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TABLE OF CONTENTS

4 **Actuaries and Data Scientists: An Evolution in Teamwork**
BY JIM LYNCH, FCAS

5 **Predictive Analytics Providers Directory**

6 **Overcoming Predictive Modeling Stumbling Blocks in Small Commercial Insurance**
BY MATHEW STORDY

9 **Insurers Probe New Analytics Frontiers**
BY J.J. IHRKE

11 **Are Actuaries Competitive in Data Science?**

12 **Competitive Intelligence — An Insurance Policy for Pricing**
BY KATHRYN A. WALKER, FCAS, MAAA, CSPA, CPCU, CONSULTING ACTUARY

14 **Public Records Attributes Boost Predictive Modeling Effectiveness**
BY PRINCE KOHLI, ACAS; JIAPEI WANG; KELLY RUSH

Actuaries and Data Scientists: An Evolution in Teamwork

BY JIM LYNCH, FCAS

The lion and the lamb. Burr and Hamilton. Patriots fans and everyone else on the planet. No. The rivalry between actuaries and data scientists is not as intense as these.

Nor should it be. But there is a natural tension between the two disciplines, as actuaries have had to cede some portion of their mantle of analytics guru to a new profession.

Overcoming the all-too-predictable challenges between the professions was the theme of a session appropriately titled "Effective Collaboration Between Actuaries and Data Scientists" at the Casualty Actuarial Society's Ratemaking, Product and Modeling Seminar in Chicago in March.

There, an actuary (Jeff Kinsey) and a data scientist (Jeffrey Rambole) presented their employer, State Farm, as a case study in how to structure the two jobs (and the world around them) to maximize value.

The emergence of data scientists has helped the actuarial profession, Kinsey said. Ten years ago, actuaries were "a bit more in the department," i.e., compartmentalized in the organization. Now they find themselves in leadership positions throughout the company: underwriting vice presidents, IT leaders or leading new, disruptive companies.

Ten years ago, actuaries were … compartmentalized in the organization. Now they find themselves in leadership positions.

The inevitable question: What is a data scientist? "If you ask 10 people what a data scientist is, you'll probably get 15 answers," Kinsey said.

The job is an unusual merger of computer science, statistics and business acumen, he said. Rambole chimed in: "It's perceived to be a unicorn. You don't see it very often."

Actuaries are a similar, unique blend.

Data scientists and actuaries have similar skills (data acumen, computer science, business savvy), but usually their strengths differ, said Kinsey.

Actuaries usually have stronger business acumen. They know the mathematics behind insurance: loss reserving and business statistics.

Data scientists typically have deeper data and computer science skills, Kinsey and Rambole said. They are stronger in the discipline of statistics. They have deeper understanding of machine learning and coding.

Kinsey and Rambole took a live poll of the audience of mainly actuaries on what the most important skill of a data scientist is. Data wrangling and statistical knowledge were the top choices. Both were selected by more than a third of those voting.

For each project there is an appropriate proportion of actuaries and of data scientists. The trick is to find it. State Farm does that by creating a centralized/decentralized structure for its analysis teams. Teams come from one of three areas:

- P&C actuarial teams make pricing models. These teams are overwhelmingly made up of actuaries but also include data scientists.
- P&C underwriting teams create underwriting models. They are composed of a more balanced mix of both actuaries and data scientists. In these, business knowledge is critical.
- Advanced analytics teams are predominantly made up of data scientists. "They are doing a lot to move the analytic needle in insurance companies," Rambole said.

But they still need actuaries, whose understand-

ing of proven techniques (think credibility) and their ability to explain the complex come in handy.

The actuary can break the complex math down into digestible bits. This helps executives, underwriters and, sometimes, regulators understand what a model does.

