

Fighting Fraud with “Forensic Intelligence”  
By Scott Palmer, Injury Sciences  
July 28, 2007

Studies on the impact of auto insurance fraud have found that it is costly to both insurers and their customers, and is pervasive in the most frequently encountered injury claims (soft tissue injuries). To combat the cost and inefficiencies associated with this challenge, insurers have turned to proven forensic disciplines, such as accident reconstruction and impact biomechanics. In addition, auto insurers are increasingly turning to business intelligence to improve their operating results.

The benefits in coupling business intelligence methodologies with traditional accident forensic analytics, fraud detection and deterrence capabilities only serve to compound their effectiveness. So the question is how are these combined disciplines – known as “forensic intelligence” – being employed to deter fraud costs to create a competitive advantage?

### Scope of the Challenge and Opportunity

Studies published by the Insurance Research Council (IRC) have shown that more than 80 percent of the bodily injury claims evaluated and settled by auto insurers involve various forms of soft tissue injury. These soft tissue injuries include neck strain/sprain, low back strain/sprain, disc injuries, knee and shoulder derangements and other miscellaneous strains and sprains. The weighted average of the payments for these bodily injury claims, based on relative frequency of injury type, was approximately \$7,000 per claim. Studies by the IRC have also shown that 30 percent of all bodily injury claims involve misrepresented facts or buildup and that 35 percent of the insurance-buying public believe it is acceptable to exaggerate insurance claims under certain circumstances.

While caution should be used when applying conclusions from one study to another, the following assumptions appears relatively safe: Given that soft tissue injuries are often subjective and are - at a minimum - *equally* susceptible to fraud as objective injuries, the frequency of fraudulent injury claims is found in nearly *one quarter* of the bodily injury claim population (30 percent X 80 percent represents 24 percent).

As the leading provider of forensic data analytics and technology to the auto insurance industry, we have had the unique opportunity to evaluate (in forensic engineering terms) hundreds

of thousands collisions and the resulting bodily injury claims over the last decade. These evaluations involved scores of auto insurers with a diversity of experienced claim professionals and processes. From these evaluations, the following has been observed:

- 1) Approximately *half* of the collisions evaluated by claims organizations are considered minor. As will be noted below, these minor collision severities are within the severity ranges in which thousands of human subjects have been tested for potential soft tissue injuries. It should be noted that just because an injury claim results from a minor or low severity impact does not mean fraud is involved: The identification of an accident as a minor or low severity impact simply creates the opportunity to identify fraud using forensic sciences.
- 2) The IRC payment averages included bodily injury payments from all ranges of collision severity. Injury Sciences compiled payment averages for the same injuries associated *only* with low severity collisions. As expected, the resulting average payment for these soft tissue injury claims was slightly less than the IRC payment average, but still significant (just over \$5,300 per claim).
- 3) When human subject testing is properly used to evaluate soft tissue injury claims and mitigate fraud, payment averages for these soft tissue injury claims are reduced by 40 to 70 percent.

The potential to reduce fraud costs by an average of \$2,100 to \$3,700 across roughly 25 percent of the bodily injury claim population is substantial enough to attract the attention of any claims organization. For most auto insurers, this represents at least a one-point reduction in their loss ratio. Other observed benefits that merit an honorable mention include improved loss reserving, stronger subrogation performance, more accurate liability evaluations and the overall development of stronger claim settlement strategies.

## History of Forensics in Auto Insurance

Accident reconstruction and impact biomechanics are proven methods to combat injury fraud in the auto insurance industry by identifying the cause, or lack thereof, of soft tissue injuries related to a collision. The first generally accepted step in evaluating the causal relationship of injuries to a collision is to evaluate the vehicle damage to forensically determine the severity of the collision. The most accepted measurement is the vehicle's accident-related change in velocity (a vector quantity that accounts for both direction and change in speed ) or "Delta-V" or " $\Delta V$ ". We reach this measurement by running a comparison of the subject vehicle's damage against historical damage profiles of similar vehicles crash-tested at known impact severities ( $\Delta V$ s). Once impact severity is determined, injury outcomes of a vehicle occupant can then be compared to the outcomes observed in human subject tests at similar  $\Delta V$ s. In this process, attention to occupant location and position, seat belt usage, age, relevant pre-existing conditions and other important attributes are required to make sure that comparing an occupant to human test outcomes is reasonable and appropriate.

