Land transport funding and the myth of the declining revenue stream

Ministry of Transport
TE MANATŪ WAKA

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Introduction

- What I want to look at is whether there is any truth to the idea that an increase in fuel efficient vehicles, and electric vehicles in particular, means New Zealand's land transport funding is at risk
- The presentation is not asking if we are raising enough revenue, or if we are recovering all of the costs generated by different users
- The presentation does not look at the effects of planned policy changes such as the Clean Car Discount
- I'm just looking at the long term trends for the fleet

Do we have declining revenue?

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BY TRIBUNE NEWS SERVICE |

By Rita

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Posted on: November 9, 2017 at 10:30 AM

New Zealand's main funding mechanism for land transport is the National Land Transport Fund (NLTF), a hypothecated (ring-fenced) fund for

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Electric cars: call for tax on road usage to cover lost fuel revenue

ams the switch from fossil fuel to electric will cause tax
o drop £28bn

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Jeff McMahon Contributor
Green Tech
From Chicago, I write about climate change, green technolo

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"This additional revenue stream would increase the likelihood of these projects being completed successfully, especially given risks around decreasing revenues from existing funding streams, such as fuel excise duty and road user charges," the report said.

Increase in electric car take-up 'could pose a substantial risk to stability of the State's finances'

A schedule of declining supports to buy electric cars should be considered, states department review.

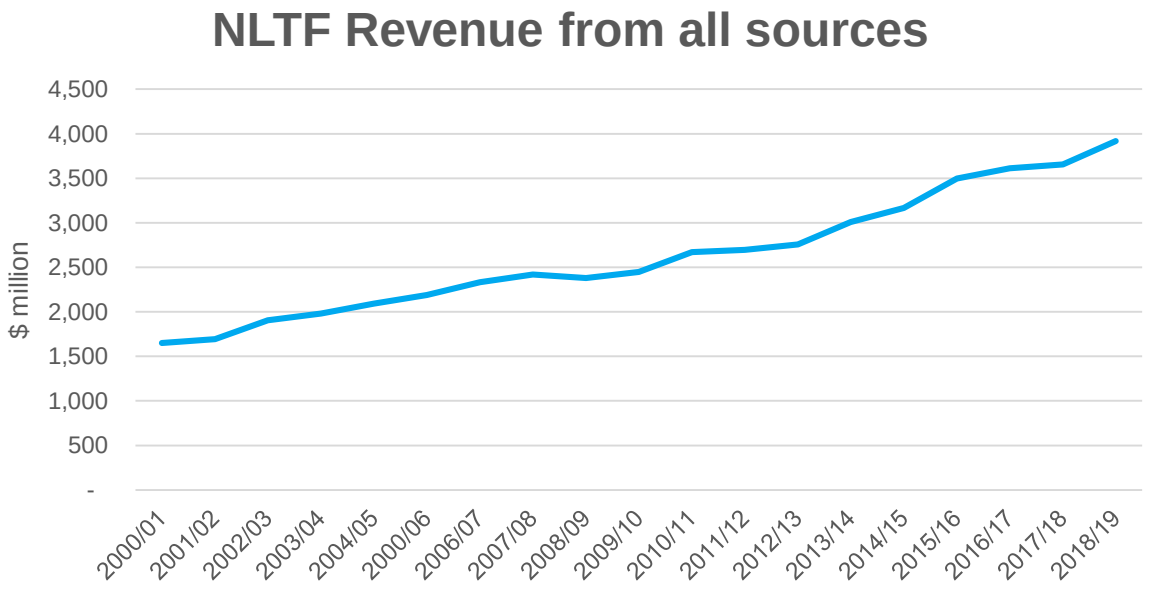
Aug 15th 2019, 4:53 PM 34,936 Views 118 Comments Share 29 Tweet Email 5

THE INCREASING TAKE-UP of electric cars in Ireland over the next decade "could pose a substantial risk to the stability of the State's

But most of these examples are from overseas!
Things are different in New Zealand

Do we have declining revenue?

- **“No!” We don’t have declining revenue**
- **The National Land Transport Fund revenue continues to grow!**



ARE CHANGES TO VEHICLE FUEL EFFICIENCY LIKELY TO BE IMPORTANT?

