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Dynamics of the South Australian registered passenger vehicle fleet

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TITLE

Dynamics of the South Australian registered passenger vehicle fleet

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ABSTRACT

A number of vehicles registered in South Australia were originally registered elsewhere in Australia, predominantly in New South Wales. A hypothetical scenario is that vehicles transferred from New South Wales to South Australia are more likely to have been involved in a crash in New South Wales, repaired before being on-sold to vehicle purchasers in South Australia and that the South Australian used car market is perhaps at the receiving end of smash repaired vehicles. This study examined registration data from South Australia and registration data and crash data from New South Wales. Very few vehicles were involved in a previous crash in New South Wales prior to transfer to South Australia and for a majority of vehicles the crash rates compared to vehicles retained in New South Wales were not significantly different, so safety concerns about these vehicles are perhaps unjustified. While there were some vehicles from New South Wales that were involved in high-damage crashes and transferred to South Australia, these appear to be clearly identified as such.

KEYWORDS

Registered passenger vehicles, interstate vehicle transfers, written-off vehicles, crash rates

Summary

Almost 30% of vehicles registered in South Australia were first registered in another state or territory of Australia, with most of these vehicles originating from New South Wales. This percentage appears to be high, particularly compared to New South Wales where only 12% of registered vehicles were first registered in another state or territory of Australia.

This raises the concern as to whether there are any safety related issues pertaining to these interstate transferred vehicles. Specifically, whether perhaps these vehicles are more likely to have been involved in a crash, repaired and then transferred to, and re-registered in South Australia. Previous differences in written-off legislation may have encouraged such transfers.

The objective of this study was to determine whether vehicles transferred from New South Wales were in fact more likely to have had a crash in that state prior to being transferred and registered in South Australia, compared to a similar group of vehicles that remained registered in New South Wales.

A snapshot of vehicles registered in South Australia was obtained and examined to identify vehicles that were first registered in New South Wales. These identified vehicles were assessed against the New South Wales crash database to determine the number of vehicles involved in a crash in New South Wales in the 12 months prior to their transfer to South Australia. The crash rates of these vehicles were compared to the crash rates of a snapshot of a similar group of registered vehicles in New South Wales - to determine whether there were any discernable differences in the two vehicle cohorts.

Two distinct types of passenger vehicle transfers from New South Wales were identified. The majority of these vehicles (N=20,370) were identified as having undergone a pre-registration identity inspection (called an 'interstate vehicle inspection') in South Australia as the result of what could be considered a 'normal' interstate vehicle transfer from New South Wales. Substantially fewer vehicles (N=531) were identified as repaired write-offs (vehicles that underwent a pre-registration roadworthy inspection, called a 'wrecked vehicle inspection').

Of the 'normal' interstate passenger vehicle transfers from New South Wales 249 were involved in at least one crash in New South Wales in the 12 months prior to being transferred to South Australia, resulting in an overall crash rate of 1.22%. The comparative crash rate of vehicles registered in New South Wales was 1.13%. The difference between these two groups was not statistically significant.

Of the repaired write-off vehicles originally registered in New South Wales, 83 were involved in at least one crash in New South Wales in the 12 months prior to being transferred to South Australia, resulting in an overall crash rate of 15.6%. The crash rate of a similar group of vehicles that remained registered in New South Wales was 1.01%. This indicates that repaired write-off vehicles from New South Wales were 15.5 times more likely to have been involved in a crash in New South Wales prior to being transferred to South Australia, compared to vehicles that remained registered in that State. This result is statistically significant but not unexpected.

The implication of this, is that while the number of normal vehicles transferred from New South Wales to South Australia appears high – very few vehicles were involved in a previous crash prior to transfer to South Australia, so safety concerns about these vehicles are perhaps unjustified. While there were some vehicles from New South Wales that were involved in high-damage crashes and transferred to South Australia, these appear to be clearly identified as such. The numbers of these vehicles from New South Wales are a diminishing problem due to changes in New South Wales legislation.

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1 Introduction

Almost 30% of vehicles registered in South Australia were first registered in another state or territory of Australia, with most of these vehicles originating from New South Wales. This percentage appears to be high, particularly compared to New South Wales where only 12% of registered vehicles were first registered in another state or territory of Australia.

A characteristic of the South Australian fleet is that vehicles of a given year of manufacture enter the state at a greater rate than they are removed for about 10 years after the year of manufacture (based on Australian Bureau of Statistics, 2011). In the first two years, this is accounted for by new car sales; increases after this period are the result of vehicles being transferred to South Australia from interstate. This is shown in Figure 1.1.

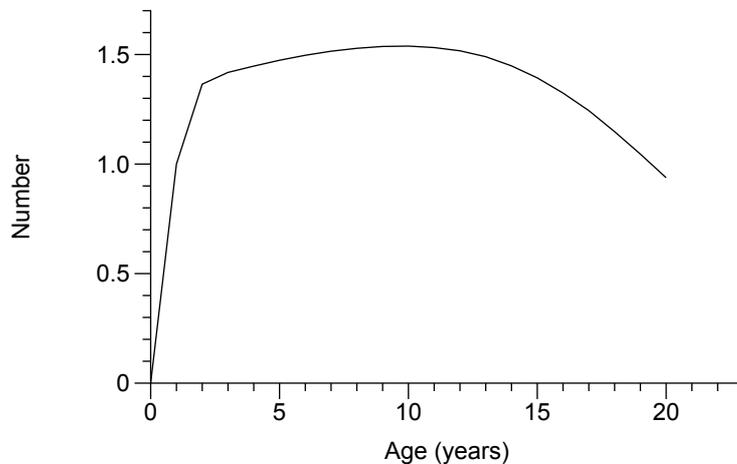


Figure 1.1

Average number of vehicles in a cohort over the age of the cohort (the number has been normalised so the number of vehicles at the end of the first year is one). Constructed using Australian Bureau of Statistics, 2002-2011

Anderson (2012) analysed a random sample of 2000 vehicles registered in South Australia in 2010 and found that only 71% of vehicles registered in South Australia were originally purchased in South Australia; the remaining vehicles were first purchased in another jurisdiction, predominantly from New South Wales.

The present study sought to focus on those vehicles transferred from New South Wales to South Australia to determine whether there may be a safety related characteristic of these vehicles. A hypothetical scenario is that vehicles transferred from New South Wales to South Australia are more likely to have been involved in a crash in New South Wales, repaired before being on-sold to vehicle purchasers in South Australia and that the South Australian used car market was perhaps at the receiving end of smash repaired vehicles.

There is no mechanism in South Australia for vehicle purchasers to determine the crash history of a registered vehicle, nor is there any legislative requirement for crash history disclosure¹. The exception is for vehicles that have been declared a repaired write-off (see Appendix B for a definition) and this

¹ In fact the only legislative requirement in regards to safety related issues is that according to the Second-hand Vehicle Dealers Act 1995 a dealer must ensure during the cooling-off period that a vehicle is roadworthy.

information is recorded against the vehicle's identification number. There is no legislative requirement for free disclosure of this information.

The first sections of this report summarises the process used to:

- Identify passenger vehicles transferred to South Australia from interstate
- Identify the sub-set of vehicles specifically transferred from New South Wales
- Identify a comparison group of vehicles that remained in New South Wales

The later sections of the report examine the crash history and crash rates of the two subsets of vehicles transferred from New South Wales and the comparison group that remained in New South Wales. A statistical comparison is then presented for the two transferred vehicle types compared to the vehicles that remained in New South Wales.