Challenges may span different areas, such as:

- Terminology: Both data scientists and actuaries have their own terminology that can have a bit of a learning curve to understand. This is compounded when the same term can have different meanings in the two disciplines.
- Software: Actuaries have traditionally worked in Microsoft Office-based products, proprietary software or GUI-based modeling tools. Data scientists operate in Python, R and H2O. This can make it difficult for one profession to review the code of the other.
- Computing environments: Actuaries work on the laptop. Data scientists work on distributed environments, including the cloud.
- Strategies: Models that actuaries have traditionally been responsible for require transparency to both internal and external audiences. This has generally meant that an actuary's go-to model is linear-based. The go-to model for a data scientist may not have the same level of transparency (think neural network), which may limit its applicability for production-based models.

"It's really easy to get territorial," Rambole said, "but working together is essential to increase the analytic function of our organization."

James P. Lynch, FCAS, is chief actuary and director of research for the Insurance Information Institute. He serves on the CAS Board of Directors.

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DataRobot
Tim Young, VP of Marketing
sales@datarobot.com
www.datarobot.com/insurance

Gross Consulting/Cognalysis Software
Chris Gross
651-293-8008
chris.gross@cgconsult.com
www.cgconsult.com

LexisNexis Risk Solutions
Pam Tippett
912-571-9128
pamela.tippett@lexisnexisrisk.com
www.risk.lexisnexis.com

Merlinos & Associates
Ryan Purdy
678-684-4848
rpurdy@merlinosinc.com
www.merlinosinc.com

Pinnacle Actuarial Resources
Roosevelt C. Mosley, Jr., FCAS, MAAA, CSPA
rmosley@pinnacleactuaries.com
309-807-2330

Verisk Analytics/ISO
Joe Izzo
AskAnActuary@iso.com

Willis Towers Watson
Pierre Laurin
416-960-2851
pierre.laurin@willistowerswatson.com
www.willistowerswatson.com/ICT

Overcoming Predictive Modeling Stumbling Blocks in Small Commercial Insurance

BY MATHEW STORDY, DIRECTOR OF COMMERCIAL INSURANCE

While predictive modeling has proven itself to be an invaluable risk assessment tool in personal lines insurance, adoption of predictive modeling has been relatively slow in commercial insurance. Particularly for carriers writing small business policies, the lag in adoption is due to a lack of resources. Other times, it's because an insurer doesn't understand how to build an effective model. Or, there may simply be concerns about engaging the organization in the process.

There is good news
Effectively applying predictive modeling is a structured process that any organization can follow. In fact, there are a number of techniques or best practices that can help carriers make the most of predictive modeling to improve their business outcomes.

Leveraging from the product development life cycle

To overcome the paralysis, a few best practices make implementing predictive models achievable for any carrier, regardless of their expertise level. Creating and using an effective predictive model can be likened to following a four-stage product development lifecycle process: ideation, design and development, implementation, and monitoring.

The following is a simple, yet proven, best practices framework for integrating predictive modeling into a workflow to better predict risk and improve business outcomes.

Step 1: Ideation

The success of any predictive modeling initiative requires strong executive sponsorship to ensure all the right resources will be applied, and it requires a committed cross-functional team to bring the idea to reality.

In the ideation phase, the team begins by showcasing the benefits of predictive modeling to establish buy-in from key stakeholders across the organization. They must identify and prioritize the key problems to be solved through predictive modeling, determine the cost and ROI of the project, and figure out how to integrate the predictive model into the underwriting workflow, including measurable success benchmarks.

Step 2: Design and development

While predictive models can be used for risk selection, pricing, claims fraud detection, claims subrogation potential and so on, within small commercial insurers, there's a growing movement to use predictive modeling for risk assessment and pricing by building insurance scores that rank order risks in terms of loss propensity. Designing and developing this type of model is a very iterative process: It begins with data exploration, followed by training and validating the model, and finally, ensuring that the model complies with any applicable regulatory requirements.

Data exploration requires a team of business analysts, statistical modelers, IT resources and regulatory experts. Third-party data, including commercial credit, consumer credit and public records, should be evaluated to further enhance the risk assessment performance of your predictive model.