Some quick background

We have three primary sources of revenue for the NLTF

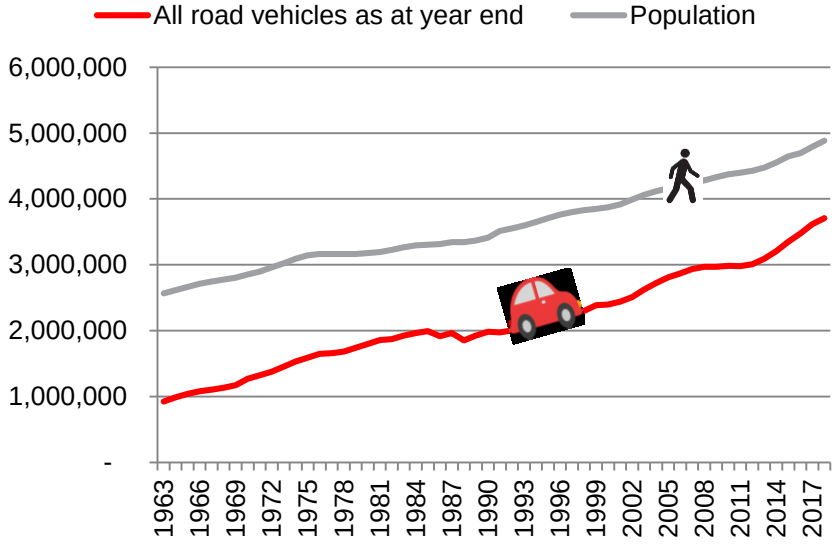
- **Fuel Excise Duty = $0.66524 per litre of petrol ($0.765 incl GST)**
  - CNG and LPG powered vehicles pay FED ~ $0.10 per litre equivalent
- **Road user charges (RUC) paid for all vehicles that don't use petrol**
  - Light vehicles < 3.5 tonnes = $72 (incl GST) per 1000km.
  - Heavy vehicles > 3.5 tonnes = between $76 and $400 (or more) per 1000km depending on number of axles, axle weight and size
- **A range of fees and charges paid by transport sector users**
  - the most important is the annual licence fee ($43.50 a year for a light vehicle)

Hydrogen powered vehicles and other low carbon fuels, including bio-diesel pay RUC

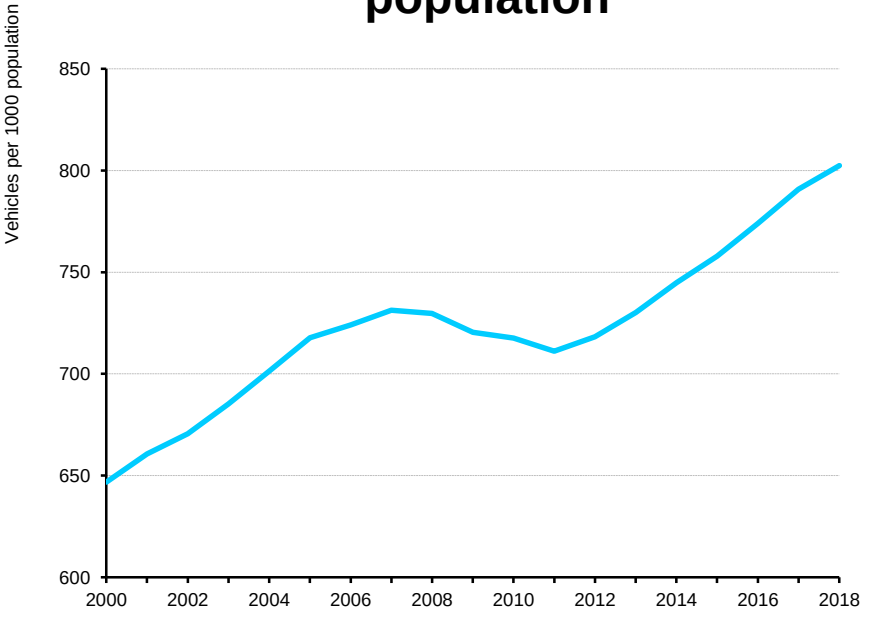
Only ethanol is not taxed as a transport fuel

New Zealand loves its motor vehicles

Number of vehicles vs population (1963 - 2018)

