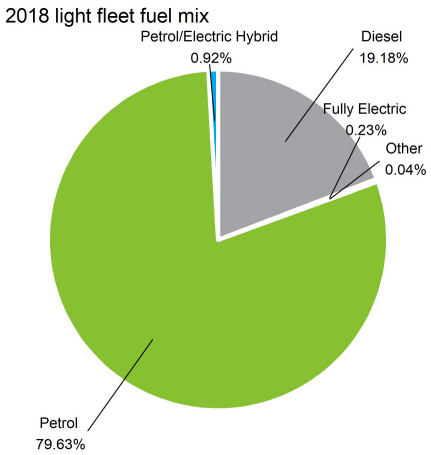
Should I ditch my fossil-fueled car?

Yes. Reducing the number of cars in your household, or switching from petrol/diesel to electric, will dramatically reduce your greenhouse gas emissions. It's one of the easiest and highest-impact climate steps you can take.

New Zealand is being flooded with cars

The New Zealand vehicle fleet is increasing rapidly. In the five years 2012-2017, 1,420,000 vehicles were imported and 660,000 were scrapped. The fleet increased by 760,000 vehicles: they would fill all lanes of State Highway 1, from Cape Reinga to Bluff, bumper to bumper. The fleet increase of 22% exceeds population growth of 9% and has given New Zealand the highest rate of car ownership in the OECD. Because of a shift to higher-emission utes and SUVs, and the lack of a fuel efficiency standard, the average fuel efficiency of the fleet has not improved. Road transport contributes 45% of all emissions from the burning of fossil fuels in New Zealand and is up 78% since 1990. The fleet is almost entirely fossil-fueled.



Vehicle use is bad for human health

Vehicle use can impact on human health through air pollution, motor vehicle crashes, road traffic noise and greenhouse gases. Vehicles release particulate matter (soot), carbon monoxide, and nitrogen dioxide, which can lead to health problems. Diesel vehicles are disproportionately more polluting than petrol vehicles in terms of particulate matter and total nitrogen oxides. Diesel engine fumes can cause lung cancer. Road traffic noise can also affect health, particularly through high blood pressure. In contrast, walking and cycling prevent obesity and lead to improved cardio-vascular health. (Environmental Health Indicators New Zealand)

Transport is a large, important, and expensive part of our lives

Households spend $21 billion annually on transport, an average of $233 a week per household. Nationally, we spend around $5 billion a year on imported fuel, $8 billion on imported vehicles, and $4 billion on road construction and maintenance. The costs of health and disability impacts are largely borne by the government and by individuals. Each person spends an average of an hour a day travelling. Of all trips, 79% are by car, 17% are by walking, 3% are by public transport, and 1% are by bicycle. By distance, nearly all travel is by car, an average of 28 km per day.

This growth didn't just happen

The present land transport system is the result of a concerted effort by most of our large institutions in government and industry. We have become used to a ready availability of cheap vehicles. Policies like increased fuel taxes, pollution-based registration fees, and steep purchase taxes (which up to 150% in some countries) are not generally considered. Even incremental change is difficult. For example, the AA and the Motor Industry Association lobby against the introduction of fuel efficiency standards.

To reduce transport emissions sufficiently, we need drastically fewer fossil-fueled vehicles on the roads.

Electric vehicles have dramatically lower lifecycle emissions

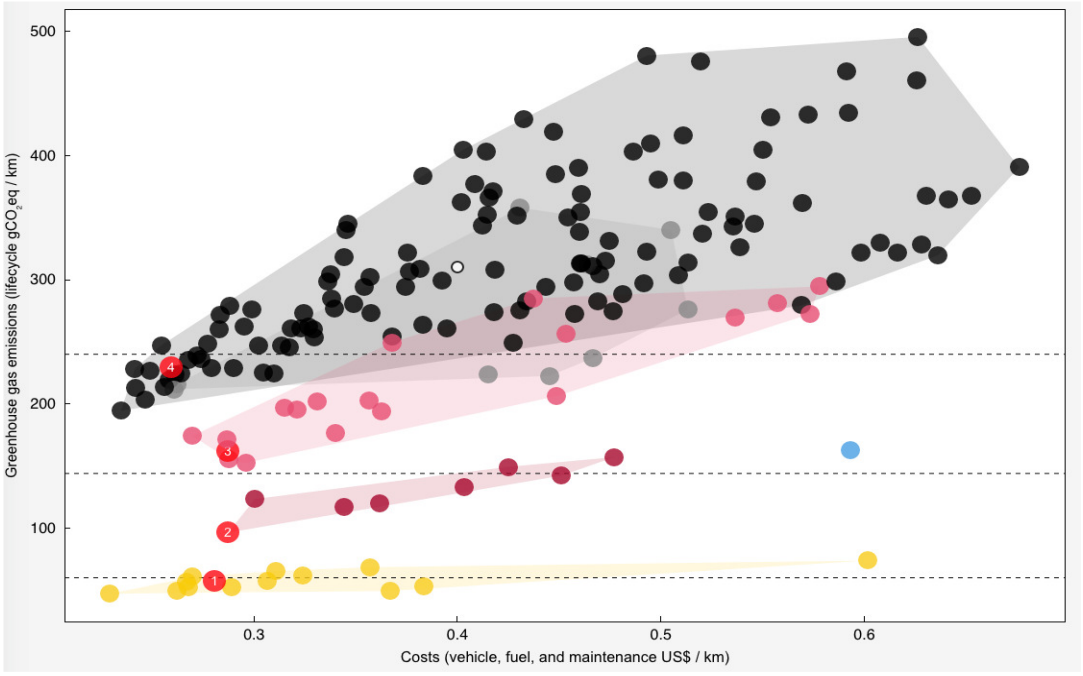
Lifecycle analyses include the energy and resources needed to make, use, and recycle a car. Most of the environmental impact of making a car is from mining, metal processing, and electricity used in the factory. Emissions from use include not just those from burning the fuel but also those from extracting, refining, and transporting it. These add a quarter to total fuel emissions.

