AVILOO Launches World's Largest Independent EV Battery Study

The message is clear: test your car independently, don't guess its health

- AVILOO has launched the AVILOO Certified EV Battery Report, the world's largest independent study of used EV battery health, published twice a year. It is built entirely on AVILOO Certified EVs - used cars whose real battery condition is a documented fact rather than a guess
- The current edition covers more than 500,000 independent tests on AVILOO Certified vehicles from 2022 to 2026 across 20 popular EV models, part of AVILOO's global database of over 1 million tests
- The data spans North and South America, Europe, Australia and Asia, capturing how different climates affect battery health and charging performance
- Battery health varies significantly between models, and even more between individual cars of the same model – independently testing your own EV, rather than relying on its dashboard reading, is the only way to really know its condition
- State of Health (SoH), the percentage of a battery's original capacity that remains, can vary by up to 13.5% between the best and worst-performing examples of the same model
- The battery tests underpinning the report are AVILOO's independent FLASH Tests which calculates battery health using trained models rather than relying on a vehicle's own dashboard reports
- Smaller-battery EVs, which need more frequent charging cycles to cover the same distance, tend to show faster degradation than larger-battery models
- This summer, AVILOO also launched its Battery Warranty across Europe, giving buyers of used EVs a financially backed guarantee on battery health
- Images and charts from this report are available to download here

Wiener Neudorf, Austria, 2 September 2026: AVILOO, the global leader in EV battery diagnostics, has today launched its **AVILOO Certified EV Battery Report**– the world's largest independent study of battery health in used electric vehicles.

This edition analyses over 500,000 individual, independent tests carried out on used EVs between 2022 and 2026, covering 20 popular EV models. It draws on a subset of AVILOO's broader diagnostic database, which now spans more than 1 million independent tests worldwide across North and South America, Europe, Australia and Asia. AVILOO will publish the AVILOO Certified EV Battery Report twice a year.

The findings carry a clear message for anyone buying, selling, financing or insuring a used EV; don't assume your battery's health - test it independently. Every figure in this report comes from AVILOO's own physical measurement of the battery, not a reading taken from the vehicle's dashboard, which can vary from manufacturer to manufacturer and doesn't always reflect the battery's true condition. Overall battery health across the market remains strong, but AVILOO's data shows meaningful differences both between models and between individual examples of the same model - differences significant enough to change what a car is really worth.

How the report works

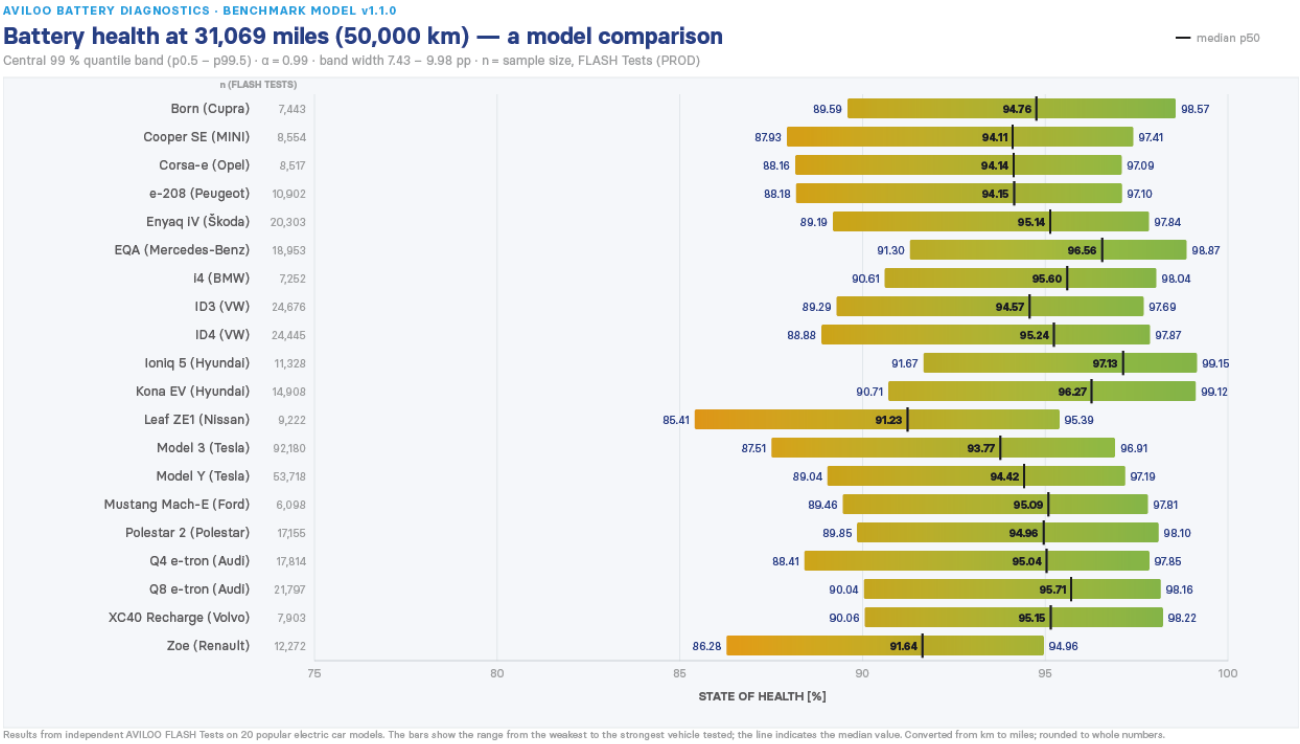
The AVILOO Certified EV Battery Report is built on data from used electric vehicles tested via its independent AVILOO FLASH Test. For each model, AVILOO calculates the median State of Health at