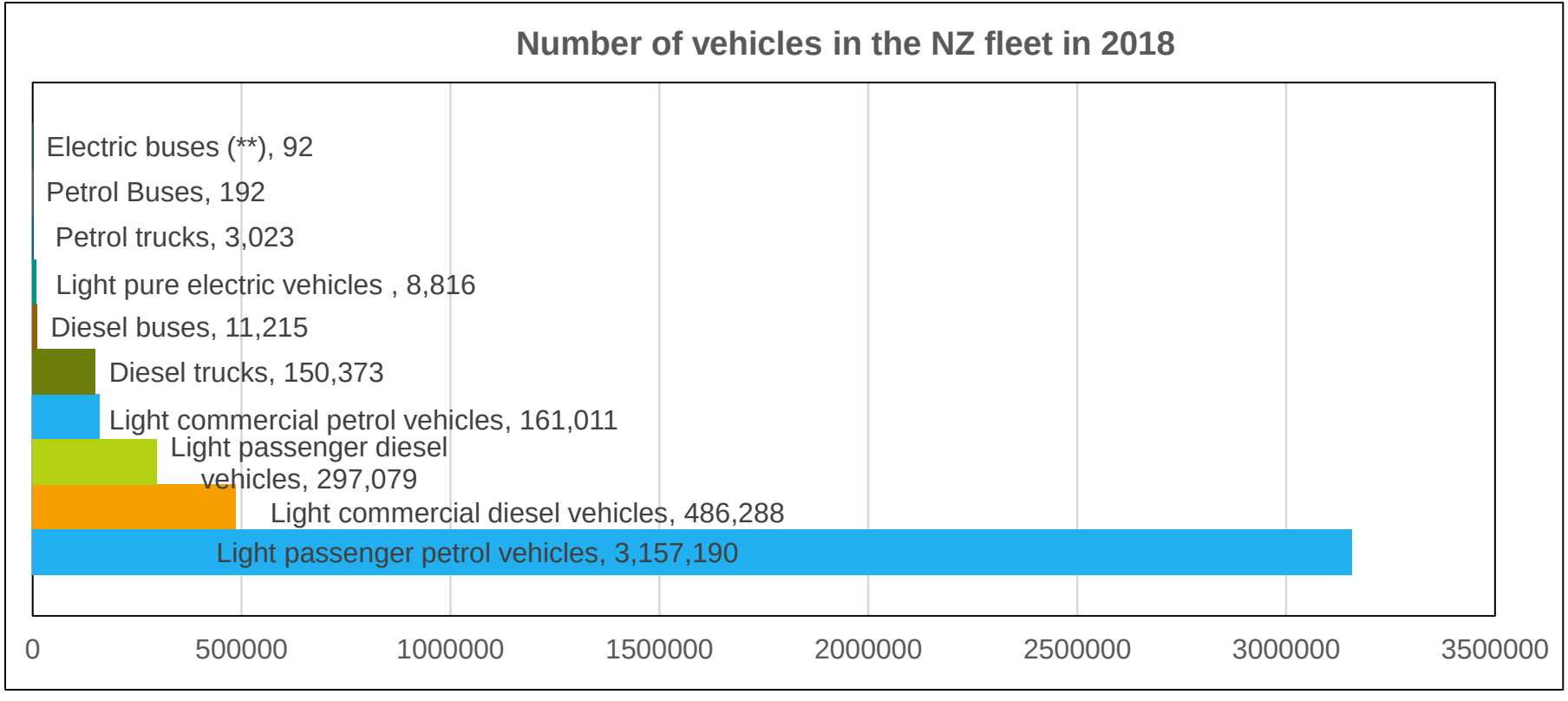


Light fleet ownership per 1000 population

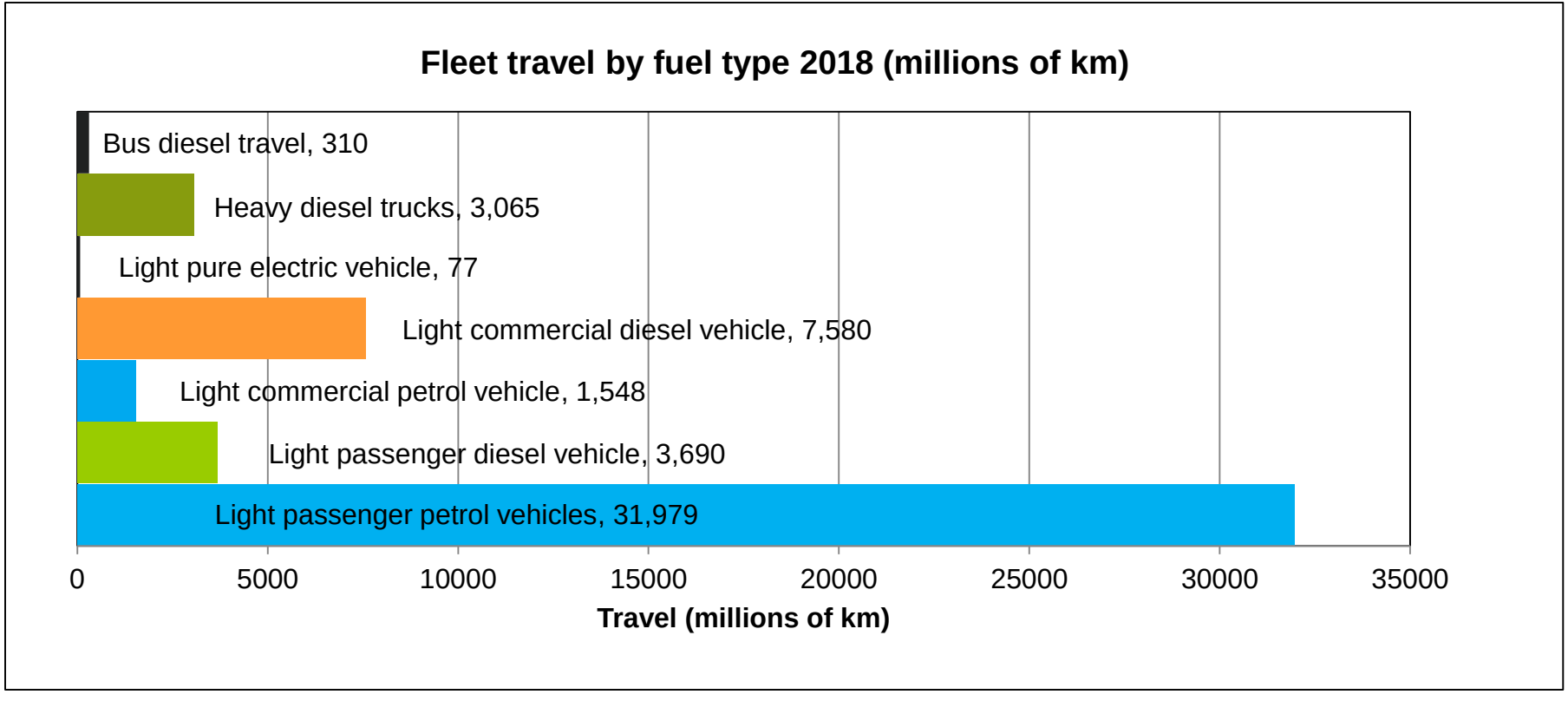


- The number of vehicles has risen slightly faster than population pretty much forever

Most vehicles in NZ are petrol passenger vehicles



