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How Telematics will impact CTP and Workers' Compensation

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Synopsis

Telematics in this paper refers to the collection, transmission, storage and analysis of information relating to road vehicles.

Insurance applications of telematics have developed in the US and Europe. A number of Australian insurers have either launched or are investigating telematics offerings.

Many newer cars are telematics enabled, and existing vehicles can become telematics-enabled through the use of aftermarket devices installed in the vehicle or as a phone app. While there are both practical and theoretical challenges to achieving mass adoption of telematics, we suggest that greater use of telematics is inevitable given the potential for insurance and other benefits.

This paper focusses on the implications of telematics on CTP and Workers' Compensation insurance.

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Contents

1. What Is Telematics?.....	4
2. Who is Using Telematics and Why	5
2.1 Introduction	5
2.2 Italy	5
2.3 United States (and Canada)	6
2.4 UK.....	6
2.5 Australia	7
3. CTP or Workers' Compensation?.....	8
4. Exposure Management.....	10
4.1 Behavioural Feedback.....	10
4.2 Policy Cancellation	11
4.3 Identifying Black Spots.....	12
4.4 Identifying Safe Speeds.....	12
5. Claims Management	13
5.1 First Responders	13
5.2 Alignment of Interests With the Risk Owner	13
6. Next Steps	15
References	16

1. What Is Telematics?

The term telematics describes broadly the process of long-distance transmission of computer-based information. In this paper we refer to the more narrow definition, where the transmission is sourced from within road vehicles.

Telematics has wide-ranging applications for insurance, vehicular fleet management and more generally infrastructure management.

Patents for using telematics as part of motor insurance were first filed in 1995 (Perez, 1995) and 1996 (Progressive, 1996). In 2013, two Australian insurers (AI Insurance, QBE) have released telematics based insurance products in Australia and a number of other Australian insurers have carried out or are considering feasibility studies.

Telematics represents a significant increase in the breadth of driving behaviour data available at the driver level. The table below illustrates some of the information that can be collected using telematics.

Table 1 Information gathered through telematics

Measurement	Description
Mileage (by road type)	Total distance driven, distinguishing highway driving from suburban areas, urban versus country
Number of trips	Number of trips driven, indication of commercial use
Night mileage	Distance driven during the night
Speeding event	Number of times vehicle exceed speed limit by various thresholds
Hard acceleration or braking events	The number of times acceleration or deceleration exceeds various thresholds
Relative speed	Speed relative to other drivers

The use of telematics information has raised some concerns around privacy and fairness. The Association of British Insurers has produced practice guides for providers of telematics insurance to help ensure that customers are being treated fairly and their personal data is protected.

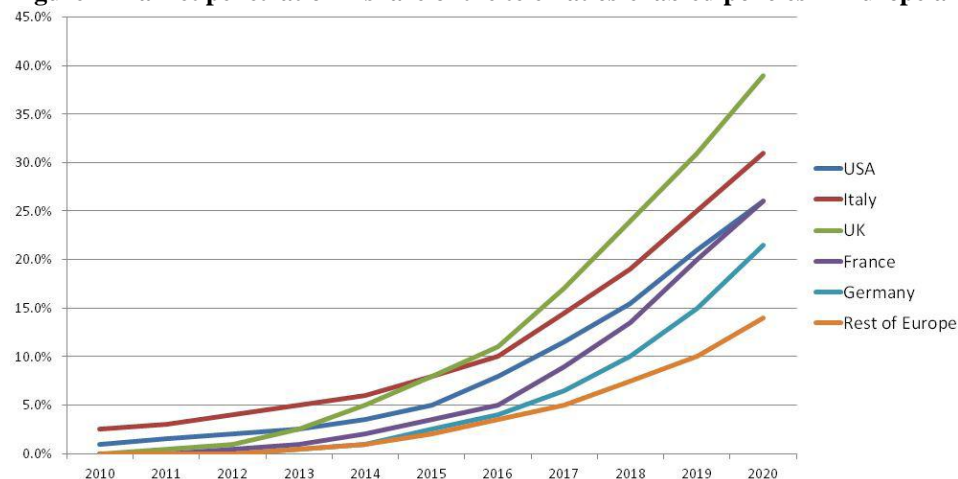
This paper focuses on the implications of telematics on CTP and Workers' Compensation insurance.