2 Background

The history of a vehicle registered in South Australia can be difficult to find. Information pertaining to stolen, written-off or defected incidents recorded on the Register of Motor Vehicles (based on a vehicle's registration number) can be obtained using EzyReg (Department of Planning, Transport and Infrastructure, 2014). For vehicle encumbrances or any national stolen or written-off incident recorded, searches (based on a vehicle identification number) can be undertaken through the Australian Government's Australian Financial Security Authority's Personal Property Securities Register (Australian Government, 2014).

Neither of these search mechanisms give any details indicating which Australian jurisdiction a particular vehicle was first registered nor any detail about a vehicle's crash history within Australia, unless the vehicle was declared a write-off as a result of that crash.

In this study, a complete list of all light vehicles registered in South Australia as of August 2013 and their vehicle identification numbers (VINs) was obtained from the Department of Planning, Transport and Infrastructure. The registration data also included several fields of information including any recent inspection and the date of that inspection. These inspection characteristics can to some extent, identify vehicles that were transferred from interstate and give an estimate of the date a vehicle was transferred. Appendix A gives further background on the types of inspections undertaken within the context of vehicle entry into the South Australian registered fleet.

2.1 The types and numbers of inspections recorded against vehicles registered in South Australia

The original jurisdiction of purchase or registration cannot be directly obtained from the South Australia registration data, but information can be obtained about any recorded inspections. For 80.2% of all vehicles registered in South Australia, no inspection was recorded, the majority of these vehicles are assumed to have been purchased new in South Australia and have not required an inspection to be recorded. The second most significant mechanism for registering a vehicle was following an 'Interstate Vehicle Inspection'; this comprised 12.9% of the registered vehicle fleet. In total, 99.9% of the South Australian registered vehicle fleet had an inspection type recorded as shown in Table 2.1.

Table 2.1
South Australia registered vehicles and inspection types and counts

Inspection Type	Number	% of total
No Inspection	1,262,193	80.2%
Interstate Vehicle Inspection	202,786	12.9%
Clear Defect Inspection	50,231	3.2%
Interstate Registration Inspection	25,825	1.6%
Wrecked Vehicle Inspection	17,666	1.1%
Miscellaneous	8,433	0.5%
Compliance Plate Inspection	3,477	0.2%
Modified Vehicle Inspection	1,620	0.1%
Total	1,572,231	99.9%

2.2 Identifying vehicles transferred from interstate

There are three ways used vehicles from interstate can be registered in South Australia, as:

- Interstate vehicle transfers – requiring an interstate vehicle inspection (ISV)
- Same owner interstate vehicle transfers
- Repaired write-off vehicle² transfers - requiring a wrecked vehicle inspection (MRD1)

Vehicles that have been subject to an interstate vehicle inspection or wrecked vehicle inspection can be identified but same owner vehicle transfers cannot, as they are not required to undergo an inspection. This is discussed further in Appendix A.

Passenger vehicles were the most likely vehicle type to have undergone an interstate vehicle inspection or wrecked vehicle inspection accounting for 94% (N=191,291) of interstate vehicle inspections and 95% (N=16,747) of wrecked vehicle inspections.

Interestingly, there is a distinct difference in the age profile of passenger vehicles transferred from interstate. The average age of all passenger vehicles was 10.9 years, compared to the average age of interstate vehicles, which were 12.2 years and 12.6 years for wrecked vehicles. The age distributions of those vehicles compared to all registered passenger vehicles is shown Figure 2.1.

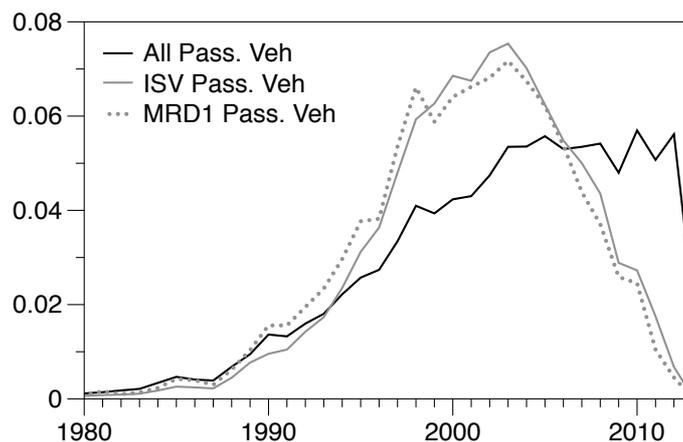


Figure 2.1

Age distribution of all registered passenger vehicles in South Australia and all registered passenger vehicles that have undergone an interstate vehicle inspection (ISV). Note: registrations prior to 1980 not shown)

² Detailed information pertaining to 'write-off' vehicles including definitions is presented in Appendix B.

3 Vehicles from New South Wales

As discussed previously, although Anderson (2012) was able to determine the South Australian fleet composition on the basis of origin of vehicle purchase, this was undertaken on a small sample. This study sought to determine whether there was a specific crash characteristic of vehicles being transferred from New South Wales to South Australia. There is evidence that in the past the proportion of vehicles transferred to South Australia from New South Wales as repairable write-offs were highly represented (see Appendix B). The suggestion is that vehicles involved in crashes in New South Wales are more likely to be repaired and transferred to South Australia than be retained in New South Wales.

3.1 Hypothesis

This study postulated the hypothesis that “vehicles transferred to South Australia from New South Wales are different in terms of crash rate in New South Wales compared to similar vehicles retained in New South Wales”.

3.2 Data

To test the hypothesis, four sources of data were used:

- A snapshot of all vehicles registered in South Australia (24 August 2013)
- A snapshot of all vehicles registered in New South Wales (December 2010)
- A snapshot of all vehicles registered in New South Wales (December 2004)
- Crash data for New South Wales (1999 to 2011, severity tow away or higher)

3.3 Method

3.3.1 Vehicles registered in New South Wales in 2004 and transferred to South Australia prior to 2010

The vehicle identification number (VIN) of each passenger vehicle registered in South Australia in 2013 was assessed against VINs in the two New South Wales registration data snapshots. This determined which vehicles were registered in New South Wales in December 2004, transferred to South Australia prior to December 2010 and still registered in South Australia in August 2013. The vehicles transferred from New South Wales with an inspection record were disaggregated according to two specific inspection types:

1. Level 2 – Tier 2 inspections : Interstate Vehicle Inspection (ISV)
 - 26,455 passenger vehicles
2. Level 3 – Roadworthy inspections : Wrecked Vehicle Inspection (MRD1)
 - 832 passenger vehicles

A breakdown of the passenger vehicle types that were on register in New South Wales in 2004 and also registered in South Australia in 2013 are shown in Table 3.1.

Table 3.1

Most common vehicle types that were on register in New South Wales in 2004 and also registered in South Australia in 2013

Vehicle Type	NSW Body Type	Interstate Vehicle Inspection	Wrecked Vehicle Inspection
Cars	SEDAN	15,322	538
	CONVERTIBLE	408	12
	COUPE	165	8
Cars Total		15,895	558
Station Wagons	PANEL VAN WITH WINDOWS & SEAT/S - 4WD	4,161	101
	STATION WAGON	3,527	79
	PANEL VAN WITH WINDOWS & SEAT/S	251	6
Station Wagons Total		7,939	186
Utilities	UTILITY	1640	58
	TABLE TOP WITH FITTINGS	495	15
	TABLE TOP WITHOUT FITTINGS	35	1
Utilities Total		2,170	74
Panel Vans	PANEL VAN	382	11
	PANEL VAN WITH SIDE WINDOWS	69	3
Panel Vans Total		451	14
Subtotal of Listed Vehicle Types		26,455	832

The inspection year as recorded in the South Australia registration data was used as the estimated transfer date to South Australia. The number of inspections by type and year are shown in Table 3.2 for vehicles with a build year 1989 – 2004.

