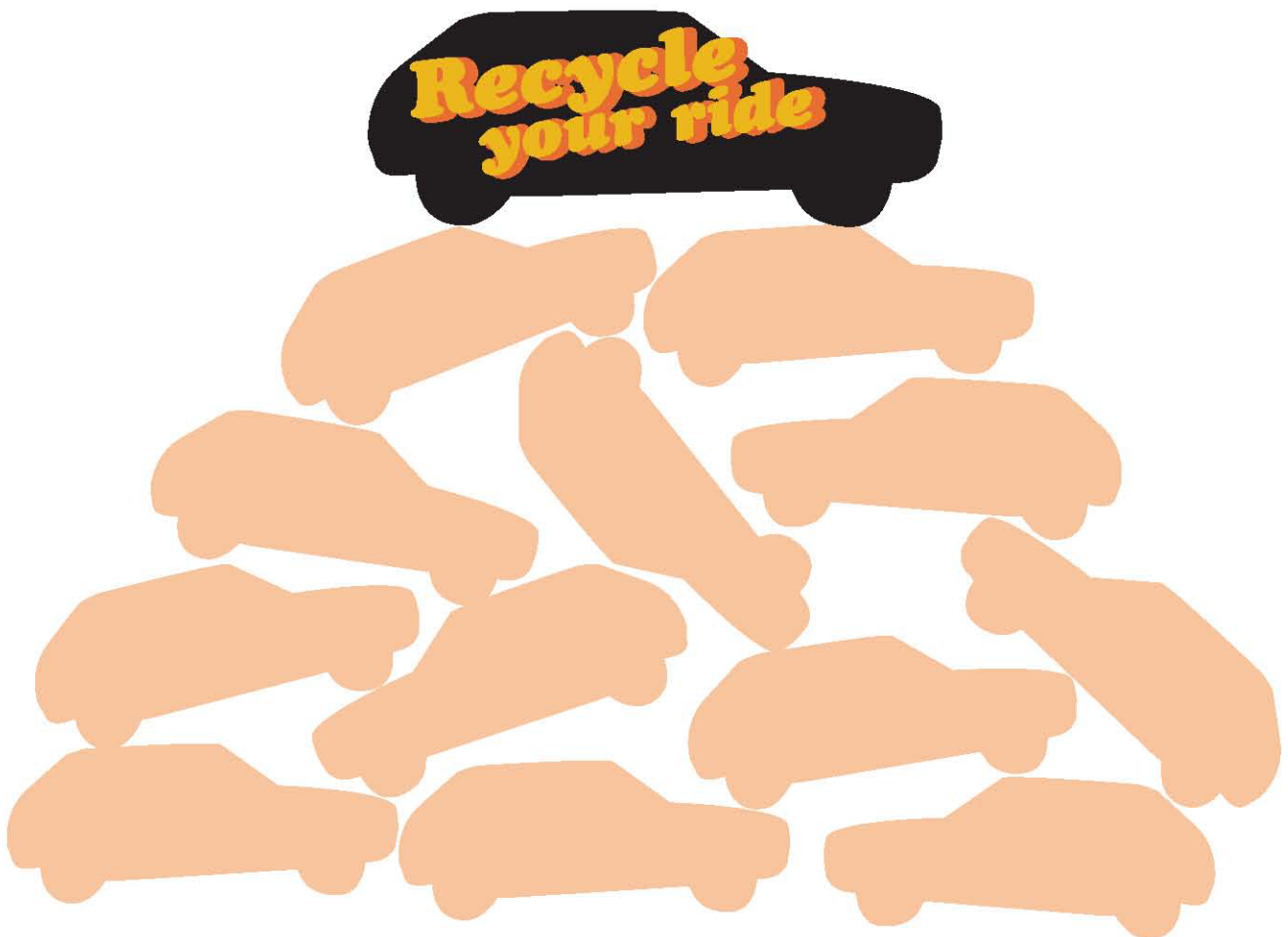


A vehicle scrappage trial for Christchurch
and Wellington: May 2009



The 2008 scrappage trial was led by the Ministry of Transport with support from the following organisations:



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Executive Summary

The Ministry of Transport, together with the NZ Transport Agency, Environment Canterbury, Wellington Scrap Metals and Metalcorp NZ, ran a vehicle scrapping trial for three and a half weeks in May 2009.

Public transport passes were exchanged for scrapped vehicles. The scrap metal companies offered participants the chance to win a Toyota Corolla and paid the current scrap metal value for each vehicle, based on weight. Participants with vehicles that met the trial's criteria were asked to fill in a short survey. In addition, vehicles were emission tested and assessed for safety features.

The trial was advertised on radio stations, websites (including Trademe) and in newspapers.

Three hundred and forty nine vehicles were collected during the trial, and of these, one hundred and twenty two met the trial's criteria of being operable, holding a Warrant of Fitness (WoF), or be within two months expiry of a WoF. Accident damaged vehicles were accepted if they were roadworthy.

Data collected from the vehicles scrapped under the trial has been analysed. A summary of findings shows the average vehicle scrapped under the trial:

- was 20 years old
- had travelled 214,500km
- had a valid WoF
- was likely to have a carburettor but not an exhaust catalytic converter
- was scrapped due to mechanical unreliability or structural problems.

Of the participants in the trial:

- almost half would have sold the vehicle in the absence of the trial
- almost half said they would still have disposed of their vehicle at a vehicle wreckers in the absence of the trial
- the majority believed their vehicle had a value higher than what was offered under the trial
- 25 percent thought it would cost money to dispose of their vehicle

The trials showed that a nationwide scheme was unlikely to be cost effective due to the low number of vehicles received and the relatively low overall social and environmental benefits, relative to the costs. The trials also showed that there is a lack of public awareness about how to safely dispose of unwanted vehicles and the cost of doing so. Twenty five percent of participants in the 2009 trial thought it would cost money to dispose of their vehicle even though in Wellington and Christchurch vehicles have value as scrap metal. While the number of vehicles collected during the trials were less than anticipated, the vehicles provided useful data about the tail end of

the fleet. This data has assisted thinking about the future direction of policy for 'end-of-life' vehicles.

This report reviews the effectiveness of advertising about the trial, and presents emissions and safety and other findings about the scrapped vehicles. It also analyses the costs and benefits and overall effectiveness of the scheme. It also compares the findings with those from the 2007 Auckland pilot scheme and comments about possible next steps for government involvement in vehicle scrappage in New Zealand.

Background

New Zealand's vehicle fleet has one of the oldest average ages in the developed world (12.49 years in 2009)¹. This means our vehicles are not as safe or as environmentally friendly as they could be. For these reasons, the Ministry of Transport planned a trial to speed up the removal of old vehicles from the New Zealand fleet. This trial followed a trial in Auckland trial in 2007.

In the 2007 Auckland trial, participants were offered 2 months' free passage on Auckland's bus and train services in return for scrapping their vehicles. Of the 253 vehicles scrapped, 162 were tested for emissions. Following that trial, the government agreed to fund a similar trial in Wellington and Christchurch.

Objectives

The Wellington and Christchurch trial had three objectives, which were to:

- find out whether incentives would encourage people to scrap their vehicle
- gather information about scrapped vehicles
- broaden public understanding of vehicle scrappage.

Project partners

The Ministry of Transport (the Ministry) led the trial with assistance from the NZ Transport Agency (NZTA) and Environment Canterbury. A request for expressions of interest was distributed to scrap metal dealers, in conjunction with the Scrap Metal Recycling Association of New Zealand (SMRANZ). Two companies were selected; Wellington Scrap Metals and Metalcorp NZ of Christchurch. Both companies offered guarantees that no part of vehicles scrapped trial would end up back in the fleet.

¹ Compared to 9.9 years for light vehicles in Australia in 2009, 8.09 years for light vehicles in Europe (2007) or 9.4 years for cars in the USA (2008) and 7.4 years for light trucks/SUVs (2008).

The target audience

The target audience of the trial were owners of vehicles that were likely to fail or had just failed a Warrant of Fitness (WoF) inspection who are faced with the option to retain or repair the vehicle.

The publicity campaign advised motorists that their vehicles could be scrapped for an incentive from a vehicle recycler (dollar amount based on vehicle weight and current scrap metal value), or collected for free, but this normally would mean the recycler would not pay an incentive for the vehicle.

Participants were offered a Snapper (Wellington) or Metro Card (Christchurch) loaded with \$250 for use on public transport. The participating scrap metal companies paid cash for cars based on vehicle weight and offered participants the chance to win a new Toyota Corolla.

All qualifying vehicles were tested for emissions and inspected for safety features (such as the presence of air bags). Participants were asked to fill out a short questionnaire when they handed in their vehicle.

Communications and publicity

The trial was branded 'Recycle your Ride' and a logo was designed for use on all communications relating to the trial. The Ministry's website featured information on the trial and a media release was sent to media outlets.

An advertising campaign was launched to publicise the trial. Advertisements aired extensively on Wellington and Christchurch radio stations and information was posted on radio station websites. Advertisements appeared in *The Dominion Post* and *The Press* newspapers, and on the Trademe website. The trial also featured on TV One's Breakfast Show.

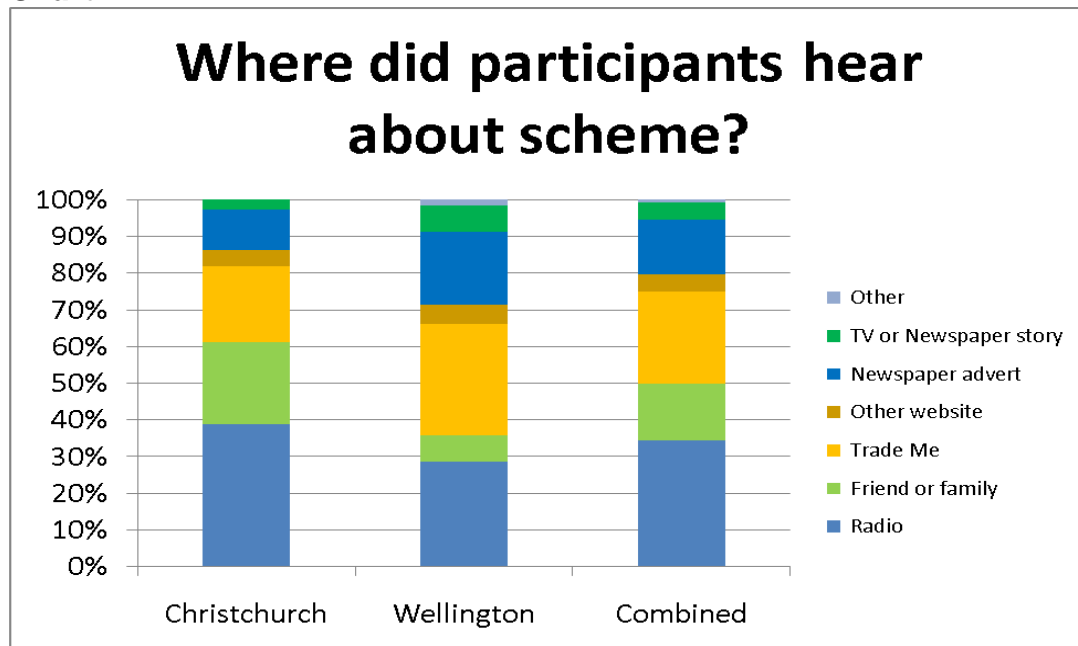
Trademe and participating radio stations offered additional incentives, including Trademe credits, jewellery, movie passes, additional cash payments and vouchers for CDs. The radio station 'The Edge' also ran a promotion at Wellington Scrap Metals.

Potentially, participants could have received over \$500 value for their vehicle in cash and incentive rewards.



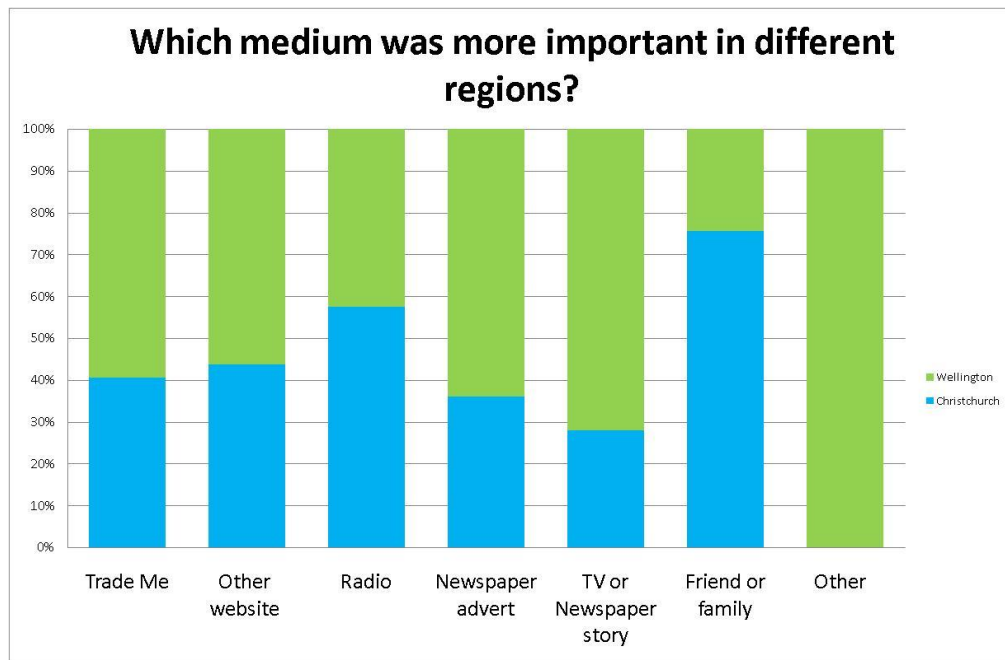
Chart 1 shows how participants reported hearing about the scrappage trial. Radio was the most common way participants heard about the trial. Trademe was also very successful. Unlike the Auckland trial, unpaid media, including the coverage by television along with newspaper articles and other news stories, were important in raising awareness.

Chart 1



The difference in ratings of newspaper advertising between the two centres (shown in chart 2) may reflect that the Wellington advertisement was more prominently placed.

Chart 2



There is further discussion on the effectiveness of communications later in the report.

Data sources

Data used in this report came from:

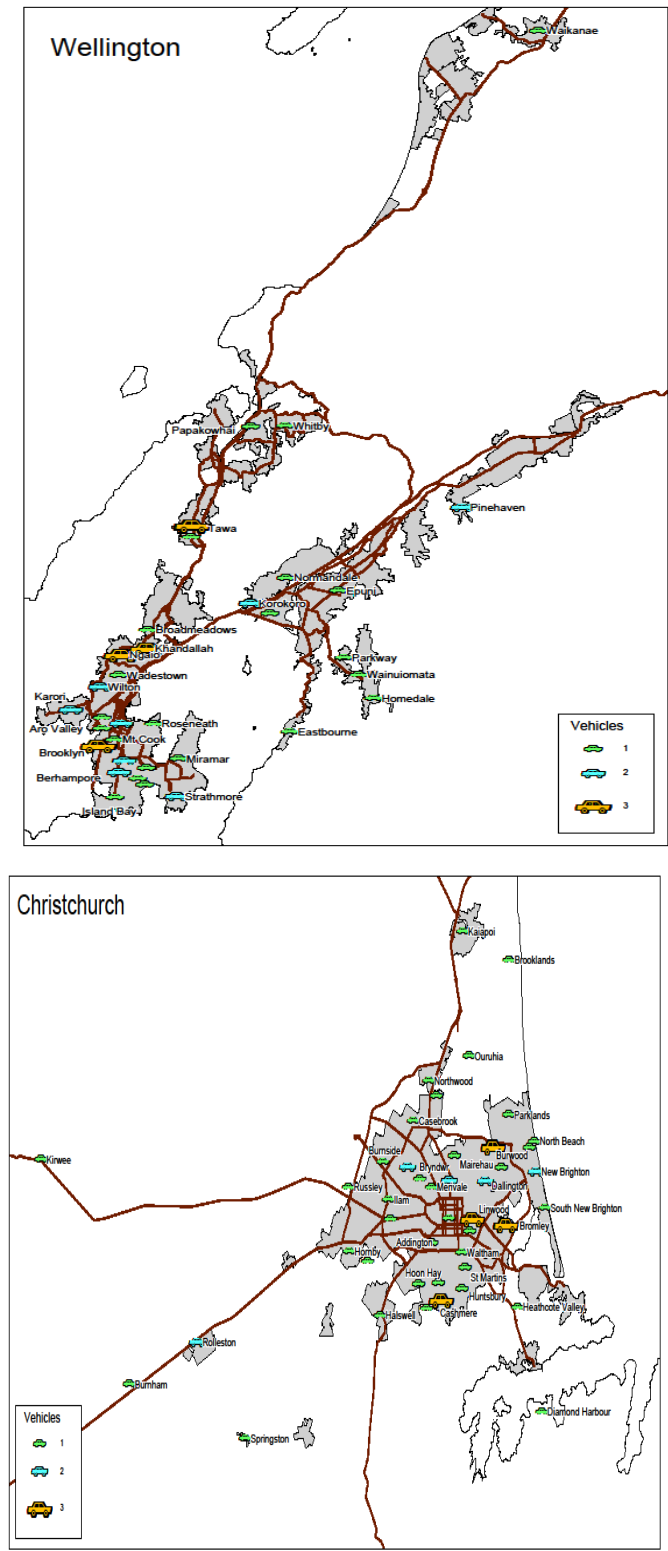
- surveys completed by the vehicle owner/participant
- participating scrap metal companies-they recorded key features of the 122 vehicles that met the trial criteria.
- 115 vehicle emission tests (87 valid results were documented)
- information held on the New Zealand national vehicle’s database, Landata.