2. Who is Using Telematics and Why

2.1 Introduction

According to ABI Research (2012), approximately 1.85 million vehicles worldwide have a fitted telematics device (ABI Research, 2012). Figure 1 below, based on the Global Insurance Telematics Study (Ptolemus, 2012), illustrates current and expected future telematics penetration for the US and Europe.

Figure 1 Market penetration – share of the telematics-enabled policies in Europe and the US.



(Source: Ptolemus, 2012)

Currently, Italy has the highest penetration rate of telematics enabled policies. Telematics uptake in the UK is growing rapidly.

2.2 Italy

The comparatively high adoption of telematics in Italy is in response to increases in fraudulent behaviour, particularly related to whiplash claims (Post, 2012). According to AXA research (AXA, 2013), one in five motor insurance claims in Italy relates to a personal injury claim. In 2012, the Italian government introduced legislation aimed at remedying this situation, which included reference to telematics.

The new law set out guidelines requiring accurate medical diagnosis as part of courts awarding whiplash injury claims. Telematics is able to provide evidence of speeds at time of impact and direction of impact and is expected to greatly increase the accuracy of medical diagnosis for such injuries¹.

In Australia, whiplash is also a very common CTP claim. For instance in NSW, whiplash was involved in approximately 45 per cent of all claims and accounts for approximately 27 per cent of total costs to the scheme (NSW Government, 2009).

¹ It is noted that significant whiplash injury can occur in relatively minor accidents and pathological evidence is often hard to establish. To substantiate the benefits of telematics in reducing whiplash claims would require comprehensive data and analysis.

2.3 United States (and Canada)

North American telematics-based motor insurance penetration is expected to grow from around 2% in 2013 to 12% in 2017 (Ptolemus, 2012). The two key drivers of telematics growth in North America relate to consumer and technological trends.

Consumer trends

The North American motor insurance market is competitive with high capacities available and motor insurance buyers remaining price sensitive. US consumers seem willing to trade information for value i.e. they are comfortable with passing on more information if there are clear benefits. Consumer friendly government regulation which tends to side with consumers over companies has reduced perceived fears related to privacy and use of personal data.

The willingness to trade information for value is particularly prevalent in the demographic characterised as “Gen Y” and “Millennials”. “Gen Y” and their parents are attracted to demanding frequent engagement with information-driven services such as teen driving oversight, green driving advice, and fuel saving tips.

Technological trends

Technological advancements have pushed down the cost of telematics units and enabled additional services and capability offering such as notifications to drivers and dynamic continuous driver feedback. Data bandwidth and accessibility has grown rapidly which has amplified the value brought by analytical strategies, techniques and tools.

Telematics-based concepts correspond well with the “Connected Car” model continuously being developed by vehicle manufacturers and wireless carriers. In our view, telematics in the US has moved beyond the early adopters’ stage of the innovation curve and is now moving towards the cost conscious stage, appealing to more consumers.

2.4 UK

The UK market has some particular features which have driven the adoption of telematics. We describe two features below: Anti-discrimination laws and the dominance of E-Aggregators.

Anti-discrimination laws

Article 21 of the European Charter of Fundamental Rights prohibits discrimination based on gender (European Parliament, 2000), which extends to the use of gender as an insurance rating factor. Telematics provides an approach which distinguishes driving behaviours without recourse to this useful rating variable.

E-Aggregators

E-Aggregators which collect comparative insurance quotes and allow consumers to price-shop and buy online have been embraced in the UK. The tendency with E-Aggregators is for quotations to be based on as few questions as possible, precluding insurers from the use of some specific rating factors. E-Aggregator customers also tend to be more price sensitive than direct online customers.

