

White Paper

Data Quality is King: Key Considerations for Usage-Based Insurance Apps

Without data filtering, UBI driving scores can vary by up to 47 per cent.

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Executive Summary

Many UK insurers are actively pursuing usage-based insurance (UBI), with the aim of deriving a simple, digestible driver score that is demonstratively related to loss propensity. UBI driving scores are particularly powerful because they give incremental lift to traditional data sources, such as, credit scores or demographic data. UBI also provides continual data throughout the life of the policy, enabling insurers to monitor the ongoing risk associated with a specific customer.

In recent years, insurers have considered different ways to collect UBI data, many of which have proven to be very expensive. As a result, standalone smartphone apps have emerged as the most cost-efficient way to obtain UBI driving data. However, while many UBI apps look similar, they differ dramatically on the back-end. Crucially, the success of UBI driving scores hinges on obtaining accurate data, which can be difficult to achieve due to the noisy data that smartphones can produce. In order for insurers to reap the benefits of app-based UBI-based risk assessment, rating and pricing—and for customers to agree to share their personal information—there must be assurance that UBI driving scores are correct.

Research by Wunelli and LexisNexis® has found that UBI driving scores can vary dramatically, depending on data quality. For example, the accuracy of UBI data depends on the type of smartphone used—in some cases, can result in variations of up to 55 percent¹.

To obtain reliable and accurate data, app-based UBI programmes should take extensive measures to:

- Filter and validate UBI data to ensure its accuracy and reliability
- Apply handset-specific rules to account for phone variances
- Augment UBI data with maps and road speed limits to derive context and meaningful insight
- Accurately determine when a user is driving (and by extension, not driving)

In short, while smartphone solutions dramatically decrease the cost of running a UBI program, only accurate driving scores can enable an insurer to improve its risk management capabilities and bottom line—and in the long run, to transform how the industry assesses and prices risk. With the right filtering and validation in place, data from a UBI app can be as accurate as data from other sources, such as black boxes or dongles.

1. LexisNexis proprietary research

The importance of UBI data quality

UBI data quality is integral to obtaining customer buy-in. It isn't enough for customers to obtain benefits in exchange for sharing their information. If customers do not believe an insurer can be trusted with their information, or if they doubt the accuracy of the data being shared, they will quickly become disengaged—and will not continue to participate in UBI programmes.

Smartphone-based UBI programmes

UBI, or insurance telematics, refers to the practice of recording, sending, receiving and storing information about driving behaviour for use within an insurance program. In the U.S. in 2014, LexisNexis commissioned a third-party research study and found that consumers are as comfortable with sharing UBI driving data as they are with using online banking or sharing information over social networks. In event of an accident, they are even more comfortable with sharing UBI driving data².

Typically, UBI is positioned with customers as an exchange of driving data for discounts in premium or value-added services, such as free roadside assistance. LexisNexis has found that by including key emergency or safety features, insurers can offer a lower discount while still capturing the same market share³.

As the UBI market matures, technology has shifted toward lower-cost data sources. Compared to hardwired devices and OBDII hardware, smartphones are a low-cost, low-risk means of obtaining UBI data. Equally compelling is their ubiquity. In fact, 66 percent of UK adults have a smartphone⁴.

Furthermore, advances in app development mean that leading UBI solutions can minimise battery drain and data usage, while still capturing relevant driving data. Successful UBI apps need to be cognizant of smartphones' small screens and offer a fun, game-like experience. Other features to drive adoption include the ability for the phone to automatically start and stop collecting data—thus making it less intrusive for customers to use.

Why UBI data quality matters

Ultimately, the success and longevity of UBI programmes depends on the quality of UBI data. When working with traditional data sources for underwriting and pricing, insurers expect the data to be validated and highly accurate. Data collected from UBI programmes needs to be held to the same standard. Furthermore, UBI data needs to be treated with the same degree of respect as more traditional data sources; as it includes personal information about customers, it must be managed accordingly.

UBI data quality is also integral to obtaining customer buy-in. It isn't enough for customers to obtain benefits in exchange for sharing their information. If customers do not believe an insurer can be trusted with their information, or if they doubt the accuracy of the data being shared, they will quickly become disengaged and will not continue to participate in UBI programmes.