Petrol vehicles also do most of the travel too



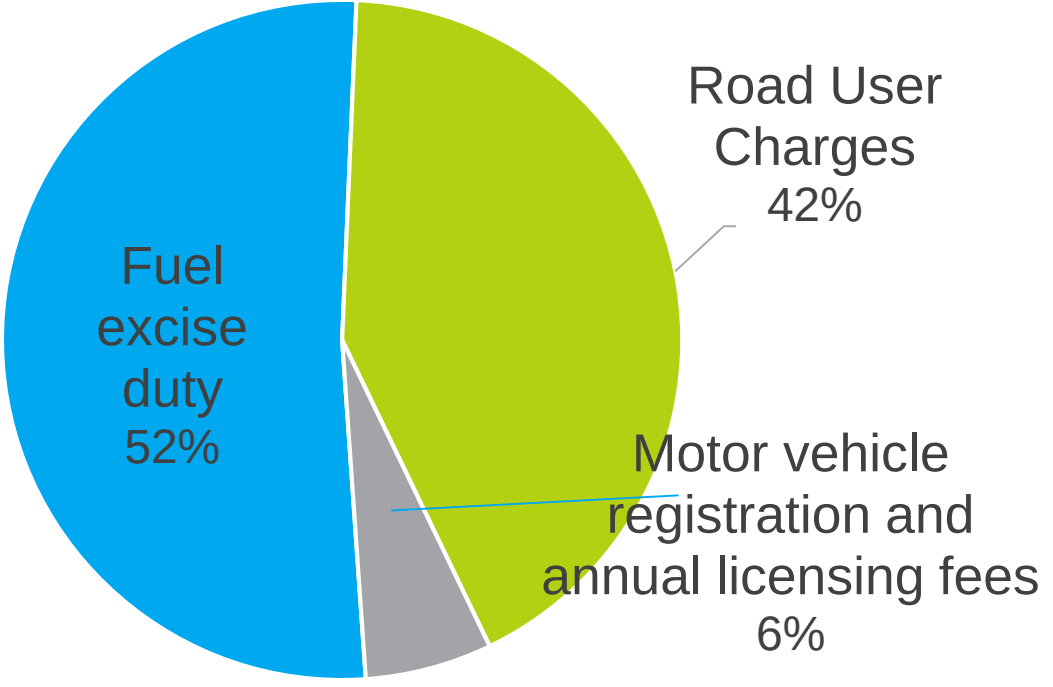
Primary land transport revenue sources

Despite the large number of petrol vehicles, fuel excise duty only contributed around half the revenue in 2018

