Number of motor vehicles

This report presents an analysis of the growth of the motor vehicle fleet in Aotearoa New Zealand, particularly regarding different fossil fuel types and electric vehicles. These data are drawn from the Ministry of Transport's Annual and Quarterly Fleet Statistics.

Key facts

- In 2022, there were 4.6 million vehicles in New Zealand, up from 2.8 million in 2001.
- The number of light vehicles per capita remains high relative to other countries at 817 vehicles per 1,000 people in 2022 - and is still rising.
- While electric vehicles represented less than 2% of the light fleet in 2022, the EV fleet doubled in size relative to 2021, driven by rapid growth in EV registrations linked to the Clean Car Discount.
- Light EV ownership per capita was highest in more urbanised regions.

Why is the number of motor vehicles important for environmental health?

The use of motor vehicles can impact human health through air pollution, crashes and accidents, by accelerating climate change and through noise. In particular, motor vehicle emissions from petrol and diesel combustion affect outdoor air quality and human health. It has been estimated that motor vehicle emissions caused 2,247 premature deaths in 2016 (Kuschel et al. 2022) – compared to 327 deaths from road traffic accidents that year (Ministry of Transport 2023).

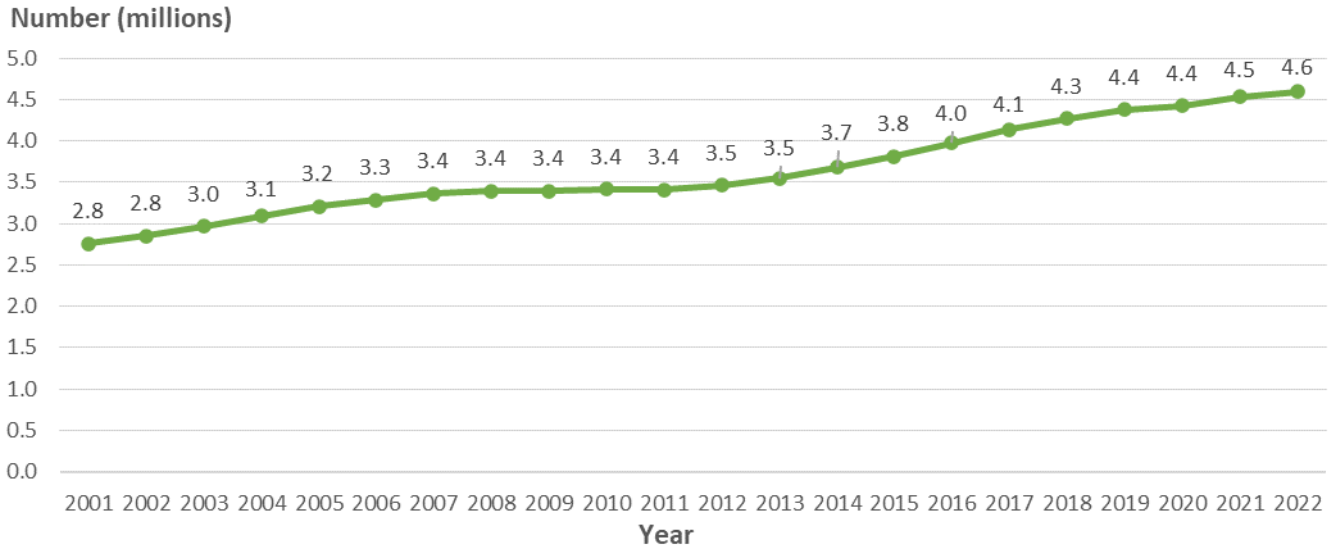
Evidence also shows that diesel engine fumes can cause lung cancer (IARC, 2023). Road traffic noise can also affect health, particularly through high blood pressure resulting from stress associated with road noise (van Kempen and Babisch 2012).

The size of the vehicle fleet continues to grow

By 2022, the number of motor vehicles in New Zealand had increased by just over 63% relative to 2001, rising from 2.8 million to 4.6 million. This contrasts with a growth in population of 32% over the same period.

Annual growth in the vehicle fleet has varied over time in response to policy changes, global financial conditions, and other significant events such as the COVID-19 pandemic. After slowing in the years following the 2007–2008 global financial crisis, fleet growth accelerated between 2013 and 2018. Growth then slowed once more, particularly during 2020 due to the COVID-19 pandemic (Figure 1).