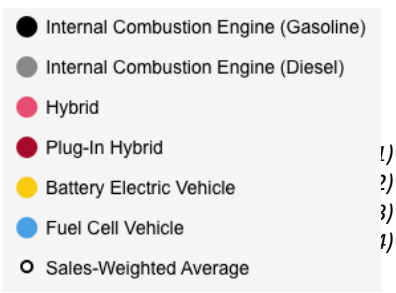
Lifecycle emissions can be measured in grams of CO_2 per kilometre, or gCO_2/km. Battery electric vehicles (such as the Nissan Leaf) emit 50 gCO_2/km. Plug-in hybrids (such as the Toyota Prius PHEV) emit 100–150 gCO_2/km, and regular hybrids 150–300 gCO_2/km. Diesel vehicles range from 220–350 gCO_2/km, petrol from 200–500 gCO_2/km.

Alternatively, emissions can be broken down into production/recycling, and use, measured in tonnes of CO_2. A small petrol car emits 5.6 tCO_2 in production/recycling and 2.8 tCO_2/year in use, for a total of 44.8 t CO_2 over its 14 year life. A small electric car emits 5.6 tCO_2 in production/recycling, an extra 2 tCO_2 to produce/recycle the battery, and 0.26 tCO_2/year in use, for a lifetime total of 12.2 tCO_2 – 75% less. (The reduction is far greater in New Zealand than in countries with less renewable electricity.)

Eliminating one car from your household gets rid of the last 25%.

The extra emissions associated with the battery are recouped in 10 months of driving a small petrol car, or 6 months of driving an average petrol car.





Lifecycle analysis of different vehicles costing up to $100K, from a study at MIT. Fuel and electricity data are for New Zealand, vehicle costs for the US for 2017. Each vehicle lasts 14 years and is driven 16,000 km a year. Premium vehicles at right, large utes at top.
Highlighted vehicles:
1) Nissan Leaf (battery electric)
2) Toyota Prius (plug-in hybrid)
3) Toyota Prius (hybrid)
4) Toyota Yaris (petrol)
Different assumptions and vehicles can be checked at carboncounter.com.

Burning fossil fuels has to end

To address climate change, we have to stop burning fossil fuels. Luckily, in one of its biggest uses, passenger cars, it's very easy to do. Not buying a fossil-fueled car stops a large amount of money flowing to oil-producing nations that contribute to oil wars and climate change obstruction and denial.

Fossil fuel cannot be recycled or made clean. In contrast, electricity is getting cleaner all the time, both in New Zealand and in car factories.

The fossil fuel industry is fighting back

The fossil fuel industry, and the companies that make products that burn fossil fuel, are fighting back. They have long obstructed and delayed efforts to decarbonise transport. In the words of Transport & Environment's William Todts,

Whenever you read a newspaper article claiming EVs are worse than diesel or petrol cars, that article will be based on a report that deliberately makes EVs look worse than they are. Usually the plot is as follows: a smaller petrol or diesel car is compared with a bigger, more powerful electric car; then the fossil fuel car is assumed to be as efficient as the EU's official tests portray (in reality its fuel economy is always a lot worse); and finally the electric car is driving in a region with a very dirty electricity mix. Then you assume very high emissions for battery production based on outdated studies and finally you pretend electric cars don't last very long and that its batteries aren't reused or recycled.

Other strategies include focussing on mining and recycling issues. Most batteries contain cobalt (although the 2011-2017 Nissan Leaf contains no cobalt) and some cobalt from independent subsistence miners enters the global supply chain. In response, manufacturers are sourcing ethical cobalt and decreasing the amount they use. Almost all EV batteries are still in use; plans are for them to eventually be re-used in stationary applications and then recycled.

Similar ethical issues, and the need to transition to a circular economy, pervade all manufacturing and trade, including of course the fossil fuel industry.

Early adopters are vital and can have a huge impact

We need to "flip the fleet" to electric as quickly as possible (and reduce the fleet as well). The obstacles are formidable. In the early years, small actions can have a big multiplier effect. The fewer people driving fossil-fueled cars, the more people will get used to the alternatives, the more pressure there will be to cater for them, and the easier it will be to counter misinformation. Many people have found that getting off fossil fuels has been empowering and has galvanized them to start taking other actions for the climate.

Isn't it better to run my existing old car as long as possible?

Maybe. It is possible to make the numbers add up on this. If you drive very little, say 4000 km a year, and have a small, efficient petrol car, you will be emitting an extra 0.7 tCO_2 per year. In eight years this would "pay off" the emissions of replacing the car. However, this assumes that you have no major repairs (which would contain embodied emissions of their own) in that time. Plus, you lose the multiplier effect of being an early adopter.

Overall, you can have a greater impact by getting rid of your car entirely and using public or active transport, and renting or car-sharing an EV for occasional trips.

On the other hand, if you drive a fossil-fueled car a lot, then you can cut your emissions steeply simply by driving less, and switching to public and active transport as much as possible. You can also make transport a priority when planning for the future.

What else can I do?

Although electricity in New Zealand is relatively clean (over 80% renewable, and heading for 90% by 2025), we do still burn gas and coal for electricity. Each household's share of such emissions is about 1 tonne CO_2 per year. Solar panels will lower your household emissions, or you can buy electricity from a certified zero carbon retailer. At the moment, there is only one of these, Ecotricity. Supporting them increases the demand for zero-carbon electricity in New Zealand.

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