



Ministry of **Transport**
TE MANATŪ WAKA

The New Zealand Light Vehicle Fleet

LIGHT FLEET STATISTICS 2006

September 2007

STATISTICAL
REPORT



REVISION HISTORY

Version	Date	Comments
1	September 1, 2007	

TABLE OF CONTENTS

REVISION HISTORY.....	1
TABLE OF CONTENTS.....	2
FOREWORD	3
1. SETTING THE SCENE – THE LIGHT VEHICLE FLEET IN CONTEXT	4
How much is the total fleet growing?.....	4
What part of the fleet contributes the most travel?.....	5
Is the light fleet travel done by New Zealand new or used imported vehicles?	5
What are the trends in mobility?.....	6
How does New Zealand’s level of motorisation compare internationally?	8
How does the age of the New Zealand fleet compare internationally?.....	8
What proportion of vehicle emissions is the Light Fleet responsible for?	10
2. COMPOSITION OF THE LIGHT FLEET	11
3. VEHICLE TRAVEL AND AGE IN 2006.....	16
4. LIGHT FLEET ENGINE CAPACITY TRENDS	18
5. WHICH VEHICLES ARE ENTERING THE LIGHT FLEET?.....	21
6. WHAT VEHICLES ARE LEAVING THE LIGHT FLEET?	25
7. QUARTERLY FLEET REPORTS: WHAT VEHICLES ARE JOINING AND LEAVING THE LIGHT FLEET?	26
8. HOW MUCH OF THE LIGHT FLEET IS DIESEL POWERED AND HOW FUEL ECONOMIC IS THE LIGHT FLEET?	30
9. WHAT IS THE AVERAGE VEHICLE ENGINE SIZE AND AGE OF THE VEHICLES IN USE?	36
10. ECONOMIC INDICATORS	37
APPENDIX A – COMPARABILITY WITH OTHER PUBLISHED DATA.....	39

FOREWORD

It is my pleasure to introduce *The New Zealand Light Vehicle Fleet*, a comprehensive statistical report that will generate a better understanding of our unique fleet composition. It pulls together for the first time a range of estimates and statistics used by the Ministry of Transport.

Understanding our vehicle fleet and its behaviour is an essential step to achieving a safe, sustainable and integrated transport network. This information will contribute to the development of specific targets under the draft New Zealand Energy Efficiency and Conservation Strategy and high-level targets under the update of the New Zealand Transport Strategy.

The government is committed to improving the quality of our vehicle fleet, particularly in regard to matters of air quality, safety, energy efficiency and fuel security. Future policy can only develop effectively by having this solid knowledge base to start from. Work programmes such as the development of a sales-weighted standard for fuel economy, improving vehicle safety technologies, and encouraging the uptake of electric vehicles, will reap benefits from the information this document provides.

This document is a snapshot of our current, but dynamic, light vehicle fleet. *The New Zealand Light Vehicle Fleet* will be updated annually and posted on the Ministry of Transport website.



Hon Annette King
Minister of Transport

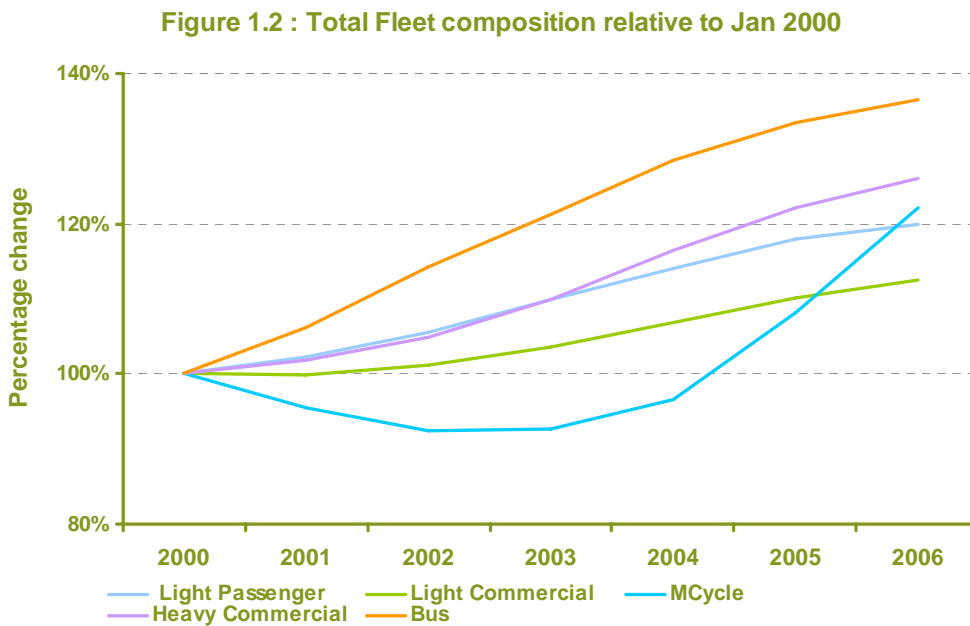
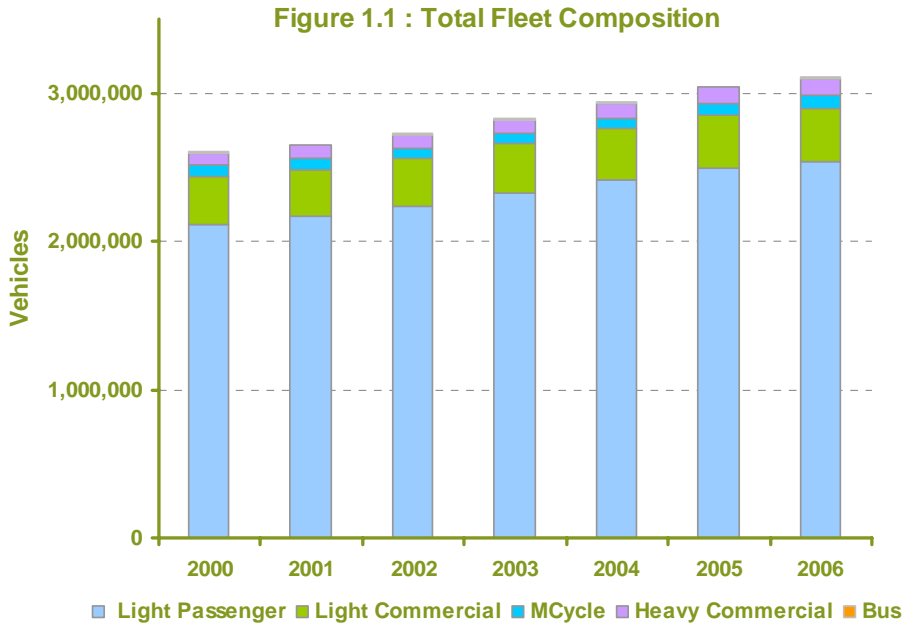
1. SETTING THE SCENE – THE LIGHT VEHICLE FLEET IN CONTEXT

How much is the total fleet growing?

The New Zealand vehicle fleet is dominated by the light fleet. The light fleet comprises light passenger and light commercial vehicles (cars, vans, utes, four wheel drives and sports utility vehicles (SUVs) under 3.5 tonnes). For the purpose of this analysis, motorcycles have not been included in the light fleet as their numbers are limited (see Figure 1.1), and their life cycle is different (although selective motorcycle data is shown in some of the graphs).

The light fleet has grown significantly in the past decade – with a 22% increase between December 2000 and December 2006.

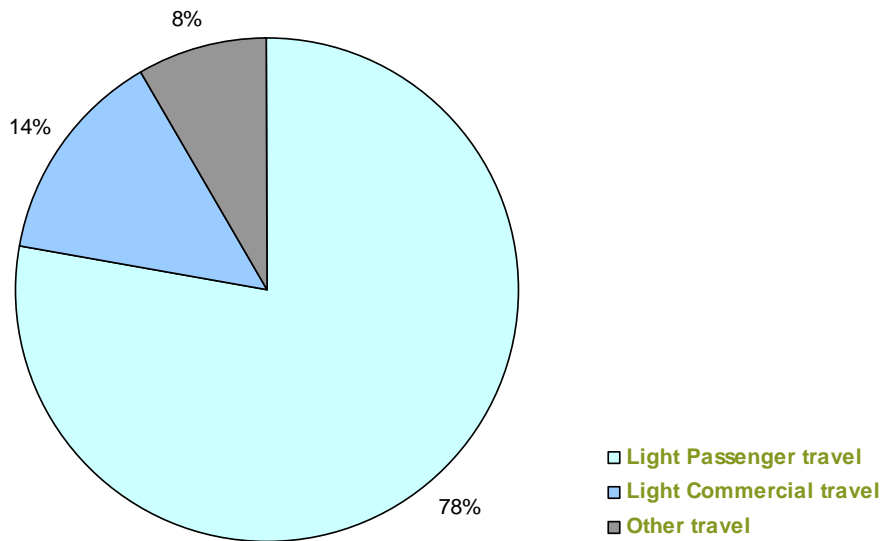
Appendix A details how this data was categorised from the Motor Vehicle Register.



What part of the fleet contributes the most travel?

Travel on New Zealand roads is dominated by the light fleet. Light passenger vehicles contributed 78% of road travel in 2005, and light commercial vehicles a further 14%. Only 8% of road travel was by other vehicles (motorcycles, heavy commercial vehicles and buses).

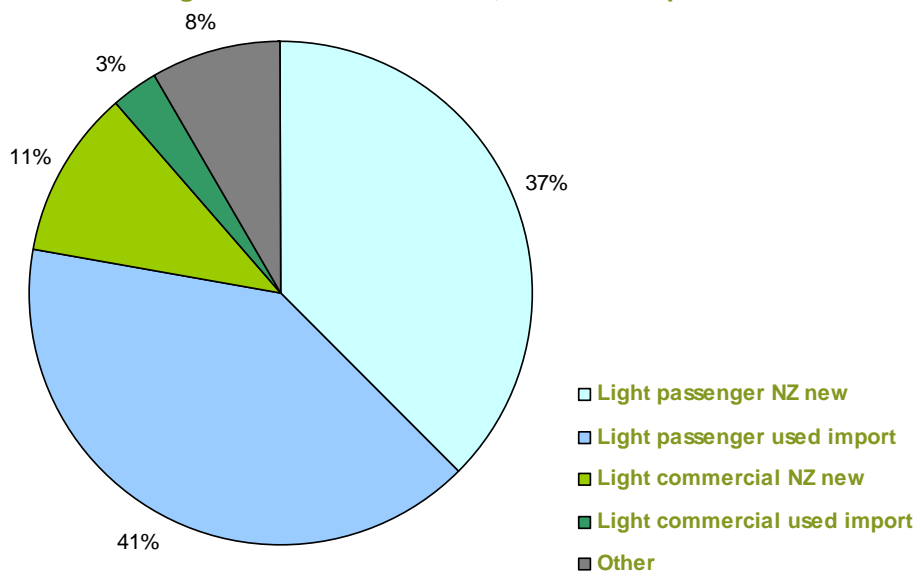
Figure 1.3a : Travel in 2006



Is the light fleet travel done by New Zealand-new or used imported vehicles?

The light passenger and commercial fleets are significantly different. Light passenger travel is almost equally split between vehicles imported new into New Zealand and used imported vehicles. Light commercial travel is dominated by New Zealand-new vehicles.

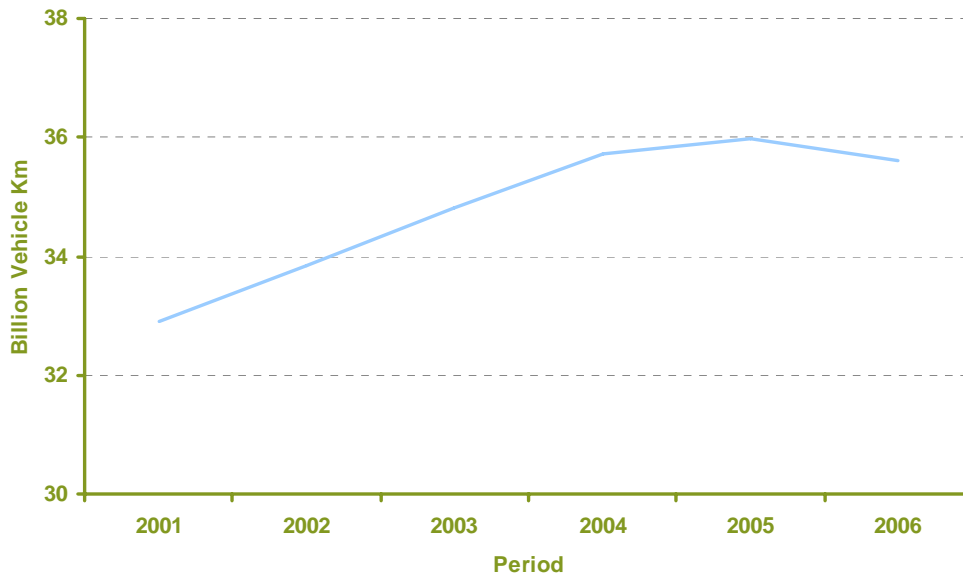
Figure 1.3b : Travel in 2006, new/used import



What are the trends in mobility?

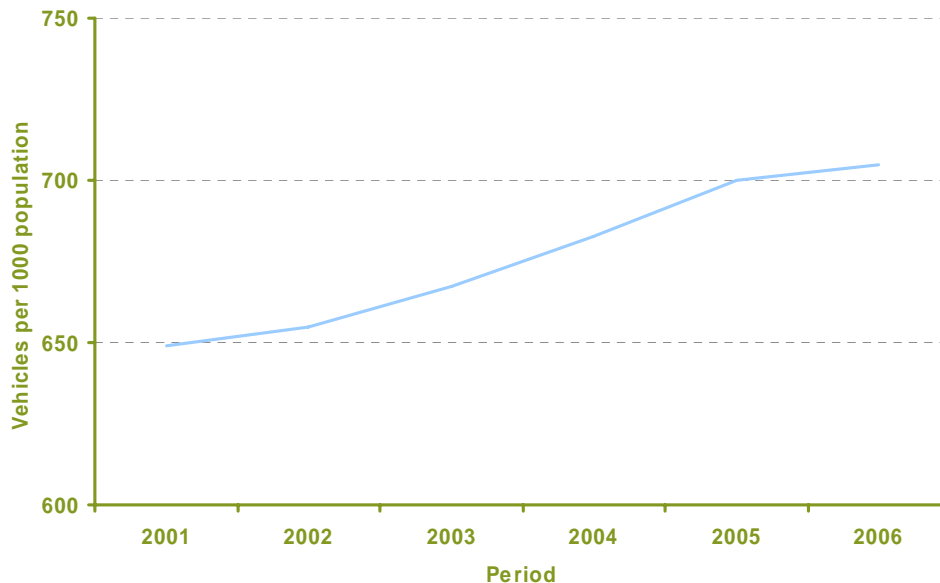
Light fleet travel¹ in New Zealand has increased faster than Gross Domestic Product (GDP) for most of this decade, but declined in 2005 and 2006, presumably as a reaction to the increase in the price of oil.

Figure 1.4 : Light Fleet total travel



Ownership per capita² of light vehicles has increased significantly this decade. The increase reflects a number of factors including the high value of the dollar, high employment and positive economic outlook (Figure 1.8a shows some international comparisons of ownership rates).

Figure 1.5 : Light Fleet ownership per 1000 population



¹ Travel has been estimated using the odometer readings from the vehicle inspection (WoF, CoF) system.

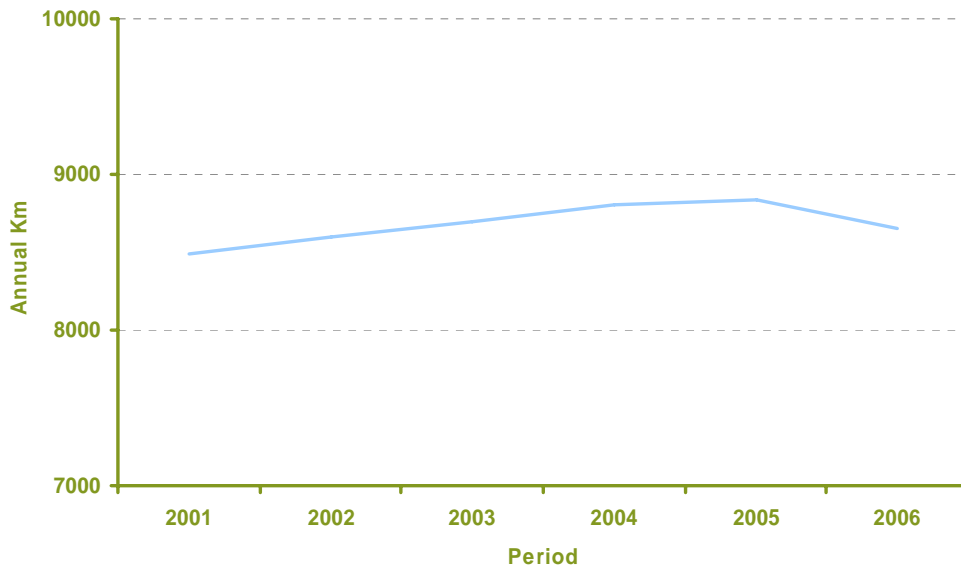
² Population data obtained from the Statistics New Zealand website (www.stats.govt.nz).