Three keys to ensuring UBI data quality

Obtaining UBI driving data is not as simple as downloading and launching a smartphone app. The raw dataset is akin to dirty laundry that must be put through the wash in order to obtain clean data. For example, a Wunelli study of 500 drivers, driving a minimum of 186 miles (300 km) each, found that UBI driving scores could vary by up to 47 per cent if the data was not filtered or validated. As shown in Figure 1, the UBI scores obtained using raw data show little correlation to driving risk.

2. LexisNexis, 2014 Usage-Based Insurance (UBI) Research Results for Consumer and Small Fleet Markets. 2014.

3. Ibid.

4. Ofcom, Facts & Figures. 2015.

UBI data collected from a Smartphone App without filtering or validating

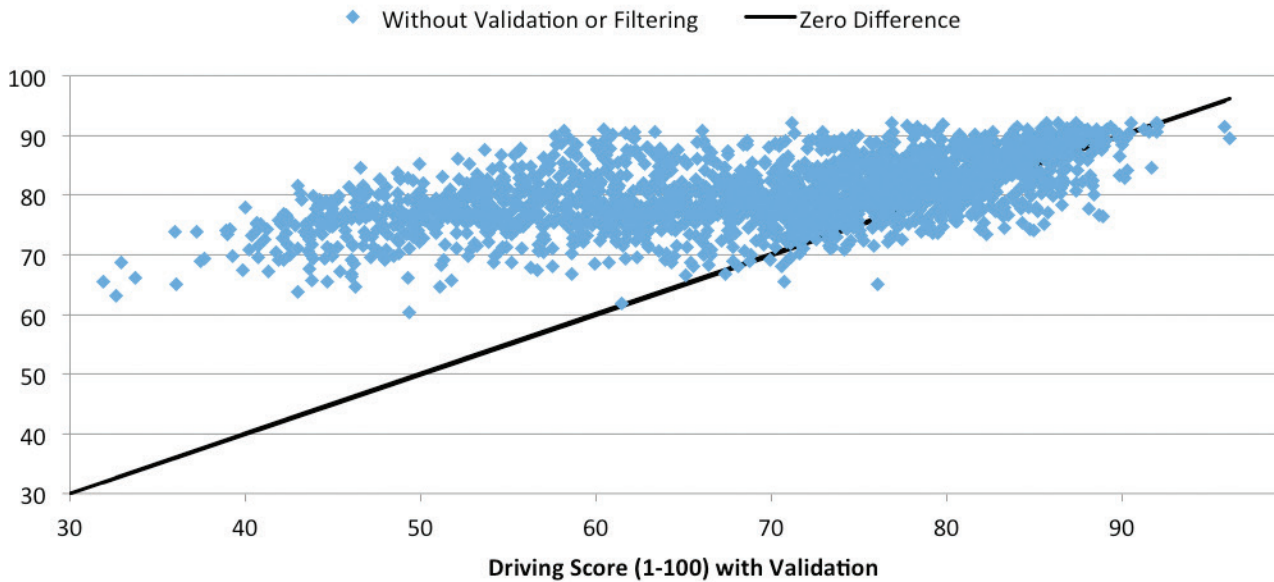


Figure 1. Without filtering and validating, UBI driving scores can vary by up to 47 per cent.

Based on our deep, collective experience, there are three keys to ensuring UBI data quality.

1. Filtering and validating data

Typically, once a smartphone has collected driving data, the information is transferred to a server for processing. LexisNexis and Wunelli apply three levels of filtering and validation to ensure data quality is accurate and results are reliable:

1. In the device firmware, we check for GPS accuracy (Figure 2) and spoofing—that is, instances where users have hacked the app to create fake data
2. At the back-end server, we check for transfer corruption and duplicated events

