Monthly EV sales: methodology

Ember, October 2026. Covers the Monthly EV sales dataset and the EV Sales Data Tracker.

1. Overview

Ember compiles monthly new car registrations by drivetrain for 57 countries, the European Union and the World, from national vehicle registration authorities, statistics offices and industry associations. From these, Ember estimates each country's electric vehicle (EV) fleet, the electricity that fleet uses and the oil it displaces.

Battery electric vehicles (BEVs) run entirely on electricity and have a larger impact on oil demand than plug-in hybrids (PHEVs). Both count as electric vehicles in the data and the tracker, and each is also shown separately.

The data are updated monthly as publishers release new figures, typically two to six weeks after the end of the month. The latest available month therefore differs between countries. Already published figures can be subject to revisions.

2. Registrations

The data count **new passenger cars registered for the first time in the month**. The tracker and the dataset refer to these as sales. Where a publisher only reports a different measure (all car sales, wholesales or customs imports) or a different set of vehicles (light commercial vehicles, pickups, imported used cars), the data are used as published and the country notes (section 9) say so. Figures are collected to a common scope where possible.

Series start between 2005 and 2024 depending on the country. The smaller EU markets start in 2023.

Canada and South Africa publish their data only quarterly. Their series have one row per quarter, dated at the first day of the quarter's last month (March, June, September and December). Monthly registrations and shares are blank for them, while the quarter, year-to-date and rolling 12-month figures are complete.

3. Drivetrains

Each car is assigned one of these drivetrains.

Drivetrain	Includes
Battery electric	Cars powered only by a battery
Plug-in hybrid	Cars with a combustion engine and a battery that can be charged externally. Range-extended EVs are included as plug-in hybrids.
Hybrid	Cars with a combustion engine and a battery that cannot be plugged in and charged only via the combustion engine and driving. Includes full hybrids and, in most sources, mild hybrids.
Petrol, Diesel	Fully combustion cars, by fuel
Ethanol/petrol blend	Flex-fuel and high-ethanol cars (Brazil, India)
Combustion (unspecified)	Combustion cars where the source gives no petrol/diesel split. For World, every car that is not battery electric or plug-in hybrid.
Other	Hydrogen fuel cell, gas (LPG, CNG) and unclassified cars

The dataset contains two aggregates: **Electric vehicle (BEV+PHEV)** and **All drivetrains**. Shares are always calculated relative to All drivetrains.

Drivetrains are mapped from each source's own categories. Where a source does not separate a drivetrain, its cars stay where the source reports them. Some sources fold plug-in hybrids into hybrids, and some count full or mild hybrids within petrol and diesel. The country notes list these cases.

4. Metrics

For each country or region, month and drivetrain, the data include:

- **Registrations** and their change from the same month a year earlier, in number and %.
- **Share of registrations**, the drivetrain's registrations as a percentage of all drivetrains.
- **Year-to-date** registrations and share for the calendar year, resetting each January.
- **Rolling 3-month** registrations and share over the latest three months. For a country that publishes quarterly, this is the quarter.
- **Rolling 12-month** registrations and share over the latest 12 months, shown once at least 12 months are available.

A drivetrain that a country reports in some months but not in others is set to zero in the months it is absent.

5. Regional aggregates

European Union

The EU is the sum of the 27 member states. Members without a national source in this dataset come from the monthly press releases of the European Automobile Manufacturers' Association (ACEA), which cover all EU markets with the same drivetrain split. A month is published when all members are present, or when the missing members make up less than 1% of EU registrations. Missing members are then carried forward from their previous month. The EU series starts in January 2023.

World

Not every market is observed. World monthly registrations are estimated by scaling the sum of the monthly sales of the countries captured in this dataset to match annual global car sales from the IEA's Global EV Data Explorer. This is done separately for battery electric, plug-in hybrid and all other cars. Countries that publish only quarterly (Canada, South Africa) are not part of the monthly sum, and the scaling covers their market.

In recent years, the countries in this monthly dataset cover over 85% of global car sales and over 90% of EV sales. Recent month world figures are only published for months where they cover at least 60%.

Only battery electric, plug-in hybrid and combustion (unspecified) are published for World. The global totals cover all other cars together, but not their split into petrol, diesel, hybrid and other.

6. Current EV fleet

The current EV fleet is an Ember estimate. It starts from the latest published year-end fleet, from Eurostat or the IEA, adds the cars registered since and subtracts the cars estimated to have left the fleet. Battery electric and plug-in hybrid fleets are estimated separately for each country and region.