three mileage milestones – 31,069 mi (50,000 km), 62,137 mi (100,000 km) and 93,206 mi (150,000 km) – along with the range expected to cover 99% of vehicles at each point†.

State of Health (SoH) – the percentage of a battery's original usable capacity that remains – is the clearest single measure of how a used EV's battery has aged; a battery at 95% SoH still delivers roughly 95% of its original range per charge.

Reading the data

The charts below show real AVILOO FLASH Test results from used EVs, presented in alphabetical order, at each of the three mileage milestones. Each bar shows the expected range of battery health for that model at that mileage – the lower and upper numbers mark a 99% prediction intervals band and the black line marks the median result. The data also aggregates multiple battery sizes behind each vehicle model.



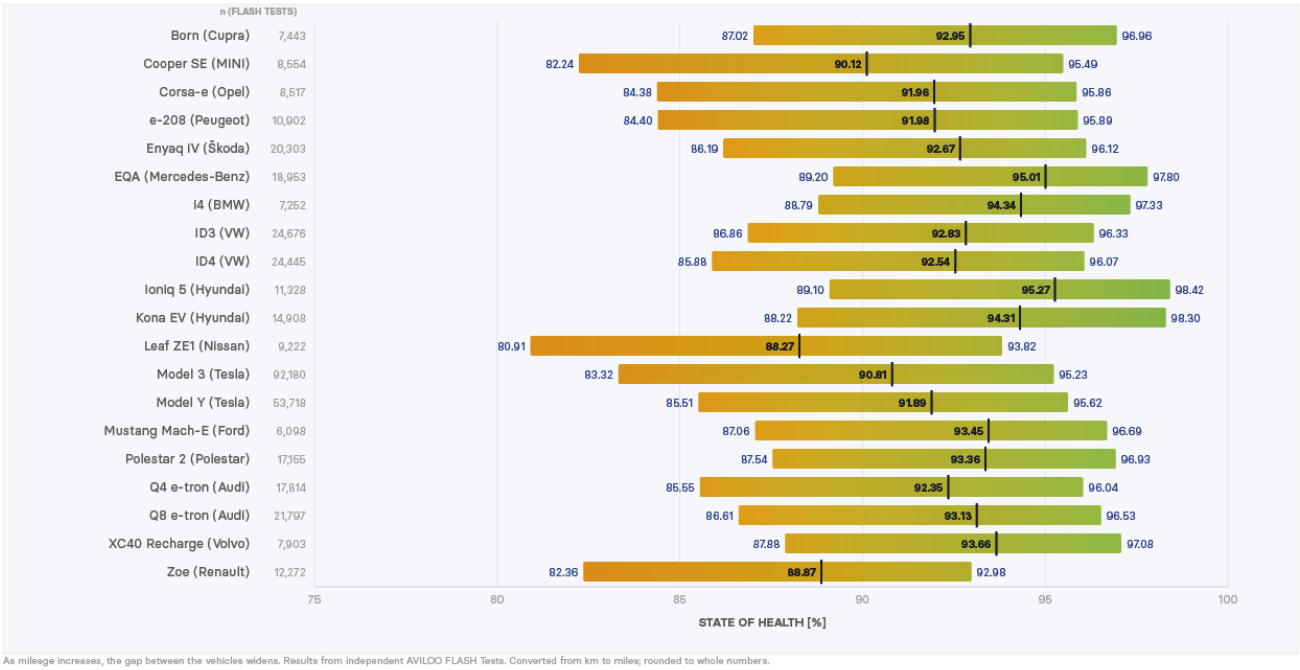
Results from independent AVILOO FLASH Tests on 20 popular electric car models. The bars show the range from the weakest to the strongest vehicle tested; the line indicates the median value. Converted from km to miles; rounded to whole numbers.