Figure 1: Number of motor vehicles (all types), 2001–2022



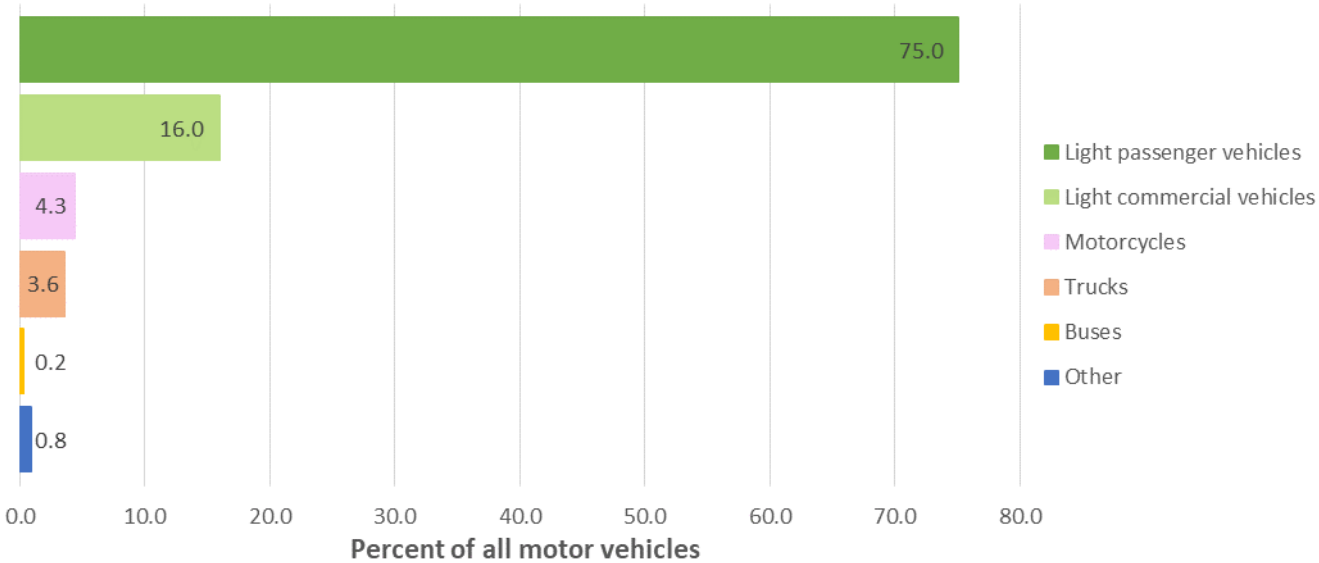
Source: Ministry of Transport 2024a

The vehicle fleet is almost exclusively composed of light vehicles

In 2022, light vehicles made up 91% of the total vehicle fleet. Light passenger vehicles continue to be the most common type of vehicle, with 3.4 million making up 75% of the total fleet (Figure 2). Light commercial vehicles accounted for a further 16% of the fleet (733,948 vehicles).

The remainder consisted of 199,393 motorcycles (4.3% of the fleet), 164,958 trucks (3.6%), 11,464 buses (0.2%) and 38,182 vehicles of other types (0.8%). These proportions have remained largely unchanged over time since 2001.

Figure 2: Vehicle types as a proportion of the combined vehicle fleet, 2022



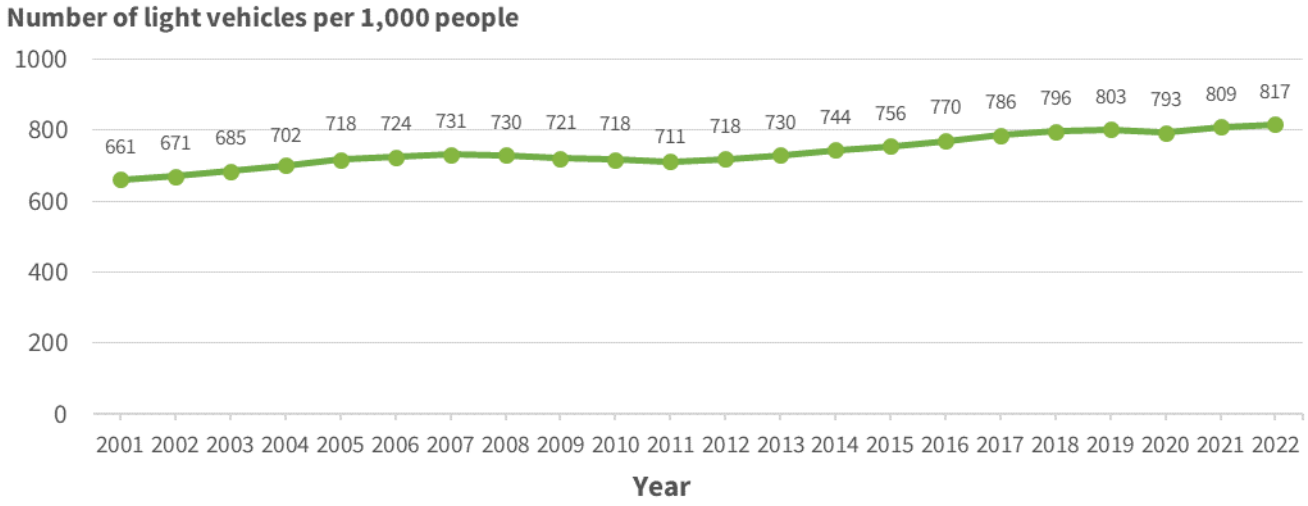
Note: The total for all types does not add to 100% due to rounding. 'Other' vehicles include mobile machines, special-purpose vehicles, tractors and agricultural equipment.
Source: Ministry of Transport 2024a