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fleet(month) = year-end fleet × (1 − attrition ÷ 12 × months since year-end)
               + registrations since year-end
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- **Year-end fleet.** For most European countries and the EU, this is Eurostat's vehicle register statistics (passenger cars by type of motor energy at 31 December, dataset road_eqs_carpda). Where a

country's Eurostat series starts late, mostly plug-in hybrids before 2022–23 and the United Kingdom before 2021, the IEA's EV stock is used for the earlier years, and the year in which the source changes is reconciled to Eurostat's first year-end, so the series has no break. For other countries and the World, it is the EV stock in the IEA's Global EV Data Explorer. The latest year-end published at or before the previous December is used.

- **Attrition** is the share of the existing fleet that leaves in a year, apart from new registrations. An attrition of 2% means that 2 in every 100 EVs on the road at the start of the year are gone by its end, scrapped or exported as used cars. Exports are typical in some markets like Germany and the United Kingdom. Where more used EVs are imported than leave, the fleet grows and attrition is negative. Imports are typical in some markets like Denmark, the Netherlands and the Baltic states. Attrition by country is estimated from consecutive year-end fleets and that year's registrations, and limited to -10% to +25% a year, the typical range, so that one-off outliers do not carry into other years. For the current year, the average of the last three years is used. Where no rate can be derived, attrition is 1.5% a year, a central estimate for EVs as the fleet is still young. It applies to the opening fleet, spread evenly over the year.
- Months missing from a country's registrations are filled with the same month a year earlier, or the mean of the nearest reported months.
- For a country that publishes quarterly (Canada, South Africa), the fleet is estimated at the end of each quarter.
- Where Ember has no year-end fleet for a country (Ecuador, Hong Kong, Nepal, Peru, Taiwan, Ukraine, Uruguay), the EV fleet is the sum of registrations since the series starts. This generally represents a lower bound.
- The World fleet uses the World registrations estimate (section 5) as its additions.

7. Electricity demand and oil displaced

The estimates follow Ember's EV oil-displacement methodology. They are calculated for the fleet of each country and drivetrain and then summed.

Quantity	Calculation
Distance per EV (km/yr)	Average distance per car × EV mileage ratio
Electric distance (km/yr)	Fleet × electric share × distance per EV. The electric share is 1 for BEVs and 0.35 for PHEVs (unless otherwise specified).
Electricity demand (GWh/yr)	Electric distance × EV energy intensity (kWh/100 km) ÷ 100 ÷ 10^6
Fuel avoided (litres of gasoline equivalent/yr)	Electric distance × counterfactual energy intensity (l/100 km) ÷ 100
Oil displaced (barrels of oil equivalent/yr)	Fuel avoided × petroleum share of the fuel blend × 9.3 kWh per litre × 1.09 (upstream losses) ÷ 1,700 kWh per barrel of oil equivalent
Value of oil displaced (USD/yr)	Oil displaced × Brent price

Assumptions. Values are country-specific where evidence exists, otherwise regional or global defaults.

- **Average distance per car.** Taken from national statistics or published studies where available. These are the EU Joint Research Centre's IDEES database for EU countries, the Department for Transport for the UK, the Federal Highway Administration for the United States (18,000 km), the Ministry of Land, Infrastructure, Transport and Tourism for Japan (8,000 km) and Oak Ridge National Laboratory for China (12,300 km). Elsewhere, an average of 12,000 km is assumed, taken from the IEA.
- **Energy intensity.** Calculated for each country as the registration-weighted average of new cars in the Global Fuel Economy Initiative's data (2024). For the counterfactual, the weighted average across all non-plug-in cars is used. An uplift of 25% (EVs) and 20% (counterfactual) is applied to reflect the gap

between the test cycle (WLTC) and real-world conditions. The resulting EV energy intensity is 18–29 kWh/100 km, and the counterfactual car uses 6–12 l/100 km.