Building a model to predict loss propensity requires a large amount of data. Data is partitioned as either training data or validation data. Of course, all data sources and attributes used within the model must comply with any applicable regulatory requirements.

Step 3: Implementation

Once a model has been designed and proven, it's ready to be implemented within the workflow. Because implementation impacts so many parts of the operation, the team needs to identify and document the impact to existing business rules and procedures, such as rating and underwriting. They also must determine the IT requirements for building the model, application workflow changes, and storing the score and whether it's used or overridden.

Other requirements for implementation include making sure that any applicable customer dispute process is supported. Training all stakeholders and impacted parties comes next and then the team creates a rollout plan.

Step 4: Monitoring

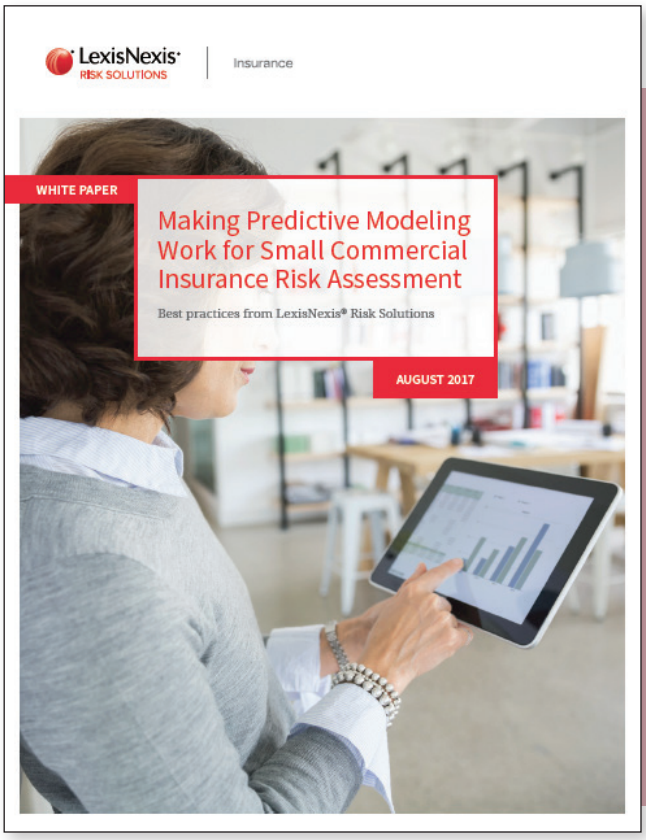
With all the hard work completed, the last step is ensuring your model works as designed. Monitoring lets you know if the model is meeting performance expectations. There are two key parameters to monitor: usage tracking and model efficacy.

Regarding usage, score overrides can provide valuable insights into limitations, score adoption, and opportunities for improvement. Monitoring for model efficacy reveals if the model is meeting performance expectations. If it's not, a deeper dive into the underlying causes is needed. Sometimes all it takes is a minor recalibration.

Putting it all together

Embracing predictive modeling can be intimidating for small commercial insurers because there are so many moving parts, diverse constituencies, and often a mindset shift to be made. Mirroring the four-step process of a product development lifecycle provides a best practices blueprint for overcoming the many obstacles. By integrating predictive modeling into their workflows, insurers will be more successful in protecting and growing their book of business.

For more on the topic of predictive modeling, please see our whitepaper, "Making Predictive Modeling Work for Small Commercial Insurance Risk Assessment," at risk.lexisnexis.com/MakingPredictiveModelingWork.



Mathew Stordy is Director of Commercial Insurance for LexisNexis Risk Solutions. He is responsible for requirements assessments and the design of data solutions and services that streamline commercial insurance processes and provide insights about entities through the use of data, analytics, and software. He has more than 20 years of experience focused on insurance software and specializing in P&C insurance systems. Stordy has worked in all phases of the systems-development lifecycle.