The combination of lack of underwriting information and high price sensitivity has created large adverse selection risk for insurers. Telematics provides a means to measure risk after the point of sale, which can assist insurers in better pricing renewals and reducing anti-selection.

2.5 Australia

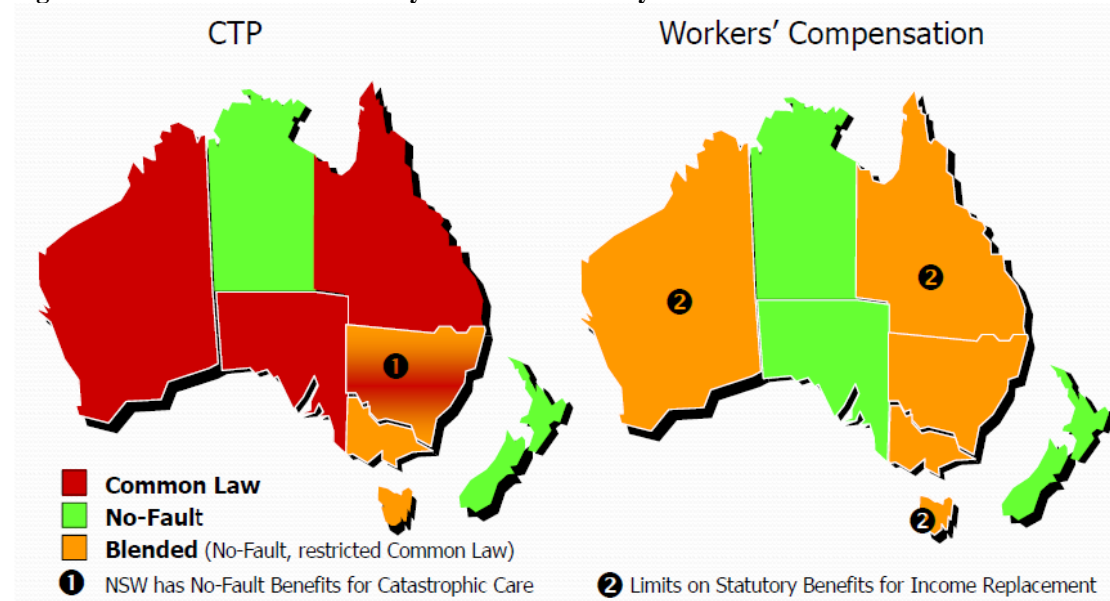
At the time of writing, both AI Insurance and QBE have launched comprehensive motor insurance telematics products in Australia. QBE was first to launch in October followed by AI Insurance in November. There are currently no insurers in Australia that utilise telematics to manage the exposure or claims related to CTP or Workers' Compensation insurance.

3. CTP or Workers' Compensation?

This section provides an Australian context, indicating how Australian CTP and Workers' Compensation schemes respond to motor accident personal injuries and how this differs by state and territory. Telematics impacts CTP and Workers' Compensation schemes differently depending on whether the schemes are fault or no fault schemes.

CTP and Workers' Compensation schemes in Australia are legislated at a state and territory level. There are differences in fault / no fault status by state and territory. Figure 2 shows the status across Australian states and territories.

Figure 2 Access to Common Law by State and Territory



(Source: Fronsko, 2011)

Australian motor accidents where personal injury has occurred may lead to CTP claims, Workers' Compensation claims or both. The main criteria are whether the motor vehicle injury arose from a work-related activity and if fault was established.

There are complexities in determining whether CTP or Workers' Compensation will provide benefits as rules differ by state and territory and there may be interactions with common law. For example, the ACT Workers' Compensation scheme includes journey claims as travel between home and work are considered working, while journey claims are excluded in the NSW Workers' Compensation scheme. Hence, in so far as telematics impacts journey claims, the impact to CTP in NSW will differ from that in ACT.

Interactions with common law will also affect how the cost of bodily injury is shared amongst CTP and Workers' Compensation schemes. No-fault CTP schemes tend to result in higher proportion of motor injuries receiving an insurance benefit. Table 2 below illustrates this.