- **Electric driving share.** Plug-in hybrids are assumed to drive 35% of their distance on electricity, based on real-world analysis of plug-in hybrid use in Europe (ICCT, 2022). For China, 55% is used, based on the Annual Report on the Big Data of New Energy Vehicles in China (2024). This reflects different usage patterns and a high share of extended-range EVs, which are counted as plug-in hybrids in China's data.
- **EV mileage ratio.** Reflects whether EVs are driven more or less than the average car. EVs are newer than the average car and are driven more in most markets. The ratio is 1.3 in Europe, where many EVs are company cars, 1.0 in China, 0.8 in the United States and 1.2 elsewhere. The values draw on European mileage studies, Chinese charging data, Argonne National Laboratory's analysis for the United States, and how mileage declines with vehicle age.
- **Petroleum share of road fuel.** Accounts for biofuels blended into road fuel, based on blending mandates. It is 0.80 in Brazil, 0.93 in the United States, 0.95 in the EU and the UK, and 1 elsewhere.
- **From petroleum to crude oil.** Oil displaced is expressed in barrels of crude oil equivalent. The petroleum fuel avoided is converted to energy (9.3 kWh per litre), raised by 9% for the oil used to extract, refine and transport it (OPGEE, JEC), and divided by the energy in a barrel of crude oil (1,700 kWh).
- **Gross figure.** The fuel used to generate the electricity for charging EVs is not subtracted.
- **Oil price.** The value of oil displaced uses one price for every country, the average Brent spot price over the latest six months (US Energy Information Administration).
- **Regions.** EU and World figures are built bottom-up. Member countries are summed, with a country whose latest month lags, or that publishes quarterly, carried forward from its latest estimate. Any part of the region's fleet not covered by member countries is modelled with the region's default assumptions.

8. Data files

monthly_ev_sales.csv has one row per country or region, month and drivetrain.

Column	Description
Area, ISO 3 code, Area type	Country or region, its ISO 3166 alpha-3 code, and "Country or economy" or "Region"
Date	First day of the month. For quarterly data, the first day of the quarter's last month.
Data frequency	Monthly, or Quarterly for countries that publish only quarterly (section 2). Quarterly rows leave the monthly columns blank.
Drivetrain, Is aggregate drivetrain	Drivetrain (section 3). Aggregates are Electric vehicle (BEV+PHEV) and All drivetrains.
Registrations	New registrations in the month. Blank for quarterly data.
Registrations YoY change, Registrations YoY change (%)	Change from the same month a year earlier. Blank for quarterly data.
Share of registrations (%)	Share of All drivetrains in the month. Blank for quarterly data.
Year-to-date registrations, Year-to-date share of registrations (%)	Calendar year to date
Rolling 3-month registrations, Rolling 3-month share of registrations (%)	Latest three months, or the quarter for quarterly data. Blank until three months are available.
Rolling 12-month registrations, Rolling 12-month share of registrations (%)	Latest 12 months. Blank until at least 12 months are available.

Column	Description
Continent, Ember region, EU / OECD / G20 / G7 / ASEAN member	Groupings

monthly_ev_fleet_impact.csv has one row per country or region, for its latest available month.

Column	Description
Area, ISO 3 code, Area type	As above
Latest available date	First day of the latest month with registrations data
EV fleet (vehicles)	Ember's estimate of the battery electric and plug-in hybrid fleet (section 6)
EV fleet electricity demand (GWh per year)	Annual electricity demand of that fleet
Oil displaced (thousand barrels of oil equivalent per year)	Annual oil displaced by that fleet, in barrels of crude oil equivalent
Value of oil displaced (USD million per year)	At the Brent price in the next column
Brent price 6-month average (USD/bbl)	Average Brent spot price over the latest six months

9. Country sources and notes

Sources are listed alongside the years each covers. Where data reach Ember through Robbie Andrew's vehicle registration data, the original source is named as well.

Country or region	Sources	Notes
World	Ember estimate from the country series in this dataset, scaled to annual global totals from the IEA's Global EV Data Explorer.	Estimated by scaling the countries covered (over 85% of global car sales and over 90% of EV sales) up to annual global car sales. All cars other than battery electric and plug-in hybrid, including hybrids, are shown as Combustion (unspecified).
EU	Sum of the member states' series in this dataset.	Small members missing in a month (under 1% of the EU market) are carried forward from previous months.
Albania	General Directorate of Road Transport Services (DPSHTRR), via Robbie Andrew's vehicle registration data	Data represents car sales.
Australia	Federal Chamber of Automotive Industries (FCAI) VFACTS	All new light vehicles, including utes and light commercial vehicles.
Austria	ACEA from 2023; Statistics Austria (2018–2022)	Data represents car sales.
Belgium	ACEA from 2023; FPS Mobility and Transport (2013–2022)	Data represents car sales. Mild hybrids are in Hybrid before 2023 and within petrol and diesel from 2023, when the source changes.
Brazil	Brazilian Automotive Industry Association (ANFAVEA)	Cars and light commercial vehicles. Flex-fuel cars, most of the market, are shown as Ethanol/petrol blend.
Bulgaria	European Automobile Manufacturers' Association (ACEA)	Data represents car sales.
Canada	Statistics Canada, new motor vehicle registrations	All new light vehicles, including SUVs, pickup trucks and vans. Published quarterly only, so monthly figures are not available.
Chile	National Automotive Association of Chile (ANAC)	Light and medium vehicles, including light commercial vehicles.

