Vehicles driven by young drivers, and features important to parents: New Zealand Drivers Study.

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ABSTRACT

Aim:

To describe the vehicles driven by young learner drivers and identify features parents' considered important.

Methods:

This study was part of the New Zealand Drivers Study (NZDS), an ongoing prospective cohort study of 3992 newly licensed car drivers. As part of this study, 1200 parents (of drivers aged 15-17 years when licensed) reported on the main vehicle driven by their child during the learner licence stage, their child's access to the vehicle, and factors that influenced their decisions regarding vehicle choice.

Results:

Half of young drivers drove light or small model cars. The majority (64%) were at least 10 years old. In most cases (76%) the vehicles were already owned by the parents, with small vehicle and engine size the most important features for selecting the vehicle. Vehicle safety features were considered important by 19% of parents. One quarter of parents considered their child to be the vehicle owner. These vehicles were more likely to be light or small (74%), older model cars (87% 10 years or older) with less insurance cover (49% full insurance), compared to vehicles which were not considered the child's.

Conclusion:

Most young drivers were driving vehicles which provide poor crash protection and adolescent vehicle owners were driving the least safe vehicles. Ensuring adolescents drive safer vehicles and limiting access are ways parents can reduce adolescent injury and crash risk. Opportunities exist to better inform parents on what factors are important to consider when making decisions about the vehicle their child will drive, especially if they are purchasing a vehicle.

Keywords
Vehicles, Young drivers, Parents

Introduction

Within Western society gaining a drivers licence is one of the most significant transition points towards independence in adolescence. This event is often viewed as a rite of passage on the path to adulthood (Arnett, Irwin, & Halpern-Felsher, 2002). In New Zealand all drivers are licensed through the graduated driver licensing system (GDLS). Under this system adolescents can obtain a learner licence from 15 years[1], all their driving during this stage is required to be supervised and the learner licence must be held for a minimum of six months. This is followed by a restricted licence stage which allows unsupervised driving except at night (10pm-5am), or when carrying passengers. A restricted licence must be held for at least 12 months (if an approved course is completed) or 18 months before drivers can graduate to a full privilege driver's licence. Drivers are required to pass driving tests to progress from learner to restricted, and then from restricted to full licensure (Begg & Stephenson, 2003). Despite substantial improvements in young driver crash rates, which are largely attributable to GDLS reducing exposure to risky driving situations and delaying licensure, young people remain significantly over-represented in the motor vehicle crash statistics in New Zealand (International Road Traffic Accident Database, 2009). The balance between giving adolescents independence, via mobility, and keeping them safe is one that most parents are mindful of.

Ensuring adolescents drive safe vehicles is a potential way parents can reduce adolescent injury risk in crashes. Vehicles which are larger or heavier provide increased crash protection, and have reduced fatality rates compared with smaller models (Insurance Institute for Highway Safety, 2007). Similarly, in comparison to older vehicles, newer vehicles reduce injury risk to occupants (Blows, et al., 2003), which may be explained by features which offer additional crash worthiness and crash avoidance capabilities such as airbags, side intrusion bars, and electronic stability control. Survey evidence from the United States indicates that vehicles driven by adolescents are typically smaller and older models (Cammisa, Williams, & Leaf, 1999; Hellinga, McCartt, & Haire, 2007; Williams, Leaf, Simons-Morton, & Hartos, 2006) and adolescents who own the vehicle or have primary access to the vehicle drive the least safe vehicles (Cammisa, et al., 1999; Williams, et al., 2006). The majority of adolescents drive existing family vehicles and parents' most often report accessibility, small vehicle size, transmission and manoeuvrability as important factors in their decisions regarding vehicle choice. Features which would provide greater occupant protection, such as large vehicle size or newer model, are not leading factors parents report considering (Cammisa, et al., 1999; Rivara, Rivara, & Bartol, 1998).