Table 3.2

Number of interstate vehicle inspections and wrecked vehicle inspections in South Australia by inspection year for vehicles with a build year 1989 – 2004

Inspection Year	Interstate Vehicle Inspection	Wrecked Vehicle Inspection
2005	3,913	25
2006	4,424	58
2007	4,094	89
2008	2,768	114
2009	2,565	110
2010	2,606	135
2011	2,392	98
2012	2,191	128
Total	24,953	757
Sum 2005-2010	20,370	531

The final sample used for further analysis was restricted to those vehicles transferred between 2005 – 2010 and built between 1989 – 2004, because:

- The snapshot of vehicles registered in New South Wales as of December 2004 limited the analysis to vehicles inspected in the year from 2005 onwards. This also limited the latest vehicle build date to 2004
- The snapshot of vehicles registered in New South Wales as of December 2010 limited the analysis to vehicles inspected up to and inclusive of 2010 as vehicles built in 2011 and registered in South Australia had no comparable vehicles in New South Wales

- The New South Wales crash data was limited to 1999 – 2011, so vehicles built in 2012 had no corresponding New South Wales crash data available
- VIN details were limited for vehicles built prior to 1989, so vehicles built prior to 1989 could not be included in the analysis.

The final sample used for further examination consisted of 20,370 passenger vehicles that underwent an interstate vehicle inspection and 531 passenger vehicles that underwent a wrecked vehicle inspection (Table 3.2).

3.3.2 Vehicles registered in New South Wales in 2004 and remained registered in New South Wales in 2010

An examination of the two registration snapshots in New South Wales for vehicles with a valid VIN, indicated that there were 2,245,132 unique passenger vehicles that were registered in New South Wales in 2004 and still registered in New South Wales in 2010. It was assumed that these vehicles were consistently registered in New South Wales in the years 2005 - 2010.

3.4 Analysis

A case-control study approach was undertaken to determine whether there were any differences (in terms of crashes and crash rates in New South Wales) of vehicles that were transferred to South Australia and similar vehicles that remained in New South Wales.

3.4.1 Case vehicles

The case vehicles were all passenger vehicles with a valid VIN with a build year between 1989 and 2004 that were registered in South Australia in 2013 and identified as having been transferred from New South Wales in the period between 2005 and 2010. The case dataset of 20,370 passenger vehicles that underwent an interstate vehicle inspection and the 531 passenger vehicles that underwent a wrecked vehicle inspection was disaggregated by VIN, build year and inspection date (an estimate for transfer date).

The VIN of each vehicle of a particular build year was examined against the 1999 – 2011 New South Wales crash database to determine the number of vehicles that were involved in a crash in New South Wales in the 12 month period prior to being transferred to South Australia. For the particular vehicle build years and transfer years considered, the crash rate of the transferred vehicles was calculated. This was the ratio of the number of crashed vehicles transferred to the total number of vehicles transferred in the same transfer year.

For example, for interstate vehicle inspections, 415 (n) vehicles of build year 2004 (N) were transferred from New South Wales to South Australia in 2005. Of these vehicles, four vehicles (Cr) had been involved in a crash in New South Wales in the 12-month period prior to their transfer. The corresponding crash rate was then 0.96% (R%), which is shown Table C.1, in Appendix C. This was repeated for all applicable build years and transfer years. Complete results are shown in Table C.1 and Table C.2 in Appendix C for interstate vehicle inspections and wrecked vehicle inspections respectively.

3.4.2 Control vehicles

The control vehicles used in the analysis were the 2,245,132 passenger vehicles that were registered in New South Wales in 2004 and were also registered in New South Wales in 2010. The 'control' years were each of the years 2005 – 2010, recognising that the same cohort of 2,245,132 vehicles

appear in New South Wales in each of the control years but get older and potentially crash and 'survive' in New South Wales each year toward 2010.

These vehicles were disaggregated by VIN and build year. The VIN of each vehicle of a particular build year was examined against the 1999 – 2011 New South Wales crash database to determine the number of vehicles of a particular build year (N) that were involved in a crash (Cr) in each control year. The crash rate (R%) was then the ratio of the number of vehicles of a particular build year (N) that crashed in a particular control year to the total number of vehicles retained in New South Wales in the same control year.

For example, in the control year 2005 there were 205,870 (n) vehicles of build year 2004, of these 3052 (Cr) had been involved in a crash in New South Wales in 2005, the crash rate was then 1.48%. Similarly, in 2006 there were also 205,870 (n) vehicles on build year 2004, however, of these 2,765 (Cr) had been involved in a crash in New South Wales in 2006, the crash rate was then 1.34% (This is shown in Table C.3 in Appendix C).

4 Results

4.1 Crash history of vehicles originating in New South Wales

4.1.1 Crash rate of vehicles transferred to South Australia - interstate vehicle inspections

Of the 20,370 vehicles originally registered in 2004 in New South Wales, 249 were involved in at least one crash in New South Wales in the 12 months prior to being transferred to South Australia, resulting in an overall crash rate of 1.22% for these vehicles. Table C.1 in Appendix C shows the individual breakdown of vehicle build year, transfer year, number of crashes and individual crash rates.

4.1.2 Crash rate of vehicles transferred to South Australia - wrecked vehicle inspections

Of the 531 vehicles originally registered in 2004 in New South Wales, 83 were involved in at least one crash in New South Wales in the 12 months prior to being transferred to South Australia, resulting in an overall crash rate of 15.6%. As expected, this figure is high given that these are repairable write-offs (the result of vehicle damage due to any number of mechanisms including vehicle collisions, vandalism, weather damage etc., as detailed in Appendix B).

4.1.3 Crash rate of vehicles retained in New South Wales

As mentioned previously, the same cohort of 2,245,132 vehicles appear in New South Wales in each of the six control years 2005 - 2010, but have a unique number of crashes each control year. Therefore, the total number of vehicles considered in the analysis are the 2,245,132 vehicles that potentially crash but survive each year, for the six-year period, i.e. 13,470,792 vehicles.

For the vehicles retained in New South Wales, 136,717 were involved in crashes over the six-year period, resulting in a 'raw' crash rate of 1.02%.

4.1.4 Vehicle age distribution adjustment

To take into account the differences in age distribution of the two cohorts of vehicles transferred to South Australia compared to the cohort of vehicles retained in New South Wales, the raw crash rates were adjusted. The adjustment was based on the proportion of vehicles transferred to South Australia by build year and inspection year. This was applied to the raw crash rates of those vehicles retained in New South Wales so they could be adjusted for interstate vehicle inspections and wrecked vehicle inspections separately.

For example, for interstate vehicle inspections, 415 vehicles of build year 2004 were transferred to South Australia in 2005 out of the total of 20,370 interstate vehicle inspections. The applicable weighting factor was then 0.02. This was systematically done for all build years and control years for both interstate vehicle inspections and wrecked vehicle inspections. The weighting factors were applied to the raw crash rates of the vehicles retained in New South Wales for the corresponding vehicle build years and control years for both of the South Australian vehicle groups. This is shown in Table C.4 and C.5 for interstate vehicle inspections and wrecked vehicle inspections respectively.

The aggregated weighted crash rate of vehicles retained in New South Wales was 1.13% for interstate vehicle inspections, corresponding to an adjusted number of 152,759 crashes (see Table 4.1).