Estimates up to 2005 were obtained from <http://www.stats.govt.nz/products-and-services/info-releases/nat-pop-est-info-releases.htm>

Projections after 2005 were obtained from <http://www.stats.govt.nz/products-and-services/info-releases/nat-pop-proj-info-releases.htm>, using the base year of 2004.

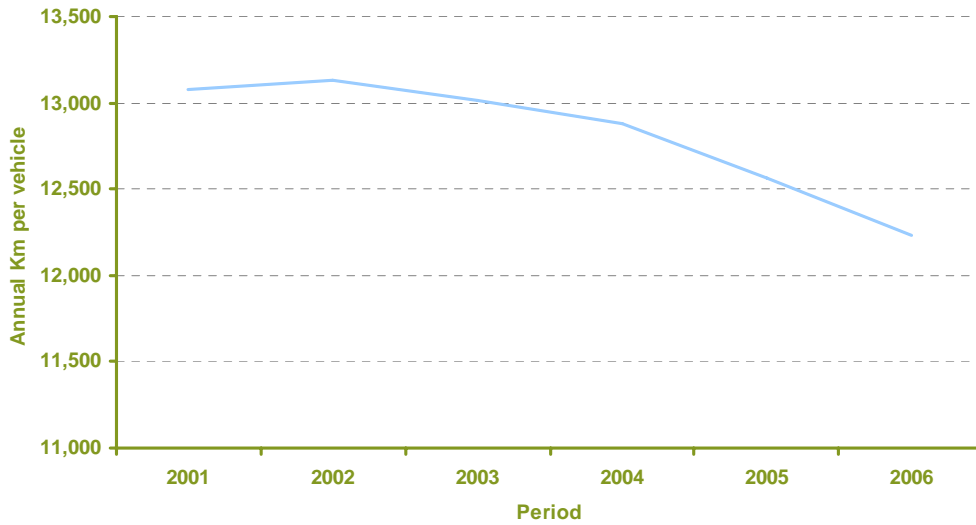
The increased ownership rate has been accompanied by increased travel per capita, presumably tailing off in response to the fuel price surge.

Figure 1.6 : Light Fleet travel per capita



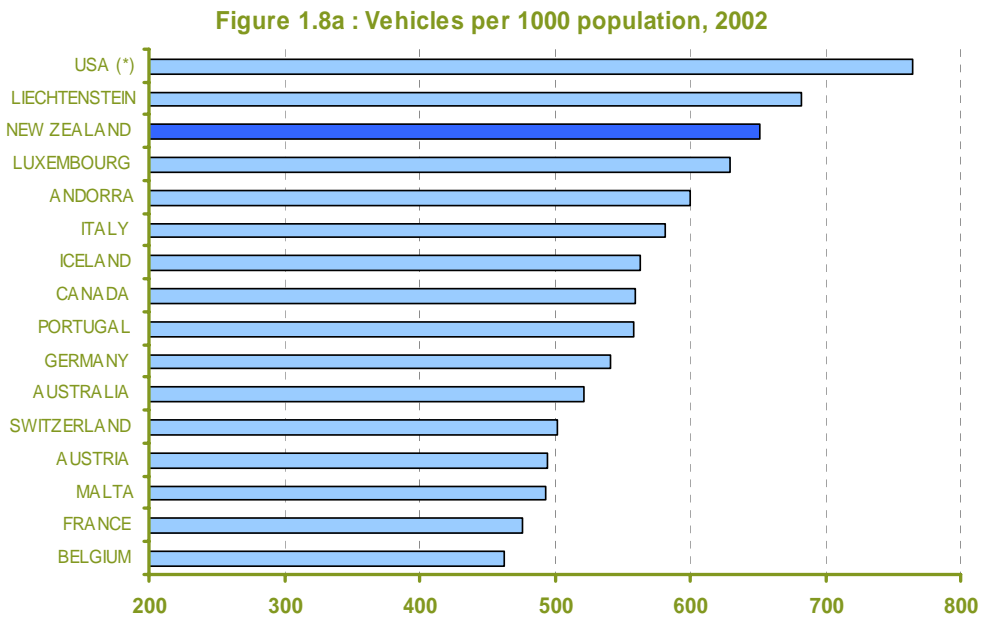
The very high (and growing) level of vehicle ownership appears to be accompanied by a saturation effect - the amount of travel per light vehicle has declined.

Figure 1.7 : Light Fleet average annual travel per vehicle



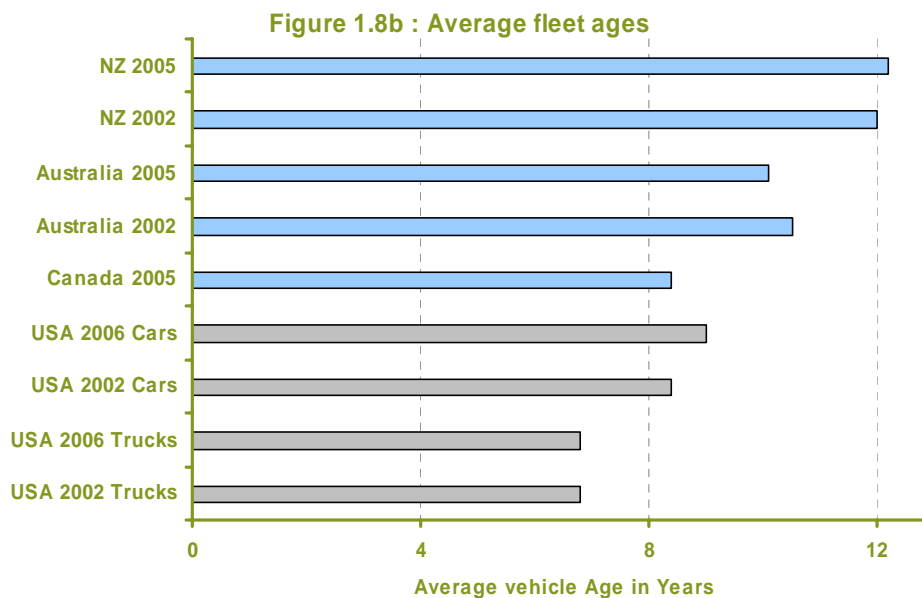
How does New Zealand’s level of motorisation compare internationally?

The New Zealand data in Figure 1.8a is based on all vehicles, not just light vehicles, to enable the New Zealand fleet to be compared with its international counterparts³. This is to sidestep issues with jurisdictions such as the United States of America – while United States car ownership figures per capita seem modest, it is because the United States SUV fleet is registered as trucks.



How does the age of the New Zealand fleet compare internationally?

This comparison has been confined to countries with high levels of motorisation, and with cultural similarity to New Zealand. The United Kingdom has not been included as its motorisation level is comparatively low.



NOTE – the United States vehicle ages are MEDIANS – they are lower than United States averages would have been, if they had been available. See Appendix B for additional detail.

³ Data sourced from UNECE passenger car numbers 2005 <http://www.unece.org/stats/trends2005/transport.htm>

Light petrol fleet fuel economy

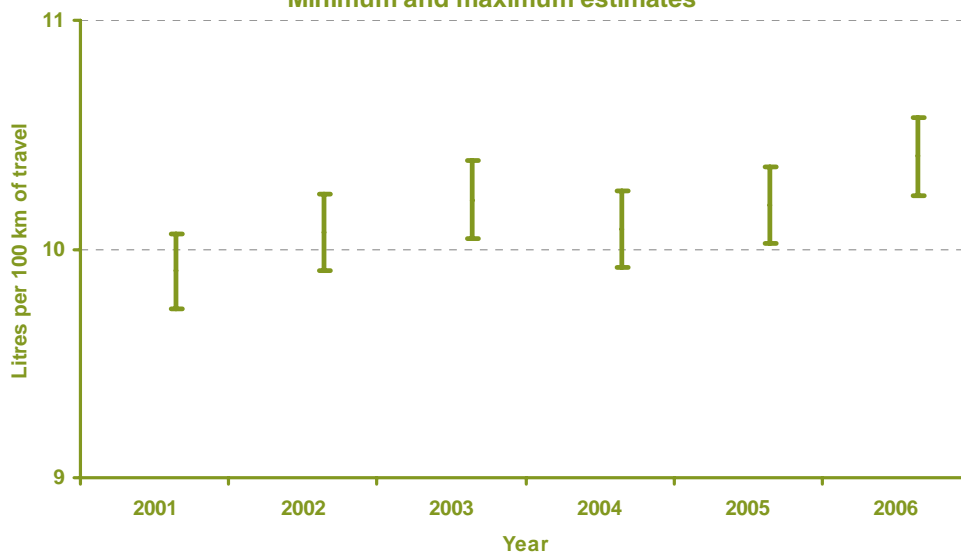
The economy of the light petrol fleet has been established by comparing light petrol fleet travel with petrol deliveries, less estimated other uses of petrol.

The fuel that has been removed from the calculation is:

- fuel used on-road by other parts of the fleet (motorcycles, heavy goods and buses) which is estimated as 0.97% of petrol deliveries
- fuel used off-road (boats and jet skis, lawnmowers, circuit racing, rallying, speedway, motocross and other off-road motorcycling and agricultural quad bikes) which is estimated as 4.9% - 7.5% of petrol deliveries
- the bars on the chart show the petrol economy estimates based on the minimum non-light fleet estimate (5.9% of petrol) and maximum non-light fleet estimate (8.5% of petrol)

The resulting rates are indicative of what happens on New Zealand roads in New Zealand driving conditions. These values are higher than the vehicle fuel test cycle values shown in Section 8, which are based on European and Japanese laboratory test cycles.

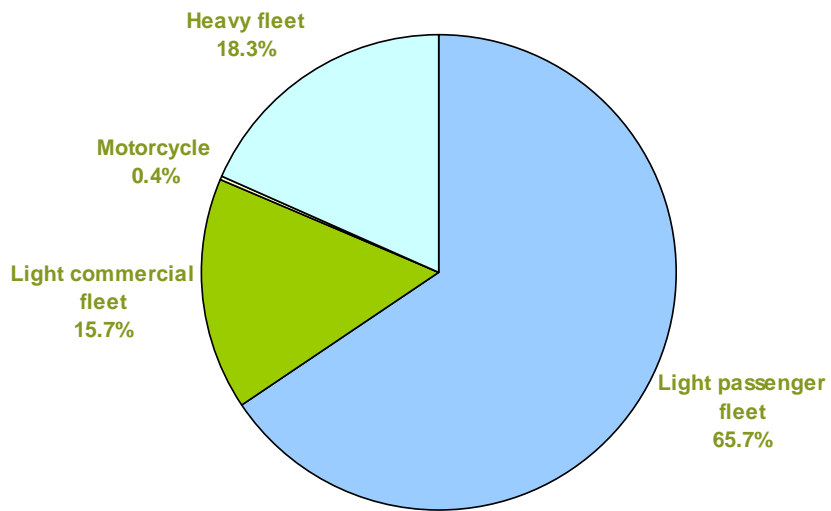
Figure 1.9 : Light petrol fleet average fuel economy 2001-2006
Minimum and maximum estimates



NOTE : The estimate for the final year is provisional. It is likely that the Ministry of Economic Development will revise the petrol delivery data for the final year, after the fuel data for the following year becomes available. This may result in the fuel economy estimate for the final year changing.

What proportion of vehicle emissions is the Light Fleet responsible for?

Figure 1.10 : 2006 CO2 Emissions



Source : Vehicle Fleet Emissions Model

2. COMPOSITION OF THE LIGHT FLEET

Used imported vehicles make up an increasing proportion of the light vehicle fleet. Their share has almost reached 50 percent.

Figure 2.1 : Light Fleet composition

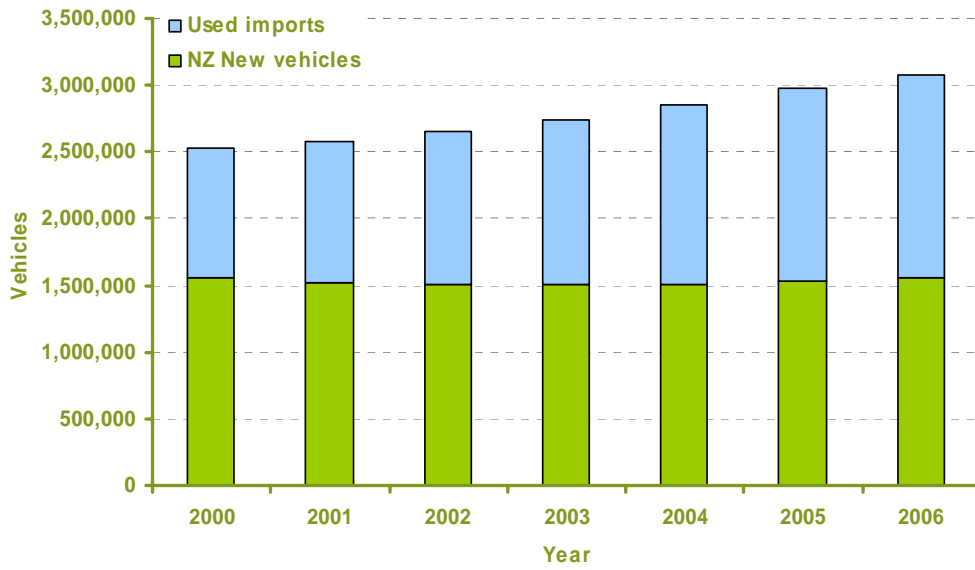
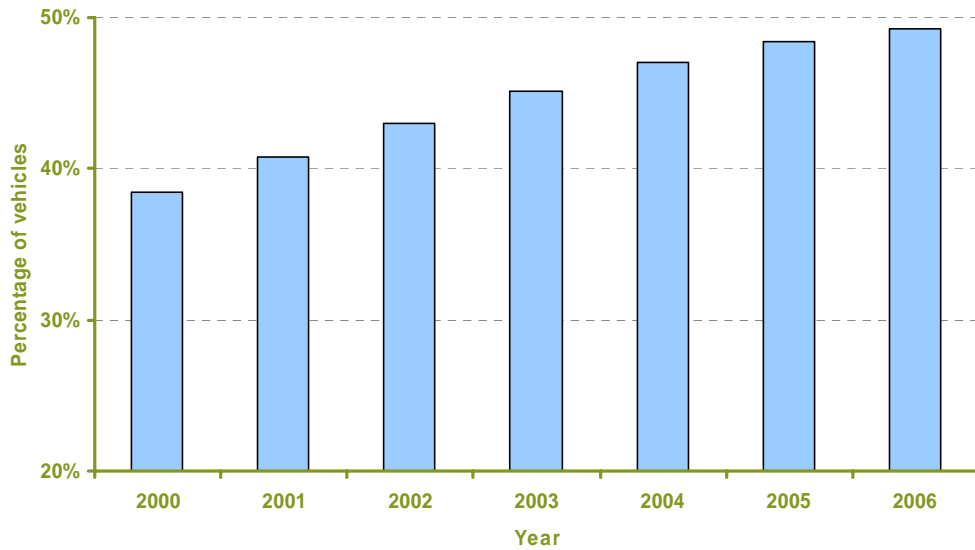
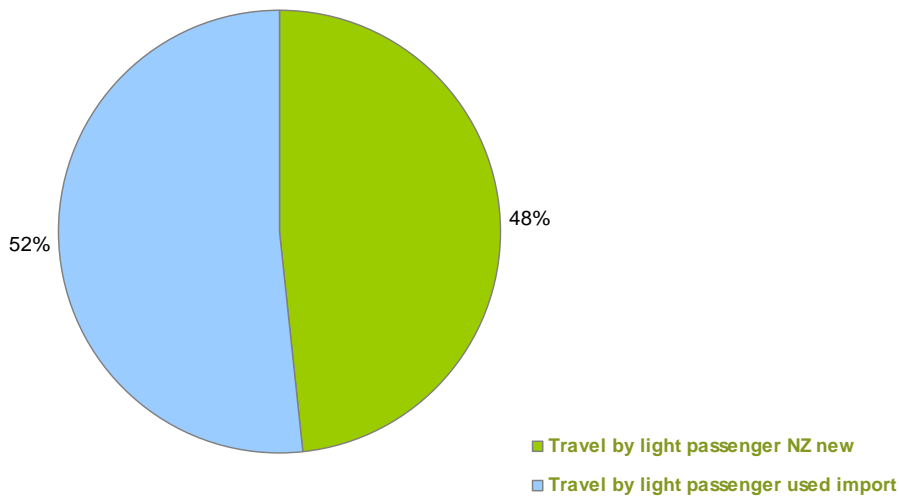


Figure 2.2 : Light Fleet used import percentage



The used imported vehicles in the light passenger fleet are now doing more travel than the New Zealand new light passenger vehicles, even though they are older on average (see Figure 2.4, and see Figure 3.3 for a breakdown of travel by vehicle age).