Asides from studies based on adolescents in the United Sates there is no published work from other countries on the vehicles driven by adolescents, nor parents' decisions regarding these vehicles and access. The aims of this present study were to describe the vehicles driven by young learner drivers in New Zealand, and identify vehicle features their parents considered important. The New Zealand driving fleet is

[1] As of 1st August, 2011 the minimum driver licensing age in New Zealand will be 16 years.

substantially older than the fleets of other highly motorised countries, mainly due to an influx of used overseas imports (Ministry of Transport, 2009). An examination of the crashworthiness of vehicles involved in reported crashes in Australasia found New Zealand to have the poorest performing fleet (Keall & Newstead, 2011). Given the age of the New Zealand fleet there is the potential that young drivers may enter the most dangerous stage of being a novice driver - driving unsupervised - driving cars which provide inferior crash protection.

Method

This research was part of a longitudinal study, the New Zealand Drivers Study (NZDS), which is following a cohort of 3992 newly licensed car drivers. The NZDS cohort was recruited between 1st February 2006 and 31st January, 2008 from driver licensing agencies and licensing courses throughout New Zealand, when potential participants passed their car learner licence theory test (Class 1L Licence). At this stage participants completed a self-administered baseline questionnaire. The follow-up telephone interviews are aligned with the licensing stages of the GDLS, with the first taking place at the restricted licence stage (Class 1R licence) and the second follow-up telephone interview taking place at the full licence stage (Class 1F licence). After full licensure, ongoing follow-up continues through national databases that monitor motor vehicle related crashes, infringements, convictions and hospitalisations.

This research relates to interviews with parents of NZDS young drivers, aged 15 - 17 years at the learner licence stage, who passed their restricted licence stage test by 1st August, 2008 and completed their first follow-up interview. In total 1405 young drivers met these eligibility criteria and their parents were invited to participate. Of these, 1200 parents (85%) completed the parent interview. Young driver and parent socio-demographic characteristics are shown in table 1.

Data Collection

Contact details for parents were obtained from all eligible young drivers at the end of their first follow-up telephone interview (restricted licence stage). Initial contact with parents was made by a personal letter to the parent informing them about the study, and inviting their participation. This letter was followed by a computer assisted telephone interview for those parents who agreed to participate. In situations where two parents were available to be interviewed the parent whom the young driver deemed their main supervisor was the first preference. If this parent refused then the second parent was invited to take part. The parent interview gathered the following measures: parent demographics, knowledge and attitudes towards the licensing system and road safety, experience with learner licence stage, expectations for restricted licence stage, parents' traffic infringements, crashes and risky driving behaviours. To help ensure confidentiality for both the parents and the young drivers, their respective interviews were conducted by different trained interviewers.

Table 1.
Young driver and parent socio-demographic characteristics.

Characteristics		N	%
Young Driver Gender			
	Females	523	(43.6)
	Males	677	(56.4)
Place of Residence			
	Main Urban Area	1013	(84.4)
	Other	187	(15.6)
Deprivation (NZDep2006)			
1 to 3	Least Deprived	612	(51.0)
4 to 7		428	(35.7)
8 to 10	Most Deprived	160	(13.3)
Parent Gender			
	Mothers	773	(64.4)
	Fathers	427	(35.6)
Parent Occupation (ANZSCO, 1st Edition)			
	Managers	213	(17.8)
	Professionals	343	(28.6)
	Technicians and Trades Workers	111	(9.3)
	Community and Personal Service Workers	85	(7.1)
	Clerical and Administrative Workers	218	(18.2)
	Sales Workers	54	(4.5)
	Machinery Operators and Drivers	30	(2.5)
	Labourers	40	(3.3)
	Other (homemaker, retired, student, beneficiary)	106	(8.8)
Parent Highest Qualification			
	No Qualification	79	(6.6)
	Secondary School Qualification	375	(31.3)
	Tertiary Diploma	170	(14.2)
	Tertiary Degree	522	(43.5)
	Post Graduate Qualification	54	(4.5)

Measures

Parents were asked a series of questions regarding the main vehicle their child drove as a learner driver.

Vehicle Type and Age

Parents reported on the make, model, engine size and year of manufacture for the vehicle their child drove the most while they had a learner licence. This information was used to determine *vehicle age* and *vehicle type.* Vehicle type was classified according

to the vehicle type categories in the "Buyers Guide to Used Car Safety Ratings, 2009" (NZ Transport Agency, 2009). Table 2 shows the categories and example vehicles.

Table 2.
NZTA "Buyer guide to used car safety ratings" vehicle type categories and examples of vehicles in each category.