Comparing the three mileage snapshots side by side reveals three consistent patterns. First, median battery health drops as mileage increases. Second, the spread between individual cars widens with distance – degradation is real, and it grows the further a car travels. Third, and just as importantly, there are consistent differences between models at every mileage point

AVILOO BATTERY DIAGNOSTICS · BENCHMARK MODEL v1.1.0

Battery health at 62,137 miles (100,000 km) — the gap widens

Central 99 % quantile band (p0.5 – p99.5) · α = 0.99 · band width 8.54 – 13.25 pp · n = sample size, FLASH Tests (PROD)

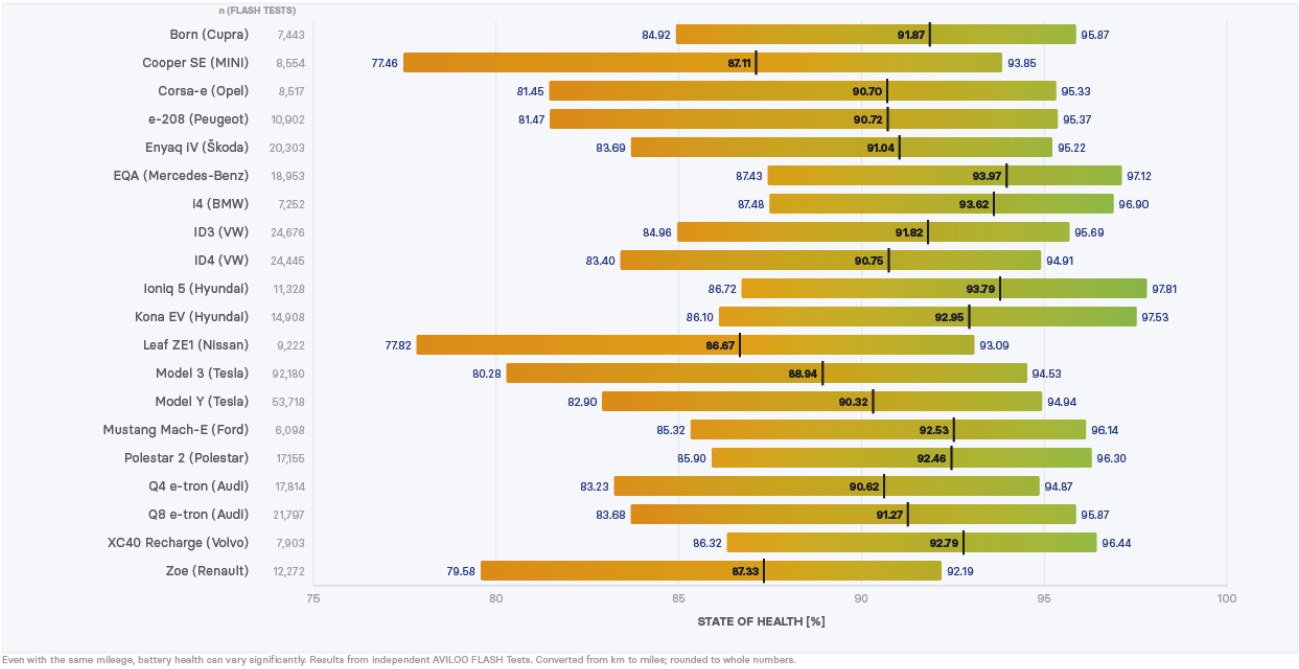


As mileage increases, the gap between the vehicles widens. Results from independent AVILOO FLASH Tests. Converted from km to miles; rounded to whole numbers.

