Submission

No 29

DRIVER AND ROAD USER DISTRACTION

Organisation: NSW Government

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NSW GOVERNMENT | Premier & Cabinet

Mr Greg Aplin MP
Chair
Staysafe (Joint Standing Committee on Road Safety)
Parliament House
Macquarie Street
SYDNEY NSW 2000

Dear Mr Aplin

I refer to the NSW Parliamentary Joint Standing Committee on Road Safety (Staysafe) Inquiry into Driver and Road User Distraction.

Please find attached a NSW Government submission.

Should you require further information, please contact [redacted] on [redacted]

Yours sincerely

[redacted]
Chris Eccles
Director General

Submission by

NSW Government

in response to

The Parliamentary Joint Standing Committee on Road Safety (Staysafe)

Inquiry into Driver and Road User Distraction

April 2012

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1 TERMS OF REFERENCE

STAYSAFE INQUIRY INTO DRIVER AND ROAD USER DISTRACTION

On 22 February 2012 the Parliamentary Joint Standing Committee on Road Safety (Staysafe) issued its terms of reference in relation to driver and road user distraction.

The table below provides a reference point for each of the Staysafe Inquiry terms of reference within the NSW Government submission.

Terms of Reference	Location/Reference in Submission
a) The nature and extent of distraction as a contributor to crash casualties on NSW roads.	Part 3
b) Current rates and future trends in take up of electronic devices, both by road users and vehicle manufacturers.	Part 4
c) Regulatory means of enforcing harm minimisation caused by such devices.	Part 5
d) Technological solutions to managing the harmful consequences of distraction.	Part 6
e) Other solutions to reduce information overload for road users.	Part 7
f) Any other related matters.	Part 8

2 Introduction

Driving is a complex task that primarily requires cognitive, visual and manual resources. The need for drivers to focus on many things in the driving environment such as the posted speed limit, signage and other road users, all form part of the driving task. Driver distractions interefere with the driving task, for example writing a text message on a mobile phone requires cognitive, visual and manual resources. When a driver uses these resources for a secondary activity such as making a phone call, less attention is afforded to the driving task.

2.1 Types of Distraction

Cognitive distraction is when the driver needs to mentally focus on something other than driving, such as the verbal directions from a Global Positioning Satellite (GPS) device, or a conversation with a passenger on the hands free phone. An example of visual distraction is when the driver simply sees something in their field of vision and an example of manual distraction is when the driver takes a hand off the steering wheel to turn on the vehicle's air conditioning.

Most distractions will result in some level of cognitive load, with the magnitude ranging from minor (eg deciding to change the radio station) to major (eg having an emotional conversation). Visual and manual distraction often occurs at the same time, such as looking at the radio while changing the station. Some in-car devices can demand a high level of multiple resources. For example, writing a text message on a mobile phone requires cognitive, visual and manual resources.

Driver distraction is defined as:
A [partial or total] diversion of attention away from activities that is critical for safe driving towards a competing activity. (Lee et al, 2009, p34)

A competing activity can be inside the vehicle (eg applying makeup or using electronic devices) or outside the vehicle (eg roadside advertising or other external activities not related to driving). Common in-car devices involve technological interactions inside the vehicle, including stereos, MP3 players, mobile phones (handsfree or handheld), GPS units and climate controls.

Driver distraction is a subset of general inattention while driving. An example of inattention is when a driver chooses not to use their mirrors or look over their shoulder for other vehicles while changing lanes. However, this example would be driver distraction if the driver had forgotten to check for other vehicles because they had been reading a text message on a mobile phone.

2.2 Measuring driver distraction

It is difficult to measure driver distraction because the level of attention demanded by the roadway at any given time is variable. One understanding of this relationship is as follows:

Driver distraction is a mismatch between the attention demanded by the road environment and the attention devoted to it. For example, even if an in-car device is particularly demanding, this may not lead to distraction if the roadway demand is low. However, a seemingly low risk situation can change if the roadway demand peaks suddenly and unexpectedly, such as when a child runs onto the road, then the driver may not have sufficient attentional capacity to respond to this increased demand (Lee et al, 2009, p36)

Distraction is thus a property of inappropriate distributions of attention, not of individual events. An activity that is highly distracting while driving on a freeway may be minimally distracting when stopped at traffic lights. The probability of a crash or risk event thus relies upon the timing of the distraction as well as the magnitude of its effect on the driver's cognitive, visual or manual functions.

2.3 Relating driver distraction to crash risk

It is difficult to correlate driver distraction with crash risk due to methodological issues and the lack of crash data. Some of the methods for investigating distraction include roadside surveys, driving simulators and naturalistic driving studies. These methods can establish that certain distractions have particular effects on the driver's ability to remain within a lane, or increase the number of near-misses.

Although these methods can establish the prevalence and consequences of distraction, none of them are particularly effective at establishing causation of actual crashes. Most drivers do not drive with perfect attention to the roadway. Some drivers may be frequently distracted, whether by reading roadside advertising, talking to a passenger or changing a radio station. Therefore there is a risk that some behaviours, such as adjusting the stereo or talking on a mobile phone, can seem to be the cause of more crashes simply due to the prevalence of the behaviour while driving, rather than being the actual cause of a crash.

Crash data on driver distraction worldwide are considered incomplete due to under-reporting. In NSW crashes are reported to police who question the involved parties. Consider a driver in NSW who was unable to swerve to avoid a crash because they were holding a mobile phone in one hand. This driver is not likely to inform attending police about this because such behaviour is illegal. As such, in the absence of other supporting information, this distraction factor will not be recorded or appear in the crash statistics.

2.4 Mobile Phones

A Canadian study assessed the risk of crashing while using a mobile phone in a 14 month period across 1994 and 1995. The mobile phone records were studied of 699 drivers who had been in a crash with substantial property damage but no personal injury. By examining the use of their telephones in the 10 minute period prior to the crash and comparing it to a control period at the same time of day on the day prior to the crash the relative risk of crashing in combination with using a mobile phone was estimated. The researchers reported that the relative risk of a crash for those who

used the phone was four times that of the same drivers when they were not using their phones (Redelmeire & Tibshirani, 1997).

A hands-free mobile phone reduces the need for manual resources. However, a hands-free mobile phone still requires the same level of cognitive resources during a conversation. Previous research has found that the difference in crash risk between handheld and hands-free mobile phone conversations is "minimal and potentially negligible" (Drews & Strayer, 2009, p185).

More recently, evidence from international naturalistic studies indicates that where vision is diverted away from the roadway for tasks such as texting, dialling or emailing, considerably higher crash risk is found compared to talking on a mobile phone (Young & Lenne, 2011). For example, texting has been found to result in 23 times the crash risk than talking on a mobile phone for truck drivers. Additionally, simulator studies for car drivers confirm that manual texting results in considerable decrements in driver performance.

Using a mobile phone while driving can bring even greater danger to novice drivers as they have less experience at anticipating or identifying the level of attention demanded by the roadway. Research has found novice drivers who use a mobile phone spend less time looking at the road ahead. They are also more likely to wander over the road (across traffic lanes) and take longer to notice driving hazards. Young people are far more likely to use a mobile phone while driving than their older counterparts. (Thulin & Lenne, 2011) The heaviest users of mobile phones have more than double the risk of a crash compared to the rare users (Larberge-Nadeau et al, 2003). For young drivers, texting is often influenced by what friends do. While young drivers know the behaviour is illegal, they see it as normal behaviour. (Nemme & White, 2010)

In 2007 a range of young driver reforms were introduced in New South Wales for young drivers in 2007. As of 1 July 2007, learner drivers and provisional P1 licence holders were banned from using a mobile phone while driving or riding. This regulation was introduced as one of a range of strategies to reduce the in-vehicle distraction for the novice driver. This includes phone in the hands-free mode or with the loudspeaker operating. Any function of any mobile phone can not be used while the car ignition is switched on.

According to the Australian Communications Authority, as at June 2007 there were 21.26 million mobile phone services in operation in Australia. This exceeded total population which was then at 21 million.

A report published by The Nielsen Company in 2010 showed that 65% of Australian mobile phone users have internet capable handsets.

2.5 Data

The involvement of mobile phones and other devices is under-reported in crashes due to the difficulty in detecting use in crashes. There is limited evidence of the actual extent that mobile phones are involved in road crashes due to the difficulty in sourcing this information from the crash scene. To establish that a mobile phone played a role in a crash, a witness is required, as the only evidence is usually a smashed phone, or it is self-reported by the driver or passengers. This often

requires police to access phones to check call and text logs, which is not logistically feasible for all crashes.

A drive around Sydney on any given day, illustrates the prevalence of illegal mobile phone use in vehicles.

3 The nature and extent of distraction as a contributor to crash casualties on NSW roads

The National Road Safety Strategy 2011-2020 states "Driving is a complex task and sources of driver distraction, both within the vehicle and in the general road environment, have increased substantially in recent years. ... Although it is very difficult to quantify the effect of all of these and other sources of distraction on serious road casualties, they are recognised as a major and potentially growing problem area." (p83-84)

The number of drivers involved in injury or non injury crashes that are using a mobile phone (or are alleged to be using a mobile phone) can not be accurately quantified. In the absence of an admission to using a mobile phone at the time of a crash, or direct witness evidence supported by call charge records, it is not possible to prove whether a person was or was not using a mobile phone at the time of a crash.

The NSW Police Force has no means of identifying from within the COPS database if distraction was a contributor to a motor vehicle crash. This is primarily due to the nebulous nature of distraction.

3.1 Data Analysis

An analysis of distraction as a contributing factor in fatal and injury crashes on NSW roads was undertaken by Safer Roads Consulting for Transport for NSW using NSW Centre for Road Safety CrashLink data and methodologies. The analysis examined:

- Crash data and contributors to distraction
- Nature of distraction
- Distracted controllers involved in NSW crashes 2000-2011
- Distracted controllers involved in casualty crashes, July 2010 to December 2011

The data used throughout the analysis were provided by the NSW Centre for Road Safety CrashLink database. The detailed report is attached to this submission as Annexure 1.

In accordance with the national guidelines for reporting and classifying road vehicle crashes, the NSW Centre for Road Safety only records crashes which are reported to the NSW Police Force, occurred on a road open to the public, involved at least one moving road vehicle, and involved at least one person being killed or at least one motor vehicle being towed away.

The data used for the initial analysis extends back twelve years (to 2000), however in June 2010 the NSW Police Force recommended provision of the crash narrative with enhanced details of the crash circumstances. The crash narrative provides the most current and reliable information on distraction factors and a more accurate qualitative result for the period July 2010 to December 2011 (2011 preliminary data). Therefore

the majority of the report's analysis focuses on the 18 month period from 1 July 2010 to 31 December 2011 (preliminary).

Some of the findings of the analysis include:

- During the 18 month period 1 July 2010 to 31 December 2011, 4,913 controllers involved in casualty crashes (which include drivers, riders, cyclists and pedestrians) were recorded as distracted.

  Of the 4,913 distracted controllers involved in casualty crashes:
  - 1% (43) were involved in a crash resulting in one or more fatalities
  - 99% (4,870) were involved in a crash resulting in one or more injuries

  these crashes resulted in 35 fatalities and 5,276 injuries.

  The 4,913 controllers were distracted by four primary factors:
  - 77% (3,788) were distracted or had their vision obscured by something outside the vehicle
  - 16% (778) were distracted or had their vision obscured by something inside the vehicle
  - 6% (287) were affected by a distraction factor classes 'other'
  - 1% (60) were using a hand held phone

  Of the 4,751 drivers or riders:
  - 80% (3,801) were driving a car or car derivative
  - 9% (424) were driving a light truck
  - 6% (292) were riding a motorcycle
  - 3% (129) were driving a motor vehicle classed as 'other'
  - 2% (80) were driving an articulated truck
  - 1% (25) were driving a bus

  Note: pedal cyclists (94) and pedestrians (68) are excluded from this group of drivers and riders

It must be noted that it is often difficult for the NSW Police Force to identify whether distraction was a contributing factor in a crash (due to the lack of independent witnesses for the crash and penalties associated with driving whilst using a hand held phone). However, the data set analysed in the attached report (Annexure A) provides a detailed breakdown of the data available at this time.

3.2 Recent research

Transport for NSW conducts an important research program relating to mobile phones and distraction. This informs policy, targeted enforcement, and in the development of communication strategies. The following is a sample of the most recent research projects.

3.2.1 Survey of Usage Rates for In-Vehicle and Portable Devices by NSW Drivers (2011)

In September 2011, the Centre for Road Safety commissioned a research study to quantify the prevalence and current usage patterns of in-vehicle and portable devices by car drivers and light and heavy commercial vehicle drivers in NSW (Roads and Traffic Authority, 2011).

This included devices used, operation of devices, usage frequency and behaviours as well as user characteristics. The research included a representative sample of 1685 light and heavy vehicle drivers in NSW. Surveys were completed primarily via online (n=1152) and telephone (n=501), with a few bus and truck interviews conducted face-to-face (n=32).

Key findings from the survey included:

- The most frequently reported devices used among light vehicle drivers when driving, on at least a quarter of trips and using manual operation are the radio (50%), the CD player (31%), a mobile phone (24%) and a navigation device (11%).

- The most common manual usage of mobile phones among all light vehicle drivers on at least a quarter of trips comprises reading a text (14%), sending a text (11%), taking a call (8%), and making a call (6%).

- Unrestricted licence holders aged 20-29 years have the highest incidence among light vehicle drivers of using a hand-held mobile phone for talking and making calls (23% & 17%) as well as reading and sending texts (36% & 32%) while driving on at least a quarter of trips. Provisional licence holders also read and send texts significantly more than other drivers, 24% and 20% respectively. Older drivers are less likely to use a hand-held mobile phone, with just 7% of 50-59 year olds and less than 1% of those 60 years or over making a call on at least a quarter of trips, and 5% and 1% taking a call respectively.

- Among light vehicle drivers, 7% report using websites or apps (other than email) when driving on a quarter or more of trips. Usage is highest among unrestricted licence holders aged 20-29 years (20%). The most common sites accessed include maps/navigation (17%) and Facebook (17%).

- Only a small proportion of light vehicle drivers report a crash or near miss involving their use of a device (4%). Incidence is highest among provisional licence holders (18%) and truck drivers (10%).

- The most frequently reported devices used among truck drivers when driving, on at least a quarter of trips and using manual operation are the radio (46%) and a mobile phone (44%). Truck drivers are more likely to manually take a call (29%) and read a text (21%) on at least a quarter of trips, than other drivers.

- Truck drivers are more likely than other types of drivers to report making and taking phone calls, and sending texts on the open road (35%, 54% and 13% respectively, compared to 14%, 23% and 4% of car drivers), than when driving in a town/suburb or when stopped at traffic lights.

3.2.2 Insights Panel Survey: Mobile Phone Usage and Deterrence Component (2011)

In September 2011 Roads and Maritime Services, in collaboration with the Centre for Road Safety undertook an Insights Panel Survey: Mobile Phone Usage and Deterrence Component (Roads and Traffic Authority, 2011).

The aim of the mobile phone component was to understand the usage of mobile phones when driving. This included current behaviours and attitudes towards mobile phone use when driving, characteristics of users and perceptions of penalties and enforcement for using mobile phones when driving.

An online questionnaire was sent to 1,500 Roads and Maritime Services customers on the Customer Panel, and was completed by a representative sample of 1025 NSW drivers during a two week period in September 2011.

Key findings include:

- Approximately 40% of respondents claim to have used a hands-free mobile phone, and 25% a hand-held mobile phone, while driving.

- Using a hand-held mobile phone is more prevalent among P2 licence holders (42%) as well as 25-34 year olds (41%) and 16-24 year olds (40%).

- The most frequent mobile phone use while driving is to receive a call (21%) or read a text message (18%). Making calls and sending texts were found to be less frequent (17% and 15%), as were accessing the internet (5%), visiting social networking sites (5%) and using email (4%).

- The majority also perceive that driving while using a hand held phone is risky. 79% agree that they would be 'more likely to crash using a hand held mobile phone than a hands-free mobile phone'.

- Approximately 59% of respondents have 'no idea' what the existing penalty is for being caught using a hand held mobile phone while driving in NSW. On being told the actual penalty, most (57%) agree that it is at an appropriate level.

4 Current rates and future trends in take up of electronic devices, both by road users and vehicle manufacturers

The current rates and future trends in the take up of electronic devices both by road users and vehicle manufacturers are rapidly accelerating in Australia and around the world. The development poses a significant challenge for road safety authorities as the rate of technological change often outpaces the rate of legislative change.

4.1 Mobile phone use and the rise of smartphones

Since the arrival of the Apple iPhone to the Australian market in 2008, there has been a rapid acceleration in the adoption of smartphones by road users. This has been further hastened with the introduction of Google-powered Android-based smartphones, which has lead to Australia becoming one of the leading countries globally for per-capita smartphone ownership. As at November 2011, behind only Singapore, Australia had the highest smartphone penetration in the world at 37 percent based on research conducted by Google. The same study showed that smartphone adoption in Australia has seen a sharp upswing in the past twelve months with four out of five of the 30,000 respondents saying that it was their first smartphone and one in three reporting that they had only just purchased their smartphone in the past six months.

Samsung Galaxy S Android-based smartphone left, Apple iPhone right

Recent research undertaken by the NSW Centre for Road Safety surveying usage rates for in-vehicle and portable electronic devices in late 2011, shows that the most frequently reported devices used by drivers on at least a quarter of trips are the radio (50%), the CD player (31%), a mobile phone (24%) and a navigation device (11%).

The research undertaken by the NSW Centre for Road Safety also showed that the most common manual usage of smartphones among all light vehicle drivers comprises:

- reading a text (14%)

- sending a text (11%)
- taking a call (8%)
- making a call (6%)

Other uses include:

- accessing the internet when driving (5%)
- visiting social network sites (5%)
- using email (4%)

all which are functions enabled by the advent of smartphones.

The research also found that 38% of 'Sydney Male' provisional licence holders who drove light vehicles reported being involved in a crash or near-miss involving an electronic device. They sighted mobile phones as being responsible in 61% of incidents and radios being the next highest factor at 25%. Generally, the research also found that the prevalence of hand-held mobile phone usage was 40% for 16-24 year olds and 41% for 25-34 year olds.

4.1.1 Third-party smartphone and in-vehicle smartphone accessories

Manufacturers of third-party products have also sought to cash in on the explosion in the smartphone market (building on their success with accessories for iPods and MP3 players), and have sought to offer users integrated solutions for iPhones and Android devices into vehicles. One of the most popular accessories is a cradle that both charges the device and allows it to transmit music using radio frequencies wireless to a car's FM radio. This has led to users interacting with the music application in smartphones whilst driving, although it could be argued that this is no different to drivers interacting with their car stereo system

Belkin TuneBase for iPhone with hands-free

4.1.2 Current and future manufacturer smartphone and tablet-based infotainment systems

Car manufacturers have also been keen to leverage the widespread adoption of smartphones into vehicles using their considerable computing power to act as the 'brains' of their in-vehicle information and entertainment systems. 2012 has been labelled the 'year of the connected car' with various consumer electronics shows (ie.

Consumer Electronic Show 2012) and auto shows (ie. Geneva 2012) around the world showing a heavy emphasis on how smartphones can be tightly integrated into vehicles. Manufacturers have either been demonstrating or introducing vehicles that have the capacity to display text messages on in-vehicle displays, including Facebook status updates and other social functions to drivers while they are driving.

Also on the agenda is the integration of smartphone applications in-vehicle entertainment systems, particular streaming music applications, as well as the use of voice control to help appease critics who have been concerned about the driver distraction potential of such systems. However, some studies have suggested that even voice controlling on-board devices can create the illusion of safety when it has the potential to distract drivers from the driving task.

Lexus Enform allows drivers to search Bing, listen to Internet radio, and even book restaurant tables

Mercedes A-Class Infotainment Concept with Facebook integration for 'digital natives'

Toyota's TouchLife entertainment system will mirror a driver's smartphone on the car display

In addition to original vehicle manufacturers developing systems that are potentially distracting, new tablet computers such as the Apple iPad and Android based equivalents have the potential to be installed in vehicles therefore becoming another source of distraction. Some vehicle manufacturers have demonstrated vehicles that use the larger 9.7-inch display of the iPad as the whole centre-piece for controlling various functions whilst driving. This may appear to be no different to using a large touch screen display integrated into a vehicle at point of manufacture. However, it opens up the possibility of accessing the internet on the go, as well as even watching movies that fully integrated systems are typically able to override. This is a potential concern for road safety authorities as the Toyota *TouchLife* system could easily be used for purposes unintended by the manufacturer.

VW Bulli Concept vehicle with iPad integration controlling all in-vehicle systems

4.1.3 Navigation and Route Guidance Systems

Adding to the mix of electronic devices already in vehicles, whether fixed original equipment manufactured (OEM) or brought into the vehicle by the driver, includes satellite navigation and route guidance systems. While the third-party supplied market for discrete navigation systems are on the decline due to the integration of similar functions into smartphone apps, many new vehicles are sold with on-board navigation

systems as either standard fitment or as an option. Most of these devices use voice guidance to complement visual navigational directions often rendered in 3D animation that is permissible under the Road Rules 2008. Whether fitted by the manufacturer or installed as additional vehicle technology by the driver, route guidance systems are generally considered to offer minimal driver distraction, provided that the driver does not input text into the device while driving.

The literature on navigation and route guidance systems suggests:

- Entering destination information is believed to be the most distracting task associated with the use of a route guidance system; however use of voice input technology can reduce the distraction associated with this task.
- Route guidance systems that present navigation instructions using voice output are less distracting and more usable than those systems that present the information on a visual display.
- Route guidance systems that provide turn-by turn instructions, rather than presenting complex holistic route information, are less distracting to the driver and present the most useable means of navigation.

An after-market Tom Tom GPS-based route guidance system with voice assistance

4.1.4 Other Entertainment Devices

Many vehicles have in-car entertainment systems which incorporate DVD players or computer game consoles. These may be a drop down unit mounted in the vehicle roof, or a small screen mounted in (or on) the rear of the front seat headrests. Australian Design Rule (ADR) 42/04 does not permit these screens to be visible to the driver (from the normal driving position). These rear mounted systems generally comply with the ADR. It is also illegal under rule 299 of the Road Rules 2008 to have a visual display unit that can be viewed by the driver or the drivers of other vehicles.

There are some systems available as aftermarket products that operate with the screen mounted on or protruding out of the dashboard (visible to the driver) and even some that can be fitted to or that replace the sun visor. (Note that internet advertising for these devices states; "Do you feel tired and bored during your drive time? Then this is the product for you!"). This is an area of growing concern to road safety, as it is extremely difficult for police to detect these types of devices fitted to a vehicle and thus be able to enforce compliance with the applicable vehicle standards.

Typical in-car DVD and TV unit
replacement for original sun visor

4.1.5 Placement of devices inside the cabin

A further concern associated with distraction is the vehicle cabin location at which the device is mounted.

According to Regan (et al) there are four types of driver distraction: physical distraction, visual distraction; auditory distraction; and cognitive distraction. A distracting activity involves one, or more, of these. The act of operating a hand-held mobile phone, for example, may involve all four types of distraction: physical distraction (dialling); visual distraction (looking at the display); auditory distraction (holding a conversation with the other person); and cognitive distraction (focusing on the topic of conversation).

Placement of devices in the vehicle cabin can have a significant effect on each or all of these distraction types. A device that is down low on the centre console (placed outside the immediate circle of a driver's peripheral vision) will take longer to find and will also require a significant amount of conscious attention if the driver is to undertake a cognitive task, (such as to select a specific tune from an MP3 play list). Positioning controls on the steering wheel and the device screen (or a repeater of the device) inside the area of peripheral vision significantly reduces the time to perform the task and the cognitive effort involved. The most promising technology solution is the use of 'heads up display' technology, where the necessary information appears as a see through display in the driver's field of view. This technology has been available in fighter aircraft for many years. The 2009 Toyota Prius, and subsequent models, includes heads up display of vehicle speed, fuel, energy use and other information, as well as turn by turn navigation instructions.

Conversely, installing solid navigation (GPS) devices directly in front of the driver not only obscures their view of the road ahead, but at night, unless the device has an automatic dimming feature, exposes the driver to a bright light source which significantly reduces their effective night vision (it is very difficult to clearly see a dark object outside the vehicle that is positioned beyond a bright light source inside the vehicle). These factors all need to be managed to place effective controls on new vehicle design and the wide array of aftermarket products that are available to vehicle owners to install into their vehicles.

BMW 5 Series full colour heads up display includes current speed, posted speed limit, vehicle condition, lane keeping and blind spot monitoring as well as navigation information

4.1.6 Other potential uses for in-car devices

There are new ways to use computers consistently showering the marketplace. Some of these encourage the use of social media in the car. An example of this is the following article which appeared in The Daily Telegraph on 31 March 2012. The concept is to use social media (through a smartphone or tablet) to turn commuters in their vehicles into couriers.

