barrier to cycling adoption. Protected lanes reduce car ownership among under-35s measurably.	3–6 years
Mixed-use land use	Reduces trip distances until walking and cycling become viable alternatives to driving – structural, but very slow.	Decades
Car purchase / ownership tax	Direct cost signal – effective but politically contentious without PT alternatives already in place.	Immediate



Reducing car dependency: The right sequence matters



#MobilityIndicators

1. First: provide viable alternatives:

Frequent public transport, safe cycling, walkable destinations.

Without this, reducing car ownership means reducing mobility and may disproportionately harming low-income households.

2. Then: raise the cost of car ownership:

Parking reform, road pricing, ownership taxes. These can be effective once alternatives exist; otherwise they are regressive mobility taxes.

3. Finally: reclaim space freed by lower ownership:

Convert parking to public realm, housing, cycling infrastructure, or greenery. This reinforces the cycle and can make car ownership even less necessary.





What a useful target looks like



#MobilityIndicators



Vague and unactionable

"Reduce car ownership across the city by 2030."



Specific, sequenced, and equity-aware

"Reduce cars per household in the inner city from 0.75 to 0.55 by 2030, through removal of minimum parking standards in new residential developments by 2025 and expansion of PT frequency on 12 key corridors by 2027, e.g. measured annually via vehicle registration data disaggregated by postcode and household income. No parking reform to take effect in areas with below-median PT access until frequency targets are met."

Gender-responsive car policy design

Policies that reduce car ownership must not reduce women's mobility. PT improvements must cover off-peak hours and cross-suburban routes, not just commuter corridors. And safety (perceived and real) on walking and cycling routes is a prerequisite for women to use them as car substitutes. Track women's independent mobility access as its own indicator alongside car ownership rates.

Car availability per household is ultimately a measure of how much a city has failed to provide alternatives. Where PT is fast, frequent, safe, and affordable, and where cycling is protected and destinations are nearby, car ownership falls naturally. The target is not fewer cars. It is a city where fewer cars are needed.



#MobilityIndicators

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Transformative Urban Mobility Initiative (TUMI): <https://transformative-mobility.org/>

Compiled by / Contact:

Verena Da Re, Armin Wagner: armin.wagner@giz.de (as of August 2026)