Location of participants who scrapped their vehicle through the trial

The trial was successful in attracting vehicles from both the greater Wellington and greater Christchurch regions. Scrapped vehicles came from various parts of these regions. Additionally, one vehicle came from Auckland as the owner was planning on scrapping the car, heard about the trial and wanted to be included in the draw for the Toyota Corolla car.

Figure 1 shows the suburb where individuals scrapping a vehicle reside.

Figure 1



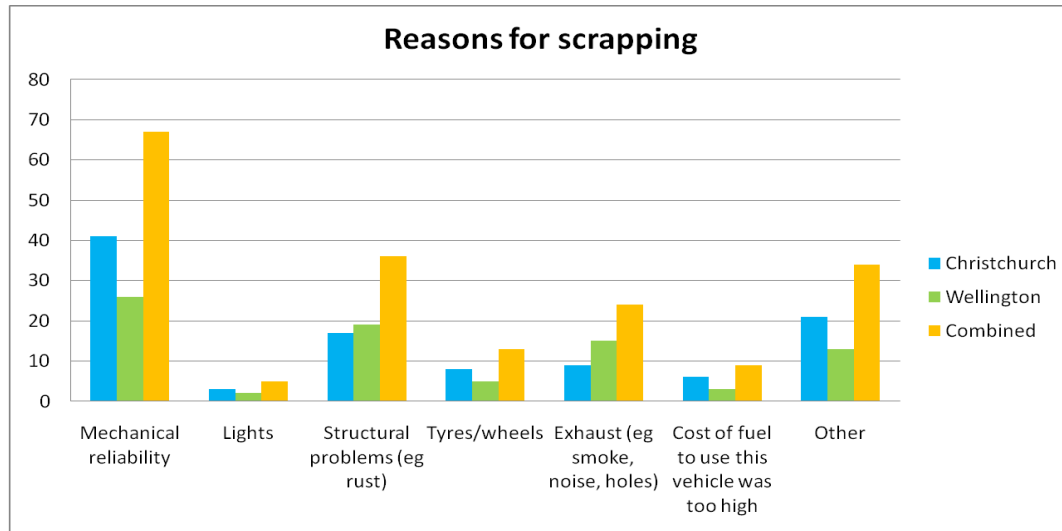
Decision to scrap vehicles

Wellington and Christchurch participants reported mechanical reliability, followed by structural problems such as rust, as their main reasons for scrapping their vehicles.

In contrast, participants in the Auckland trial reported tyres or wheels as their main reason for scrapping.

Chart 3 shows that reasons for scrapping vehicles differ between Wellington and Christchurch.

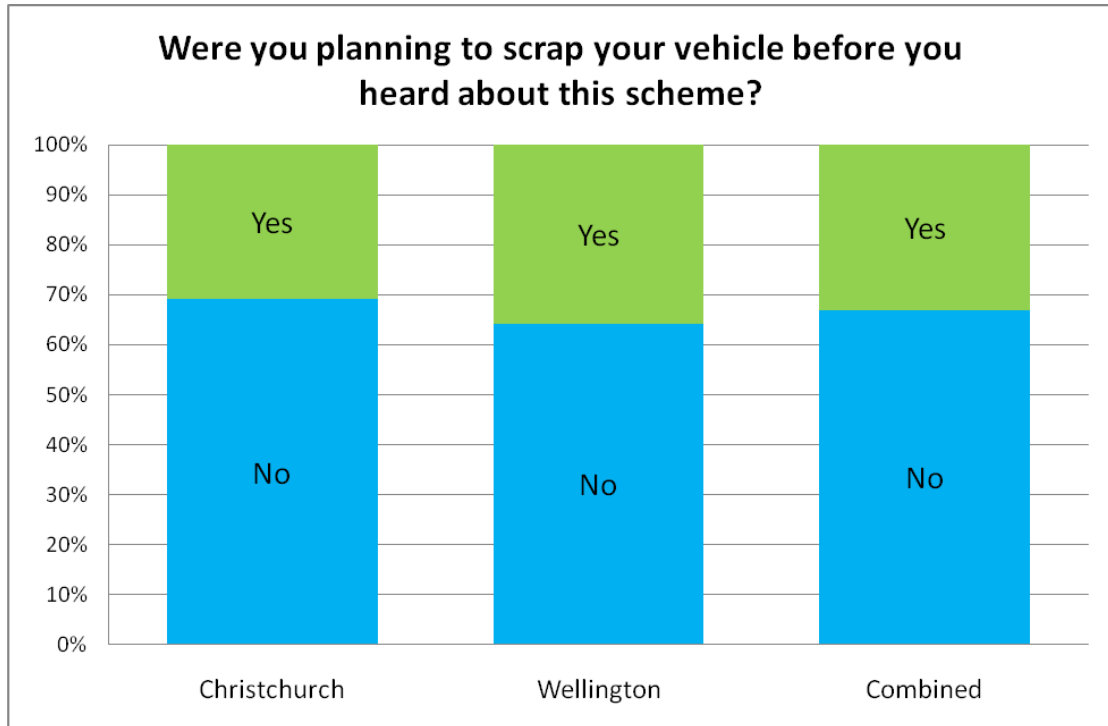
Chart 3



Christchurch participants were more likely to cite mechanical reliability followed by structural rust or exhaust problems than participants in Wellington. It is possible that these differences may reflect the older vehicle fleet in Christchurch (vehicles are more likely to break down if older). It is also possible that having a less maritime environment (less salt in the air) than Wellington leads to less concerns with rust.

In both centres about three quarters of those taking part stated that they were not planning on scrapping their vehicle prior to hearing about the trial (as shown in chart 4). This shows that the incentives and/or publicity were successful in encouraging many individuals to scrap their vehicles.

Chart 4

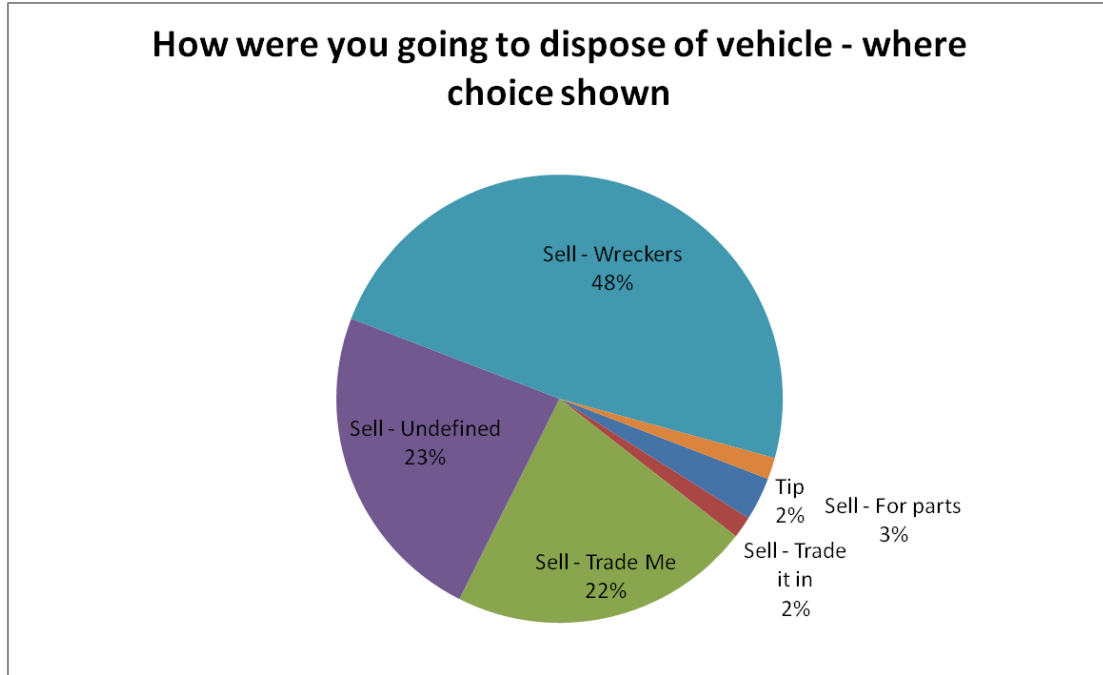


Participants plans prior to scrapping

Trial participants were asked how they originally planned to dispose of their vehicles prior to the scrapping trial. Of the 25 percent of participants who said they were planning to dispose of their vehicle, 48 percent said that they would have it scrapped. However, many scrap metal dealers sell parts from wrecked vehicles for continued road use. Another possible question would have been to ask participants their understanding and concern about how their vehicle is disposed of once they scrapped it.

Chart 5 shows 45 percent of participants said they had intended to sell their vehicle for continued road use. These vehicles are likely to have continued operating if the trial was not in place.

Chart 5



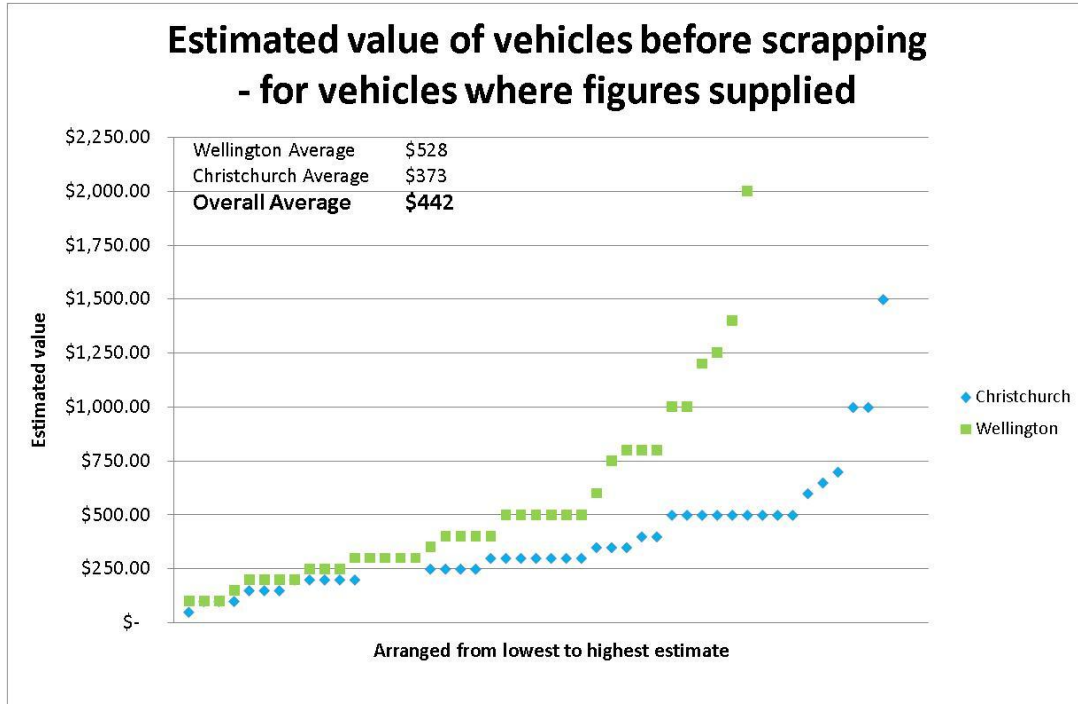
Value of vehicles

Twenty percent of participants thought their vehicle had no value. However, the majority thought their vehicle was worth something prior to scrapping. Of the participants who thought their vehicle had a value, the average perceived value was \$442. Some believed their vehicle was worth over \$500, and a few thought their vehicle was worth over \$1,000.

Wellington participants consistently valued their vehicles higher than Christchurch participants. It is not possible to say whether older vehicles are worth more in Wellington or whether Chart 6 reflects some other factor.

Participants were asked to estimate the value of their cars in order to find out whether the incentive was enough to encourage scrapping as an alternative to selling the vehicle. It could be interpreted that people value the transport utility of their vehicles more than the scrap metal value. The difference in values appears to be a perceived value of about \$500 on average, and \$1,000 for some, compared to an actual value of about \$100 to \$200. The higher perceived value suggests that a reward closer to \$1,000 would be needed to compensate vehicle owners for what they believe to be the value of their vehicle.

