

Leveraging Big Data to help insurers increase financial returns from claims subrogation

Deloitte and Cloudera can help you make claims subrogation more effective using advanced analytics

Insurers spend significant efforts to recover money through claims subrogation. Yet the manual processes typically involved in referring the claims to an investigative team are often limited in their effectiveness. Many good opportunities for recovery are missed and investigators are also assigned too many cases that have little chance for successful recovery.

The Deloitte Claims Subrogation Solution uses advanced quantitative modeling, sentiment analytics and modern technology from Cloudera to enable a highly effective referral process that can yield greater financial returns. The solution is designed for use alongside your existing manual referral process to help you catch missed opportunities for recovery and keep your claims adjustors focused on the right claims.

Deloitte's Claims Subrogation Analytical Model

Our Claims Subrogation Analytical Model identifies claims that have high potential for subrogation and matches each claim to the appropriate claim adjuster skill set. To determine the likelihood that a claim can be recovered, claims are scored based on a variety of attributes ranging from the nature of the claim to claimant demographics, claim source, severity, and incident type. It also uses behavioral attributes that are extracted from the claimant

history through advanced text mining techniques and sentiment analysis.

Figure 1 shows a screenshot in which Tableau software is used to visualize the results from the model. This screenshot shows two histograms that map the number of claims (vertical axis) against the model's score for recoverability (horizontal axis). The top chart delineates how many of the claims in each score range were already recovered, and the bottom chart shows compares the number of claims that were manually referred versus those that were not.

Near the right side of the top histogram chart in Figure 1, you can see that more than 9,000 claims were scored in the 95th percentile. This means the model identified these claims as very good opportunities for recovery. Of these claims, only 5,306 actually resulted in partial recovered value (green section of the bar indicates recovery). The bottom histogram shows that there were 5,707 claims in this 95th percentile that were manually referred and another 3,636 that were not. Comparing the top and bottom charts shows that 5,306 of the 5,707 referred claims in this category resulted in a partial recovery. This is nearly 93 percent. The model scored the remaining 3,636 claims in this 95th percentile to be equally recoverable.

In other words, these 3,636 claims behave and look very similar to the recovered 5,306 claims. This suggests that it's likely best to override the manual process and refer these claims for further investigation. Leaving recoverable claims on the table like this is quite common, but the model offers a good way to find these claims that are ripe for recovery.



Figure 1: Visualized results for scored claims in Deloitte's Claims Subrogation Analytical Model

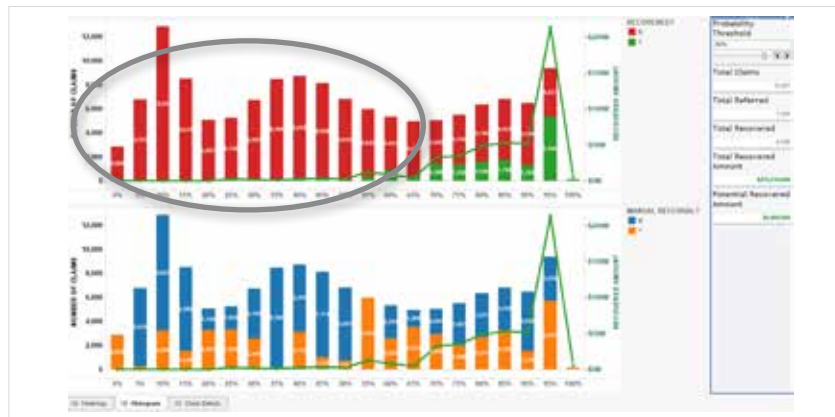


Figure 1: Visualized results for scored claims in Deloitte's Claims Subrogation Analytical Model

Closer inspection of the results in Figure 1 also reveals that there were many claims that were manually referred for subrogation but did not result in recovery. In fact, those claims that had a low model score and were manually referred resulted in almost no recoveries at all. There were virtually no recoveries for claims that were ranked lower than the 50th percentile by the model. This means that claims adjusters spent valuable time chasing claims that had little chance of recovery when they could have spent their time on claims with high probability of recovery and high value.