The effects of GPS drift

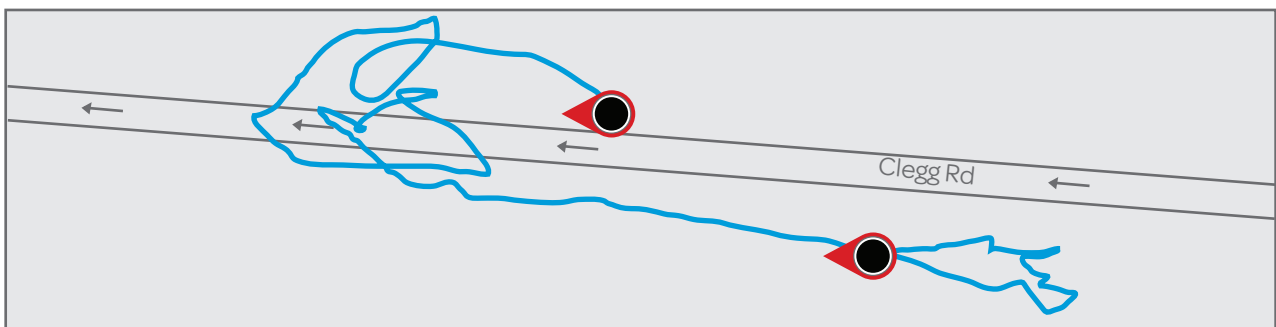


Figure 2. A trip plagued by GPS drift. If uncorrected, this can essentially nullify the value of UBI data.

3. Also at the back-end server, we apply granular filter and travel rules UBI solution providers must also correct for the user's choice of smartphone. In a study of more than 20,000 drivers, LexisNexis found significant variation in how different types of smartphones logged acceleration events (Figure 3)—in some cases, up to 55 per cent difference. Given the hundreds of different handsets available on the market, this variation can significantly skew UBI driving scores. Consequently, it is critical for UBI solution providers to normalise results in order to obtain consistent scores across the entire spectrum of handsets.

Variation in acceleration events recorded by different Smartphone manufacturers

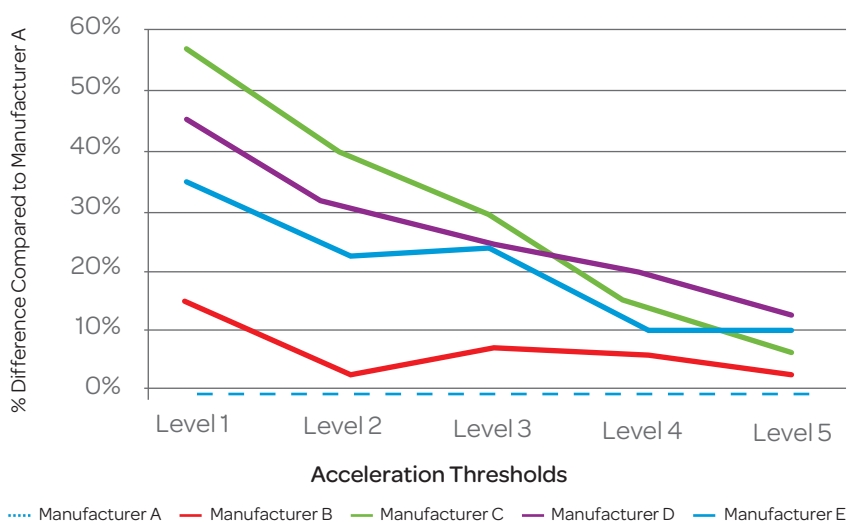


Figure 3. Without filtering by type of smartphone, UBI driving data can vary by up to 55 per cent. An acceleration threshold of level 1 corresponds to quick acceleration from a rolling start, while level 5 corresponds to a standing start.

2. Augmenting data

Once filtered and validated, UBI driver data can provide important insight into driver behaviour: for example, hard stops or rapid acceleration. However, to be truly useful, insurers must understand a driver's speed relative to their environment, particularly road type or posted speed limit, as these attributes are highly predictive of loss.

For example, insurers must be able to distinguish between a driver firmly accelerating onto a motorway on-ramp and hard accelerating in a residential area, or driving 90 mph on a 70 mph motorway. These distinctions are crucial to understanding the effect of the raw behaviours—speeding and acceleration—on the driver's risk profile.

UBI data security and privacy

UBI driving data is personal to each driver, and insurers have an obligation to customers to use and store the information responsibly. A successful app-based UBI programmes will incorporate:

- Robust encryption as data is transferred from the user's phone to the solution provider's servers
- Limited storage of driving data on the user's phone, encryption of the data while stored and the ability to delete it as soon as possible after a trip
- Top-of-the-line data warehouse, disaster recovery and redundancy capabilities
- Transparency in how data is captured and used in the insurance process

In short, insurers must be sure to treat UBI data with the same level of care as they would any other sensitive data sources.

