

Telematics and Usage Based Insurance

Is New Zealand ready?



May 2014

Tower's SmartDriver car insurance phone app

Tower Insurance has recently been in the news regarding a smartphone application they have released which can be used by policyholders to reduce their car insurance premiums.

The smartphone app utilises the phone's inbuilt GPS and accelerometer to measure how far, and how well, the policyholder drives. Over the course of 250km, a profile is established for the driver and a score is given from 0 to 10. Based on this score, Tower then offers the driver a discount of up to 20%.

The significance of Tower's SmartDriver product is that this is the first New Zealand entry into the telematics insurance market.

Usage based insurance and telematics

Usage Based insurance (UBI) and Telematics (using technology to assess driving risks) have become highly topical in many insurance markets around the world, particularly the UK and US.

UBI is insurance in which the premium is determined based on some measure of policyholder usage. The term is almost exclusively applied to car insurance. Related terms are pay-as-you-drive (PAYD) or pay-how-you-drive (PHYD).

When one incorporates some form of monitoring (and possibly transmitting) device into the car, it is referred to as telematics. Although in many cases the terms UBI and telematics are used interchangeably.

So how does it work? Basically, the policyholder agrees to install some form of device into their car which will provide feedback to the insurer on their driving habits. The insurer then uses this feedback to charge the driver a more appropriate premium.

The 'device' usually takes one of four forms:

- A professionally installed 'black box'
- A dongle which the policyholder plugs into the OBD port on their car (see picture)
- An application on the policyholder's smartphone
- Or one may be able to utilise the inbuilt GPS system in many newer cars

Each of these options has its pros and cons. For the smartphone option chosen by Tower, the obvious advantage is that it keeps the costs down

for the insurer. The difficulty lies in making sure that the policyholder turns on the application every time they drive (and turns it off when they are a passenger or using public transport). Nevertheless, SmartDriver seems like a fairly safe and measured approach for Tower to 'dip their toes' into the water of a whole new market.



A typical dongle which plugs into a vehicle's OBD port – in this case the type used by a mechanic to diagnose engine faults. Those used by telematics insurers are very similar, though without the bulky cable. (Source: Wikipedia.org)

The limitations of traditional policies

With traditional car insurance policies there are only so many factors an insurer can realistically use to estimate the best premium. The obvious ones are age, sex and vehicle type. Ideally an insurer would charge a lower premium for people who drive less, though without a telematics device this can be difficult to measure.

To date, insurers have used proxies to allow for typical driving volumes – a policyholder's age and the age of their car will give a rough indication of how much driving they might do. But how does an insurer distinguish, for example, between the 21 year old male who drives his car to university every day, and the 21 year old male who catches the bus?

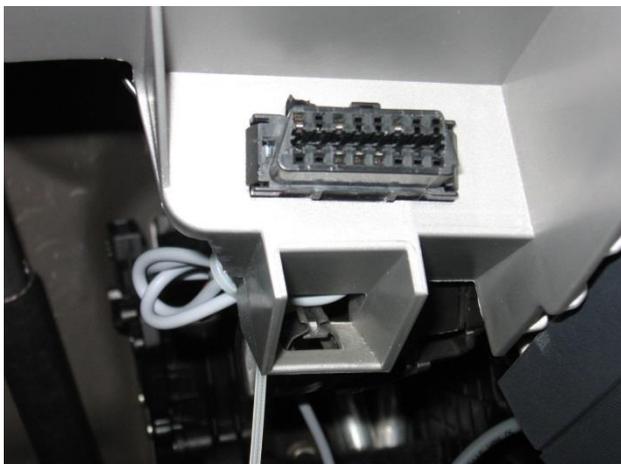
No claims discounts go some of the way towards better matching a driver's premium with their individual risk. However, the no claims discount is a fairly crude and not altogether accurate way of trying to identify and reward the 'better' drivers.

The advantage of telematics

Telematics opens up a whole new world of rating factors for the insurer. No longer will an insurer have to use proxies to estimate how a person will drive – they can now measure it directly! The insurer can analyse a driver's cornering abilities, accelerating and braking habits, and typical driving routes and distances. In the extreme case one could move toward charging policyholders per km rather than annually.

But increased premium rating sophistication is only one of the benefits. Via a telematics policy, insurers can incentivise their policyholders to drive safely and even provide feedback that teaches their policyholders to be better drivers.

The benefits to the policyholder go beyond simply lower premiums. Some devices can be programmed to automatically contact emergency services in the event of a serious crash, or to send useful information to a roadside assistance team when a vehicle breaks down.



The On-Board Diagnostics (OBD) port in a car (typically located below the steering wheel). This is where a mechanic plugs in a computer to find out why your 'check engine' light has come on. (Source: Wikipedia.org)

Difficulties

The first obstacle to an insurer entering the telematics market is cost. When it comes to telematics devices, the more expensive options generally enable the insurer to provide a better (and more accurate) product.

The second obstacle to launching a telematics product is that there is very little data in New Zealand upon which to determine a new rating

basis. Tower Insurance, who has already started collecting data, is at a distinct advantage here.

Ironically, the other difficulty with telematics data is that once you have started collecting data it can prove expensive to store and analyse it all. Consider the second-by-second data that a telematics device can record against a traditional car insurance policy which simply records a snapshot of the policyholder at renewal time.