24 SATURDAY, MARCH 31, 2012 // THETELEGRAPH.COM.AU

Turn commuters into couriers

A TEAM of Aussie entrepreneurs has coupled the power of social media with the volume of traffic on city roads to create a delivery service that makes anyone an instant courier.

Formed in Melbourne but now operating in Sydney, online start-up company MeeMeep connects people who need something moved or delivered with motorists who are heading in the right direction.

Co-founder Rob Emmett said the result negated the need for expensive couriers and, because the drivers were already going close to the delivery address, it was an environmentally friendly alternative.

"I was watching empty cars and vans going back and forth and I thought: 'Wouldn't it be great if we could harness all that commuter movement'," he said.

"What's stopping us connecting the physical power of people with the digital power of the internet?"

Potential drivers hook up on the MeeMeep site with people who want items delivered, with a fee negotiated between the pair before the delivery takes place.

Live updates about new jobs are posted on the company's Facebook page. Mr Emmett said prices usually varied from $5-$50 per job and worked out to be about 40 per cent cheaper than commercial couriers.

He cited as an example workers travelling from the CBD to their outer suburban homes every day.

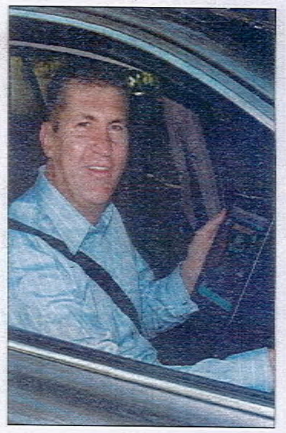
He said they could align with a business that needed regular deliveries from the CBD to the suburb and get paid to do what they were already doing.

"There is also a huge market out there for pick-up only items from sites like eBay, Trading Post and Gumtree and a lot of interstate movement of items like beds, picture frames, hard drives and wardrobes," Mr Emmett said.

"It's an attractive proposition for people who have one-off items to move and don't have enough stuff to fill a removals truck."

CONNECT

NEIL KEENE



Rob Emmett of MeeMeep.

4.1.7 Discussion

The rapid pace of change and the current rate and future take up of electronic devices by road users, third-party accessory makers and vehicle manufacturers pose challenges for legislators. The rate of technological change is often outpacing the legislative measures designed to help keep road users and the road system safe from driver distraction-related crashes. Driver distraction from an electronic devices perspective is no longer limited to drivers making phone calls or texting whilst driving, but now also extends to the ability for smartphones and tablets to access the internet whilst on the move, coupled with the range of other social interactions that this makes possible. At least one recent fatality in the US has been attributed by the victim's family to a driver making a Facebook status update on their smartphone while driving (http://globalgrind.com/node/827659). The phenomenon of vehicle connectivity is being driven by consumer demand, and vehicle manufacturers in a highly competitive market rushing to meet that demand and attract potential buyers. Drivers aged under 30 in the US consider vehicle connectivity options as being the second most important consideration when buying a new car (with fuel efficiency at the top of the list.)

US government road safety bodies including the National Highway and Traffic Safety Administration (NHTSA), the Department of Transport (DoT) and the National Transportation Safety Board (NTSB) have recently invested considerable resources into investigating the issue of driver distraction, running anti-driver distraction campaigns, as well as making a series of recommendations as to how road safety authorities and vehicle manufacturers can address the issue. For example, the NTSB has recently issued a recommendation that all US states consider the banning of not only mobile phones, but hands-free devices as well, based on the latest findings. Research conducted by the NHTSA suggests that 16% of fatal crashes in the US in 2009 involved reports of distracted driving. Historically, it has proven difficult to quantify the exact number of fatal crashes related to distracted driving as usually it requires either witnesses to come forward or for the driver to self-report what had caused them to become involved in a crash, and then, only if they survive such a crash.

While this discussion has focused on electronic devices and their potential to cause driver distraction, the issue of driver distraction also extends to non-technology related distractions as well. These can include eating and drinking while in control of a vehicle, talking to passengers, grooming, reading (including maps), as well as outside of vehicle distractions. All of these are important considerations when developing appropriate countermeasures to the rapid increase in the range and type of distractions that are taking the minds and eyes of drivers off the driving task

5 Regulatory means of enforcing harm minimisation caused by such devices

In NSW there are a number of regulatory provisions to prohibit the misuse of items or devices which cause driver distraction. These are under the NSW Road Rules 2008. The NSW rules are based on the Australian Road Rules, which are a set of national model laws that form the basis of road rules across Australia.

Under the Road Rules 2008, rules 297, 299, 300 and 300-1 apply to driver distraction:

5.1 Road Rules 2008 – Rule 297: Driver to have proper control of a vehicle

- Under rule 297(1) a driver must not drive a vehicle unless he or she has proper control of the vehicle. The offence '*Drive without proper control of vehicle*' attracts a fine of $353 and 3 demerit points ($441 and 4 demerit points if offence occurs in a school zone, during school zone hours).

- Under rule 297(1A) a driver must not drive a vehicle if a person or animal is on the driver's lap. The offence '*Drive motor vehicle with person or animal in lap*' attracts a fine of $353 and 3 demerit points ($441 and 4 demerit points if offence occurs in a school zone, during school zone hours).

- Under rule 297(2) a driver must have a clear view of the road and the traffic ahead, behind and to each side of the driver. The offence '*Drive without clear view*' attracts a fine of $265 and 3 demerit points ($353 and 4 demerit points if offence occurs in a school zone, during school zone hours).

- Under rule 297(3) the rider of a motorcycle must not ride with an animal on the petrol tank of the motorcycle. The offence '*Motor bike rider ride with animal on petrol tank*' attracts a fine of $353 and 3 demerit points ($441 and 4 demerit points if offence occurs in a school zone, during school zone hours).

5.2 Road Rules 2008 – Rule 299: Television receivers and visual display units in motor vehicles

- Under rule 299(1) a driver must not drive a vehicle that has a television receiver or visual display unit operating if any part of the image on the screen is visible from the normal driving position or is likely to distract another driver. The offence '*Drive vehicle with TV/VDU image visible to driver*' attracts a fine of $265 and 3 demerit points ($353 and 4 demerit points if offence occurs in a school zone, during school zone hours).

  This rule does not apply if the visual display unit is a driver's aid such as a global positioning satellite (GPS) navigational device.

5.3 Road Rules 2008 – Rule 300: Use of mobile phones by drivers (except holders of learner or provisional P1 licences)

- Under rule 300(1) a driver must not use a mobile phone that is being held in the driver's hand while the vehicle is moving or stationary (but not parked). 'Use' of the phone includes holding the phone, writing, sending or reading text messages, turning the phone on or off and operating any other function on the phone. The offence *'Drive using hand-held mobile phone (not L or P1)'* attracts a fine of $265 and 3 demerit points ($353 and 4 demerit points if offence occurs in a school zone, during school zone hours). This offence does not apply to learner drivers or holders or a provisional P1 licence (see Rule 300-1).

5.4 Road Rules 2008 – Rule 300-1: Use of mobile phones by learner and Provisional P1 licence holders

- Under 300-1 a driver, who holds a learner licence or a provisional P1 licence must not use a mobile phone at all (whether or not held in the hand) while the vehicle is moving or stationery (but not parked). The offence *'Learner of P1 driver use mobile phone while driving'* attracts a fine of $265 and 3 demerit points ($353 and 4 demerit points if offence occurs in a school zone, during school zone hours).

5.5 Current penalty levels for use of mobile phones and visual display units

Current penalty levels for use of mobile phones or visual display units

Offence	Penalty	Demerit Points
Drive vehicle with TV/VDU image visible	$265	3
Drive vehicle with TV/VDU image visible - School Zone	$353	4
Drive vehicle with TV/VDU image likely to distract	$265	Nil
Drive vehicle with TV/VDU image likely to distract - School Zone	$353	Nil
Drive using hand-held mobile phone	$265	3
Drive using hand-held mobile phone - School Zone	$353	4
Learner/P1 driver use mobile phone while driving	$265	3
Learner/P1 driver use mobile phone while driving – School Zone	$353	4

5.6 Australian Road Rules Maintenance Group discussion about distraction

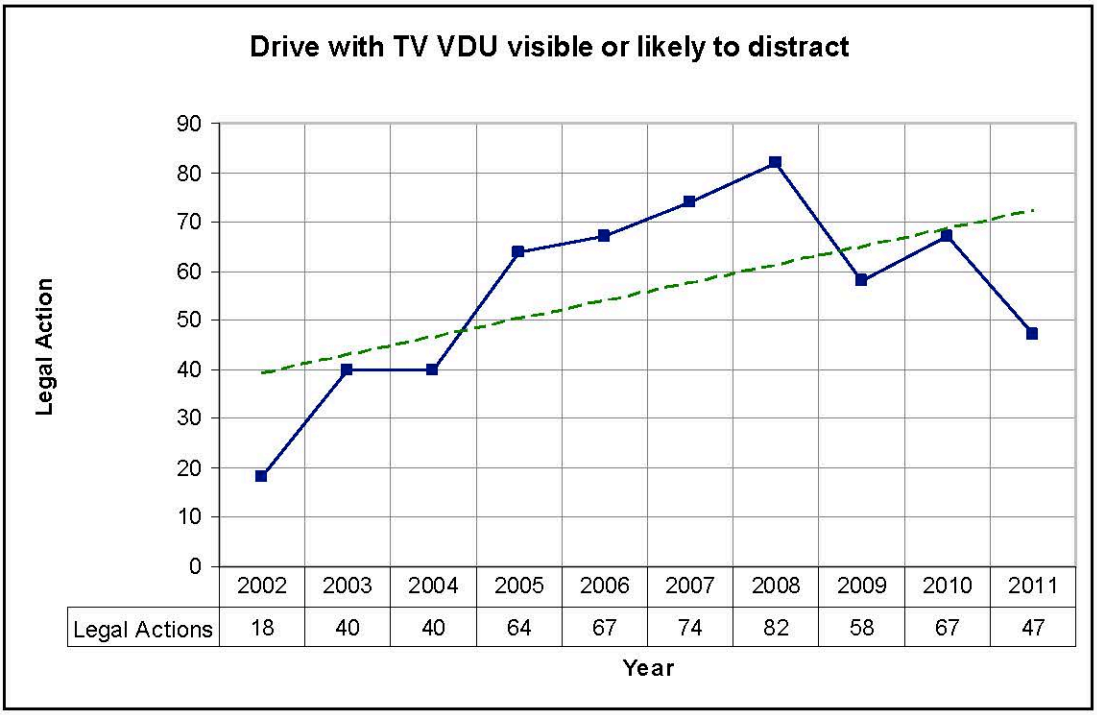
The Australian Road Rules Maintenance Group has, in recent years, been discussing changing rules 299 and 300 to make them more appropriate to deal with emerging in-vehicle devices. Transport for NSW plans to raise for discussion the possible creation of a separate offence for sending or receiving a text message, email or similar communication. It is anticipated that issues about enforceability and relative distraction risk would be considered in discussion of this matter.

5.7 Enforcement statistics

Set out below is the volume of penalty notices issued under the above Road Rules in the financial year **1 July 2010 to 30 June 2011**:

- Road Rules 2008 – Rule 297:
  Driver to have proper control of a vehicle: 435
  (Note: it is not possible to ascertain how many of these were due to driver distraction)

- Road Rules 2008 – Rule 299:
  Television receivers and visual display units in motor vehicles 62



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Legal Actions	18	40	40	64	67	74	82	58	67	47

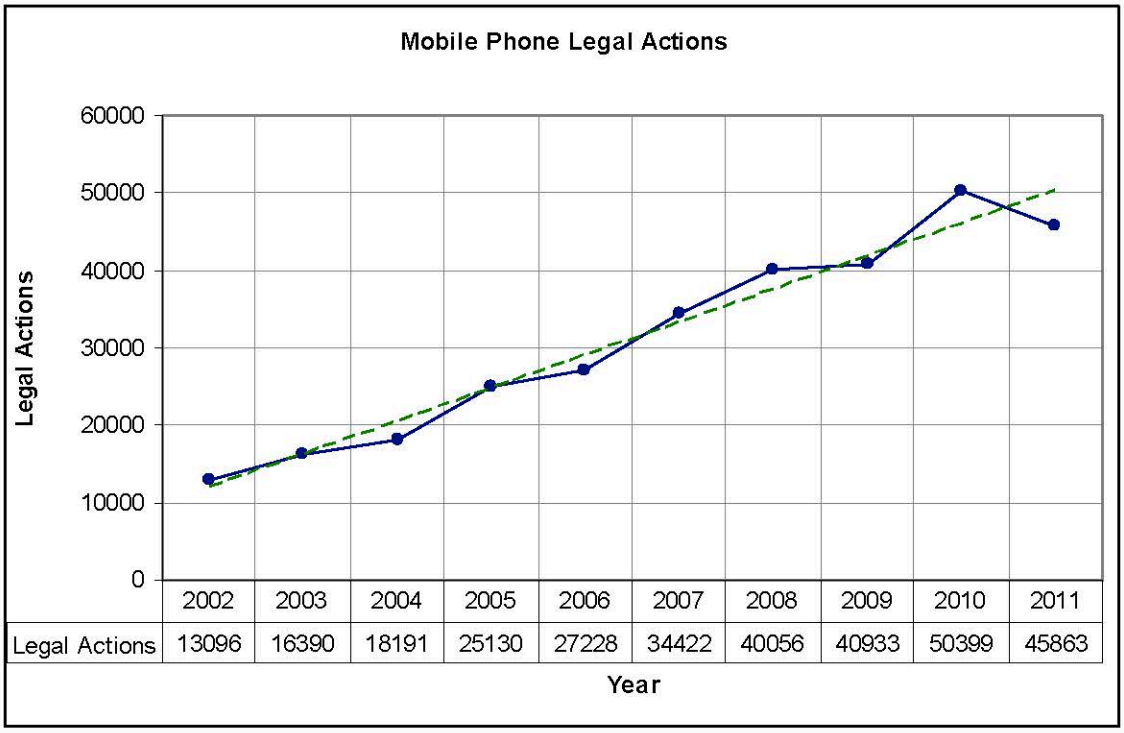
The NSW Police Force data shows that over the past 10 years (by calendar year), detection rates for television and visual display unit offences under rule 299 are increasing, though note a downward trend in the past couple of years.

Department of Attorney General and Justice figures show that over the past four years (October 2007 to September 2011), 8 people have elected to have their television/visual display offence heard in court, with 7 being found guilty and 1 dismissed under section 10 of the Crimes (Sentencing Procedure) Act 1999.

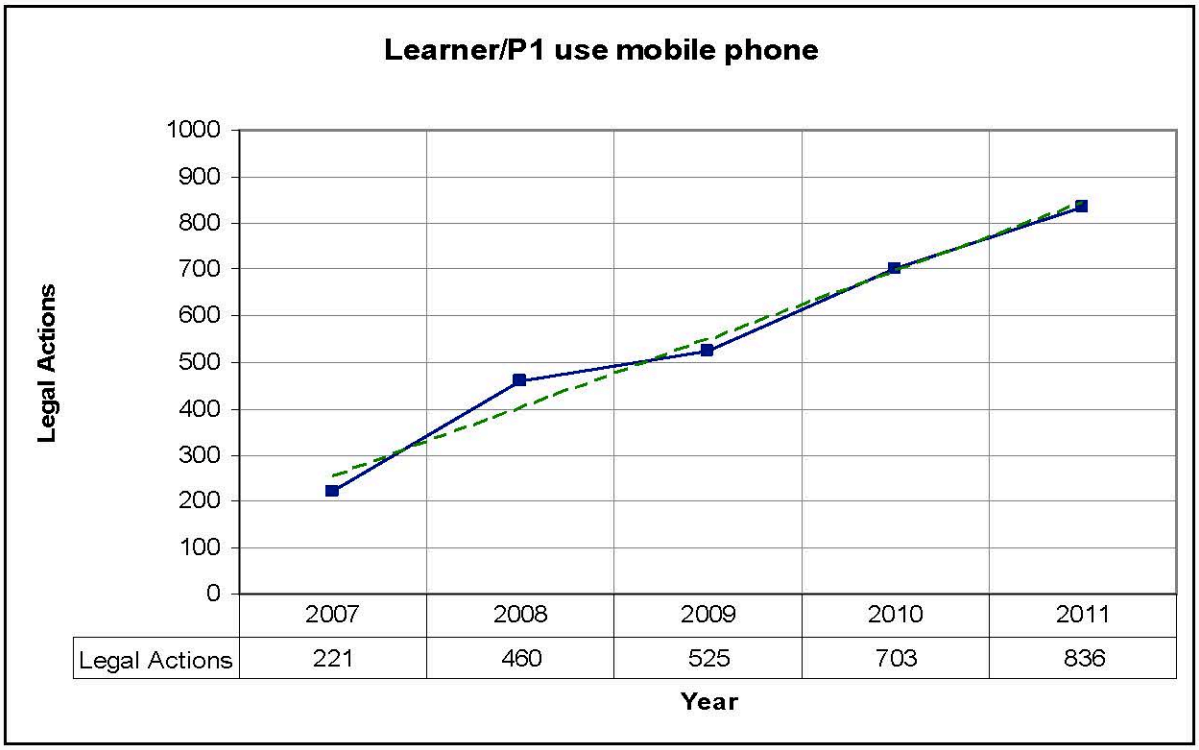
- Road Rules 2008 – Rule 300:
  Use of mobile phones by drivers 54,168

  Road Rules 2008 – Rule 300-1 837
  Use of mobile phone by a learner or P1 licence holder

The NSW Police Force data shows that over the past 10 years (by calendar year), that detection rates for mobile phone offences under rule 300 are increasing significantly.



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Legal Actions	13096	16390	18191	25130	27228	34422	40056	40933	50399	45863



Source: http://www.osr.nsw.gov.au/about/corporate/statistics/#Penaltynotices

Department of Attorney General and Justice figures show that over the past four years (October 2007 to September 2011), 1,154 people have elected to have their mobile phone offence heard in court, with 947 (80%) being found guilty and 192 (17%) dismissed under section 10 of the Crimes (Sentencing Procedure) Act 1999.

Offences under rule 300 of the Road Rules 2008 are actively enforced by the NSW Police Force, with this offence consistently in the top ten of infringement types issued by police. Review of legal actions by the NSW Police Force over the past decade (2002 – 2011) shows that detection rates are significantly increasing. There has been no new enforcement techniques or methodologies introduced during this period. The increase is in spite of an increase in penalty level and the attachment of demerit points to the offence.

Despite ongoing enforcement efforts, technology has outpaced legislation. Notwithstanding, using similar interfaces and technology as mobile phones, the emergent technologies, in particular digital music players such as MP3 and iPod devices, are not regulated. We now see a surge in tablet technologies like the iPad and Android based systems coupled with aggressive expansion in the use of social media; this will continue to be troublesome in the area of enforcement. These types of devices can play both music and video files. Whilst a driver is using an iPod to view stored or streaming video it may be considered a visual display unit and is regulated, however if the device is used exclusively by the driver to play music, it is not. Yet scrolling through menus to select music to play is as much a distraction as searching mobile phones for stored numbers or texting.

5.8 Other driving offences

Enforcement of the unlawful use of electronic devices when driving can be challenging as users can conceal their use from authorities by keeping devices out of general view, even when they are in use.

Driving whilst distracted by a mobile phone or electronic device could, in certain circumstances, constitute negligent, reckless or dangerous driving, as referred to in the following provisions:

- Negligent driving - section 42(1) of the *Road Transport (Safety and Traffic Management) Act 1999*
- Driving in manner reckless or dangerous - section 42(2) of the *Road Transport (Safety and Traffic Management) Act 1999*
- Driving in a manner dangerous occasioning grievous bodily harm or death - section 52A of the *Crimes Act 1900*

If a driver faces serious criminal charges of Dangerous Driving Occasioning Death or Grievous Bodily Harm, there is a maximum penalty of imprisonment up to 10 years.

Case law supports that inattention while driving can amount to dangerous driving (R v Hain 1966). Whilst the case does not relate to use of hand held mobile devices, it does relate to driver distractions which can be extended to encompass the use of mobile phones while driving.

5.9 Regulation of road environment relating to distraction

There is also additional legislation in relation to road safety and what is permitted in the road environment. Under the *Transport Administration Act 1998* Roads and Maritime Services is responsible for establishing standards and principles for the purpose of maintaining traffic safety, traffic flow and regulation and control of traffic.

Under the *Roads Act 1993* Roads and Maritime Services may order the removal of traffic hazards which may limit the view of drivers, be mistaken for a traffic control or cause danger on a road or related area.

The *Road Transport (Safety and Traffic Management) Act 1999* provides that a person must not display or install, near or on a road related area, any marking or device that might be reasonably mistaken to be a traffic control device. A maximum penalty of $2,200 is provided for this offence.

5.10 Enhanced enforcement of mobile phone usage

The Centre for Road Safety is working with NSW Police Force to develop an enhanced enforcement approach to mobile phone use while driving. This initiative will be supported by a strong communications campaign.

6 Technological solutions to managing the harmful consequences of distraction

6.1 Introduction

Despite the significant progress being made in recent years to reduce the potential for driver distraction, road safety experts generally agree that this issue will become a greater contributor to road trauma as the number of in-vehicle technology-based devices increases. There is currently little knowledge regarding how drivers use in-vehicle technologies: whether they use them in the manner intended by the designer; and at what point (or threshold) and under what conditions they become a distraction. There has been a concentrated effort more recently on mobile phone calling and texting through laws, communications campaigns, and company policies and programs.

Various technological countermeasures are being developed by road safety researchers and several anti-distraction systems are currently available as standard equipment in several top end vehicles or as after-market products. Many models already feature steering wheel controls for audios system and telephones. The ultimate impact of the existing and proposed devices on reducing distracted drivers however is difficult to predict.

Studies have also been undertaken to a lesser extent on other sources of driver distraction, such as passengers, roadside advertising, grooming, smoking, reading, eating and drinking.

6.2 Background

There is little consensus on which countermeasures are the most effective, as the evaluation methods differ, along with the interpretation of the results. There is agreement however that more studies are required to actually quantify the level of distraction at which driving becomes inherently unsafe. For now, it is generally up to drivers to manage their cognitive workload and assess the risks.

Researchers use a variety of measures to estimate distraction and to develop appropriate countermeasures. Examples include a combination of the percentage of time the driver's gaze falls within a road centre area over one minute, the amount of time the driver glances away from the roadway and the duration of the driver's single glance in any given direction.

Vehicle manufacturers continue to develop, test, and implement measures to manage driver workload and to warn drivers of risky situations. Volvo and Saab have undertaken some pioneering research in this area. Their results however suggest that further research is required to determine optimal combinations of distraction predictors. It is anticipated that large scale field operational tests and naturalistic driving studies will assist to identify those systems which provide the greatest safety potential.

6.3 Voice activated Devices and smart phone applications

Many cars now allow drivers to operate the radio, use a media player, make and receive phone calls, or search for a destination with simple voice commands. In the most recent models, voice-activated infotainment systems such as Ford's SYNC technology replace the manually controlled buttons and knobs. Ford's system integrates GPS, and Bluetooth-capable phones to provide hands-free access to personalised traffic reports, precise driving directions and up-to-date information including business listings, news, sports, and weather. The information is provided through the car's audio entertainment speakers, allowing the driver to keep hands on the wheel and eyes on the road. Various models of 2012 Holden, Toyota, Honda, Mercedes, Nissan and Subaru also come with voice activated Bluetooth phone connectivity. Ford Australia advises the feature is expected to arrive in Australian models in 2013.

Route guidance systems that present navigation instructions using voice output are less distracting and more usable than those systems that present the information on a visual display. These systems using voice recognition technology are a more ergonomic and safer option than systems that require visual-manual entry. Route guidance systems that provide turn-by turn instructions, rather than presenting complex holistic route information, are less distracting to the driver and present the most useable means of navigation. These systems are now standard features in many vehicles (Ford, Holden, Honda, Mercedes, Nissan, Toyota and Subaru) and are also available in high-end portable navigation devices (Garmin, Navman, NVE and Eclipse).

This array of voice activated systems has been criticised by other road safety experts for their ability to force a huge cognitive workload onto the driver. They argue that hands-free technology does not necessarily make driving safer and can, in fact, make the driving task more problematic as drivers perceive they are doing something that is safer.