AVILOO BATTERY DIAGNOSTICS · BENCHMARK MODEL v1.1.0

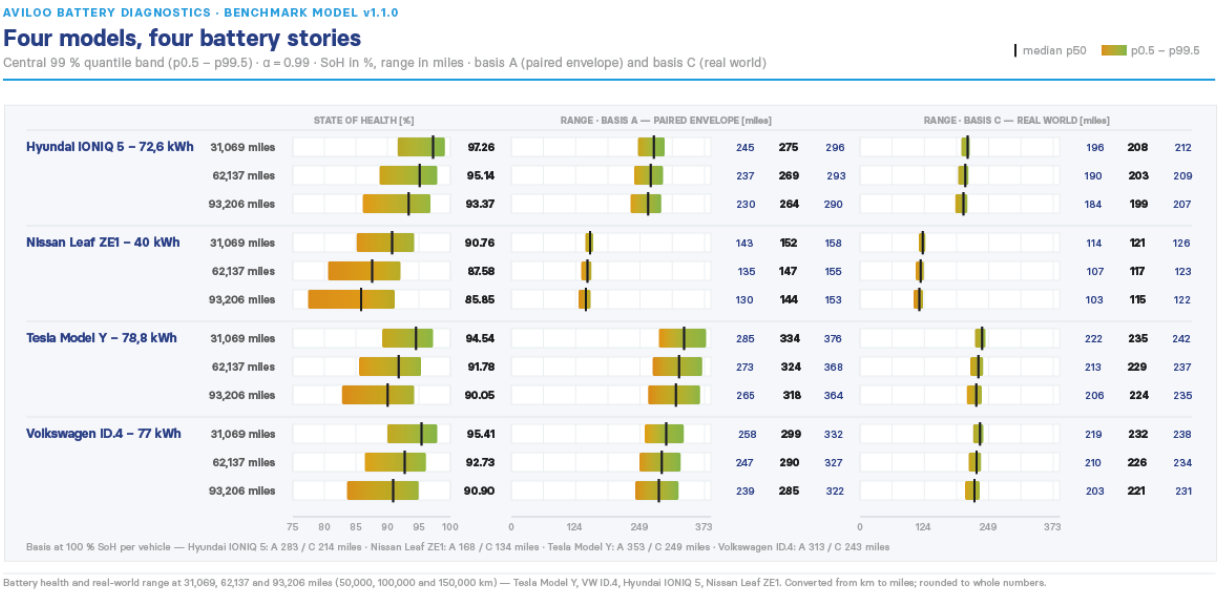
Battery health at 93,206 miles (150,000 km) — maximum variation

Central 99 % quantile band (p0.5 – p99.5) · α = 0.99 · band width 9.42 – 16.39 pp · n = sample size, FLASH Tests (PROD)



Even with the same mileage, battery health can vary significantly. Results from independent AVILOO FLASH Tests. Converted from km to miles; rounded to whole numbers.

Four EVs, four different battery stories



Battery health and real-world range at 31,069, 62,137 and 93,206 miles (50,000, 100,000 and 150,000 km) — Tesla Model Y, VW ID.4, Hyundai IONIQ 5, Nissan Leaf ZE1. Converted from km to miles; rounded to whole numbers.

The **Tesla Model Y (78.8 kWh)** has been the best-selling car of any kind, anywhere in the world, for three consecutive years*. In AVILOO's data, used Model Ys show a median State of Health of 94.5% at 31,069 mi (50,000 km), falling to 90.3% at 93,206 mi (150,000 km) – equivalent to a real-world range per charge of around 235 mi (379 km), dropping to roughly 225 mi (362 km). That median is only the midpoint: **individual cars vary by up to 11% of state of health across that range, worth around 29 mi (46 km) of real-world range per charge** – a reminder that the model average doesn't tell you how any one car has actually aged.

The **Volkswagen ID.4 (77 kWh)** was one of Europe's top-selling EVs in 2025, with more than 40,000 units sold in the first half of the year alone**. Median battery health runs from 95.3% at 31,069 mi (50,000 km) to 90.6% at 93,206 mi (150,000 km) – a real-world range per charge of around 232 mi (373 km), falling to roughly 220 mi (354 km). **Individual cars vary by up to 11-12% of state of health at higher mileages, worth around 28 mi (45 km) of real-world range per charge.**

The **Hyundai IONIQ 5 (72.6 kWh)** has become one of the most recognisable EVs on our roads today. In AVILOO's data, median SoH runs from 97.2% at 31,069 mi (50,000 km) to 92.8% at 93,206 mi (150,000 km) – equivalent to a real-world range per charge of around 208 mi (335 km), dropping to roughly 198 mi (319 km). **The spread between individual cars grows to over 12% of state of health by 93,206 mi (150,000 km), worth around 26 mi (42 km) of real-world range per charge** – a reminder that only an independent test tells you where a specific car sits.