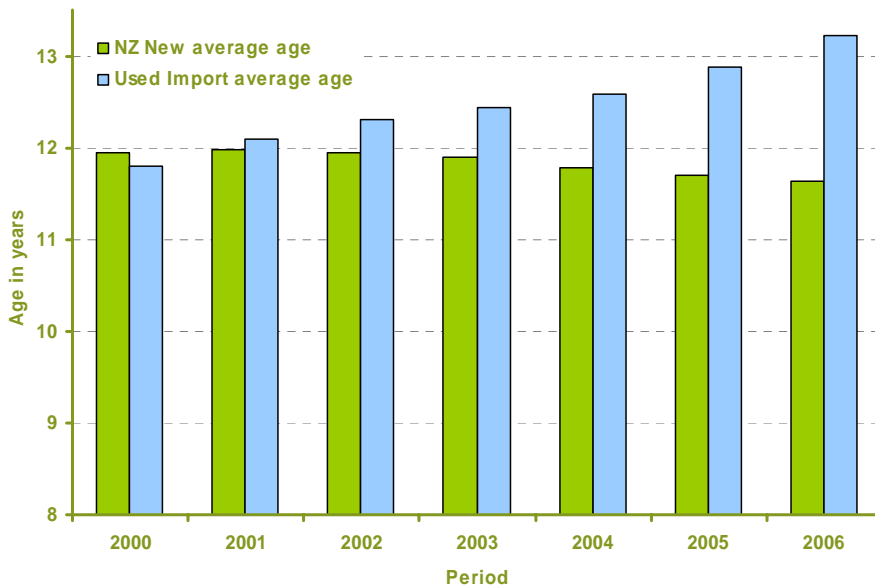
Figure 2.3 : Light Private Fleet travel 2006



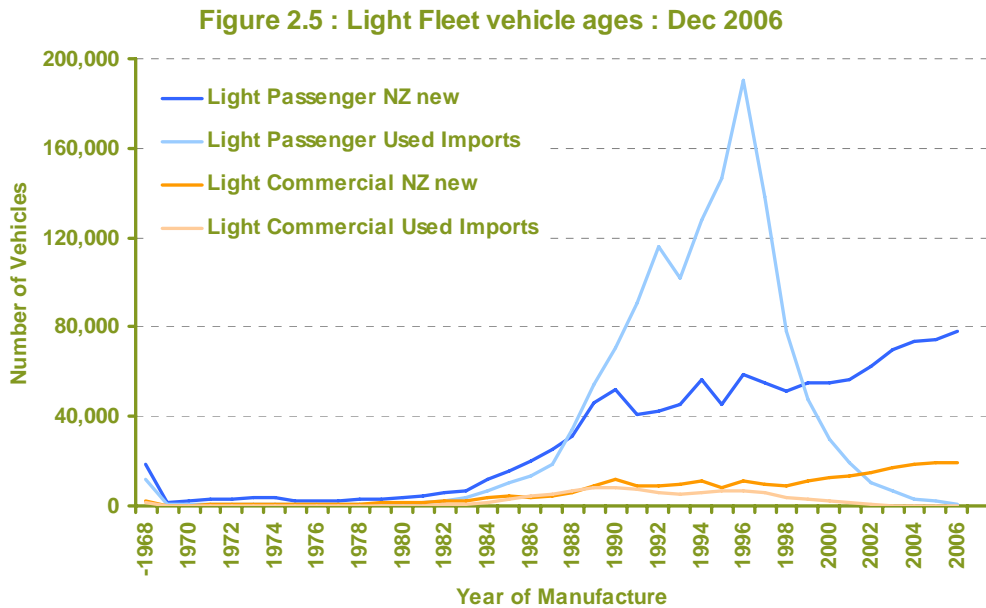
Light Fleet Vehicle Age

The average age of the vehicles in the light fleet is old by international standards (see Figure 1.8b) and the average age of the used imported vehicles in the fleet is increasing. The New Zealand Frontal Impact Standard was introduced in 2002 and had the effect of restricting used car imports to those vehicles manufactured during or after 1996 (and some older vehicles that met the standard). This reduced the typical age of used imports arriving in New Zealand earlier this decade, but the effect of this restriction has now largely worn off (see Figure 5.2).

Figure 2.4 : Light Fleet average age



The light vehicle fleet age mix includes a very significant number of used imports manufactured in the 1990s.



The New Zealand and Australian light fleets

The New Zealand light fleet age profile and that of Australia are significantly different. Australia does not import used vehicles to any great degree, so most vehicles in the Australian fleet have been there since new.

The 1996 year of manufacture peak in the New Zealand fleet is a direct consequence of the frontal impact standard, which had the effect of restricting used car imports to those vehicles manufactured during or after 1996 (and some older vehicles that met the standard).

Note: this graph is **indicative only** as the available published Australian data is actually Dec 2004. It is presented here displaced forward in time by two years. The fundamental shape of the curve is valid even though it may change slightly when the data becomes available.

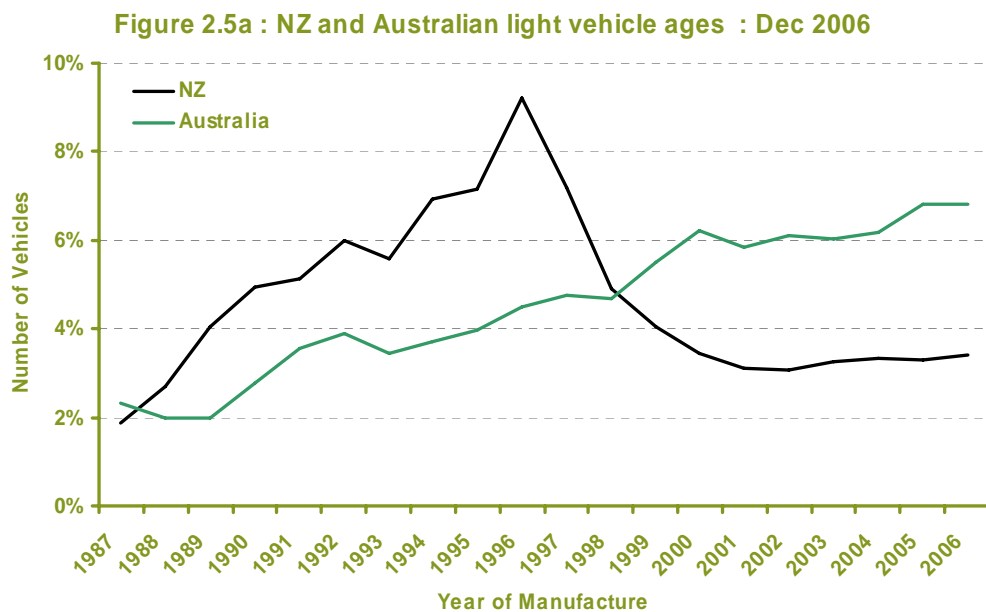
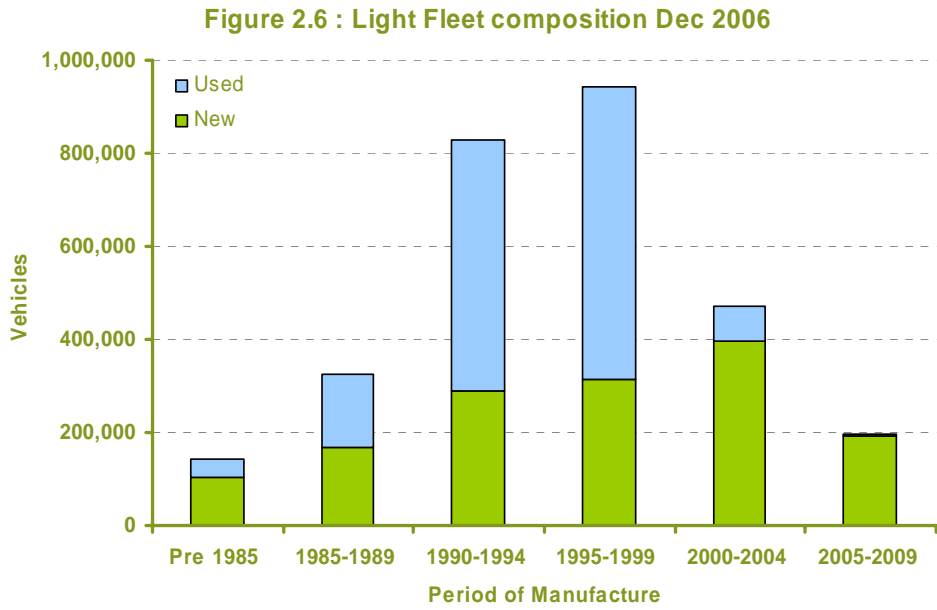


Figure 2.6 shows the relative numbers and ages of the vehicles in the light fleet in December 2006. Used imported vehicles are typically seven or nine years old when they enter New Zealand, which is why the age structure is so different from the Australian age structure (see Figure 2.5a).



There is a marked difference between the makeup of the light passenger and light commercial fleets. Light commercials are typically relatively young New Zealand-new vehicles, whereas the passenger fleet is more typically older used imports.

Figure 2.7 : Light Private Fleet composition Dec 2006

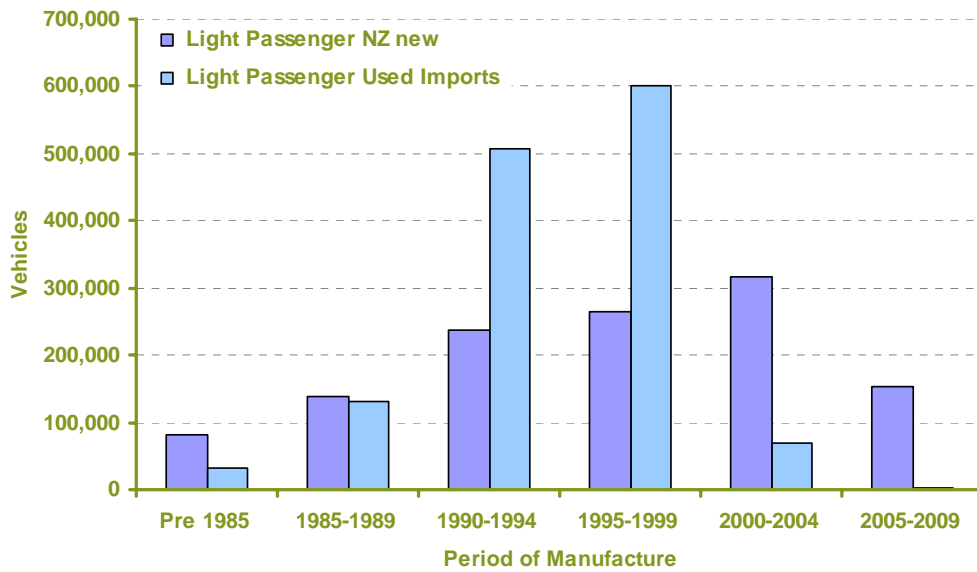
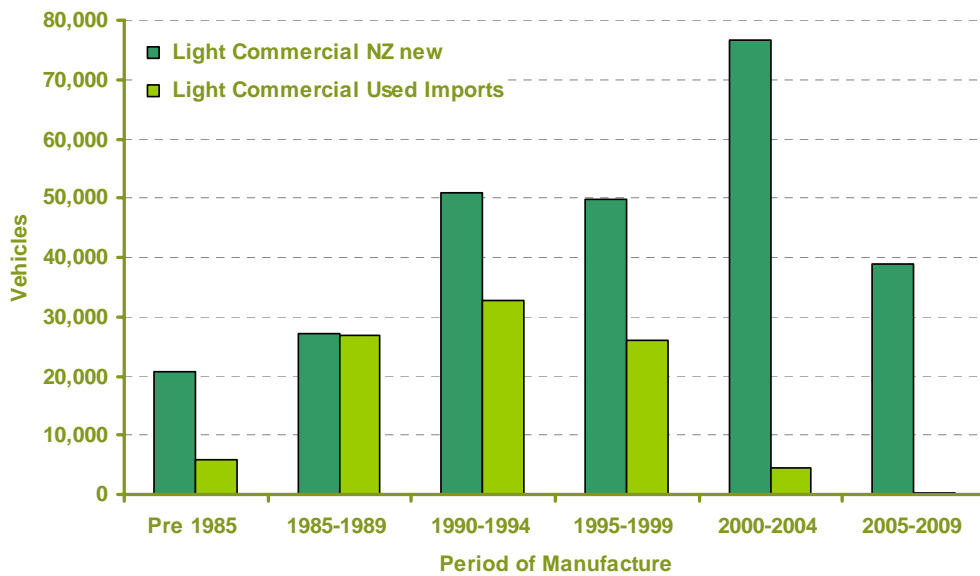
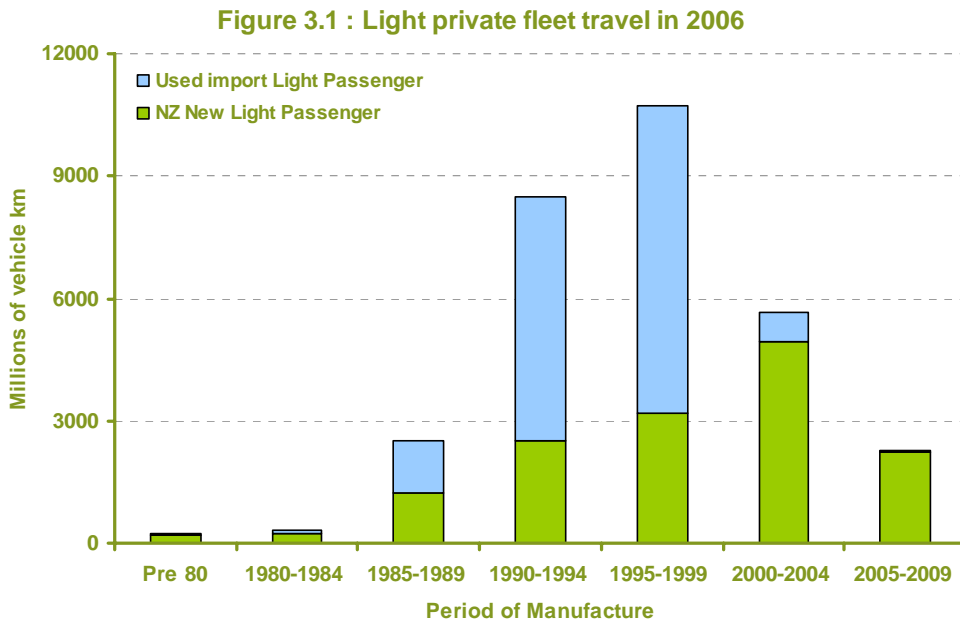


Figure 2.8 : Light Commercial Fleet composition Dec 2006

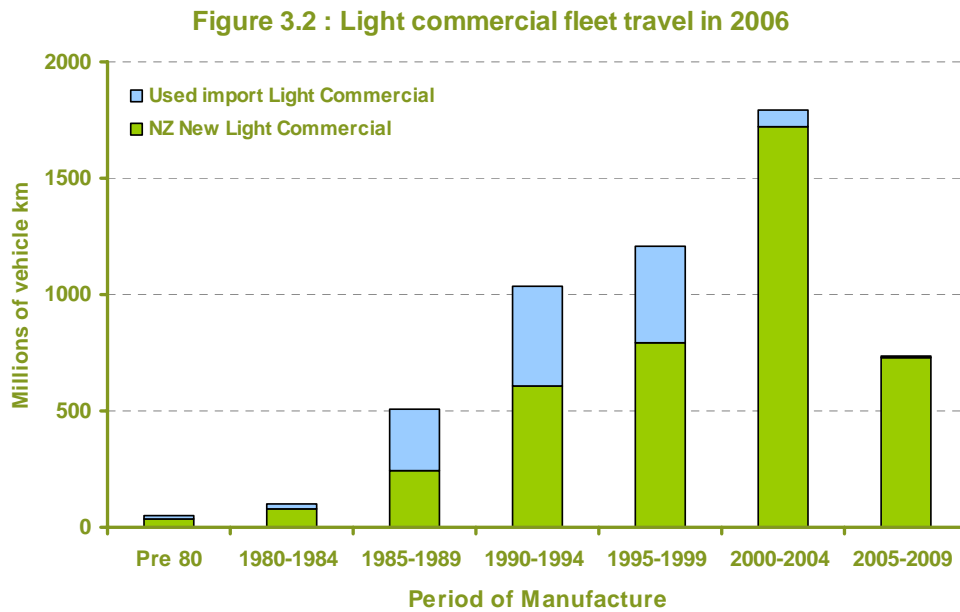


3. VEHICLE TRAVEL AND AGE IN 2006

The light fleet travel is dominated by used imported vehicles manufactured during the 1990s. The breakdown of the light passenger fleet is illustrated below (Figure 3.1).