Vehicle Type Classifications	***Example***
Light car	Honda Jazz
Small car	Ford Focus
Medium car	Holden Vectra
Large car	Holden Commodore
People mover	Honda Odyssey
Commercial vehicle -van	Ford Transit
Commercial vehicle -ute	Holden Commodore Ute
Compact 4-wheel drives	Holden Cruze
Medium 4-wheel drives	Ford Territory
Large 4-wheel drives	Toyota Landcruiser

Insurance Cover

Parents reported the level of *insurance cover* the vehicle had. Insurance cover options were: "no insurance", "third party only", "third party fire and theft cover", "full insurance cover".

Purchase Status and Key Features

Parents reported on whether the vehicle was one they already owned (*existing vehicle*) or a vehicle purchased for the newly licensed driver (new or used). Parents also reported the most important features that made them decide their child would use this car. This question was an open-ended format and parents were given the prompt "anything else?".

Vehicle Ownership

Parents were asked 1. "Who did this vehicle belong to?" to, and 2. "Is this vehicle considered to be your child's car?". If parents reported that the vehicle belonged to the child or they considered the vehicle to be their child's then the young driver was deemed to have primary access and was coded as the *vehicle owner*.

Statistical Analysis

All analyses were conducted in SAS. Chi Square analyses were used to determine the statistical significance of differences in vehicle type, age and insurance by purchase status and ownership.

Results

Table 3 details the characteristics of the main vehicle driven by the young drivers during the learner licence stage. The majority of adolescents drove cars (78%) as opposed to 4-wheel drives or larger vehicles (Utes, People Movers). Small model cars were the predominant type of vehicle driven, with medium model cars the next most common sized vehicle driven. The majority of the vehicles were older models with two thirds at least 10 years old (mean 12.5 years, median 12 years, range 0-38 years). Almost three quarters of the vehicles were fully insured.

Table 3.
Vehicle type, age and insurance cover for the main vehicle driven by the young driver during the learner licence stage.

	N	%
Vehicle Type		
Light car	113	(9)
Small car	487	(41)
Medium car	283	(24)
Large car	55	(5)
Van, ute or people mover	114	(10)
4-wheel drives	85	(7)
Unclassifiable	63	(5)
Vehicle Age		
0 - 4 years	116	(10)
5 - 9 years	209	(17)
10 -14 years	389	(32)
≥ 15 years	380	(32)
Don't know	106	(9)
Vehicle Insurance		
Full cover	878	(73)
Third party, fire and theft	85	(7)
Third party only	169	(14)
No insurance	42	(4)

In most cases (76%) vehicles were already owned by the family. Vehicle that were purchased, either by parents or the child, were small or light vehicle types and older models, compared to existing vehicles. Newly purchased vehicles also had less insurance cover compared with existing family vehicles (table 4).

Table 4.
Age, type and insurance cover of newly purchased and existing vehicles.

	Newly Purchased Vehicle (22%)		*Existing Vehicle* (76%)		χ^2	*P* value
Vehicle Type	n	%	n	%		
Light or small car	203	(80)	388	(45)	103.36	<0.0001
Medium or large car	42	(17)	294	(34)	(df=3)	
Van, ute or people mover	4	(2)	110	(13)		
4-wheel drives	5	(2)	79	(9)		
Vehicle Age						
0 - 4 years	9	(4)	106	(12)	43.12	<0.0001
5 - 9 years	29	(12)	179	(21)	(df=3)	
10 -14 years	78	(33)	309	(36)		
≥ 15 years	120	(51)	259	(30)		
Vehicle Insurance						
Full cover	123	(47)	749	(83)	142.20	<0.0001
Third party, fire and theft	46	(18)	39	(4)	(df=3)	
Third party only	74	(28)	94	(10)		
No insurance	19	(7)	22	(2)		

In terms of vehicle features parents considered most important 22% of parents reported availability (only vehicle available). For the remainder of parents (n=938) small vehicle or small engine size and transmission type were the most often reported features (table 5).

Table 5.
Vehicle features parents considered to be the most important.