Increasing use of these disciplines to combat exaggerated soft tissue injury claims began in the late '80's. However, due to a scarcity of human subject testing at that time, defense of these disciplines in litigation was often contentious and expensive. Fortunately organizations such as Biodynamic Research Corporation (BRC) of San Antonio, Texas, Biomechanical Research and Testing (BRT) of Long Beach, California, and MacInnis Engineering of Vancouver, British Columbia and Los Angeles, California began pursuing and publishing *independent* human subject testing at low impact severities in the early '90's to create a scientific basis for identifying *both* how and when injuries that are often exaggerated, do and do not occur.

The findings from this research began to achieve wide adoption and gained regular acceptance in the judicial courts. The special investigation units (SIU) of auto insurance companies were the earliest adopters of this science, and by the mid-'90s, SIU-related continuing education on low impact collisions and soft-tissue injury causation was commonplace.

Today, there are more than 4,100 documented human subject testing exposures at low-impact severities and numerous sources of car-crash performance data (e.g., IIHS, NHTSA, Consumer Reports, and myriad other private organizations). This is part of the reason why forensic methods continue to be generally accepted in the courts, despite the proliferation of "How-To" guides that targeted a way to defeat these forensic approaches. In fact, in a national review of

all recently appealed cases involving the question of cause of injury and using human testing and car-crash data, 89 percent were resolved favorably for the party using the forensic sciences.

### What is Forensic Intelligence (FI)?

Wikipedia defines “Business Intelligence” as “...a business management term, which refers to applications and technologies that are used to gather, provide access to, and analyze data and information about company operations.” The term “forensic intelligence” or “FI” has been used to describe databases of fingerprints, DNA, documentation and other aspects to link criminals to crime scenes and make better decisions in crime investigations. Similarly, the concept of forensic intelligence can be logically *extended* to include the use of accumulated human and car-crash data to expand the forensic analysis for an auto insurer’s claim investigations and decisions.

It is very important to note that an auto insurer’s claims operation includes many similar steps to the investigations and analyses performed by a forensic expert. Just like a forensic expert tasked with the investigation of an injury relationship with a subject collision, an auto insurer’s typical starting point with the claim evaluation is inspecting the damaged vehicle. While the insurer’s focus is to make reparations for collision-related damages, the inspection steps are quite similar to that of a forensic expert and are usually even *more* detailed. Repair estimates created by auto insurers document each component damaged, the decision to repair or replace damaged components, and the subsequent labor costs associated with the repair.

Auto insurers traditionally use business intelligence in the repair process to assure repair quality, control costs and reduce cycle times. Now, it can be taken a step further. Insurers can use “forensic intelligence” by comparing existing vehicle damage data and with historical auto crash tests outcomes to quickly identify the collisions and resulting soft injury claims susceptible to fraud. This “forensic intelligence” postures auto insurers to *prevent or contain* fraud rather than be relegated to the position to attempt to recover the cost of fraud.

The key step for auto insurers looking to proactively manage fraud and related costs is having a process that enables auto insurers to consistently apply FI to their auto physical damage stream. Today “forensic intelligence” technologies exist that enable the application of FI data and analytics to each and every auto physical damage estimate and supplement, *without adjuster intervention*, to identify those damage outcomes that are most likely resulting from low severity collisions. As a result – in the event a bodily injury claim is made, the claim is immediately flagged to properly and proactively investigate the claim. In addition, insurers can consider claimed injuries

relative to human crash testing results to prevent payments for misrepresented or exaggerated injury claims.