The **Nissan Leaf ZE1 (40 kWh)** has the smallest battery of the four models here – around half the capacity of the others – needing far more frequent charging to cover the same distance. AVILOO's data shows the effect: median SoH falls from 91.1% at 31,069 mi (50,000 km) to 86.3% at 93,206 mi (150,000 km), the lowest of the four models throughout, with **the widest spread of any model here – up to 13.5% of state of health by 93,206 mi (150,000 km), worth around 18 mi (29 km) of real-world range per charge.**

In real-world terms, **that median SoH is worth around 122 mi (196 km) of range per charge at 31,069 mi (50,000 km), dropping to roughly 115 mi (185 km) at 93,206 mi (150,000 km)** – markedly less than

the other three models, reflecting its smaller battery and suiting it best to shorter, more local journeys. The Leaf remains the world's first mass-market EV, with more than 650,000 units sold worldwide[***]. It's the clearest illustration in this report of how battery size and charging frequency interact with real-world degradation – and why independent testing matters most for this kind of higher-use EV.

Why a small gap in state of health matters more than it sounds

As the examples above show, a gap of ten percent or more in state of health isn't just a number on a spec sheet – it can mean tens of miles of real-world range per charge. It can be the difference between a car that comfortably completes a long day trip and one that needs an extra charging stop. That's exactly the kind of detail a consumer, dealer or lender would want to know before a used EV changes hands – and exactly why a single average number for a whole model isn't enough.

Why climate matters – and why global data matters more

Battery health isn't just a function of mileage. Temperature affects both the chemistry of degradation and how quickly a battery can accept charge – cooler climates, for example, can slow charge rates and change wear patterns compared with warmer ones. That's why AVILOO's global reach matters: because the AVILOO Certified EV Battery Report draws on independent tests from across North and South America, Europe, Australia and Asia, its findings reflect a genuine spread of climates and driving conditions, rather than the pattern seen in any single country or region.

Why this matters for the used-EV market

That distinction matters more as the used-EV market grows. Buyers of a used petrol or diesel car have long relied on a mileage reading and an MOT history to judge condition; consumers, dealers and fleets buying a used EV need an equivalent for the battery – the single most expensive component in the car, and, as this report shows, the component most likely to vary from car to car.

Marcus Berger, CEO of AVILOO said:

"The truth in this data is that averages hide a lot. Yes, EV batteries are ageing better than the 'they wear out fast' myth suggests – but that's not the most useful thing this report tells you. What matters is that battery health varies significantly between models, and even more between individual cars of the same model. A gap of ten or fifteen percent in state of health is a real difference in range, in what a car is worth, and in what you can rely on it for. You simply can't know where your car sits in that range without testing it independently.

"That's why we built the AVILOO FLASH Test, and why we're now publishing this AVILOO Certified EV Battery Report twice a year – to give the whole market, from individual buyers to fleets and insurers, an honest, independent and genuinely global picture of how these batteries perform."

AVILOO's FLASH Test, an independent, three-minute diagnostic performed via the vehicle's OBD port, is designed to answer that question for each individual used vehicle, rather than relying on an average across the model: a battery health certificate that gives consumers, dealers, fleet operators, insurers and lenders a trusted, independent number to work from, rather than the reading provided by the car's own dashboard.

Independent measurement, not a dashboard reading

What sets AVILOO's FLASH Test apart is that the number comes from independent measurement, not from the vehicle's own reporting. Rather than reading out a figure generated internally by the car's battery management system, AVILOO calculates SoH using a statistical model trained on hundreds of thousands of comparable, real, used vehicles. In addition to the car's internal health assessment,

AVILOO also take into account battery State of Health (SoH), mileage, age, cycles, cell voltage spread, energy counts and multiple other diagnostic signals.

That independence matters to consumers and trade buyers alike – fleet managers, remarketers and insurers – who need a consistent, comparable measure of battery health across makes and models, rather than a figure that can vary depending on how a manufacturer's software chooses to report it.