- $1,957 Fuel excise duty
- $1,594 Road User Charges
- $228 Motor vehicle registration and annual licensing fees

(millions)

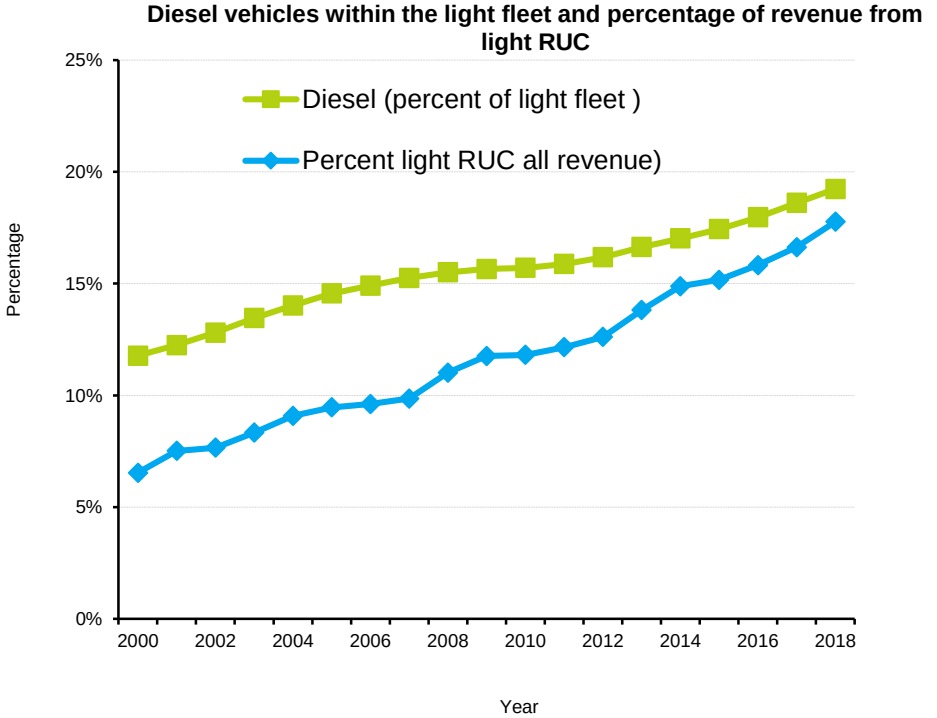
- **Only half of the revenue is potentially affected by changes in fuel economy**



Diesel is now an important fuel for light vehicles

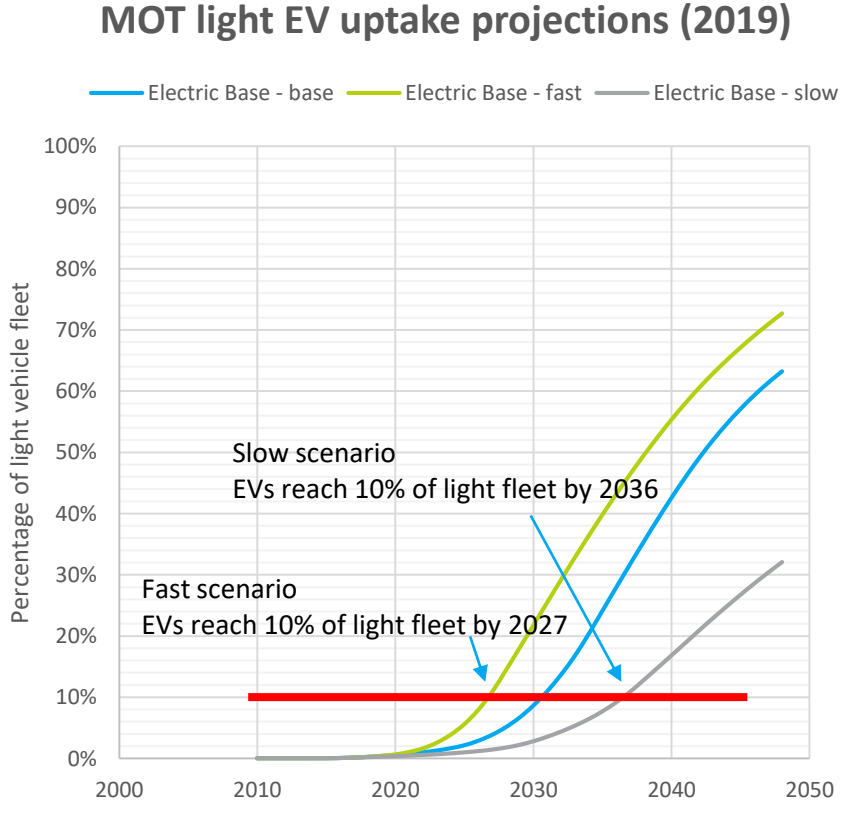
- There has been a shift in buying patterns since early 2000s
- Diesel vehicles pay RUC so efficiency not relevant for revenue
- Because new diesels travel further they contribute more revenue