For more information, please:
Call 800.458.9197
Email insurance.sales@lexisnexisrisk.com
Visit risk.lexisnexis.com/insurance

Best Practices to Improve Business Outcomes

While predictive modeling has proven to be an invaluable risk assessment tool in personal lines, adoption within commercial lines is not as pervasive. Why? Often carriers lack the appropriate resources to build this capacity and/or they do not understand where to begin in applying a predictive model.

When an insurance carrier hesitates to integrate predictive modeling into the business, it's usually because of either a lack of resources or a lack of understanding about how to build an effective model.

But integrating predictive modeling into small commercial insurance is easier than many might think. Whether carriers choose to enlist the help of a solution provider or build a predictive model themselves from scratch, following a few best practices can make all the difference in achieving a successful outcome when using predictive models for risk assessment.

Download the white paper at risk.lexisnexis.com/MakingPredictiveModelingWork.

CONGRATULATIONS

TO THE RECIPIENTS OF THE CERTIFIED SPECIALIST IN PREDICTIVE ANALYTICS CREDENTIAL

The CAS Institute recently awarded the Certified Specialist in Predictive Analytics (CSPA) credential to the following individuals:

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Milliman, Inc.

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Philip Borba, Ph.D., CSPA
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Wanchin W. Chou, FCAS, CSPA
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Theophilus Djanie, CSPA

Ian Duncan, FSA, FIA, CSPA
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Daniela Fassbender, CSPA
The Hartford

Paul Ferrara, CERA, CSPA
Merlinos & Associates, Inc.

Timothy Garcia, FCAS, CSPA
Tokio Marine HHC

Meghan Goldfarb, FCAS, CSPA
State Farm Mutual Automobile Insurance Co.

Sheri Holzman, FCAS, CSPA
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Kim Holmes, ACAS, CSPA
XL Catlin

Ali Ishaq, FCAS, CSPA
Actuarial Analytics PLLC

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Munich Re America, Inc.

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Tokio Marine HHC

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Allstate Insurance Company

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State Compensation Insurance Fund

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CNA Insurance Companies

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Chunpong Woo, FCAS, CSPA
Willis Towers Watson

Aaron A. Wright, FCAS, CSPA
United Services Automobile Association

Weixin Wu, FCAS, CSPA
State Farm Mutual Automobile Insurance Co.

Insurers Probe New Analytics Frontiers

BY J.J. IHRKE

Emerging data sources and advanced analytics provide an expanding universe full of promise for insurers — if they can navigate it effectively.

In a short space of time, data and advanced analytics have become new frontiers for transforming insurance company operations. A recent Willis Towers Watson survey of U.S. property and casualty (P&C) insurers' attitudes has confirmed that many have already embarked on this voyage of discovery and plan to probe deeper into it.

Priority areas

In terms of priorities, three areas dominate: the customer experience, claims management and applications of telematics data.

With customer expectations increasingly set by online retail environments, better customer centricity is a major focus. Big leaps in how insurers plan to use customer data (49% to 76%), surveys (43% to 69%) and auto telematics (24% to 57%) are seen as the main facilitators of faster, smoother and more personalized customer experience over the next two years.

Insurers also see huge unexplored potential for advanced analytics in claims. Key applications over the next two years are expected to be fraud prevention (82%) and triage to identify complex claims (80%), together with the evaluation of claims for both litigation and subrogation potential.

Expectations for the wider use of telematics data are similarly very high, mainly in pricing and underwriting but expanding also into customer management, claims and loss control over the next five years. Beyond the auto market, 43% of respondents see a significant role for telematics in homeowners' insurance within this timeframe.

Ringing the changes

But carriers acknowledge that changes will be needed to turn these ambitions into reality.

This is reflected in the data sources that insurers see as useful and that they will need to interrogate over the next two years (Figure 1).

The analytics environment is also under scrutiny. The volumes, variability and lack of structure associated with new data types and are becoming increasingly difficult to manage using internal capacity, networks and processing systems. So, insurers are actively exploring technologies to help them manage big data — principally the cloud and Hadoop.

Attitudes towards modeling techniques are also evolving.