AVILOO Battery Warranty launches across Europe

This summer, AVILOO launched its Battery Warranty across Europe, extending the diagnostics behind the FLASH Test into a genuine, financially backed guarantee on battery health for buyers of used electric vehicles – based entirely on independent diagnostic data rather than manufacturer claims.

For each vehicle, AVILOO uses its global diagnostics database to calculate an individual State of Health limit – the minimum the battery must maintain at 12,427 mi (20,000 kilometres) within the one-year warranty period. If the battery falls below that limit, buyers receive £2,700 in the UK ($3,600) and €3,000 in most European countries.

The guarantee is now live in the UK, Germany, the Netherlands, Finland, Austria, Belgium, Ireland, Switzerland, France, Sweden, Norway and Denmark.

Already trusted by Europe's biggest automotive names

AVILOO's credentials in battery diagnostics are already well established. Mercedes-Benz, Volvo, and Porsche Holding have each selected AVILOO as their preferred independent, third-party battery testing provider for dealerships across Europe, with the AVILOO FLASH Test deployed on both own-brand and trade-in vehicles.

Leasing majors Ayvens and Arval use AVILOO as part of their end-of-lease remarketing process. Auction groups BCA and Cox Automotive have integrated the AVILOO FLASH Test into their European operations. Major dealer groups Hedin and Emil Frey are also live. All relationships are underpinned by European-level agreements.

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About AVILOO

AVILOO is the global leader in battery diagnostics for electric and plug-in hybrid vehicles. The company develops and markets precise, fast, and manufacturer-independent tests to detect the State of Health (SoH) and defects in drive batteries of used vehicles. Its test results are provided in detailed reports and certificates. All analysis methods and certificates are TÜV and CARA certified, ensuring complete transparency and safety for used car buyers, sellers, and users – both commercial and private. With the AVILOO FLASH Test, the company offers the only independent EV battery quick test on the market – not a BMS readout, but a genuine diagnostic that can be carried out cost-effectively and easily on the vehicle in just three minutes. AVILOO currently covers over 96% of all available brands. AVILOO's diagnostic database now spans more than 1 million independent tests carried out on used EVs across North and South America, Europe and Asia, and the company publishes its AVILOO Certified EV Battery Report twice a year to share insights from that data with the wider market.

Notes to editors

This report analyses a subset of AVILOO's global diagnostics database: over 500,000 individual, independent AVILOO FLASH Test results from used EVs tested between 2022 and 2026, drawn from vehicles across North and South America, Europe, Australia and Asia. AVILOO's total diagnostic database exceeds 1 million independent tests worldwide. Chart data: AVILOO FLASH test-weighted

distribution, 99% confidence bands (α = 0.99), calculated at 31,069 mi (50,000 km) / 62,137 mi (100,000 km) / 93,206 mi (150,000 km) mileage buckets, covering 20 popular EV models presented in alphabetical order. The four vehicles explored in detail in this release – Tesla Model Y (78.8 kWh), Volkswagen ID.4 (77 kWh), Hyundai IONIQ 5 (72.6 kWh) and Nissan Leaf ZE1 (40 kWh) – are illustrative examples chosen to show a range of battery sizes and vehicle types, not an exhaustive list or a ranking.

Distances shown in miles, with original km values in parentheses; rounded to whole numbers (1 km = 0.621371 mi).

† Methodology: for each vehicle model, independent AVILOO FLASH-test data is used to produce a statistical distribution of State of Health at each mileage point. The distribution is found by fitting multiple quantile curves, including the median, to the data.

Media contact

AVILOO Press Contact

Uwe Blümel, Corporate Communications
Tel.: +43 676 3310430
uwe.bluemel@aviloo.com

Press Contact Influence Emobility

Tom Green
tom@influenceemobility.com

Sources

* Tesla Model Y: world's best-selling car of any kind for three consecutive years (2023-2025); cumulative global sales passed 4 million units. Source: CnEVPost, March 2026.

** Volkswagen ID.4: 40,335 units sold in Europe in the first half of 2025, the second best-selling EV model in Europe that half, up 38% year-on-year. Source: best-selling-cars.com, July 2025.

*** Nissan Leaf: first mass-market EV, launched December 2010; over 650,000 units sold worldwide as of November 2025. Source: Nissan.