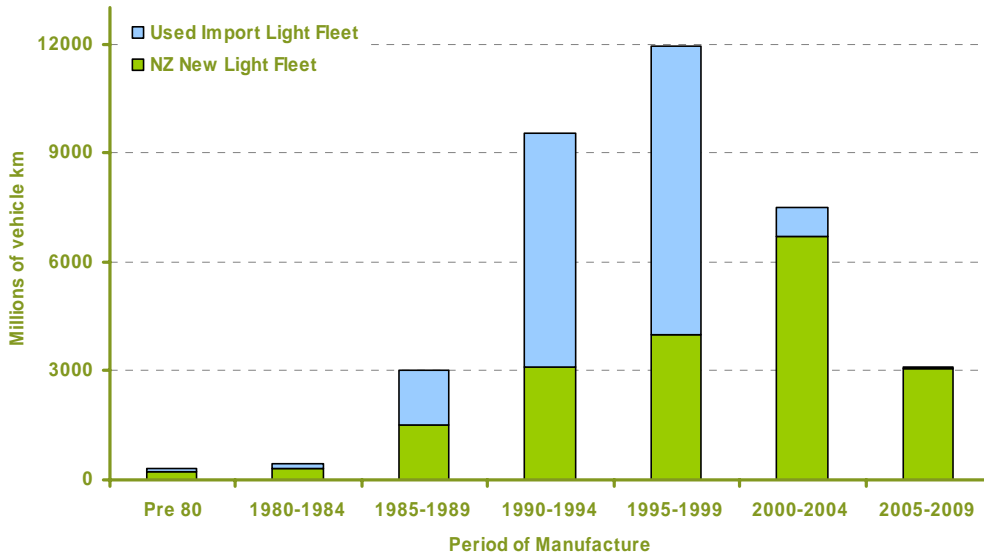


Light commercial travel shows a different pattern – a far higher proportion of travel is done by recently purchased New Zealand-new vehicles:



The light fleet as a whole is shown below (Figure 3.3).

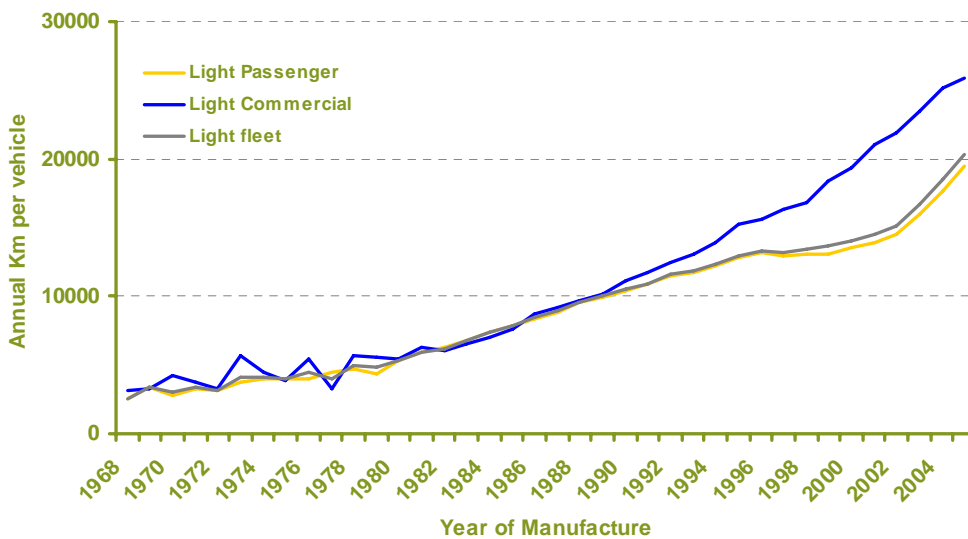
Figure 3.3 : Light Fleet travel in 2006



Average light vehicle travel by vehicle age

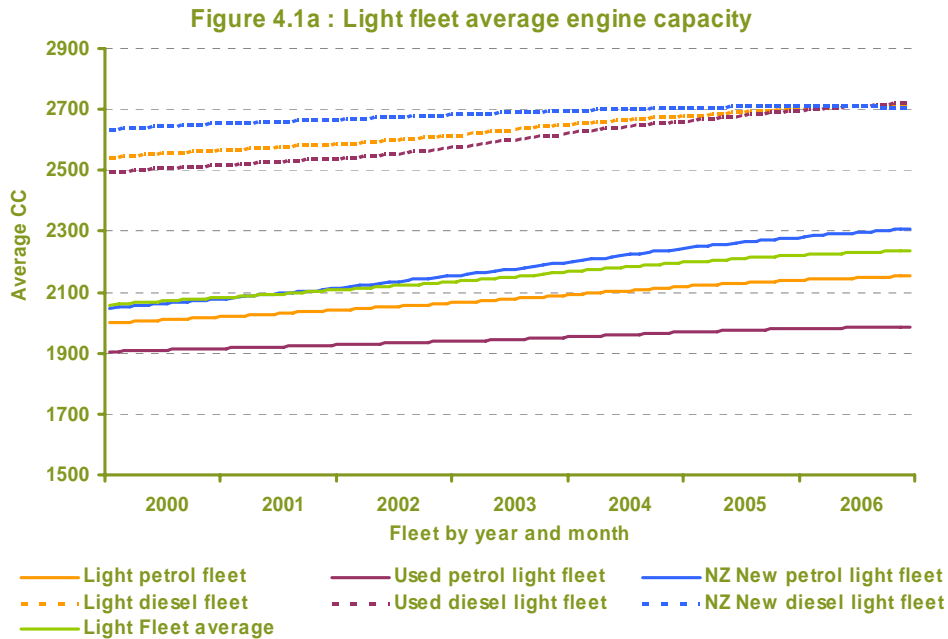
There is a clear relationship between vehicle age and travel – older vehicles travel less. The light commercial fleet travels more per vehicle than the passenger fleet until vehicles reach the age of about 15 years.

Figure 3.4 Light Fleet average travel in 2006, by vehicle age

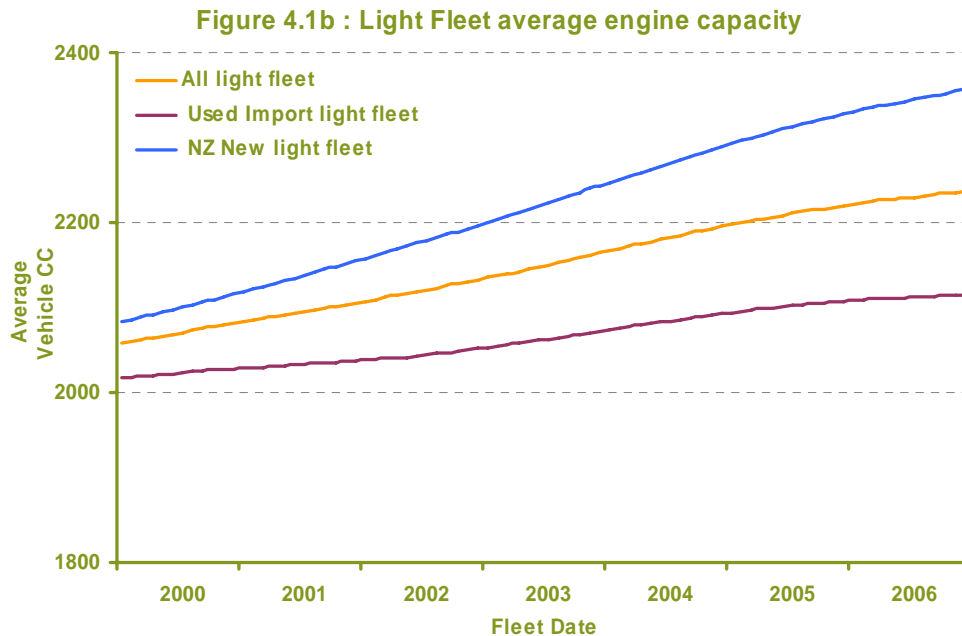


4. LIGHT FLEET ENGINE CAPACITY TRENDS

There has been a steady month-on-month increase in average engine capacity in the light fleet this decade. This graph shows the averages for the vehicles in the fleet as at January 2000 through until December 2006. Interestingly, the New Zealand-new component of the fleet has a significantly larger engine capacity than the used imported component. This is mainly due to Australian-made vehicles imported new into New Zealand. There was a slight tailing off in the trend in 2006.

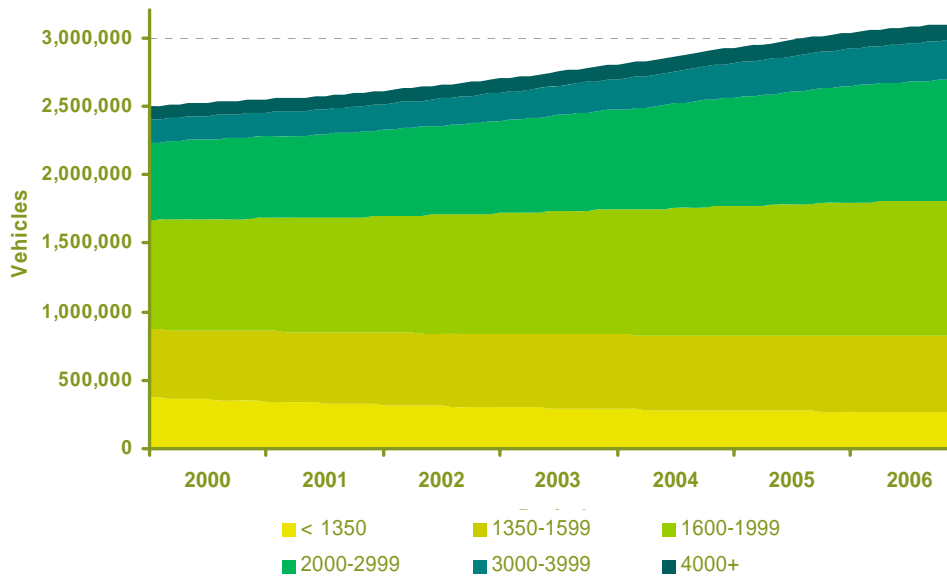


The trends in diesel and petrol engine capacities are quite different. The capacity of the New Zealand-new petrol vehicles within the fleet shows the greatest level of increase and is still maintaining an upward trend. The average diesel engine is significantly larger than the average petrol engine, but growth has tailed off.



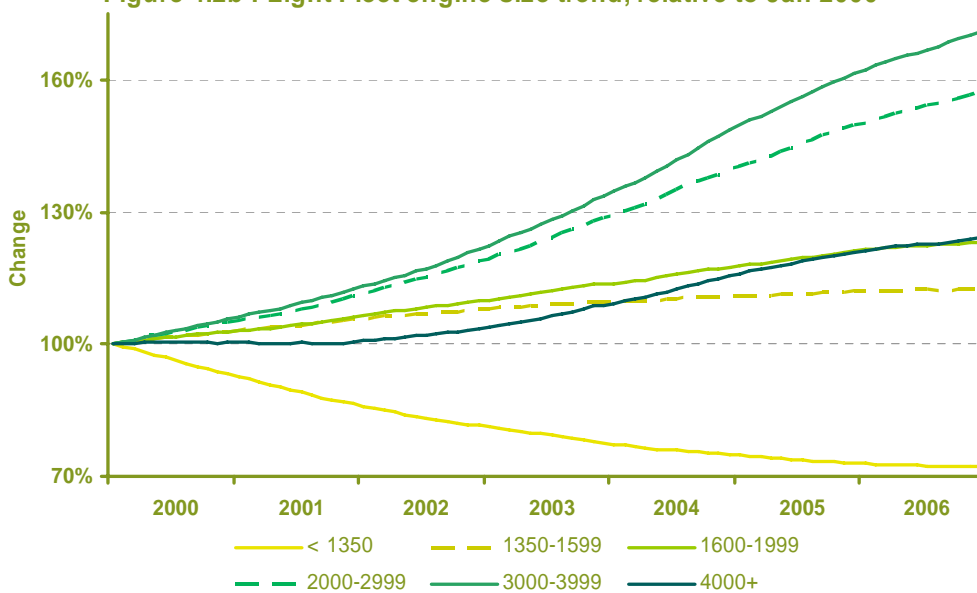
The mix of engine sizes in the light fleet has been changing. The smallest class of vehicles (under 1350cc) has been steadily disappearing and there has been significant growth in the 1600-1999cc and 2000-2999cc classes.

Figure 4.2a : Light Fleet engine size trend



The engine capacity sector showing the greatest rate of growth is the 3000-3999cc class, but the number of these vehicles is relatively low. The 2000-2999cc class has shown the most growth in terms of vehicle numbers. There has been little obvious reaction to the fuel price rises.

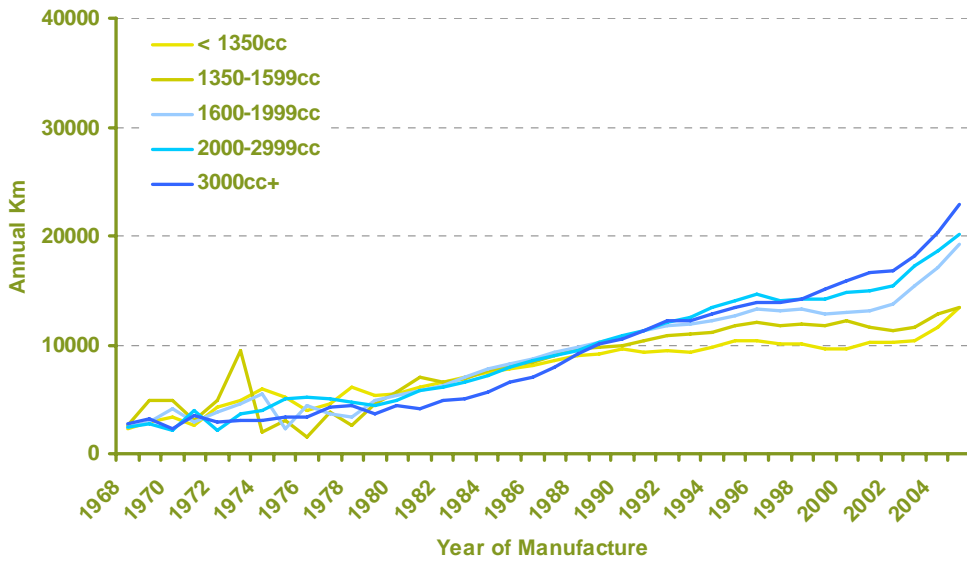
Figure 4.2b : Light Fleet engine size trend, relative to Jan 2000



Light fleet travel by engine capacity and age

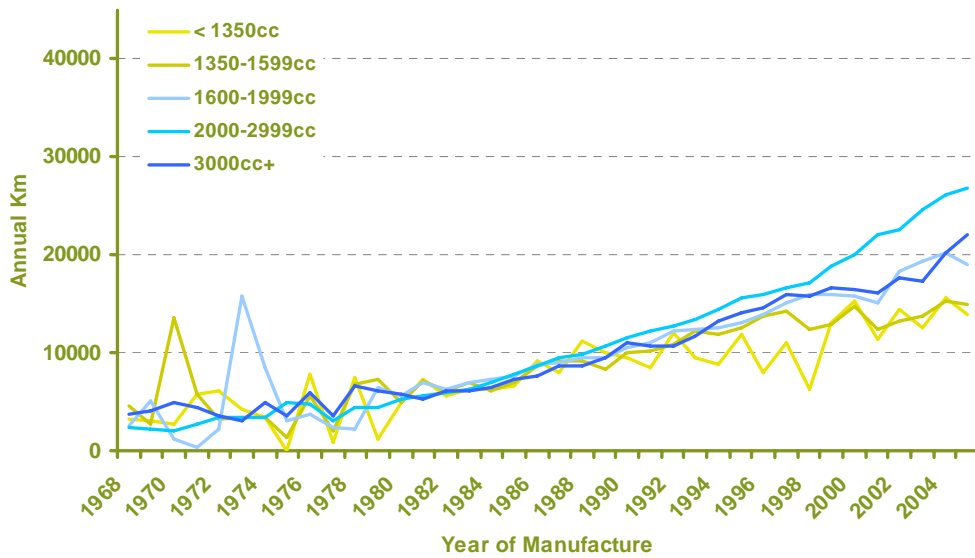
Smaller-engined vehicles do less annual travel than other vehicles, and vehicles with the largest engines travel more early in their life.

Figure 4.3a : Light Passenger average travel 2006



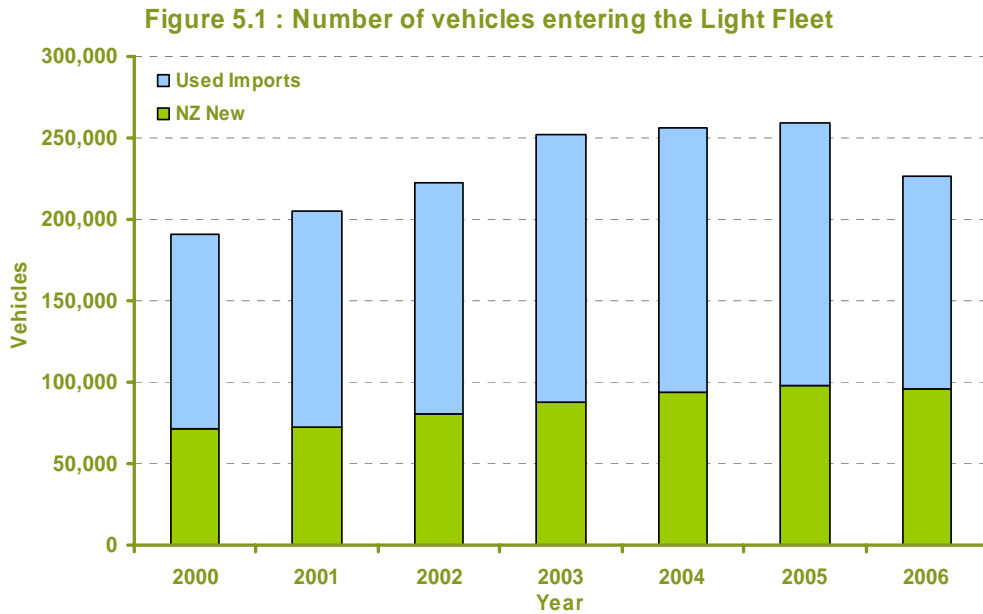
The pattern for light commercials is similar to that for light passenger vehicles, although the amount of travel is far higher. Again, the vehicles with the largest engines do the most travel early in their life.