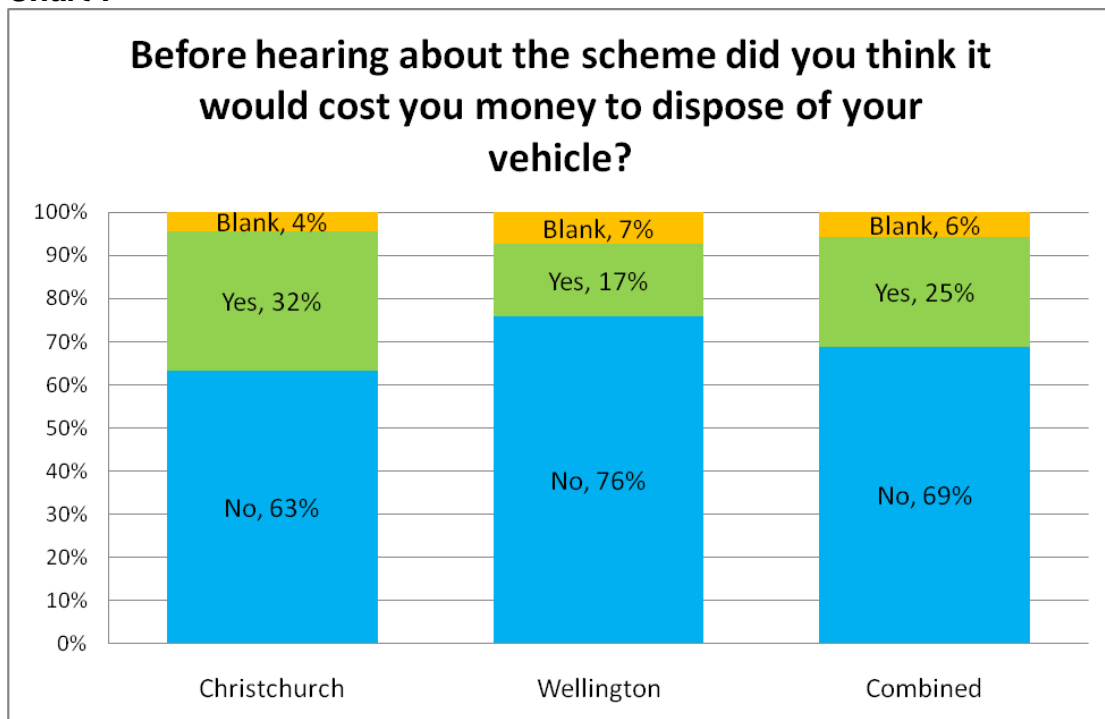
Chart 6



Cost to dispose of vehicles

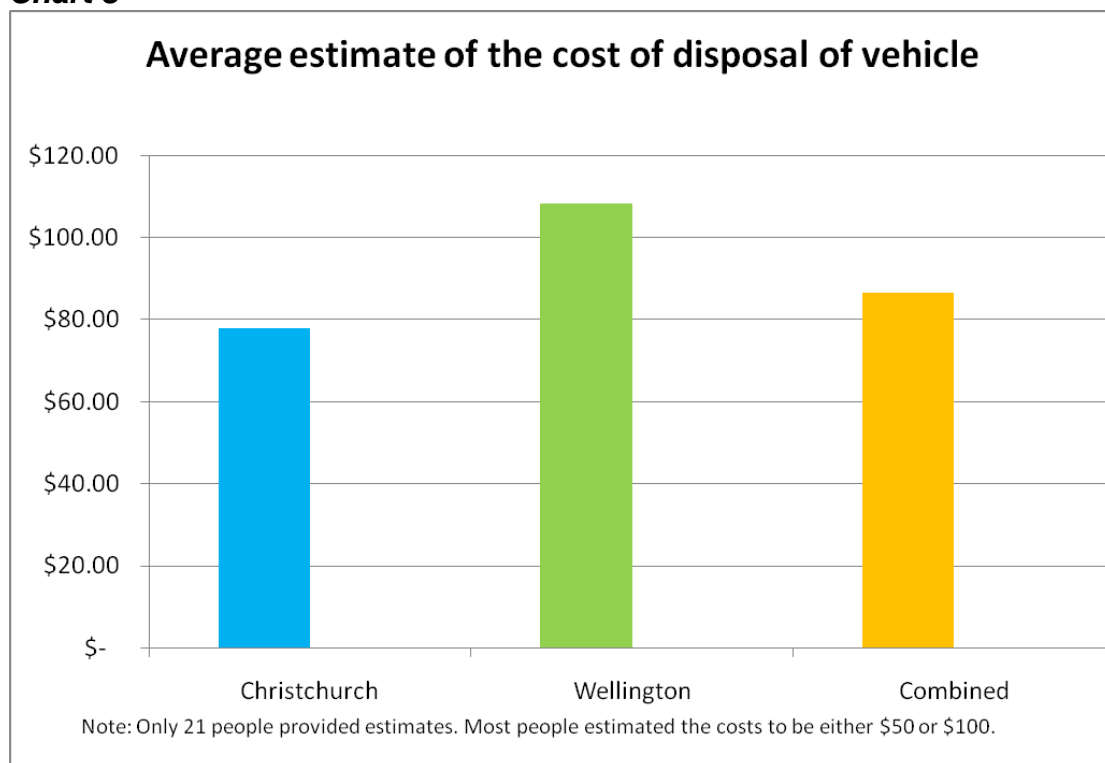
Although the majority of participants did not think it cost anything to dispose of their vehicle, 25 percent did think that disposing of their unwanted vehicle would cost something. This result suggests a lack of awareness of the options for disposing of vehicles. Providing relevant information to vehicle owners may encourage greater rates of scrapping.

Chart 7



The survey asked participants, who thought it would cost money to dispose of their vehicle, the amount they thought it would cost. As shown in Chart 8, participants in Wellington believed it would cost an average of more than \$100 to dispose of their vehicle. In Christchurch, participants indicated it would cost an average of just under \$80 to dispose of their vehicle. In actual fact, the cost to dispose of a vehicle at the landfill is on average only \$40.

Chart 8

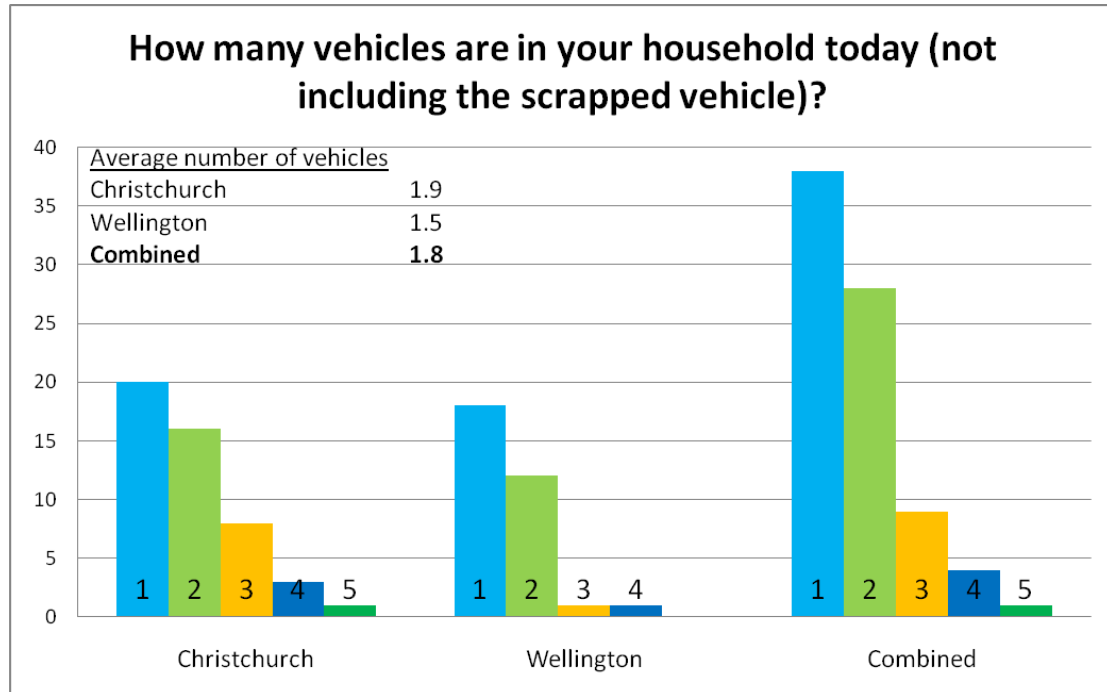


Number of vehicles in household

Overall, the majority of vehicles scrapped were not the only vehicle in a household. Seventy eight percent of participants over both centres reported another vehicle in the household. Only 22 percent of participants were scrapping the sole vehicle of the household. This is not surprising considering the average New Zealand household has two or more vehicles. However, it is significant that 22 percent of participants were prepared to get rid of a vital form of transport without any ready substitute.

Chart 9 shows that participants had an average of 1.8 vehicles in their household. The results show that a number of participants were scrapping a second or third vehicle, and in a couple of cases, a fourth or fifth vehicle.

Chart 9



Household income

The average household income for participants was \$66,000. The average incomes of participants were slightly lower than median incomes for the two regions. As with the Auckland trial, this suggests that income is not a good indicator of vehicles that are near the end of their lives.

Both average and median values are shown as Statistics New Zealand report that median income is a better measure, as averages are distorted by a few, very high, incomes.

Chart 10 shows combined household income.

Chart 10

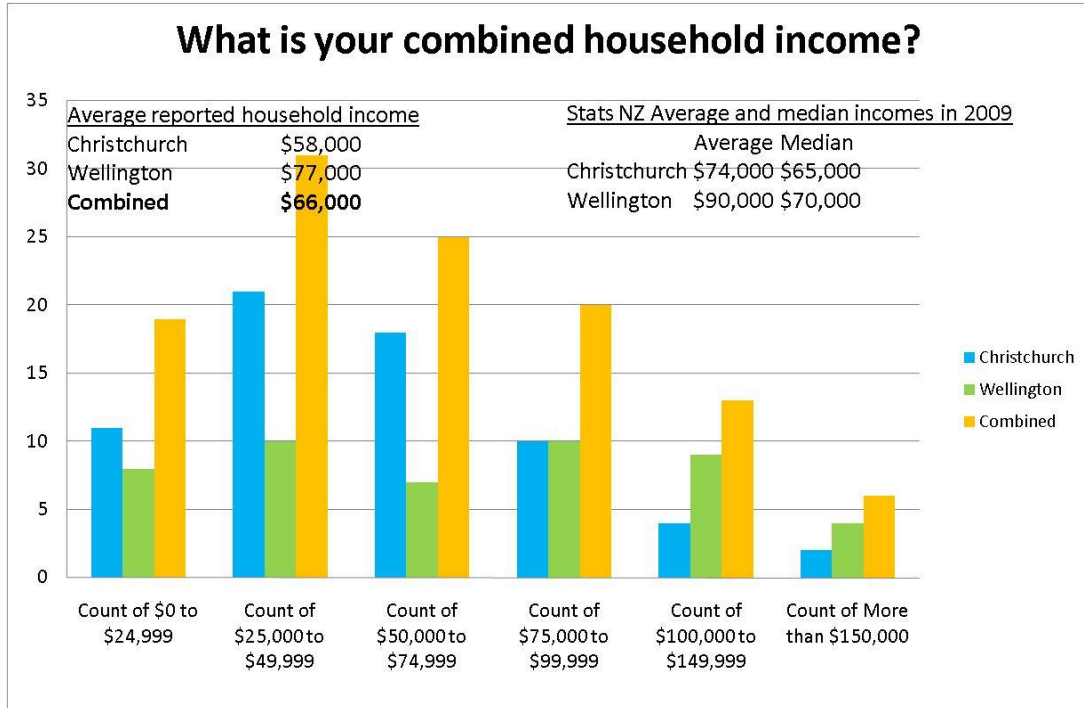
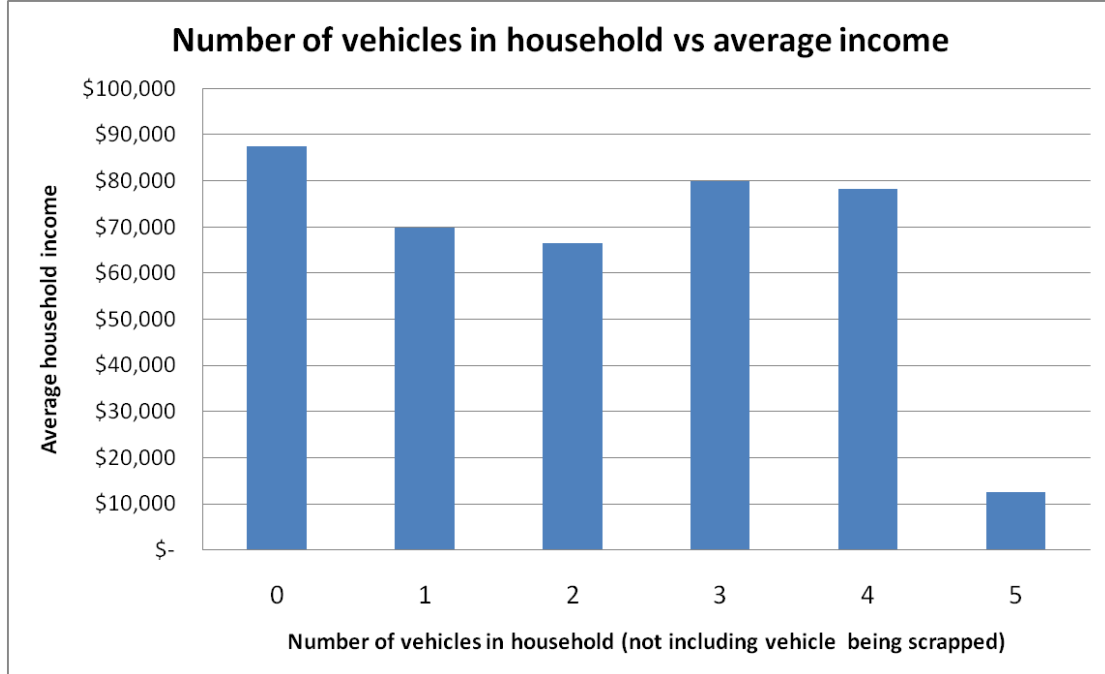


Chart 11 shows the number of vehicles per household versus average income.

Chart 11



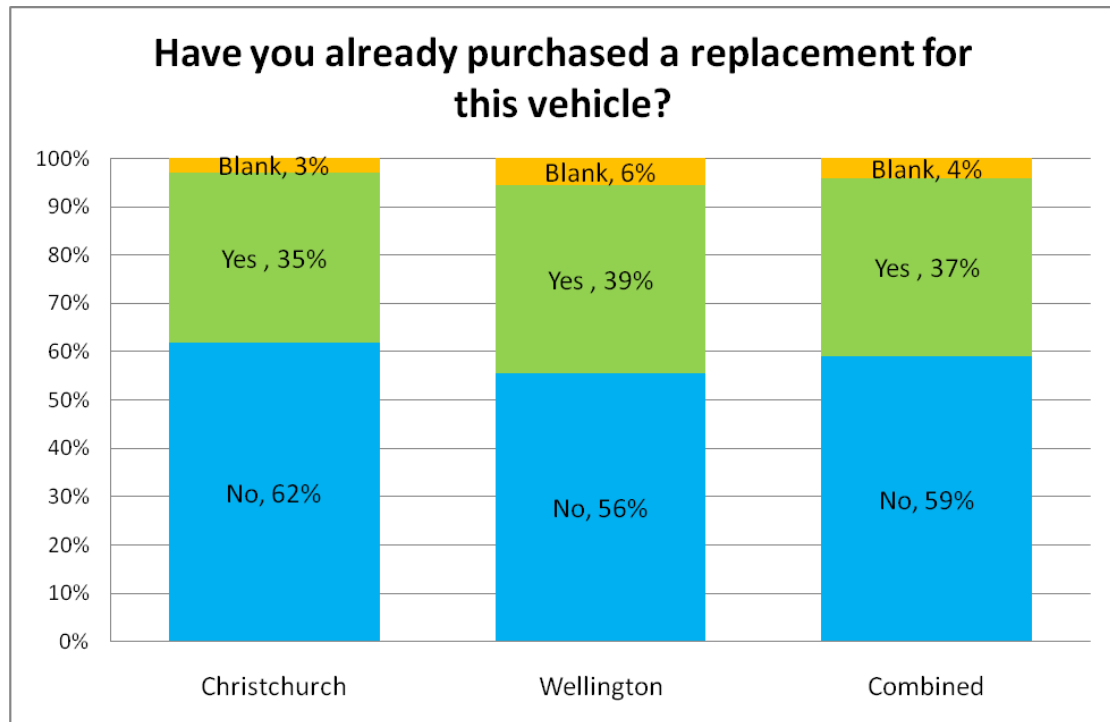
Although there is a perception that end of life vehicles are owned by lower income earners, the data collected during the trial shows there is no correlation between income and number of vehicles owned, or income and taking part in the trial. There is also a public perception that policies aimed at reducing the number of end of life vehicles on the road would negatively

impact low income earners, but the results from both the Auckland trial and the Wellington and Christchurch trial show this is incorrect.

Replacement vehicles

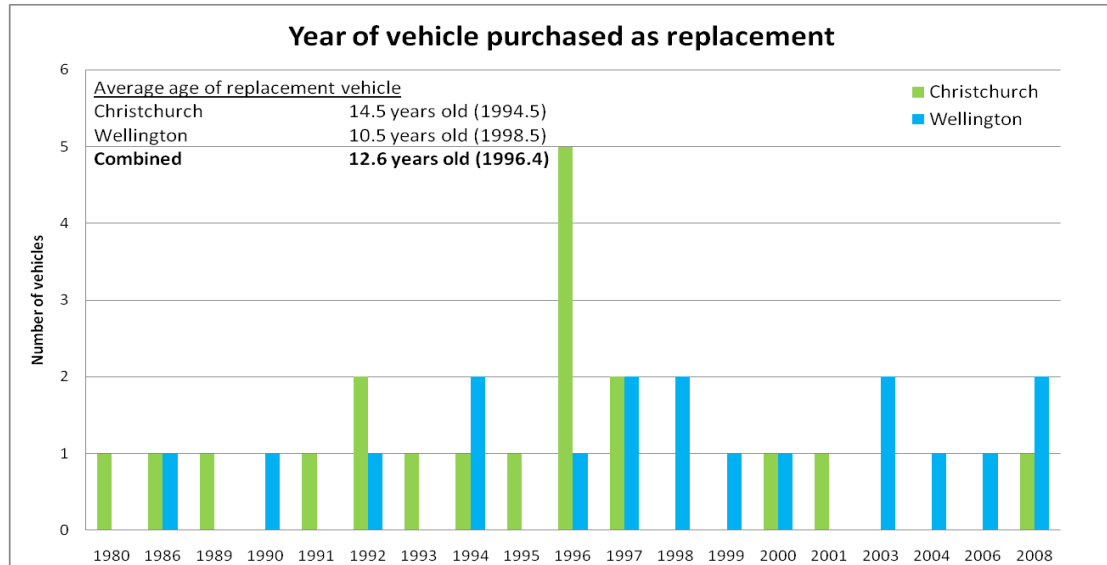
Thirty seven percent of participants over both centres had already purchased a replacement vehicle for the vehicle they were scrapping, as shown in Chart 12.