- Clean Car Discount may see a move away from larger diesel vehicles and possibly to electric vehicles (EVs), but these should pay RUC



What if there is a shift to electric vehicles?

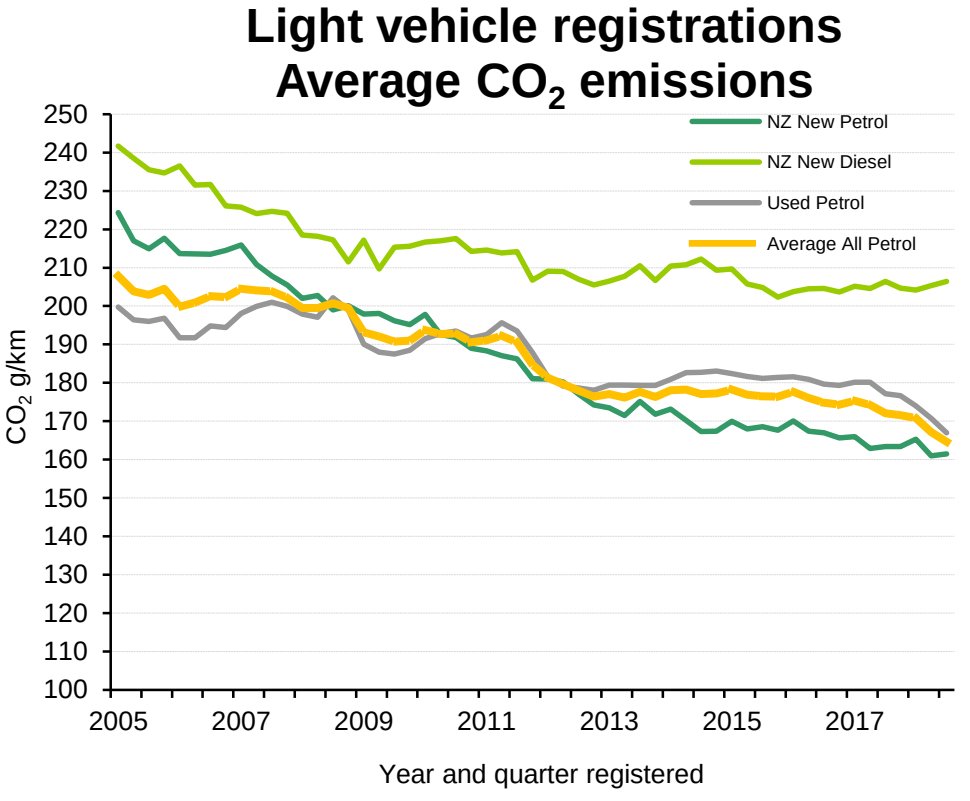
- It is very hard to predict the likely uptake of EVs over the longer term
- They might reach 10% of the fleet as soon as 2027 or late as 2036 under our modelling scenarios
- The law says that EVs will pay the full rate of RUC for light vehicles ($72/$1000) after exemption ends at the end of 2021 = no loss of revenue
- If EVs grow at base case rate, but didn't pay any RUC after exemption ends at the end of 2021, we would have a 2% revenue loss by 2025
- This would be a long term concern, but not a short term one