Figure 4.3b : Light Commercial average travel 2006

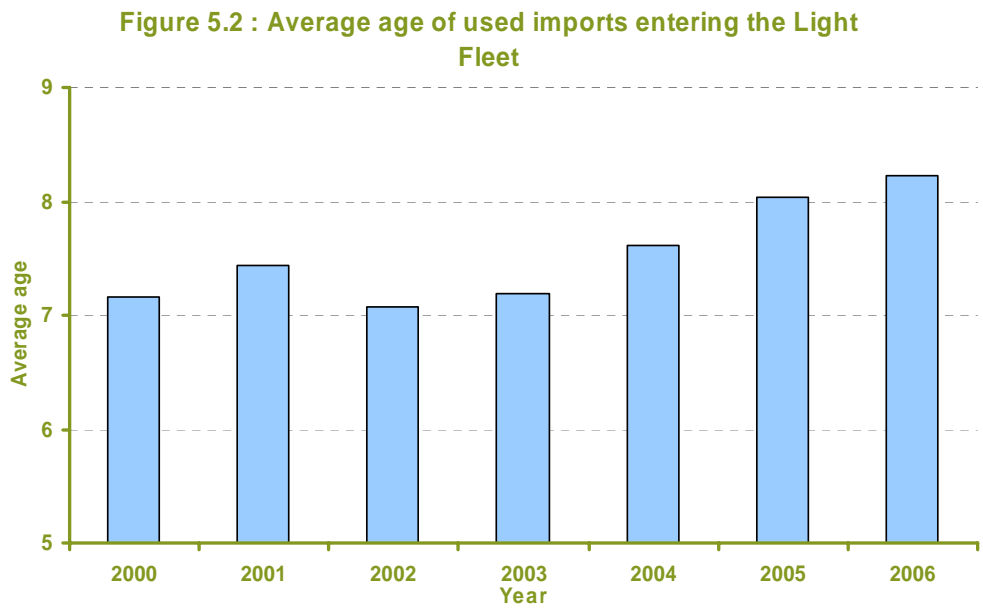


5. WHICH VEHICLES ARE ENTERING THE LIGHT FLEET?

Used imports are entering the light fleet at a faster rate than New Zealand-new vehicles. There were many more used imports from 2003 to 2005, although the relative proportion dropped in 2006.



The average age of the used imported vehicles entering the fleet has been rising for the past five years (see Figures 5.2 and 5.3).



Used Import Year of Manufacture

Figure 5.3a shows the breakdown of the year of manufacture of the used imports first registered in New Zealand during 2006.

Figure 5.3a : 2006 Used imports - Year of Manufacture

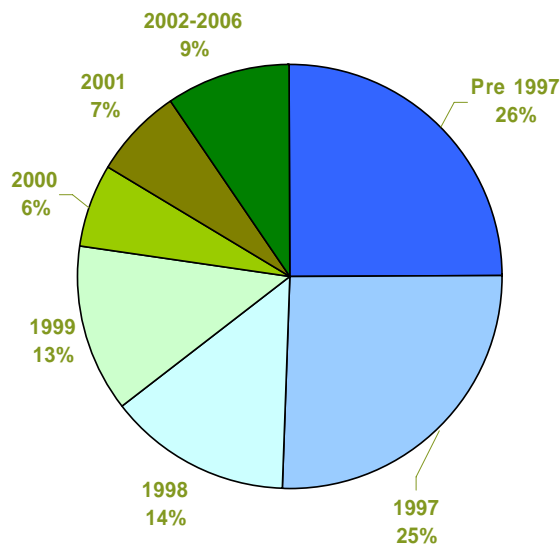


Figure 5.3b shows the year of manufacture of vehicles that entered and left the New Zealand light fleet in 2006. Virtually all of the new vehicles were manufactured in 2006. The graph shows that more used vehicles manufactured in 1997 entered the fleet than any other age. This is likely to reflect the effects of the Frontal Impact Rule (which restricts the entry cars made before 1996, although vans, utes and 4WDs continue to be imported). It may also reflect the Japanese pattern of selling vehicles in their seventh and ninth years, which owners do to avoid paying a relatively large tax at their two yearly registration process known as the Shaken.

It can also be seen that used vehicles leave the fleet slightly earlier than New Zealand-new vehicles.

Figure 5.3b : Light vehicles entering or leaving the fleet in 2006

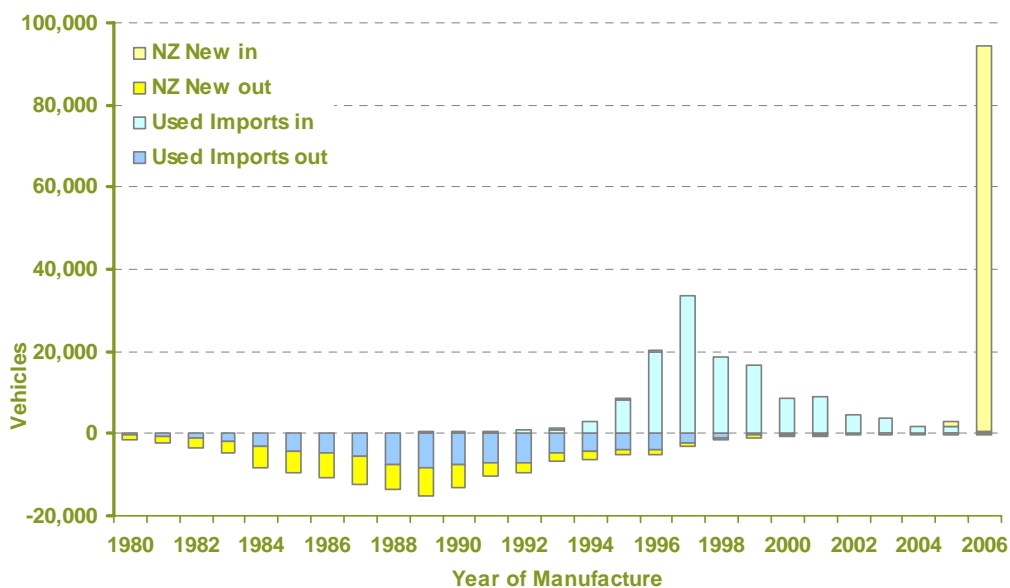
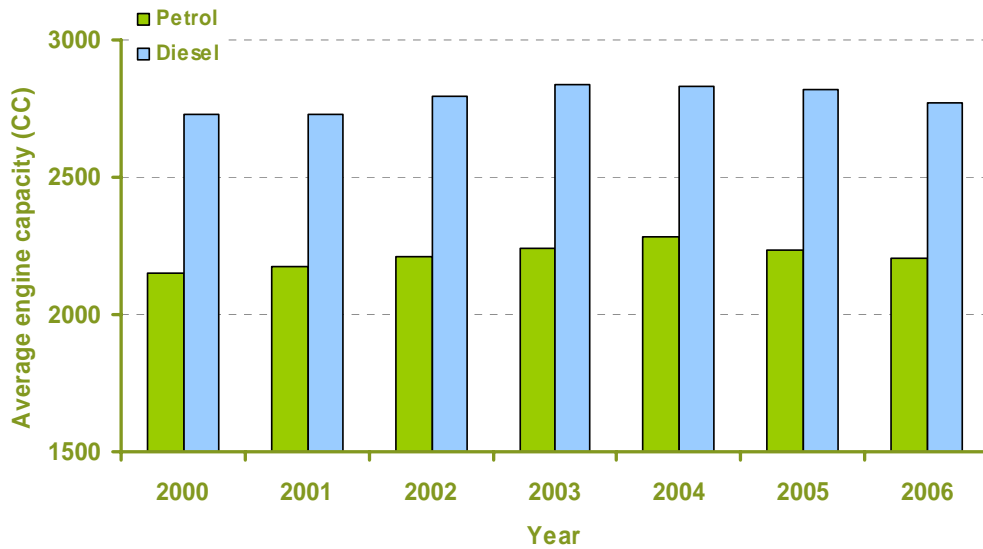


Figure 5.4 shows the average engine size of vehicles entering the fleet was increasing until 2005 (Figure 4.1 showed the average of all the vehicles in the light fleet).

Figure 5.4 : Average engine size of vehicles entering the Light Fleet



Used import versus New Zealand-new engine capacity mix

The engine size mix of the used imports entering the fleet is different from that of New Zealand-new vehicles. There are relatively more smaller-engine used imported vehicles than New Zealand-new.

Figure 5.5a : Engine size of used imports entering the Light Fleet

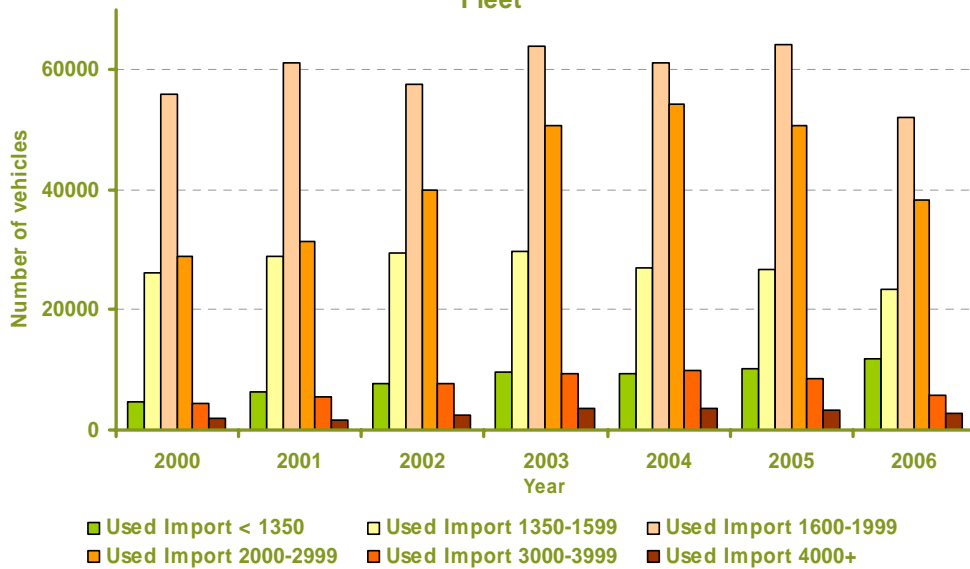
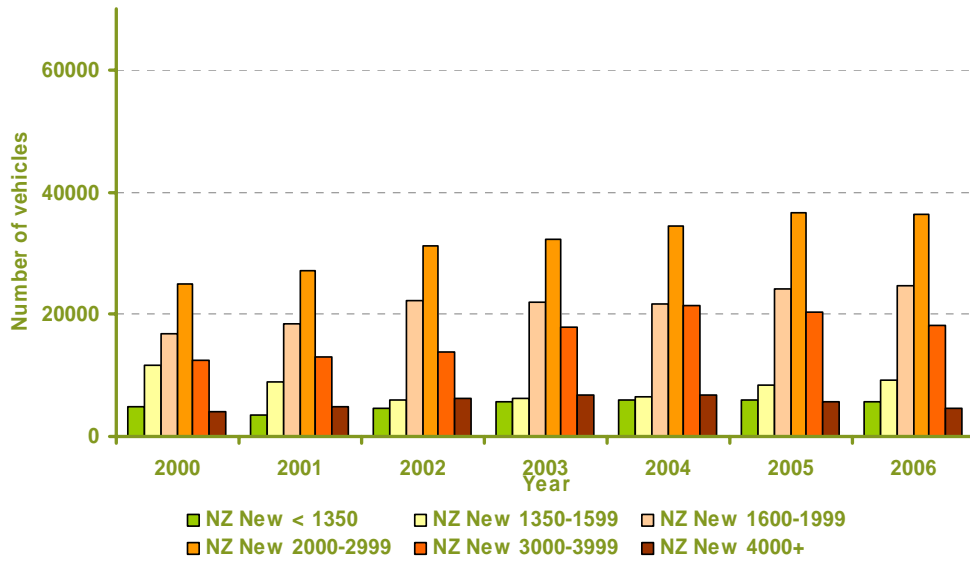
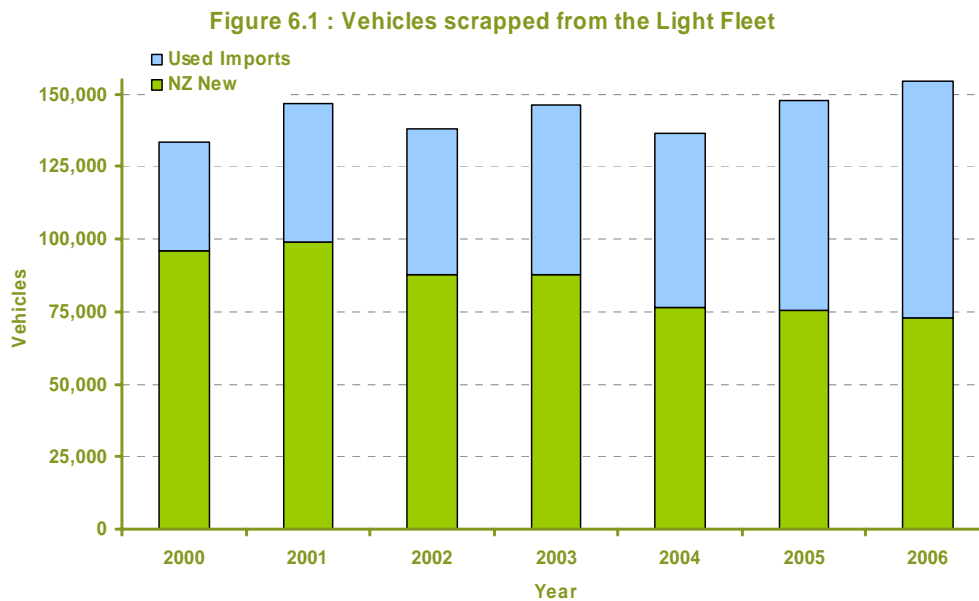


Figure 5.5b : Engine size of NZ new vehicles entering the Light Fleet

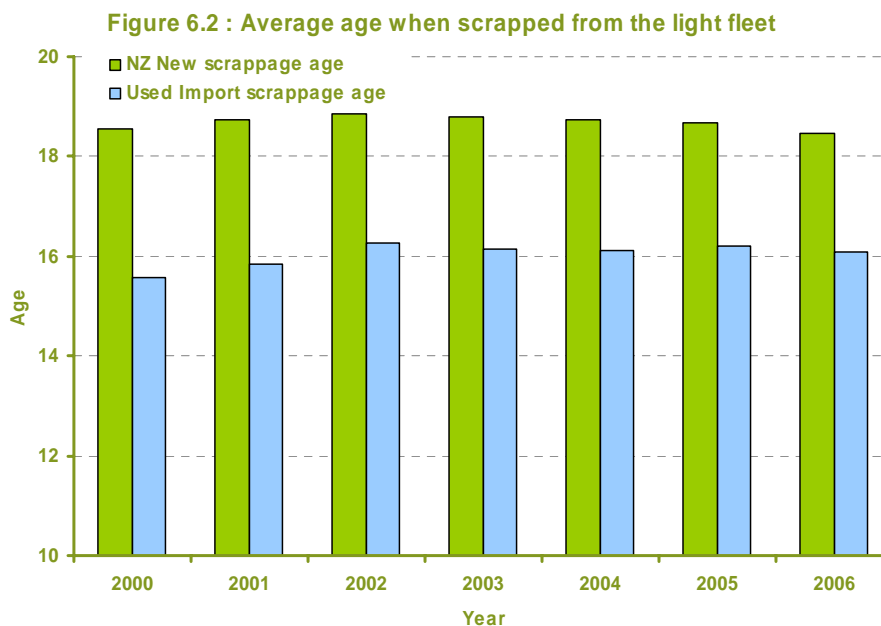


6. WHAT VEHICLES ARE LEAVING THE LIGHT FLEET?

Until recently, there have been more New Zealand-new vehicles being scrapped than used imported vehicles. However, now that used imports make up half the light fleet, this is changing (see Figure 6.1).



Used imports are leaving the fleet at an average age of 16 years, whereas New Zealand-new vehicles are averaging 18 years old when they are scrapped (see Figure 6.2).



Scrapage Curves

The accompanying spreadsheet includes scrappage curves for 2006. The curves show the percentage of vehicles of each age that were in the fleet at the start of January 2006, but gone by the end of December 2006. They are table 6.3.

Although motorcycles have not been included in the light fleet, their scrappage curve is included. Their high scrappage rates early in their life probably reflects crash damage.