Country or region	Sources	Notes
China	China Passenger Car Association (CPCA)	Data represents car sales. Plug-in hybrids include extended-range electric vehicles, and non-plug-in hybrids are included in Combustion (unspecified).
Colombia	National Business Association of Colombia (ANDI), via Robbie Andrew's vehicle registration data	Data represents car sales. Plug-in hybrids are not reported separately and are included in Hybrid.
Croatia	European Automobile Manufacturers' Association (ACEA)	Data represents car sales.
Cyprus	European Automobile Manufacturers' Association (ACEA)	Data represents car sales.
Czechia	Car Importers Association (SDA)	Data represents car sales. Before 2018, plug-in hybrids are included in Hybrid. From 2018, full hybrids are counted within petrol and diesel.
Denmark	Statistics Denmark	Data represents car sales. Hybrids are counted within petrol and diesel.
Ecuador	Association of Automotive Companies of Ecuador (AEADE), via Robbie Andrew's vehicle registration data	Data represents car sales. Plug-in hybrids are not reported separately and are included in Hybrid.
Estonia	European Automobile Manufacturers' Association (ACEA)	Data represents car sales.
Finland	Finnish Transport and Communications Agency (Traficom)	Data represents car sales. Hybrids are counted within petrol and diesel.
France	French Ministry for the Ecological Transition, statistics service (SDES)	Data represents car sales.
Germany	Federal Motor Transport Authority (KBA)	Data represents car sales.
Greece	European Automobile Manufacturers' Association (ACEA)	Data represents car sales.
Hong Kong (SAR of China)	Transport Department (TD)	Data represents car sales, excluding used imports. Plug-in hybrids and hybrids are not reported separately and are included in Petrol.
Hungary	European Automobile Manufacturers' Association (ACEA)	Data represents car sales.
Iceland	European Automobile Manufacturers' Association (ACEA)	Data represents car sales.
India	Ministry of Road Transport and Highways (Vahan dashboard)	Data represents car sales. From 2025, most new petrol cars are registered as E20 and shown as Ethanol/petrol blend, so the fall in Petrol is a change of fuel label. CNG cars are in Other.
Indonesia	Association of Indonesia Automotive Industries (GAIKINDO), via Robbie Andrew's vehicle registration data	Data represents car sales. Wholesales (factory to dealer), not registrations.
Ireland	Society of the Irish Motor Industry (SIMI)	Data represents car sales.
Israel	Israel Vehicle Importers Association, via Robbie Andrew's vehicle registration data	Data represents car sales.
Italy	UNRAE (association of foreign vehicle makers in Italy)	Data represents car sales. LPG and natural gas cars, about 8% of the market, are in Other.
Japan	Japan Automobile Dealers Association (JADA); Zenkeijikyo (kei cars)	Data represents car sales, including kei cars (軽自動車) from Zenkeijikyo. Kei battery-electric models are identified by model name; kei cars have no plug-in or full hybrids.