Another benefit of the model is that it also identifies which claims adjusters have the right skill sets for investigating each referred claim. For example, a claim that involves a hand injury might best be investigated by a claims adjuster with experience and a track record of successful recovery for hand injury claims. By assigning adjusters who have the highest likelihood of success with a given claim, financial returns from subrogation can be improved.

Multi-million dollar potential for incremental recoveries

To understand the potential for incremental recoveries from the model, consider this example based on data from a Deloitte client project. We reviewed the client's top 200 claims using the model and identified an additional 100 claims that warranted further investigation for subrogation and weren't manually referred. As shown in Figure 2, these 100 claims indicate a 57 percent lift rate on referrals (100 out of 176 opportunities). To be conservative, we won't use the 93% as a rate of recovery from the above example because claims from the lower percentile buckets may have a lower recovery rate. We will use the average recovery rate of 31 percent and average recovery per claim of \$22,000. This conservative approach yields \$682,000 in incremental recoveries from just the top 200 claims.

To annualize these results, Figure 2 shows a second set of calculations for how the model would perform in recoveries for the top one percent of claims throughout the year. For simplicity sake, we assume that the referral lift rate and average recovery rate will be the same as for the initial 200 claims. The results are significant — \$2.48M in incremental recoveries.

Recovery Results for Top 200 Claims	
Previous number of referrals	24
Remaining opportunities out of the 200	176
New referrals by model	100
Referral lift rate (100/176)	57%
Average recovery rate	31%
Incremental recoverable claims	31
Average recovery per claim	\$22K
Projected recoveries from Top 200	\$682K

Annualized Results for Top 1% of Claims	
Average number of claims per year	65,000
Top 1% of claims	650
Referral lift rate	57%
Number of claims referred	369
Average recovery rate	31%
Number of recoverable claims	113
Average recovery per claim	\$22K
Projected annualized recoveries	\$2.48M

Figure 2: Calculation of incremental recoveries from the model

What makes it work?

Cloudera technology makes it possible for our model to review thousands of claims and identify which attributes represent good indicators for claims recovery. The model was originally designed and developed in SAS. It was then ported and implemented in Cloudera to take advantage of Cloudera's cluster computing technology. Using Cloudera clusters, it's possible to evaluate many more attributes than could be achieved with traditional analytics tools.

Another factor in the success of the model is that Cloudera can utilize data straight from its source without having to modify the data through an ETL process.¹ Avoiding this process means that data is available in real-time. Whenever new information about a claim is entered, it is immediately available for analysis.

Cloudera also enables analysis of unstructured data that has not been indexed. A claims adjuster generally only looks at structured data in databases to determine whether a claim should be referred for further investigation. Our model can also search unstructured data such as audio recordings and scanned images using Cloudera technology. It can also look at historical records such as frequency of injury for a specific claimant. Most adjusters would not be able to take the time for this kind of research even if the data were at their fingertips. Cloudera can provide an SQL engine (Impala) on Hadoop with certified interfaces to several data analytics and data visualization tools to help provide integration of data interfaces, data, analytics and visualization needs.

Implementation approach

The analytical model used in the Deloitte Claims Subrogation Solution provides a starting point for implementing a customized solution that is tailored to the unique needs of each client and each line of business within the client. The implementation follows a structured approach to identify strategic objectives, define requirements, and then design and implement a customized version of the model.

Because the same model can be leveraged from one client engagement to the next, the solution can be implemented relatively quickly. Tailoring the model to your needs and implementing it in Cloudera requires approximately three to four months for a single line of business in a single region or organizational unit.

Risk and reward sharing opportunity

Because the Deloitte Claims Subrogation Solution can be implemented relatively quickly and has the potential for high returns. Our firm can engage in your project for a flat fee, or you can choose to share a percentage of your incremental recoveries with Deloitte and to help reduce your risk. To take advantage of risk and reward sharing, start a discussion with your Deloitte contact.

