Property & Casualty Insurance: Fighting Fraud Through Location Analytics

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Executive Summary

Fraud represents a multi-billion dollar problem for the property and casualty insurance industry. Insurers are increasingly using data to identify and detect patterns of fraud. Location intelligence and analytics can add a powerful dimension to fraud management. This paper shows how location analytics can be an integral part of an insurance company’s arsenal of fraud detection strategies.
INTRODUCTION

Combating fraud has become a priority issue for the property and casualty insurance industry. While fraud has been a persistent problem in the insurance sector for decades, there are clear signs that the scope of insurance crime is more extensive than previously thought. This is particularly true in Ontario and more specifically the Greater Toronto Area (GTA), where organized fraud rings have devised elaborate, sometimes dangerous schemes to bilk insurers - and policyholders. However, it is not just an Ontario problem; fraud is rife in other areas of the country.

To address fraud, insurers are becoming more proactive and sophisticated in their approach to data and information. In particular, data analytics and predictive modeling are allowing insurers to uncover complex, organized fraud activities using both structured and unstructured data.

Although location intelligence and analytics represent a key piece of the fraud puzzle, traditionally they have been overlooked or vastly underutilized by p&c insurers. Geospatial analytics tools can unlock useful information and allow insurers to connect the dots on previously hidden fraud schemes. Leading insurers are beginning to recognize the power of location in fraud management.

It’s estimated that 80% of all information has a geographic component. Nowhere is that figure more relevant than in insurance. Given that almost every element of property and casualty insurance has an intrinsic relationship to location, insurers that can effectively model, analyze and visualize spatial information will gain a competitive advantage in several areas, including fraud detection.

THE SCOPE OF FRAUD

Measuring the extent of fraud has become a prominent issue in p&c insurance industry. A 2012 report submitted to the Ontario government by the province’s Auto Insurance Anti-Fraud Task Force included an estimate from KPMG that fraud cost insurers in Ontario up to $1.6 billion each year.
In British Columbia, the Insurance Corporation of B.C. pegs auto insurance fraud at $100-150 per policyholder, or between $310-470 million per year. Other studies show that fraud accounts for roughly 10-15% of premiums in Canada, or as high as $5 billion across the country. Insurance fraud falls into three broad categories—organized, premeditated and opportunistic.

**Organized fraud**

Organized fraud is undertaken by a group of individuals working in concert. By working together, the group takes advantage of the insurance system in multiple ways, such as staged accidents and claims under various insurance coverages.

**Premeditated insurance fraud**

This involves the purposeful claiming of improper insurance benefits by an individual (rather than a group). For example, a service provider may submit claims for damage or treatment that did not occur and/or was not provided.

**Opportunistic fraud**

This type of fraud occurs when an individual increases or “pads” a legitimate claim. For example, a policyholder may claim for the repair of damage not caused by the accident, which is the subject of the claim or may overstate the true value of some aspect of the claim (e.g., property lost).

Taken as a whole, these various forms of fraud represent a multi-billion-dollar problem in the insurance industry, affecting premiums charged to consumers and costs and profitability for insurers. So what are insurers doing about it?
FRAUD FIGHTING TECHNIQUES

Insurers have always had systems in place to identify fraudulent claims and special investigation units (SIUs) to track suspicious cases. However, the growing complexity of fraud and well-executed rings have exposed the limitations of traditional detection systems, such as manual red flag indicators, random investigations, internal audits, whistleblower hotlines to report fraud and software that shows anomalies based on a pre-defined set of business rules.

Today, more insurance companies are turning to data analytics and predictive modeling to better identify fraud patterns. Predictive analytics can help to quickly and accurately determine the complexity of a claim and whether it requires further investigation.

In 2015, a consortium of insurers representing 75% of the Ontario auto insurance market launched CANATICS - a data pooling and analytics service that identifies patterns of fraud and allows individual insurers to pursue further investigation. In the case of CANATICS, for example, the tool might discover that the same car was insured with three different insurers over several years, and was involved in three different suspicious claims. This is the sort of connection that individual insurers can’t always make, but could indicate a large-scale organized crime ring at work.