Vehicle ownership per capita is high relative to other countries

New Zealand has one of the world's highest rates of motor vehicle ownership (Ministry of Transport 2022). Between 2001 and 2022, the number of light vehicles per capita increased from 661 to 817 vehicles per 1,000 people (Figure 3).

A minor decrease occurred in 2020, but this is likely a result of the rate of imports slowing during the coronavirus pandemic; the rates have increased every year since.

Figure 3: Light motor vehicle ownership per capita, 2001–2022



Source: Ministry of Transport 2024a

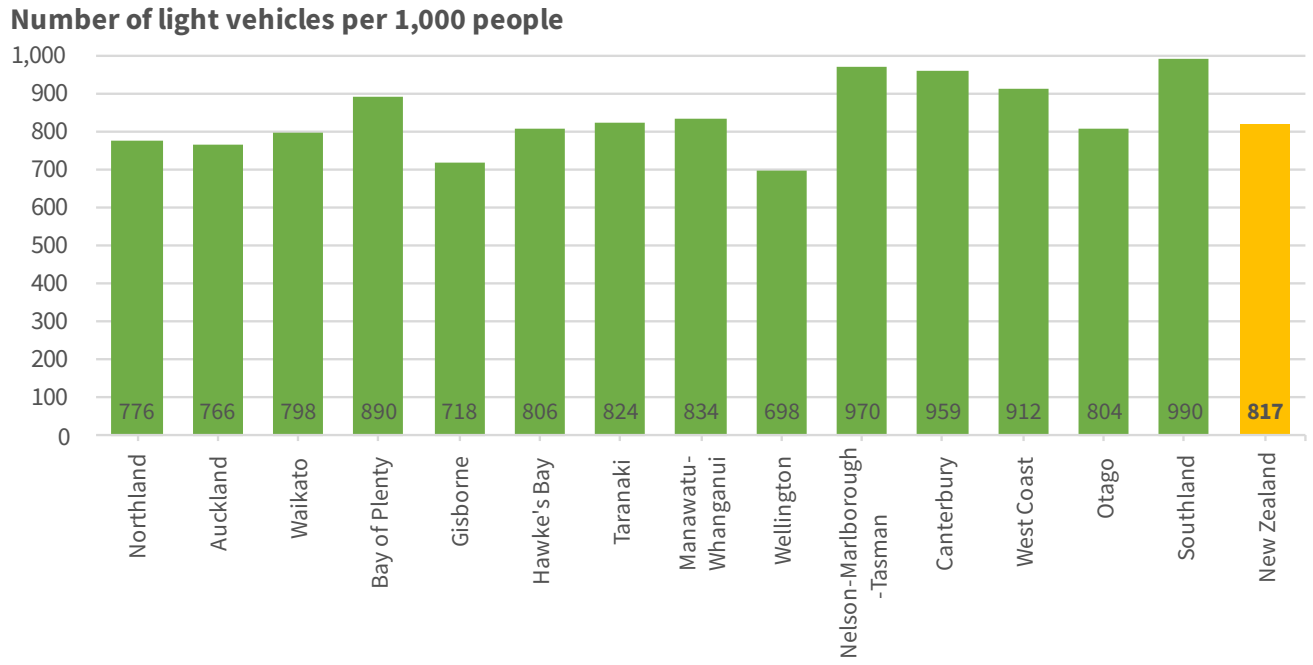
Light vehicle ownership across New Zealand

Light vehicle ownership rates varied across the country in 2022 (Figure 4). The region with the highest rate was Southland, with near-universal ownership: 990 vehicles per 1,000 people - up from 980 the previous year.

The Wellington region hosted the lowest ownership rates (689 vehicles per 1,000 people), which may reflect commuting habits. In Wellington, 24% of all commuting time is spent using active or public transport, reducing the need to own a vehicle.

See our 'Commuting time by mode of transport' report for more details.