The aggregated weighted crash rate of vehicles retained in New South Wales was 1.01% for wrecked vehicle inspections, corresponding to an adjusted number of 136,190 crashes (see Table 4.1).

4.1.5 Crash risk analysis - interstate vehicle inspections

Table 4.1 shows a summary of the vehicle numbers and adjusted vehicle numbers used in the analysis. Also shown are the number of crash involved vehicles and their corresponding crash rates. For interstate vehicles transferred from New South Wales to South Australia the crash rate was 1.22%. This is compared to 1.13% of a similar cohort of vehicles that were retained in New South Wales (see Table 4.1). The corresponding risk ratio (R1/R4) is 1.08 (see Table 4.2). This result however is not statistically significant, as shown in Table 4.2 (95% Confidence interval 0.95 – 1.22).

4.1.6 Crash risk analysis - wrecked vehicle inspections

For vehicles that were transferred from New South Wales to South Australia as a wrecked vehicle transfer, 15.6% had a crash in New South Wales in the 12 months prior to being transferred. This is compared to 1.01% of a similar cohort of vehicles that were retained in New South Wales. The corresponding risk ratio (R2/R5) is 15.5, indicating that vehicles transferred to South Australia from New South Wales, that have undergone a wrecked vehicle inspection are not surprisingly 15.5 times more likely to have been involved in a crash in New South Wales prior to being transferred to South Australia, compared to vehicles retained in New South Wales. This result is statistically significant, as shown in Table 4.2 (95% Confidence interval 12.69 – 18.84), but is expected, given these vehicles are known to be wrecked vehicles.

Table 4.1
Summary table showing the crash rates for the various vehicle samples considered in the analysis

State	Vehicle Sample	Non-Crashed Vehicles	Crashed Vehicles	Total	Crash Rate	
SA	Interstate vehicle transfers from NSW	20,121	249	20,370	1.22%	R1
	Wrecked vehicles transfers from NSW	448	83	531	15.63%	R2
NSW	Vehicles retained in NSW (raw)	13,334,075	136,717	13,470,792	1.01%	R3
	Vehicles retained in NSW (ISV adjusted)	13,318,033	152,759	13,470,792	1.13%	R4
	Vehicles retained in NSW (MRD1 adjusted)	13,334,602	136,190	13,470,792	1.01%	R5

Table 4.2
Risk ratios R1/R4 and R2/R5 and the corresponding 95% confidence intervals

	Risk ratio	95% confidence intervals	
		Lower limit	Upper limit
R1/R4	1.08	0.95	1.22
R2/R5	15.46	12.69	18.84

4.2 Limitations of the analysis

There were several limitations with the data sets, particularly with respect to the origin of a vehicle. There was no direct method to determine the state of origin of the large number of vehicles considered in this analysis.

A fundamental assumption made in this study was that all vehicles transferred from New South Wales to South Australia were first registered in New South Wales, and the transfer was unique between the two jurisdictions. Any interim transfers of those vehicles cannot be accounted for, or identified with the data available.

Additionally, the date vehicles were transferred was assumed to be consistent with the inspection date flagged against a vehicle in the South Australian registered vehicle database. Also, passenger

vehicles that were transferred from New South Wales to South Australia under a 'same owner transfer' could not be identified unless they occurred prior to 2004.

Another limitation was that vehicles considered in the South Australian analysis have 'survived' from 2004 to 2013, and these are being compared to vehicles in New South Wales that are only known to have survived from 2004 to 2010. Specific case vehicle types were not compared with specific control vehicle types. Instead, vehicle build years were compared between case vehicles and control vehicles, allowing the largest case sample possible to be compared against the largest control sample.

For the crash analysis, the inspection date by day, month and year was used to examine the previous 12-month crash history in New South Wales of each vehicle. The expected distribution of crashes relative to the transfer date is likely to be between the calendar year of the transfer and the calendar year of the most recent crash. With the New South Wales data, the control year and crash year of interest are the same, which means that the comparison periods may be slightly offset.

There are some issues with the data sets being compared. Within the South Australian data, all interstate passenger vehicle transfers from New South Wales (with a build year) registered in South Australia were compared to the entire passenger vehicle fleet registered in New South Wales in 2004 that remained registered in New South Wales in 2010. This includes written-off vehicles in New South Wales, interstate transfers to New South Wales and renewed New South Wales registrations. Similarly, all vehicles flagged as written-off vehicles in South Australia that were in New South Wales in 2004 were also compared against all registered passenger vehicles in New South Wales in 2004.

It is not certain that the vehicles within the written-off cohort in South Australia were all written-off in New South Wales. All that is that known is that they were registered in New South Wales in 2004, they underwent a wrecked-vehicle inspection in South Australia, and 15.6% of those vehicles had a crash in New South Wales in the 12 months prior to being inspected in South Australia.

The remaining 84.4% could have been involved in some other 'event' in New South Wales or a crash or event in South Australia, although originating from New South Wales. For vehicles that were written-off in New South Wales and then transferred to South Australia, it would be expected that the prevailing crash rate would correspond to the proportion of vehicles that were written-off due to a crash in New South Wales compared to other written-off classification events in that State.

5 Discussion

The analysis undertaken in this report indicated that 1.7% (20,370 of 1,178,780) of passenger vehicles currently registered in South Australia could be identified as being originally registered in New South Wales in 2004. Of these passenger vehicles 1.2% were involved in a crash in the 12 months prior to the vehicle being transferred to South Australia. Within the total registered passenger fleet in South Australia this constitutes only 0.02% of all passenger vehicles. The analysis and results presented in this report indicate that, with respect to crash history, there is no significant difference between vehicles transferred from New South Wales to South Australia compared to vehicles that are retained in New South Wales.

The crash history for vehicles from New South Wales that underwent wrecked vehicle inspections however, indicate these vehicles were considerably more likely to have been involved in a crash prior to being transferred to South Australia. This result was not unexpected and is likely to be a diminishing issue, given the new written-off rules in New South Wales, where future written-off vehicles in New South Wales will no longer be re-registered in any jurisdiction (detailed in Appendix B). One concern with this is the implications for vehicles that would previously have been assessed as a total loss may now be considered borderline and may not be written-off. It may be worthwhile monitoring historical trends in vehicle collision insurance claims and trends in total loss claims post-implementation of the New South Wales written-off legislation.

6 Conclusion

The South Australian registered vehicle fleet appears to have a disproportionately high number of vehicles that originated from another jurisdiction of Australia, particularly from New South Wales. The South Australian registered passenger vehicle fleet was disaggregated to identify vehicles that were transferred from New South Wales and the crash rates of those vehicles in New South Wales were calculated. A similar group of vehicles that were retained in New South Wales were also disaggregated to determine crash rates.

It was found that two distinct types of vehicles were transferred from New South Wales to South Australia. The majority of those vehicles were simple vehicle transfers that were identified through an interstate vehicle inspection prior to being registered in South Australia. Fewer vehicle transfers were repaired write-off vehicles identified through a wrecked vehicle inspection prior to being registered in South Australia.

The crash rate for the majority of the New South Wales vehicle transfers was quite low, 1.22% compared to 1.13% for a similar group of vehicles retained in New South Wales. The difference in crash rates was not statistically significant.

For vehicles that were repaired write-offs from New South Wales, not surprisingly, the crash rates were considerably higher; 15.63% compared to 1.01% for a similar group of vehicles retained in New South Wales. These vehicles were 15.5 times more likely to have been involved in a crash in the 12 months prior to their transfer. However, in light of recent legislative changes in New South Wales (that is since February 2011, vehicles that might otherwise have been classified a 'repairable' write-off are now classified a 'statutory' write-off and are unable to be registered in any Australian jurisdiction) these particular vehicle transfers are unlikely to be a future problem.