Ford's SYNC system also allows drivers to have text messages read aloud to them while driving. Tailored for owners of select SYNC-equipped 2011 and early-release 2012 vehicles, the update includes the emerging Message Access Profile (MAP) Bluetooth standard, which is custom-made for the automotive hands-free environment and outlines a set of features and procedures used to exchange email, SMS, and MMS between devices. In 2010, Ford announced it was voluntarily integrating MAP into SYNC for all 2011 MyFord Touch-equipped vehicles and is now extending the capability to the broader SYNC user community – with thousands of 2011 and 2012 vehicles equipped with the first generation SYNC system. According to Bluetooth Special Interest Group (SIG), MAP adoption by mobile device manufacturers is still in its infancy.

6.4 Disabling Devices

Most factory fitted navigation systems ensure their settings cannot be changed while moving, however third party manufactured portable devices currently outnumber factory fitted devices and these merely warn the driver not to change the device's settings when driving.

The Ford MyKey feature debuted as standard equipment on the 2010 Ford Focus and is now standard on nearly all Ford models in the USA. Ford Australia expects MyKey to feature in Australian models in late 2013.

It allows parents to program the vehicles' key so that the vehicle is not only limited to a preset top speed but also limits the vehicle's audio volume to 44 percent of total volume. The reduced volume potentially translates to reduced audio distraction.

6.4.1 Ford's MyKey

In Ford's "Distraction Lab" engineers and technologists test if 85% or more of test subjects are able to comprehend the information on a screen in the time allowed, then the related task such as reading and selecting an address on a navigation screen is considered compliant with industry guidelines. If too many of the test subjects cannot complete the task in time, the function is designed to be locked out when the vehicle is in motion, and can only be operated when the vehicle is stopped.

Systems to block or limit drivers' mobile phone calls are developing rapidly. These devices are currently prohibited in Australia by Federal communications laws, as they not only interfere with mobile phones, but often interfere with 'behind the scenes' communication systems and Wi-Fi. They may also prevent the driver or passengers from ringing emergency telephone numbers when needed. Despite being illegal, they are readily available on the internet for as little as $50.

Car manufacturers also report that disabling in-vehicle devices has shown to frustrate drivers. Of growing concern to car manufacturers is the liability issues associated with a an in-vehicle device taking over parts of the vehicle's primary driving task.

6.4.2 TXTBlocker Smartphone application

A Smartphone application called TXTBlocker attempts to address driver distraction by disabling a number of phone functions. Drivers could, for example, block all phone alerts that might distract a driver while on the road, such as the ability to make and receive phone calls and texts, barring the 000 emergency services. Alternatively a "safe-list" of numbers could be allowed, and "safe-zones" can be created to up the security around schools or worksites. The product works in tandem with GPS technology using proprietary velocity and geographic algorithms to tell when a user is driving, which allows it to automatically activate the service.

Callers are notified that calls and text messages are being blocked if they try to contact the driver and additional provisions are made for those who use Bluetooth headsets and hands-free kits. The service is intended to be installed by parents on their teenagers' handsets. Parents can also restrict activity by geographic region and time, prohibiting use during school or work hours. The device can also be set to restrict web browsing. "Passenger mode" allows non-drivers to use the phone without restrictions. The application is available on line for US$6.99 per month (www.txtblocker.com).

6.4.3 DriveMode application by AT&T

The recently released free DriveMode application by AT&T for BlackBerry and Android Smartphones sends out an automatic reply to incoming text messages and emails advising the senders that the user is driving and cannot respond. Calls are also sent directly to voicemail. As soon as users turn the application off, all missed texts, calls and e-mails will be displayed. Users can also enable one navigation application and one music application to run when the application is turned on. The application however, relies on the driver turning it on. This application at present is available free to AT&T (a US telecommunications company) customers only.

6.4.4 Drivesafely Pro 2.0

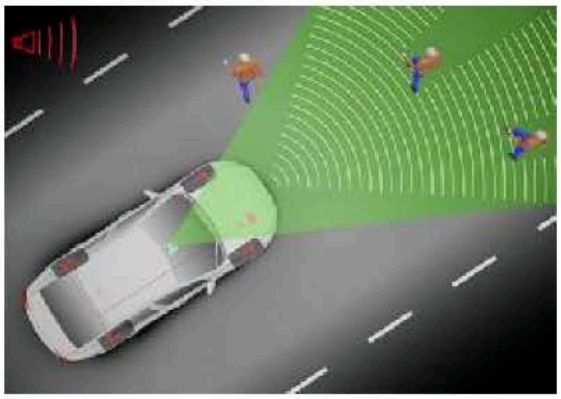
Drivesafely Pro 2.0 is also a free Smartphone application that reads text messages and emails out loud so the driver can concentrate on the road. It also automatically responds without drivers touching the mobile phone. The driver can answer out loud and the device sends the driver's voice message back as a text to the sender.

6.4.5 Merecedes mBrace2

Carmakers are continually making it easier to Tweet, check Facebook and search the web from inside the vehicle while driving. Leading car manufacturer Mercedes Benz recently announced the release of its mBrace2 iphone application. The company boasts software features that allow the driver to browse the internet, use Facebook, Twitter, and connect to their iphone (and viewing it all on a screen). Mercedes claims many of the application functions are blocked while the car is moving. Several UK road safety lobby groups however are trying to ban the technology from entering the UK. There is currently no information on when or if the system will be included in Australian models.

6.5 Object detection

Car manufacturer Volvo is pioneering systems which detect objects within the roadway, such as pedestrians and vehicles and automatically control the vehicle if there is a risk of a crash. Their 2008 S60 and XC60 models introduced CitySafety technology which uses forward looking cameras to scan the traffic for pedestrian-like forms over one metre tall.



Volvo's City Safety System

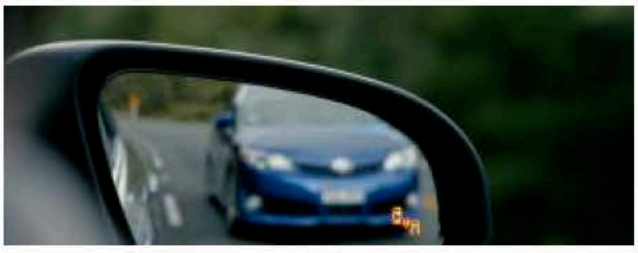
If a distracted driver fails to slow down or steer away from the object ahead the car the system audibly warns the driver and if no action is taken, the vehicle will automatically brake. CitySafety is standard on all new Volvo models sold in Australia.

Subaru's latest Liberty model incorporates a similar system called Eyesight which uses two cameras mounted on top of the windscreen to study the road for cars, bicycles and pedestrians. The system can also cancel the vehicle's adaptive cruise control and bring the vehicle to a complete stop. This feature is currently available in Australian Liberty top end models.

Subaru's Eyesight System

Volvo's system on the XC60 model has a laser guidance system that can see other vehicles stopping and hit the brakes if the driver is distracted or fatigued (up to 30km/h), making 50 calculations per second. This is similar to BMW's series 5 and 6 models.

Other in-vehicle systems currently available can monitor the line marking on the road and if a distracted or fatigued driver veers out of their lane the vehicle's steering wheel vibrates to alert the driver of their distracted or fatigued state. Advanced systems, such as those used by Daimler Mercedes-Benz are able to use the vehicle's electronic stability control system to apply braking force to one wheel, creating a yaw moment that steers the vehicle back into its correct lane. Another in-vehicle system able to assist distracted or fatigued drivers is blind spot monitoring, which uses proximity sensors to detect if another vehicle is in the lane beside, or close behind the driver's vehicle and provides a warning to the driver. Some systems flash a hazard warning in the external rear view mirror, as well as providing an audible alert on the side of the car at risk.



Vehicle detection and lane departure warning system

Toyota Camry Atara 2012 model Blind Spot Monitoring System

Anti-collision device manufacturer Mobileye™ has developed a system which provides the driver with this lane departure warning. A video camera located behind the vehicle's windshield is coupled with an advanced image processor to automatically detect lane markings. The system alerts drivers who might unintentionally stray from the lane being travelled. To reduce nuisance alerts, the system will not provide an alert if the turn signal is activated by the driver, or if the driver makes a sharp manoeuvre. When the system's lane departure warning is engaged, a driver about to cross a detected lane marking without signalling is alerted in two ways: an amber indicator light located in the instrument panel flashes, and an alerting chime of three beeps is played in the left or right speakers, depending on the direction of impending lane departure. The system's forward collision warning works in a similar fashion, with the combination of a warning light and an audible tone to alert the driver. The driver can set distance warnings for far, medium or near. Mobileye systems are available in Australia.

Mobileye object detection system

Active Cruise Control (also known as Adaptive or Autonomous Cruise Control) is a system that can assist distracted drivers by monitoring the travel speed and headway between their vehicle and the one in front. This ensures the following driver maintains not only the set speed, but a safe distance between vehicles. Active systems are able to slow as the vehicle in front slows and accelerate back up to the set speed when the road ahead clears, either when the lead vehicle pulls off the road, or the driver moves into a safe overtaking position. Active Cruise Control has been available on many vehicles since the late 1990s but has become more common in recent years as sensor

and signal processing technology has advanced and become more affordable. Most advanced systems are also linked to autonomous braking systems, able to stop the vehicle when necessary to avoid a crash, or reduce the severity of a crash that cannot be avoided.

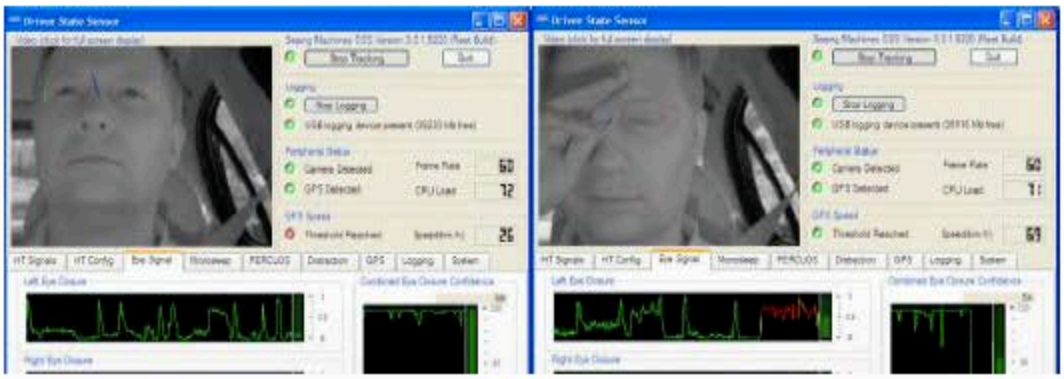
6.6 Driver monitoring devices

In 2003 Volvo released their Intelligent Driver Information System (IDIS) as standard on all Volvo V70 models. IDIS is an electronic information system that helps prevent the driver from becoming distracted by irrelevant information in busy situations. By continuously monitoring certain functions in the car, such as brake application and movements of the steering wheel, accelerator pedal and turn indicators, IDIS can assess the complexity of the driving situation. The information is processed and at a certain level of complexity, any information that is not essential to driver safety is delayed, for instance incoming phone calls or SMS text messages.

Several Saab models use a similar system called ComSense which minimises driver distraction through its "dynamic workload management", which briefly suppresses in-car warning messages and phone calls when moments of high driver workload is detected. Saab's 9-3X crossover model now available in Australia uses ComSense.

The Driver State Sensor (DSS) system is developed by an Australian company, Seeing Machines. It uses software called faceLAB™ to track the driver's eyes, eyelid and head, using a remote sensor on the dashboard to detect both distraction and fatigue. The DSS system also provides a series of interventions to avert accidents, such as audio alerts and seat vibration.

Driver State Sensor system



Driver State Sensor system display

Zoomsafer's FleetSafer Mobile is a patented software application for Smartphones (BlackBerry and Android. It detects when employees are driving and automatically enforces compliance with defined mobile phone use policies. It automatically turns on and off safe drive mode based on several different context triggers including integration with telematics vendors, OBDII devices, Bluetooth accessories and more.

The software restricts access to text, email and browsers and optionally enables hands-free calling to selected numbers. In safe drive mode, it can silence all incoming alerts, notifications and rings and it can send auto-replies to inbound text, email and phone calls. It connects via the vehicle's OBDII port. Once installed, the device automatically connects with the driver's smartphone and communicates vehicle speed to activate / deactivate safe driving mode.

Zoomsafer's FleetSafer Smartphone application

6.7 Short Range Communications between vehicles

Dedicated Short Range Communications (DSRC) is an emerging technology that will enable vehicle to vehicle (V2V) and vehicle to infrastructure (V2I) communications in very short time frames (faster than a human response). Its primary application is collision avoidance by allowing vehicles to 'see around corners', over hills and beyond visual obstructions to know all about the movements of surrounding traffic. Vehicles can 'watch' and communicate with each other (within 100 metres). Whilst it is not primarily a driver distraction tool, it has the potential to warn a driver of an imminent crash with another vehicle. These situations may arise due to a distracted or fatigued driver. The technology also has the potential to warn a distracted driver of an imminent crash and so help avoid a collision, by either manually or automatically applying the vehicle's brakes if the driver fails to take evasive action.

Dedicated Short Range Communications (DSRC)

6.8 Intelligent Speed Adaptation

Intelligent Speed Adaptation (ISA) is another emerging technology which can warn a distracted or inattentive driver when their vehicle exceeds the speed limit. ISA refers to advanced systems which use GPS technology linked to a speed zone database. The vehicle "knows" where it is and what the speed limit is for that road.

ISA device

The ISA system informs the driver via visual and auditory feedback if they exceed the speed limit. ISA devices can be mounted on the vehicle's dashboard or be integrated into the vehicles instrumentation. ISA devices are currently available in Australia (Smart Car Technologies P/L)

6.9 Road Design technology

Improvements in the design and application of road marking technology such as edge line and centreline rumble strips, warn distracted or fatigued motorists via steering wheel vibration and road noise when they accidently wander out of their travel lanes.

Vibraline ™

6.10 Technology & Legislation

In Europe, North America and Japan, draft standards have already been developed which contain performance based goals which must be reached by the Human Machine Interface (HMI) so that the in-car technologies do not distract or visually entertain the driver while driving. In 2010 alone, over 3,000 people were killed in distracted driving crashes in the USA.

In December 2011 the National Transportation Safety Board (NTSB) called for an all-out ban on mobile phone use among drivers, drawing complaints from industry and consumers alike that such a prohibition would be impossible to enforce and not entirely necessary. More realistically, National Highway Traffic Safety Administration and automaker trade groups worked on guidelines for how car manufacturers can reduce driver distraction. In February 2012 the first phase of the U.S. Department of Transportation voluntary guidelines for car manufacturers were released. The guidelines encourage vehicle manufacturers to develop 'less distracting' in-vehicle electronic devices. The recommended measures aim to reduce the complexity and time taken by the device so as to limit the device's operation to one hand only (leaving the other hand to remain on the steering wheel to control the vehicle). The proposals also aim to limit individual off-road glances required by drivers to operate the device to no more than two seconds, to limit unnecessary visual information in the driver's field of view, and to limit the amount of manual inputs required from the driver to use the device. The proposed guidelines also recommend the following measures; disabling the in-vehicle devices while the vehicle is in motion, block manual texting, internet browsing, social media browsing, navigation setting and telephone dialling, and to display to the driver less than 30 characters of text if the message is unrelated to the driving task. Further proposals address devices or systems that are not built into the vehicle but are brought into the vehicle and used while driving, including aftermarket and portable personal electronic devices such as navigation systems, smart phones, electronic tablets and pads, and other mobile communications devices.

U.S. President Barack Obama has banned Federal Employees from texting or using government issued phones or other devices while driving on official business, including the military. Thirty US states have banned text messaging for all drivers and seven states have banned the use of all hand-held devices behind the wheel.

Currently there is no prohibition in Australia for the use of telematic devices, such as advanced driver assistance systems (i.e. in-vehicle navigation systems) within a moving vehicle with the exception of mobile phones, visual display units and television receivers. Because they have a visual display screen, these devices are restricted under Australian Design rule 42/04, which states:

18.1. General

All television receivers or visual display units [VDUs] and their associated equipment must be securely mounted in a position which:

18.1.1. does not obscure the driver's vision;
18.1.2. does not impede driver or passenger movement in the vehicle; and
18.1.3. is unlikely to increase the risk of occupant injury.

18.2. Restriction on Visibility of Screen

Unless a driver's aid, all television receivers or visual display units must be installed so that no part of the image on the screen is visible to the driver from the normal driving position.

This states that a visual display unit (VDU) which is not a driver's aid must not be visible to the driver from the normal driving position. A Smartphone, tablet or other multi-function device that incorporates a 'driver's aid' (such as a GPS-device, if that is considered to be a driver's aid), whether it is a standard feature in the vehicle or can be accommodated by the vehicle, can be visible to the driver from the normal driving position so long as it is only displaying the driver's aid function. It must not be capable of displaying any other function while the vehicle is being driven.

This issue is of concern to vehicle safety regulators at both State and Federal level and the automotive industry itself. The NSW Centre for Road Safety submitted a paper to the February 2012 meeting of the Australian Motor Vehicle Certification Board on this matter. All jurisdictions have agreed that Australian Design Rule (ADR) 42/04 needs to be revised to better define what is a drivers aid and to include a requirement for screens displaying other than a drivers aid function to blank out once the device detects the vehicle is in motion. Similarly, the keypad functions should be disabled if the device detects it is in motion.

7 Other solutions to reduce information overload for road users

7.1 Education and communication campaigns

While the technological advances are moving at a rapid pace as outlined above, continued increased awareness of the real dangers of driver distraction is also essential to increase safety on NSW roads.

Transport for NSW is constantly developing and refining campaigns to target road users and key risk behaviours, such as driver distraction.

7.1.1 The Roads and Maritime Road User's Handbook

The *Road Users' Handbook* provides practical information on the Road Rules 2008 as well as road safety, low risk driving, vehicle registration and penalties for driving offences. The road rules are a framework for the safe and efficient movement of traffic on NSW roads. The handbook is essential reading for anyone learning to drive, or upgrading a licence. Section 5 of the Road User Handbook provides information on distraction and crash risk.

7.1.2 Education brochures

The NSW Centre for Road Safety has also developed a *'Mobile Phone and Driving'* brochure. The brochure provides information about the law, penalties and strategies for using hands free mobile phones safely. The brochure is distributed through the motor registries, Roads and Maritime Services regions and community events such as the Easter Show and regional events. This brochure is also included in the Transport for NSW learner driver pack which is issued to new learner drivers when they obtain their learner licence.

7.1.3 School education driver education

School-based driver education is delivered as part of high school road safety education programs. Driver education focuses on challenging young people's behaviour and attitudes to influence their safe road use as drivers and passengers. Well structured, engaging activities that stimulate student's thinking about road safety as a driver and passenger, can contribute to the development of safer drivers.

Transport for NSW develops a range of curriculum-based resources to support teachers in the delivery of road safety education in schools. The Limiting Risks: Protecting Lives resource has been provided to all NSW high schools to support the delivery of driver education part of school-based personal development and health, student welfare and or pastoral care programs.

Driver distraction is addressed specifically in 'Limiting risks, protecting lives' in Module 2: 'Safer driving - it's all about thinking and acting safely'. Here students investigate the

hazards, including distractions that can affect young drivers and examine the influences on driving.

7.1.4 The Centre for Road Safety Web Page

Information regarding the use of mobile phones is provided through the CRS web page. The web page provides information about:

- The law
- The penalty regime – the fines and demerit points.
- Specific provision for learner and P1 provisional drivers and riders

7.1.5 The Roads and Maritime Services GEARED Website

The Roads and Maritime Services website connects to a separate website called GEARED.com.au The site is managed by Roads and Maritime Services and has been specifically developed for young and learner drivers aged 17 to 20. The site provides information about getting and driving; and has a dedicated keeping a licence; buying and maintaining cars; safe page on distraction and features the types of distraction with the top 5 featured in the information. It also includes a video with interviews of young people and their experiences with distraction.

8 Any other related matters

8.1 Roadside Advertising

The placement and use of roadside advertising could be a potential emerging issue. The NSW Department of Planning and Infrastructure is currently reviewing its State Environmental Planning Policy (SEPP) No.64 - Advertising and Signage. Transport for NSW and Roads and Maritime Services have participated in ongoing consultation in relation to the review. One of the issues being considered is the possible use of electronic roadside advertising.

AUSTROADS is conducting further research into the 'impact of roadside advertising on road safety'. Transport for NSW and Roads and Maritime Services attended a workshop in December 2011 about this project. It is anticipated that the draft report will be available for comment later in 2012.

Additional research is required into this area of driver distraction to determine the impact on road safety. Transport for NSW will continue to monitor the ongoing research to develop an informed, evidenced based policy position on roadside advertising.

8.2 Pedestrians and distraction

Distraction for pedestrians is any diversion of attention away from walking toward a competing activity, regardless of whether the diversion is self-initiated or reactive. For example, the pedestrian could initiate the distraction by using portable electronic devices, eating, smoking or talking with others or alternatively the pedestrian could be distracted by a reaction to something external such as responding to a screaming baby or seeing a flashing advertising billboard.

Electronic devices that cause distraction for pedestrians include mobile phones or Smartphones with increasing functionality such as texting, applciations, iPods and MP3 players.

When pedestrians choose to voluntarily divert attention toward competing activities (e.g. texting or selecting a music track), they have some latitude to self-regulate their pedestrian behaviour to compensate for the anticipated impact of this diversion on their attention in the road environment.

The daily interaction within the road environment requires full concentration of each road user for safe and responsible road use. Drivers are legally required to give way to a pedestrian at crossings and when turning at intersections. Drivers need to be prepared at all times to slow down and stop for pedestrians therefore it is critical that they are not distracted from the task of driving.

This is particularly important:

- In busy Central Business District areas where more people are likely to be crossing the road.
- At intersections where pedestrians cross (pedestrians have the right of way in the road into which drivers are turning).
- Near hotels where there are likely to be pedestrians who have been drinking.
- Where there are parked cars or stopped buses.

An analysis of pedestrian and cyclist behaviour to date has not identified distraction as the key risk pedestrian behaviour contributing to crash involvement. Any safety message about pedestrian distraction needs to be embedded within the key safety messages related to the correct use of traffic signals and the safety benefits of using a pedestrian crossing where available otherwise pedestrians who do not use electronic devices may be of the belief that their risky crossing behaviour is not a problem.

8.2.1 Distractions and road crossing behaviour

Bungum et al (2005 in Hatfield and Murphy, 2007) found that distraction was weakly associated with not displaying cautious pedestrian behaviours. Distraction was defined as wearing headphones, talking on mobile phone, eating, smoking etc.

However, the overwhelming majority of studies view distraction in terms of the distracting effect of mobile phone use on road crossing behaviour. A number of studies reveal that pedestrian behaviour becomes more hazardous when pedestrians use electronic devices, especially mobile phones, while crossing roads (Nasar et al, 2008 and Stavrinos et al 2011). The cognitive diversion due to the nature of the conversation is far greater than listening to music.

Hatfield and Murphy (2007) detected a difference between men and women in such situations. It was observed that women using a mobile phone while crossing the street paid less attention to traffic than men using a phone. In fact, users of mobile phones behave more dangerously than non-users, but also more so than users of audio-devices (Naser et al, 2008). Similarly, adults distracted by a phone conversation took more risks in a virtual pedestrian environment than those distracted by listening to music (Neider et al, 2010).

A comprehensive review of the literature (Wiliamson et al) revealed while pedestrian distraction was clearly a risk factor in pedestrian crashes, there is very little evidence on the influence of this factor in crashes. A major reason for this is the difficulty of establishing whether a pedestrian was distracted just before a crash.

8.2.2 Young pedestrians

Children and teenagers are considered particularly vulnerable road users due to their physical, cognitive and social development. Crossing the road requires cognitive skills that utilise problem solving skills, identifying a safe place to cross, visual scanning skills, estimating vehicle speed and distance and predicting when the vehicle will pass by. Children also have limited ability to judge speed, have limited peripheral vision and limited ability to locate the direction of sound.

For young pedestrians, distractions include chatting with others, texting/talking on mobile phones, reading and eating/drinking (Chinn et al 2004). An American study of 10-11 year olds (Stavrinos et al, 2009) found that children's crossing behaviour was compromised when distracted by a mobile phone.

Research into adolescent road safety behaviour (Chinn et al 2004) found that high school students may experience greater distractions such as chatting with friends when they travel in groups. Adolescents reported forgetting more often to look properly when crossing the road and rated their attention to traffic as lower when they were with friends compared to when they were alone. (Chinn et al 2004). However, as Williamson and Dunn point out, when exposure factors are taken into account, the Chinn et al study concluded that the risk of pedestrian crashes was no higher for adolescents in groups than when alone.

8.2.3 Older pedestrians

The NSW Centre for Road Safety sponsored a major observational study of crossing behaviour of elderly pedestrians in the late 1990s. The final 2006 report (Job & Hatfield) highlighted impaired concentration due to distractions (e.g. walking with a friend or talking on a mobile phone). A recent 2011 study (Neider et al, 2011) supported this with the finding that older adults generally take longer than younger adults to initiate the crossing, and this difference is exacerbated during mobile phone conversation suggesting impairment in cognitive planning processes.