7. QUARTERLY FLEET REPORTS: WHAT VEHICLES ARE JOINING AND LEAVING THE LIGHT FLEET?

The quarterly graphs combine several sets of information. They may look complicated but if you take a few moments to work out their structure, it will make interpretation easier.

- the green bars show vehicles entering the fleet
- the blue bars show vehicles leaving the fleet

- the filled bars show petrol vehicles
- the outlined bars show diesel vehicles

For example:

- the green outlined bars in the 2500-2999cc range show a significant number of diesels entering the fleet
- comparing these bars with all other green outlined bars shows that the 2500-2999cc class is the dominant diesel engine size
- the solid blue bars for the 1000-1249cc class are far longer than the associated solid green bars. This shows that the number of these vehicles leaving the fleet vastly exceeds new registrations in this size range

The quarterly graphs below show several trends:

- Vehicle engine size growth

The 1000-1249cc class is reducing in number (more vehicles are exiting the fleet than entering) but the next class up (1250-1499cc) is expanding. The same reduction is evident in the 1500-1749cc and 2000-2249cc classes, and in each case the next class up is expanding.

- Diesels

There are substantial numbers of 2500-2999cc diesels entering the fleet.

- Fuel price effect

The reaction to high fuel prices in 2006 appears to have resulted in a reduction in the number of large engined (3000cc+) petrol vehicles purchased, rather than increased purchases of smaller engined vehicles.

Figure 7Q1 : Vehicles entering and leaving the Light Fleet

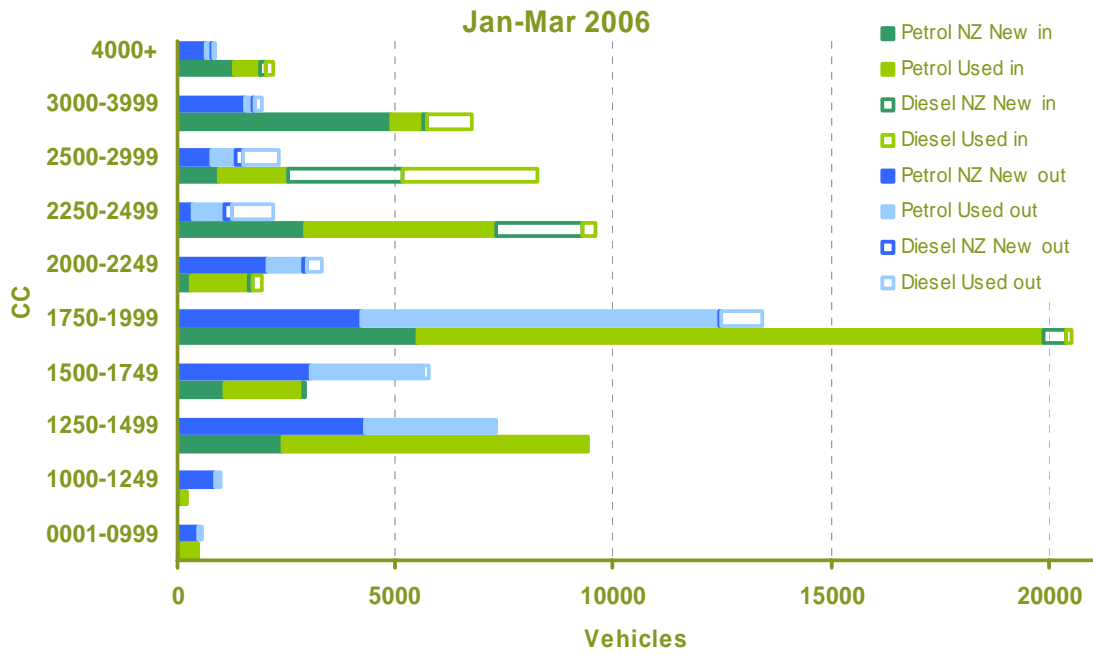
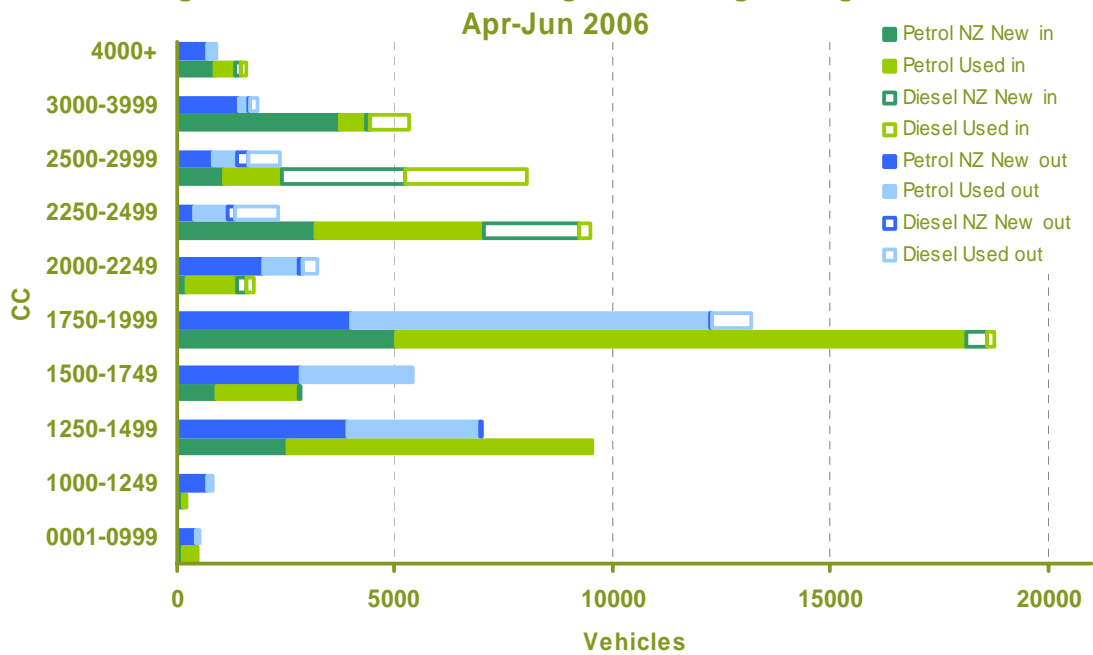
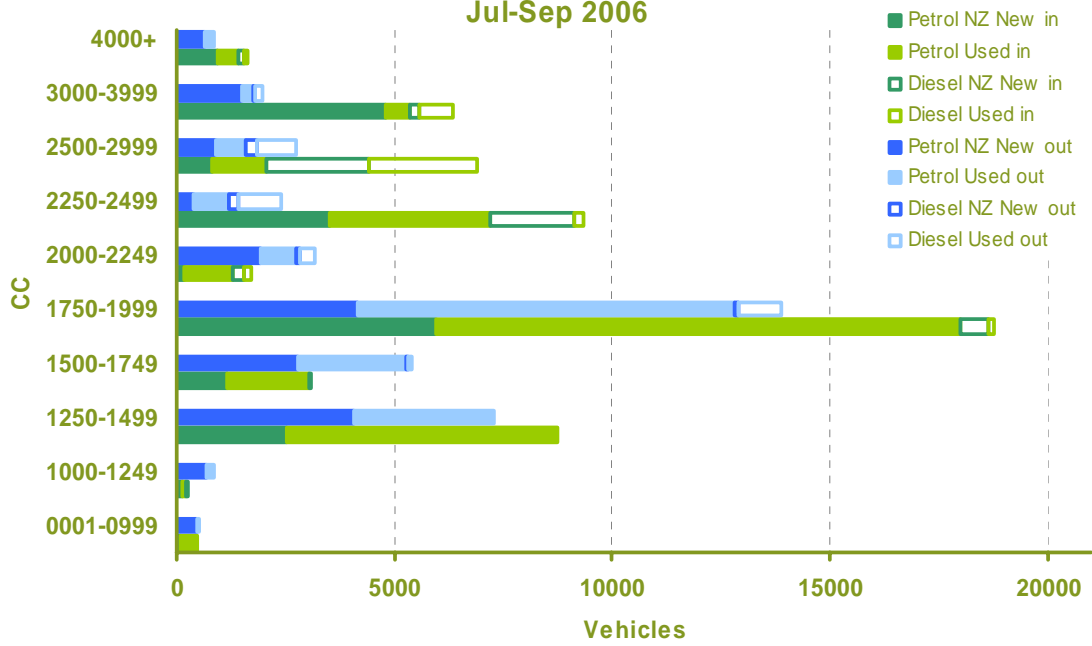


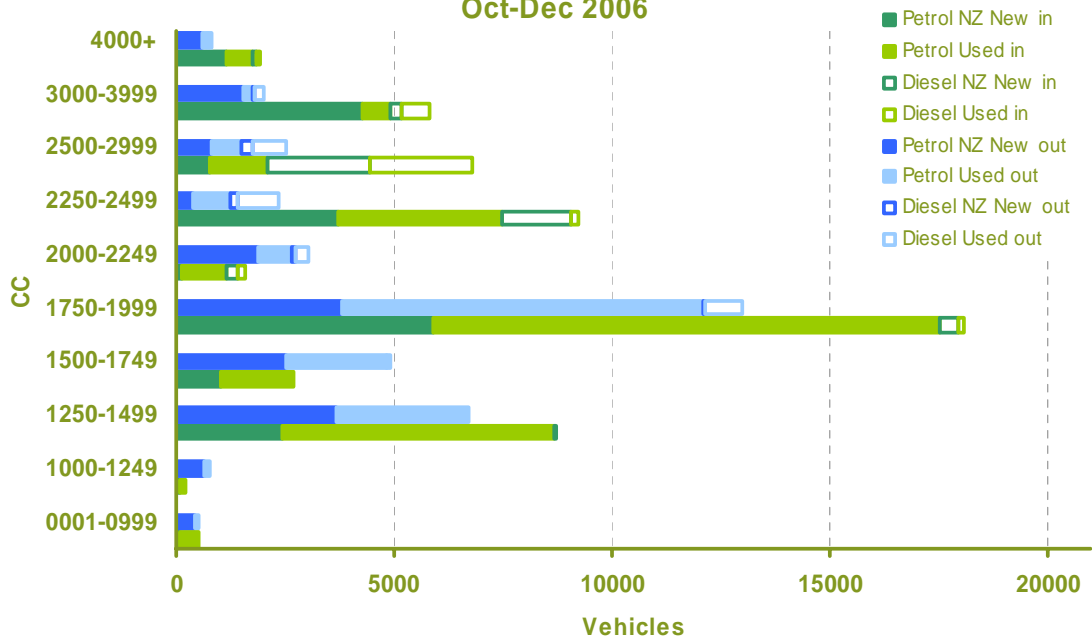
Figure 7Q2 : Vehicles entering and leaving the Light Fleet



**Figure 7Q3 : Vehicles entering and leaving the Light Fleet
Jul-Sep 2006**



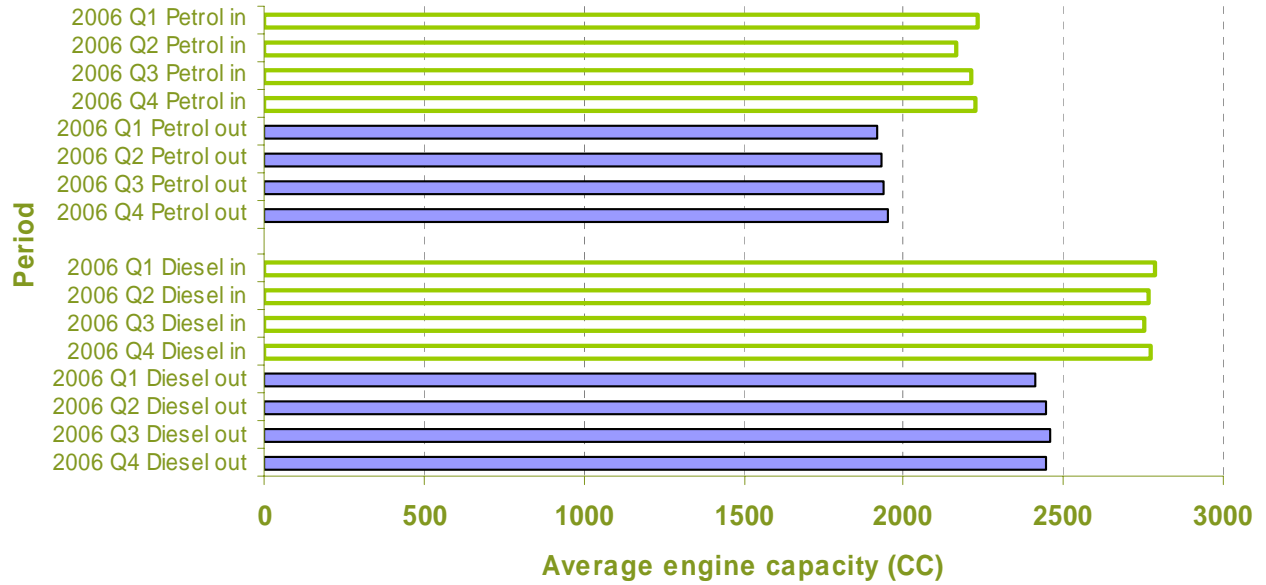
**Figure 7Q4 : Vehicles entering and leaving the Light Fleet
Oct-Dec 2006**



What trends are there in the engine sizes joining and leaving the fleet?

The new and used imported vehicles that joined the fleet in 2006 did not differ markedly in engine capacity, despite higher fuel prices. The vehicles entering the fleet have greater engine capacities than those leaving, and the fleet average continues to grow.

Figure 7.1 Means : Average engine size of vehicle entering and leaving the fleet



8. HOW MUCH OF THE LIGHT FLEET IS DIESEL POWERED AND HOW FUEL ECONOMIC IS THE LIGHT FLEET?

The following table shows the fraction of the light fleet, passenger and commercial, that is diesel powered, and the percentage of light fleet travel that is diesel powered.

Table 1	Diesel vehicles	Diesel travel
Light fleet overall	15%	19%
Light passenger fleet	13%	17%
Light commercial fleet	34%	34%

Figure 8.1 : Light Fleet makeup by fuel type 2006

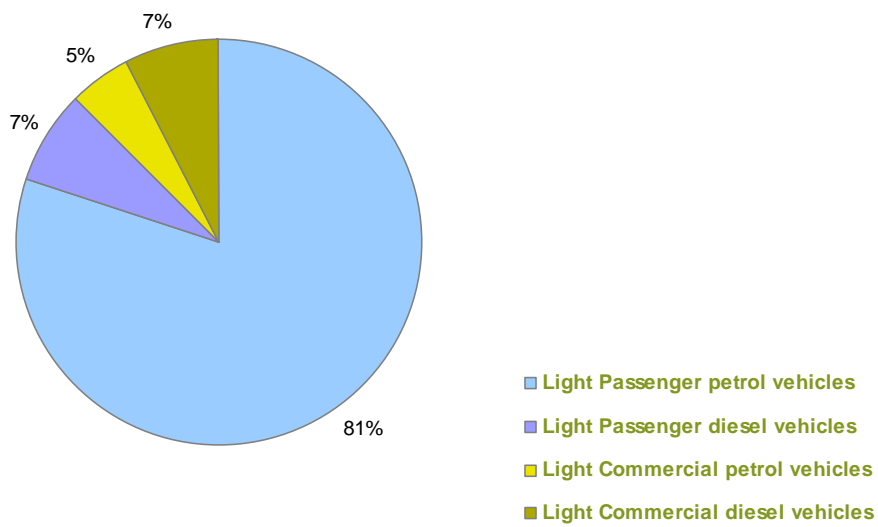
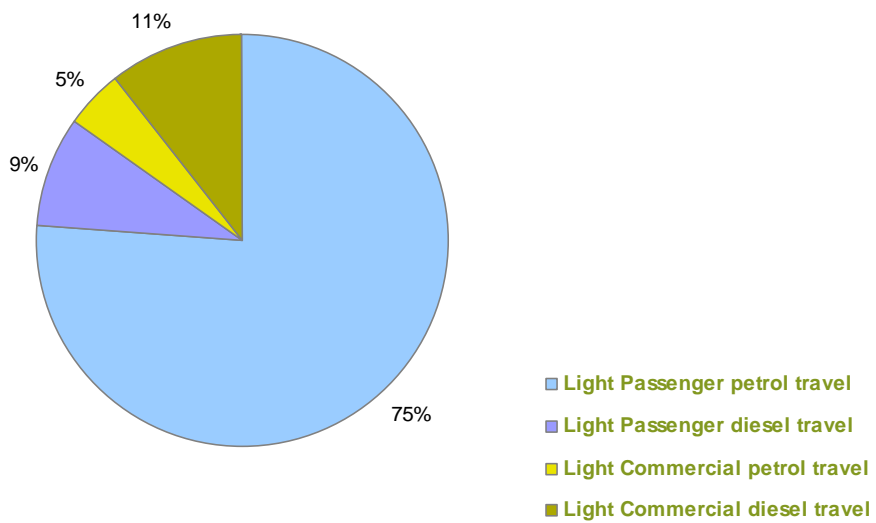
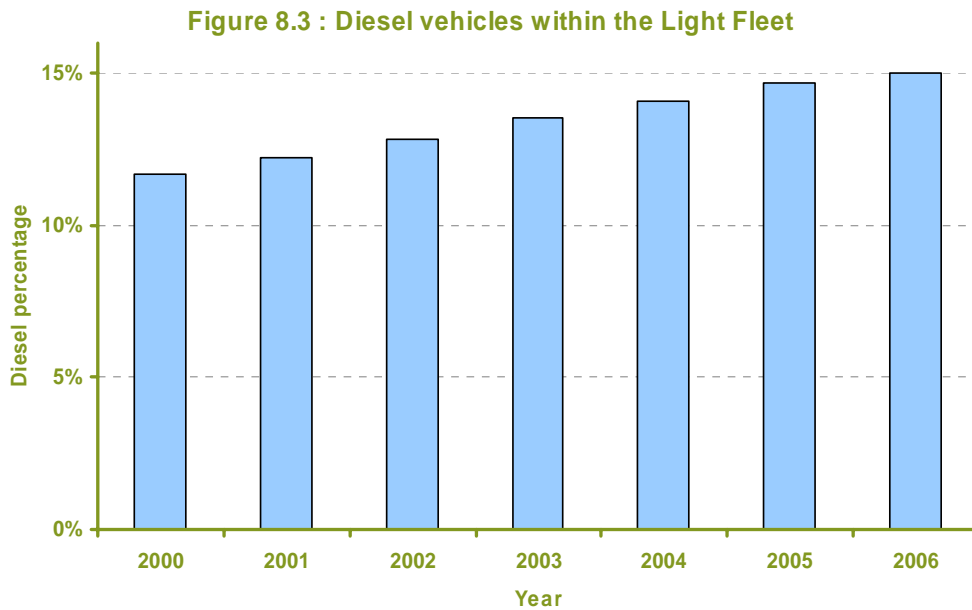


Figure 8.2 : Light Fleet travel by fuel type 2006



The proportion of diesel vehicles in the fleet

The diesel proportion of the light fleet has grown steadily, from 11.7% in 2000 to 15% in 2006.