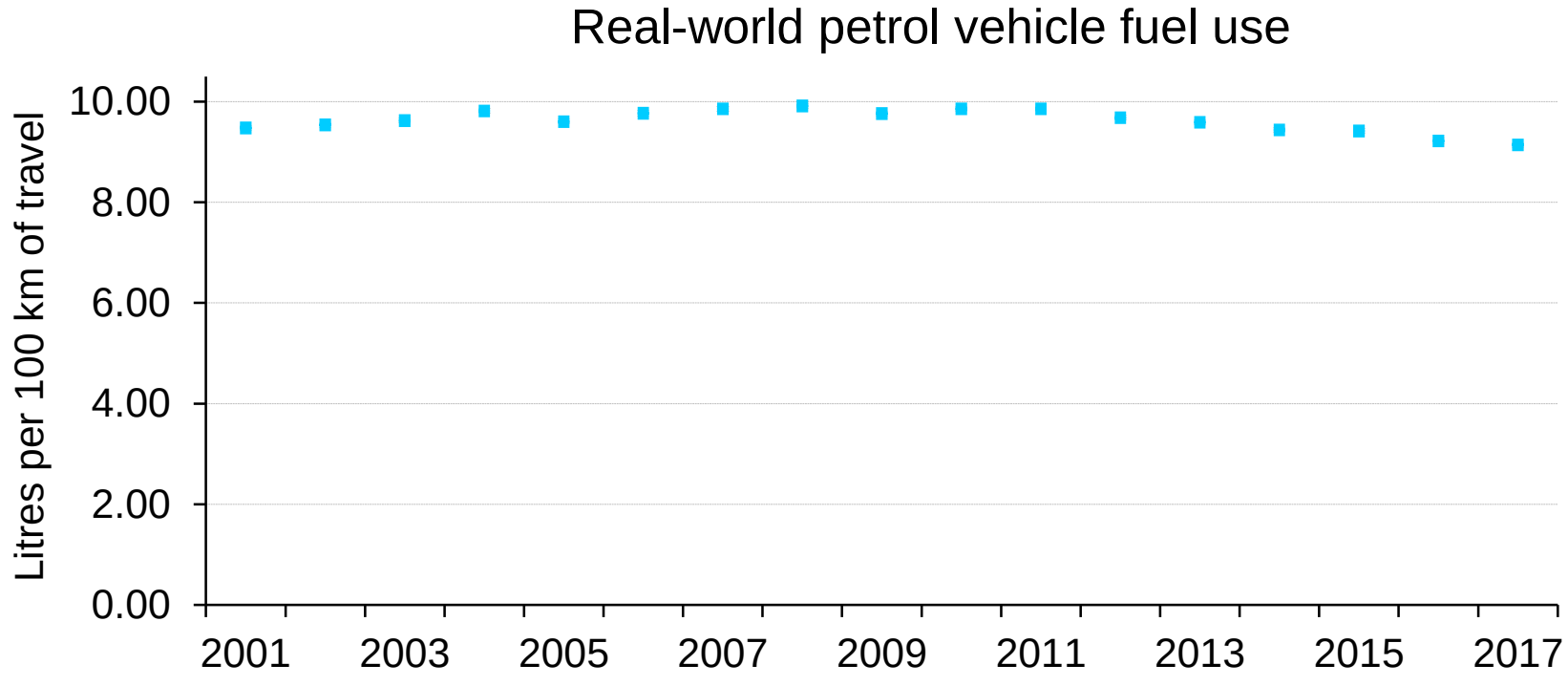
SO IS REVENUE FROM PETROL VEHICLES LIKELY TO DECLINE DUE TO IMPROVING FUEL EFFICIENCY?

Light vehicle registrations show falling average CO2 emissions

- Many people assume that vehicles entering the fleet are using less fuel
- If we look at the manufactures' published data there is a downwards trend (less fuel used) in reported CO_2 emissions
- But the real world is a different case!