Clearly, data analytics is becoming an essential part of the fraud management platform.

THE ROLE OF LOCATION ANALYTICS

This enhanced focus on data analytics has shown distinct promise in improved fraud detection at insurance companies. One underutilized component, however, in this drive for a better understanding of data is the use of location intelligence and analytics.

Location intelligence is the capability to organize and understand complex phenomena through the use of geographic relationships inherent in all information. Raw geographic data is captured and turned into information.
by filtering it for accuracy, structuring it consistently and storing it where it can be easily accessed. Reports are created to visualize the information and manually identify relationships within the data that can provide insight and predictive capabilities.

The role of location in data analytics is a key facet of fraud detection. Accurate mapping data can be leveraged to build a single customer view, allowing insurance companies to easily identify false or invalid addresses.

By combining internal and external data, insurers can visually link individuals or organizations to quickly see patterns that aren’t apparent in spreadsheets and tables. These patterns can be explored by geographical area, time, frequency, duration or associated links. This helps companies detect fraud at every stage - from application to underwriting through to claims.

By leveraging location, insurance claims have a direct spatial context, giving insurers detailed insights into each policy and the accuracy of the information provided.

There is a hierarchy of benefits that can accrue from location intelligence in insurance fraud management:

- Improved fraud detection rate and lower loss ratios
- Reduced number of “false positives” that mistakenly extend to legitimate claims
- Faster processing of claims and improved service/turnaround
- Better use of claims adjuster/claims management resources
- Deterrent message sent to fraudsters

Some progressive insurers are beginning to recognize the value of location as an organizing principle, and how it can be applied to current business problems including insurance fraud. By integrating location intelligence into business workflows, insurance companies are activating a latent asset and applying the benefits across the enterprise.

Thus, insurers not only have a better understanding of fraud deterrence and claims costs control, but they can also pass that information through the cycle back to underwriters to check on high-risk locations at the point of policy application and administration. Claims departments and adjusters can identify fraud patterns through data analytics to improve underwriting and rating.
The potential is vast, yet most insurers are still only scratching the surface of location analytic capabilities. “There are several examples in the industry of GIS solutions being used in an offline reporting manner or in only one functional area of the business,” notes Catherine Stagg-Macey, Executive Advisor with Celent’s Insurance Group and author of the report, Understanding the Value of Location Intelligence Solutions. “This is a vast underutilization of an expensive resource.”

**HOW LOCATION WORKS IN FRAUD DETECTION**

Location analytics platforms provide powerful tools to spatially analyze and visualize claims data, making it possible to identify geographic trends or anomalies that would otherwise not be apparent. We call these “outliers.”

For example, accurate geo-coding and location analytics can determine the authenticity of information of property claims in an exact geographic coordinate – not merely a postal code or street or region. Can the claim location be verified? Was it in an area where a significant loss event, such as flooding, actually occurred? Geospatial analysis can be used to identify the exact area affected by a natural disaster, which helps determine the amount of risk to insured properties and weed out claims that are filed from areas not located in the affected zone.

This could involve, as an example, a spate of hail damage claims in a particular area. An insurance company can quickly pinpoint the exact geographic coordinates of the claim in real-time and overlay the storm’s path over that location. Was the claim location actually affected by the storm, or is it outside the boundaries (or marginal)? In large loss events, insurance companies often experience claims “leakage” – when claims payouts are more than the terms set out in the policy. Precise use of location intelligence can help stop the leakage of opportunistic claims, or “soft fraud.” Location intelligence can help with more than just catastrophic events. There may be, as an example, a series of small, but costly kitchen fires in a certain neighborhood. Is this just an anomaly or is it neighbors’ talking over the fence about how small fires can lead to full kitchen replacement costs? With location intelligence, this cluster, anomaly our outlier can be flagged for follow up investigation.
Location intelligence and auto insurance

There are many interesting opportunities that may involve the coordination of GPS, telematics and link analysis with location intelligence to pinpoint vehicle fraud activity.