Chart 12



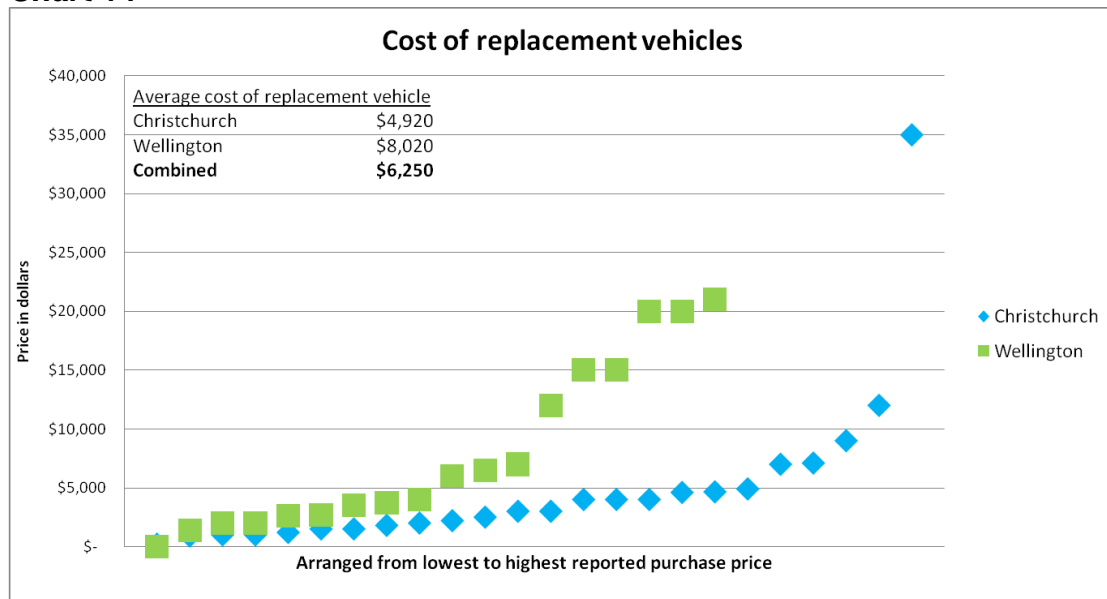
Participants were asked about the age of these replacement vehicles. Chart 13 shows that the average age of 12.6 years (1996 model) of replacement vehicles is consistent with the average age of the New Zealand fleet. The average age of replacement vehicles in Wellington was 10.5 (1998 model) years compared to 14.5 (1994 model) years for Christchurch. The older replacement vehicles for Christchurch support Ministry research which shows the average vehicle age increases with latitude. Reasons for this are not clear, however it could relate to income, with Wellington participants earning more per household, on average, than Christchurch. Another explanation may relate to other factors that change with latitude in New Zealand, such as population density or average temperature.

Chart 13



The cost of a replacement vehicle varied greatly between the two centres. Wellington participants paid, on average, \$3,000 more per vehicle than Christchurch. Chart 14 shows the Christchurch/Wellington disparity. The combined average cost of a replacement vehicle was just over \$6,000.

Chart 14



Age of scrapped vehicles

The average age of vehicles scrapped in this survey was 20 years (that is, manufactured in 1989). The average age in Christchurch was 21 years, while in Wellington it was 18.2 years. As noted, this is consistent with research showing average vehicle age is higher in the South Island.

The age of vehicles scrapped in Christchurch ranged from 13 to 27 years—a similar age range to the vehicles in the Auckland trial. In Wellington, the age of scrapped vehicles ranged from 11 to 24 years.

Comparison to figures from the Motor Vehicle Register

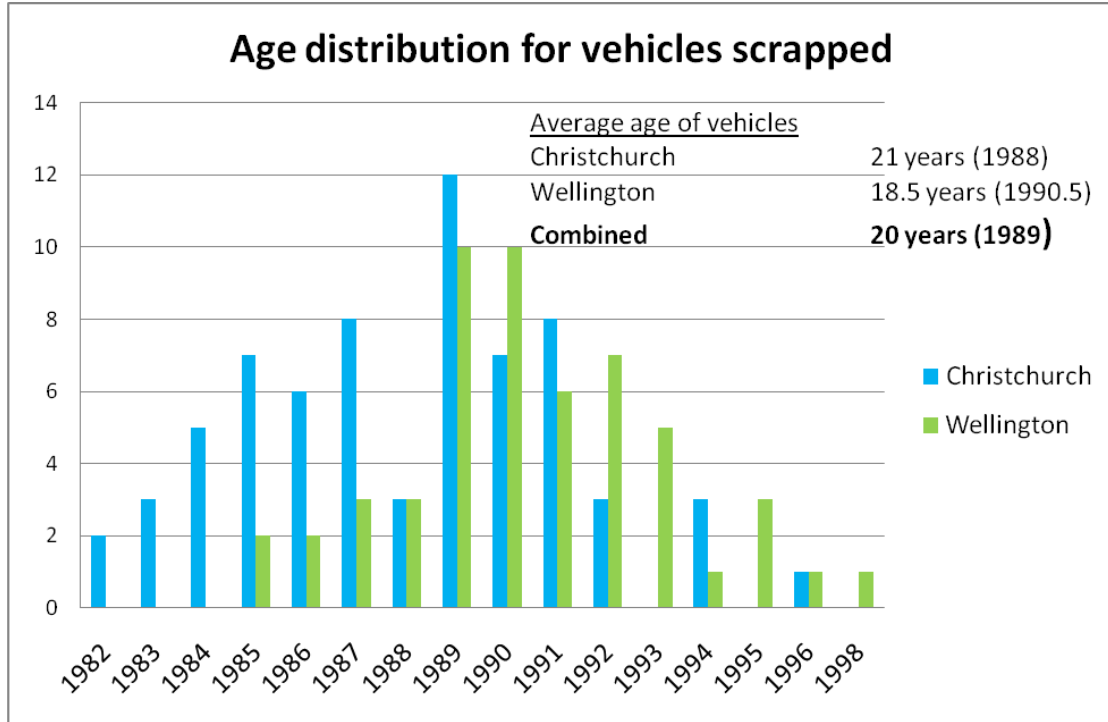
Information on the age of vehicles scrapped during the trial can be compared with information on the age of vehicles at the time they are deregistered as recorded in the New Zealand Motor Vehicle Register as at 1 July 2009.

In the Wellington Region (including Wellington, Porirua, Lower Hutt, Upper Hutt, Kapiti Coast and Horowhenua), where there is a total of 310,905 registered vehicles, the average age of vehicles deregistered during the previous twelve months is 16.7 years. In the Christchurch region (including Christchurch city, Hurunui, Waimakariri, Christchurch, Selwyn)², where there is a total of 379,011 registered vehicles, the average age of vehicles deregistered during the previous twelve months is 18.6 years. Accident damaged vehicles are included in these figures, so the averages are affected by disposal of much younger vehicles than those in the trial sample.

These figures confirm that vehicles scrapped under the trial were being scrapped at about the time they would have been retired from the fleet anyway (based on figures from the Motor Vehicle Register).

² It is debateable whether Horowhenua in Wellington and Hurunui in Christchurch should be included, but there are too few vehicles in either district to distort the numbers.

Chart 15



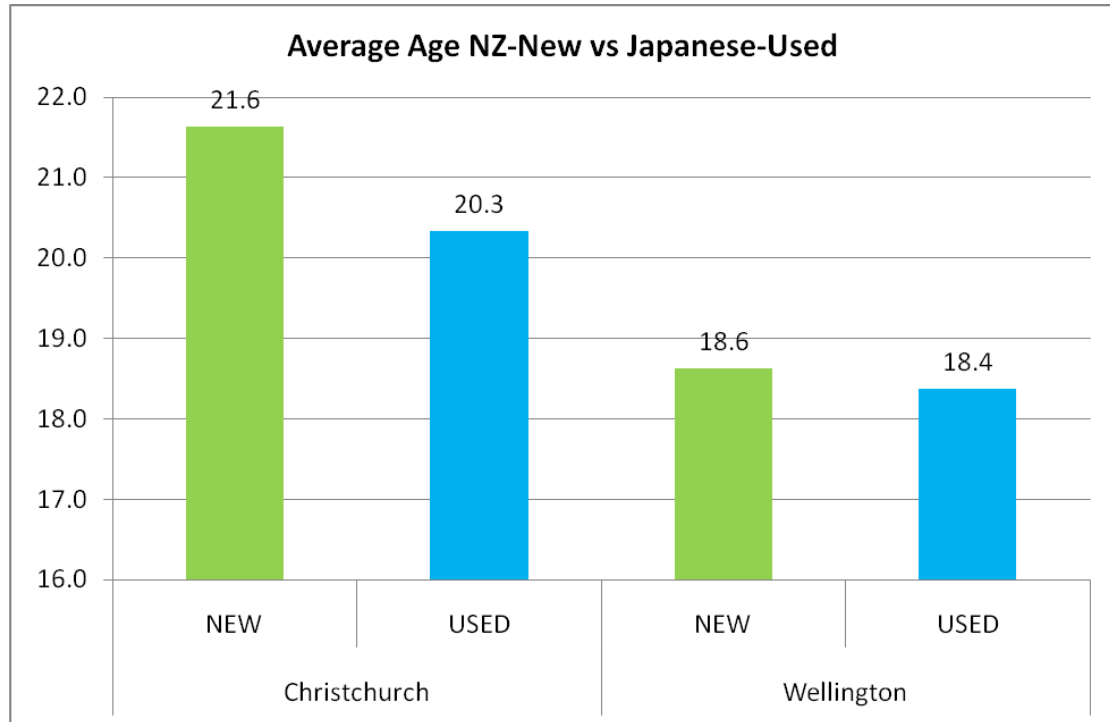
The trial found that New Zealand-new vehicles are scrapped older than Japanese used vehicles. This is consistent with earlier findings³. Chart 16 shows that scrapped New Zealand-new vehicles had an average of 21.6 years old in Christchurch and 18.6 years old in Wellington. Scrapped Japanese-used imports had an average age of 20.3 years in Christchurch and 18.4 years in Wellington.

Vehicles scrapped in this trial are older than the average age of vehicles deregistered nationally. This is possibly because the national average is skewed to Auckland, which has a younger fleet. It could reflect the varying ways of calculating average age. It could also be due to the national average being skewed by newer cars scrapped after crashes.

Appendix One shows the average age of light vehicles at deregistration using data from the Motor Vehicle Register. This shows the light vehicle fleet getting older in southern regions of New Zealand.

³ Ministry of Transport Fleet Statistics Report 2009

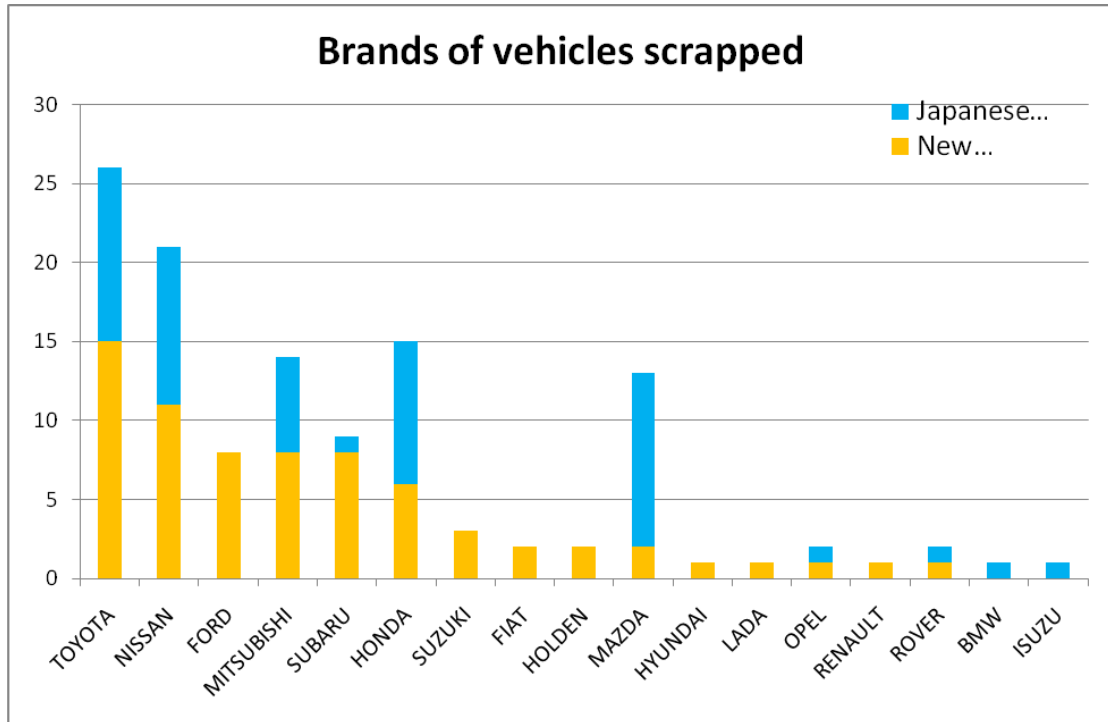
Chart 16



Brands of vehicles scrapped

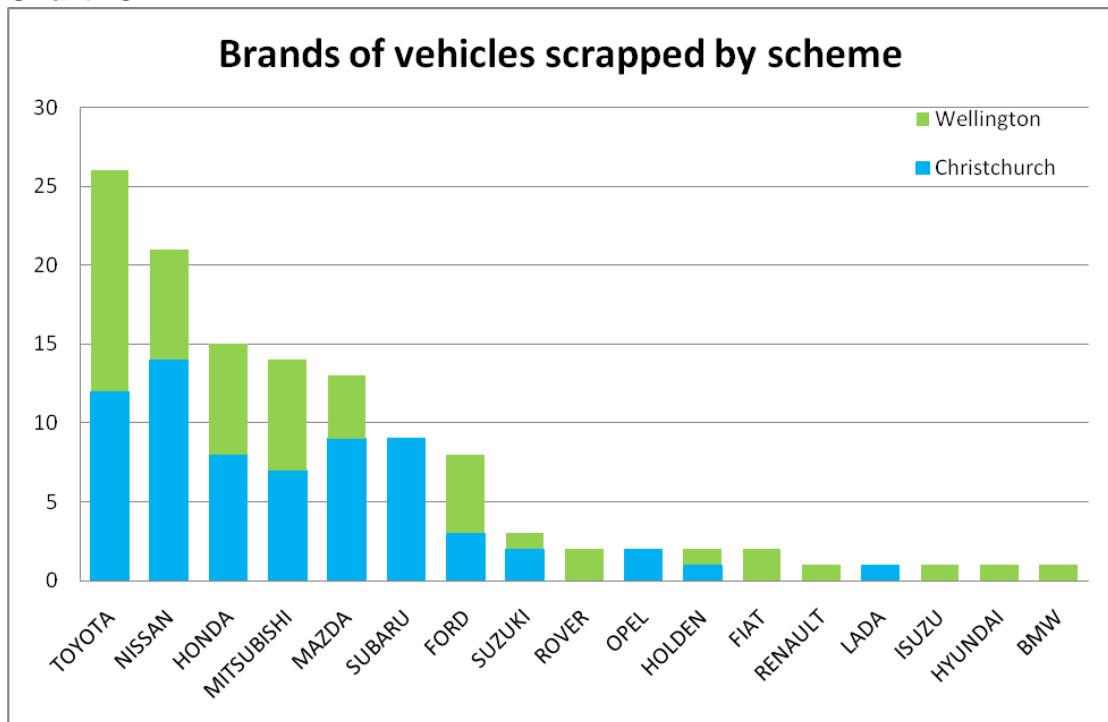
Chart 17 shows that the three major car brands scrapped in the trial were Toyota, Nissan and Honda. This was followed by Mitsubishi and Mazda. All of the top five brands collected under the trial were Japanese manufactured vehicles. This finding is consistent with the New Zealand light vehicle fleet, which is dominated by Japanese manufactured vehicles.