Fuel economy values

Vehicle importers have been supplying fuel consumption figures for New Zealand-new vehicles since March 2005. They also provided values for most used Japanese imports manufactured since 2000, and those imported into New Zealand since March 2005. However the majority of used vehicles being imported were manufactured before 2000, and do not have associated fuel consumption values.

Figure 8.4 shows that a fuel test cycle value is now being recorded against almost all new vehicles entering New Zealand, but relatively few of the used vehicles, although this rate is increasing.

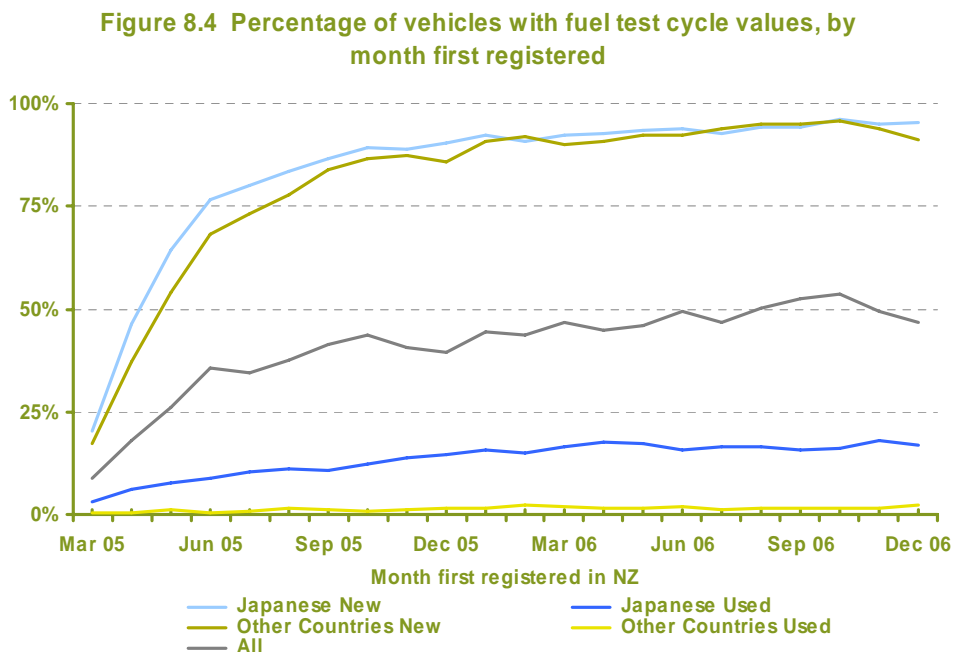
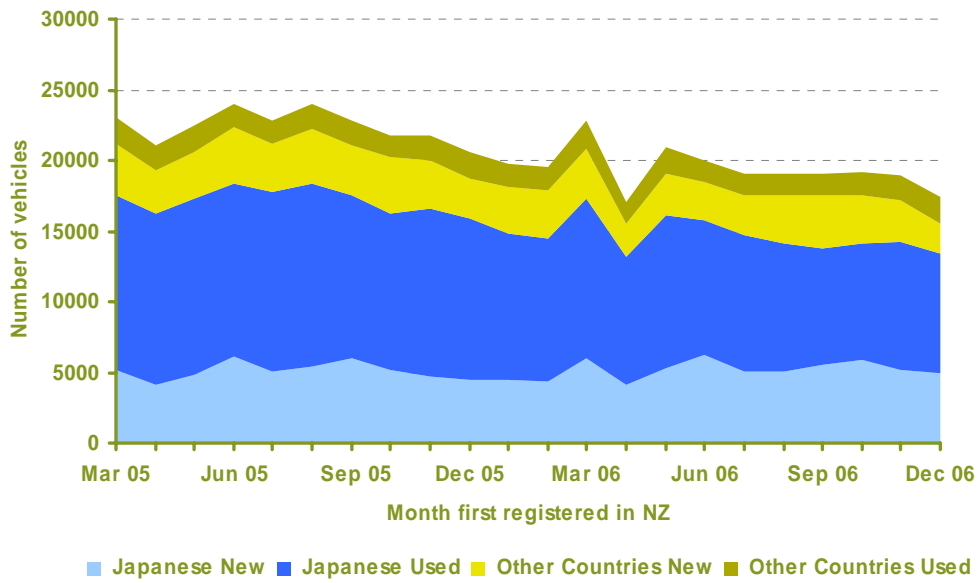


Figure 8.5 shows the number of each of these groups of vehicles that were first registered each month.

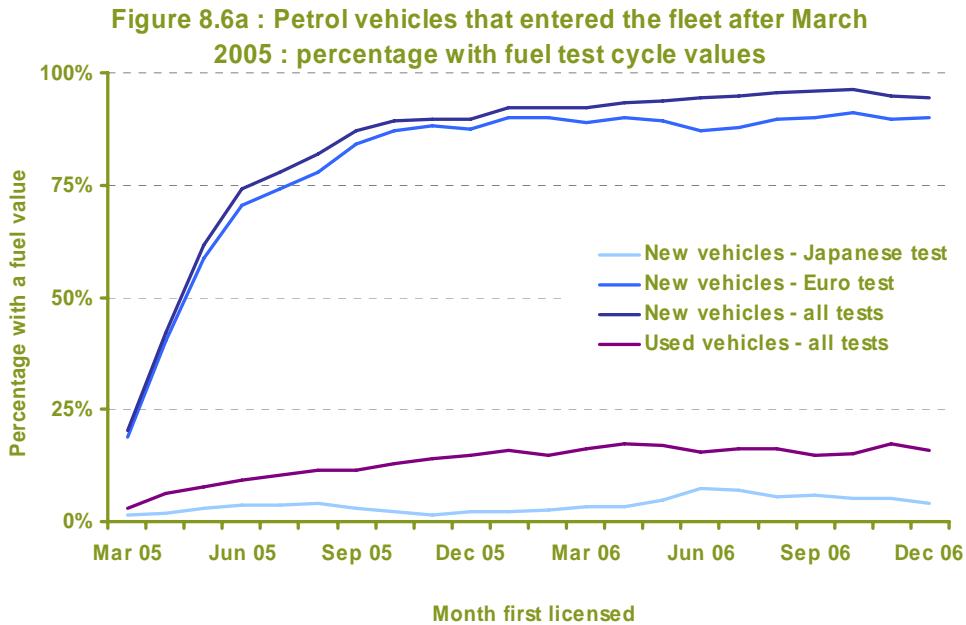
Figure 8.5 : Monthly vehicle registrations



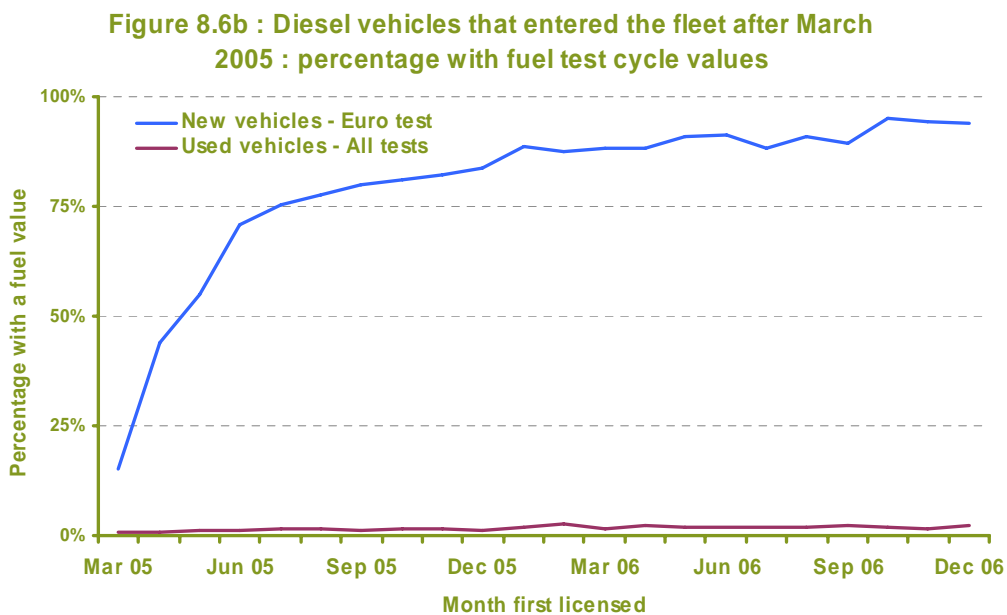
Japanese and European fuel consumption test cycles

The majority of new vehicles arriving in New Zealand, including those manufactured in Australia and Japan, are tested using the European drive cycle. The majority of the imported used vehicles are tested using the Japanese drive cycle. The results of the two tests are not directly comparable.

Figures 8.6a and 8.6b show the percentage of vehicles first registered in New Zealand from March 2005 that had test cycle values. The “New vehicle - all tests” curve totals the “New vehicle - Japanese test” and “New vehicle - Euro test” curves. The used and new vehicle curves cannot be summed – they show the percentage of used and new vehicles respectively.



New diesel vehicles show a similar trend. Over 90% of new vehicles now have test cycle values (they are all European test cycle values), but almost none of the used imports have a test cycle value as they were manufactured before 2000. The used and new vehicle curves cannot be summed – they show the percentage of used and new vehicles respectively.



Monthly fuel cycle trends

Figures 8.7a and 8.7b show the fuel test cycle values of those vehicles that have them, by the month the vehicle was first registered in New Zealand. The data is split by petrol/diesel as the economy rates are different.

The Japanese domestic test cycle results are NOT directly comparable with the European test cycle results. Used imported Japanese vehicles were subject to the Japanese test regime, and almost all new Japanese vehicles are subject to the European test cycle. The Ministry of Transport is developing a translation between the two test cycles.

Figure 8.7a : Average petrol consumption by test regime

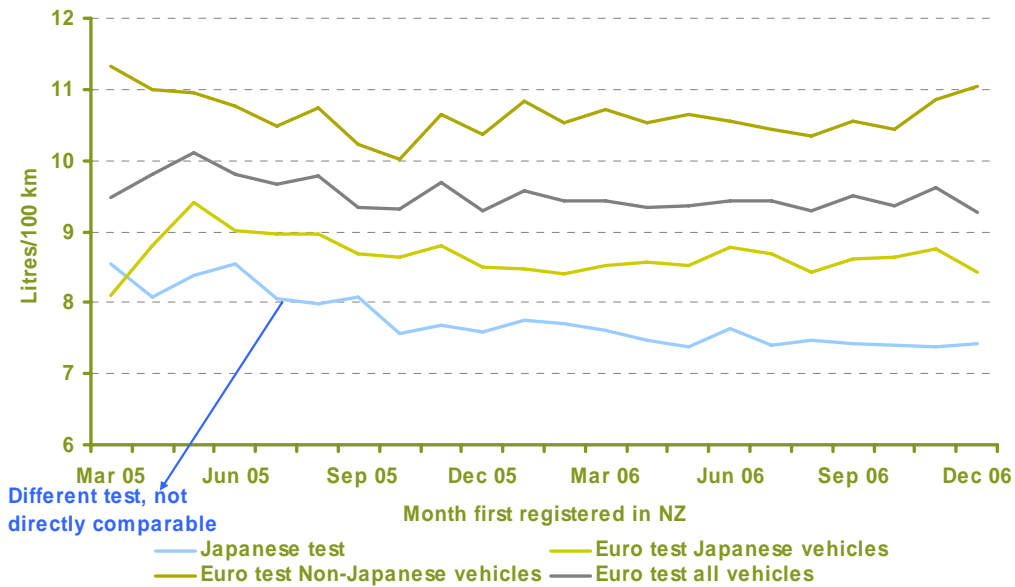
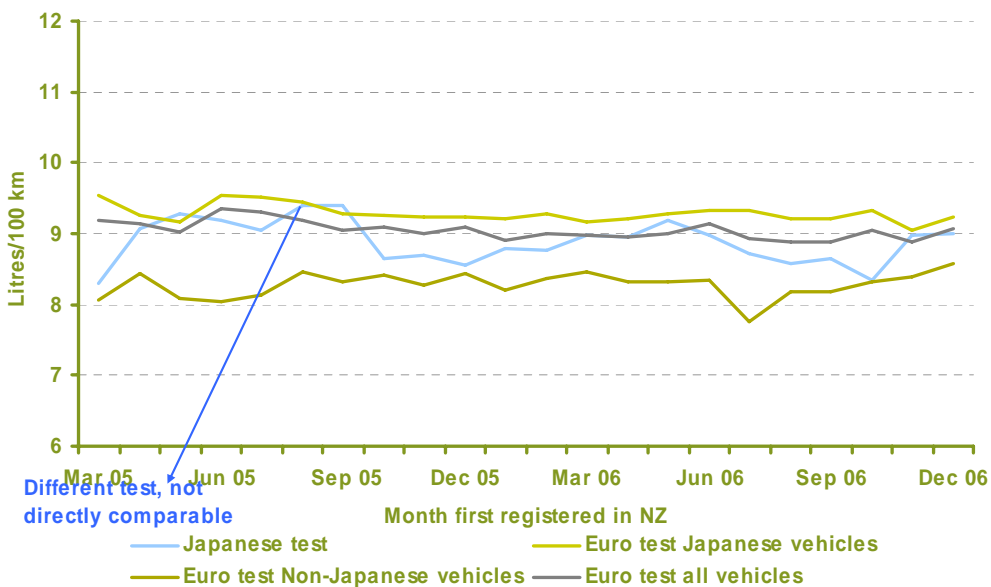


Figure 8.7b : Average diesel consumption by test regime



Annual fuel cycle trends

The annual trends in fuel efficiency (based on the vehicles for which we have values) are shown in Figures 8.8a and 8.8b. **The Japanese test data is NOT directly comparable with the European test data**, as the test method is different.