## Deployment of FI and Key Success Factors

Working with CCC Information Services, an information technology solutions provider to the automotive claims industry, we have developed a relatively transparent deployment of FI for a number of auto insurers. Transparency, along with flexibility and the ability to provide straight-through processing, are critical components when applying FI to auto claims. By establishing a vendor-to-vendor interface, auto insurer's damage repair estimates and supplements can be transferred for immediate processing and evaluation. These transfers can be made real-time or in daily batches and repair estimate formats can be either proprietary or in industry standard EMS or BMS formats. Carriers can also establish vendor-to-client interfaces to automatically receive notification of injury claims upon being flagged. During this automated step, injury claims are matched to the corresponding repair estimate data, and if the corresponding repair estimated data are found through the FI application to be related to a low severity collision, the auto insurer is immediately notified and the appropriate action can be taken. Notification can take a variety of forms: automatically posted log notes; flags or indicators in claim and/or fraud system fields; and, other varied management reports.

When an auto insurer receives the FI derived indicator(s), it is then postured to mitigate potential fraud. However, indicators alone will not drive results; the claim processes and behaviors must also be changed. The following operational behaviors are closely linked to achieving measurable improvements in fraud deterrence:

- 1) Consistency – Many adjusters can fall into the trap that “they know a low impact collision when they see one.” Given the proliferation of SUVs, pickups and vans on the road today, a very large percentage of vehicle damage extends beyond bumper systems in low severity impacts because the higher SUV, pickup and van bumpers tend to override relatively lower sedan bumpers. When bumper mismatch occurs, the damage profile and the cost of repair give the adjuster the *impression* that the severity of the impact is much greater than it actually is. In these instances, the adjuster's impression is also to give more credence to resulting injury claims even though these collision severities are no different, in impact severity terms, than the ones they would normally scrutinize because of a lack of vehicle damage. As a result,

consistently investigating all the identified low severity collisions is one of two key success factors in preventing fraud leakage.

- 2) Early intervention – A second trap is one related to the timing of deterrence. A common step is to wait until all medicals are incurred before considering payment. This practice encourages those that would build-up or exaggerate an injury to attempt to add merit to their claim by incurring unnecessary medical treatments. As a result of the thousands of human subject exposures as low severity collisions, the forensic data tells us two important things: 1) there are many types of soft tissue injuries that have *never* been observed, and; 2) for those that *have* been observed, the duration of symptoms has been relatively short and well defined. Once an accident is defined as a low severity collision, it should be properly investigated and evaluated. If the claimant has no relevant exceptions for comparison to human subject testing results, expected medical outcomes and treatment plans (if any) should be communicated quickly to proactively deter potential exaggeration or buildup. These communications have shown to have a chilling effect on those that are considering build-up or exaggeration. Thus, the practice of early intervention and communication is the second key success factors.

Additional uses of FI-derived indicators include segmenting and routing claims to the appropriate specialists. Additionally, these indicators can be further used in other analytics, such as fraud scoring models, to help refine SIU referral processes.

FI is not a promising new development or technology. It is an innovative deployment of rapidly expanding forensic data and analytic methodologies that have been successfully used by auto insurers for over a decade. By consistently applying FI to all accident evaluations, the traditional approaches of comparing vehicle photos to medical information to identify medical build-up and exaggerated injuries (which are inefficient, inaccurate and costly) can quickly be rendered obsolete. With opportunistic fraud and inaccurate liability assessments driving increases in loss costs, the implementation of proven, science-based and automated solutions to not only monitor but proactively manage against fraud is among the auto insurers' best tools for loss cost containment and competitive differentiation. As previously noted, use of "FI" has helped insurers improve their loss ratios by a point or more. Possibly, this may be a point worth pursuing in your organization.