Figure 4: Light motor vehicles per capita, by region, 2022

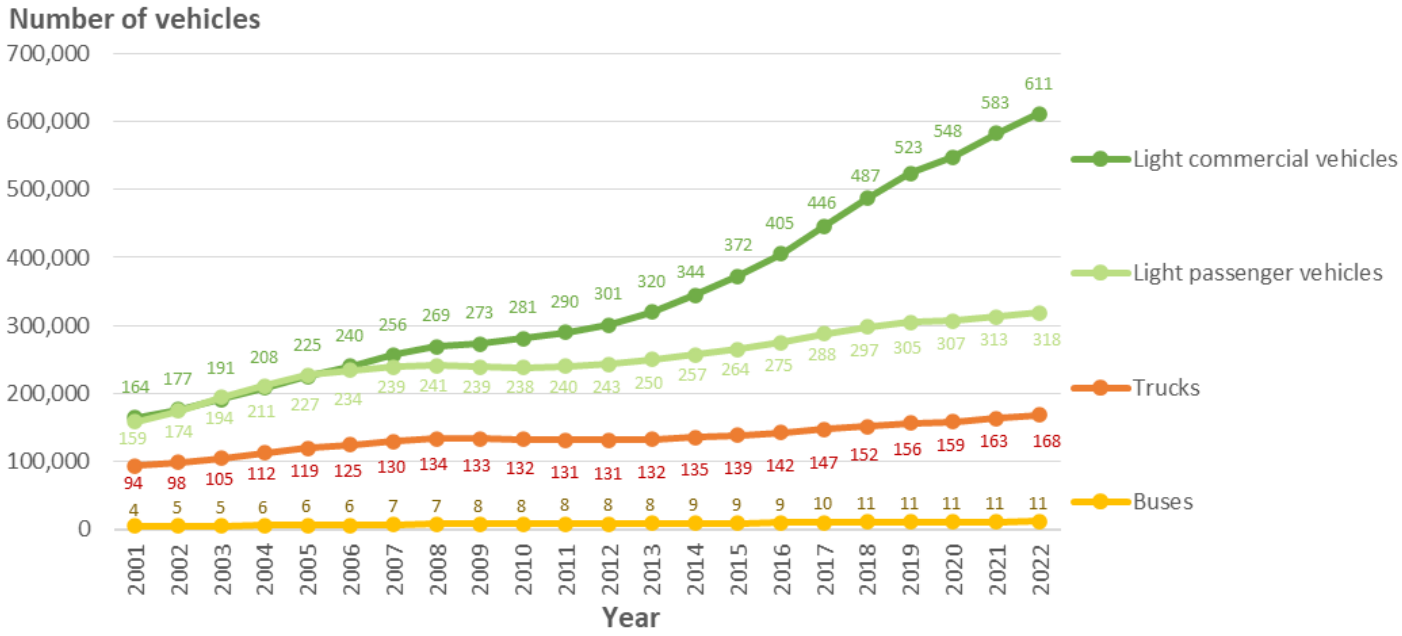


Source: Ministry of Transport 2024a

Diesel vehicle numbers are still increasing

The number of diesel-powered vehicles has increased steadily since 2001, with particularly strong growth occurring in the light commercial fleet (Figure 5).

Figure 5: Number of diesel vehicles, by vehicle type, 2001–2022



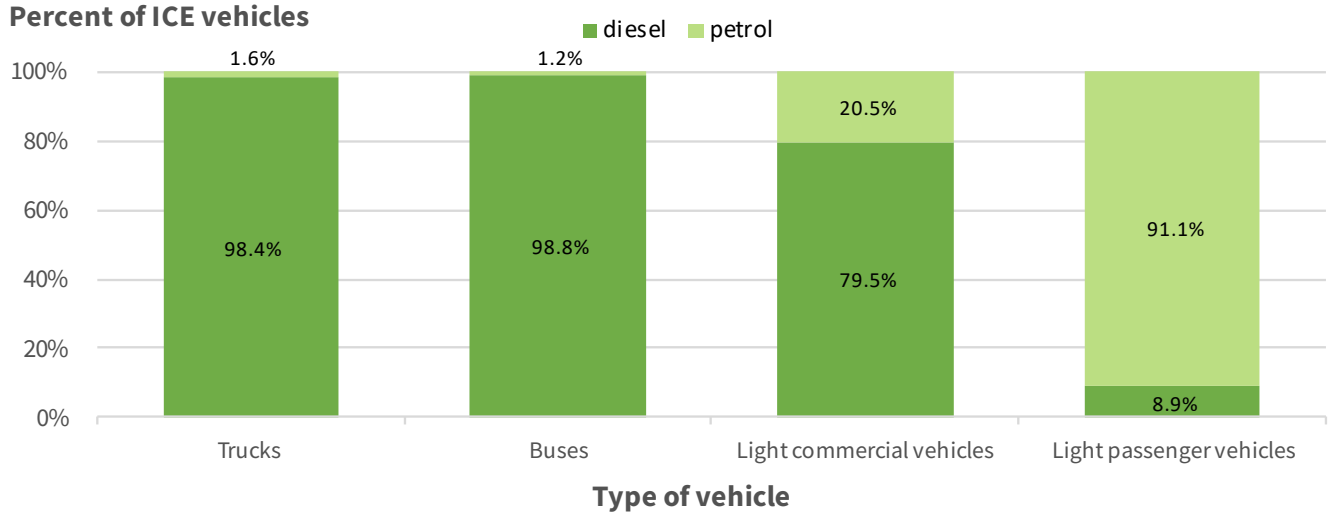
Note: Labels are in units of one thousand.
Source: Ministry of Transport 2024a