Research conducted in 1999 by the Monash University Accident Research Centre found that for older pedestrians, physical impairments such as arthritis, occurs for one of every two people over 65 years of age and can greatly restrict the range of movement (head and neck movement, difficulty in walking and involuntary hesitation), the result of which can be difficulty in or slowing of the detection of approaching vehicles (Centers for Disease Control and Prevention, 2001). In addition, these problems can slow walking speed and reduce the ability to adapt walking pace to suit traffic conditions. The related discomfort and pain can be a distraction and can lead to fatigue.

Overall, while no studies have demonstrated a clear and strong link between pedestrian distraction and increased crash risk, there is emerging evidence of an association between distraction while crossing the roads and poorer road safety behaviour by pedestrians (Williamson and Dunn).

8.3 Cyclists and distraction

Cyclists need to be particularly vigilant and fully aware of their surroundings - given their exposure to injury and vulnerability on the roads. Personal devices such as iPods and mobile phones can be an auditory, visual and cognitive distraction and potentially impact on their safety on the roads. A study conducted in The Netherlands (DeWaard et al, 2010) found that use of mobile phones coincided with reduced speed, reduced peripheral vision performance and increased risk and mental effort ratings. Text messaging had the largest negative impact on cycling performance.

Another study (Goldenbeld et al, 2012), also in the Netherlands, used an internet questionnaire survey and found that the risk of a bicycle crash increases with greater use of electronic devices. A careful estimate is that the odds of being involved in a

bicycle crash are higher by a factor of 1.4 for cyclists who use devices *during every trip* than for cyclists who never do. Cyclist respondents were asked about situations in which they fell off their bicycle. Approximately 10% of all bicycle crashes and about 9% of the bicycle crashes with any form of injury are preceded by the use of devices. These responses relate to self-reported bicycle crashes and cannot be compared with official crash statistics which involve more serious injury.

8.4 Pedestrian and cyclist distraction - education and communication campaigns

Transport for NSW uses a range of strategies to communicate road safety messages to pedestrians and cyclists to influence safe and responsible road use.

8.4.1 The Roads and Maritime Services (RMS) Website

The Roads and Maritime Services website has a section on pedestrian safety and includes specific advice to "avoid using a mobile phone or portable media player (so you can hear vehicles and can concentrate on crossing the road)".

8.4.2 The Roads and Maritime Services Road User's Handbook

The *Road Users' Handbook* provides practical information on the NSW road rules and safety tips for both pedestrians and cyclists.

8.4.3 The NSW Government website

The NSW Government website www.bicycleinfo.nsw.gov has the following information on cyclist distraction:
"Leave your portable audio equipment behind. It's absolutely essential when you're riding with a group to be aware of your changing road environment and the verbal messages of other riders. Listening to audio devices or a mobile phone could distract you and prevent you from hearing what's going on."

The website also provides information about riding safely including information on the NSW road rules, riding in groups, road safety education and 10 tips for cycling safely.

8.4.4 Education brochures

Transport provides a range of brochures on cycling and pedestrian safety. The *Pedestrians crossings* brochure provides information about the NSW road rules and safety tips for pedestrians on how to cross safely. The brochure is distributed through the motor registries and local councils as part of the NSW Local Government Road Safety Program. This brochure provides the following information: "Avoid using a mobile phone or portable music player while you are crossing the road . These devices can distract you from checking for traffic".

8.4.5 Older Pedestrian Education Program

Transport for NSW funds projects through the NSW Local Government Road Safety Program for local council road safety officers to deliver education programs aimed at older pedestrians, including users of motorised wheelchairs. A new educational

resource entitled *Walking Safely* presentation addresses safe and unsafe pedestrian behaviours, safety tips and safe places to cross. The safe use of mobile phone and music devices is discussed within the presentation.

8.4.6 School Education Program

The NSW Centre for Road Safety funds the NSW School Road Safety Education Program which addresses child pedestrian safety in the early childhood, primary and secondary school settings. Road safety is addressed as a component of the NSW Board of Studies Personal Development, Health and Physical Education syllabuses and as such is mandatory in all NSW schools.

Pedestrian safety messages and information on pedestrian safety issues around schools and centres are conveyed to parents, carers and the school community through the provision of free publications – brochures, booklets, take home notes, and material designed for inclusion in school newsletters.

Youthsafe in cooperation with the Centre for Road Safety developed the *On the way to high school - Helping Teenagers to Travel Safely* fact sheet. This fact sheet is promoted to be distributed to parents of high school students and senior primary school students.

The tips outlined in the fact sheet are designed to promote parent /teenager discussion about safe travel to high school. "talking and texting on mobile phones and using MP3 players are a distraction".

The NSW Centre for Road Safety has also developed a curriculum road safety resource Road *risks – your choice* (RRYC) for Stage 4 (Years 7-8) students. This resource has been provided free to all New South Wales high schools with supporting professional development.

Stage 4 students (12-14 year olds) mainly use the road as pedestrians, passengers and riders of wheeled devices. This resource allows students to learn about risk factors, protective behaviours, protective equipment, laws, rules and influences on behaviours in these road user groups. This Personal Development, Health and Physical Education resource provides teachers with a range of teaching and learning activities for students to identify and reduce risks, make safer decisions and be proactive about personal safety on and near roads. Two teaching activities explore risk situations with the issues of pedestrian and driver distraction being addressed within these activities.

8.5 Public Passenger Vehicles

Vehicles such as buses and taxis also contain equipment which fall within the scope of this inquiry such as (but not limited to) driver ticketing consoles, taxi meters, dispatch systems, security cameras and satellite navigation systems. This equipment is integral to the provision of passenger services in NSW.

Over the past three years there has been a steady increase in the number of complaints received by Transport for NSW about drivers, particularly taxi drivers, using a handheld mobile phone while driving.

Year	Complaints against taxi drivers
2012 to 27 March	16
2011	83
2010	62
2009	48

8.5.1 Transport for NSW policy on drivers' use of hand-held mobile phones

Under the Passenger Transport Act 1990, the Director General of Transport for NSW may suspend the authorities of public passenger drivers. Transport for NSW has a policy of suspension of driver authorities pending investigation of unacceptable conduct.

Driving while using a mobile phone is illegal and as such is a conduct issue for bus, taxi and private hire car drivers. Transport for NSW's policy concerning the use of mobile phones by public passenger vehicle drivers is available at: http://www.transport.nsw.gov.au/content/use-mobile-phones-and-other-unacceptable-driver-behaviour

Transport for NSW is currently revising its policy on the use of hand held electronic devices to ensure that Roads and Maritime Services can take immediate action to suspend a driver in serious cases which affect passenger safety, while reflecting current lawful behaviour regarding the use of mobile phones and other devices.

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Investigation of Road User Distraction as a Contributing Factor in Casualty Crashes in NSW

Analysis of NSW Centre for Road Safety Crash Data

April 2012

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Introduction

The National Road Safety Strategy 2011-2020 states "Driving is a complex task and sources of driver distraction, both within the vehicle and in the general road environment, have increased substantially in recent years. … Although it is very difficult to quantify the effect of all of these and other sources of distraction on serious road casualties, they are recognised as a major and potentially growing problem area." (p83-84)

In late February 2012, the Parliamentary Standing Committee on Road Safety (Staysafe) announced an inquiry into the impact of driver and road user distraction from the use of hand-held electronic devices, in-vehicle technology and external visual displays and signs. To support this inquiry, this report examines the nature and extent of these types of distraction as contributors in crash casualties on NSW roads.

Scope of the Analysis

This analysis of distraction as a contributor to fatal and injury crashes on NSW roads examines:

- Crash data and contributors to distraction
- Nature of distraction
- Distracted controllers involved in NSW crashes 2000-2011p
- Distracted controllers involved in casualty crashes, July 2010 to December 2011p

Crash Data and Contributors to Distraction

The crash data used throughout these analyses were provided by the NSW Centre for Road Safety from the CrashLink database. The primary distraction factor recorded in NSW crash data apply to the controller of a traffic unit (including pedestrians and pedal cyclists). There may be none, one or more distraction factors associated with a traffic unit. Only the factor most relevant to the crash is recorded. Recording of a primary distraction factor, within NSW crash data, commenced approximately 20 years ago. While the primary distraction factor field includes a controller of a vehicle or pedestrian using a hand-held phone, the many hand-held electronic and in-vehicle technology devices available today are not individually recorded within these crash data.

The devices and technology available that may impact on driver and road user distraction include hands-free phones, SMS capability, MP3 players, hand-held and in-vehicle satellite navigation systems, smart phones, portable and in-vehicle DVD players, portable computer pads, e-readers, as well as complex sound systems, climate controls, audible and visual signals for an array of vehicle

operations. Many of these did not exist when the primary distraction factor coding was established.

In addition to those possible distractions related to technology, relevant distractions may also be caused by other factors such as eating, drinking, smoking, conversations, passing things to/from passengers or another pedestrian, reaching or searching for objects within a vehicle (or a pedestrian's bag), grooming, reading (maps or other material), writing, adjusting windows, being overwhelmed with the number of road signs or road environment demands, etc.

The variables within the primary distraction factor include:

1. Controller with physical infirmity or chronic illness
2. Controller with sudden illness
3. Controller asleep, drowsy or fatigued
4. Controller distracted or vision obscured by passenger (including passenger interfering with controls)
5. Controller distracted / vision obscured by something inside vehicle
6. Controller distracted / vision obscured by something outside vehicle*
7. Controller being pursued by police
8. Emergency vehicle sounding warning within earshot
9. Controller using hand-held telephone
10. Other distraction a factor

Due to the requirements of this report, analyses will generally be concentrated on the variables 5, 6, 9 and 10 listed above (and highlighted in blue).

* Please note that the code for 'controller distracted / vision obscured by something outside the vehicle' is used when the driver was blinded by the sun or the headlights of an approaching vehicle.

In 2003, under NSW Personal and Private Information Protection Act, the NSW Police Force replaced the crash narrative which was previously supplied to the NSW Centre for Road Safety with a brief summary of the crash event (known as the crash summary). Following consultation, in June 2010 the NSW Police Force recommenced the provision of the crash narrative with enhanced details of the crash circumstances. This has resulted in a substantial increase in the recording of factors associated with road user controllers, including distraction as a possible factor. Therefore, the majority of this analysis will be based on data within the period 1 July 2010 to 31 December 2011, as these data contain the most current and reliable reporting of controllers recorded as distracted (hereafter known as distracted controllers).

As a penalty, including a fine and demerit points, are issued for mobile phone use, unlike some of the other distraction factors, it seems likely that the use of mobile phones may be under reported.

Please note that throughout the analysis within this report, data from the final three months of 2011 are considered preliminary and approximately 10-15% incomplete; thus, containing less crashes than expected. 2011 data are marked in graphs and tables with a 'p' to indicate they are preliminary and incomplete.

As much of the analyses rely on a data period from 1 July 2010 to 31 December 2011p, all analyses were based on the month and year taken from the crash date, rather than the reported year of crash.

In accordance with the national guidelines for reporting and classifying road vehicle crashes, the NSW Centre for Road Safety only record crashes which are reported to the Police, occurred on a road open to the public, involved at least one moving road vehicle, and involved at least one person being killed or injured or at least one motor vehicle being towed away. A fatality is a person who dies within 30 days of a crash from injuries received in the crash.

Nature of Distraction

These crash data do not define what constitutes a distraction. A recent Australian report on driver distraction explored a number of different definitions of distraction, and defined distraction within the study as "... a visible outcome of some event, action or feature in the driving situation inside the car that impacts driving activities so that it, for example, involves the driver looking away from the road, removing a hand from the wheel, reorienting the body away from forwards driving activity or in other ways attending to something other than driving."[1] This study did not examine distractions occurring outside the vehicle.

This study, amongst other components, included a small sample of 27 hours of video recordings of 9 individual drivers involved in real-world, real-time driving in Australia. "The quantitative results suggest that such distracting activities as talking (in 100% of journeys with passengers), grooming (91%), the adjustment of entertainment system (58%) and searching for objects inside the car (44%) were the four most frequent distracting activities, whereas reading (1%), texting (2%), eating and drinking (8%) and making / receiving a mobile phone call (9%) were among the four least frequent distracting activities. Other identified distracting

[1] *In-car distractions and their impact on driving activities*; sponsored by the Australian Government, Department of Infrastructure and Transport; authors M Nevile and P Haddington; published December 2010; p.v

activities included singing and drumming, adjusting climate control and passenger influence."[2]

This study also discusses distractions in terms of those that can be planned, predictable and controlled, and those that may be unplanned, unpredictable and uncontrolled. It examines the length of distractions, as well as from where the distraction was initiated (ie initiated by the driver, a passenger, a ringing mobile phone or noise from another technological device).

The study cited that some research suggests that the number and age of passengers in a vehicle has an impact on driver distraction.[3]

[2] *In-car distractions and their impact on driving activities*; M Nevile and P Haddington; published December 2010; p.vi

[3] *In-car distractions and their impact on driving activities*; M Nevile and P Haddington; published December 2010; p.8-9

Controllers Involved in NSW Crashes, 2000-2011p, All Primary Distraction Factors

During the 12 year period 2000-2011p, as shown in Table 1, 75,479 controllers were recorded as distracted and involved in reported crashes in NSW. This was 7% of all 1,009,217 controllers involved in crashes during this period.

There were 647 distracted controllers involved in fatal crashes, and 33,303 distracted controllers involved in injury crashes during this period. This was 7% of all 8,970 controllers involved in fatal crashes, and 7% of all 446,278 controllers involved in injury crashes.

The set of data used throughout the majority of the analyses counts controllers (including vehicle drivers, motorcyclists, pedal cycle riders, and pedestrians), or categories of these controllers, recorded as having a primary distraction of one of the four primary factors listed above, involved in a crash resulting in one or more fatalities and/or injuries (a casualty crash), and occurring within NSW.

Over the period 2000-2011p, of the 24,615 controllers recorded as distracted by the four primary factors of interest to this report, and involved in casualty crashes:

- 80% (19,605) were distracted or had their vision obscured by something outside the vehicle
- 15% (3,664) were distracted or had their vision obscured by something inside the vehicle
- 5% (1,136) were affected by a distraction factor classed as 'other'
- 1% (210) were using a hand-held phone

2000-2011p			Controllers Involved in:					
Primary Distraction Factor	All Crashes	%	Fatal Crashes	%	Injury Crashes	%	Total Casualty Crashes	%
Distracted outside	44294	59%	207	32%	19398	58%	19605	58%
Asleep or drowsy	8601	11%	219	34%	3900	12%	4119	12%
Distracted inside	9980	13%	13	2%	3651	11%	3664	11%
Sudden illness	5345	7%	79	12%	3193	10%	3272	10%
Other distraction factor	2456	3%	62	10%	1074	3%	1136	3%
Distracted by passenger	1868	2%	7	1%	827	2%	834	2%
Pursued by police	1414	2%	29	4%	562	2%	591	2%
Emergency vehicle warning	910	1%	2	0%	381	1%	383	1%
Hand-held phone	438	1%	9	1%	201	1%	210	1%
Chronic illness	173	0%	20	3%	116	0%	136	0%
Total Distracted Controllers	75479	100%	647	100%	33303	100%	33950	100%
No distraction factor	933738		8323		412975		421298	
Total Controllers Involved	1009217		8970		446278		455248	

Table 1: Controllers involved in All Crashes, 2000-2011p, by Degree of Crash and Distraction Factor

A table showing controllers involved in all crashes between 2000 and 2011p, by traffic unit group and each of the ten distraction factors is provided in Appendix A (Table 3). A similar table is provided for controllers of articulated and heavy rigid trucks involved in these crashes (Table 4).

Distracted Controllers Involved in Casualty Crashes, Trends Since 2000, Four Primary Distraction Factors

An examination of the involvement of controllers affected by the four distraction factors in casualty crashes by year is shown in Figure 1. Only controllers involved in casualty crashes and recorded as using a hand-held phone by year are shown again in Figure 2.

In each figure, a reduction in recording of primary distraction can be seen in about 2003, followed by an increase since 2010. As described earlier, this decrease and the subsequent increase can be traced to the removal and re-provision of the lengthier crash narrative by the NSW Police Force. Any decrease prior to 2003, may relate to the process beginning to take place.

Conversely, the controllers involved in casualty crashes throughout NSW over the same time period shows a steady downward trend, as can be seen in the comparison data provided in Figure 1.

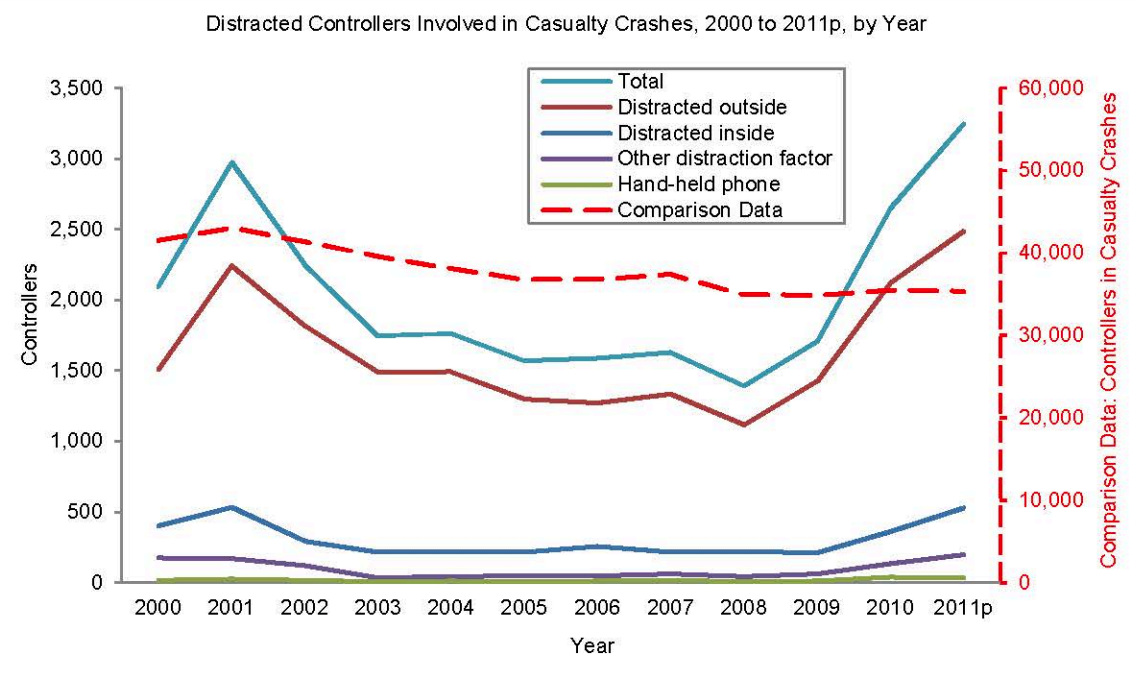

Figure 1: Distracted Controllers Involved in Casualty Crashes, 2000 to 2011p, by Year

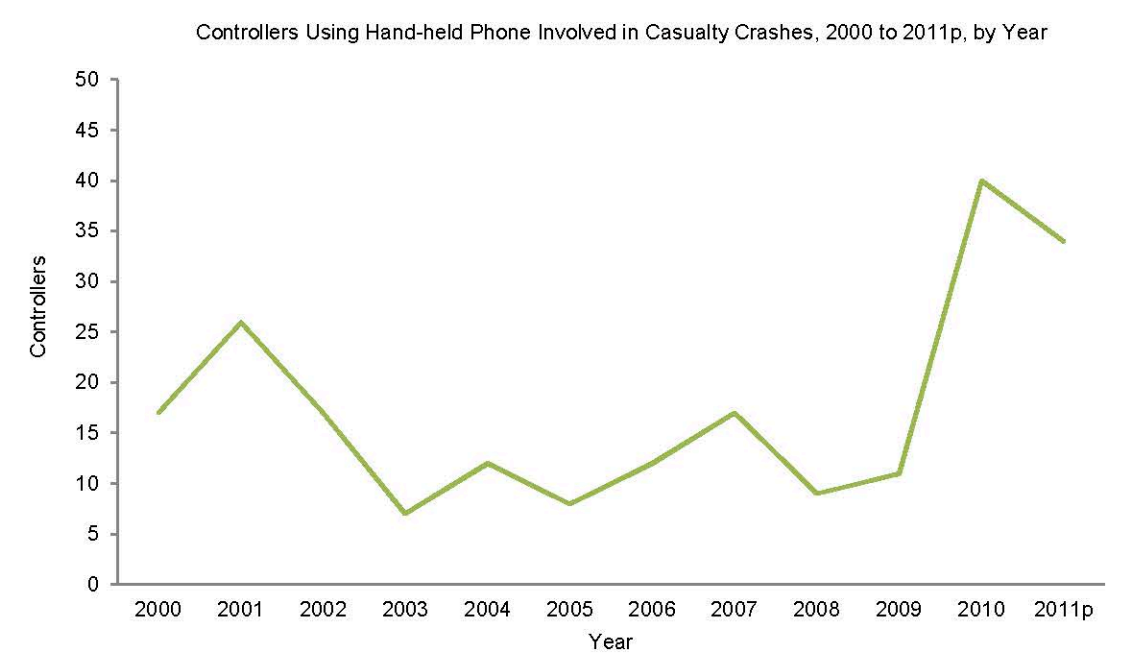

Figure 2: Controllers Using Hand-held Phone Involved in Casualty Crashes, 2000 to 2011p, by Year

Distracted Controllers Involved in Casualty Crashes, July 2010 to December 2011p, Four Primary Distraction Factors

From this point onwards, the analyses focus on the 18 month period from 1 July 2010 to 31 December 2011p. As described above, these are the most informative NSW crash data available with respect to distracted controllers.

During this period, of the 4,913 controllers recorded as distracted by these four primary factors and involved in casualty crashes:

- 77% (3,788) were distracted or had their vision obscured by something outside the vehicle
- 16% (778) were distracted or had their vision obscured by something inside the vehicle
- 6% (287) were affected by a distraction factor classed as other
- 1% (60) were using a hand-held phone*

* As the figure for controllers using a hand-held phone is low (60), please treat all analysis of this group with caution, as small changes in figures can result in a large variation in proportion.

Of these 4,913 distracted controllers involved in casualty crashes, 1% (43) were involved in a crash resulting in one or more fatalities, and 99% (4,870) were involved in a crash resulting in one or more injuries. These crashes resulted in 35 fatalities and 5,276 injuries. Please note that some crashes involved multiple distracted controllers. Casualty crashes by the four primary distraction factors are shown in Figure 3.

When compared to the proportion of total distracted controllers involved in fatal crashes (1% or 43), those controllers distracted by the use of a hand-held phone were higher (7% or 4), and those distracted by a factor classed as other were also higher (5% or 14).

A table reflecting these figures can be found in Appendix A, Table 5.

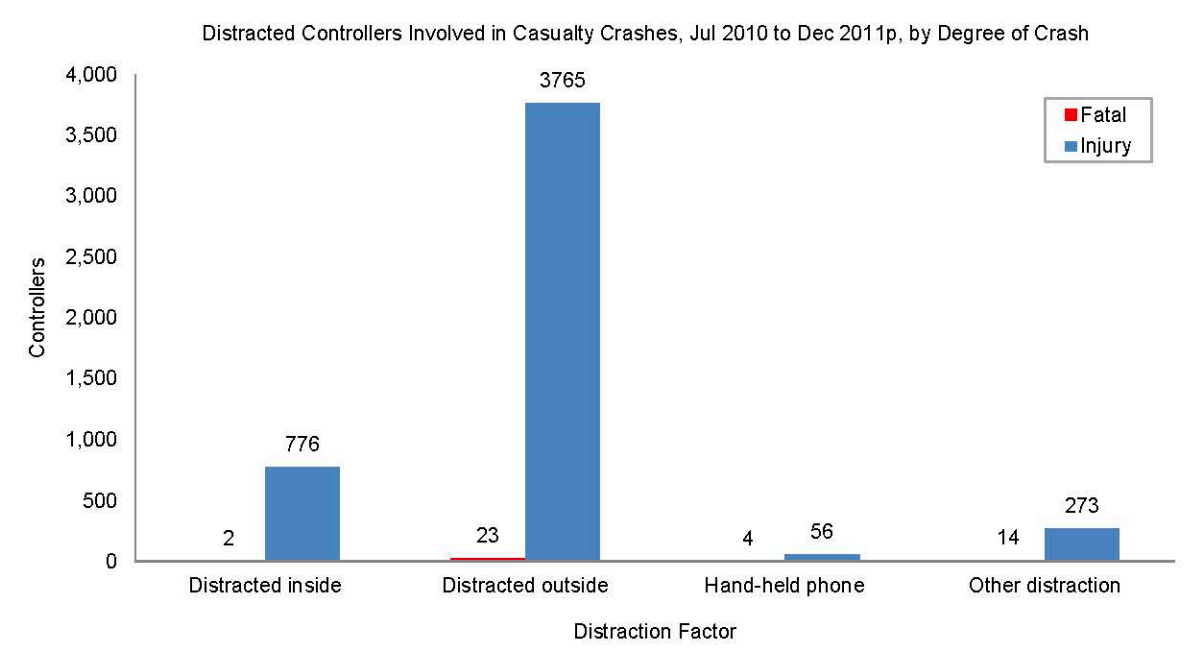

Figure 3: Distracted Controllers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Degree of Crash

At times throughout the analyses, this set of data is compared to a set counting controllers involved in a casualty crash occurring within NSW. Over this 18 month period, in NSW, there were 53,707 controllers involved in reported casualty crashes. Of these controllers, 2% (865) were involved in a crash resulting in one or more fatalities and 98% (52,840) were involved in a crash resulted in one or more injuries. These crashes resulted in 981 fatalities and 74,183 injuries.