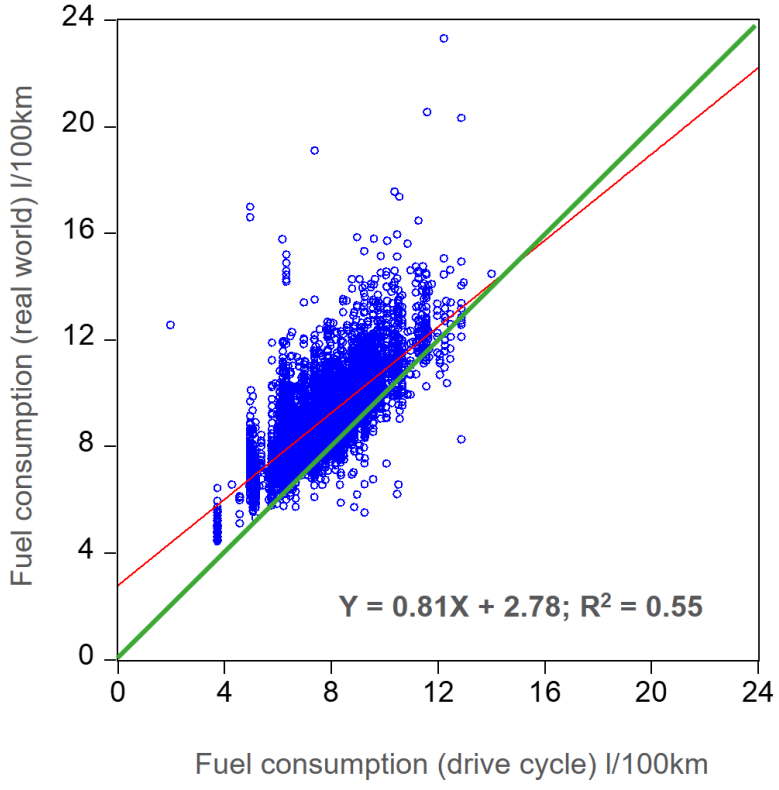


Real word petrol vehicle fuel use



- Average fuel use has been improving at around 0.5% per annum since 2009
- This is calculated by dividing total petrol sales by total VKT. It is not based on models

Divergence between rated fuel consumption and real world in independent European testing



- European research also shows that steady divergence between fuel economy measured by manufacturers compared with results from real world driving
- Strong suggestion that manufacturers build cars to pass the test, not for real world
- Also, other variables, like congestion may also have gotten worse over this time
- This is data from 2015 MOT research comparing real word fuel use vs manufacturers published figure

Source:
https://theicct.org/sites/default/files/publications/Lab_to_Road_2018_fv_20190110.pdf
http://atrf.info/papers/2015/files/ATRF2015_Resubmission_9.pdf

The other reason for a lack of improvement with efficiency

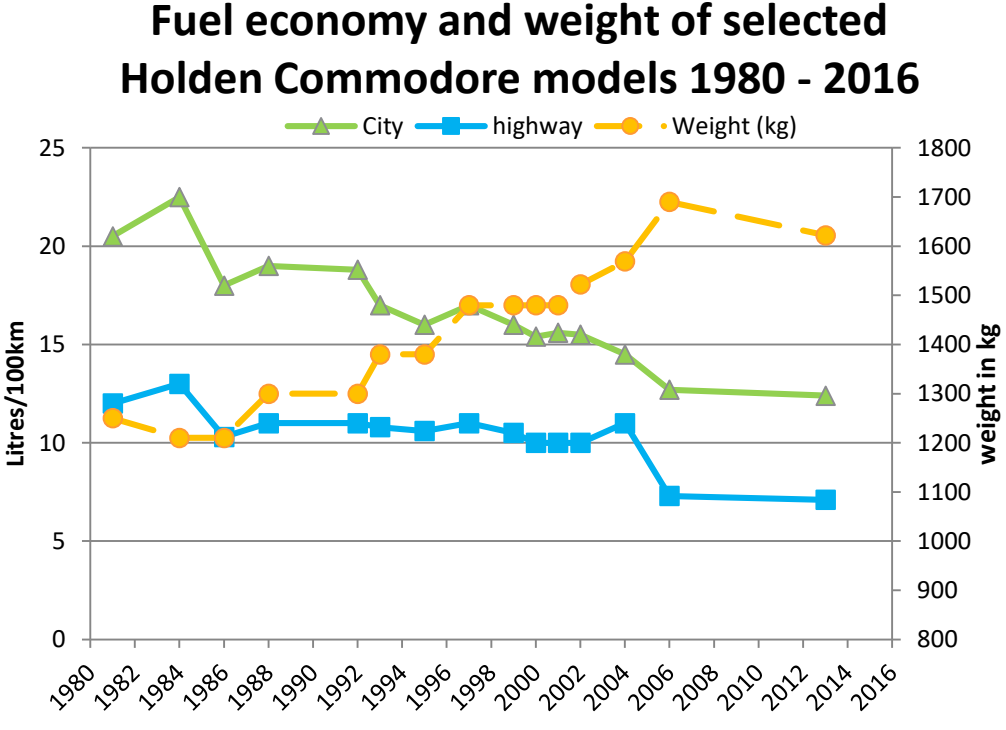
Much of the benefit of increasing technical efficiency has been traded off against weight and increased power

1972 Honda Civic 1.2l
700kg/56kW

2016 Honda Civic 1.8l
1,240 kg/96 kW

1972 Toyota Corolla 1.2l
880kg/52kw

2016 Toyota Corolla 1.8l
1280kg/104kW



Data provided by Australian govt official (pers com). Checked against published figures where possible.

SO WHAT IS GOING TO HAPPEN?

Conclusions

Despite the hype and the headlines, in the next decade:

- **There is no obvious risk of a drop in revenue from the increased use of EVs**
  - provided that they pay RUC
- **There is no obvious risk of a drop in revenue from increased use of fuel efficient petrol vehicles**
  - partly because efficiency is only improving slowly
  - partly because it takes a very long time for changes to flow through to fleet

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