Chart 17



Of the seven brands most commonly collected in the trial, all but Subaru were collected in both centres. Only Christchurch collected Subaru brand vehicles. Among the less common vehicle brands collected, Opel and Lada were only collected in Christchurch, while Rover, Fiat, Renault, Isuzu, Hyundai and BMW were only collected in Wellington. This is shown in Chart 18.

Chart 18



Distance that vehicles had travelled

The average odometer reading for all vehicle types and fuel types was 211,000km for Wellington and 218,000km for Christchurch, with a combined average of 214,500km. Figures are shown in Table 1.

Table 1: Average distance travelled by vehicles at time of scrapping

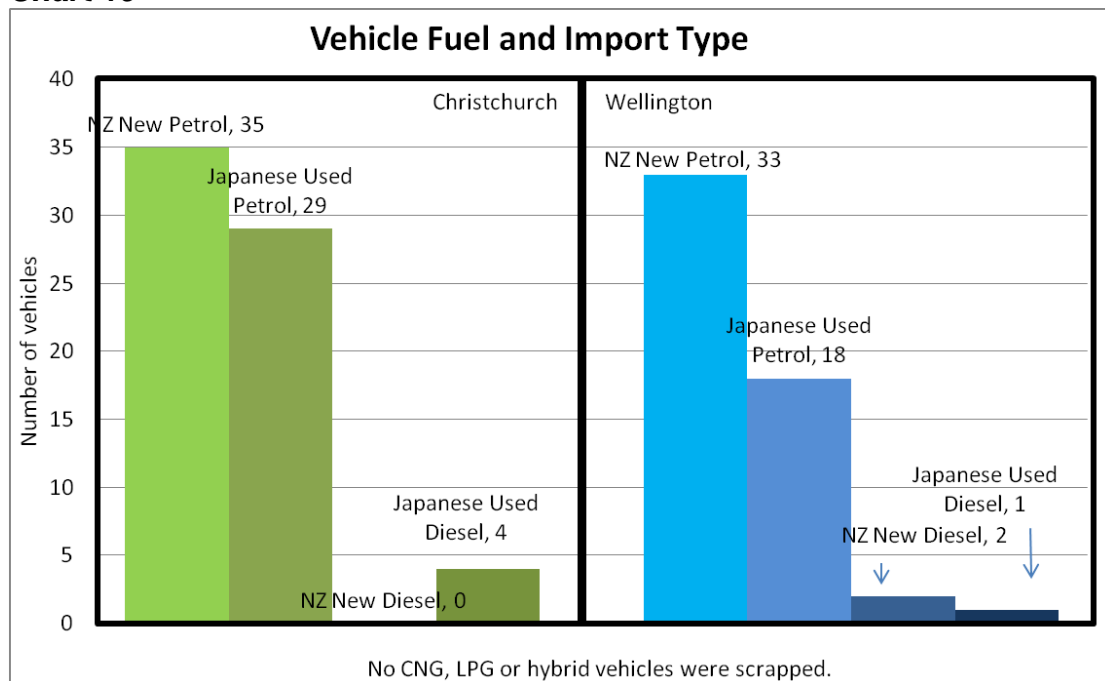
Fuel Type	NZ New Vehicles	Used Japanese Vehicles
Petrol	240,000 (68 vehicles)	190,000 (47 vehicles)
Diesel	270,000 (2 vehicles)	180,000 (5 vehicle)

Vehicle fuel type

Based on statistics for the New Zealand light vehicle fleet, it was expected that twenty diesel vehicles would be scrapped through the trial. However, only seven were handed in.

Chart 19 shows the breakdown of the number of vehicles by fuel type.

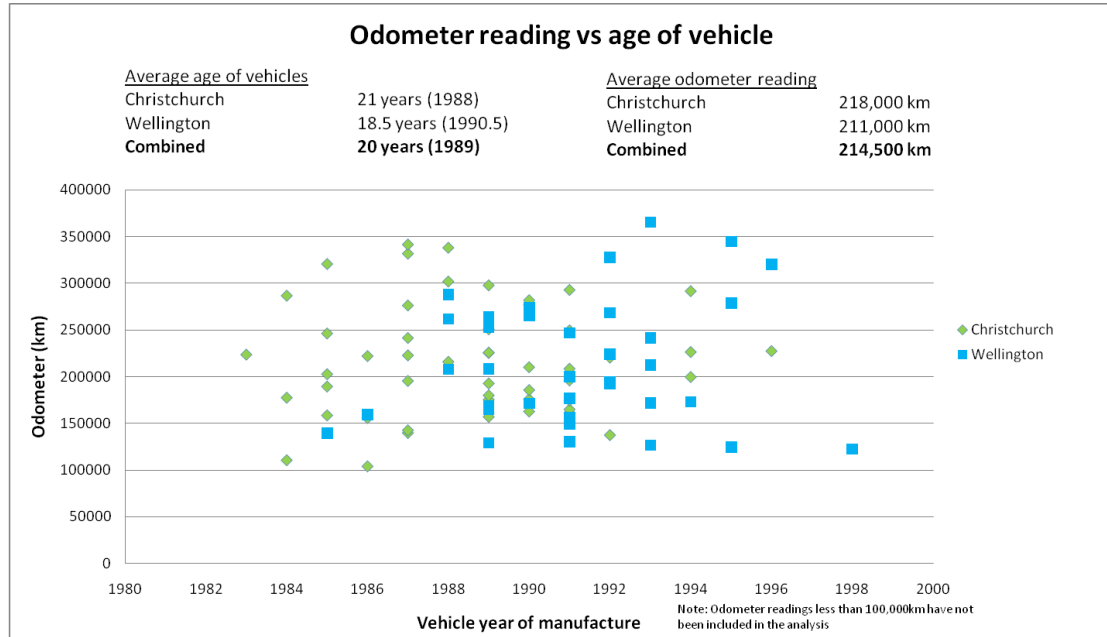
Chart 19



The trial also found that vehicles sold new in New Zealand are driven further than Japanese-used vehicles. Vehicles with odometer readings under 100,000km were not included in the results. This was because it is unlikely that a vehicle at the end of its working life with such a reading was on its first time around the clock. As there is no way of knowing how many times the vehicle had been around the clock, and the low reading would skew the results, it was decided not to include them.

Chart 20 shows the relationship between the age of the vehicles and the distance that the vehicles had travelled.

Chart 20



Emissions

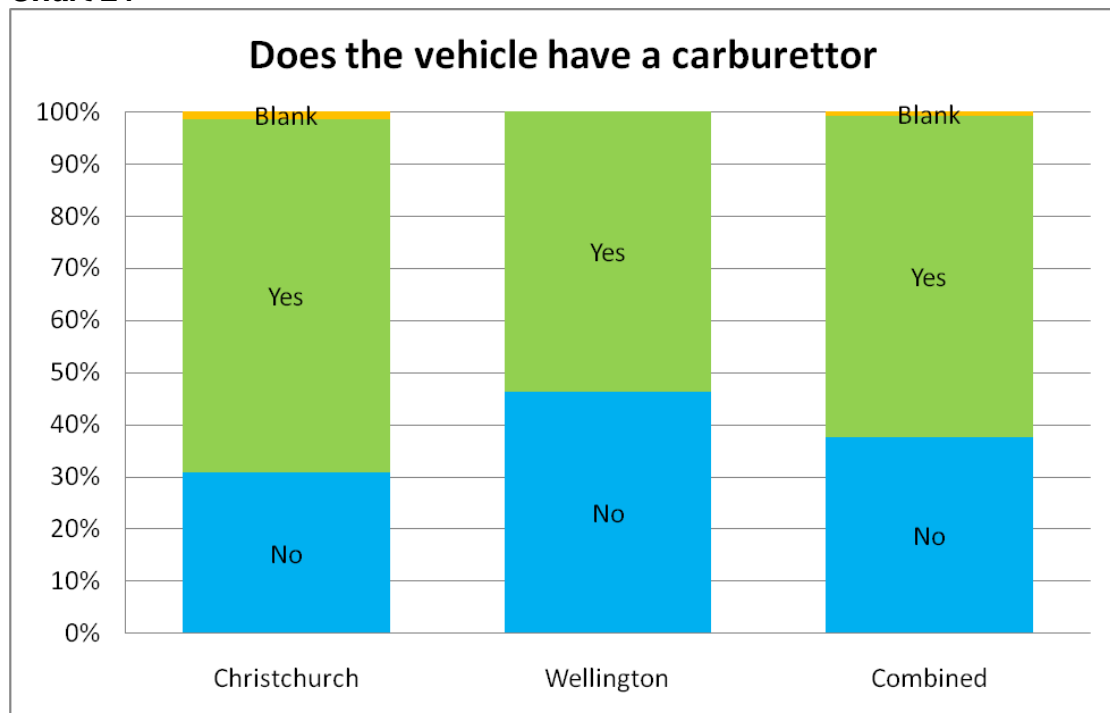
Simple emissions tests were carried out by Vehicle Testing New Zealand on 115 of the 122 vehicles which met the trial's criteria. Valid emission test results were obtained for 87 of these vehicles.

Presence of a carburettor as a guide to emissions

Scrapped vehicles were also checked for the presence of a carburettor. Carburettored engines are becoming obsolete as electronic fuel injection systems become more common. Carburettors wear over time and tend to provide imprecise amounts of fuel for combustion. This can result in more polluting emissions and higher fuel consumption.

Most scrapped vehicles had carburettored engines. The majority of these were collected in Christchurch, as shown in Chart 21.

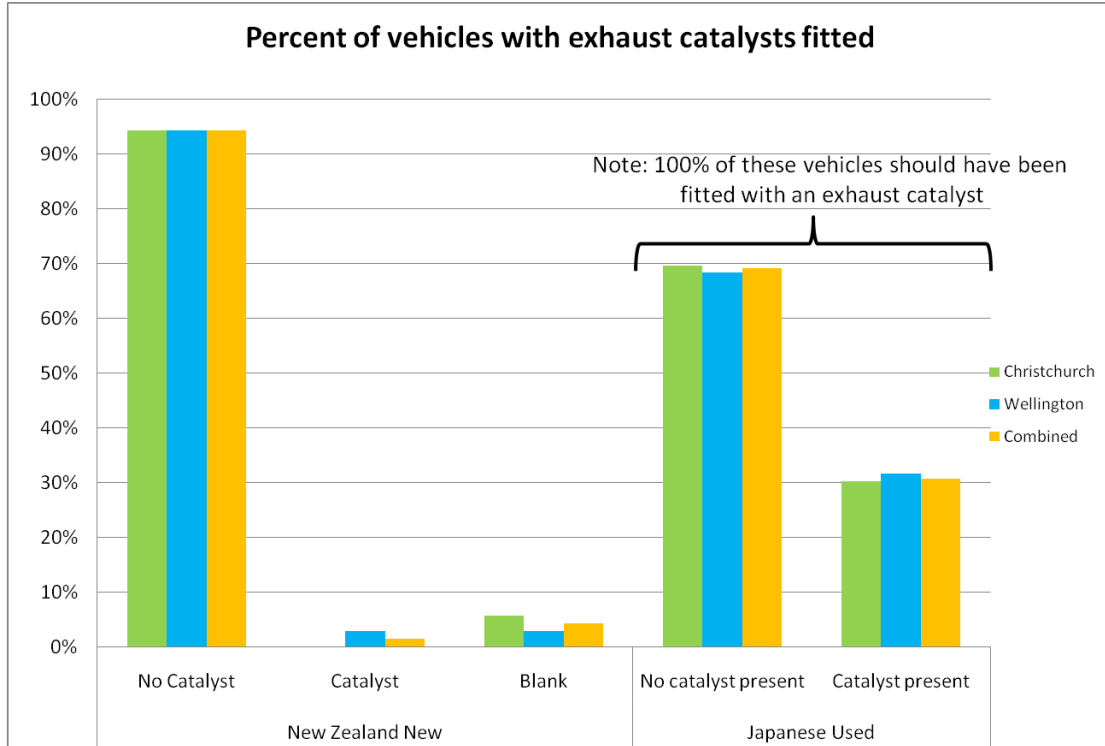
Chart 21



Presence of exhaust catalytic converters

Scrapped vehicles which met the trial's criteria were checked for an exhaust catalytic converter. Eighteen percent of vehicles had an exhaust catalytic converter present. All of the Japanese-used vehicles would have been fitted with a catalytic converter when manufactured. However, as shown in Chart 18, some 70 percent had catalytic converters subsequently removed. This is consistent with the Auckland trial and it remains unclear why or when catalytic converters are removed. Chart 22 shows the percentage of vehicles with exhaust catalytic converters present when scrapped.

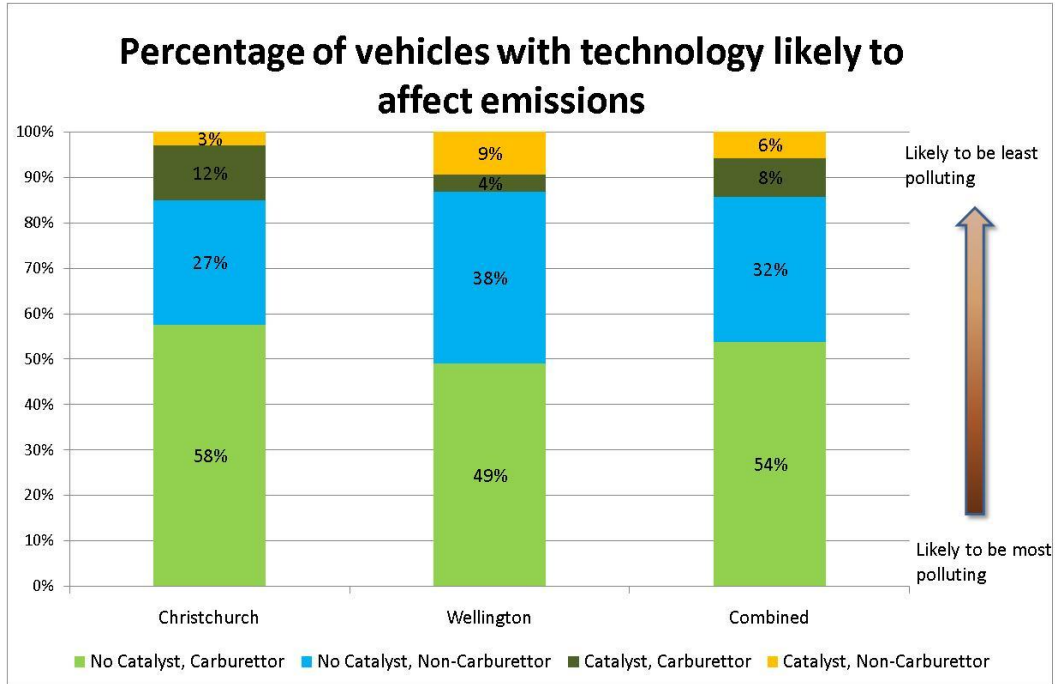
Chart 22



Vehicles with a carburettor and without catalytic converters, which were sold new in New Zealand, had significantly higher hydrocarbon (HC) emissions than vehicles without a carburettor and without a catalytic converter.

Technologies known to reduce emissions are exhaust catalytic converters and electronic engine management systems. The presence of these technologies is shown in Chart 23.