¹ ETL stands for extract, transform, load. ETL is a process of preparing data so that it can be stored in rows and columns in a data warehouse.

About the Deloitte Analytics practice

Deloitte has been widely recognized as a leader in business analytics (See Deloitte at a Glance sidebar). Our Analytics practice uses a fully integrated approach to analytics that can unlock the value buried deep in your data. We combine the science of business analytics with strategy-level insights and an understanding of how to bring analytics to the front lines of your organization.

Our experienced industry specialists can help you identify which questions matter and where to find the answers. Our services address an overall Information Management strategy as well as effective integration across the domains of technology, processes, and people. We bring an extensive set of capabilities that involve reporting applications, portals, information delivery, and basic as well as advanced analytics — all grounded in a deep understanding of the business issues that drive the industries and sectors we serve.

Learn more

To learn more about how Deloitte and Cloudera can help you increase conversions and drive revenue through our Customer Next Best Offer Accelerator, please contact a Deloitte team member listed below.

Ashish Verma

Director, Big Data Lead, Information Management
Deloitte Consulting LLP
asverma@deloitte.com

Prithvi Mazumder

Specialist Leader, Big Data Lead, Information Management
Deloitte Consulting LLP
pmazumder@deloitte.com

Prince Nasr Harfouche

Senior Manager, Big Data Analytics Lead, Advanced Analytics & Modeling Practice
Deloitte Consulting LLP
pharfouche@deloitte.com

Deloitte at a Glance

- Deloitte is one of the largest privately held professional services organization in the world based on headcount and breadth of capability, delivering audit, enterprise risk, tax, finance, strategy and operations, human capital, and technology services.
- Deloitte named a global leader in Business Analytics Services based on capabilities by Gartner.¹
- Deloitte named a global leader in Business Analytics Consulting and Systems Integration Services by IDC.²
- Deloitte named the global leader in Analytics IT Consulting based on capabilities by Kennedy.³
- Deloitte is the largest Consulting organization in the world.^{4,5}
- Deloitte is the largest IT consulting organization in the world.⁵
- Deloitte is a global leader in Technology Transformation.
- Deloitte is a global leader in Information Security consulting.
- Deloitte is a global leader in IT Strategy Consulting.
- Deloitte is on *Fortune* magazine's list of "100 Best Companies to Work For" for the 14th year (Deloitte LLP and its subsidiaries).

¹ Gartner Magic Quadrant for Business Analytics Services, Worldwide, Alex Soejarto, Neil Chandler, 17 July, 2014.

² IDC MarketScape: Worldwide Business Analytics Consulting and Systems Integration Services 2014 Vendor Assessment by Ali Zaidi, May 2014, IDC #246675.

³ Kennedy Consulting Research & Advisory; IT Consulting: Analytics 2014; Kennedy Consulting Research & Advisory estimates © 2014 Kennedy Information, LLC. Reproduced under license.

⁴ Includes S&O, HR, IT, Risk, FA, Audit, and Tax advisory capabilities; excludes regulatory audit and tax compliance.

⁵ DITL Global AR, February 2013; DITL Strategy, June 2012.

As used in this document, "Deloitte" means Deloitte Consulting LLP, a subsidiary of Deloitte LLP. Please see www.deloitte.com/us/about for a detailed description of the legal structure of Deloitte LLP and its subsidiaries. Certain services may not be available to attest clients under the rules and regulations of public accounting.

This publication contains general information only and is based on the experiences and research of Deloitte practitioners. Deloitte is not, by means of this publication, rendering business, financial, investment, or other professional advice or services. This publication is not a substitute for such professional advice or services, nor should it be used as a basis for any decision or action that may affect your business. Before making any decision or taking any action that may affect your business, you should consult a qualified professional advisor. Deloitte, its affiliates, and related entities shall not be responsible for any loss sustained by any person who relies on this publication.

Copyright © 2014 Deloitte Development LLC. All rights reserved.
Member of Deloitte Touche Tohmatsu Limited.