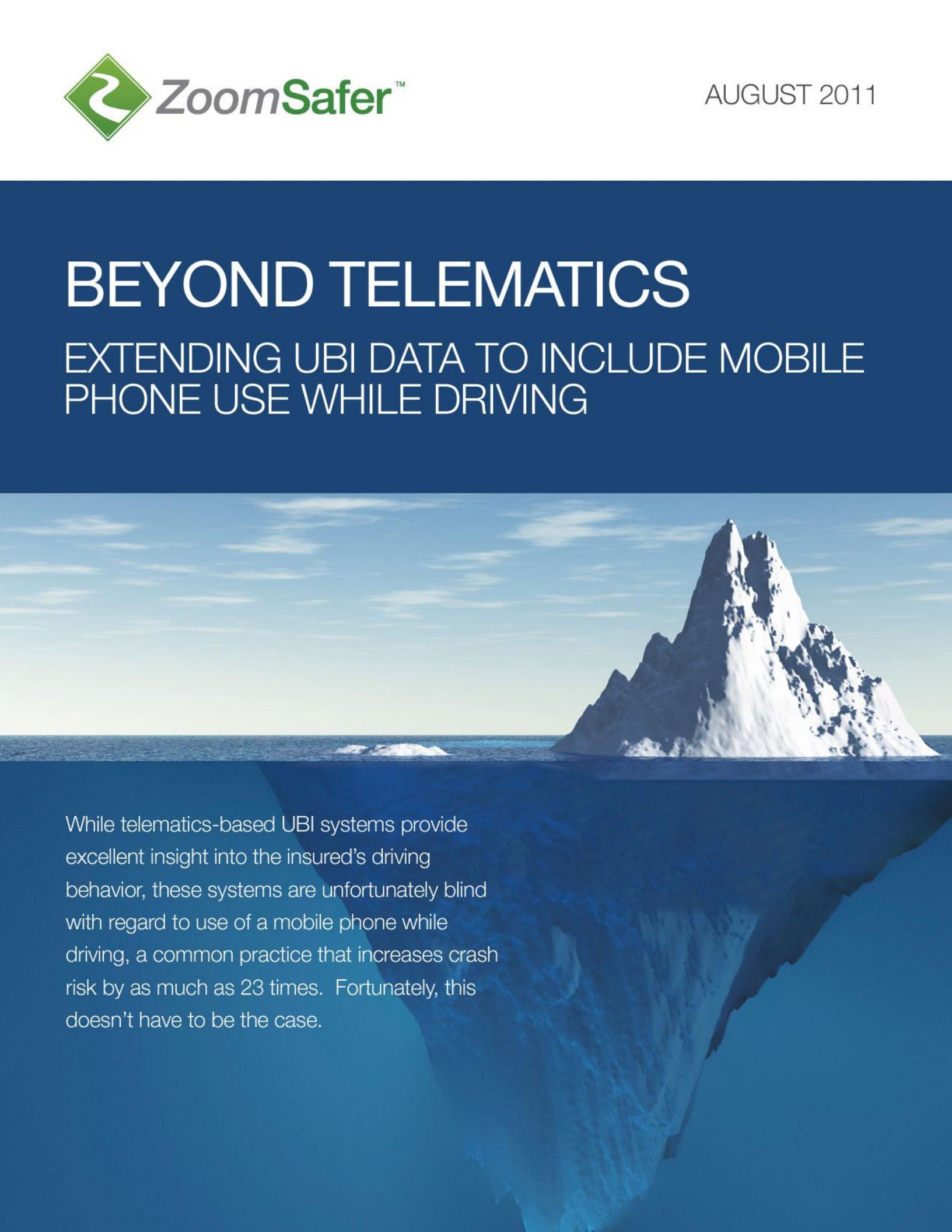


# BEYOND TELEMATICS

## EXTENDING UBI DATA TO INCLUDE MOBILE PHONE USE WHILE DRIVING

A large iceberg floats in the ocean. The tip of the iceberg, which is visible above the water, represents the telematics-based UBI systems. The much larger, submerged part of the iceberg represents the mobile phone use while driving, which is currently not captured by these systems.

While telematics-based UBI systems provide excellent insight into the insured's driving behavior, these systems are unfortunately blind with regard to use of a mobile phone while driving, a common practice that increases crash risk by as much as 23 times. Fortunately, this doesn't have to be the case.

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## 1. ABSTRACT

This paper examines how usage-based insurance (UBI) and telematics applications can be enhanced to measure use of mobile phones while driving.

Usage-based insurance (UBI) and Pay-as-you-go (PAYG) are increasingly popular insurance product offerings, potentially delivering significant value to both insurance companies and their end-customers. Although different carriers measure “usage” in slightly different ways (e.g. miles driven, time of day driven, speeding, hard breaking, swerving, and rapid accelerating) they all generally work the same way: by collecting data from telematics devices installed in the insured’s vehicle to better understand risk and determine pricing.

While UBI-based telematics systems provide insurers with excellent insight into a person’s actual driving behavior, these systems are unfortunately blind with regard to a person’s *use of a mobile phone while driving*, a very common and very dangerous behavior that increases crash risk by as much as 23 times.

Fortunately, this doesn’t have to be the case.

This paper explains how insurance companies can innovate beyond the competition by leveraging UBI data to measure and manage risk associated with cell phone use while driving.

## 2. AUTO AND FLEET UNDERWRITING: PAST, PRESENT, FUTURE

Historically, insurance carriers calculated premiums based on data collected during the quoting and underwriting processes. Application forms and data entry screens were constructed to capture driver and vehicle data needed to calculate a premium. As premium pricing became more sophisticated, insurers relied on external sources to verify applicant data (e.g. motor vehicle reports; claims histories; registration files) as well as new types of external data (such as credit, household drivers, and homeownership).