Table 2 Proportion of motor injuries who receive insurance benefits by scheme type

Schemes	Type	Proportion of motor injuries who receive insurance benefits
ACC NZ (includes both entitlement and non-entitlement claims)	'no fault'	88%
Victoria TAC	'no fault'	78%
Canada	mixture of fault, no fault	50%
United States	mixture of fault, no fault	40 to 50%
NSW	fault-based	40%

(Source: Tess, 2008)

We would expect Workers' Compensation schemes to pick up some of the costs not paid by no-fault CTP schemes. In so far as telematics is able to provide evidence to determine fault, the impact to CTP and Workers' Compensation schemes will differ according to fault / no fault status of the state or territory

We view that Telematics will impact CTP and WC in two distinct but connected areas.

Firstly, the impact on drivers' exposure to motor accidents, in turn impacting CTP and Workers' Compensation claims frequency. We discuss this exposure aspect further in Section 4 Exposure Management.

Secondly, in the event where a motor accident has occurred and a CTP and Workers' Compensation claim is lodged, we describe how telematics impacts claims management and in turn the CTP or Workers' Compensation claims frequency and severity. We discuss this claims aspect further in Section 5 Claims Management.

4. Exposure Management

This section describes aspect of telematics which affect drivers' exposure to motor accidents and hence CTP and Workers' Compensation claims frequency.

4.1 Behavioural Feedback

Telematics prompts improved driver behaviour via a combination of alerts, gamification, rewards schemes and premium savings.

Alerts

Telematics can come with the functionality of "beeping" when a driver is for example speeding, veering or suddenly accelerating. In most cases the "beeping" is optional and drivers may turn off this functionality.

Gamification

Gamification aims to change behaviour through games and making learning fun. Telematics influences behaviour via games such as earning points / stars / badges, ranking on leader boards and periodic competitions amongst peer drivers. Gamification alone may only affect the behaviour of some consumers. Insurers can encourage gamification with rewards schemes.

Rewards Schemes

Rewards schemes provide a mechanism whereby earned points can be converted into discount vouchers for various goods and services. For example, Carrot Insurance (UK based insurer) rewards consumers with more insurance (i.e. an extension of insured kilometres). Reward schemes are generally considered a bonus rather than an expectation and are well received by consumers. The cost of providing the reward is often a lot less than the consumer's perceived value.

Premium Savings and Loadings

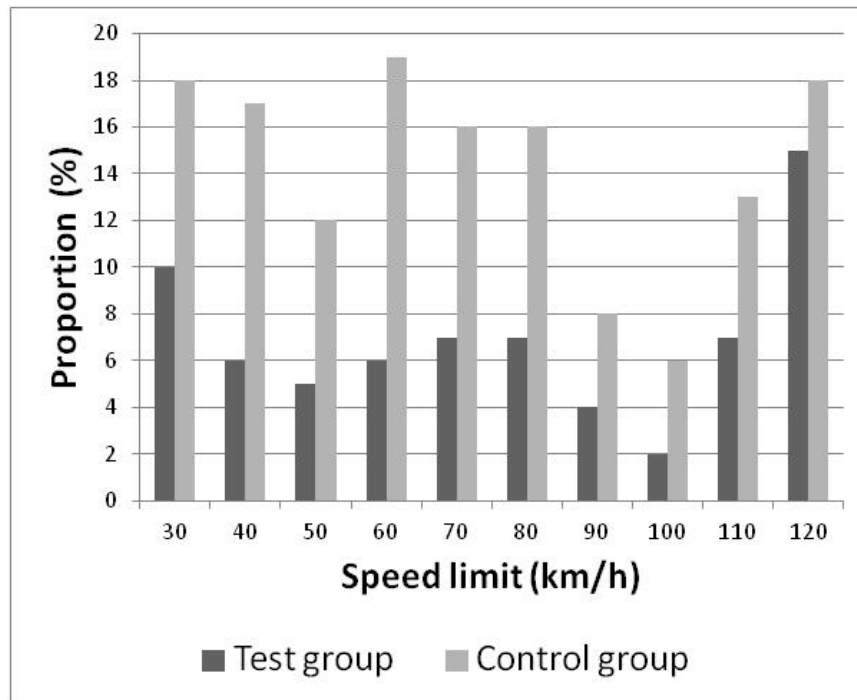
Currently, there is an expectation from consumers that telematics will provide premium savings but not premium loadings. In a future scenario where telematics penetration is much higher, insurers may have greater power to increase premiums when bad driving is detected. Likewise, insurer will be able to more accurately provide discounts to drivers exhibiting good driver behaviour.