This study indicates there is no evidence to suggest that vehicles transferred from New South Wales to South Australia are more likely to have been in a crash prior to being transferred, compared to a similar group of vehicles that remained registered in New South Wales.

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Appendix A – Vehicle entry to the South Australian registered fleet

In addition to annual registration renewals there are a number of mechanisms by which vehicles enter the South Australian registered vehicle fleet. Predominantly this occurs through registration of new vehicles sold in South Australia, followed by registration of vehicles transferred from interstate, re-registration of repaired write-off vehicles (either from within South Australia or from interstate) and from used vehicles imported from overseas. Vehicles exiting the registered vehicle fleet do so via annual vehicle attrition, i.e. non-registration renewals, interstate transfers out of South Australia and scrappage/retirement of vehicles.

While re-registration of already registered vehicles in South Australia is subject to an administrative renewal process, new registration or re-registration of vehicles not already registered in South Australia are subject to an identity inspection process. This process is documented in Langmair (2008) and summarised below (Government of South Australia, n.d; Langmair, 2008; Power, personal communication, September 23, 2013, and E. Langmair, personal communication, August 9, 2013).

Level One – Identity Inspections

These are conducted on brand new vehicles by the new vehicle dealerships only to confirm the identity of the new vehicle being sold.

Level Two – Identity Inspections

Tier 1 : A basic examination of a vehicle from interstate, conducted by an authorised person employed or affiliated with a licensed motor vehicle dealer, where the dealer is to sell the vehicle, guarantee title to the purchaser and it is to be registered in South Australia. DPTI checks the vehicle identifiers recorded by the authorised person against national databases for accuracy and to determine if the vehicle is stolen.

Tier 2 : A basic examination of a vehicle conducted by Vehicle Identity Assessment Station (VIDAS) assessors (Adelaide) or by South Australia Police (Country and Rural). This examination is for vehicles from interstate or overseas, where the details on an application to register do not match those on the national database or is a vehicle not previously registered in South Australia.

Tier 3 : A comprehensive examination of a vehicle recorded as written-off or where a vehicle's identity cannot be confirmed by a basic inspection, conducted only by (VIDAS) assessors. This inspection is undertaken to verify that components used to repair the vehicle are legitimate and not from a stolen vehicle.

Level Three – Roadworthy Inspections

Conducted state-wide by DPTI Vehicle Inspectors after undergoing a Level Two – Tier 3 assessment. This is a full roadworthy inspection required to ensure the vehicle is roadworthy – that is they comply with standard vehicle requirements including wheels and tyres, steering, brakes, seatbelts, lamps and reflectors, exhaust and emission controls, windscreens and wipers and vehicle body and chassis – before registration in South Australia will be granted (Government of South Australia, 2012).

The entry and exit of vehicles from the South Australia registered vehicle fleet is shown schematically in Figure A.1.

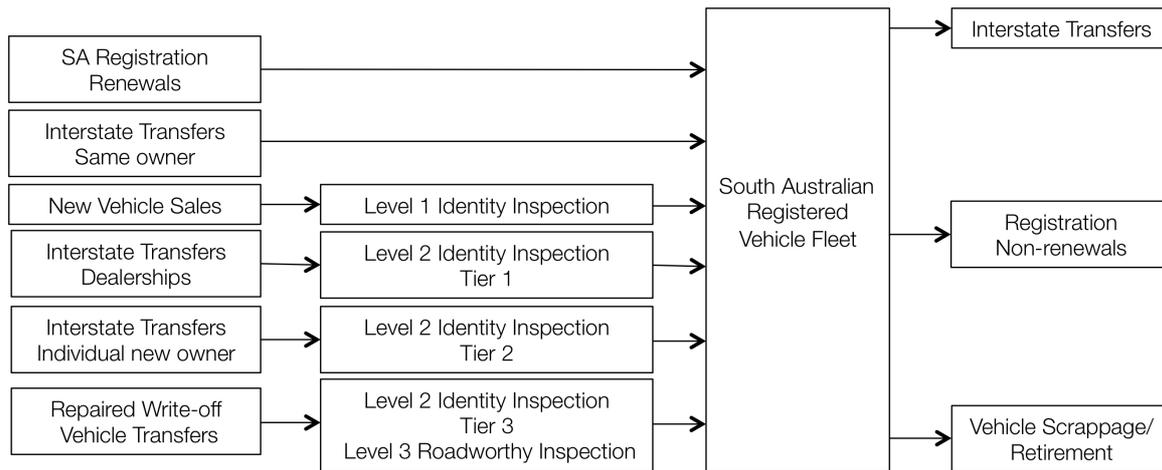


Figure A.1
Flow chart of vehicles entering and exiting the South Australia registered vehicle fleet

The number of vehicles entering the South Australia registered vehicle fleet in any year can be estimated by annual number of new vehicle sales, annual number of identity inspections and annual number of estimated attrition. Numbers of identity inspections by type, new car sales by financial year and vehicle attrition by ABS Motor Vehicle Census year in South Australia are shown in Table A.1.

It should be noted that legislation was introduced in September 2004 that removed the previous requirement for vehicles transferred from interstate by the owner of that vehicle ('same owner transfers' and in current registration) to undergo an identity inspection. Consequently, these vehicle transfers are not reflected in Table A.1, nor are the Tier 2 inspections conducted by South Australia Police.

According to E. Langmair (personal communication, August 9, 2013) the drop in the number of Tier 2 inspections in the first full financial year (2005/2006) since the legislation change was around 10,000. This indicates that potentially, only about two-thirds of the total annual number of interstate transfers are processed through South Australia's vehicle inspection process.

Table A.1
Numbers of identity inspections³ by type, new car sales⁴ and vehicle attrition⁵ in South Australia by year

Years	Tier 1	Tier 2 (interstate)	Tier 2 (overseas)	Tier 3	New Cars Sales	Total	Attrition
2006/2007	7435	23826	1001	1961	60752	94975	40073
2007/2008	8973	24250	1018	2345	64561	101147	45253
2008/2009	8828	23294	944	2274	59406	94746	43554
2009/2010	7231	25380	931	2847	66080	102469	36588
2010/2011	8031	22643	1024	3290	62836	97824	35204
2011/2012	7233	24866	1035	3146	65340	101620	-
2012/2013	7268	24993	1176	2934	70268	106639	-

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³ These inspections are as recorded by Vehicle Identity Assessment, Vehicle Engineering Services, The Department of Planning, Transport and Infrastructure (E. Langmair, personal communication, August 9, 2013) and may not reflect actual registration numbers of these vehicles.

⁴ New vehicle sales derived from ABS Cat 9314.0 Sales of New Motor Vehicles, Australia, and exclude motorcycles, plant and equipment and unpowered vehicles.

⁵ Estimated attrition from ABS Cat 9309.0 – Motor Vehicle Census, Australia, 31 March 2010, Sales of New Motor Vehicles, Australia (excluding motorcycles). According to ABS Cat 9309.0 – Motor Vehicle Census, Australia: "The attrition rate measures the number of registration lapses as a percentage of the total potential vehicle fleet, where the potential vehicle fleet is the number of registrations at the first MVC date plus the number of new motor vehicle sales between the two MVCs". The attrition details here are offset from the financial year data by three months.