Almost all trucks and buses are diesel-powered

In 2022, 24.5% of all internal combustion engine (ICE) vehicles were diesel-powered, though diesel fuels are limited primarily to heavy and commercial vehicles (Figure 6). Nearly all trucks and non-electric buses were diesel-powered (over 98% in both cases) as were 79.5% of light commercial vehicles. There were roughly twice as many electric buses as there were petrol-powered ones, 248 electric (equal to 2.2% of all buses) compared to 133 petrol-fuelled ones.

The proportion of diesel vehicles within the light commercial fleet has grown over the past 20 years – in 2001, only 45.8% of these were diesel-powered.

Figure 6: Percentage of internal combustion engine vehicles, by fuel and type, 2022



Note: This graph only includes vehicles powered by internal combustion engines (ICE). This includes petrol hybrids, but not pure electric vehicles.
Source: Ministry of Transport 2024a

Electric vehicles in New Zealand

Electric vehicles (EVs) are charged externally from a power source. There are two types of electric vehicles in New Zealand:

- Pure electric vehicles are powered solely by batteries
- Plug-in hybrid electric vehicles use a combination of externally charged batteries and a conventional fuel-burning engine

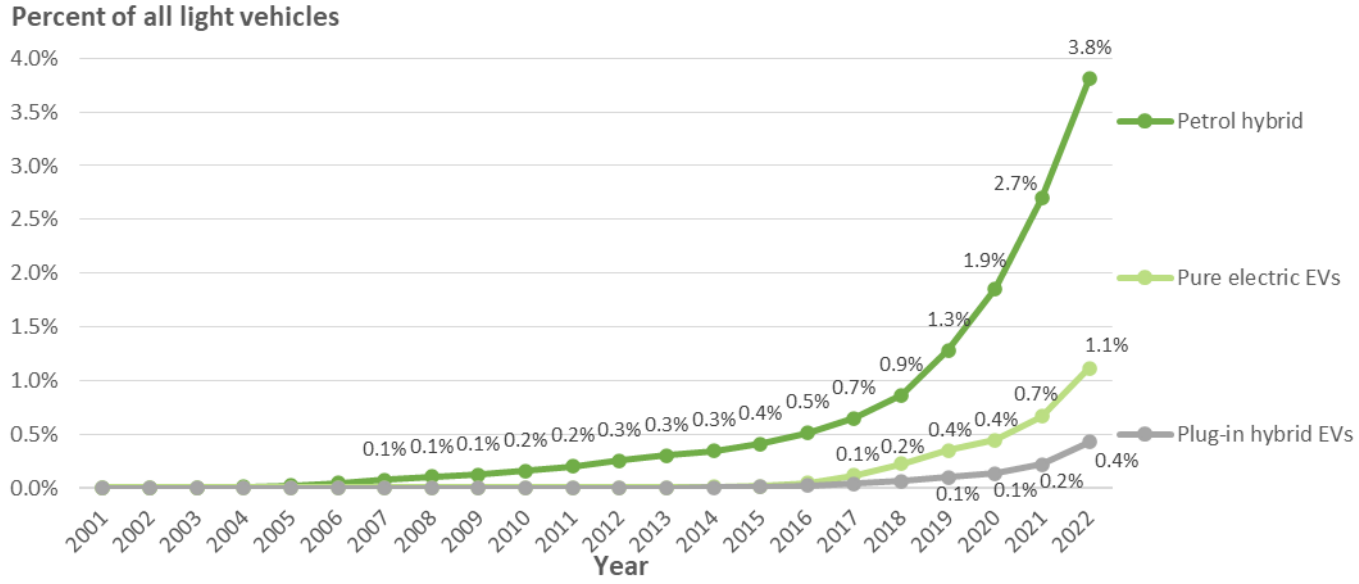
Petrol hybrid vehicles are not counted as 'electric vehicles' in this factsheet, as they are not rechargeable from external electrical power sources. Instead, their batteries are charged from onboard sources - using electricity generated by their ICE engine and regenerative braking.