As shown in Table 2, when compared to the proportions of fatal crashes involving speed (41% or 211) and fatigue (16% or 83) that occurred over this 18 month period, fatal crashes involving a distracted controller occurred less frequently (7% or 35).

Compared the proportions of injury crashes involving speed (17% or 4,857), injury crashes involving a distracted controller occurred less frequently (14% or 4,057). They occurred more frequently than injury crashes involving fatigue (7% or 2,081).

Crashes Jul 2010-Dec 2011p	Fatal Crashes	% Total Fatal Crashes	Injury Crashes	% Total Injury Crashes
Speed related crashes	211	41%	4857	17%
Fatigue related crashes	83	16%	2081	7%
Crashes involving at least one controller affected by one of the 4 distraction factors	35	7%	4057	14%
Total crashes	519		28913	
*Please note that the categories within this table are not mutually exclusive				

Table 2: Crashes, Jul 2010 to Dec 2011p, by Contributing Factor and Degree of Crash

Road Users and Traffic Units Involved

Traffic Unit Groups

Figure 4 shows the proportion of distracted 'drivers' involved in casualty crashes by their traffic unit group. These drivers include 4,751 controllers of cars, car derivatives, light trucks, motorcycles, other motor vehicles, articulated trucks, heavy rigid trucks and buses. Pedal cyclists (94) and pedestrians (68) are excluded from this group of drivers.

Of the 4,751 distracted drivers involved in these crashes:

- The majority (80% or 3,801) were driving a car or car derivative
- 9% (424) were driving a light truck
- 6% (292) were riding a motorcycle
- 3% (129) were driving a motor vehicle classed as other
- 2% (80) were driving an articulated truck (1% or 47) or heavy rigid truck (1% or 33)
- 1% (25) were driving a bus

As shown in Figure 4, compared to the total percentage of car and car derivative drivers (80% or 3,801), this group were more likely to be distracted inside the vehicle (85% or 662), and using a hand-held phone (84% or 38).

Compared to the percentage of light truck drivers (9% or 424), this group were less likely to be recorded as distracted by using a hand-held phone (4% or 2).

Compared to the percentage of motorcycle riders (6% or 292), this group were less likely to be recorded as distracted, or having their vision obscured, by something inside the vehicle (1% or 7).

Compared to the percentage of articulated truck drivers (1% or 47), this group were more likely to be recorded as being distracted by using a hand-held phone (7% or 3).

No motorcyclists or bus drivers were recorded as being distracted by using a hand-held phone.

A table reflecting these figures can be found in Appendix A, Table 6.

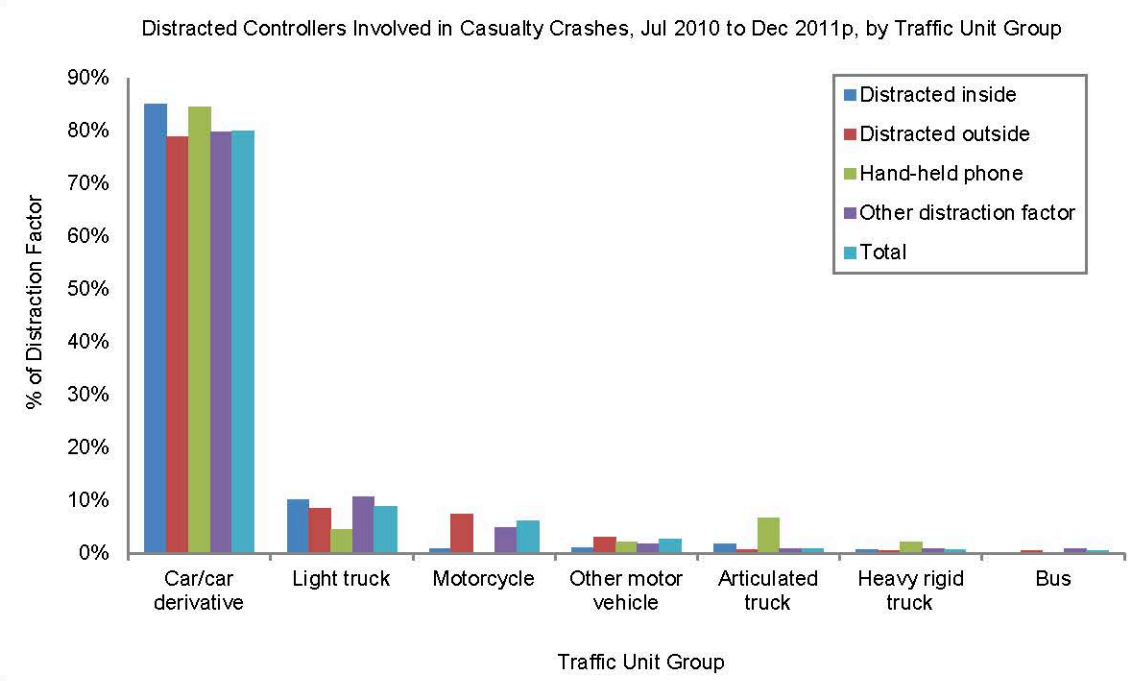

Figure 4: Distracted Controllers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Traffic Unit Group

Of pedestrians (68), this group were most likely to be recorded as distracted by a factor classed as other (78% or 53), followed by using a hand-held phone (22% or 15). Please note that pedestrians were not recorded as being distracted by something outside or inside the vehicle.

Of pedal cyclists (94), none were recorded as being distracted by using a hand-held phone.

Occupants

Figure 5 shows traffic units with a distracted driver involved in a casualty crash by the number of occupants. The majority of traffic units with a distracted driver involved in casualty crashes had a single occupant (73% or 3,469).

Compared to the percentage of distracted drivers with a single occupant (73% or 3,469), this group were more likely to be recorded as being distracted by using a hand-held phone (91% or 41), and distracted, or having their vision obscured, by something inside the vehicle (79% or 614).

Compared to the percentage of distracted drivers with 2-5 occupants (26% or 1,244), this group were less likely to be recorded as using a hand-held phone

(9% or 4) and distracted or having their vision obscured by something inside the vehicle (21% or 161).

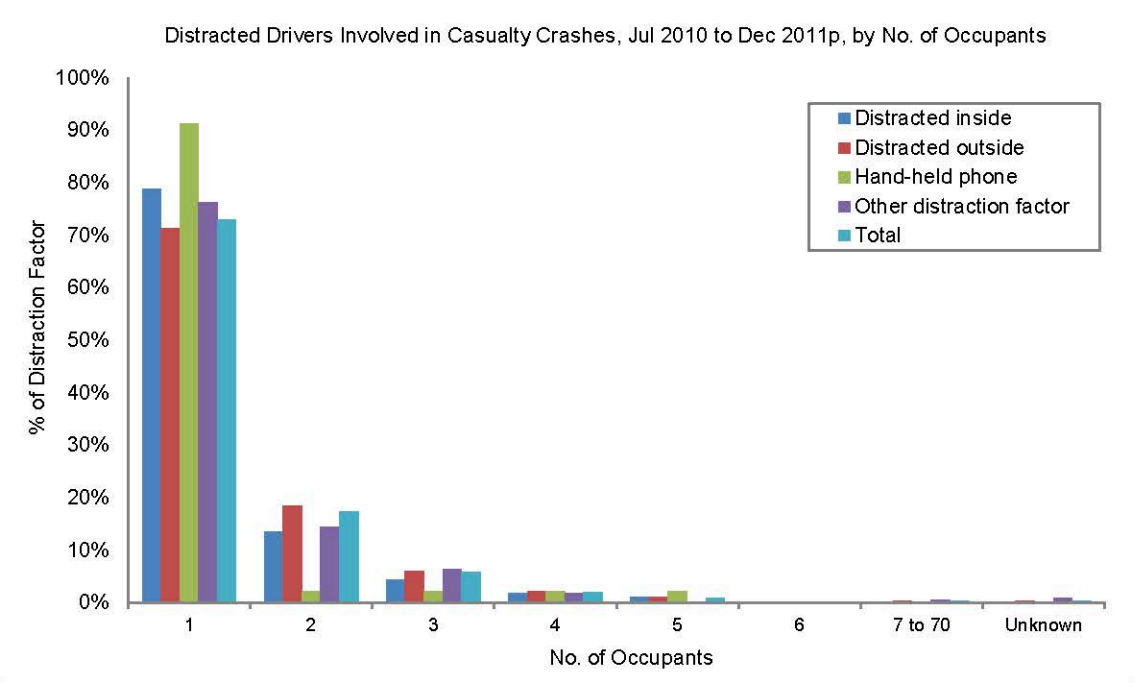

Figure 5: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Number of Occupants

A table reflecting these figures can be found in Appendix A, Table 7.

Traffic Units

Figure 6 shows traffic units with a distracted driver involved in a casualty crash by the number of traffic units involved in these crashes. The majority of traffic units with a distracted driver involved in casualty crashes involved multiple (2-7) traffic units (88% or 4,177).

Compared to the percentage of distracted drivers involved in a casualty crash involving a single traffic unit (12% or 574), this group were more likely to be recorded as being distracted or having their vision obscured by something inside the vehicle (30% or 237), distracted by using a hand-held phone (29% or 13), and distracted by a factor classed as other (25% or 56). This group were less likely to be recorded as distracted or having their vision obscured by something outside the vehicle (7% or 268).

Compared to the percentage of distracted drivers involved in a casualty crash involving multiple traffic units (88% or 4,177), this group were more likely to be recorded as being distracted or having their vision obscured by something outside the vehicle (93% or 3,438). This group were less likely to be recorded as distracted or having their vision obscured by something inside the vehicle (70%

or 541), by using a hand-held phone (71% or 32), and distracted by a factor classed as other (75% or 166).

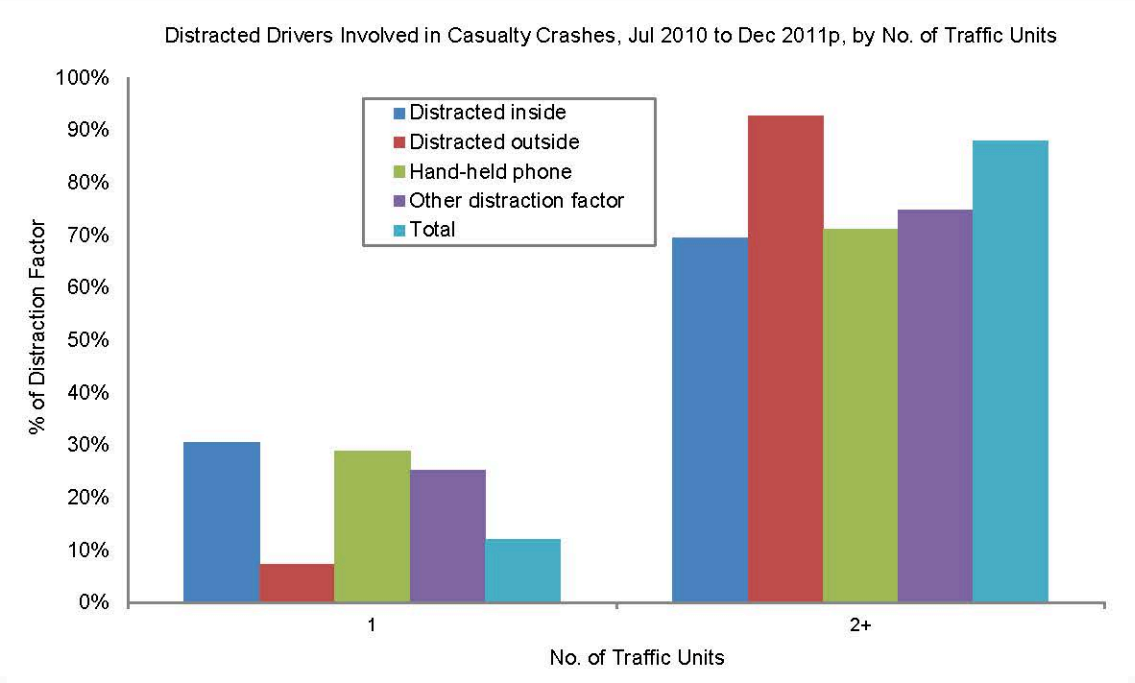

Figure 6: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Number of Traffic Units

A table reflecting these figures can be found in Appendix A, Table 8.

Controller Characteristics

Gender

Males comprised 62% (3,065) of the distracted controllers involved in casualty crashes, and females comprised the remaining 37% (1,833). As depicted in Figure 7, when the proportion of distracted controllers by gender was examined within each of the four distraction factors, males were slightly less likely to be distracted by something inside the vehicle (57% of controllers distracted inside, or 443 male controllers), than by the other distraction factors, and females slightly more likely (43% or 335 female controllers).

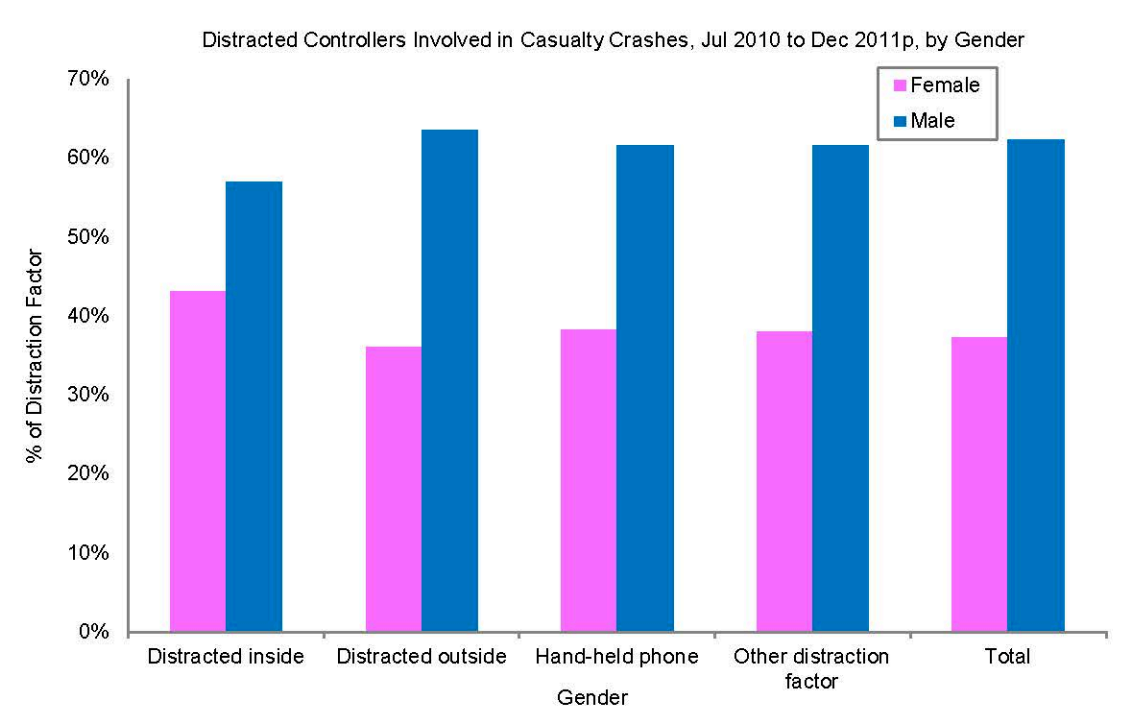

Figure 7: Distracted Controllers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Gender

An examination of distracted controllers' genders by traffic unit type found in all cases (to varying degrees) the majority of controllers were male:

- All articulated truck, heavy rigid truck and bus drivers were male (100% or 82)
- Of motorcyclists, 91% (266) were male
- Of drivers of other motor vehicles, 89% (115) were male
- Of light truck drivers, 88% (374) were male
- Of pedal cyclists, 84% (79) were male
- Of pedestrians, 62% (42) were male
- Of car and car derivative drivers, 55% (2,085) were male

Age

Figure 8 depicts the proportion of controllers involved in casualty crashes within each of the four distraction types. Distracted controllers were most frequently aged 30-59 years (48% or 2,378), followed by 17-29 years (37% or 1,840). A further 12% (594) were aged 60 years and over, and 1% (44) was aged 5-16 years. Please note that these age groups are not uniformly sized.

Compared to the percentage of distracted controllers aged 30-59 years (48% or 2,378), this group were less likely to be recorded as distracted or vision obscured by something inside the vehicle (41% or 321), and distracted by a factor classed as other (40% or 115).

Compared to the percentage of distracted controllers aged 17-29 years (37% or 1,840), this group were more likely to be recorded as distracted or vision obscured by something inside the vehicle (51% or 394), and distracted by using a hand-held phone (43% or 26).

Compared to the percentage of distracted controllers aged 60 years and over (12% or 594), this group were less likely to be recorded as distracted by using a hand-held phone (5% or 3), and distracted or vision obscured by something inside the vehicle (7% or 58).

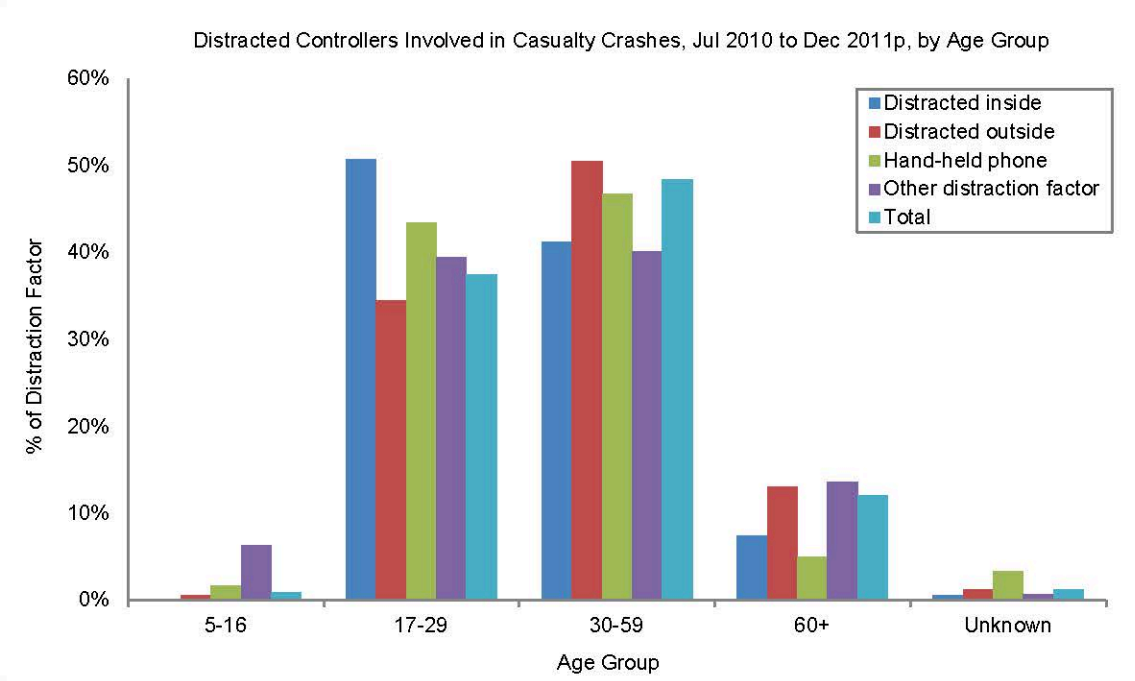

Figure 8: Distracted Controllers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Age Group

A table reflecting these figures can be found in Appendix A, Table 10.

The age groups of distracted controllers involved in casualty crashes by distraction factor were also examined by traffic unit group. Of pedestrians (1% or 68) distracted by using a hand-held phone (25% or 15), 13% (8) were aged 17-29 years, 8% (5) were aged 30-59 years. A further 2% (1) were aged 5-16 years, and 2% (1) were aged 60 years and over.

Of pedestrians distracted by a factor classed as other (18% or 53), 6% (16) were aged 5-16, 5% (15) were aged 17-29 years, and 5% (14) were aged 30-39 years. A further 3% (8) were aged 60 years and over.

Compared to the proportion of car and car derivative drivers aged 17-29 years (30% or 1,488), this group were more likely to be distracted inside the vehicle (44% or 345).

A table reflecting these figures can be found in Appendix A, Table 11.

Location of Crashes

Conurbation

Figure 9 shows distracted drivers involved in casualty crashes by conurbation. The majority of distracted drivers involved in casualty crashes were travelling in the Sydney/Newcastle/Wollongong greater conurbation (78% or 3,696). A further 15% (697) were travelling in urban areas and 7% (356) in rural areas, within the rest of NSW.

Compared to the percentage of distracted drivers travelling in the Sydney/Newcastle/Wollongong greater conurbation (78% or 3,696), this group were less likely to be recorded as distracted by a factor classed as other (65% or 145), distracted or having their vision obscured by something inside the vehicle (67% or 520), or distracted by using a hand-held phone (73% or 33).

Compared to the percentage of distracted drivers travelling in the rural areas of NSW (7% or 356), this group were more likely to be recorded as distracted or having their vision obscured by something inside the vehicle (15% or 116), distracted by a factor classed as other (13% or 29), or distracted by using a hand-held phone (11% or 5).

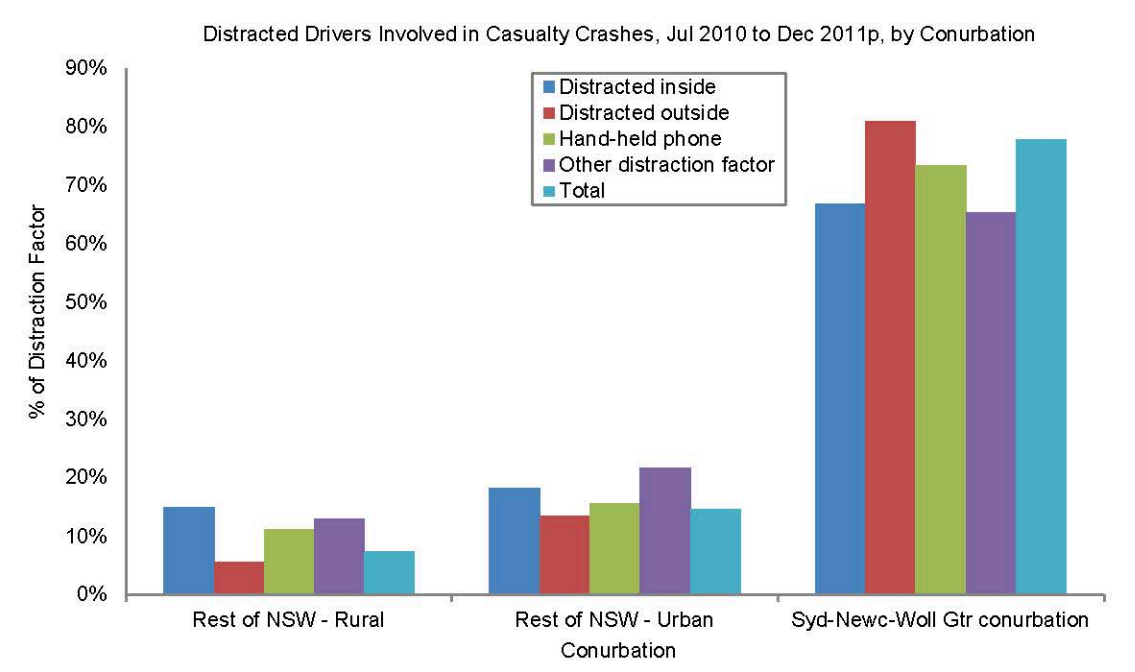

Figure 9: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Conurbation

A table reflecting these figures can be found in Appendix A, Table 12.