Capturing the precise location of a car accident has been an ongoing challenge for insurers. Today, however, GPS technologies and location intelligence tools have vastly improved the process and can quickly help to identify inconsistencies in submitted information. In a wider context, geospatial analysis can illustrate crime and fraud hotspots, highlighting potentially fraudulent activity clustered around specific locations and targeting specific claims for investigation.

Another example of fraud occurs when consumers change the “garaging” location of an insured vehicle to take advantage of a better premium in a different region or municipality. This is also called rate evasion. According to one large Canadian insurer, rate evasion, which often involves falsified residential information, non-existent addresses and P.O. Boxes, is becoming a more common practice. Aviva Canada reported a five-fold increase in rate evasion since 2012.

Location intelligence and geospatial analysis can play a role in quickly and accurately verifying where a vehicle is domiciled for insurance companies.

Location intelligence can also be applied to organized staged auto accident rings. By using link analysis in combination with geospatial analytics, insurers can establish relationships among various parties involved in a claim based on geographic location. For example, an insurer might be performing an analysis to identify staged accidents and the link between medical/rehabilitation clinics that charge inflated fees for diagnosis and treatment. Data might include the claimants’ addresses, which can be geocoded, as well as the location of clinics and the average claim estimate for a particular kind of treatment. Indications of potential fraud and can be flagged for follow up. This geocoding linkage can apply to many different groups - tow truck operators, car repair shops, paralegal clinics.
Additionally, location intelligence can extend to other areas of claims, even liability. For example, slip and fall claims are a continuing source of casualty losses. How can location analytics pinpoint the exact geographic coordinates of a slip and fall injury location and combine that with, say, weather maps, building maintenance logs and adjuster notes?

With location intelligence, an insurer can quickly identify if the frequency or severity of claims for a particular area exceeds expected threshold by analyzing any type of claim data over any given time period on a simple geographic user interface. The potential is vast.

**CONCLUSION**

Insurers are clearly making strides in the ongoing fight against insurance fraud. But are they using all the analytic tools in their data arsenal? By ignoring one critical part of the information system, insurance companies could be failing to identify key patterns linking to organized and premeditated fraud. Without precise geographic coordinates, they may also be overpaying for claims in catastrophic event scenarios, such as floods, earthquakes or windstorms. Location analytics can be integrated into fraud detection and management best practices as “plug and play”, and can be easily integrated into legacy policy administrative systems.

**What to look for**

Any location intelligence solution should be integrated into the workflow of an underwriter, claims manager or adjuster - combining geographic information with the insurer’s own business data in a series of map layers. Insurance companies should seek solutions that reveal the spatial location and distribution of different types of hazards and perils, and the location of policies, events, and claims.

Twenty years ago, many special investigation units worked in isolation from claims and underwriting managers. Now, insurers have to focus equally on deterring fraudsters at both the policy application/information gathering stage and the claims reporting/adjudication phase. In this process, data analytic tools like location intelligence are moving from being a back-office, offline function to a leading role in real-time fraud, underwriting and claims decisions.

Achieving this level of fraud detection requires an effective approach to enterprise-wide data management. Insurers have to eliminate data silos and ensure a continuous flow of quality information across various functional areas - underwriting, claims, actuarial. This will allow for a more thorough use of advanced analytics that detect and reduce fraud.

While there is no silver bullet in fraud identification, the use of precise geographic coordinates can yield important insights and help complete the picture when it comes to breaking fraud rings or flagging suspicious claims for investigative follow-up. Since fraudsters don’t stand still and frequently target the weakest areas of industry or government, it’s critical that insurers employ all of the analytic tools at their disposal.
To learn more about how DMTI Spatial can help your business, please contact us at info@dmtispatial.com.

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