Appendix B – Wrecked vehicle inspections – written-off vehicles

Registered vehicles that have been written-off, repaired, presented for identity inspection, undergone a roadworthy inspection and re-registered comprised 1.1% of the South Australian registered fleet and 1.4% of all South Australian registered passenger vehicles. This is compared to Hughes (G. Hughes, personal communication, 21 August 2013) who indicated that "... at any given time the percentage of all write-off vehicles is less than 1 per cent (usually around 0.6-0.8), including recorded statutory write-offs and repairable write-offs (both re-registered and not)".

It is important to define the terms 'statutory write-off' and 'repairable write-off' in the context of vehicles being re-registered in South Australia. According to the Motor Vehicle Regulations (2010) Part 7, 71, (2) : a repairable write-off means a motor vehicle that is written-off and is not a statutory write-off and a statutory write-off means a motor vehicle referred to as notifiable vehicle that meets the assessment criteria as a statutory write-off specified in the Technical Guide (The Technical Guide being Austroads, 2011).

Further, a notifiable vehicle is a written-off vehicle that is less than 15 years of age (determined from its date of manufacture) and is a motor vehicle (other than a motor bike or trailer) with a GVM not greater than 4.5 tonnes to which Australian Design Rules apply. According to the Technical Guide (Austroads, 2011, p3) "...any vehicle that has been determined to be a total loss by an insurer or other notifier (as specified by each individual jurisdiction) as a result of damage induced by a collision, fire, water inundation, other weather event, malicious action; or dismantling or stripping; must be classified to be either a statutory write-off (SWO) or repairable write-off (RWO)".

A total loss means a motor vehicle damaged by accident, collision, demolition, dismantling, fire, flood, trespass or other event to the extent that the fair salvage value, when added to the cost of repairing it for use on a road or road related area, would be more than fair market value immediately before the event that caused the damage (Motor Vehicle Regulations (2010) Part 7, 71, (2)).

A statutory write-off (SWO) is subject to a statutory restriction that it may be sold, but only to be used for parts or scrap metal (Austroads, 2011). Additionally, with respect to the South Australian Motor Vehicles Act (959 – 28.5.2012), "The Registrar may refuse to register a vehicle if – (i) does not comply with an Act or law that regulates the design, construction or maintenance of such a vehicle; or (ii) would, if driven on a road, put the safety of persons using the road at risk; A statutory write-off will not be re-registered again and the vehicle's identifiers and specific details about the damage to the vehicle are recorded on a written off vehicle register (WOVR) introduced nationally by all jurisdictions in 2004. (Department of Planning, Transport and Infrastructure, 2012).

A vehicle determined to be a total loss must be assessed against the eleven assessment criteria detailed in Austroads (2011) to determine its classification. The eleven criteria include three specific 'event' related criteria (being fire, water or vehicle stripping/dismantling). If the vehicle meets any of these criteria, it must be classified as a statutory write-off.

Additionally, eight separate areas of potential structural damage are to be reviewed, as specified in the Austroads (2011) guide. If the vehicle is assessed to have sustained any damage to any of the three identified structural areas and/or supplementary restraints it must be deemed a statutory write-off. The effective date of the Austroads (2011) criteria for South Australia was from September 2012 (G. Hughes, personal communication 27 November 2013).

Given that the current Austroads (2011) guide was only adopted in September 2012, vehicles assessed prior to this date were subject to the assessment criteria of the previous technical guide. According to the National Motor Vehicle Theft Reduction Council (National Motor Vehicle Theft

Reduction Council, 2010) the previously used guide was developed by the New South Wales Roads and Traffic Authority in the mid-1990s (based on vehicles of that era) and later adopted by the National Motor Vehicle Theft Reduction Council and other jurisdictions as part of a national criteria (Richardson et al., 2012). It is purported that the improvements in vehicle design, crashworthiness, manufacturing techniques and materials in vehicle construction have changed considerably since this time and hence the necessity to revise the criteria from the previous guide to the current one.

According to the National Motor Vehicle Theft Reduction Council (2012, p. 2) “The fundamental premise which underpins the revised criteria is that the classification decision requires greater application of engineering principles to ensure that vehicles which should not be repaired on safety grounds are appropriately identified and classified as only suitable for parts or as scrap”.

A repairable write-off is a vehicle that has been deemed economically repairable and the vehicle is not a statutory write-off (Department of Planning, Transport and Infrastructure, 2012). These vehicles are also recorded on the WOVN and are subject to the inspection requirements detailed above, with evidence via a repair diary (Department of Planning, Transport and Infrastructure, 2012a), proving the vehicle has been repaired adequately and with legitimate parts (Department of Planning, Transport and Infrastructure, 2012).

Written-off vehicle characteristics

As mentioned earlier, at least 1.4% of the South Australian passenger vehicle fleet comprises of repaired RWO vehicles, or almost three passenger vehicles registered out of every 200 registered passenger vehicles. A study commissioned by the National Motor Vehicle Theft Reduction Council (National Motor Vehicle Theft Reduction Council, 2010) prior to the introduction of the revised Austroads (2011) technical guide found that 30% of vehicles assessed under the previous technical criteria as a repairable write-off would be deemed a statutory write-off under the Austroads (2011) criteria (National Motor Vehicle Theft Reduction Council, 2010). Given that a majority of the currently registered RWO passenger vehicles in South Australia would have been assessed under the previous technical criteria, it would suggest that almost one in every 200 passenger vehicles on South Australian roads would be deemed a statutory write-off under the current Austroads (2011) criteria and would not have been able to be re-registered; this is perhaps more relevant for vehicles post mid-1990s.

The South Australian Motor Vehicle Regulations (2010) Part 7, 71, (2), also recognise interstate written-off vehicles as those deemed written-off in the corresponding jurisdiction and recorded on the jurisdictional WOVN. Table B.1 shows the number of repairable write-offs (RWOs) registered in South Australia in 2006 (National Motor Vehicle Theft Reduction Council, 2010) and the corresponding jurisdiction where they were assessed as a RWO. Also shown is the number of RWOs inspected at DPTI and the corresponding jurisdiction where they were assessed as RWOs in the 2012/2013 financial period (E. Langmair, personal communication, August 9, 2013).

Table B.1 indicates that while most of the RWOs re-registered in South Australia are of South Australian origin, in 2006, RWOs from New South Wales made up 14.9% of RWOs registered in South Australia compared to 1.3% in 2012/2013 period. This is compared to RWOs from Victoria that made up only 3.3% of RWOs in South Australia in 2006, but in 2013/2014 made up 26% of RWOs.

Table B.1
 Repairable write-offs in South Australia by reporting jurisdiction
 (National Motor Vehicle Theft Reduction Council, 2010; E. Langmair, personal communication, August 9, 2013)

	Jurisdiction reporting repairable write-off								Total
	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	
RWOs registered in SA 2006	1	176	8	9	945	0	39	7	1185
RWOs pre-registration inspections SA 2012/2013	22	38	44	105	1887	5	764	69	2934

Table B.1 is interesting for a few reasons. It indicates that re-registered⁶ RWOs in South Australia have tripled since 2006 and RWOs from New South Wales have dropped considerably since 2006.

The drop in RWOs from New South Wales is explained by changes to the New South Wales write-off rules. Since 1 February 2011 all New South Wales vehicles added to the written-off vehicle register (WOVR) are now classed as statutory (non-repairable) write-offs (Transport, Roads and Maritime Services, 2012, Transport; Roads and Maritime Services, 2012a). Repairable write-offs registered on the WOVR that were registered on or before 1 February 2011 could have been re-registered in New South Wales from that date for the life of the vehicle, providing inspection and registration requirements were met. From 1 August 2011, these vehicles cannot be re-registered unless repairs are certified by a New South Wales Fair Trading licensed repairer and the vehicle passes two inspections (Transport, Roads and Maritime Services, 2012).