Insurers came to realize that the benefits of collecting more data could outweigh the convenience of delivering a fast quote at the point of sale, thus predictive modeling became a competitive advantage. Since then, advances in telematics technologies have caused insurers to ask the question, “Why not examine *actual* driving behavior?” Rather than assessing risk based on macro demographic and historical data, insurers could instead look at a customer’s actual driving activity to more accurately assess risk and set pricing.

Mike Slattery, former Manager of Consumer Innovation for Liberty Mutual, explained, “The ability to measure how safe drivers are in relation to each other seems to be a better predictor of risk than using some of the other proxies the insurance industry uses today.”<sup>1</sup>

As telematics technologies became less expensive and easier to use, insurers began to experiment with UBI offerings for both personal and commercial lines customers. In recent years, announcements of new UBI initiatives have become common. In August 2011, State Farm and Hughes Telematics launched a new consumer product called in-Drive, which provides a range of telematics services – and offers drivers discounts based on safe habits.<sup>2</sup> Likewise, last year Allstate launched a UBI product for consumers called Drive Wise<sup>3</sup> and GMAC has for several years enabled low-mileage OnStar customers to use their systems to save on insurance.<sup>4</sup>

So now, rather than guess how policy-holders *might* drive, insurers are watching how policy-holders *actually* drive.

The good news for insurers is that telematics-enabled UBI offerings are an effective way to identify and attract safer drivers, rewarding them with lower premiums and offering them other value-added services such as road-side assistance.

The bad news for insurers is that these telematics-enabled systems are still blind to a person’s use of a handheld mobile phone while driving, a very common and very dangerous behavior that increases crash risk from 1.04 times (for talking on a handheld phone) to up to 23.2 times (for text messaging).<sup>5</sup>

The future, however, for UBI insurers is promising because they can easily create new product offerings that incentivize safe and legal use of cell phones while driving.

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<sup>1</sup> Telematics Update, “Liberty Mutual: Smartphone usage is ‘one of the driving factors ushering in insurance telematics,” *Telematics Update*, < <http://analysis.telematicsupdate.com/infotainment/liberty-mutual-smartphone-usage-%E2%80%9Cone-driving-factors-usher-ing-insurance-telematics%E2%80%9D>>

<sup>2</sup> Ludovic Privat, “State Farm Insurance Unveils Telematics Service,” *GPS Business News*, August 8, 2011,, <[http://www.gpsbusinessnews.com/State-Farm-Insurance-Unveils-Telematics-Service-UPDATED\\_a3184.html](http://www.gpsbusinessnews.com/State-Farm-Insurance-Unveils-Telematics-Service-UPDATED_a3184.html)>

<sup>3</sup> Susan Ladika, “To Save a Buck, Let Your Insurer Be a Peeping Tom,” *Fox Business*, May 2, 2011, <<http://www.foxbusiness.com/personal-finance/2011/04/28/save-buck-let-insurer-peeping-tom/>>

<sup>4</sup> “Auto Insurance First: Technology Lets America Who Drive Less, Pay Less,” GMAC, <[http://www.gmacinsurance.com/About/GMAC\\_News/07July02.asp](http://www.gmacinsurance.com/About/GMAC_News/07July02.asp)>

<sup>5</sup> Rebecca L. Olson, Richard J. Hanowski, Jeffrey S. Hickman and Joseph Bocanegra, “Driver Distraction in Commercial Vehicle Operations,” *Distraction.gov*, <<http://www.distraction.gov/research/PDF-Files/Driver-Distraction-Commercial-Vehicle-Operations.pdf>>

## 3. THE DISTRACTED DRIVING DILEMMA

### 3.1. CELL PHONE USE WHILE DRIVING IS RISKY

Use of a cell phone while driving is distracting, and when drivers are distracted, the risk of crashing goes up.<sup>6</sup> It is that simple. A well-known 2009 study conducted by the Virginia Tech Transportation Institute (VTTI) showed that texting while driving increased drivers' crash risk as much as 2300%.<sup>7</sup>

Indeed, there are many distracting activities in which individuals engage while behind the wheel including eating, grooming, and talking to a passenger. In recent years, however, a "perfect storm" has emerged, fueled by a massive proliferation of smartphones, a rapid increase in the popularity of text messaging, and a series of high-profile fatal crashes which have all led legislators, transportation regulators and safety advocates to focus their attention on driver distraction due to cell phone use.

There are three main forms of driver distraction<sup>8</sup>:

- Visual – driver's eyes are off the road
- Manual – driver's hands are off the wheel
- Cognitive – driver's mental focus is off the task of driving

Handheld cell phone use while driving is simultaneously distracting on all three fronts.

#### 3.1.1. CELL PHONE DISTRACTIONS ARE COMMON

Mobile phones are everywhere, and they compete very effectively for their users' attention in every aspect of life, even when driving. Consider the following:

- By December 2010, there were more than 300 million active wireless subscriptions in the United States, representing market penetration of 96%<sup>9</sup>
- Americans sent approximately 175 billion text messages per month in 2010<sup>10</sup>
- As of December 2010, nearly a third (31%) of U.S. mobile consumers owned smartphones;<sup>11</sup> by mid-2011, that number had risen to 35%<sup>12</sup>

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<sup>6</sup> Matt Howard and Michael Riemer, "On-the-Job Distracted Driving: 31 Important Statistics, Figures and Ideas," ZoomSafer < <http://zoomsafer.web6.hubspot.com/distracted-driving-risk-ebook/> >

<sup>7</sup> Olson et al, "Driver Distraction in Commercial Vehicle Operations."

<sup>8</sup> "Distracted Driving Stats and Facts," NHTSA, accessed August 11, 2011, <<http://www.distraction.gov/stats-and-facts/index.html>>

<sup>9</sup> "U.S. Wireless Quick Facts," CTIA – The Wireless Association. accessed August 21, 2011, <<http://www.ctia.org/advocacy/research/index.cfm/aid/10323>>

<sup>10</sup> Ibid.