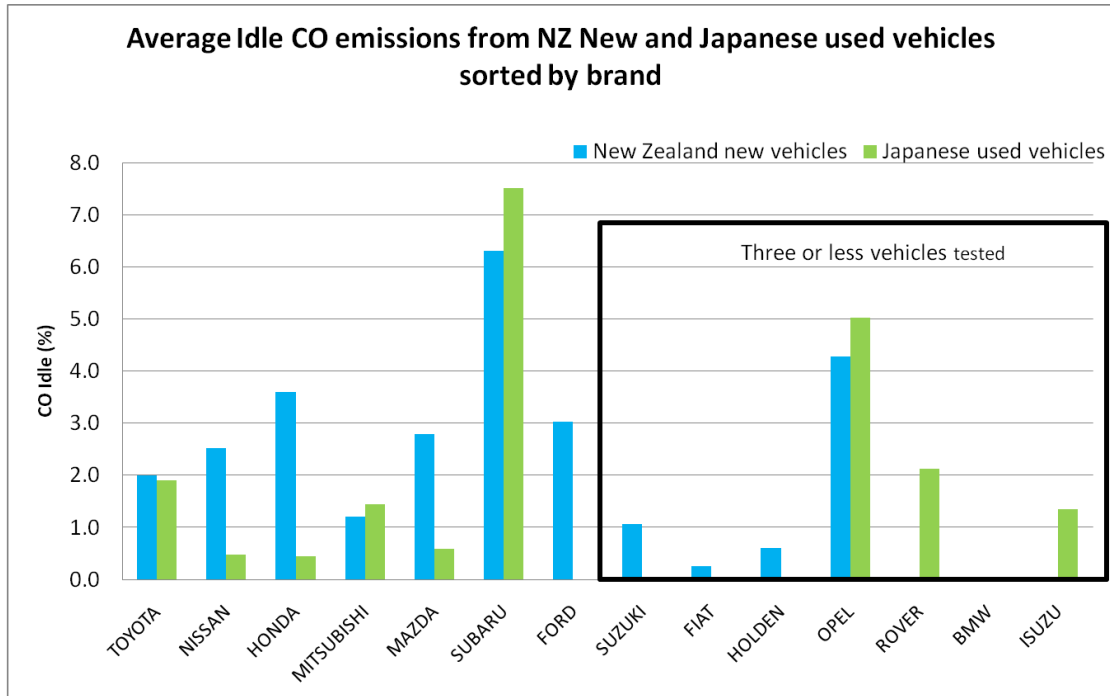
Chart 23



Emissions from different car brands

Chart 24 shows the CO emissions of the vehicles collected during the trial by vehicle brand.

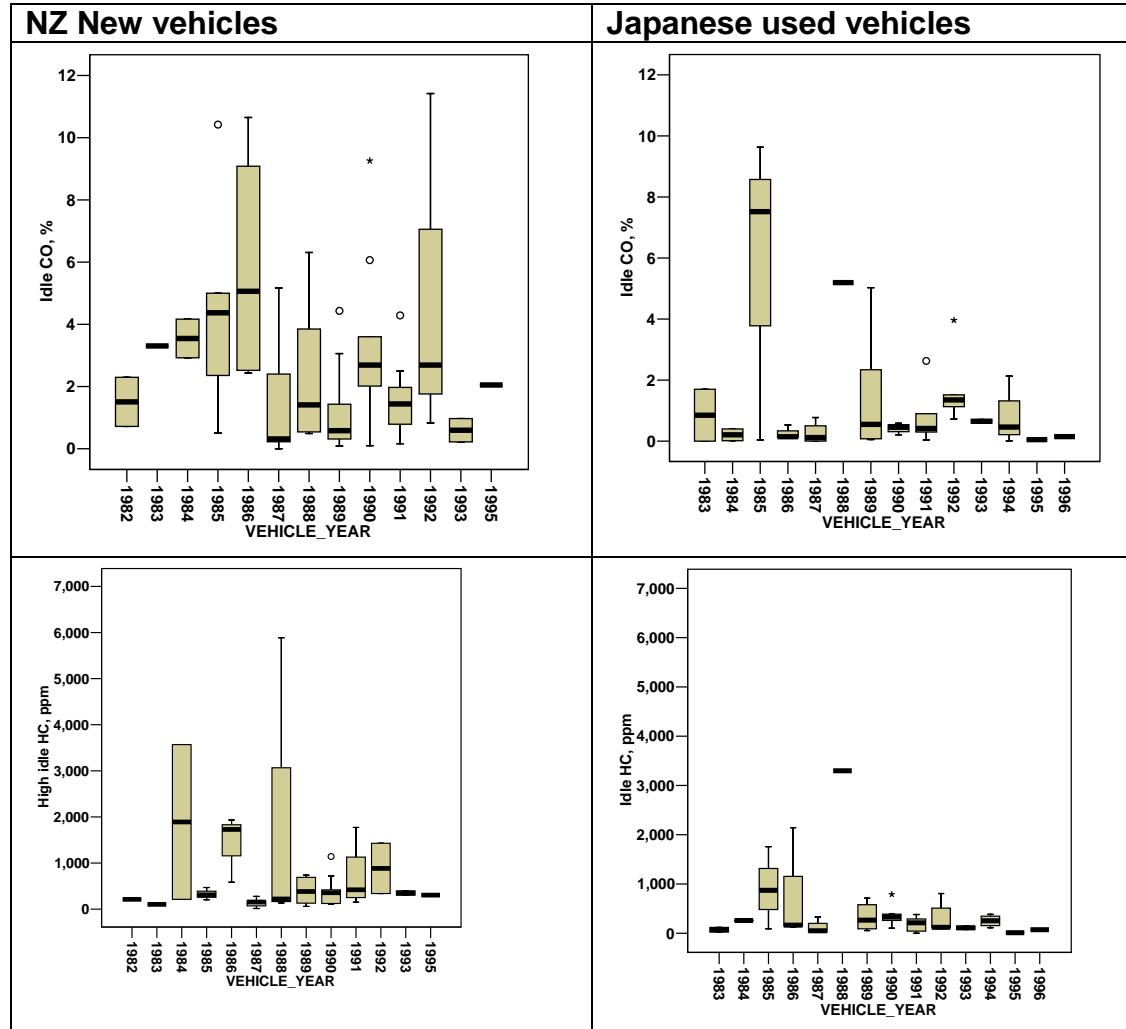
Chart 24



Range of emissions vs. vehicle year of manufacture

As with the Auckland trial, neither age nor distance travelled were indicators of emissions. This is detailed in Chart 25 below.

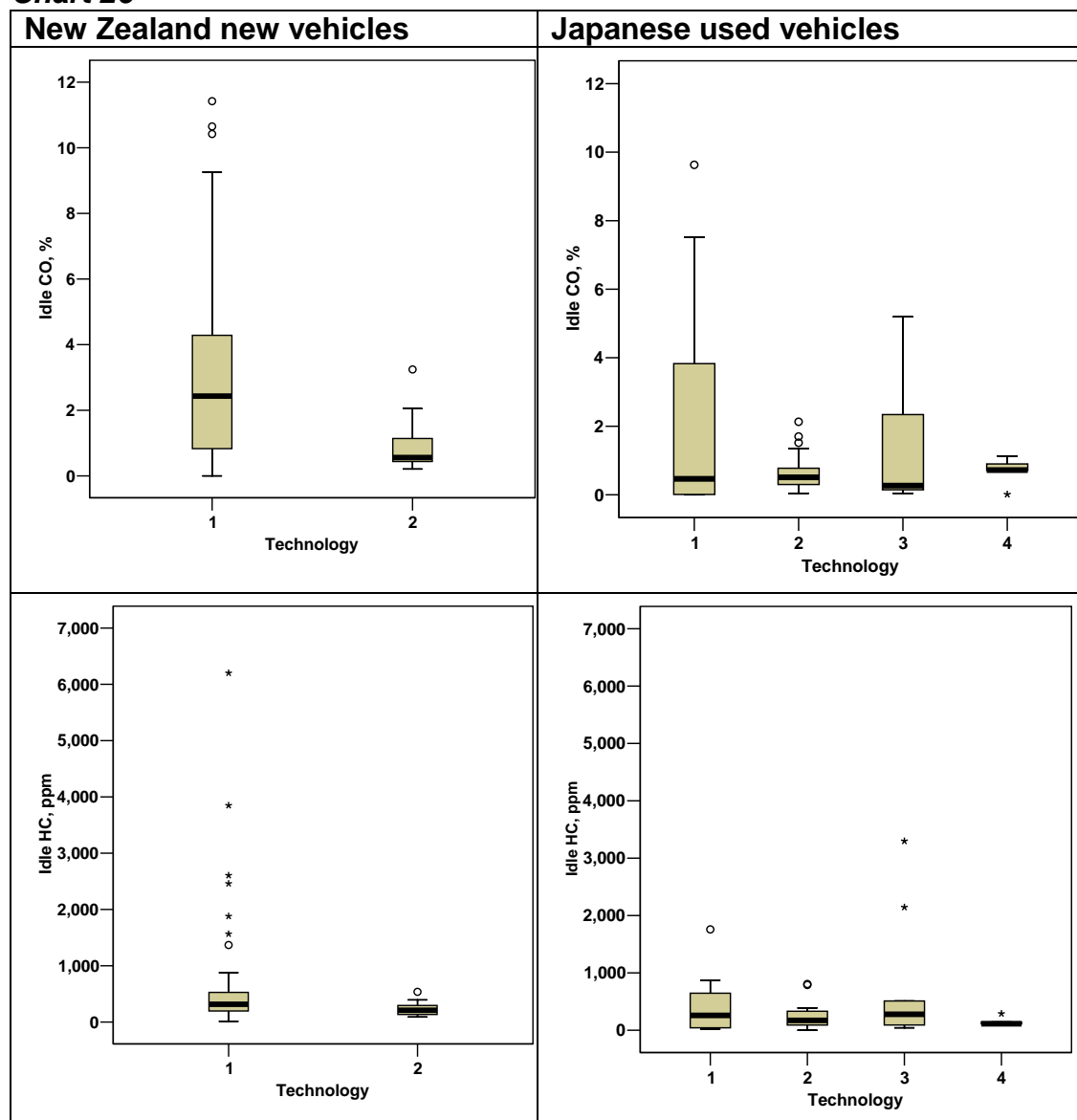
Chart 25



The best predictor of emissions was technology. Vehicles with carburetors (Technology 1 and 3) consistently had higher emissions than those without carburetors (such as vehicles with electronic ignition systems), (Technology 2 and 4), even if the vehicle was fitted with an exhaust catalytic converter.

The data also shows that where the catalytic converter remained fitted to a Japanese-used vehicle, it remained functioning (Technology 4). This is interesting as there is a perception that catalytic converters stop working over time. Even where the catalytic converters had been removed from those vehicles fitted with electronic ignition systems (Technology 2), the other emissions reduction technologies on the vehicle still, reduced emissions to generally acceptable, albeit more variable levels. This is shown in Chart 26.

Chart 26



Note: No New Zealand-new vehicle belongs to category 3 and only 1 vehicle is in category 4. (This vehicle is excluded from the analysis here).

- Codes: 1 = Non-catalytic converter but with a carburettor
2 = Non-catalytic converter and non-carburettor
3 = Catalytic converter and carburettor
4 = Catalytic converter but non-carburettor

Diesel vehicles

The trial scrapped six diesel vehicles. Of these, four were able to be tested for their emissions.

Vehicles were tested with standard European in-service emissions test procedures using the 'Free acceleration test'⁴. Two of the four tested were relatively clean and would have passed the European in-service test for non-turbo diesel vehicles for their age ($K \leq 2.5$ ⁵) with the third being only slightly over the fail limit ($K=2.8$).

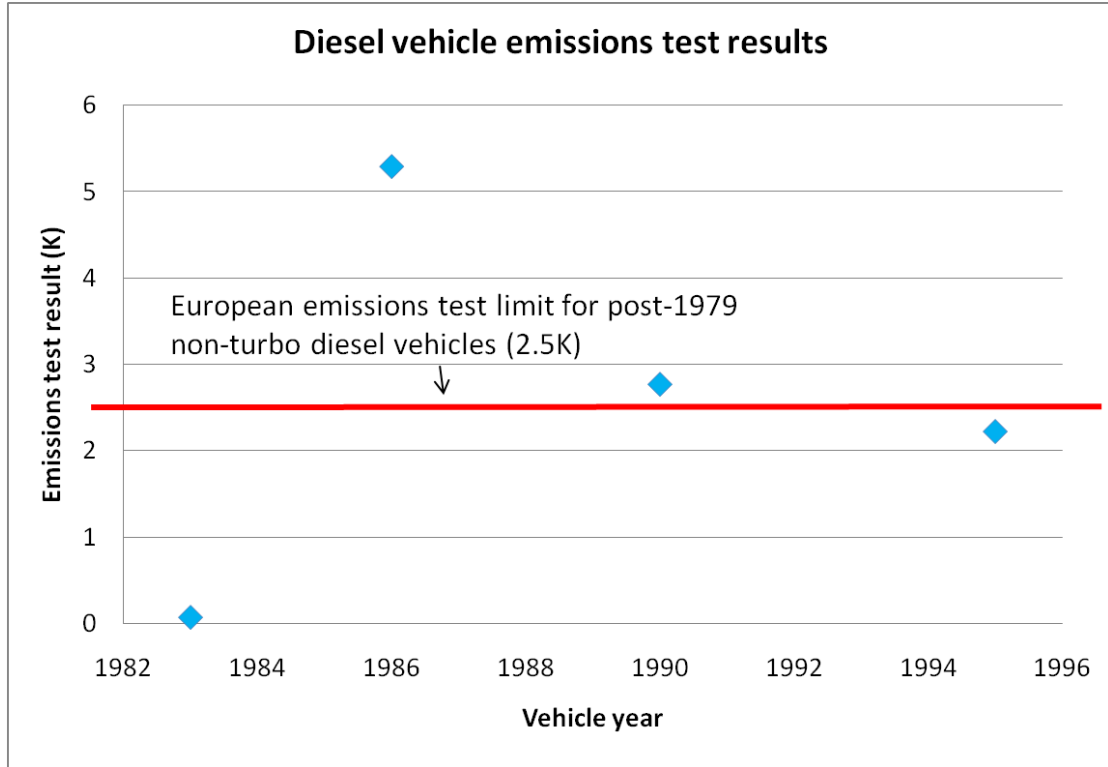
Only one vehicle that was tested was notably dirty ($K=5.3$) and one vehicle, a 1983 Land Cruiser, was remarkably clean ($K=0.06$) with a result comparable to vehicles built to modern emissions standards.

These results confirm that vehicles being scrapped are not necessarily the most polluting on the New Zealand roads.

⁴ The "free acceleration test" used for diesel vehicles is also known as the "snap acceleration test". In this test the vehicle's engine is rapidly accelerated (snapped), using the engine's own inertia to simulate a load. The resulting smoke is then measured.

⁵ K is a measure of the amount of light absorbed by the plume of smoke by a beam passing through a tube of known length. A value of zero indicates no smoke. At 3.5K the smoke would be clearly visible to the naked eye and at K=5 it would be significant.

Chart 27



Safety features on scrapped vehicles

Presence or absence of air bags

Of the 122 vehicles, only two were identified as having an airbag fitted; four were identified as having lights to warn the driver about seatbelt usage; and only one was identified as having ABS brakes, which make a vehicle much safer in emergency braking conditions. Given the age of the vehicles these results are not surprising.

The average age of the replacement vehicles purchased by participants was 12 years. These vehicles are likely to have airbags, so participants in the trial are expected to be safer as a result.