Unlike the group of all distracted drivers, of the 80 distracted controllers of articulated and heavy rigid trucks involved in these crashes:

- 46% (37) were in the Sydney/Newcastle/Wollongong greater conurbation (compared to 78% or 3,696 for all distracted drivers)
- 44% (35) were in rural areas within the rest of NSW (7% or 356 for all distracted drivers)
- 10% (8) were in urban areas within the rest of NSW(15% or 697 for all distracted drivers)

Figure 10 shows distracted pedestrians involved in casualty crashes (68) by conurbation. The majority of distracted pedestrians involved in casualty crashes were travelling in the Sydney/Newcastle/Wollongong greater conurbation (82% or 52). A further 13% (9) were travelling in urban areas and 4% (3) in rural areas, within the rest of NSW. No pedestrians recorded as distracted by the use of a hand-held phone were recorded as travelling in rural areas of NSW.

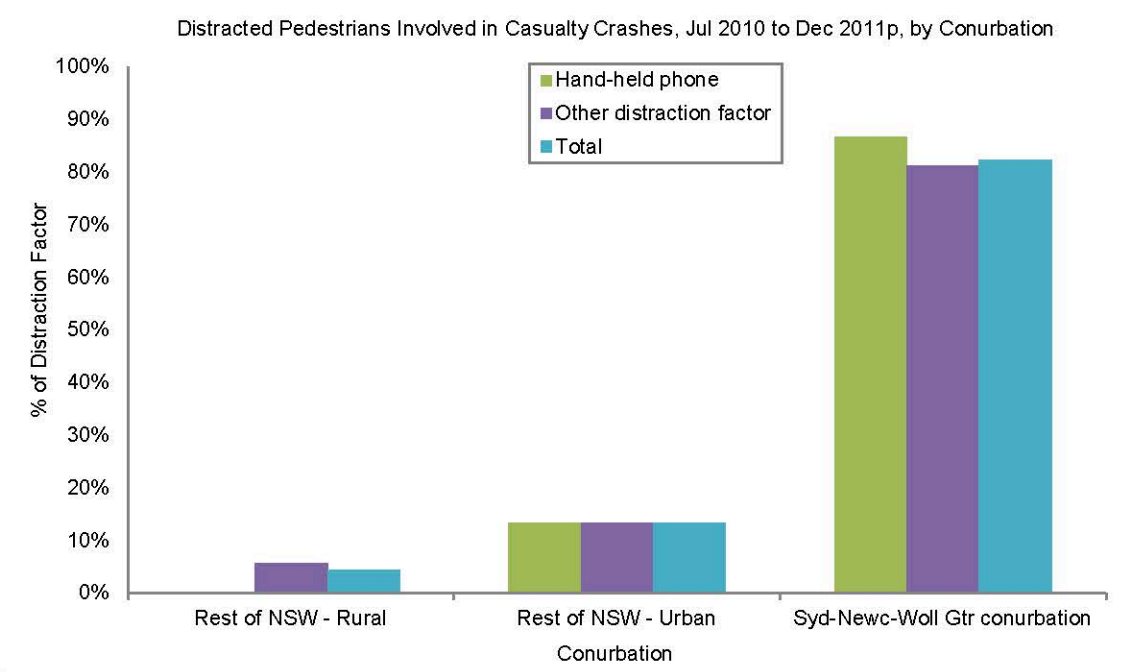

Figure 10: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Conurbation

A table reflecting these figures can be found in Appendix A, Table 13.

Road Classification

Figure 11 shows distracted drivers involved in casualty crashes by road classification. Distracted drivers involved in casualty crashes were most frequently travelling on an unclassified road (46% or 2,168), followed by an 'other' type of classified road (not a road classified as a state highway, freeway or motorway) (36% or 1,722). A further 16% (753) distracted drivers were travelling

on a state highway, and the remaining 2% (108) were travelling on a freeway or motorway.

Compared to the percentage of distracted drivers travelling on an unclassified road (46% or 2,168), this group were more likely to be recorded as distracted by using a hand-held phone (53% or 24) and less likely to be recorded as affected by a distraction factor classed as other (40% or 88).

Compared to the percentage of distracted drivers travelling on an other type of classified road (36% or 1,722), this group were less likely to be recorded distracted by using a hand-held phone (29% or 13).

Compared to the percentage of distracted drivers travelling on a state highway (16% or 753), this group were more likely to be recorded as affected by a distraction factor classed as other (23% or 51).

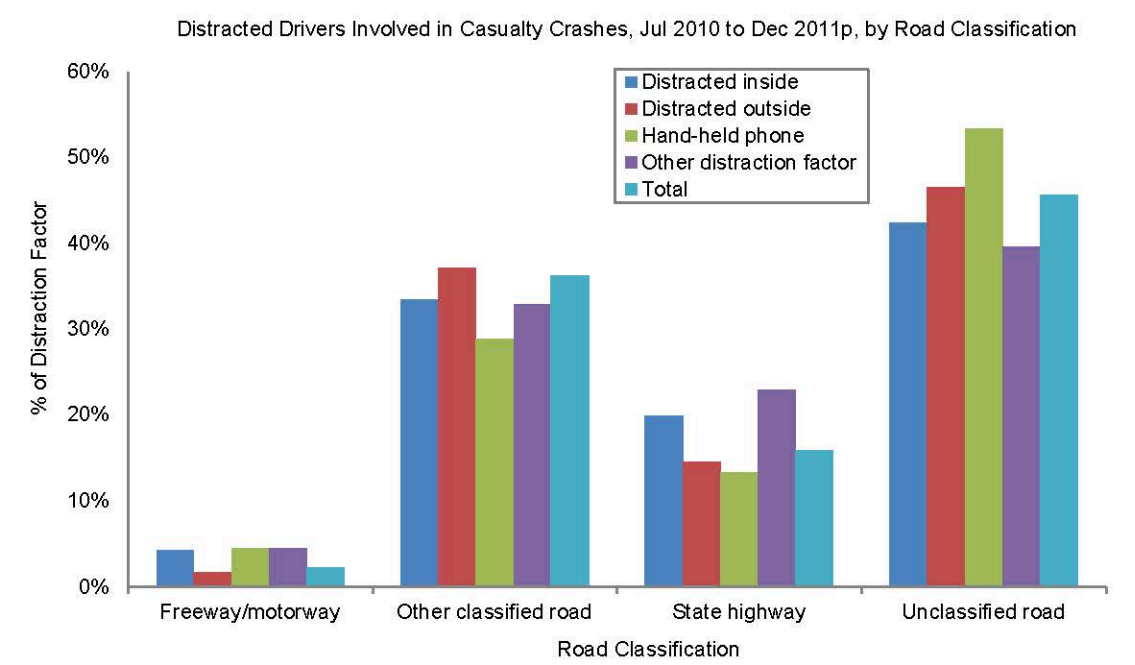

Figure 11: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Road Classification

A table reflecting these figures can be found in Appendix A, Table 14.

Figure 12 shows distracted pedestrians involved in casualty crashes (68) by road classification. The majority of distracted pedestrians involved in casualty crashes were travelling on an unclassified road (59% or 40), followed by another type of classified road (29% or 20). A further 12% (8) distracted pedestrians were travelling on a state highway, and none were recorded as travelling on a freeway or motorway.

Compared to the percentage of distracted pedestrians travelling on an unclassified road (59% or 40), this group were less likely to be recorded as distracted by using a hand-held phone (40% or 6) and slightly more likely to be recorded as affected by a distraction factor classed as other (64% or 34).

Compared to the percentage of distracted pedestrians travelling on another type of classified road (29% or 20), this group were more likely to be recorded as distracted by using a hand-held phone (47% or 7).

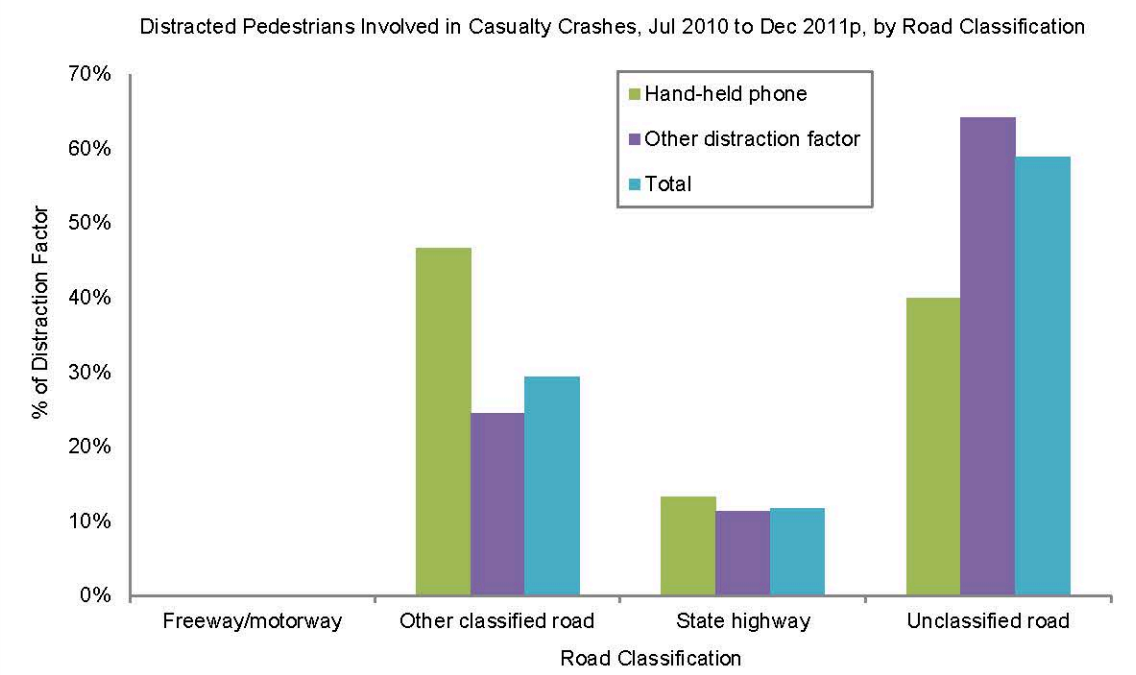

Figure 12: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Road Classification

A table reflecting these figures can be found in Appendix A, Table 15.

Speed Limits

Figure 13 shows distracted drivers involved in casualty crashes by speed limit. The majority of these drivers were travelling on a road with speed limits of 50-60km/h (74% or 3,527). 9% (405) were travelling on a road with speed limits of 100-110km/h.

Compared to the percentage of distracted drivers travelling on a road with speed limits of 50-60km/h (74% or 3,527), this group were less likely to be recorded as distracted or vision obscured by something inside the vehicle (62% or 484), and distracted by using a hand-held phone (64% or 29).

Compared to the percentage of distracted drivers travelling on a road with speed limits of 100-110km/h (9% or 405), this group were more likely to be recorded as distracted or vision obscured by something inside the vehicle (17% or 132),

distracted by using a hand-held phone (16% or 7), and affected by a distraction classed as other (14% or 32).

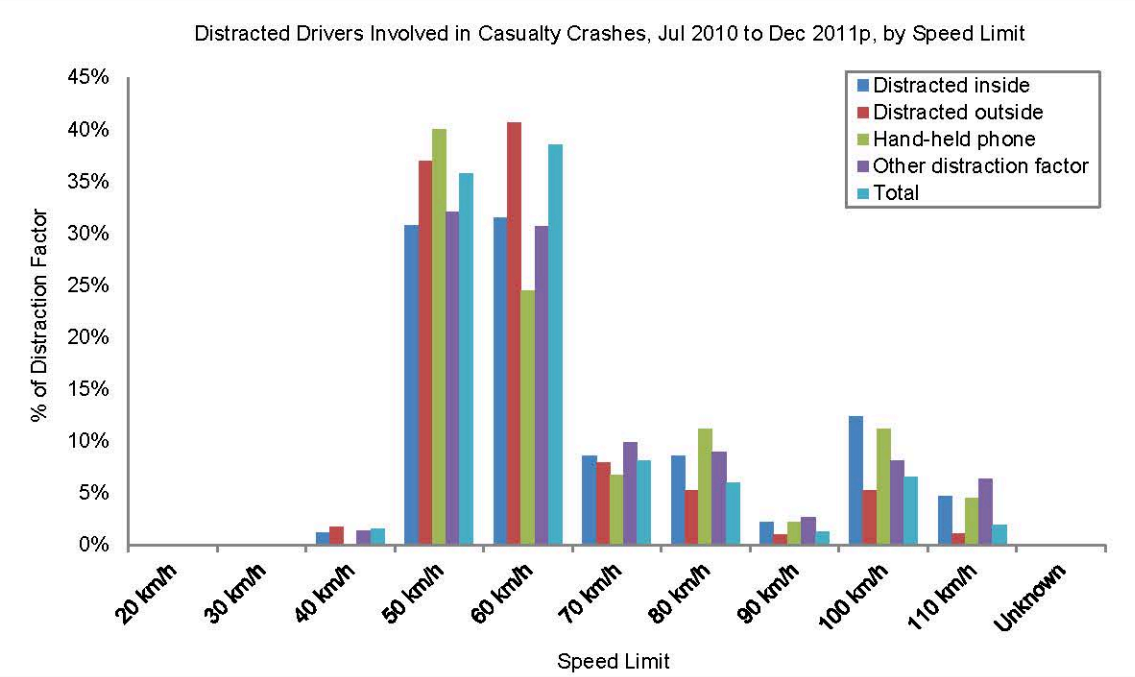

Figure 13: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Speed Limit

A table reflecting these figures can be found in Appendix A, Table 16.

Figure 14 shows distracted pedestrians involved in casualty crashes by speed limit. The majority of these drivers were travelling on a road with a speed limit of 50km/h (69% or 47), followed by 60km/h (19% or 13). 4% (3) were travelling on a road with a speed limit of 100km/h.

Compared to the percentage of distracted pedestrians travelling on a road with a speed limit of 50km/h (69% or 47), this group were less likely to be recorded as distracted by using a hand-held phone (60% or 9). Of distracted pedestrians travelling on a road with a speed limit of 60km/h (19% or 13), this group were more likely to be recorded as distracted using a hand-held phone (27% or 4). However, when the figures for 50 and 60km/h limits were combined, the use of a hand-held phone (87% or 13) was similar to the overall proportion of distracted pedestrians on these roads (88% or 60). This was a similar proportion to those distracted by a factor classed as other (89% or 47).

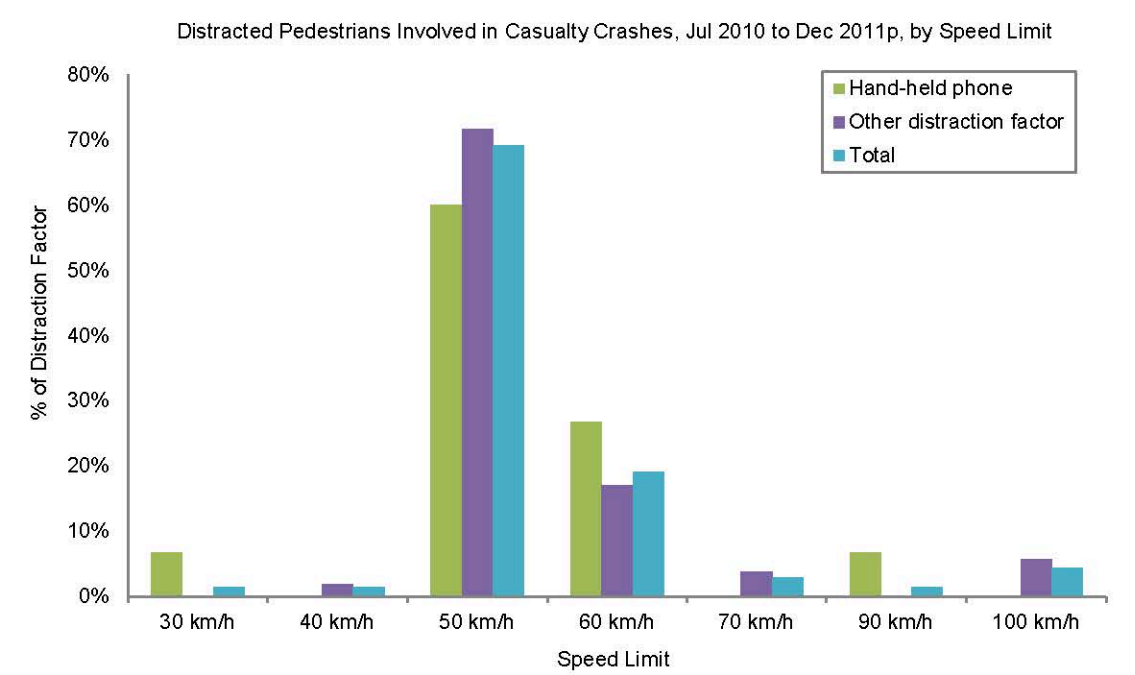

Figure 14: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Speed Limit

A table reflecting these figures can be found in Appendix A, Table 17.

Type of location

Figure 15 shows distracted drivers involved in casualty crashes by location type. The majority of these drivers were at an intersection (55% or 2,604). The remaining 45% (2,147) were not at an intersection.

Of those drivers distracted or having their vision obscured by something outside the vehicle, 61% (2,249) were at an intersection. Of those drivers recorded as distracted by the use of a hand-held phone, 69% (31) were not at an intersection. Also not at an intersection were 67% (521) of those drivers distracted or having their vision obscured by something inside the vehicle, and 62% (138) of those distracted by a factor classed as other.

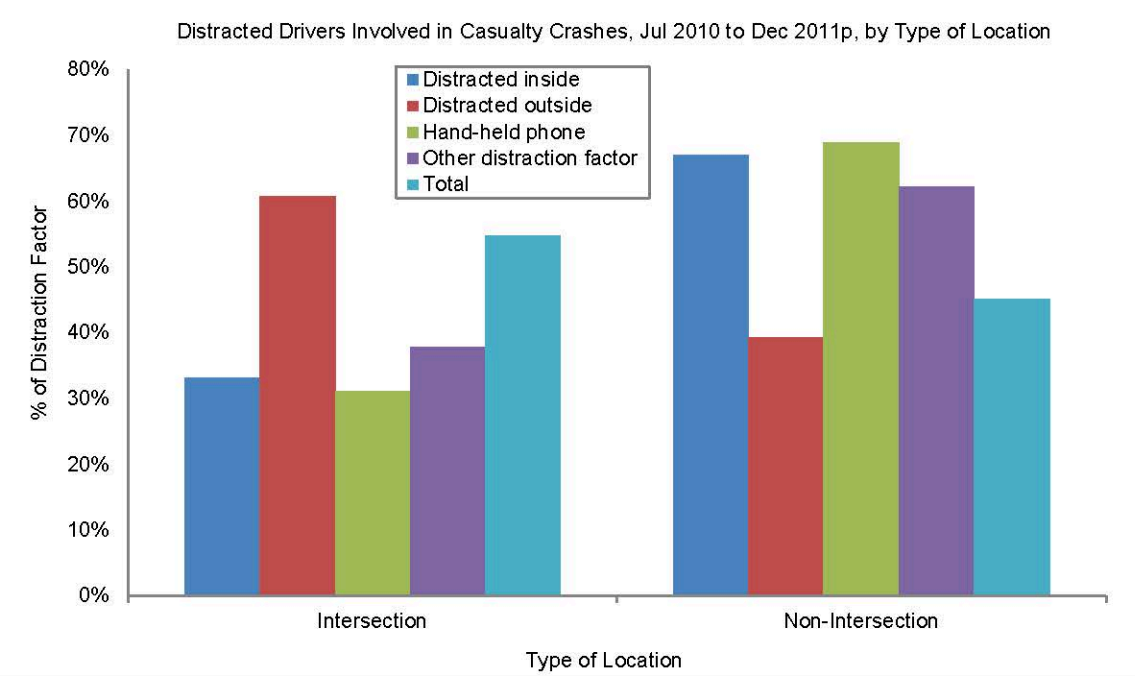

Figure 15: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Type of Location

A table reflecting these figures can be found in Appendix A, Table 18.

When examined by intersection and non-intersection locations, distracted pedestrians were fairly evenly split over both the type of distraction they were engaged in and the location.

Alignment

Figure 16 shows distracted drivers involved in casualty crashes by alignment. The majority of these drivers were at on a straight alignment (85% or 4,052). The remaining 15% (699) were on a curved alignment.

Compared to the percentage of distracted drivers travelling on a straight alignment (85% or 4,052), this group were less likely to be recorded as distracted or vision obscured by something inside the vehicle (77% or 598), and distracted by using a hand-held phone (78% or 35). Thus, these distraction factors were proportionately higher than the average of distracted drivers travelling on a curved alignment.

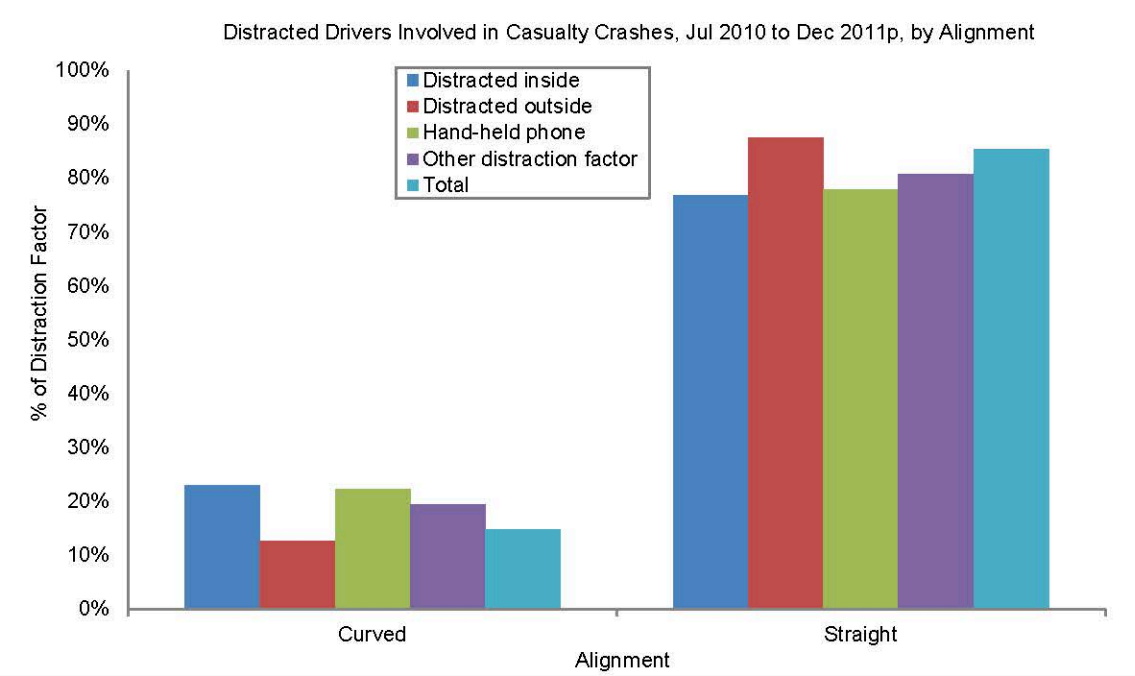

Figure 16: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Alignment

A table reflecting these figures can be found in Appendix A, Table 19.

The majority of distracted pedestrians involved in a casualty crash were travelling on a straight alignment (91% or 62), with only 9% (6) travelling on a curved alignment, as shown in Figure 17.

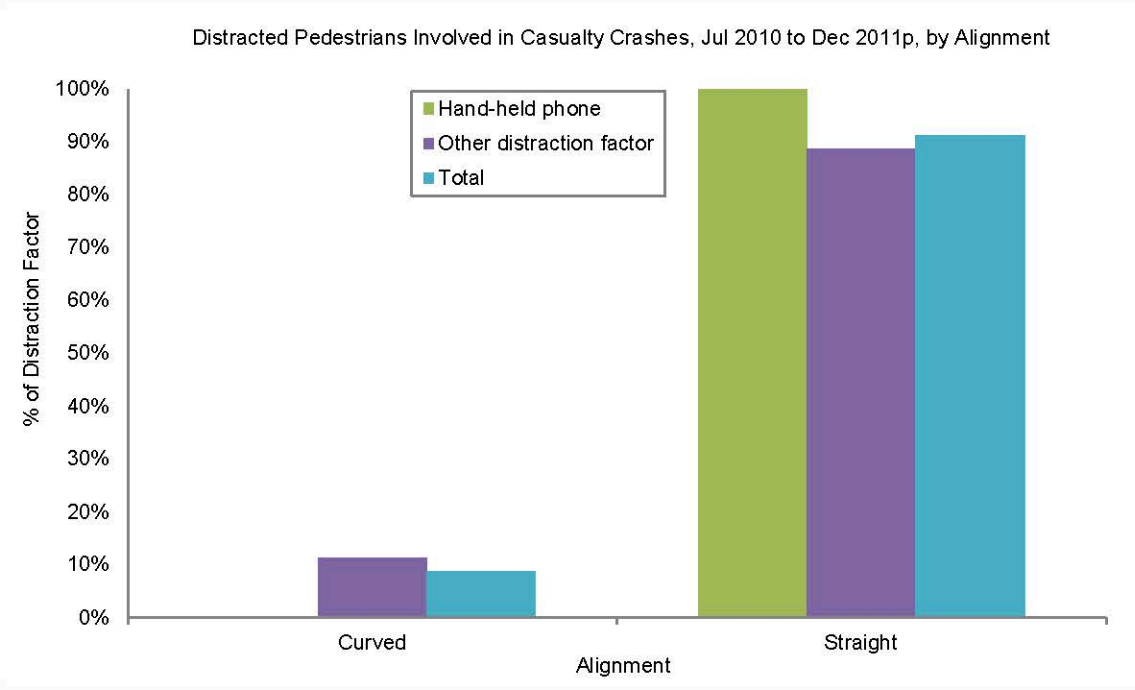

Figure 17: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Alignment

A table reflecting these figures can be found in Appendix A, Table 20.