<sup>11</sup> Don Kellogg, "Among Mobile Phone Users, Hispanics, Asians Are Most-Likely Smartphone Owners in U.S.," *Nielsenwire*, February 1, 2011, < <http://blog.nielsen.com/nielsenwire/?p=25901> >

- 51% of adult cell phone users have used their devices to get real-time information at least once and one quarter (27%) had trouble dealing with a situation because their mobile phone was not available<sup>13</sup>
- More than a quarter of American adults (27%)<sup>14</sup> and teens (26%) say they have texted while driving at least once<sup>15</sup>
- Nearly two-thirds (61%) of American adults have talked on the phone while driving;<sup>16</sup> 43% of American teens say they have done the same<sup>17</sup>
- Over half (54%) of employees who have a smartphone say they check it while driving<sup>18</sup>

### 3.1.2. TEXTING AND EMAILING ARE THE MOST DISTRACTING CELL PHONE ACTIVITIES

Anyone who has ever tried to respond to a text or write an email while driving can attest that texting and emailing while behind the wheel is very risky behavior. While there is debate over which forms of cell phone use are most distracting, the research that exists is revealing:

- 44% of adults<sup>19</sup> and 40% of teens say they have been passengers of drivers whose cell phone use put them or others into danger<sup>20</sup>
- Texting while driving increases the risk of a crash or near-crash by as much as 23.2 times<sup>21</sup>
- Dialing a cell phone increases crash risk 5.93 times while having a conversation on a handheld mobile phone increases it 1.04 times<sup>22</sup>
- 5,474 people were killed on U.S. roadways and an additional 448,000 were injured in motor vehicle crashes reported to involve distracted driving in 2009 alone<sup>23</sup>

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<sup>12</sup> “Smartphone Adoption and Usage,” Pew Internet and American Life Project,, <  
<http://www.pewinternet.org/Reports/2011/Smartphones/Summary/Key-Findings.aspx>>

<sup>13</sup> “Americans and Their Cell Phones,” Pew Internet and American Life Project, ,<  
<http://www.pewinternet.org/Reports/2011/Cell-Phones/Key-Findings.aspx>>

<sup>14</sup> “Adults and Cell Phone Distractions,” Pew Internet and American Life Project,, <  
<http://www.pewinternet.org/Reports/2010/Cell-Phone-Distractions.aspx>>

<sup>15</sup> “Teens and Distracted Driving,” Pew Internet and American Life Project, <  
<http://www.pewinternet.org/Reports/2009/Teens-and-Distracted-Driving.aspx>>

<sup>16</sup> Pew, “Adults and Cell Phone Distractions.”

<sup>17</sup> Pew, “Teens and Distracted Driving.”

<sup>18</sup> “More Than Half of Workers Admit to Checking Their Smart Phones While Driving, Finds New CareerBuilder Survey,” CareerBuilder,<  
[http://www.careerbuilder.com/share/aboutus/pressreleasesdetail.aspx?id=pr558&sd=3/10/2010&ed=12/31/2010&siteid=cbpr&sc\\_cmp1=cb\\_pr558](http://www.careerbuilder.com/share/aboutus/pressreleasesdetail.aspx?id=pr558&sd=3/10/2010&ed=12/31/2010&siteid=cbpr&sc_cmp1=cb_pr558)>

<sup>19</sup> Pew, “Adults and Cell Phone Distractions.

<sup>20</sup> Pew, “Teens and Distracted Driving.”

<sup>21</sup> Olson et al, “Driver Distraction in Commercial Vehicle Operations.”

<sup>22</sup> Ibid.

<sup>23</sup> “Distracted Driving 2009,” National Highway Transportation Safety Administration (NHTSA), <  
<http://www.distracted.gov/research/PDF-Files/Distracted-Driving-2009.pdf>>

- Of people killed in distracted-driving-related crashes in 2009, in 995 crashes (18%) cell phone use was reported as a factor<sup>24</sup>
- An estimated 28% of all traffic crashes in the U.S. – at least 1.6 million crashes annually – involve drivers using cell phones and texting<sup>25</sup>
- Cell phone use while driving could have as severe an effect on driving performance as the effects of legal intoxication<sup>26</sup>
- Deaths due to distracted driving increased 28% after 2005 and texting while driving caused an estimated 16,000 additional fatalities from 2001 to 2007<sup>27</sup>
- Despite total road fatalities declining 22% from 2005 to 2010, deaths as a result of distracted driving *increased* at least 16% from 2005 to 2008<sup>28</sup>

### 3.1.3. FLYING BLIND WITH LIMITED DATA

Given the plethora of quality research, it would seem that regulators and insurers would have a mature understanding of the risk posed by use of cell phones while driving. The reality, it seems, is very different.

According to a recent report from the Governors Highway Safety Association, the exact extent to which cell phone use while driving affects crash risk is debatable.<sup>29</sup> Even a safety-minded organization (assisted in this particular case by insurance carrier State Farm) cannot definitively say how best to assess the risk of cell phone use while driving. Why?

The reason is because distracted driving crashes are underreported in the nation's crash databases due to the difficulty of verifying after the fact whether or not cell phone use was a factor. In a recent Detroit Free Press article examining the issue, GHSA Executive Director Barbra Harsha acknowledges that "It's really hard to collect good distracted driving data."<sup>30</sup>

Currently, police reports are the primary data source for determining the discrete cause of crashes. Unfortunately, such reporting is not standardized and "cell phone use involved"

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<sup>24</sup> Ibid.