To obtain this context, app-based UBI programmes need to tap into road data with a level of accuracy not commonly available, and must be quick to respond to changes in the environment. Not only does this mean more frequent updates and more accurate maps as road infrastructure changes, but it also creates opportunities for more responsive customer service. One example would be a UBI app that enables customers to report inaccuracies related to road speed limits. Successful app-based UBI programmes are able to integrate these updates within 48 hours, and report back to the customer. The result: customers feel more engaged, the insurer is seen as more credible and data accuracy remains very high.

3. Getting the right driver profile

A UBI app needs to be able to identify, with a high degree of accuracy, whether the user is actually driving the vehicle—and filter out things like bus trips, taxi rides and times when the user is a passenger in another vehicle.

Successful app-based UBI programmes have sophisticated algorithms and business rules to generate a unique driver signature for each user. Typically, this is based on an initial trial period, during which the user is asked to validate trips. Over time, the app will learn a user's typical routes, travel times and driving style, and automatically determine whether the user is driving.

Crucially, missed trips are less detrimental than rating the wrong trip. For example, if a UBI solution provider is not able to distinguish a user in a taxi from a user behind the wheel, it can affect the data quality, an insurer's ability to use it—and perhaps most important, the customer's faith in the process. For this reason, it is not imperative to capture every single trip. As an analogy, almost all insurers use a consumer's credit information, and it is widely accepted that credit data is highly predictive of loss; however, credit reports capture less than 40 per cent of a person's total financial activity⁵. As with credit data, it is more important that the UBI data used to make underwriting and pricing decisions is as accurate as possible than it is to capture every single trip.

Summary

UBI programmes have the potential to provide actual data on the risk associated with a driver—and in the long run, could change how insurers select and price risks. Smartphone apps provide a low-cost, accessible way for insurers to implement UBI programmes and obtain UBI driving scores. However, while many apps are similar in look and feel, few have the robust data infrastructure and back-end capabilities required to generate accurate, meaningful UBI driving scores.

Insurers should seek out UBI solution providers that can filter, validate and augment driving data to obtain an accurate and relevant UBI driving score for its customers. Indeed, the long-term success of UBI programmes depends on changing driver behaviour—and that hinges upon customers trusting the apps and the UBI driving score they obtain from using them.

Wunelli a LexisNexis company has developed unparalleled expertise in the field of UBI, including insights drawn from over one billion miles of driving data with complete loss histories, 16 smartphone production implementations in three countries and more than 30 completed pilots. With more than 25 years of experience serving the insurance industry, LexisNexis is a trusted steward, provider of essential information and advisor of best practices to help insurers get the most out of UBI.

5. The Federal Reserve System's Cash Product Office, Cash Continues to Play a Key Role in Consumer Spending: Evidence from the Diary of Consumer Payment Choice. 2014.

About the authors



David Lukens is a Director of Telematics at LexisNexis, responsible for telematics and mobile solutions for the auto insurance market. He has been engaged in the insurance telematics space since the mid-1990s, initially developing practices to use event data recorder (EDR) data for accident investigation and reconstruction. Prior to LexisNexis, David was product development manager with AIG's personal lines auto group. There he was responsible for building and delivering new multivariate rating models for the agency and direct distribution channels. He also has managed claims operations in AIG's personal lines auto group, serving as process leader for both the physical damage and casualty areas. David holds a bachelor's degree from Cornell University and a master's degree from the University of Delaware.



Paul Stacy has an extensive auto pricing background and has been working in telematics underwriting and pricing for the last six years with direct telematics experience in Australasia, China, the United States, South Africa, the United Kingdom and Italy. He co-founded Wunelli in 2008, creating a proof-of-concept UBI product, Coverbox, for the UK auto market. LexisNexis acquired Wunelli in 2014. Prior to Wunelli, Paul worked for Accenture's insurance practice in Australasia and as a UK-based insurance broker. At university, Paul studied engineering and completed a master's degree in mathematics.

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