Aspects of driving behaviour will be more difficult to conceal from insurers, and the cause and effect more immediate under telematics. For instance, telematics may be able to detect drunken driving (Nowotarski, 2008) and texting while driving, leading to a direct increase in premium upon renewal or alternatively an option of micro transactions whereby the consumer has the option of making a small payment to avoid slipping to a higher risk category².

² This is similar to the current option in Victoria of paying a fine to avoid loss of licence, or using dollars to top up frequent flyer points.

It is possible to change driver behaviour via economic incentives and hence reduce frequency of accidents. A Swedish study (Stigson, 2013) supported by the Swedish Transport Administration and Folksam Insurance Group showed how drivers with telematics fitted in the car (the test group) tended to speed less than the control group where no telematics units were fitted. This is illustrated in Figure 3 below.

Figure 3 Proportion of speeding driver (>6km over the speed limit)



(Source: Stigson, 2013)

4.2 Policy Cancellation

Telematics enables insurers to respond to actual driving behaviour. Whilst in the UK insurers are responding by cancelling some policies, in Australia restrictions on cancelling policies or denying coverage and rules on premium rates and relativities means Australian insurers will be less able to respond to actual driving behaviour than their UK counterparts.

Policy Cancellation

UK law allows warranty terms in insurance contracts which give insurers the right to repudiate a contract. Warranties are not allowed in most Australian insurance contracts. A potential Australian response which achieves the effect of responding to actual driving behaviour is to shorten policy durations and take advantages of options available to the insurer at renewal.

Denial of Coverage

Denial of CTP or Workers' Compensation coverage is not usually allowed in Australia. For example, the *Queensland Motor Accident Insurance Act 1994* (Queensland Government, 2012) states: "A licensed CTP insurer cannot repudiate, or decline to issue or renew, a CTP insurance policy."

Premium Loading

Legislation for CTP in all states and territories restricts free rating and therefore the impact of telematics is limited. Whilst Workers' Compensation has fewer restrictions, motor vehicle injuries represent a smaller part of the overall claims cost, so pricing is more likely to be incorporated through longer term trends in claims experience rather than a telematics based approach.

The impact of telematics on CTP and Workers' Compensation prices will be felt in a number of areas impacting claims frequency and severity. This will be reflected over time in the claims experience used in pricing. The tendency for telematics information to be used directly in pricing is limited due to the restrictions embedded in CTP and Workers' Compensation pricing frameworks.

4.3 Identifying Black Spots

Telematics will assist in identifying and categorising black spots both on a casualty basis and an 'accidents waiting to happen' basis.

Accident Data

The location of accidents will be recorded by the telematics device, which can be matched with CTP insurance records. This will provide an accurate source of data for government departments funding decisions. Similarly, accidents that have happened (but have not led to an injury) can be reported. This will provide information on whether to remediate marginal black spots.

'Accidents Waiting To Happen'

Telematics can also identify areas where accidents are waiting to happen, i.e. higher risk areas. For instance, areas where there is hard braking, more frequent activation of ABS or stability control systems indicate a higher risk area.

In some cases, the remediation of a black spot may involve reducing the speed limit. Telematics will be able to provide evidence whether speed limit reductions are effective or whether further remediation is required.