<sup>25</sup> "National Safety Council Estimates That at Least 1.6M Crashes Each Year Involve Drivers Using Cell Phones and Texting," National Safety Council, <<http://www.nsc.org/Pages/NSCEstimates16millioncrashescausedbydriversusingcellphonesandtexting.aspx>>

<sup>26</sup> Donald A. Redelmeier and Robert J. Tibshirani, "Association between Cellular-Telephone Calls and Motor Vehicle Collisions," *New England Journal of Medicine* 336 (1997):453-458, <<http://www.nejm.org/doi/full/10.1056/NEJM199702133360701>>

<sup>27</sup> Fernando A. Wilson and Jim P. Stimpson, "Trends in Fatalities from Distracted Driving in the United States, 1999 to 2008," *American Journal of Public Health* 100.11 (2010): 2213-2219, <<http://ajph.aphapublications.org/cgi/content/short/100/11/2213>>

<sup>28</sup> "Road fatalities are down, despite more distracted-driving deaths," University of Michigan Transportation Research Institute, <<http://ns.umich.edu/htdocs/releases/story.php?id=8173>>

<sup>29</sup> "Distracted Driving: What Research Shows and What States Can Do," Governors Highway Safety Association (GHSA), <<http://statehighwaysafety.org/html/publications/pdf/sfdist11execsum.pdf>>

<sup>30</sup> Aaron M. Kessler, "Distracted Driving numbers don't tell the whole story," *Detroit Free Press*, July 31, 2011, <<http://www.freep.com/article/20110731/BUSINESS01/107310466/Distracted-driving-numbers-don-t-tell-whole-story>>

reporting methods range from non-existent, to narrative only. As a result, the simple truth is that no one knows for sure exactly how often cell phone distractions contribute to motor vehicle crashes.

Fortunately, changes are coming in the form of updates to the voluntary guidelines designed to standardize how local police departments collect crash data. The new guidelines will call for better distracted driving tracking which will help to illuminate the true nature of the problem.<sup>31</sup>

Beyond improved crash reporting, further empirical evidence of risk will come from innovative insurers who deploy technology designed to measure cell phone use while driving.

### 3.2. LEGISLATION AND REGULATION ARE PARTIAL SOLUTIONS

While legislation is definitely part of the solution, it is not the sole answer to the distracted driving problem. Currently, 34 U.S. states (and all ten Canadian provinces)<sup>32</sup> have laws on the books prohibiting texting while driving. Out of that number, nine states also prohibit the use of handheld mobile phones behind the wheel.<sup>33</sup> Twelve of those laws have been enacted since 2010, indicating the increasing prominence state lawmakers are giving to cell phone use while driving. Furthermore, more than 25 states have made their cell phone use laws 'primary enforcement,' meaning police officers may pull over and ticket drivers they suspect of violating the cell phone use law alone.

While tough laws are critical ingredients in the fight against distracted driving – they are not a “silver bullet”. Evidence of this fact can be seen in the 2010 Insurance Institute for Highway Safety (IIHS) study which revealed that after a brief positive impact, states that enact legislation banning texting while driving actually experience an increase in total motor vehicle crashes.<sup>34</sup> IIHS President Adrian Lund speculates that drivers seeking to avoid texting ban tickets actually engage in riskier behavior in order to continue texting behind the wheel:

“If drivers were disregarding the bans, then the crash patterns should have remained steady. So clearly drivers did respond to the bans somehow, and what they might have been doing was moving their phones down and out of sight when they texted, in recognition that their activities were illegal. This could exacerbate the risk of texting by taking drivers' eyes further from the road and for a longer time.”<sup>35</sup>

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<sup>31</sup> Ibid.

<sup>32</sup> David Tanner, “All Canadian provinces now ban texting while driving,” , *Landline Magazine*, March 18, 2011, < [http://www.landlinemag.com/todays\\_news/Daily/2011/Mar11/031411/031811-02.shtml](http://www.landlinemag.com/todays_news/Daily/2011/Mar11/031411/031811-02.shtml)>

<sup>33</sup> “Cell Phone and Texting Laws,” GHSA, < [http://ghsa.org/html/stateinfo/laws/cellphone\\_laws.html](http://ghsa.org/html/stateinfo/laws/cellphone_laws.html)>

<sup>34</sup> “Texting bans don't reduce crashes; effects are slight crash increase,” IIHS, < <http://www.iihs.org/news/rss/pr092810.html> >

<sup>35</sup> Ibid.

Furthermore, it is difficult for police departments to effectively enforce state laws restricting cell phone use due to the nature of the activity. For example, the state of Georgia prohibits drivers from text messaging while driving – but allows them to use handheld phones for talking. How can police officers determine whether or not a driver is texting – or simply dialing? Many drivers may have a ready-made excuse – and many officers may hesitate to pull over a driver who they cannot prove was violating the law. Although there is strong evidence that stringent high-visibility enforcement programs can effectively reduce cell phone use while driving, such programs rely on resources that are usually out of reach of most police departments.<sup>36</sup>

Beyond laws, federal regulators with jurisdiction over commercial transportation have instituted their own policies in an attempt to better deter drivers from engaging in cell phone use. In 2010, the Federal Motor Carrier Safety Administration (FMCSA) issued a new rule prohibiting commercial motor vehicle (CMV) operators from texting while driving,<sup>37</sup> followed by a 2011 proposal that would further restrict the use of handheld mobile phones by CMV operators.<sup>38</sup> The Pipeline and Hazardous Materials Safety Administration (PHMSA) followed suit, instituting a texting ban for HAZMAT drivers in 2011. In each instance, the rules include specific guidelines for employers to ensure they monitor employees, and enforcement is tied with the comprehensive compliance management system (CSA) the DOT has in place for commercial vehicle operators. When compared to legislation, industry regulations are more likely to reduce distracted driving behaviors for two reasons: a) regulations apply to a smaller population of drivers, and b) employers have strong financial incentive to meet their regulatory obligations to monitor and manage employee cell phone use.

### 3.3. CURRENT UBI SOLUTIONS FAIL TO MEASURE CELL PHONE USE WHILE DRIVING

Miles driven, time of day driven, speeding, hard breaking, swerving, and rapid acceleration are well known indicators of automobile risk among actuarial professionals. Therefore, it's not surprising that current UBI solutions are designed to collect information pertaining to these behaviors.