Written-off vehicles not repaired and registered before 31 January 2013 will have had their status changed to a statutory written-off vehicle on the WOVR. From 1 February 2013, all RWO vehicles will have their status changed to statutory write-off if they have not been registered in the interim (Transport, Roads and Maritime Services, 2012).

Interstate repairable write-offs; if the vehicle was registered on an interstate WOVR on or before 31 January 2011 the vehicle can be repaired and registered in New South Wales providing it meets the New South Wales registration requirements. If the vehicle was recorded as a repairable write-off on the interstate WOVR after the 31 January 2011, the vehicle must be repaired and registered in that state before applying for registration in New South Wales (Transport, Roads and Maritime Services, 2012).

Increases in the number of RWOs on register is also evident in Figure B.1, which shows the 16,201 RWOs (of 16,747 total passenger RWOs), with a recorded wrecked vehicle inspection date that are registered in South Australia (as of 24 August 2013) based on when it was inspected (pre-registration) - essentially the RWOs that have 'survived' since being first re-registered since being written-off.

⁶ This assumes that most, if not all, pre-registration inspections result in a vehicle being registered in South Australia.

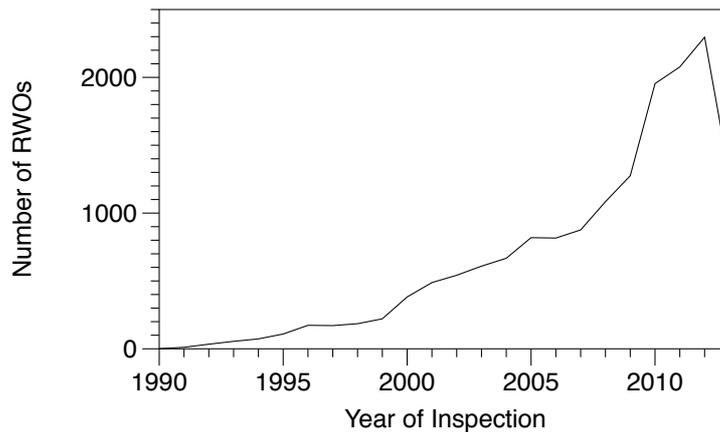


Figure B.1
Number of RWOs currently registered in South Australia,
by year of inspection (2013 data is incomplete due to snapshot period)

The reason for the significant increase in RWOs on registers could be due to a number of factors:

- Increased number of weather and catastrophe events⁷ in recent times; for example floods and severe hailstorms in New South Wales in 2007 and 2008; in 2006 39,500 vehicles were written off in New South Wales, in 2007 this increased to more than 50,000 due to the weather events (New South Wales Government, 2009).
- Increased costs of repair, for example see NRMA (2012), costs of repairs from a minor impact ranged from 14.3% to 70.8% of original purchase price.

An interesting outcome of this study found that 1.4% of the current South Australian passenger vehicle fleet comprised of RWO vehicles and it appears this number is increasing. If the vehicles assessed as RWOs historically are consistent with the National Motor Vehicle Theft Reduction Council study (National Motor Vehicle Theft Reduction Council, 2010) that found 30% of vehicles assessed under the previous technical criteria as a repairable write-off would be deemed a statutory write-off under the Austroads (2011) criteria, this would suggest that perhaps 0.42% of the registered passenger vehicles would likely be considered a statutory write-off under the current criteria. Additionally it may be expected that due to the new assessment criteria, fewer vehicles in the future will be assessed as repairable write-offs, so the number may decrease.

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⁷ According to the Insurance Council of Australia (2013), half of the 10 Largest Catastrophe Events in Australia have occurred since 1989. In terms of ranking the 1999 New South Wales hailstorm ranked (1), New South Wales earthquakes 2010/2011 ranked (2), 2010/2011 Queensland floods ranked (5), 2007 New South Wales severe storms ranked (8) and 2011 Queensland 'cyclone Yasi' ranked (10).

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Appendix C – Disaggregated results

Table C.1

Interstate vehicle inspections: Number of vehicles transferred (n), number of crashes (Cr) 12 months prior to transfer to South Australia and corresponding crash rate (R%) of those vehicles of build year N

	Transfer Year																	
	2005			2006			2007			2008			2009			2010		
N	n	Cr	R %	n	Cr	R %	n	Cr	R %	n	Cr	R %	n	Cr	R %	n	Cr	R %
1989	33		0.00	19		0.00	17		0.00	13		0.00	18		0.00	12		0.00
1990	35		0.00	46		0.00	35		0.00	14		0.00	14		0.00	23		0.00
1991	50	1	2.00	52	1	1.92	31		0.00	28		0.00	18	1	5.56	33		0.00
1992	69	1	1.45	69	1	1.45	42		0.00	33		0.00	33		0.00	31		0.00
1993	93		0.00	70		0.00	57	1	1.75	53		0.00	42	2	4.76	42	1	2.38
1994	127	2	1.57	119	3	2.52	85		0.00	63		0.00	52		0.00	70		0.00
1995	192	2	1.04	137	1	0.73	126		0.00	63		0.00	78	2	2.56	83		0.00
1996	167	1	0.60	152	2	1.32	133	3	2.26	85	1	1.18	83		0.00	91		0.00
1997	244	1	0.41	224	4	1.79	207	1	0.48	135	2	1.48	136	2	1.47	133	1	0.75
1998	340	4	1.18	347	3	0.86	267	8	3.00	186	4	2.15	223		0.00	180	2	1.11
1999	338	3	0.89	350	1	0.29	319	4	1.25	225		0.00	197	2	1.02	218	1	0.46
2000	373	2	0.54	365	10	2.74	389	4	1.03	277	1	0.36	229	3	1.31	275	4	1.45
2001	519	6	1.16	475	8	1.68	475	7	1.47	307	7	2.28	304	5	1.64	297		0.00
2002	519	8	1.54	650	8	1.23	599	13	2.17	389	5	1.29	366	4	1.09	369	3	0.81
2003	399	6	1.50	648	7	1.08	718	11	1.53	431	4	0.93	370	5	1.35	394	9	2.28
2004	415	4	0.96	701	12	1.71	594	13	2.19	466	3	0.64	402	5	1.24	355	3	0.85
Totals	3,913	41	1.05	4,424	61	1.38	4,094	65	1.59	2,768	27	0.98	2,565	31	1.21	2,606	24	0.92

Table C.2

Wrecked vehicle inspections : Number of vehicles transferred (n), number of crashes (Cr) 12 months prior to transfer to South Australia and corresponding crash rate (R%) of those vehicles of build year N