4.4 Identifying Safe Speeds

Telematics can provide an aggregate profile of actual drivers' speeds in different terrains. If the majority of people are travelling below the speed limit, this suggests the safe speed may be below the actual speed limit and speed limits can be reduced. Conversely, if the majority of people are travelling above the speed limit and there are no accidents or near misses, this suggests that the safe speed may be above the actual speed limit and speed limits can be increased.

5. Claims Management

This section describes a number of telematics mechanisms that affect motor accidents' claims severity and hence CTP and Workers' Compensation average claim sizes.

5.1 First Responders

Telematics will be able to enable insurers to identify when deceleration is sufficiently large to indicate that a major accident has occurred. First responders can then be automatically despatched to the accident site.

E-call, which differs slightly from insurance-based telematics in that the trigger mechanism is based on airbag deployment or impact sensors, is set to be implemented within the European Union by 2015. The European Commission has estimated that under E-call, "emergency services' response time would be reduced by 50% in rural areas and 40% in urban areas, leading to a reduction of fatalities estimated to be between 2% and 10%, and reduction of severity of injuries between 2% and 15%, depending on the country considered." (European Commission, 2011).

Insurers will be able to provide courtesy calls to insureds following identification of impacts, contacting the insured at the scene of accident, allowing management of less severe accidents at point of impact. This improves the service to policyholders, provides immediate assistance to a driver who may be in shock or distressed and reduces the opportunity to exaggerate injury.

5.2 Alignment of Interests with the Risk Owner

We consider how telematics introduces greater evidence in determining fault and the application of policy conditions and claims management frameworks may differ as a consequence. This section is relevant to fault-based schemes.

Coinsurance

In states which allow common law damages³, legislation allows for contributory negligence and reduction of insurance payments. For example, if a driver was participating in illegal speed trials where the injured person could have declined to become a passenger, telematics may be able to provide evidence that the injured person could have reasonably been expected to be aware of the driver's intent.

Behaviour-Based Excesses

Excesses could vary based on whether a driver was speeding or based on other driver metrics. Linking excesses to level of fault within CTP is not a new concept. In NSW an excess currently applies if a driver is more than 25% at fault for the cause of a crash and someone lodges a CTP claim.

Reducing Legal Costs and Settlement Delays

With broken glass, twisted metal, shredded tires, and other debris, the events leading up to and including a car accident can be difficult to interpret. When an injury has occurred, police attempt to reconstruct the crash - identifying the pre-impact motion of the vehicle(s), vehicle speed, the cause of the crash, etc.

³ See Section 3.

Telematics will provide hard facts on speed details, G-forces and GPS logging. With telematics establishing fault will be less problematic and this will simplify and hasten the process of payment being received for injury or as compensation for a motor vehicle accident. This will also reduce the percentage of scheme costs spent on legal expenses.

6. Next Steps

This paper has been intentionally brief as the impact CTP and Workers' Compensation is very broad and no paper could realistically cover all aspects.

We are looking at the Telematics topic and its potential for a number of areas and plan to publish further research into the Telematics area in the future.

In the process of furthering the research, we will be drawing on US and UK market experiences where Telematics is more developed relative to Australia.