What is surprising, however, is that current UBI and telematics-based risk management solutions are not looking deeper into available data to (a) gain historical perspective on a

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<sup>36</sup> "Four High-Visibility Enforcement Demonstration Waves in Connecticut and New York Reduce Hand-Held Phone Use," NHTSA, < <http://www.distraction.gov/files/for-media/2011/508-research-note-dot-hs-811-845.pdf>>

<sup>37</sup> "Final Rule: Limiting the Use of Wireless Communication Devices," U.S. Department of Transportation – Federal Motor Carrier Safety Administration (FMCSA), < [http://www.fmcsa.dot.gov/rules-regulations/administration/rulemakings/rule-programs/rule\\_making\\_details.aspx?ruleid=323](http://www.fmcsa.dot.gov/rules-regulations/administration/rulemakings/rule-programs/rule_making_details.aspx?ruleid=323)>

<sup>38</sup> "Proposed Rule: Drivers of CMVs: Restricting the Use of Cellular Phones," FMCSA, < [http://www.fmcsa.dot.gov/rules-regulations/administration/rulemakings/rule-programs/rule\\_making\\_details.aspx?ruleid=324](http://www.fmcsa.dot.gov/rules-regulations/administration/rulemakings/rule-programs/rule_making_details.aspx?ruleid=324)>

person's cell phone use habits or (b) determine if and how cell phone distractions are contributing to vehicle crashes and claims.

Despite the lack of cell phone-related data mining in current UBI systems, there is a class of in-vehicle surveillance solutions that capture and provide asynchronous video recordings of driver behavior coincident with a crash, hard brake or swerve. By investing in these systems it is possible for an insurer or fleet manager to determine if a driver was distracted by a cell phone at the time of a crash. While such systems provide valuable data to risk managers, the data is nevertheless purely reactive (e.g. presented post incident) and does not provide visibility into a drivers' *historical and habitual* cell phone use.

## 4. EXTENDING UBI SOLUTIONS TO CELL PHONES

Through integration of UBI systems with cell phone policy technology, innovative insurance companies can now go beyond the competition and begin to measure and manage cell phone use while driving. Specifically, by leveraging data generated by UBI systems, insurance companies can create innovative offerings that:

- Actively prevent drivers from texting, emailing or browsing the web while driving
- Passively measure and report when and how drivers use their phones while driving

### 4.1. ACTIVE POLICY SOLUTIONS

To actively prevent cell phone use while driving, policy software can be installed on the insured's smart phone. Once installed, the policy application will receive start and stop commands from the UBI device in the insured's vehicle. When the insured individual starts driving, the cell phone policy application will automatically activate on his or her smartphone; likewise, it will deactivate when driving stops. While activated, the policy application prevents the insured from texting, emailing and browsing while driving. Furthermore, while the insured is driving, the application can automatically respond to inbound text and email messages to inform others that the insured individual is busy driving. These auto-reply messages can be branded on behalf of the insurance carrier, which serves to create a potentially huge number of valuable viral marketing impressions. Additionally, the cell phone policy system can collect usage information, including distractions successfully averted to supplement important actuarial data.

UBI systems can integrate with phone-based policy controls via (a) cloud-based web services, or (b) in-vehicle Bluetooth® technology pairing between OBD devices and cell phones.

When integrating via cloud-based web services, the trigger performance of the cell phone policy software depends directly upon the type of UBI device installed in the insured's vehicle and its associated back-end web services. Assuming the UBI device collects and communicates relevant telematics data (ignition or speed) in near-real time (via GPRS radio),

then those events can be communicated via web services to the cell phone policy service which, in turn, will remotely activate and deactivate the policy software on the insured's phone.

For UBI devices equipped with a built-in Bluetooth radio, integration to cell phones is quick and easy. In such cases, the UBI device pulls speed from the vehicle's OBD port and communicates on/off commands directly to the policy application installed on the insured's smartphone. When driving faster than 1 mph, the insured's policy software is active. When stopped or idling for a determined amount of time, the insured's phone's policy software deactivates.

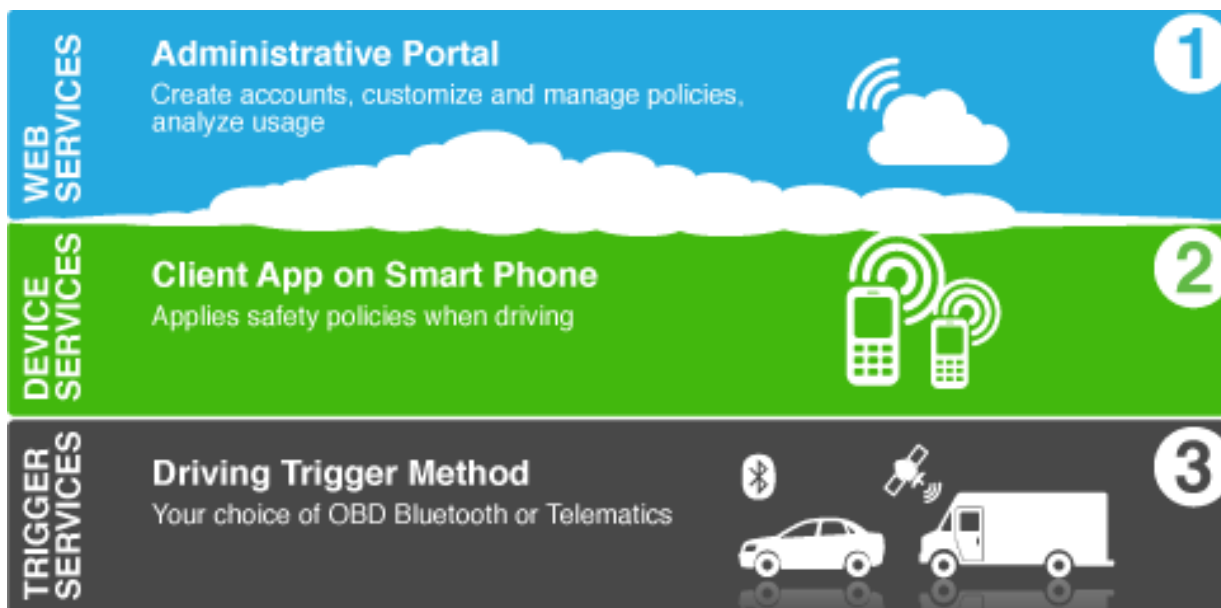


Figure 1 – Active Policy Solution Diagram

## 4.2. PASSIVE POLICY SOLUTIONS

For drivers equipped with any type of mobile phone, insurers can integrate trip data collected by UBI systems with carrier billing data, revealing the insured's cell phone use while driving. Once correlated, the data can provide valuable context for why certain events, including hard brakes and swerves occur. Furthermore, by correlating trip data with cell phone usage data the insurer can determine when and where an insured is using a cell phone while driving, and depending on the UBI system, the insurer can even determine if the insured was speeding at the time of the cell phone use.