Figure 1: Top-growing new data sources insurers plan to use two years from now

Personal lines	Now	Two years
Smart home/smart building data	0%	52%
Usage-based insurance/telematics	26%	70%
Social media	26%	52%
Unstructured internal claim information	39%	61%
Unstructured internal underwriting information	30%	52%
Images	13%	35%
Commercial lines	**Now**	**Two years**
Unstructured internal claim information	46%	92%
Other unstructured customer information	11%	54%
Unstructured internal underwriting information	25%	39%
Usage-based insurance/telematics	11%	47%
Web/clickstream/phone/email customer interactions	11%	36%
Images	3%	39%

Backing up the generalized linear models that three quarters of companies already use, a quarter of companies surveyed are looking to add artificial intelligence and machine learning techniques over the next two years. These are also seen as important for streamlining operations and making cost savings. Many companies are also focusing on improving what 83% of carriers categorize as "moderate" or "limited" levels of understanding of advanced analytics outputs within the business.

Staying on course

The course seems set for a future where insurers aim to use data and advanced analytics to better quantify risk, streamline processes and improve customer experience — or a combination of them all.

Each company's journey will be different, but our experience points to the benefits of three guiding principles.

Concentrate on data first. New (or better) experience data, predictors and customer response information will always trump new methods being thrown at the same data.

More data, in depth analysis and new insights aren't the end game. They have to be able to be translated into something the business can understand, implement and monitor and from which it can derive and offer value.

Stay on top of the technology. Legacy company systems and networks will make it increasingly difficult to conduct business effectively in the advanced analytics age. New technologies that enhance analytical capability and system connectivity, including those coming out of the insurtech movement, will have a greater role to play.

For more information, email jj.ihrke@willistowerswatson.com.

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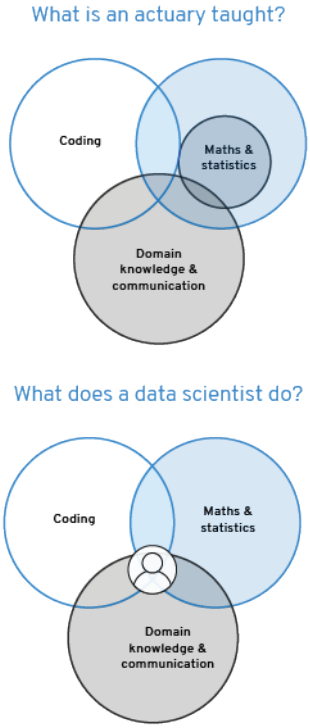
Are Actuaries Competitive in Data Science?

It has been said that actuaries were the first "data scientists," but can we still describe ourselves as such, asks Colin Priest, an actuary turned data scientist at DataRobot. Colin comes with 30 years of experience working with many insurance companies globally.

A data scientist exists in the intersection of three skill sets: coding/programming, mathematics and statistics, and domain knowledge. Coding allows data scientists to manipulate data and create algorithms. Mathematics and statistics allow them to use data to predict future outcomes. Then data scientists need to understand people and business rules to solve practical business problems. People with all three of these skills are rare and valuable.



Does actuarial training stack up?

In recent years, when I started teaching data analytics to actuaries, I discovered, to my surprise, that it was no longer compulsory to learn programming. And while actuaries learn statistics and mathematics, their education is narrowly focused. But actuaries do know a lot about insurance — the law and regulations, underwriting, claims management and product design.

The worry is that this gap is negatively affecting the employment prospects of actuaries. Actuarial employers are increasingly expecting their staff to have the same skill set as data scientists. In its most recent survey of actuarial employers, the Singapore Actuarial Society reported that almost half expected new actuaries to write code, manipulate data and use statistical software.

A further theme in the employer feedback was that actuaries need to "improve on programming skills." In the U.S., data scientists have increasingly been hired for roles that were traditionally actuarial.