Time of Crash

Hour of Day

Figure 18 shows distracted drivers involved in casualty crashes by hour of day in 2 hour intervals. The proportion of distracted drivers builds to, and drops off from a peak during 2-6pm. The lowest proportion of distracted drivers involved in these crashes occurred during 8pm to 6am.

Of individual distraction factors, the use of hand-held phones has the most variance. However, there does not seem to be a clear pattern. This may be due to low numbers overall.

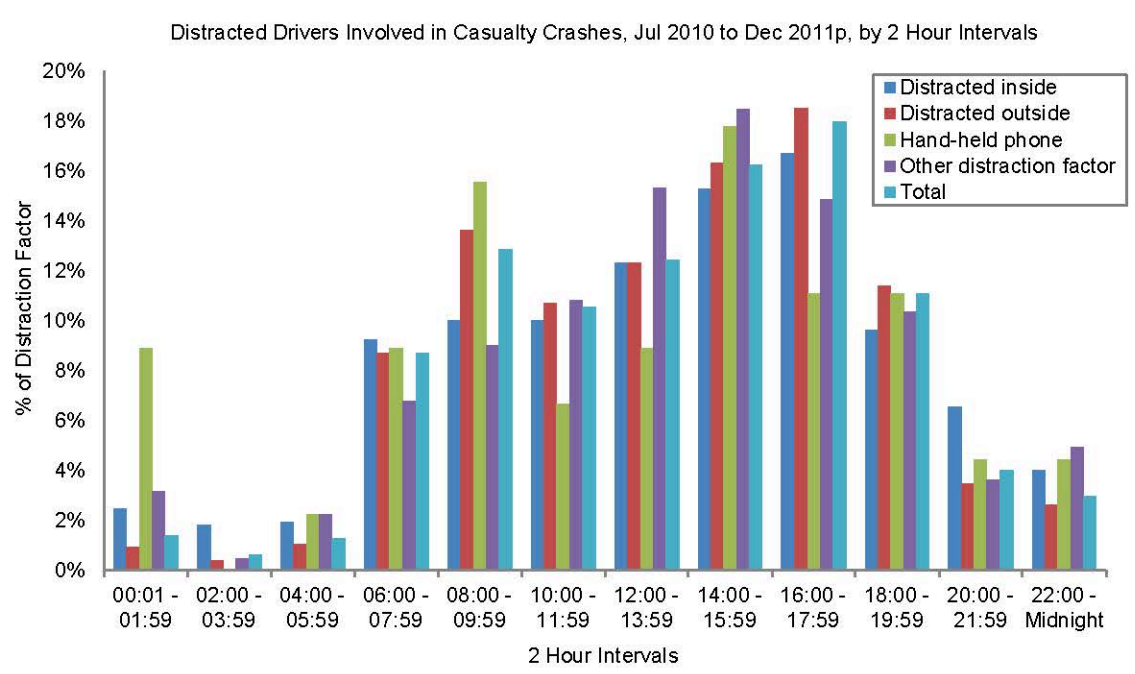

Figure 18: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by 2 Hour Intervals

A table reflecting these figures can be found in Appendix A, Table 21.

When examining distracted pedestrians involved in a casualty crash (68) by distraction factor and hour of day, a peak in distractions classed as other appears to occur during 2-8pm (40% or 27). There also appears to be a peak in distraction by use of a hand-held phone during 6pm-2am (14.7% or 10). However, as the figures are low, this may be arbitrary.

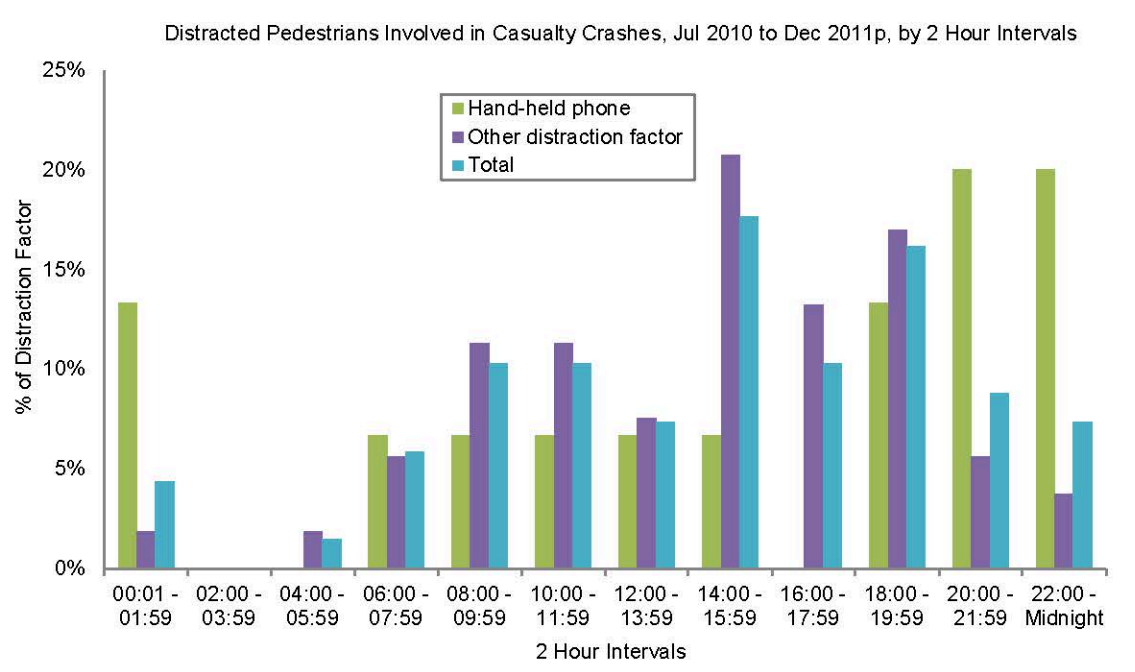

Figure 19: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by 2 Hour Intervals

A table reflecting these figures can be found in Appendix A, Table 22.

Day of Week

Figure 20 shows distracted drivers involved in casualty crashes by day of week. These drivers were involved in a higher incidence of crashes on Wednesdays, Thursdays and Fridays (50% or 2,379). The days with the drivers having the lowest recorded incidents were Saturdays and Sundays (21% or 1,012). While there was some minor variation within different distraction types across the days of the week, there does not seem to be a particular pattern.

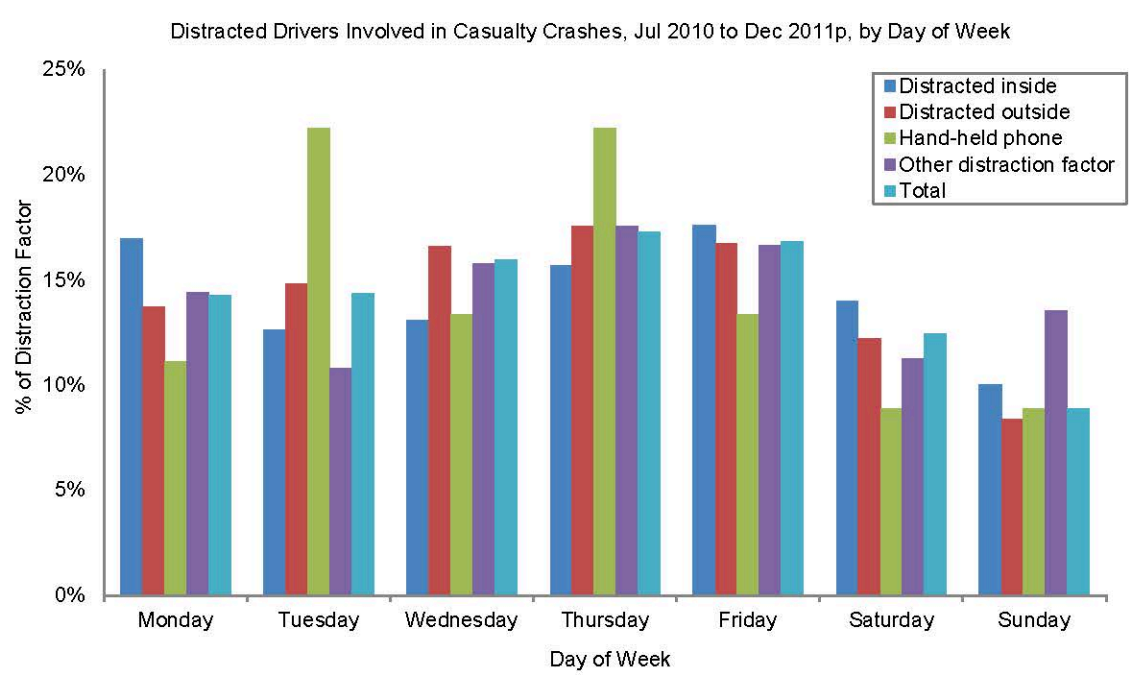

Figure 20: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Day of Week

A table reflecting these figures can be found in Appendix A, Table 23.

When examined by day of the week, distracted pedestrians (68) were involved in a higher incidence of casualty crashes on Tuesdays and Wednesdays (40% or 27). The days with pedestrians having the lowest recorded incidents were Saturdays and Sundays (16% or 11). While there was some minor variation within different distraction types across the days of the week, there does not seem to be a particular pattern.

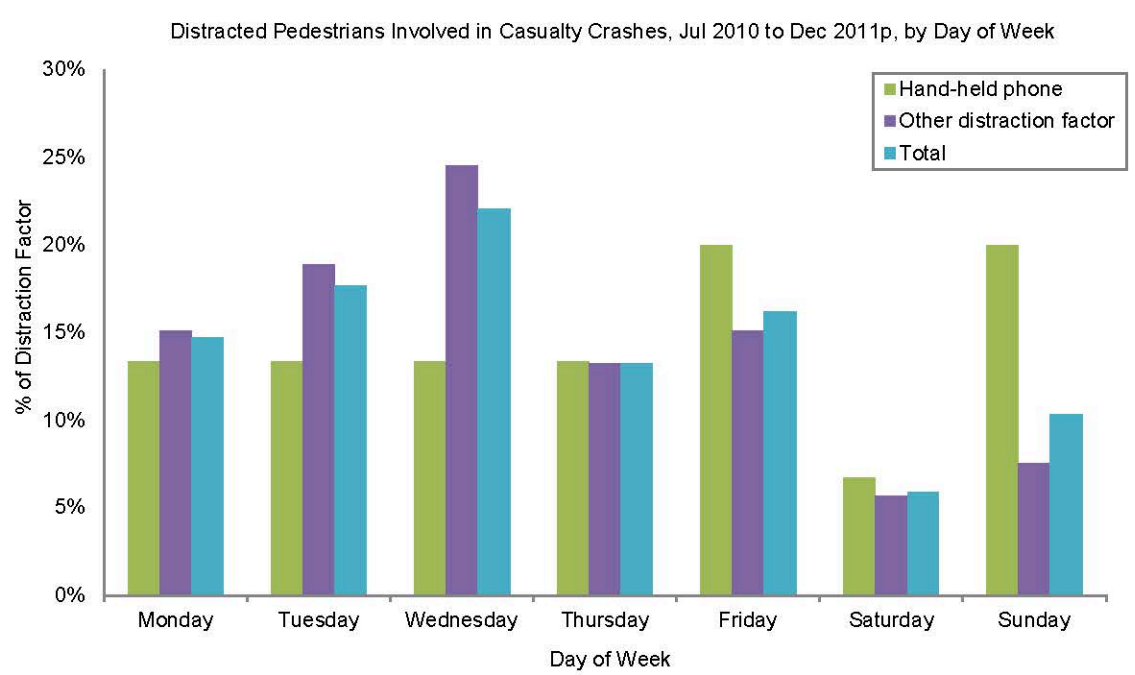

Figure 21: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Day of Week

A table reflecting these figures can be found in Appendix A, Table 24.

Natural lighting

Figure 22 shows distracted drivers involved in casualty crashes by natural lighting. These crashes most commonly occurred during daylight (74% or 3,525 distracted drivers). The least incidents occurred during dawn (3% or 130) followed by dusk (7% or 344).

Compared to the percentage of distracted drivers involved in casualty crashes during darkness (16% or 752), this group were more likely to be recorded as distracted by using a hand-held phone (24% or 11), distracted or vision obscured by something inside the vehicle (22% or 168), and distracted by a factor classed as other (20% or 45).

Compared to the percentage of distracted drivers involved in casualty crashes during daylight (74% or 3,525), this group were less likely to be recorded as distracted or vision obscured by something inside the vehicle (70% or 546).

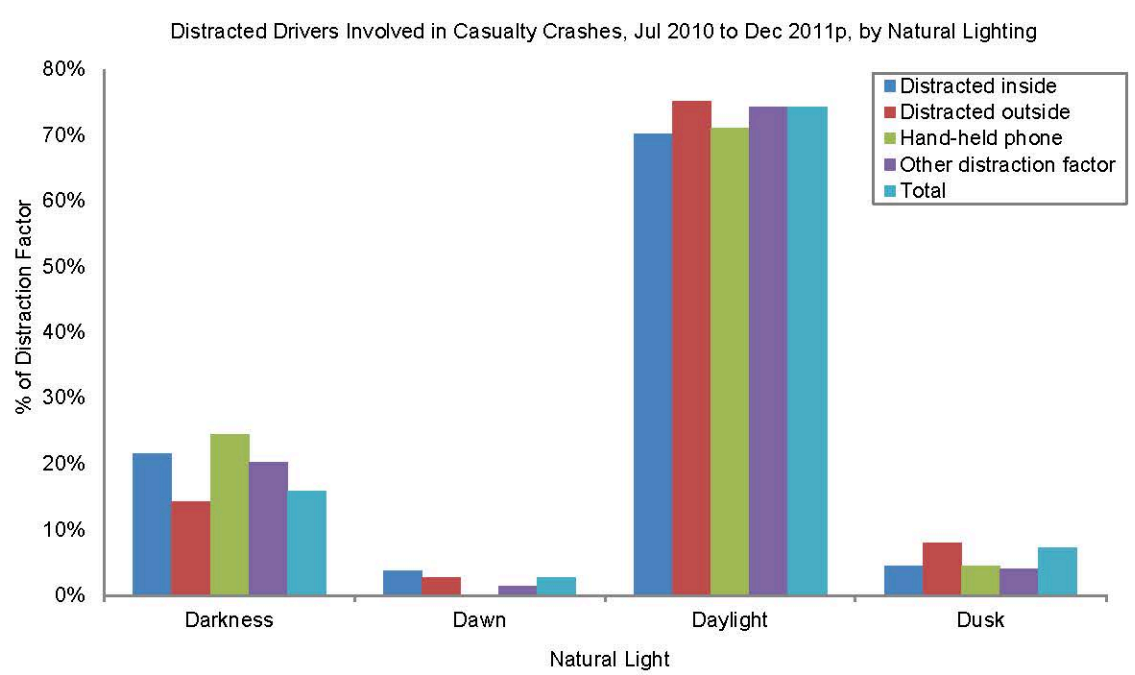

Figure 22: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Natural Lighting

A table reflecting these figures can be found in Appendix A, Table 25.

The majority of distracted pedestrians were involved in a casualty crash occurring during daylight (63% or 43), followed by 32% (22) occurring during darkness, as shown in Figure 23. Pedestrians affected by a distraction classed as other, were more likely be involved in a crash during the day (72% or 38). Conversely, the majority of pedestrians recorded as distracted by using a hand-held phone were involved in a crash occurring during darkness 67% (10).

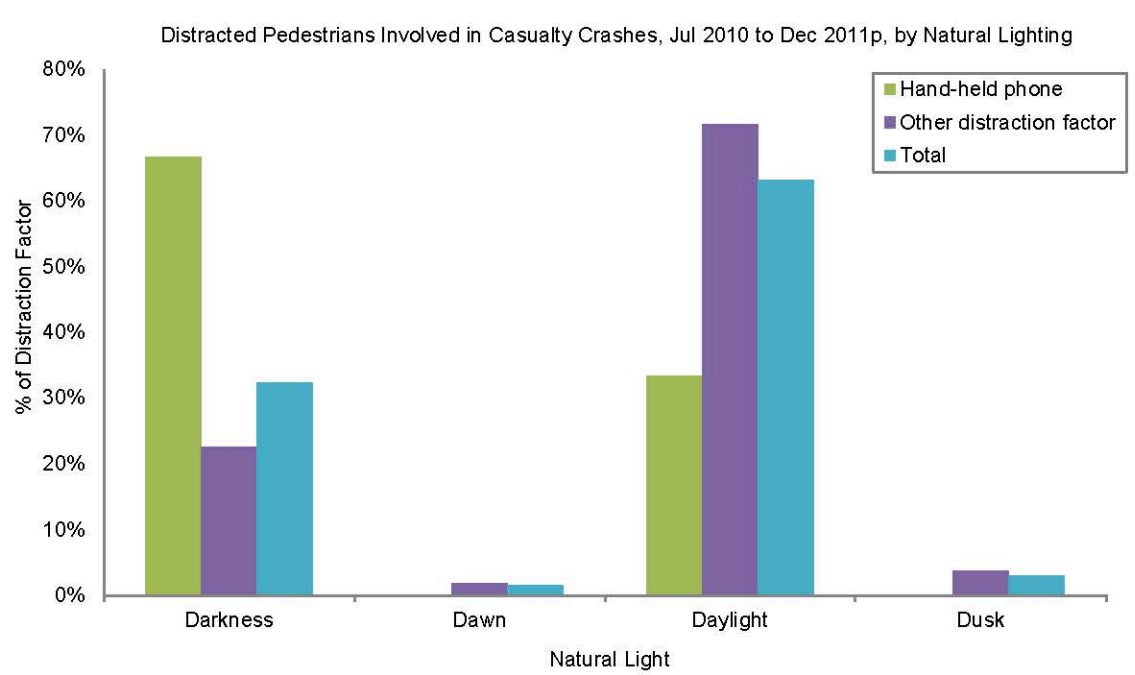

Figure 23: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Natural Lighting

A table reflecting these figures can be found in Appendix A, Table 26.

Contributing Factors

Speeding Controllers

An examination of distracted drivers by involvement of excessive or inappropriate speeding found that 5% (258) of drivers recorded as distracted were also recorded as speeding. This is low compared to 10% (5,104 of 49,378) for all drivers recorded as speeding across NSW, during the same period, as shown in Figure 24.

Compared to all drivers recorded as speeding (10% or 5,104), drivers recorded as distracted or having their vision obscured by something outside the vehicle were less likely to be recorded as speeding (4% or 136).

However, when compared to the 5% (258) of drivers recorded as distracted and speeding:

- The drivers distracted by using a hand-held phone were three times more likely to be recorded as speeding (18% or 8). Please note as this figure is very low, it may be coincidental.
- Drivers distracted or having their vision obscured by something inside the vehicle, and drivers distracted by a factor classed as other, were twice as likely to be recorded as speeding (each 11%, or 89 and 25 respectively).

A table reflecting these figures can be found in Appendix A, Table 27.

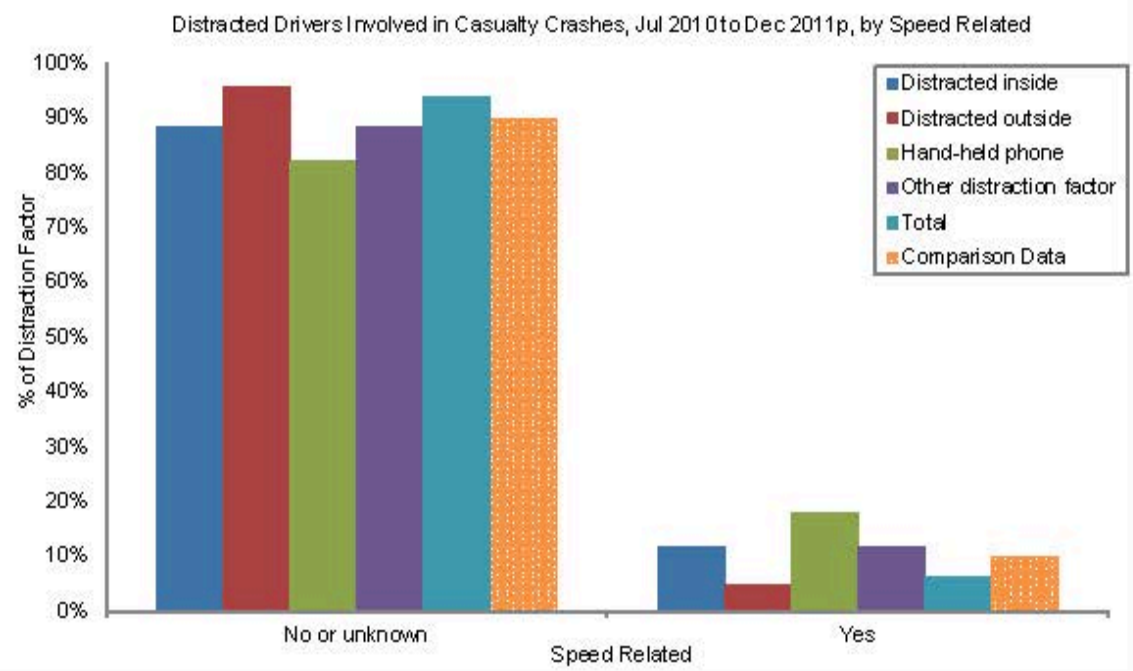

Figure 24: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Speed Related

Fatigued Controllers

An examination of distracted drivers by fatigue found that no drivers recorded as distracted were also recorded as fatigued. This is low compared to 4% (2,164 of 49,378) for all drivers recorded as fatigued across NSW, during the same period.

A table reflecting these figures can be found in Appendix A, Table 28.

Alcohol Affected Controllers

Please note that as data related to crashes involving alcohol as a contributing factor were not made available for this analysis, this issue was not examined.

Drivers' Usage of Safety Devices

An examination of distracted drivers (as stated earlier, this group comprises controllers of cars, car derivatives, light trucks, motorcycles, other motor vehicles, articulated trucks, heavy rigid trucks and buses) by safety device usage found that 88% (4,181) of drivers recorded as distracted were also recorded as wearing a seatbelt. This is high compared to 83% (41,117 of 49,378) for all drivers recorded as wearing a seatbelt by safety device usage across NSW, during the same period.

Compared to all drivers recorded as wearing a belt (83% or 41,117), drivers recorded as distracted or having their vision obscured by something inside the vehicle were more likely to be recorded as wearing a belt (93% or 720).

When compared to the 88% (4,181) of drivers recorded as distracted and wearing a belt, the drivers distracted by using a hand-held phone were less likely to be recorded as wearing a belt (80% or 36). This may be partially affected by the high proportion (18% or 8) of distracted drivers using a hand-held phone where their usage of safety device was recorded as unknown.

A table reflecting these figures can be found in Appendix A, Table 29.

Hand-held Phone Usage

The National Road Safety Strategy 2011-2020 states:

"There is evidence from epidemiological studies and other research suggesting that mobile phone use produces a significant increase in casualty crash risk, regardless of whether the phone is hand-held or hands-free. The research indicates that using mobile phones to write or read text messages while driving is particularly risky, and that the risks of mobile phone use and other distracting activities are higher for novice drivers than for more experienced drivers. …

"National surveys show that many drivers still use hand-held mobile phones while driving, despite it being illegal in all Australian jurisdictions. A recent survey found that 61 per cent of drivers reported using mobile a phone [sic] while driving, with 30 per cent admitting to reading text messages and 16 per cent to sending them.

"Emerging evidence from naturalistic driving studies reinforces concerns about phone-related tasks such as dialling and text messaging, but appears to suggest that the risks associated with talking or listening may be comparable to other common driver activities." (p90)

Infringement Notices Issued

The NSW Police Force issued 282,932 infringement notices for mobile phone use with an offence date between 1 July 2004 and 29 February 20012 (data as at 6 March 2012 and may change as matters progress through the fine lifecycle). As shown in Figure 25, there was a steady and substantial increase in fines over the years from a low of 22,098 in the 2004/05 financial year to a high of 52,689 in the 2010/11 financial year (2.4 times the 2004/05 figure).