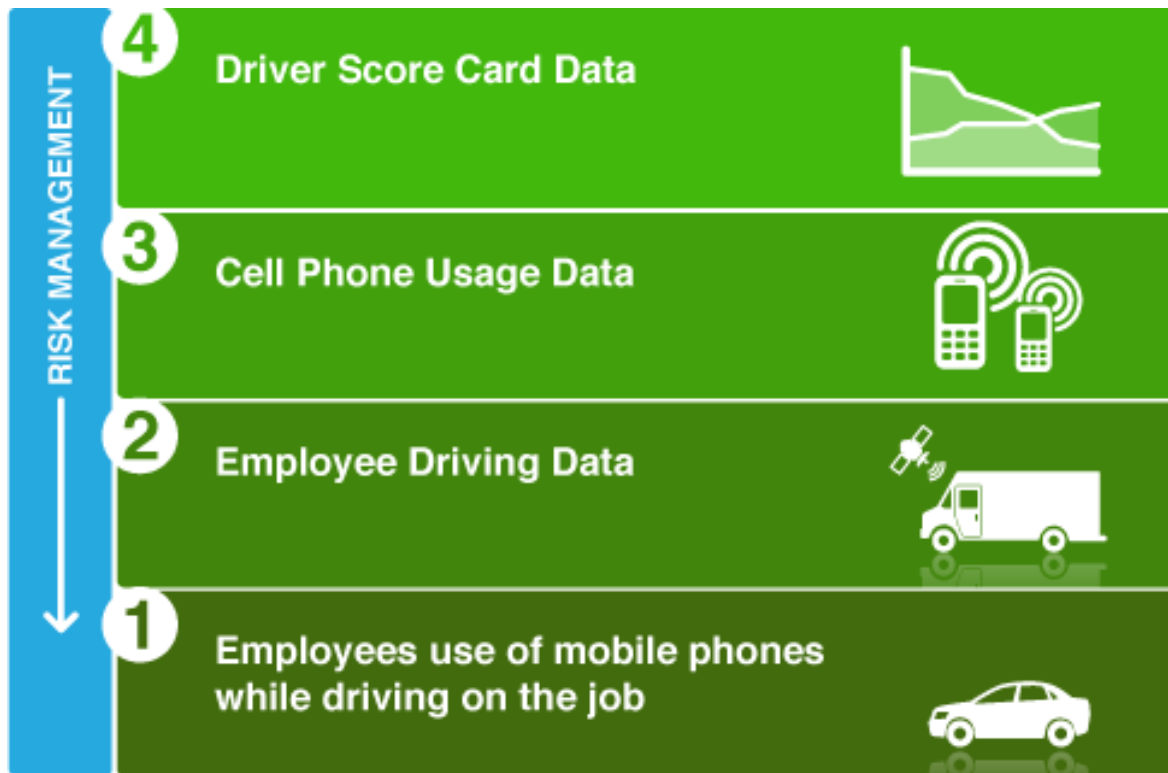


Figure 2 – Passive Policy Solution Diagram

When integrating UBI solutions with passive cell phone policy solutions, the following service elements must be carefully considered:

- **Granularity of Telematics Data:** While all UBI systems are guaranteed to have a baseline amount of trip data, different systems collect different types of data and at different intervals (real-time vs. non-real-time). The type of trip data collected by the UBI system directly impacts the quality of cell phone usage reporting. For example, in order to establish the context of driving, a telematics event type (ignition, speed, in gear) must be designated to signal the beginning and end of a trip. Furthermore, the frequency of GPS way points (time, location, speed) also impacts the quality of cell phone usage reporting. For example, more frequent waypoints (e.g. every 15 seconds) ensure the ability to accurately identify the difference between “stop-and-go driving” vs. “parked and idling” safely on the side of road.
- **Correlation of Driving Data with Cell Phone Billing Records:** When UBI trip data is exposed via API to a cell phone usage analytics service, the analytics service then automatically collects appropriate cell phone billing records (call detail records and text detail records) from the designated wireless carrier. The analytics service correlates cell phone billing data with driving and behavioral data, generating a report that empirically measures cell phone usage while driving.

- **Correlating Multi-Faceted Driving Data with Cell Phone Driving Records:** When advanced UBI systems collect GPS location and accelerometer events, the UBI systems can also correlate such multi-faceted data with cell phone billing records to determine where and how fast a person was driving at the time he or she sent a text message, or, whether a person was texting at the time of a hard breaking event.
- **Driver Identification:** The accuracy of cell phone usage reporting is maximized when telematics-based UBI solutions are capable of identifying the individual driver via key fob, similar to Ford MyKeys where vehicle controls can be modified based on the individual driver. Alternatively, in the absence of a key fob, cell phone reporting accuracy is maximized when vehicles are assigned on a one-to-one basis.
- **Data Ownership and Privacy.** UBI trip data is owned by the insurer consistent with the terms and conditions of the regulated insurance offering. Carrier billing data, on the other hand, is owned by either the individual consumer or by the corporate employer. To access the driver's billing data in compliance with federal privacy laws, appropriate permission must be granted by the individual or by the corporate employer. Individual consumers must voluntarily opt in to a specific use and grant permission to the insurer to obtain and analyze their cell phone billing records. Corporations must sign a letter of authorization granting the insurer permission to access and analyze their corporate billing data. In both cases, when appropriate permission has been granted, phone call and SMS text records are available from carrier billing systems on a 30-day post-processed basis. Consistent with the permission granted, the cell phone analytics service reports usage events only and does not collect or report additional personal details (e.g. dialed number, text content, etc.).
- **Possibility of Real-Time Billing Feeds:** With appropriate permission obtained, wireless carrier billing data is currently available every 30 days. However, carriers are investigating the possibility of providing this information on a more real-time basis so individuals and companies can better understand their usage. A strategic alliance between a wireless carrier and an insurance carrier could potentially serve as a catalyst to make "real-time billing data" happen sooner rather than later.