	N	%
Most important features ***(multiple responses possible)***		
Only car available	262	(22)
	(n= 938)	
Small vehicle/engine size	587	(63)
Manual vehicle	363	(39)
Automatic vehicle	236	(25)
Safety features/Airbags/ABS	179	(19)
Economic cost/price	174	(19)

One quarter of parents considered that their child was the vehicle owner. These vehicles were more likely to be light or small sized, older model cars and have less insurance cover, compared to vehicles which were not considered the young drivers (table 6).

Table 6.
Age, type and insurance cover of vehicles parents considered their child's (owner).

	Primary access -vehicle considered child's car					
	Yes (25%)		No (75%)		χ^2	*P* value
Vehicle Type	n	%	n	%		
Light or small car	216	(74)	384	(46)	78.33	<0.0001
Medium or large car	63	(22)	275	(33)	(df=3)	
Van, ute or people mover	8	(3)	106	(13)		
4-wheel drives	6	(2)	79	(9)		
Vehicle Age						
0 - 4 years	9	(3)	107	(13)	79.55	<0.0001
5 - 9 years	27	(10)	182	(22)	(df=3)	
10 -14 years	88	(32)	301	(37)		
≥ 15 years	151	(55)	229	(28)		
Vehicle Insurance						
Full cover	148	(49)	730	(84)	144.64	<0.0001
Third party, fire and theft	52	(17)	33	(4)	(df=3)	
Third party only	81	(27)	88	(10)		
No insurance	19	(6)	23	(3)		

Discussion

The current study provides evidence from a large sample of parents of learner drivers on what vehicles adolescents are driving in New Zealand and what factors influence parents' decisions regarding these vehicles. Although the young drivers included in this study are not a random sample of the newly licensed driving population, or the youth population, of New Zealand, the socio-demographic characteristics of the young drivers and parents in this study (see Table 1) show that they represent a wide cross section of New Zealanders. Families came from all levels of the socioeconomic spectrum, and there was a reasonable representation from rural and urban residential locations. Parents were employed in a diverse range of occupations and had broad educational backgrounds. When compared with all newly licensed drivers aged 15-17 years in New Zealand over the 2 years of recruitment, the gender distribution of this study population was similar (44% female in study population, vs 47% female in newly licensed driver population). The results presented here, therefore, should represent the

experiences of a substantial proportion of young newly licensed drivers and their parents in New Zealand.

In this study half of adolescents were driving vehicles that were small or light sized models (e.g., Toyota Corolla, Honda Civic) and another quarter were driving medium sized cars (e.g., Toyota Celica, Honda Accord). Two thirds of the vehicles were at least 10 years old, with vehicles 12½ years old on average. This finding is not surprising given the older age of the NZ passenger fleet. In 2008 the average age of the NZ passenger fleet was 12.2 years, by comparison the average vehicle age in the United States was 9.2 years, and 9.9 years in Australia (Ministry of Transport, 2009).

Almost one quarter of parents indicated that they had no choice in what factors were most important when deciding what their child would drive as the vehicle used was the only one available. For the remaining parents the features they considered most important related to small engine and small car size, followed by transmission type. Only one fifth of parents reported considering safety factors. These findings are in line with evidence from the United States (Cammisa, et al., 1999; Rivara, et al., 1998). While the majority of vehicles were existing family vehicles, those that were purchased were less safe. Purchased vehicles were smaller and older models and had less insurance cover compared to existing family vehicles. For families who purchase a vehicle the opportunity exists to improve their vehicle choice, by encouraging parents to consider safety features when purchasing a vehicle for their adolescent to drive.

The vehicles that adolescents in this study owned were the least safe vehicles: they were smaller, older models, compared to vehicles that weren't considered the adolescents. A growing body of evidence indicates that adolescents who own or have primary access to a vehicle experience more adverse driving outcomes, such as risky driving, infringements and crashes, compared to adolescents who share a vehicle (Cammisa, et al., 1999; Garcia-Espana, Ginsburg, Durbin, Elliott, & Winston, 2009; Klauer, et al., 2011; Williams, et al., 2006). The next stage with this longitudinal research is to examine the association between vehicle type and access with adverse outcomes of risky driving, crashes and infringements.

Conclusion

Ensuring adolescents drive safer vehicles and limiting access are ways parents can reduce adolescent injury and crash risk. Opportunities exist to better inform parents on what factors are important to consider when making decisions about the vehicle their child will drive, especially if they are purchasing a vehicle or if their child will have primary access to it.

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