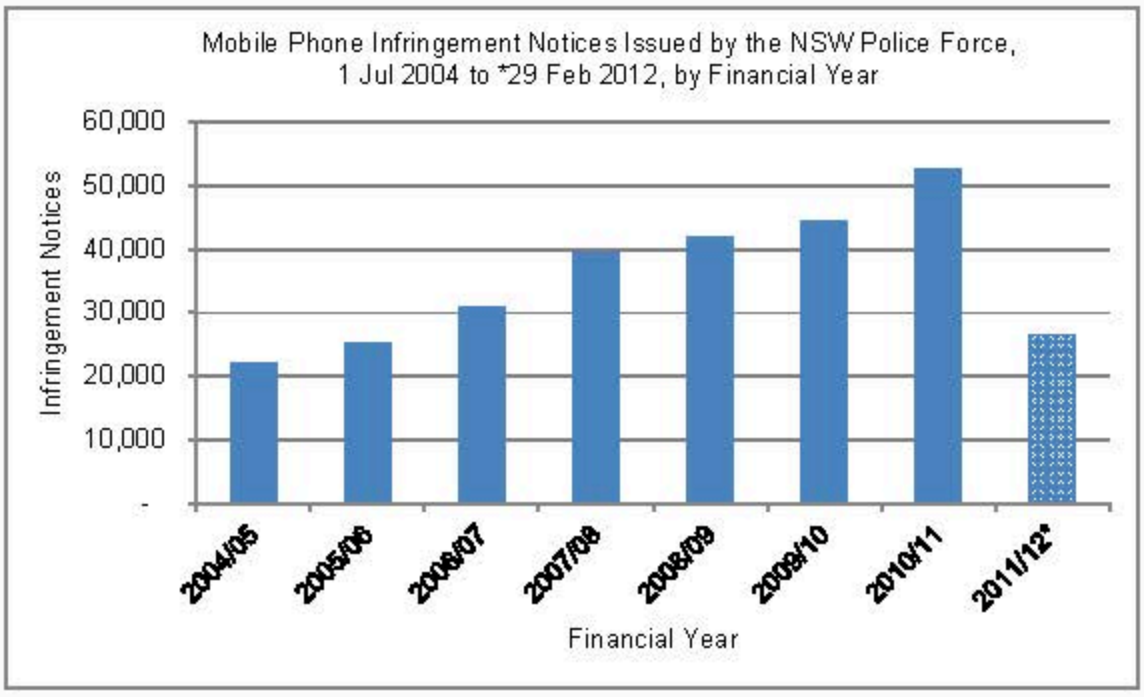

*Figure 25: Mobile Phone Infringement Notices Issued by the NSW Police Force, 1 Jul 2004 to *29 Feb 2012, by financial year*

An examination of these data by month of year shows some variability across the months, as depicted in Figure 26. However, it is difficult to draw meaning from this without knowing about any potential variation in Police activity.

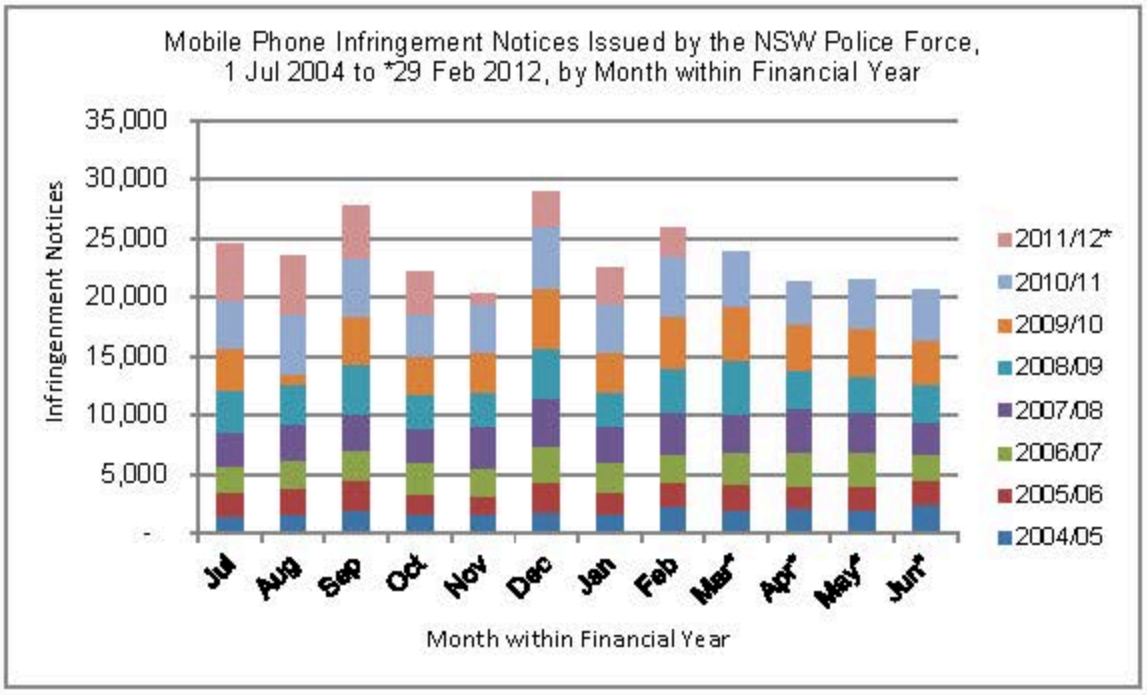

*Figure 26: Mobile Phone Infringement Notices Issued by the NSW Police Force, 1 Jul 2004 to *29 Feb 2012, by Month within Financial Year*

Appendix A: Additional Data Tables

All Controllers 2000-2011p Traffic Unit Group	No Distraction Factor	Asleep or drowsy	Chronic illness	Distracted by passenger	Distracted inside	Distracted outside	Emergency vehicle warning	Hand-held phone	Other distraction factor	Pursued by police	Sudden illness	Total
Articulated truck	14824	281	0	2	163	437	6	5	22	0	91	15831
Bus	7706	26	0	14	42	246	2	0	18	1	24	8079
Car/car derivative	722334	7123	87	1660	8548	36421	778	346	1803	1184	4492	784776
Heavy rigid truck	14401	95	0	1	99	471	10	7	25	2	79	15190
Light truck	75125	970	8	99	980	3679	52	34	192	50	506	81695
Motorcycle	27999	26	2	8	33	1493	24	4	69	163	54	29875
Other motor vehicle	29442	74	2	82	111	1060	34	8	41	9	51	30914
Other or unknown	138	0	0	0	0	2	0	0	1	0	0	141
Pedal cycle	13563	3	8	2	4	485	2	3	71	1	28	14170
Pedestrian	28206	3	66	0	0	0	2	31	214	4	20	28546
Total	933738	8601	173	1868	9980	44294	910	438	2456	1414	5345	1009217

Table 3: Controllers Involved in All Crashes, 2000-2011p, by All Distraction Factors and Traffic Unit Group

All Controllers, 2000-2011p	Controllers of:			
Primary Distraction Factor	Articulated truck	Heavy rigid truck	Total	%
No distraction factor	14824	14401	29225	94%
Asleep or drowsy	281	95	376	1%
Distracted by passenger	2	1	3	0%
Distracted inside	163	99	262	1%
Distracted outside	437	471	908	3%
Emergency vehicle warning	6	10	16	0%
Hand-held phone	5	7	12	0%
Other distraction factor	22	25	47	0%
Pursued by police	0	2	2	0%
Sudden illness	91	79	170	1%
Total	15831	15190	31021	100%

Table 4: Controllers of Heavy Trucks Involved in All Crashes, 2000-2011p, by All Distraction Factors and Truck Type

Controllers % Distraction Factor	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
Degree of Crash										
Distracted Controllers Involved in Fatal Crashes	2	0%	23	1%	4	7%	14	5%	43	1%
Distracted Controllers Involved in Injury Crashes	776	100%	3765	99%	56	93%	273	95%	4870	99%
Total	778	100%	3788	100%	60	100%	287	100%	4913	100 %

Table 5: Distracted Controllers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Degree of Crash

Drivers % Distraction Factor	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
Traffic Unit Group										
Car/car derivative	662	85%	2924	79%	38	84%	177	80%	3801	80%
Light truck	79	10%	319	9%	2	4%	24	11%	424	9%
Motorcycle	7	1%	274	7%	0	0%	11	5%	292	6%
Other motor vehicle	8	1%	116	3%	1	2%	4	2%	129	3%
Articulated truck	14	2%	28	1%	3	7%	2	1%	47	1%
Heavy rigid truck	6	1%	24	1%	1	2%	2	1%	33	1%
Bus	2	0%	21	1%	0	0%	2	1%	25	1%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%

Table 6: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Traffic Unit Group

Drivers % Distraction Factor No. of occupants	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
1	614	79%	2645	71%	41	91%	169	76%	3469	73%
2	105	13%	684	18%	1	2%	32	14%	822	17%
3	34	4%	227	6%	1	2%	14	6%	276	6%
4	14	2%	80	2%	1	2%	4	2%	99	2%
5	8	1%	38	1%	1	2%	0	0%	47	1%
6	0	0%	5	0%	0	0%	0	0%	5	0%
7 to 70	1	0%	14	0%	0	0%	1	0%	16	0%
Unknown	2	0%	13	0%	0	0%	2	1%	17	0%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%

Table 7: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Number of Occupants

Drivers % Distraction Factor No. of Traffic Units	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
1	237	30%	268	7%	13	29%	56	25%	574	12%
2-7	541	70%	3438	93%	32	71%	166	75%	4177	88%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%

Table 8: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Number of Traffic Units

Controllers % Distraction Factor Gender	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
Female	335	43%	1366	36%	23	38%	109	38%	1833	37%
Male	443	57%	2408	64%	37	62%	177	62%	3065	62%
Unknown	0	0%	14	0%	0	0%	1	0%	15	0%
Total	778	100%	3788	100%	60	100%	287	100%	4913	100%

Table 9: Distracted Controllers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Gender

Controllers % Distraction Factor / Age Group	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
5-16	1	0%	24	1%	1	2%	18	6%	44	1%
17-29	394	51%	1307	35%	26	43%	113	39%	1840	37%
30-59	321	41%	1914	51%	28	47%	115	40%	2378	48%
60+	58	7%	494	13%	3	5%	39	14%	594	12%
Unknown	4	1%	49	1%	2	3%	2	1%	57	1%
Total	778	100%	3788	100%	60	100%	287	100%	4913	100%

Table 10: Distracted Controllers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Age Group

Controllers % Distraction Factor Traffic Unit Group and Age Group	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
Articulated truck	**14**	**2%**	**28**	**1%**	**3**	**5%**	**2**	**1%**	**47**	**1%**
5-16	0	0%	0	0%	0	0%	0	0%	0	0%
17-29	7	1%	6	0%	1	2%	0	0%	14	0%
30-59	6	1%	16	0%	2	3%	1	0%	25	1%
60+	1	0%	6	0%		0%	1	0%	8	0%
Unknown	0	0%	0	0%	0	0%	0	0%	0	0%
Bus	**2**	**0%**	**21**	**1%**	**0**	**0%**	**2**	**1%**	**25**	**1%**
5-16	0	0%	0	0%	0	0%	0	0%	0	0%
17-29	0	0%	1	0%		0%	0	0%	1	0%
30-59	2	0%	14	0%	0	0%	1	0%	17	0%
60+	0	0%	4	0%	0	0%	0	0%	4	0%
Unknown	0	0%	2	0%	0	0%	1	0%	3	0%
Car/car derivative	**662**	**85%**	**2924**	**77%**	**38**	**63%**	**177**	**62%**	**3801**	**77%**
5-16	1	0%	6	0%	0	0%	1	0%	8	0%
17-29	345	44%	1051	28%	15	25%	77	27%	1488	30%
30-59	260	33%	1411	37%	20	33%	72	25%	1763	36%
60+	53	7%	428	11%	2	3%	26	9%	509	10%
Unknown	3	0%	28	1%	1	2%	1	0%	33	1%
Heavy rigid truck	**6**	**1%**	**24**	**1%**	**1**	**2%**	**2**	**1%**	**33**	**1%**
5-16	0	0%	0	0%		0%	0	0%	0	0%
17-29	0	0%	2	0%	0	0%	0	0%	2	0%
30-59	6	1%	20	1%	1	2%	2	1%	29	1%
60+	0	0%	2	0%	0	0%	0	0%	2	0%
Unknown	0	0%	0	0%	0	0%	0	0%	0	0%
Light truck	**79**	**10%**	**319**	**8%**	**2**	**3%**	**24**	**8%**	**424**	**9%**
5-16	0	0%	0	0%	0	0%	0	0%	0	0%
17-29	36	5%	109	3%	2	3%	12	4%	159	3%
30-59	39	5%	183	5%	0	0%	11	4%	233	5%
60+	4	1%	23	1%	0	0%	1	0%	28	1%
Unknown	0	0%	4	0%	0	0%	0	0%	4	0%
Motorcycle	**7**	**1%**	**274**	**7%**	**0**	**0%**	**11**	**4%**	**292**	**6%**
5-16	0	0%	1	0%	0	0%	0	0%	1	0%
17-29	5	1%	106	3%	0	0%	5	2%	116	2%
30-59	2	0%	156	4%	0	0%	5	2%	163	3%
60+	0	0%	9	0%	0	0%	1	0%	10	0%
Unknown	0	0%	2	0%	0	0%	0	0%	2	0%
Other motor vehicle	**8**	**1%**	**116**	**3%**	**1**	**2%**	**4**	**1%**	**129**	**3%**
5-16	0	0%	0	0%	0	0%	0	0%	0	0%
17-29	1	0%	13	0%	0	0%	1	0%	15	0%
30-59	6	1%	78	2%	0	0%	1	0%	85	2%
60+	0	0%	13	0%	0	0%	2	1%	15	0%
Unknown	1	0%	12	0%	1	2%	0	0%	14	0%
Pedal cycle	**0**	**0%**	**82**	**2%**	**0**	**0%**	**12**	**4%**	**94**	**2%**
5-16	0	0%	17	0%	0	0%	1	0%	18	0%
17-29	0	0%	19	1%	0	0%	3	1%	22	0%
30-59	0	0%	36	1%	0	0%	8	3%	44	1%
60+	0	0%	9	0%	0	0%	0	0%	9	0%
Unknown	0	0%	1	0%	0	0%	0	0%	1	0%
Pedestrian	**0**	**0%**	**0**	**0%**	**15**	**25%**	**53**	**18%**	**68**	**1%**
5-16	0	0%	0	0%	1	2%	16	6%	17	0%
17-29	0	0%	0	0%	8	13%	15	5%	23	0%
30-59	0	0%	0	0%	5	8%	14	5%	19	0%
60+	0	0%	0	0%	1	2%	8	3%	9	0%
Unknown	0	0%	0	0%	0	0%	0	0%	0	0%
Total	**778**	**100%**	**3788**	**100%**	**60**	**100%**	**287**	**100%**	**4913**	**100%**

Table 11: Distracted Controllers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Traffic Unit Group and Age Group

Drivers % Distraction Factor Conurbation	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
Syd-Newc-Woll Gtr conurbation	520	67%	2998	81%	33	73%	145	65%	3696	78%
Rest of NSW - Urban	142	18%	500	13%	7	16%	48	22%	697	15%
Rest of NSW - Rural	116	15%	206	6%	5	11%	29	13%	356	7%
Rest of NSW - Unknown	0	0%	2	0%	0	0%	0	0%	2	0%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%

Table 12: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Conurbation

Pedestrians % Distraction Factor Conurbation	Hand-held phone		Other distraction factor		Total	
Syd-Newc-Woll Gtr conurbation	13	87%	43	81%	56	82%
Rest of NSW - Urban	2	13%	7	13%	9	13%
Rest of NSW - Rural	0	0%	3	6%	3	4%
Total	15	100%	53	100%	68	100%

Table 13: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Conurbation

Drivers % Distraction Factor Road Classification	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
Freeway/motorway	33	4%	63	2%	2	4%	10	5%	108	2%
Other classified road	260	33%	1376	37%	13	29%	73	33%	1722	36%
State highway	155	20%	541	15%	6	13%	51	23%	753	16%
Unclassified road	330	42%	1726	47%	24	53%	88	40%	2168	46%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%

Table 14: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Road Classification

Pedestrians % Distraction Factor Road Classification	Hand-held phone		Other distraction factor		Total	
Freeway/motorway	0	0%	0	0%	0	0%
Other classified road	7	47%	13	25%	20	29%
State highway	2	13%	6	11%	8	12%
Unclassified road	6	40%	34	64%	40	59%
Total	15	100%	53	100%	68	100%

Table 15: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Road Classification

Drivers % Distraction Factor Speed Limit	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
20 km/h	1	0%	3	0%	0	0%	0	0%	4	0%
30 km/h	0	0%	3	0%	0	0%	0	0%	3	0%
40 km/h	9	1%	64	2%	0	0%	3	1%	76	2%
50 km/h	239	31%	1370	37%	18	40%	71	32%	1698	36%
60 km/h	245	31%	1505	41%	11	24%	68	31%	1829	38%
70 km/h	67	9%	294	8%	3	7%	22	10%	386	8%
80 km/h	67	9%	192	5%	5	11%	20	9%	284	6%
90 km/h	17	2%	37	1%	1	2%	6	3%	61	1%
100 km/h	96	12%	194	5%	5	11%	18	8%	313	7%
110 km/h	36	5%	40	1%	2	4%	14	6%	92	2%
Unknown / not stated	1	0%	4	0%	0	0%	0	0%	5	0%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%

Table 16: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Speed Limit

Pedestrians % Distraction Factor Speed Limit	Hand-held phone		Other distraction factor		Total	
30 km/h	1	7%	0	0%	1	1%
40 km/h	0	0%	1	2%	1	1%
50 km/h	9	60%	38	72%	47	69%
60 km/h	4	27%	9	17%	13	19%
70 km/h	0	0%	2	4%	2	3%
90 km/h	1	7%	0	0%	1	1%
100 km/h	0	0%	3	6%	3	4%
Total	15	100%	53	100%	68	100%

Table 17: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Speed Limit

Drivers % Distraction Factor Location Type	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
Intersection	257	33%	2249	61%	14	31%	84	38%	2604	55%
Non-Intersection	521	67%	1457	39%	31	69%	138	62%	2147	45%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%

Table 18: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, Location Type

Drivers % Distraction Factor Alignment	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
Curved	180	23%	466	13%	10	22%	43	19%	699	15%
Straight	598	77%	3240	87%	35	78%	179	81%	4052	85%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%

Table 19: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Alignment

Pedestrians % Distraction Factor Alignment	Hand-held phone		Other distraction factor		Total	
Curved	0	0%	6	11%	6	9%
Straight	15	100%	47	89%	62	91%
Total	15	100%	53	100%	68	100%

Table 20: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Alignment

Drivers % Distraction Factor Hour of Day 2hr Intervals	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
00:01 - 01:59	19	2%	35	1%	4	9%	7	3%	65	1%
02:00 - 03:59	14	2%	15	0%		0%	1	0%	30	1%
04:00 - 05:59	15	2%	39	1%	1	2%	5	2%	60	1%
06:00 - 07:59	72	9%	322	9%	4	9%	15	7%	413	9%
08:00 - 09:59	78	10%	505	14%	7	16%	20	9%	610	13%
10:00 - 11:59	78	10%	396	11%	3	7%	24	11%	501	11%
12:00 - 13:59	96	12%	456	12%	4	9%	34	15%	590	12%
14:00 - 15:59	119	15%	604	16%	8	18%	41	18%	772	16%
16:00 - 17:59	130	17%	686	19%	5	11%	33	15%	854	18%
18:00 - 19:59	75	10%	423	11%	5	11%	23	10%	526	11%
20:00 - 21:59	51	7%	128	3%	2	4%	8	4%	189	4%
22:00 - Midnight	31	4%	97	3%	2	4%	11	5%	141	3%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%

Table 21: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by 2hr Intervals

Pedestrians % Distraction Factor Hour of Day 2 hr Intervals	Hand-held phone		Other distraction factor		Total	
00:01 - 01:59	2	13%	1	2%	3	4%
02:00 - 03:59	0	0%	0	0%	0	0%
04:00 - 05:59	0	0%	1	2%	1	1%
06:00 - 07:59	1	7%	3	6%	4	6%
08:00 - 09:59	1	7%	6	11%	7	10%
10:00 - 11:59	1	7%	6	11%	7	10%
12:00 - 13:59	1	7%	4	8%	5	7%
14:00 - 15:59	1	7%	11	21%	12	18%
16:00 - 17:59	0	0%	7	13%	7	10%
18:00 - 19:59	2	13%	9	17%	11	16%
20:00 - 21:59	3	20%	3	6%	6	9%
22:00 - Midnight	3	20%	2	4%	5	7%
Total	15	100%	53	100%	68	100%

Table 22: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by 2hr Intervals

Drivers % Distraction Factor Day of Week	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
Monday	132	17%	509	14%	5	11%	32	14%	678	14%
Tuesday	98	13%	550	15%	10	22%	24	11%	682	14%
Wednesday	102	13%	615	17%	6	13%	35	16%	758	16%
Thursday	122	16%	650	18%	10	22%	39	18%	821	17%
Friday	137	18%	620	17%	6	13%	37	17%	800	17%
Saturday	109	14%	452	12%	4	9%	25	11%	590	12%
Sunday	78	10%	310	8%	4	9%	30	14%	422	9%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%

Table 23: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Day of Week

Pedestrians % Distraction Factor Day of Week	Hand-held phone		Other distraction factor		Total	
Monday	2	13%	8	15%	10	15%
Tuesday	2	13%	10	19%	12	18%
Wednesday	2	13%	13	25%	15	22%
Thursday	2	13%	7	13%	9	13%
Friday	3	20%	8	15%	11	16%
Saturday	1	7%	3	6%	4	6%
Sunday	3	20%	4	8%	7	10%
Total	15	100%	53	100%	68	100%

Table 24: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Day of Week

Drivers % Distraction Factor Natural Lighting	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total	
Darkness	168	22%	528	14%	11	24%	45	20%	752	16%
Dawn	29	4%	98	3%	0	0%	3	1%	130	3%
Daylight	546	70%	2782	75%	32	71%	165	74%	3525	74%
Dusk	35	4%	298	8%	2	4%	9	4%	344	7%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%

Table 25: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Natural Lighting

Pedestrians % Distraction Factor Natural Lighting	Hand-held phone		Other distraction factor		Total	
Darkness	10	67%	12	23%	22	32%
Dawn	0	0%	1	2%	1	1%
Daylight	5	33%	38	72%	43	63%
Dusk	0	0%	2	4%	2	3%
Total	15	100%	53	100%	68	100%

Table 26: Distracted Pedestrians Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Natural Lighting

Drivers % Distraction Factor Speed Related	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total		Comparison with NSW Drivers	
No or unknown	689	89%	3570	96%	37	82%	197	89%	4493	95%	44274	90%
Yes	89	11%	136	4%	8	18%	25	11%	258	5%	5104	10%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%	49378	100%

Table 27: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Speed Related

Drivers % Distraction Factor Fatigue Related	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total		Comparison with NSW Drivers	
No or unknown	778	100%	3706	100%	45	100%	222	100%	4751	100%	47214	96%
Yes	0	0%	0	0%		0%	0	0%	0	0%	2164	4%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%	49378	100%

Table 28: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Fatigue Related

Drivers % Distraction Factor Safety Device Usage	Distracted inside		Distracted outside		Hand-held phone		Other distraction factor		Total		Comparison with NSW Drivers	
Null	0	0%	0	0%	0	0%	0	0%	0	0%	5	0%
Belt not fitted	0	0%	11	0%	0	0%	1	0%	12	0%	99	0%
Belt not worn	13	2%	37	1%	1	2%	0	0%	51	1%	619	1%
Belt worn	720	93%	3225	87%	36	80%	200	90%	4181	88%	41117	83%
Full face helmet worn	6	1%	213	6%	0	0%	8	4%	227	5%	2825	6%
No helmet worn	0	0%	4	0%	0	0%	0	0%	4	0%	95	0%
Open face/bicycle helmet	1	0%	37	1%	0	0%	3	1%	41	1%	472	1%
Unknown	38	5%	179	5%	8	18%	10	5%	235	5%	4146	8%
Total	778	100%	3706	100%	45	100%	222	100%	4751	100%	49378	100%

Table 29: Distracted Drivers Involved in Casualty Crashes, Jul 2010 to Dec 2011p, by Safety Device Usage