Historically, actuaries have adapted to new techniques and technologies. In the 17th century, actuaries developed deterministic methods for managing life insurance. In the early 20th century, they applied probabilistic methods to general insurance. And, in the early 21st century, actuaries were among the first to adopt enterprise risk management. Now, in the 2010s, it's time for actuaries to further improve their skills. Here's what actuaries need to learn:

- Data manipulation and joining tables.
- The theory of machine learning (training versus testing, overtraining).
- Machine learning algorithms.
- Mathematics and statistics: missing value imputation, optimisation, numerical estimation.

The good news is that modern technology makes this easier than ever. Data manipulation doesn't need to be a time-consuming manual process: Modern drag-and-drop software allows you to visually design data pipelines that manipulate data and merge data sources. There are free online courses about learning from data that teach machine learning theory. And you don't need to learn dozens of arcane algorithms or spend months writing code to implement them.

The latest technology is automated machine learning — expert software that automatically finds the best algorithms for your data, applies best practices and avoids overtraining.

With these technological tools, actuaries can step up and be competitive in data science. Actuaries' business knowledge and communication skills can give them a competitive advantage.

This article was originally published in The Actuary*: http://www.theactuary.com/opinion/2017/12/are-actuaries-competitive-in-data-science/.*

About DataRobot:

For a 21st-century insurance company, AI & machine learning have to be core capabilities. From Distribution, Marketing, Underwriting to Claims & Operations — AI applications are driving profitable growth for companies through better and faster decisions and making their customers highly satisfied. With the DataRobot platform, organizations develop, integrate and operationalize AI applications across all core functions. Founded in 2012 and built by insurance veterans with more than 100+ years of combined experience from several F100 companies, DataRobot raised $125 million in funding, grew to a 300+ organization, and amassed a customer base that covers a large number of global F500 companies from a variety of industries. ***Fun Fact:*** *DataRobot chief data scientist, Xavier Conort, is an actuary who was Kaggle's #1 data scientist for more than a year!*

Become a practicing data scientist — attend the highly sought-after DataRobot University for Actuaries at https://www.datarobot.com/education/.

Competitive Intelligence — An Insurance Policy for Pricing

BY KATHRYN A. WALKER, FCAS, MAAA, CSPA, CPCU, CONSULTING ACTUARY

Insurance carriers are continually looking for a competitive advantage through initiatives such as new product offerings, unique customer segmentation, innovative rating variables and deeper market knowledge. Each of these is a stepping stone to growth and profitability. However, insurers are challenged to connect these into a cohesive business strategy. The decentralized core processes of rating, product development, underwriting and marketing have created competing goals and disconnected views of the business.

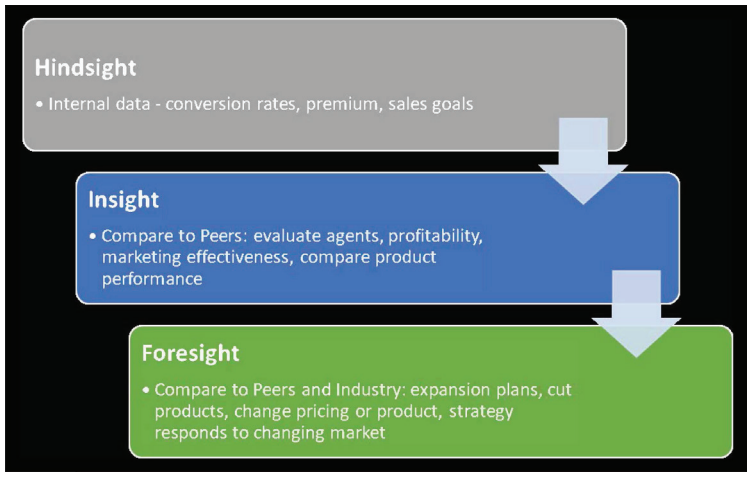
As companies strive to become more innovative and add increased analytics and metrics to their operations, the need for more comprehensive data is even greater. Insurers seek to make more confident decisions as they continue to work through existing system, operational and regulatory time constraints. Carriers are focused on continuously monitoring and synthesizing results given the perpetual flow of information now available.