Our Alliance Partner, Towers Watson, has developed a product to get around some of these data issues for small-medium US insurers. Via their DriveAbility scoring model, Towers Watson aggregates data from a number of US insurers and provides feedback to each insurer which enables them to determine an appropriate premium for each of their drivers based on a larger pool of data than the insurers could generate individually

Perhaps the Towers Watson model might provide an initial basis upon which smaller New Zealand insurers can enter the telematics market with at least some experience to draw upon. In time, a similar data aggregation project in New Zealand may be able to address questions such as:

- Which driving behaviours are the most predictive of claims?
- Which areas in New Zealand are the most dangerous to drive in?
- How will the results in New Zealand be different to the rest of the world, given our unique bodily injury model with ACC?

Selection

With the launch of a new and different product there is always the risk of selection i.e. the effect whereby policyholders gravitate towards the best premium and exploit the differences between rating bases for different insurers. For a telematics policy, the risk here is considerable – both for the insurer launching the product and the ones that choose to hold back.

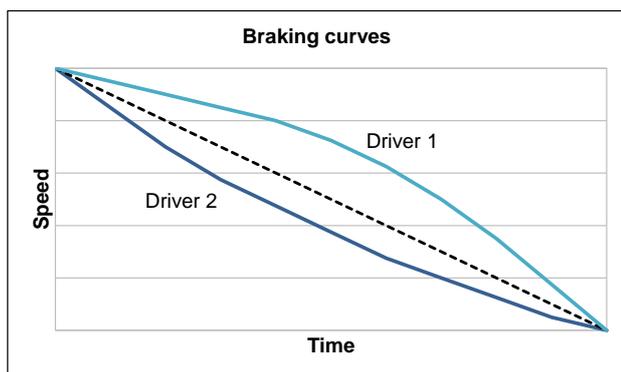
US telematics insurers have reported significant benefits due to self-selection and driver awareness. Firstly, it tends to be only those drivers who consider themselves safe (or just infrequent) drivers who would opt for a telematics policy anyway. Secondly, when a driver knows they are being monitored (and will be charged accordingly) they tend to drive better.

To date, telematics policies only account for about 1% of the UK car insurance market, although policy numbers are growing quickly. Given the ability of superior ability of a telematics product to identify better drivers, one can be sure that this 1% represents a better pool of drivers than the remaining 99%.

Removing the better 1% of drivers from the pool of traditional policies has not yet had serious consequences for the remaining 99%. But when that figure grows to 10% or 20%, what will that do to premiums for the remaining drivers who either don't want to purchase a telematics policy, or have previously tried it and been identified as high risk?

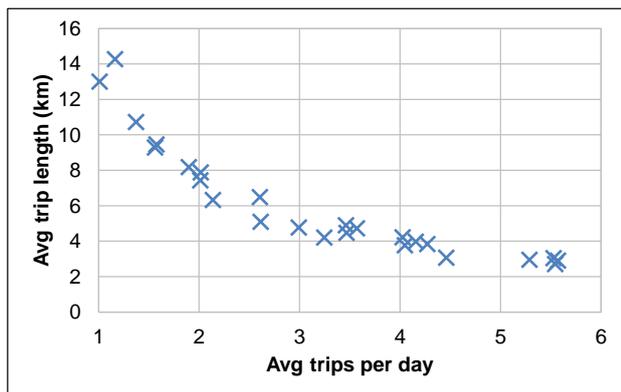
The analytics

So how does one go about separating the good drivers from the bad? Consider the two drivers below. Both are approaching a red traffic light and need to come to a stop over the same distance.



Driver 1 applies only light braking at first. Then, realising that he is unlikely to stop in time, increases the braking pressure. Driver 2, on the other hand, applies slightly heavier braking at first, then eases off as he approaches the stop line.

But it's not just about the quality of the driving – quantity matters too. The chart below illustrates average daily commutes for 25 different drivers. Each travels an average of around 15km per day, though the make-up of that 15km is very different.



On the left we might have a university student living on the outskirts of the city who often catches the bus. When she does use her car, it's usually for a fairly long journey, and probably in fairly heavy traffic too.

On the right we might have a stay at home mother doing school runs and grocery trips. She also averages around 15km per day, although in this case it's comprised of larger number of shorter journeys spread throughout the day.

Privacy issues

Perhaps one of the biggest obstacles to building a market for telematics policies is allaying policyholder fears about privacy. The questions asked by drivers include:

- What will the insurer do with my data?
- Will they use it against me to decline my claim?
- Will the insurer provide my data to any third parties, for example the police or transport agencies?
- Even if the insurer has no intention of providing my data to third parties, can I be confident that they won't ever be forced to hand it over?

Some of these questions can be addressed via the type of device an insurer uses to collect the data. Some devices track location while others monitor only limited metrics. Some devices send data to the insurer every second, while others require some form of initiation by the driver before any data is sent.

Conclusion

Telematics represents the first major development in the car insurance market in some time. And while the obstacles to launching a telematics product are real, insurers around the world are finding ways to make it work in a profitable manner.

In New Zealand the telematics market is very much untested. But the launch of Tower's SmartDriver policy indicates that our insurers are starting to think about the potential benefits. Perhaps one day, in the not too distant future, telematics will become as widespread in New Zealand as the no claims discount is today.

ABOUT MELVILLE JESSUP WEAVER

Melville Jessup Weaver is a New Zealand firm of consulting actuaries. The firm was established in 1992 and has offices in Auckland and Wellington. The firm is affiliated to Towers Watson, a global professional services firm that helps organisations around the world optimise performance through effective people, risk and financial management. Towers Watson has offices in 25 countries and the business covers human resources services, reinsurance and Tillinghast.

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