Table 1 – Active and Passive Policy Comparison

Solution Type	Key Features	Telematics Integration
<b>Active policy management</b>	<ul style="list-style-type: none"> <li>• RIM / Android / Winmo OS</li> <li>• Real-time enforcement</li> <li>• No Text/email/browsing</li> <li>• Hands-free calling enforced</li> </ul>	<ul style="list-style-type: none"> <li>• Connectivity (real-time)</li> <li>• Cloud</li> <li>• Bluetooth (directly from the vehicle or 3<sup>rd</sup> party aftermarket solution)</li> <li>• Vehicle state</li> <li>• 0 &lt; MPH &lt; 0</li> </ul>
<b>Passive policy management</b>	<ul style="list-style-type: none"> <li>• Any phone type (iPhone, iDEN, Feature, etc.)</li> <li>• No phone software</li> <li>• Captures wireless billing data</li> </ul>	<ul style="list-style-type: none"> <li>• Connectivity (batch)               <ul style="list-style-type: none"> <li>○ Cloud</li> </ul> </li> <li>• Trip data               <ul style="list-style-type: none"> <li>○ Driving (Start/stop, location, speed, miles, duration)</li> <li>○ Behavior (e.g. hard braking, speeding, etc.)</li> </ul> </li> </ul>

## 5. CELL PHONE POLICY SOLUTIONS BY MARKET SEGMENT

### 5.1. COMMERCIAL LINES

In the hyper-competitive and price sensitive commercial fleet insurance market, insurers are working to partner with fleet management vendors to provide premium incentives to commercial customers who adopt telematics technology in support of everyday fleet operations. The rationale is simple. Commercial customers who invest in telematics technology to monitor their employees' driving habits are more likely to operate a safe and efficient fleet. As a result, those same customers represent a better risk to the insurer.

Going one step further, insurers have an opportunity to enhance these programs by integrating active or passive cell phone policy solutions to help commercial fleet customers prevent distracted driving, reduce crashes and minimize liability. When you consider that typing and texting on a cell phone increases risk of crash by 23 times<sup>39</sup> and that more than

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<sup>39</sup> Olson et al, "Driver Distraction and Commercial Motor Vehicle Operation."

50% of employees admit to using their smartphones while driving – the incentive for insurers to take this step is clear.<sup>40</sup>

Regarding this issue, Chris Carver, Onboard Advisor Program Manager at Liberty Mutual said, "The experience of our Onboard Advisor program reinforces my belief that GPS-based risk management must incorporate frequent driver feedback, including coaching about driver distractions such as cell phone use and texting. Only with continual mentoring and measurement can supervisors see trends and leading indicators that point to potential problem behaviors, allowing fleets to effectively help their drivers improve performance, save fuel and avoid collisions before they happen."<sup>41</sup>

Likewise, Kevin Henderson, General Manager of Data Services at Trimble recently said "In fleet telematics we believe that major fleet insurance carriers will align with key telematics providers who can provide a comprehensive solution suite to monitor driver behavior, prevent distracted driving, manage fatigue, maintain vehicle health, and push for implementation of technologies that can proactively reduce crashes."<sup>42</sup>

From the employer's perspective, the value of such programs is not just about reducing crashes, it's also about reducing liability: when employees use cell phones while driving on the job, employers are directly liable for damages that might occur. As a result, CEOs are faced with an interesting dichotomy. On one hand, they want their mobile workforce to be as productive as possible, even when driving. On the other hand, they want to protect the company as much as possible from risk and liability.

The complexity of the distracted driving issue was highlighted in a recent survey of more than 500 commercial fleet and risk managers, which found that 62% of companies surveyed have adopted written policies prohibiting employees from using a mobile phone while driving for company business.<sup>43</sup> This figure reflects rapidly growing concern among corporate America about distracted driving liability. The survey also revealed that while many companies have cell phone use policies, only half (53%) make any attempt to enforce compliance with those policies. Among companies that do enforce compliance, the survey found that nearly two-thirds (61%) rely on post-incident disciplinary measures. Only 2% currently utilize technology to proactively measure and manage employee compliance.

Although employers are just beginning to investigate and adopt technology to enforce compliance with written cell phone policies, it is important to realize that different types of fleets have very different requirements:

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<sup>40</sup> CareerBuilder, "More than Half of Workers Admit to Checking Their Smart Phones While Driving, Finds New CareerBuilder Survey."

<sup>41</sup> Chris Carver, e-mail message to author, August 12, 2011.

<sup>42</sup> "Trimble: Telematics is 'a vital component in the insurance market space'," *Telematics Update*, August 12, 2011, <<http://social.telematicsupdate.com/insurance-telematics/trimble-telematics-%E2%80%9C-vital-component-insurance-market-space%E2%80%9D>>

<sup>43</sup> Matthew Howard and Michael Riemer "Measuring Corporate Attitudes to Distracted Driving," ZoomSafer, <<http://zoomsafer.com/distracted-driving-survey-results>>

- Sales and Sedan Fleets: Sales and sedan fleets tend to have a higher penetration of company-liable smartphones (BlackBerry, Android and iPhone devices), but they tend not to have telematics-based fleet management systems.
- Local Service Fleets: These fleets tend to have smartphones, typically BlackBerry or Android devices. Furthermore, approximately 3 million local fleet vehicles are equipped with some form of telematics-based fleet management system.
- Truck Fleets: For Class-4 and above trucks, the penetration of company-liable smart phones is small, but growing. Furthermore, such fleets are significantly more likely to be equipped with GPS telematics systems. For these reasons, and because of the FMCSA cell phone regulations detailed previously, trucking fleets are ideal candidates to benefit from passive cell phone policy management of personally-liable phones.