Consumer shopping data has become a valuable addition to traditional insurance data sources for these very reasons. Insurers are desperate to understand factors driving sales and retention, and they want to make more informed decisions to avoid costly implementation mistakes. Key data elements about the quotes, including quoted premium amounts and policy, driver and vehicle characteristics, are compiled into robust market basket datasets that can be used for analytics purposes. These data sets reflect real consumers shopping for insurance and the real pricing for the risk at that point in time.

Consumer shopping data can be used for a number of different applications, such as:

- **Filling existing information gaps** — Insurance companies face information gaps in various situations, such as entering a new state or product line or adding a new variable, discount or surcharge to their rating plan. By incorporating comparative rater data, insurers can overcome these information gaps. Further, with information about the consumers in the new state, the insurer is able to set realistic sales goals, develop benchmarks and create monitoring reports. By better understanding their competitive position, insurers will have increased confidence in their rating plans and are better able to work with agents to target profitable business.
- **Validating business decisions** — Insurers concurrently seek rate adequacy, battle competitive challenges and

strive to align their programs with regulatory requirements. As rating plans are refined, the view of the competitive landscape provides additional insights on expected performance for retention and conversion. This information is extremely valuable when setting internal business goals related to conversion, retention, average rate levels and agent response.



- **Identifying shopping trends** — Traditional target marketing methods have focused on identifying an "ideal" customer who is less prone to loss based on certain risk characteristics. Unfortunately, there is not always an abundance of these "ideal" customers in the shopping population. By reviewing characteristics of recent insurance quotes, an insurer will soon realize that these customers make up only a fraction of a percent, and thus will be forced to develop a more realistic view of the shopping population.
- **Creating benchmarks and metrics** — Like most companies, insurance companies have growth and profitability goals. The measurement of those goals is often on a calendar-year view to align with budgets and contingency plans. To actively manage business performance, insurers need to create dynamic business plans and monitor standard metrics, such as frequency and severity, in more meaningful ways.

Future Applications

As competitive data becomes more prevalent and available, there are a number of current analyses that can be enhanced with this behavioral element. Rating plans can be designed using the loss costs intrinsic in premiums available in the market. Policy lifetime value can be analyzed when the shopping triggers are known, and insurance affordability can be better understood by including available premium quotes.

As the pace of change continues to accelerate, conventional wisdom will continually need to be challenged. Insurers will need to be able to make decisions in the future that currently take hours to weeks in real time.

Conclusion

As insurers continue to seek competitive advantages to profitably grow their business, they will rely on innovative applications of data, analytics and metrics. Including competitive data and behavioral information will supplement traditional pricing, underwriting and marketing practices, and allow the insurers to make more intuitive business decisions.

Traditionally, most companies have created plans and goals using historical information and then developed action plans to achieve those goals. With more information available today, the sequence is beginning to reverse such that insurers will be able to gather information related to the individual policy risks and create more accurate and insightful forecasts. This information can then be used to drive strategic plans related to growth, retention and profitability, and to create tactical plans and metrics.

The most successful insurance companies have maintained a broad view of the industry and focused on creating additional segmentation and increased pricing accuracy. Utilizing a perpetual flow of information related to the competitive landscape allows these companies to continuously monitor results and make strategic changes as needed. Further, these adjustments are often related to the underwriting and marketing of the program rather than modifying the rates.

Katey Walker is a Consulting Actuary in Pinnacle Actuarial Resources, Inc.'s Chicago office and has over 17 years of experience working in the property/casualty industry. She has extensive loss reserving and pricing experience in personal, commercial and specialty lines of business, including managing the implementation of predictive models. Katey has considerable experience in the development and monitoring of key metrics, attestation and management reporting, data governance and trend analysis. She currently serves on the Casualty Actuarial Society Board of Directors.