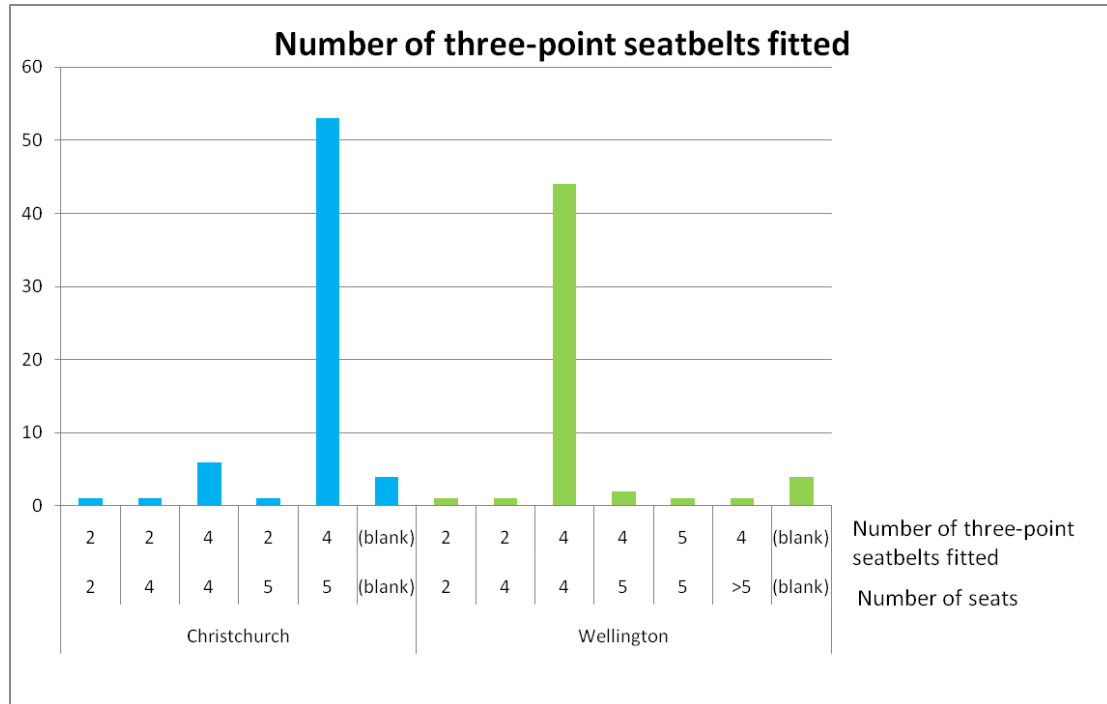
Sixty vehicles were identified as having lights indicating the presence of 'on board diagnostics' where a computer system warns the driver of mechanical problems with the engine, and of faults likely to cause higher levels of harmful exhaust emissions. Most of these vehicles (50 of 60) were in Wellington, presumably reflecting the greater number of Japanese used vehicles (such warning lights have been common in Japan since the late 1980s) and younger vehicles, which are also likely to have more electronic monitoring devices.

Number of seatbelts

The majority of scrapped vehicles had three-point seatbelts fitted in four seats. However, there were still a small number that did not have three point seatbelts fitted in all of the available seats. Chart 28 shows the number of three-point seatbelts fitted in the scrapped vehicles.

The survey was completed in slightly different ways in each centre. In Christchurch, individuals took the centre seat into account when completing the survey, whereas in Wellington they did not.

Chart 28



Condition of tyres

In the 2007 Auckland scrappage pilot, tyre condition was the most commonly cited reason for individuals scrapping their vehicle. This was not the case in the Wellington and Christchurch trial. The results, as outlined in Charts 29 and 30 below, show that the majority (80 percent) of vehicles scrapped under the trial had either no, or only one bald tyre.

Chart 29

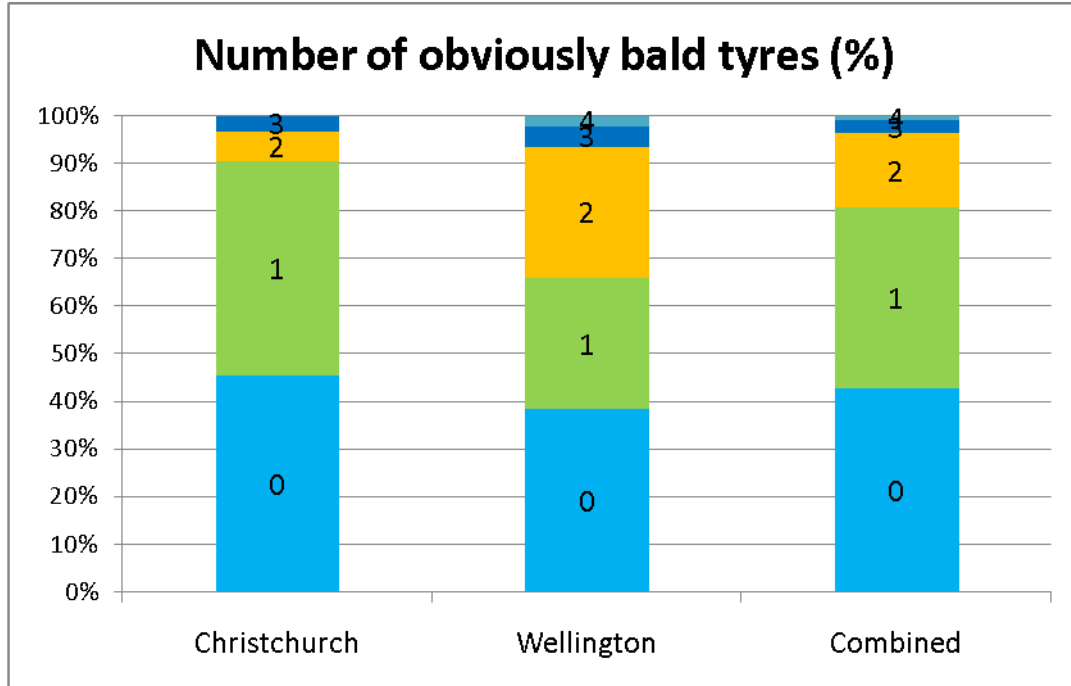
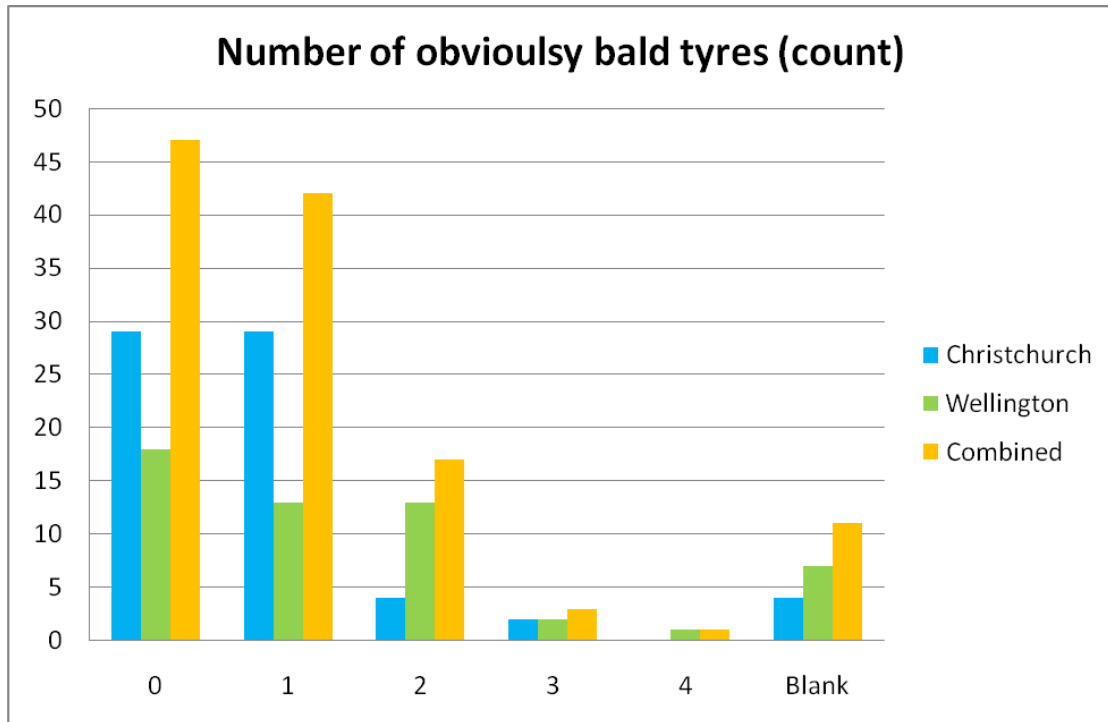


Chart 30 shows the actual number of vehicles with obviously bald tyres.

Chart 30

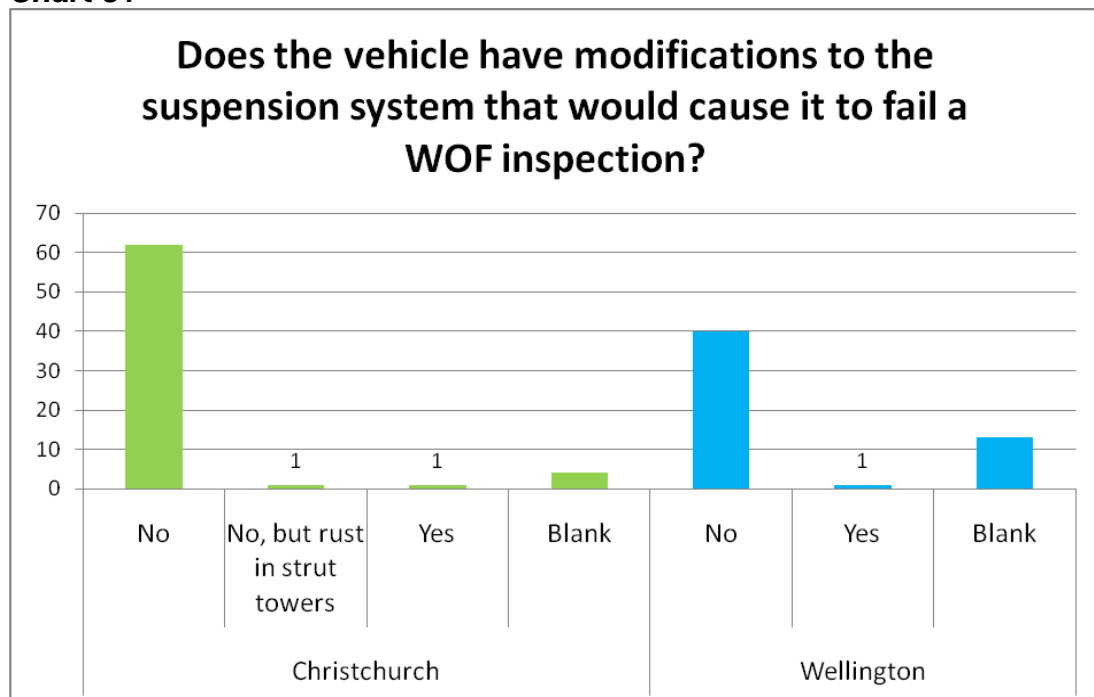


Other safety features

One vehicle in each centre would have failed a WoF inspection due to modifications to the suspension system. Christchurch had a further vehicle that was not modified, but had rust in the strut towers which would have resulted in it failing its WoF inspection. This is significant as modifications or rust in the suspension system would deem the vehicle unsafe and not roadworthy.

Chart 31 shows the breakdown of results in relation to suspension modifications.

Chart 31



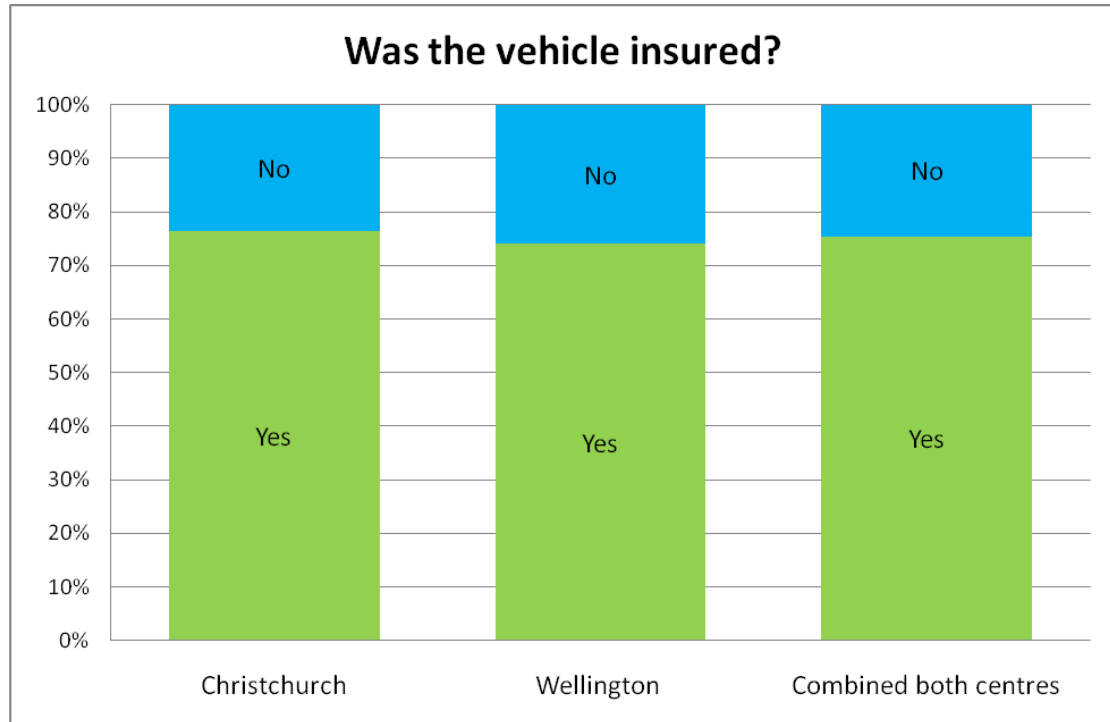
Vehicle insurance

75 percent of participants reported that they had some sort of vehicle insurance, leaving 25 percent without any vehicle insurance.

Some participants made comments on why they did not have insurance on the vehicle. Over 10 percent said they were unable to afford insurance. In addition, some said that as their vehicle had no WoF or registration they were unable to get insurance, and a number believed it was not worth insuring the vehicle as it was a 'wreck' or was originally bought for parts.

Chart 32 shows the percentage of vehicles with insurance.

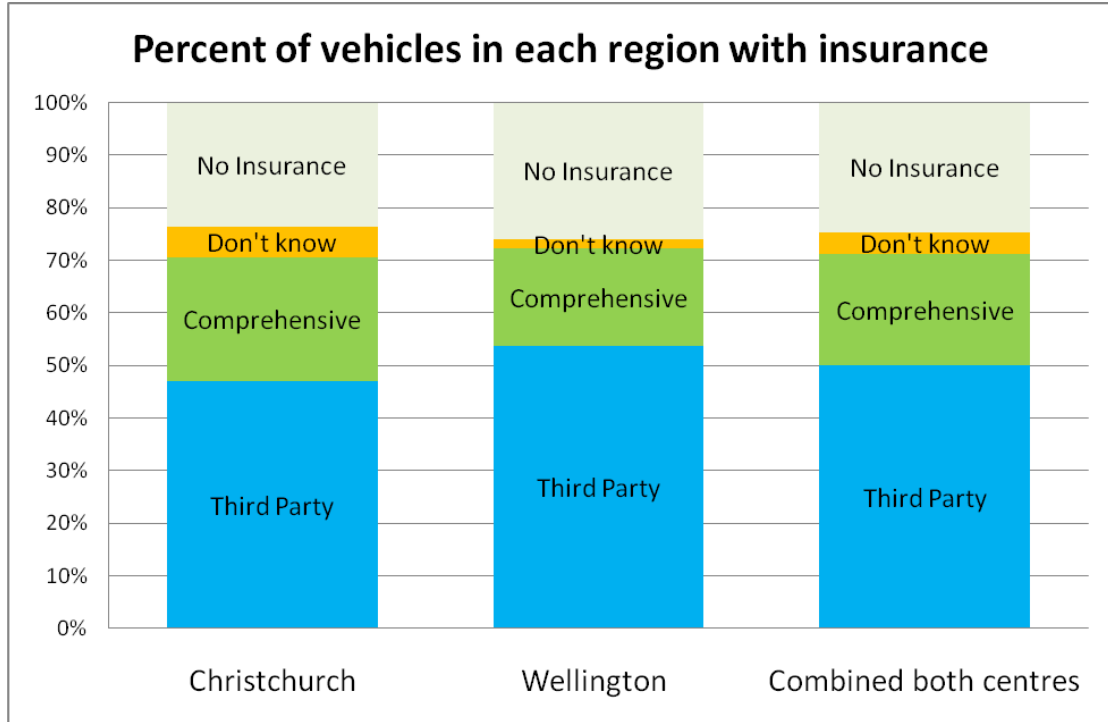
Chart 32



Both centres combined had a rate of insurance of just over 70 percent. Approximately 5 percent did not know if the vehicle had any insurance, and 25 percent said they had no insurance for their vehicle. Recent research in New Zealand showed that 7.6 percent of vehicle owners either do not insure their vehicle, or did not know whether their vehicle was insured. In comparison, the United Kingdom has not been able to reduce the percentage of uninsured motorists below 5.5⁶ percent through compulsory third party insurance⁶.