Country or region	Sources	Notes
Latvia	European Automobile Manufacturers' Association (ACEA)	Data represents car sales. From 2025, hybrids are counted within petrol.
Lithuania	European Automobile Manufacturers' Association (ACEA)	Data represents car sales. In 2023, plug-in hybrids are included in Hybrid.
Luxembourg	ACEA from 2023; STATEC (2010–2022)	Data represents car sales.
Malaysia	Road Transport Department (JPJ)	Includes pickups and vans. Plug-in hybrids are not reported separately and are included in Hybrid.
Malta	European Automobile Manufacturers' Association (ACEA)	Data represents car sales.
Mexico	National Institute of Statistics and Geography (INEGI)	Data represents car sales. Excludes BYD and Tesla, and Chirey and Omoda from May 2025, which do not report to INEGI, so EV sales are understated.
Nepal	Department of Customs, via Robbie Andrew's vehicle registration data	Data represents car sales. Vehicle imports from customs records, not registrations.
Netherlands	Netherlands Vehicle Authority (RDW) from 2024; Netherlands Enterprise Agency (RVO) (2018–2023)	Data represents car sales. Before 2024, hybrids are counted within petrol and diesel.
New Zealand	NZ Transport Agency Waka Kotahi (NZTA)	Data represents car sales. Includes imported used cars at their first New Zealand registration, which lowers the EV share.
Norway	Norwegian Road Traffic Information Council (OFV), via Robbie Andrew's vehicle registration data	Data represents car sales.
Peru	Peruvian Automotive Association (AAP), via Robbie Andrew's vehicle registration data	Data represents car sales.
Poland	Polish Automotive Industry Association (PZPM), from the Central Vehicle Register, via Robbie Andrew's vehicle registration data	Data represents car sales.
Portugal	Automobile Association of Portugal (ACAP), via Robbie Andrew's vehicle registration data	Data represents car sales.
Romania	European Automobile Manufacturers' Association (ACEA)	Data represents car sales. Plug-in hybrids are not reported separately and are included in Hybrid.
Singapore	Land Transport Authority (LTA)	Data represents car sales.
Slovakia	European Automobile Manufacturers' Association (ACEA)	Data represents car sales.
Slovenia	European Automobile Manufacturers' Association (ACEA)	Data represents car sales.
South Africa	National Association of Automobile Manufacturers of South Africa (naamsa)	Data represents car sales. Quarterly only, includes some light commercial vehicles.
South Korea	Ministry of Trade, Industry and Energy (MOTIE)	Includes commercial vehicles.
Spain	Directorate-General for Traffic (DGT)	Data represents car sales.
Sweden	Statistics Sweden (SCB)	Data represents car sales.
Switzerland	auto-schweiz from 2024; Federal Statistical Office (FSO) (2005–2023)	Data represents car sales.
Taiwan (China)	Highway Bureau, Ministry of Transportation and Communications (THB)	Data represents car sales. From 2025, plug-in hybrids are included in Hybrid.

Country or region	Sources	Notes
Thailand	Department of Land Transport registrations, published by the Thailand Automotive Institute	Includes pickup trucks.
Türkiye	Turkish Statistical Institute (TÜİK); plug-in hybrid split from the Automotive Distributors' and Mobility Association (ODMD)	Data represents car sales. Plug-in hybrids are estimated from ODMD's monthly plug-in share of hybrid sales. Before 2024, all hybrids are in Hybrid.
Ukraine	Ministry of Internal Affairs vehicle register, via Robbie Andrew's vehicle registration data	Data represents car sales. Includes imported used cars at their first registration in Ukraine. Plug-in hybrids are not reported separately and are included in Hybrid.
United Kingdom	Society of Motor Manufacturers and Traders (SMMT)	Data represents car sales. Mild hybrids are counted within petrol and diesel.
United States	Argonne National Laboratory	Includes all light-duty vehicles (cars, SUVs, pickups and vans).
Uruguay	Automotive Trade Association of Uruguay (ACAU), via Robbie Andrew's vehicle registration data	Data represents car sales. Plug-in hybrids are not reported separately and are included in Hybrid.
Viet Nam	Vietnam Automobile Manufacturers' Association (VAMA), VinFast and TC Group, via Robbie Andrew's vehicle registration data	Data represents car sales. Covers VAMA members, VinFast and Hyundai (TC Group) only. Plug-in hybrids are not reported separately and are included in Hybrid.

10. Limitations

Every effort has been made to make data as comparable as possible across countries. However, there are some limitations to take into account:

- Scope can differ between sources (light vehicles or passenger cars, imported used cars, sales or registrations). Shares are more comparable across countries than totals.
- World is an estimate. The covered countries' mix is scaled to annual global totals, which are published rounded.
- The EV electricity demand estimates use energy intensity from 2022 electric vehicle registrations as a fleet average and assumes no difference in driving patterns for battery electric and plug-in hybrid cars.
- Oil displaced in barrels of crude oil equivalent is not directly comparable with estimates in barrels of refined product.

11. Data use and acknowledgements

This dataset and the EV Sales Data Tracker only aim to compile national data publications into a comparable, up-to-date dataset that enables comparative analysis of the electrification of the transport sector. Every effort has been made to ensure accuracy. Where possible, we compare sources to confirm their agreement.

The dataset and the tracker were built in collaboration with New AutoMotive, building on its substantial prior work tracking EV sales across a variety of markets.

Recent and historical data for several countries come from Robbie Andrew's (CICERO) vehicle registration data. Year-end fleet totals are used in the current fleet estimate and come from Eurostat for most European countries and the EU, and from the IEA Global EV Data Explorer for other countries and the World.

IEA data are also used to scale Ember's monthly World estimates (see section 5). The European Alternative Fuels Observatory's figures were used to validate the European series.

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