Electric and petrol hybrid vehicles are a growing minority

While the light vehicle fleet remains dominated by vehicles powered exclusively by fossil fuels, both EVs and petrol hybrids have grown as a proportion of the fleet, with growth accelerating since 2016. However, the proportions remain very low, with petrol hybrids making up just 3.8% of the light fleet in 2022, while pure EVs and plug-in hybrid EVs combined make up only 1.6% of the fleet (Figure 7).

The uptake of EVs will need to increase greatly in order to meet the Government target of zero-emissions vehicles being 30% of the light vehicle fleet by 2035.

Figure 7: Electric and petrol hybrid vehicles as a percentage of the light fleet, 2001–2022

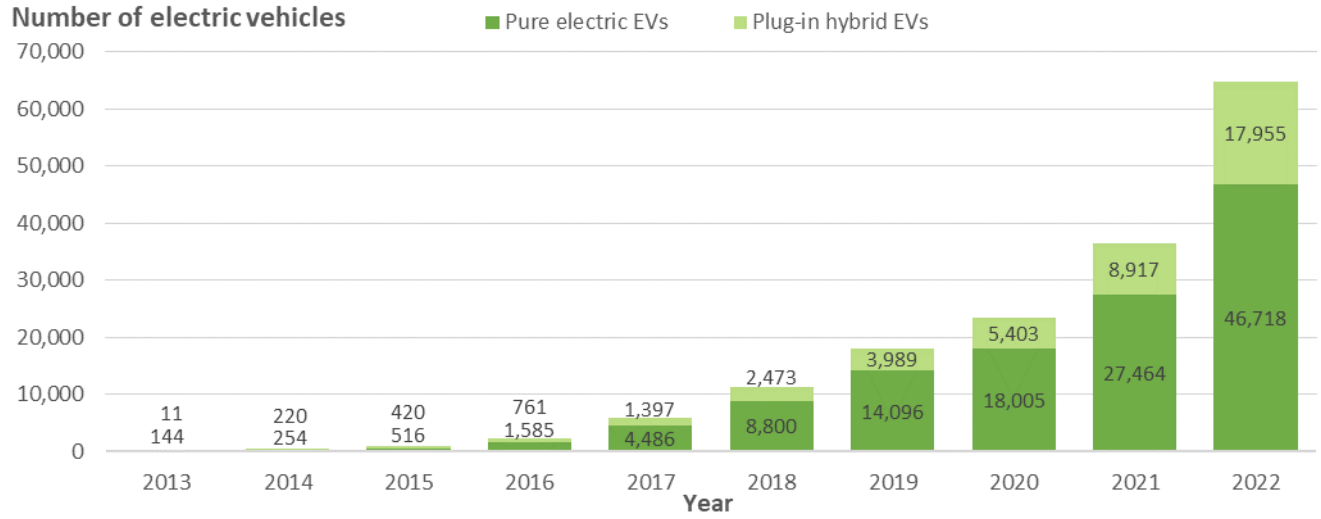


Source: Ministry of Transport 2024a

The EV fleet doubled in size between 2021 and 2022

The electric vehicle fleet in New Zealand is almost exclusively composed of light passenger vehicles. In 2022, there were nearly 65,000 electric vehicles, up from only 155 in 2013, and almost double the number that were in service in 2021 (Figure 8). Pure electric EVs comprise just over 72% of the light EV fleet; the remainder are plug-in hybrid vehicles.