References

- ABI Research. (2012, February 10). *Research News: ABI Research*. Retrieved October 16, 2013, from ABI Research: <https://www.abiresearch.com/press/89-million-insurance-telematics-subscribers-global>
- APIA. (n.d.). *Australian Pensioners Insurance Agency Pty Limited*. Retrieved October 16, 2013, from APIA > Quote Terms and Privacy: <http://m.apia.com.au/mobile/quote-terms-and-privacy-ctp>
- APRA. (2013, August 29). *Statistics: Quarterly General Insurance Performance Statistics*. Retrieved October 16, 2013, from APRA: <http://www.apra.gov.au/GI/Publications/Documents/GI-Quarterly-Performance-20130630.pdf>
- Australian Government. (2013, June 27). *Commlaw: Australian Government*. Retrieved October 16, 2013, from Insurance Contracts Act 1984, Div 2 Sec 24: <http://www.comlaw.gov.au/Details/C2013C00077>
- Australian Government. (2013, February 26). *Department of Infrastructure and Regional Development*. Retrieved October 16, 2013, from Black Spot Sites Eligibility: http://www.nationbuildingprogram.gov.au/funding/blackspots/eligibility_of_sites.aspx
- AXA. (2013, February). *The AXA Whiplash Report 2013*. Retrieved October 31, 2013, from www.parliament.uk: <http://www.publications.parliament.uk/pa/cm201314/cmselect/cmtran/117/117vw56.htm>
- European Commission. (2011). *Commission Staff Working Paper on the implementation of the harmonised EU-wide in-vehicle emergency call, eCall Impact Assessment*. Retrieved October 16, 2013, from European Commission: http://ec.europa.eu/information_society/activities/esafety/doc/ecall/recomm/impact_ass.pdf
- European Parliament. (2000, December 18). *Charter Of Fundamental Rights Of The European Union*. Retrieved October 16, 2013, from European Parliament: http://www.europarl.europa.eu/charter/pdf/text_en.pdf
- Fronsko, D. A. (2011). Insurance Market Incentives and constraints and complementary public policies. *International Transport Forum Round Tables*, (p. 23).
- Nowotarski, M. S. (2008). *Patent No. 12/266,657*. United States of America.
- NSW Government. (2009, May 5). *Motor Accidents Authority*. Retrieved October 16, 2013, from Home > Injury Management > Whiplash : <http://www.maa.nsw.gov.au/default.aspx?MenuID=115>
- Perez, S. M. (1995). *Patent No. EP0700009 B1*. Europe.
- Post. (2012, June 6). *Home > Feature > Insurer > Telematics: Ready for the mainstream?* Retrieved October 2013, 16, from Telematics: Ready for the mainstream?: <http://www.postonline.co.uk/post/feature/2182531/telematics-ready-mainstream>
- Progressive, C. I. (1996). *Patent No. 5,797,134*. United States of America.
- Ptolemus. (2012). *Ptolemus: Global Insurance Telematics Study*. Retrieved October 16, 2013, from Global Insurance Telematics Study: http://www.sas.com/resources/whitepaper/wp_56343.pdf
- Queensland Government. (2012, November 22). *Motor Accident Insurance Act 1994*. Retrieved October 2013, 16, from Queensland Consolidated Acts, Sect 22: http://www.austlii.edu.au/au/legis/qld/consol_act/maia1994243/

- Sheehan, M. (1998). The ICA Fraud Report, Jun 1998. *Conference Crime Against Business* (p. 7). Melbourne: Insurance Council of Australia.
- Stigson, H. e. (2013). A one year pay-as-you-speed trial with economic incentives for not speeding. *23rd International Conference on the Enhanced Safety Vehicles (ESV)*., (p. 8). Seoul, Korea.
- Tess, K. A. (2008). Fault versus No Fault - Reviewing the International Evidence. *Institute of Actuaries of Australia 16th General Insurance Seminar 9-12 November 2008*, (p. 39). Coolom, Australia.
- The Motor Report. (2013, July 2). *News: The Motor Report*. Retrieved October 16, 2013, from Florida Fines Slow Drivers: Blueprint For Australia?: <http://www.themotorreport.com.au/56851/slow-drivers-in-the-fast-lane-new-laws-in-florida>
- US Dept of Transportation. (2011, December 15). *Connected vehicle insights*. Retrieved September 4, 2013, from Trend in machine-to-machine communications: <http://www.its.dot.gov/research/pdf/Tech%20Scan%20M2M.pdf>
- Various State Governments. (n.d.). *Multi-state worker's compensation guidance material*. Retrieved October 16, 2013, from Worksafe Victoria: <http://www.worksafe.vic.gov.au/wps/wcm/connect/577ade004071e4e4a867fee1fb554c40/?a=3847>
- WardsAuto . (2011, August 15). *Home > News & Analysis > World Vehicle Population Tops 1 Billion Units*. Retrieved October 2013, 16, from WardsAuto : http://wardsauto.com/ar/world_vehicle_population_110815