## 5.2. PERSONAL LINES

Smartphone use is growing at an incredibly rapid pace. These powerful devices, which compete so effectively for human attention, also contribute heavily to increased driver distractions. As a result, personal lines insurers have strong motivation to incorporate cell phone policy solutions into UBI offerings to promote safe and legal use of smart phones while driving.

When creating consumer-oriented UBI offerings enhanced with cell phone policy solutions, the following service elements must be carefully considered:

- Return on Investment: Proper economic justification (lower cost of customer acquisition, reduced churn, reduced claims) must exist in order to fund the offering (hardware, software, services, and discounts).
- Potential to Reduce Operating Expenses: By utilizing an OBD device connected to a smart phone via Bluetooth, opportunities exist to subsidize costs (hardware and network) by leveraging the insured's smart phone and data plan.
- Ease of Installation: Installation and setup of UBI hardware and phone software must be simple.
- Support for Smartphone Devices: Active cell phone controls require either OS specific client apps (RIM, Android, WinMo).
- Support for iPhone and Feature Phone Devices: Passive cell phone policy solutions prevail where full-scale policy apps are not possible due to technical limitations (iPhone and feature phones).
- Data Privacy: In accordance with federal privacy laws, end-users are required to opt-in to the service and provide permission to the insurer to obtain and analyze cell phone usage data.
- Driver Identification: Behavioral analytics are fully optimized when UBI systems know for certain who is driving the vehicle when. Such insight is critical when insuring a "family" of drivers who commonly share a vehicle. Options include RFID key fobs (MyKey), NFC solutions and smartphone fingerprinting.

- **Generating Driving Context from Vehicles – Not Phones:** To establish when an insured is driving, context is required from the vehicle itself in coordination with the phone. An alternative would be to utilize the phone's GPS (or accelerometer) to determine speed. Unfortunately, such context is almost useless because (a) it cannot determine the difference between driving, riding in a taxi, or riding a bike and (b) it significantly drains the battery.
- **Potential to Leverage Auto OEM Platforms:** As auto OEMS sell more cars equipped with native telematics capabilities, opportunities will exist to leverage such data to support UBI offerings.

### 5.3. TEEN PROGRAMS

Insurers have invested heavily in PSA campaigns to educate teens on the dangers of cell phone use while driving – here's why:

- The average teen (age 13-17) sends/receives 3,339 text messages every month; female teens send/receive an average of 4,050 – over 130 messages a day<sup>44</sup>
- 26% of driving-age teens have texted while driving and almost half (48%) have been a passenger to a texting driver<sup>45</sup>
- 58% of teen drivers who text have been passengers of other drivers who text<sup>46</sup>
- Two-in-five (44%) of teens who text have been passengers in cars where the driver is using a phone dangerously<sup>47</sup>
- Of drivers under age 20 involved in fatal crashes in 2009, 619 (16%) were identified as distracted drivers, the highest proportion of any age group<sup>48</sup>
- Of the 619 under-20 distracted drivers NHTSA identified, police indicated that a cell phone was involved for at least 22%<sup>49</sup>

Although teen-focused educational programs are helpful as part of broader educational initiatives, the unfortunate reality is that there is precious little evidence suggesting that such programs actually change teen behavior.

The good news for insurers' is that cell phone policy controls (active and passive) can be offered in coordination with existing UBI initiatives. While it's too early to say for certain if such efforts would yield significant safety improvements among teen drivers – the efforts, at a minimum, would be guaranteed to generate significant amounts of data that would dramatically sharpen an insurer's understanding of the risk associated with teen use of cell phones while driving.

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<sup>44</sup> Ibid.

<sup>45</sup> Pew, "Teens and Distracted Driving."

<sup>46</sup> Ibid.

<sup>47</sup> Ibid.

<sup>48</sup> NHTSA, "Distracted Driving 2009."

<sup>49</sup> Ibid.

The financial motivation for insurers to undertake such efforts stem from the fact that “teen drivers” are fundamental to long term retention strategies. Indeed, there are few events in a person’s lifetime where auto insurance is a critical, primary shopping event. Most parents experience “sticker shock” when adding a teen driver to their policy. It’s not uncommon for a family’s premium to double or even triple. So why should a family buy from a given insurer? While price certainly matters, innovative programs designed to improve teen safety are also compelling. Such decision-making impacts “policy life expectancy” which is an important variable for all insurance carriers.

When creating teen-focused UBI offerings enhanced with cell phone policy solutions, insurers must carefully consider the key service elements outlined above in section 5.2.

## 6. CONCLUSION

While UBI-based telematics systems provide insurers with excellent insight into a person’s actual driving behavior, these systems are unfortunately blind with regard to a person’s *use of a mobile phone while driving*, a very common and very dangerous behavior that increases risk of crash by as much as 23 times.

Fortunately, this doesn’t have to be the case. Advances in telematics and other technologies provide ample opportunity for innovative insurers to enhance existing UBI offerings by incorporating cell phone usage into the broader measurement and assessment of driver behavior. Doing so will enable insurers to differentiate themselves in the eyes of customers while improving the bottom line.

## 7. ABOUT THE AUTHORS

Matthew Howard and Michael Riemer are co-founders of ZoomSafer, the leading provider of innovative software solutions to help prevent distracted driving. For more information, please visit [www.zoomsafer.com](http://www.zoomsafer.com).

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