Figure 8: Number of light electric vehicles, 2013-2022



Source: Ministry of Transport 2024a

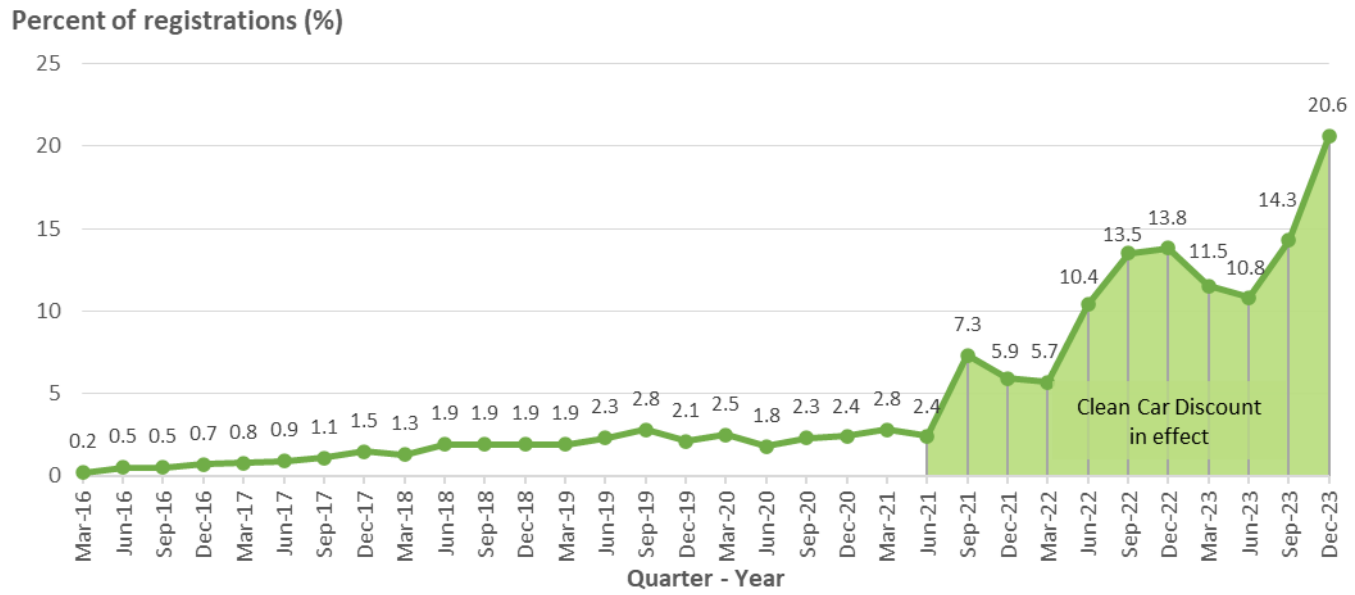
Electric vehicles are also becoming better represented among new registrations of light vehicles (Figure 9). In particular, the introduction of the Clean Car Discount scheme in July 2021 marked the start of rapid growth in the share of quarterly registrations that were EVs.

Starting from only 2.6% of quarterly registrations in the second quarter of 2021, this growth continued all the way to the discontinuation of the rebate in December 2023, at which point a full fifth (20.6%) of registrations

that quarter were EVs.

It remains to be seen what effect the removal of the rebate will have on quarterly registrations going forward.

Figure 9: EVs as a percentage of quarterly light vehicle registrations, 2016–2023



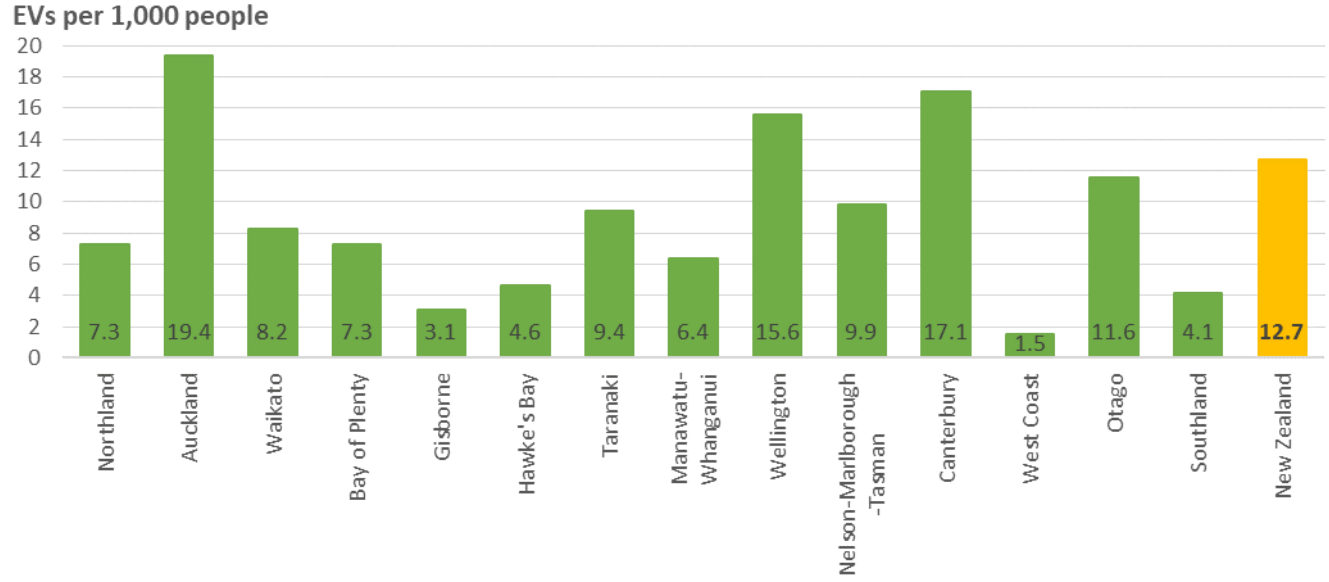
Source: Ministry of Transport 2024b

Light electric vehicles across New Zealand

In 2022, there were 12.7 light EVs per 1,000 people in New Zealand (Figure 10), up from 7.8 in 2021. Ownership per capita increased in all regions but was still markedly higher in major urban centres.