Figure 8.8a : average petrol consumption

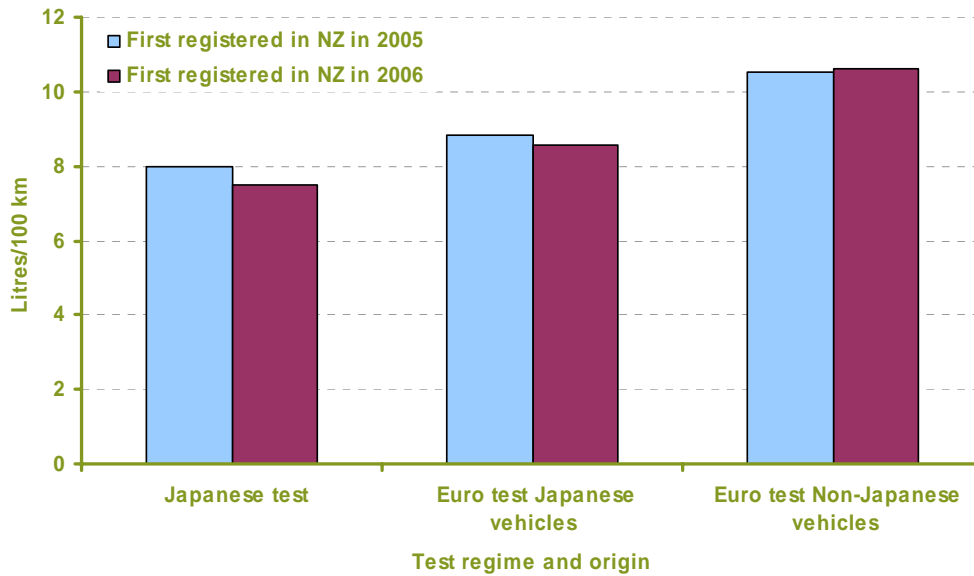
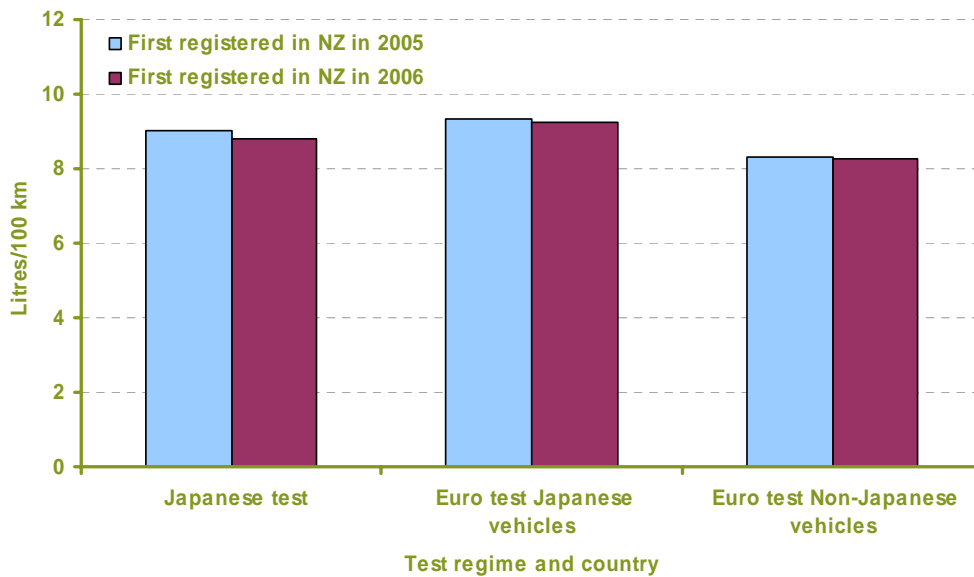


Figure 8.8b : average diesel consumption



9. WHAT IS THE AVERAGE VEHICLE ENGINE SIZE AND AGE OF THE VEHICLES IN USE?

We have established the average vehicle age and engine capacity of the light fleet. But how does that compare with the average vehicle that is actually travelling on the road?

The technique to establish this is to weight engine size and age by travel.

Say the fleet consisted of a 1000cc car that did 5000km/year and a 2000cc van that did 12,000km/year.

Then the average size of the fleet would be $1500\text{cc} = (1000+2000)/2$

The travel-weighted size would be $(1000 \times 5000 + 2000 \times 12000) / (5000 + 12000) = 1706\text{cc}$

Similarly, say the fleet consisted of a ten year old vehicle doing 4000km /year, and a four year old vehicle doing 10000km/year.

The average fleet age would be seven years = $(4+10)/2$

The average travel-weighted fleet age would be $(10 \times 4000 + 4 \times 10000) / (4000 + 10000) = 5.7$ years

Using this technique we learn that the average vehicle actually travelling is younger than the average vehicle in the fleet, and that it has a larger engine capacity than the average vehicle in the fleet.

Figure 9.1 : Light Fleet travel weighted average vehicle age

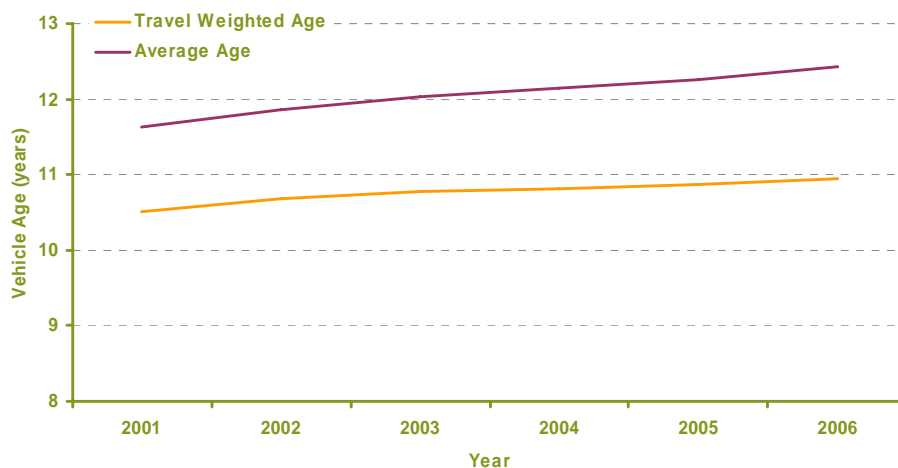
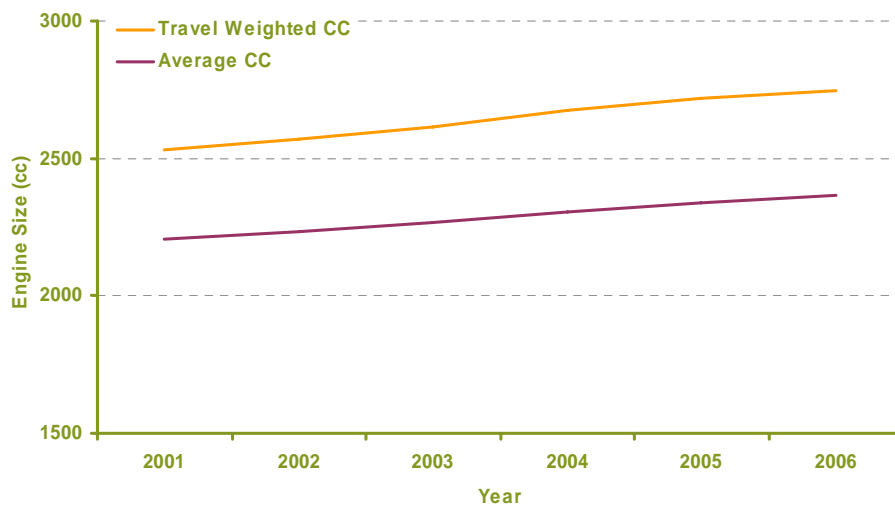
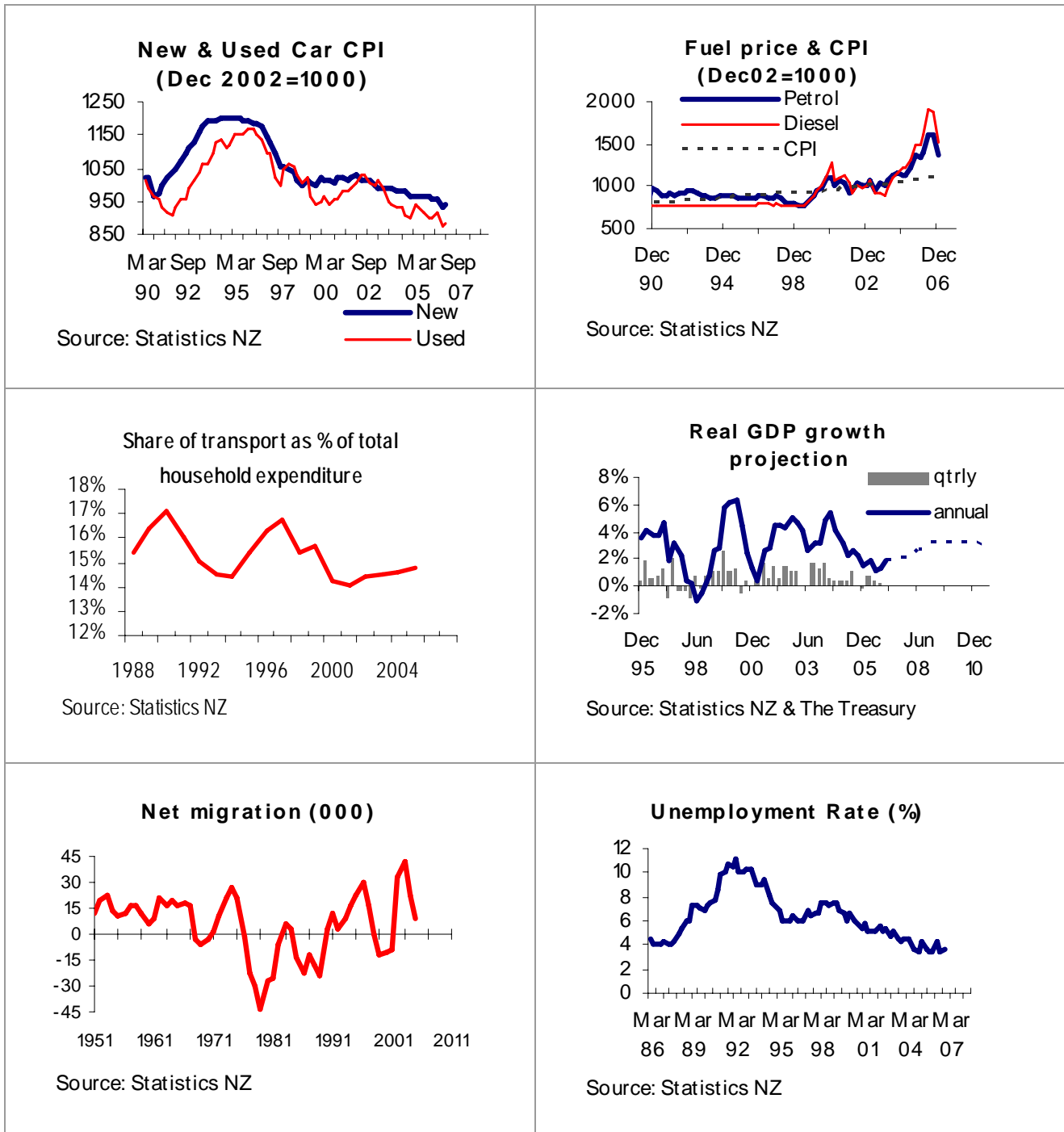


Figure 9.2 : Light Fleet travel weighted average engine size



10. ECONOMIC INDICATORS



Statistics New Zealand source series

Car prices	New car prices CPIQ, SE907101, Used car prices CPIQ, SE907102
Fuel prices	Petrol NRGQ SIHZ5, Diesel NRGQ SIHZ6
Household Transport expenditure	Prior to 1988, PCINFOS series was HEIA.SZEZZZZ6 but the HES only happens 3-yearly since 1998. Statistics produces some annual estimates but not published on INFOS – search for Household Consumption Expenditure on the Statistics New Zealand website
GDP growth	SNBA SKFAQ4
Migration	Total Permanent and Long Term (PLT) arrivals (EMIQ.S1CEZ) minus Total PLT departures (EMIQ.S2CEZ)
Unemployment	HLFQ.S1F3S

Quarterly edition

A brief quarterly trends analysis will also be published on the Ministry of Transport website. This will cover the vehicles entering and leaving the fleet that quarter (Figures 7Q1-7Q4 and 7.1 in the main report), and the fuel consumption of those vehicles (Figures 8.3-8.7). This report will also be solely web-published, with an accompanying data spreadsheet.

The quarterly data for the previous year will be incorporated in the subsequent annual edition.

Acknowledgements

Kheang Chrun of Land Transport New Zealand, for advice on Motor Vehicle Register data
Mark Walkington of the Ministry of Economic Development
Stuart Badger, Lynley Povey, Sarah Wheaton, Wayne Jones, Joanne Leung, Iain McGlinchy, Tony Frost and David Eyre of the Ministry of Transport

APPENDIX A – COMPARABILITY WITH OTHER PUBLISHED DATA

The fleet statistics in this analysis are not directly comparable with other published data. The analysis has used a different method to categorise the vehicle fleet and to count the number of active vehicles.

The information in this publication has been derived from a data extract from the New Zealand Motor Vehicle Register (MVR) which holds information on all active vehicles in New Zealand.

Vehicle categorisation

The vehicle categorisation is the one used in the Vehicle Fleet Emissions Model (VFEM)⁴, rather than the vehicle split traditionally found in Transport Registry Centre (TRC) statistics, which are published annually by Land Transport New Zealand.

The major difference from the TRC statistics is that, in this analysis, light vehicles (under 3.5 tonnes) have been categorised into light passenger vehicles and light commercial vehicles. In the TRC data, light commercial vehicles are included with trucks, but they may actually be cars, vans, utes or SUVs. The TRC categorisation is therefore not as useful when projecting the makeup of the fleet for the purposes of estimating fuel use or the level of emissions.

The objective of the VFEM is to estimate the size and activity of the on-road fleet. For this reason, vehicles exempt from licensing (typically those used off-road) and vehicles with restoration licences are excluded from the analysis.

	MVR Vehicle types	Mass
Light Passenger Fleet	Passenger car/van	Up to 3500 kg
Light Commercial fleet	Goods van/truck/utility	Up to 3500 kg
	Motor caravan	
	Bus (*)	
Bus	Bus	Over 3500 kg
Heavy	Passenger car/van	Over 3500 kg
	Goods van/truck/utility	
	Motor caravan	
Motorcycles	Motorcycle	
	ATV	
	Moped	
Miscellaneous (**)	Mobile machine	
	Special purpose vehicle	
	Tractor	
	Agricultural machine	

(*) Light buses have been included in the light fleet as they have the same fuel use and emissions characteristics

⁴ The VFEM is a computer model of the New Zealand vehicle fleet that is used to predict emissions. Much of the analysis in this report was carried out as part of work by the Ministry to improve the accuracy of the VFEM

(**) a small number of vehicles are classified as “miscellaneous”. Many of these vehicles are exempt from licensing and therefore not included in these analyses.

The breakdown of vehicle categorisation by vehicle body type for the fleet as of December 2006 was:

	Light passenger vehicle	Light commercial vehicle	Bus	Heavy goods vehicle	Motorcycle	Miscellaneous	Total
Articulated truck		117		7596			7713
Cab and chassis only		13		132			145
Cab and chassis only		29	5	909		1	944
Convertible	21940	1		1			21942
Flat-deck truck		25624		24383		1	50008
Hatchback	524198	3		1			524202
Heavy bus		30	3	453			486
Heavy van	56	13135	23	5678			18892
Light van	51476	119167		402			171045
Minibus	13	10021	105	1			10140
Mobile machine			1	24		6975	7000
Motorcycle	98				108548		108646
Other truck	2	21390	7	68718		1204	91321
Saloon	1258011			13			1258024
Self-propelled caravan	4	7925	80	14931			22940
Service coach	2	230	8790	12			9034
Sports car	65311						65311
Station wagon	777805	4677		104			782586
Tractor						8457	8457
Unknown				4			4
Utility	9144	193149		637			202930
Total	2708060	395511	9014	123999	108548	16638	3361771

Number of active vehicles

The number of potentially active vehicles is a critical factor in estimation of travel and the fuel use by the fleet. The traditional practice of the TRC has been to include vehicles in fleet statistics unless either their owner actively deregisters them, or the vehicle has not been re-licensed for 12 months. This approach is likely to overestimate the size of the active fleet as some vehicles will become inactive well within the 12 months.

An alternative approach has therefore been taken in this analysis. In this case, as with the TRC practice, vehicles are included in these fleet statistics unless they are de-registered. However, we have also excluded those vehicles where their WoF/CoF renewal is more than six months overdue. This is considered more realistic⁵.

Vehicle travel estimates

Vehicle travel estimates have been calculated on the basis of the difference between successive WoF/CoF odometer readings. The resulting fleet travel estimate has been validated against three large scale traffic counting exercises conducted by the former Land Transport Safety Authority (LTSA).

⁵ It is acknowledged that a small number of vehicles will continue to operate without a WOF or Registration. As the number of these vehicles is unknown no attempt has been made to include these. However inclusion of vehicles in the active fleet until their WoF/CoF is six months overdue appears to compensate.

APPENDIX B – INTERNATIONAL FLEET AGE COMPARISON

New Zealand light fleet	Dec 2002	12.0 years average age
New Zealand light fleet	Dec 2005	12.2 years average age

(source Motor Vehicle Register data)

Australia 2002	10.5 years average age
Australia March 2006	10.1 years average age

(source Australian Bureau of Statistics, Motor Vehicle Census)

USA July 2002	Cars	8.4 years MEDIAN age (lower than average age)
	All trucks	6.8 years
	Light Trucks	6.6 years
USA July 2006	Cars	9.0 years MEDIAN age (lower than average age)
	All trucks	6.8 years
	Light Trucks	6.6 years

(source R L Polk & Co and GreenCarCongress - Light trucks have a GVW of 1-3 tons, Trucks have a GVW of 1-8 tons)

Canada 2005	Under 4.5 tonnes	8.3 years average age
	4.5-14.9 tonnes	11.4 years
	15+ tonnes	9.4 years
	Entire fleet	8.4 years

(source – computation based on the Canadian Annual Vehicle Survey 2005 Tables 2.1, 2.2 and 2.3. Vehicles in the category “Earlier than 1987” have been assigned a year of manufacture of 1982 for computational purposes.

The average is somewhat sensitive to this assumption – assuming pre-1987 vehicles have been in the fleet for 23.5 years produces an overall average of 8.4 years, and using 25.5 years produces a fleet average of 8.5 years)