⁶ Vehicle insurance in New Zealand', Ministry of Transport 2009

Chart 33



General comments on the trial

The scrap metal companies were very positive about the trial. The companies reported that during the trial they received vehicles that were younger and of better quality vehicles than usual. Therefore, it appears the trial did incentivise the early retirement of a small number of vehicles from the fleet.

The Ministry received many positive comments from participants in the trial, such as:

- “Awesome trial :) Scrapped my car!”
- “Thank you for the opportunity to enter this competition”
- “I’m going to do my bit [to improve air quality and safety] with my crappy old 1990 Bluebird this Saturday!”

Radio stations reported the following positive feedback from the trial:

From Media Works:

- “This promotion was a huge success”
- “The support promotions on *The Rock* and *More FM* were hugely successful, with the support of the commercial schedule, website activity and announcer liners, the message to get your old car off the road definitely broke through into the market”

Feedback from the radio station ‘street teams’:

- *The Edge* promotion at Wellington Scrap Metals: “The team at Wellington Scrap Metals were great to work with and we had a lot of fun with the prize giveaways. Participants were very excited about the Snapper credit – it seemed to be a great motivating factor. Participants really appreciated the extra giveaways especially as they were just doing something they had been meaning to do for a while!”
- “The winner of the *More FM* promotion ditched her 18 year old car with Wellington Scrap Metals and very happily received the 12 month More Movie Preview exclusive pass!”

Effectiveness of advertising

The Ministry used Clemengers OMD to arrange advertising for the trial. Data received from Clemengers at the end of the trial showed that the radio advertising, although expensive, was effective. Online auction site ‘Trademe’ was also used for advertising. Advertisements were placed on specific pages as they related to vehicles which may be nearing the end of their economic life. Due to an oversight by Trademe, advertisements for the trial were not put up on the site, so Trademe offered ‘value added’ advertising which was at no

cost to the Ministry. This value added advertising proved to be very effective as adverts for the trial appeared on Trade Me's home page (one tower advert on the left hand sidebar and an additional advert on the top right).

The trial's advertisements also appeared on the following Trade Me pages:

- Cars under \$2k watch-list
- Cars up to \$4k watch-list
- Cars under \$2k search tile
- Cars up to \$4k search tile
- Wrecked cars
- Parts for sale
- Unsold items tab
- Email footer (that the seller received when the item they had listed is not sold – this was titled 'sale fail' and made the seller aware of the trial)
- Trademe motors tab and tower advertising placements

Trade Me's cost-per-click, calculated by the number of people who 'clicked' through to the Ministry website from the Trademe site for further information, varied from \$0 to \$181.05. The average cost-per-click of all Trademe activity was \$4.47, which represents good value for money.

The newspaper advertisements on Saturday 17 May were in *The Dominion Post* and *The Christchurch Press*. Although both advertisements were prominently placed, the response from this advertising was not as successful as the online advertising.

Cost and benefits of the trial

The Ministry of Transport, together with the NZ Transport Agency, Environment Canterbury, Wellington Scrap Metals, and Metalcorp NZ jointly funded the trial. Not including staff time, the project costs were just over \$150,000.

Advertising	\$99,116
Emissions testing	\$2,745
Public transport passes	\$30,000
Purchase of Toyota Corolla	<u>\$18,500</u>
Total	<u>\$150,361</u>

Three hundred and forty nine vehicles were scrapped during the trial. Of these, 122 met the trial's criteria of either having a WoF or being no more than two months outside of WoF. If total costs of the trial are divided by total vehicles scrapped, the cost per vehicle is \$430. If total costs are divided by the number of vehicles that met the trial criteria, the cost per vehicle is \$1,240.

The length of time of the trial is one factor that contributes to the relatively high cost per vehicle. The trial period was three and a half weeks. It was

problematic to extend this period because of the terms and conditions of winning the Toyota Corolla. If the trial could have been extended, it is likely more cars would have been collected without much additional cost.

The Auckland trial period was six weeks and had similar advertising costs. Two hundred and fifty vehicles were collected during this trial. This Auckland trial is not directly comparable because the greater Auckland region has a much larger pool of vehicles, with approximately one million, compared to Wellington and Christchurch's combined total of approximately 650,000 vehicles.

How effective was the incentive to trade in end-of-life vehicles?

The majority of participants believed their vehicle was worth over \$500, several thought their vehicle was worth \$1,000. A number of participants reported that, if it was not for the Toyota Corolla car which was raffled by the scrap metal dealers, they would not have participated in the trial.

The trial results and other research suggests that the \$250 public transport vouchers may not have been enough on their own to encourage people to scrap their vehicles. Instead, the chance to win the Toyota Corolla diesel car offered by the participating scrap metal companies was the greatest incentive for participants.

Comparison of trial with United States 'Cash for Clunkers' programme

Under the United States 'Cash for Clunkers' programme (officially called the "Car Allowance Rebate System" or "CARS"), people could scrap their old car and receive a credit of up to \$4,500 from the government's automotive stimulus program. The programme was designed to energise the economy, boost auto sales, and put safer, cleaner and more fuel-efficient vehicles on the roads.

To be eligible for a trade-in rebate, cars and light trucks had to be at least a 1984 model-year vehicle or newer. The vehicle had to be drivable, insured and licensed for at least a year, and get 18 miles per gallon or less. Both domestic and imported vehicles were eligible for the programme. The credit could not be applied toward the purchase or lease of used vehicles.

The United States Government invested \$3 billion dollars in the programme which ran from the end of July until 1 November 2009.

The programme removed over 700,000 older vehicles from the road. Following media coverage of 'Cash for Clunkers', the Ministry of Transport was approached by organisations and individuals interested in the potential for a similar trial in New Zealand.

However, the CARS programme was designed to assist the new car industry during the recession. As New Zealand does not have a new car

manufacturing industry, there would be less benefit to the economy from any such trial.

While 'Cash for Clunkers' was successful in removing a large number of vehicles from the road, these numbers need to be considered alongside the total number of vehicles in the United States. A 2006 Department of Transport study found there were an estimated 250 million registered passenger vehicles in the United States. Based on this figure, the 'Cash for Clunkers' trial removed 0.3 percent of the United States fleet from the road and cost \$3 million.

In comparison, during the Wellington and Christchurch trial, 121 vehicles were scrapped. The number of passenger vehicles in greater Wellington and greater Christchurch is 652,000. This means 0.02 percent of the Wellington and Christchurch fleet was scrapped under this trial at a cost of just over \$150,000 to the government and associated partners. The 'Cash for Clunkers' trial cost 20,000 times more than the Wellington and Christchurch trial.

Health Benefits

The relatively small number of vehicles collected in the trial means that the overall effects on air quality were negligible. We cannot accurately estimate the actual emissions benefits from the trial because the emission tests performed on the scrapped vehicles did not measure on-road emissions or how far the vehicles would have driven had they been on the road.

However, the Auckland Regional Council's Vehicle Emissions Prediction Model (VEPM) was used to make an estimate of the pollutants avoided and associated health savings of the trial.

The figures are based on the assumptions that:

- vehicles would have remained in use for one further year had they not been scrapped
- 55 percent of the fleet has the catalytic converter removed
- the annual Vehicle Kilometres Travelled (VKT) for vehicle = 52 multiplied by the average weekly VKT
- average speed is 40km/hr
- there is no allowance for these vehicles having a disproportionately large number of 'gross emitters'.

All assumptions used in the modelling were the same as that used in the Auckland trial, so the figures can be compared directly.

Figure 2 shows the breakdown of emissions and values.

Figure 2

	Tonnes of pollutants avoided	Value of tonne of pollutant	Total value of pollutants avoided
CO ₂	179.07	\$ 20.00	\$ 3,581.40
CO	16.41	\$ 315.00	\$ 5,169.15
HC	1.32	unknown	
NOx	1.2	unknown	
PM10 EXHAUST	0.05	\$ 225,000.00	\$ 11,250.00
PM10 BREAK&TYRE	0.014	\$ 225,000.00	\$ 3,150.00

Total health savings	\$ 19,569.15
Number of vehicles scrapped	122
Health saving per vehicle	\$ 160.40

The savings for Wellington and Christchurch amounted to nearly \$20,000, or \$160 per vehicle. These are significantly lower than the estimates for savings in Auckland of \$251 to \$321 per vehicle calculated using the same model and assumptions. As the vehicles in Wellington and Christchurch were older, the finding may seem unexpected. However, the primary reason for this difference appears to be that because the vehicles in Wellington and Christchurch were older, they would have travelled less distance in a year. This means they would have emitted less in a given year.

This report shows that there were measurable health benefits from the trial, but individually these were not enough to justify the total cost of the trial.

Safety benefits

Older cars are usually less safe than newer vehicles, so the removal of older vehicles from the road will give safety benefits.

The greatest safety benefits would come from participants who begin using public transport after scrapping their vehicles. Public transport is significantly safer as a means of transport than private cars. However, it is difficult to estimate how many participants would have made this change and if so, for how long, or, as public transport use is relatively common in both cities, if the card resulted in new use of public transport, or merely subsidised an existing usage.

There are also safety benefits from replacing vehicles with newer ones (for those who reported that they had done so). However, the safety benefits from upgrading vehicles are less than those for switching to public transport.

Other benefits

Since the completion of the Wellington and Christchurch trial, both of the participating scrap metal companies have reported ongoing enquiries from the public regarding the scrappage trial and whether it will be repeated. The trial seems to have been very popular with those who took part and had a high degree of public and media support. Therefore the trial may have resulted in greater public awareness about scrappage options than is indicated by the number of participants in the trial.

Final conclusions from both trials (Auckland 2007 and Wellington and Christchurch 2009)

The trials showed that a nationwide government initiated scrappage scheme is unlikely to be cost effective because of the low number of vehicles received and the relatively low overall health, safety and climate change benefits. The Ministry of Transport will continue to work with other government agencies and industry representatives on the future direction of vehicle scrappage in New Zealand.

Comparison between three centres (Auckland, Wellington and Christchurch)

The findings in Wellington and Christchurch were not dissimilar to Auckland. The 2007 Auckland pilot trial offered \$400 of public transport vouchers, had a duration of almost double the Wellington and Christchurch trial, and had more lenient vehicle criteria (it accepted vehicles up to three months outside of WoF, while the Wellington and Christchurch trial only accepted vehicles up to two months outside of WoF).

In Auckland, 253 vehicles met the criteria and were scrapped over a six week period. In Wellington and Christchurch, 122 vehicles met the criteria and were scrapped over a three and a half week period. In Auckland, the most common reason for scrapping vehicles was tyres. In Wellington and Christchurch the most common reason was mechanical reliability.

Incentive value

Many members of the public would require a larger incentive than that provided during the trials to dispose of their vehicles earlier than they might otherwise. Many participants in the trial believed their vehicle was worth about \$1,000 with a current WoF and registration. Additionally, many participated in the trial because of the prize draw for a new car rather than for the public transport vouchers. It appears that a higher incentive than that provided in the trial would be needed to attract more vehicles to be scrapped. The Ministry is investigating how it might support greater public awareness about existing incentives offered by scrap metal recyclers, rather than the implementation of a government operated scrappage scheme.

Need for public education

Many car owners are not aware that their car has a cash value as scrap metal. Over 20 percent of participants in the Wellington and Christchurch trial thought it would cost money to dispose of their car. Many also believed that they would get a higher cash value if they sold their car as a vehicle rather than as scrap metal. More than half of participants said that in the absence of the trial they would have tried to sell their cars. This suggests that public

education about the value of vehicles as scrap may bring forward the disposal of vehicles near the end of their life.

The trial has assisted with the understanding that a public awareness campaign could be focussed on vehicle owners of vehicles with high mileage, such as over about 200,000 kilometres and of vehicles that have just failed a Warrant of Fitness. The Ministry will investigate opportunities for further public education and awareness about vehicle scrappage options.

Benefits

There were limited social and environmental benefits from the early retirement of vehicles during the trials.

Participants in the trial indicated that the scrapped vehicles would have been scrapped soon regardless of the trials. Participants who scrapped vehicles generally bought replacements that were around 12 years old. On average these vehicle have larger engines and are driven further than older vehicles and so fuel savings were unlikely.

The trial resulted in limited gains to air quality and therefore to society's health. Scrapped vehicles were likely to have limited emissions controls (such as exhaust catalytic converters), but generally did not travel far.

Safety gains as a result of the trial were difficult to quantify. Limited safety gains can be attributed to the early retirement of older vehicles and to the increased use of public transport.

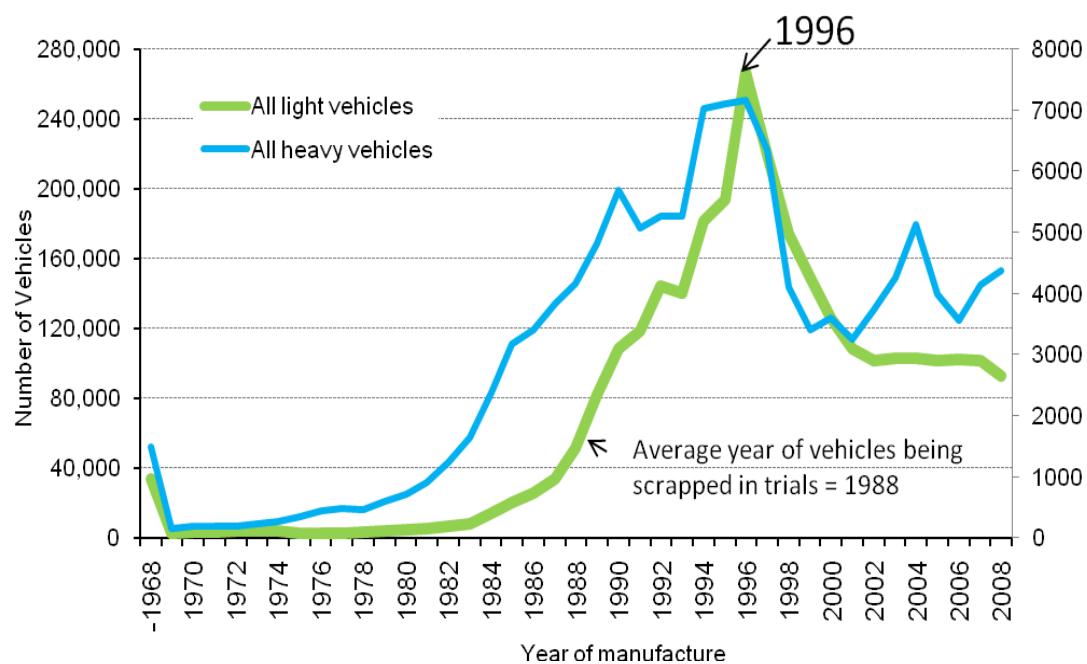
Environmentally responsible disposal of vehicles

During the trials, the Ministry became aware of the diversity of environmental responsibility taken by the scrap metal companies who dismantle and recycle cars (or parts there of). Questions remain about whether there is sufficient infrastructure in place in New Zealand to manage the dismantling and recycling of cars in an environmentally responsible way. However, once a vehicle at the end of its life and is removed from the road, it becomes waste. Waste policy is managed by the Ministry for the Environment and local government. Any further work on end-of-life vehicles would need the active involvement of these other organisations.

Future outlook

In five to seven years' time, there is expected to be a large number of vehicles being retired from the New Zealand in-service fleet. Research by the Ministry of Transport shows that one third of all light vehicles on New Zealand roads in 2008 had model years of between 1995 to 1997. These vehicles are likely to reach the end of their life at 20 years. This situation has the potential to put strain on the existing infrastructure to manage scrapped vehicles such as scrap metal recycling companies and local councils. The Ministry of Transport will continue to work with industry and local councils regarding this potential situation. Chart 34 shows the age distribution of the New Zealand fleet.

Chart 34: Age distribution of the New Zealand fleet



Appendix One