The region with the highest rate was Auckland (19.4 EVs per 1,000 people), followed by Canterbury (17.1) and Wellington (15.6). The per capita ownership rates in these areas were almost double what they were in 2021. The West Coast region had the lowest EV ownership rate, with less than two EVs per 1,000 people.

Figure 10: Light electric vehicles per capita, by region, 2022



Source: Ministry of Transport 2024a

Data for this indicator

This factsheet is an analysis of the most recent data from the Ministry of Transport's annual vehicle fleet statistics, published in February 2024.

The following categories of vehicles are used:

- Light vehicles, which includes:
    - Light passenger vehicles (passenger vehicles weighing up to 3,500 kg)
    - Light commercial vehicles (the following if under 3,500 kg: goods vans, trucks, utilities, buses, and motor caravans)
- Trucks (the following if over 3,500 kg: goods vans, trucks, utility vehicles, and motor caravans)
- Buses (those over 3,500 kg, including minibuses)
- Motorcycles (including mopeds and quadbikes/ATVs)

Data on electric vehicle numbers and registrations come from the Ministry of Transport's quarterly electric vehicle registrations and cover two forms of light electric vehicles:

- Plug-in hybrid electric vehicle (PHEV), and
- Battery electric vehicles (BEV).

The data includes all vehicles on the Motor Vehicle Register, excluding those exempt from having a license (not used on roads) and those with an expired license (if the license has not been renewed within 6 months).

For additional information, see the Metadata sheet.

References

IARC (International Agency for Research on Cancer). 2023. *List of classifications by cancer sites with sufficient or limited evidence in humans, IARC Monographs Volumes 1–133.* URL: https://monographs.iarc.who.int/wp-content/uploads/2019/07/Classifications_by_cancer_site.pdf (accessed 11/03/2024)

Kuschel G, Metcalfe J, Sridhar S, Davy P, Hastings K, Mason, K et al. 2022. *Health and air pollution in New Zealand 2016 (HAPINZ 3.0): Volume 1 – Findings and implications.* Report prepared by G Kuschel, J Metcalfe, S Sridhar, P Davy, K Hastings, K Mason, T Denne, J Berentson-Shaw, S Bell, S Hales, J Atkinson and A Woodward for Ministry for the Environment, Ministry of Health, Te Manatū Waka Ministry of Transport and Waka Kotahi NZ Transport Agency.

Ministry of Transport. 2023. *Deaths on New Zealand Roads since 1921*. Wellington: Ministry of Transport. URL https://www.transport.govt.nz/statistics-and-insights/safety-road-deaths/sheet/death-on-nz-roads-since-1921 (accessed 11/05/2023).

Ministry of Transport. 2024a. *Annual vehicle fleet statistics 2022.* Wellington: Ministry of Transport. URL: https://www.transport.govt.nz/statistics-and-insights/fleet-statistics/sheet/annual-fleet-statistics (accessed 28/02/2024).

Ministry of Transport. 2024b. *Quarterly vehicle fleet statistics.* Wellington: Ministry of Transport. URL: https://www.transport.govt.nz/statistics-and-insights/fleet-statistics/quarterly-fleet-statistics (accessed 21/02/2024).

Van Kempen E, Babisch W. 2012. *The quantitative relationship between road traffic noise and hypertension: a meta-analysis.* Hypertension 30 (6): 1075.

Explore geographic data on interactive dashboards:

Transport dashboard | Air quality dashboard | EHINZ Dashboard

Previous surveillance reports:

2023 | 2022 | 2019 | 2017

Other related topics include:

Age of motor vehicles | Particulate matter | Other air pollutants

Health effects of air pollution | Household travel time by mode | Main mode of transport to work

Disclaimer

Author

The author of this report is Patrick Hipgrave, ehinz@massey.ac.nz

Citation

Environmental Health Intelligence. 2024. *Number of motor vehicles*. [Surveillance Report]. Wellington: Environmental Health Intelligence NZ, Massey University.

Visit the EHINZ website

Subscribe to our newsletter