VehicleYear	Transfer Year																	
	2005			2006			2007			2008			2009			2010		
	No.	Cr	R %	No.	Cr	R %	No.	Cr	R %	No.	Cr	R %	No.	Cr	R %	No.	Cr	R %
1989				1		0.0												
1990																		
1991																		
1992				2		0.0										2		0.0
1993				3	1	33.3	3		0.0	1		0.0	2		0.0	1		0.0
1994				2		0.0	2		0.0	6		0.0	3		0.0	2		0.0
1995	4	1	25.0	7	1	14.3	2		0.0	5		0.0	4		0.0	8		0.0
1996	4		0.0	4		0.0	6		0.0	6	1	16.7	3		0.0	6		0.0
1997	5	2	40.0	2	2	100.0	13	3	23.1	13	3	23.1	7		0.0	4		0.0
1998	3	2	66.7	5		0.0	7		0.0	11		0.0	6	1	16.7	12	3	25.0
1999	2	1	50.0	3	2	66.7	8		0.0	8	2	25.0	11		0.0	10	2	20.0
2000				6	2	33.3	10	2	20.0	13	2	15.4	20	3	15.0	18	2	11.1
2001				7	3	42.9	8	2	25.0	15	2	13.3	9	1	11.1	13		0.0
2002	2	1	50.0	2	1	50.0	14	3	21.4	11	1	9.1	23	5	21.7	18	2	11.1
2003	2		0.0	5	3	60.0	9	1	11.1	15	2	13.3	14	1	7.1	26	3	11.5
2004	3	2	66.7	9	4	44.4	7	2	28.6	10	3	30.0	8	2	25.0	15	1	6.7
Totals	25	9	36.0	58	19	32.8	89	13	14.6	114	16	14.0	110	13	11.8	135	13	9.6

Table C.3

Vehicles retained in New South Wales: Number of vehicles (n), number of crashes (Cr) in the same registration (control) year and corresponding crash rate (R%) of those vehicles of build year N

N	n	NSW Control Year											
		2005		2006		2007		2008		2009		2010	
		Cr	R %	Cr	R %	Cr	R %	Cr	R %	Cr	R %	Cr	R %
1989	44,006	292	0.66	237	0.54	208	0.47	164	0.37	185	0.42	223	0.51
1990	58,215	383	0.66	353	0.61	324	0.56	277	0.48	222	0.38	271	0.47
1991	60,227	482	0.80	399	0.66	333	0.55	278	0.46	311	0.52	332	0.55
1992	70,872	614	0.87	558	0.79	456	0.64	380	0.54	368	0.52	430	0.61
1993	81,098	777	0.96	692	0.85	633	0.78	497	0.61	452	0.56	507	0.63
1994	105,819	1113	1.05	1003	0.95	902	0.85	660	0.62	601	0.57	677	0.64
1995	117,592	1248	1.06	1121	0.95	988	0.84	816	0.69	723	0.61	783	0.67
1996	123,439	1421	1.15	1293	1.05	1176	0.95	917	0.74	839	0.68	794	0.64
1997	155,066	1892	1.22	1801	1.16	1536	0.99	1337	0.86	1195	0.77	1093	0.70
1998	191,038	2504	1.31	2377	1.24	2172	1.14	1811	0.95	1623	0.85	1510	0.79
1999	189,272	2469	1.30	2333	1.23	2141	1.13	1848	0.98	1722	0.91	1509	0.80
2000	204,536	2752	1.35	2734	1.34	2485	1.21	1993	0.97	1946	0.95	1832	0.90
2001	195,922	2769	1.41	2658	1.36	2503	1.28	2055	1.05	1922	0.98	1645	0.84
2002	211,402	3042	1.44	2953	1.40	2682	1.27	2355	1.11	2169	1.03	1976	0.93
2003	230,758	3323	1.44	3168	1.37	3125	1.35	2740	1.19	2516	1.09	2254	0.98
2004	205,870	3052	1.48	2765	1.34	2738	1.33	2503	1.22	2366	1.15	2110	1.02
Totals	2,245,132	28,133	1.25	26,445	1.18	24,402	1.09	20,631	0.92	19,160	0.85	17,946	0.80

Table C.4

The proportion (W) of vehicles of a specific vehicle year (1989 to 2004) corresponding to interstate vehicle inspections (2005 to 2010) and the corresponding (ISV) adjusted crash rate (WR) for vehicles retained in New South Wales

Vehicle Year	2005		2006		2007		2008		2009		2010	
	W	WR										
1989	0.002	0.001	0.001	0.001	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000
1990	0.002	0.001	0.002	0.001	0.002	0.001	0.001	0.000	0.001	0.000	0.001	0.001
1991	0.002	0.002	0.003	0.002	0.002	0.001	0.001	0.001	0.002	0.001	0.002	0.001
1992	0.003	0.003	0.003	0.003	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001
1993	0.005	0.004	0.003	0.003	0.003	0.002	0.003	0.002	0.002	0.001	0.002	0.001
1994	0.006	0.007	0.006	0.006	0.004	0.004	0.003	0.002	0.003	0.002	0.003	0.002
1995	0.009	0.010	0.007	0.006	0.006	0.005	0.003	0.002	0.004	0.003	0.004	0.003
1996	0.008	0.009	0.007	0.008	0.007	0.006	0.004	0.003	0.004	0.003	0.004	0.003
1997	0.012	0.015	0.011	0.013	0.010	0.010	0.007	0.006	0.007	0.005	0.007	0.005
1998	0.017	0.022	0.017	0.021	0.013	0.015	0.009	0.009	0.009	0.008	0.009	0.007
1999	0.017	0.022	0.017	0.021	0.016	0.018	0.011	0.011	0.011	0.010	0.011	0.009
2000	0.018	0.025	0.018	0.024	0.019	0.023	0.014	0.013	0.014	0.013	0.014	0.012
2001	0.025	0.036	0.023	0.032	0.023	0.030	0.015	0.016	0.015	0.014	0.015	0.012
2002	0.025	0.037	0.032	0.045	0.029	0.037	0.019	0.021	0.018	0.019	0.018	0.017
2003	0.020	0.028	0.032	0.044	0.035	0.048	0.021	0.025	0.019	0.021	0.019	0.019
2004	0.020	0.030	0.034	0.046	0.029	0.039	0.023	0.028	0.017	0.020	0.017	0.018

Table C.5

The proportion (W) of vehicles of a specific vehicle year (1989 to 2004) corresponding to wrecked vehicle inspections (2005 to 2010) and corresponding (MRD1) adjusted crash rate (WR) for vehicles retained in New South Wales.

Vehicle Year	2005		2006		2007		2008		2009		2010	
	W	WR										
1989	0.000	0.000	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1990	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1991	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1992	0.000	0.000	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.002
1993	0.000	0.000	0.006	0.005	0.006	0.004	0.002	0.001	0.004	0.002	0.002	0.001
1994	0.000	0.000	0.004	0.004	0.004	0.003	0.011	0.007	0.006	0.003	0.004	0.002
1995	0.008	0.008	0.013	0.013	0.004	0.003	0.009	0.007	0.008	0.005	0.015	0.010
1996	0.008	0.009	0.008	0.008	0.011	0.011	0.011	0.008	0.006	0.004	0.011	0.007
1997	0.009	0.011	0.004	0.004	0.024	0.024	0.024	0.021	0.013	0.010	0.008	0.005
1998	0.006	0.007	0.009	0.012	0.013	0.015	0.021	0.020	0.011	0.010	0.023	0.018
1999	0.004	0.005	0.006	0.007	0.015	0.017	0.015	0.015	0.021	0.019	0.019	0.015
2000	0.000	0.000	0.011	0.015	0.019	0.023	0.024	0.024	0.038	0.036	0.034	0.030
2001	0.000	0.000	0.013	0.018	0.015	0.019	0.028	0.030	0.017	0.017	0.024	0.021
2002	0.004	0.005	0.004	0.005	0.026	0.033	0.021	0.023	0.043	0.044	0.034	0.032
2003	0.004	0.005	0.009	0.013	0.017	0.023	0.028	0.034	0.026	0.029	0.049	0.048
2004	0.006	0.008	0.017	0.023	0.013	0.018	0.019	0.023	0.015	0.017	0.028	0.029