Public Records Attributes Boost Predictive Modeling Effectiveness

BY PRINCE KOHLI, ACAS; JIAPEI WANG; AND KELLY RUSH

The search for the next big data source

The access and use of public records across a broad spectrum of services and industries in the United States has dramatically increased over the past 30 years. At the same time, insurance carriers have significantly ramped up investments in their internal analytical resources and capacity. Carriers are now looking to leverage these investments across more decision points in all areas of their business.

This initiative is fueling a greater demand for more data to analyze, in an easily digestible format, in order to answer specific questions about risks and exposures that are not fully explained by current models. Public records attributes have emerged as the next big data resource for the insurance industry and can be leveraged to provide benefits across the insurance continuum.

The lift that public records attributes can offer above and beyond current insurance models may be the difference between a carrier making a profit or losing money.

Public records as a predictive modeling enabler

As data analytics have become more sophisticated, predictive modeling has evolved to enable the analysis of increasingly complex data environments. Depending on the predictive modeling approach, these new methods and environments drive three primary data needs:

1. *Much more data.* Some new predictive modeling methods require substantially more data than previous methods. For example, the data needs for assessing comparable confidence intervals differ greatly for linear regression as compared to non-linear regression.
2. *Data that is "new" or "orthogonal" to existing data.* Utilizing data to predict behavior that is already explained is redundant and a waste of resources. The preferred approach is to use new or different data that explains behavior beyond what existing variables provide and is not dependent on or related to existing variables or attributes.
3. *Data that is prioritized.* The amount of data that can be obtained in the modern connected world includes a massive amount of duplicative or spurious explanation. Understanding of true relationships is an absolute necessity in highly regulated business lines. Legal discoverability heightens the need to justify industry methods within a public forum.

   Public records data meets all of these needs.

LexisNexis public records data offerings have been supporting these industries since 1999 through data, attributes and report products. When it comes to public records, LexisNexis is a data expert. We aggregate 65 billion records from more than 10,000 data sources to provide detailed information on individuals, businesses and other entities. Our robust public record coverage includes bankruptcy filings, felony convictions, real property ownership, professional licenses, suits, liens, evictions and judgments, voter registration, watercraft and aircraft ownership, education records, published business associations and phone records. In total, our public records footprint covers 95% of the U.S. population.

Using attributes in predictive modeling

Attributes add value to data by allowing it to be interpreted in a way that answers specific questions. Each attribute represents a piece of information, or a data point, about some specific "thing." That thing could be a person, a building, a business, a vehicle identification number (VIN), a geography and so on. By using attributes, a statistical modeler can separate out all the singular pieces of information within a data source and reform them to answer a question such as, "How long has it been since this person applied for credit?"

Well-designed attributes free the modeler from time spent analyzing the raw data to put more focus on gaining insights. Attributes also simplify the programming process by vastly reducing the time required for the IT team to program and test underlying data.

Lastly, and very importantly, attributes enable the customization that can help carriers develop unique solutions that will stand out against the competition.

Meeting carrier needs

Building upon our extensive expertise in data and credit attributes and one of the industry's largest collections of public records and other alternative credit data sources, LexisNexis has developed more than 250 public records-based attributes to give carriers a more holistic view of consumer risk.

LexisNexis® InsurView™ Attributes are based on public, institutional and other alternative credit sources not reported to national credit bureaus. According to our internal data analysis, the solution can provide accurate insurance risk as-

sessment on 95% of credit-active consumers and on approximately 75% of consumers with no credit history.

We used these same attributes to develop scores and realized a lift of 20 points when comparing the most-risky and least-risky quintiles in a 14 million record validation dataset, using a control model that included credit, age, gender, territory and property ownership. The overall top-to-bottom ratio for the InsurView™ model for decile groupings is 1.31. These attributes are truly predictive.

These attributes and the score offer carriers a number of advantages, including:

InsurView™ Score Quintiles	Relative Adjusted Loss Cost
Best	0.90
Good	0.95
Average	0.98
Poor	1.01
Worst	1.10

Source: LexisNexis internal data analysis

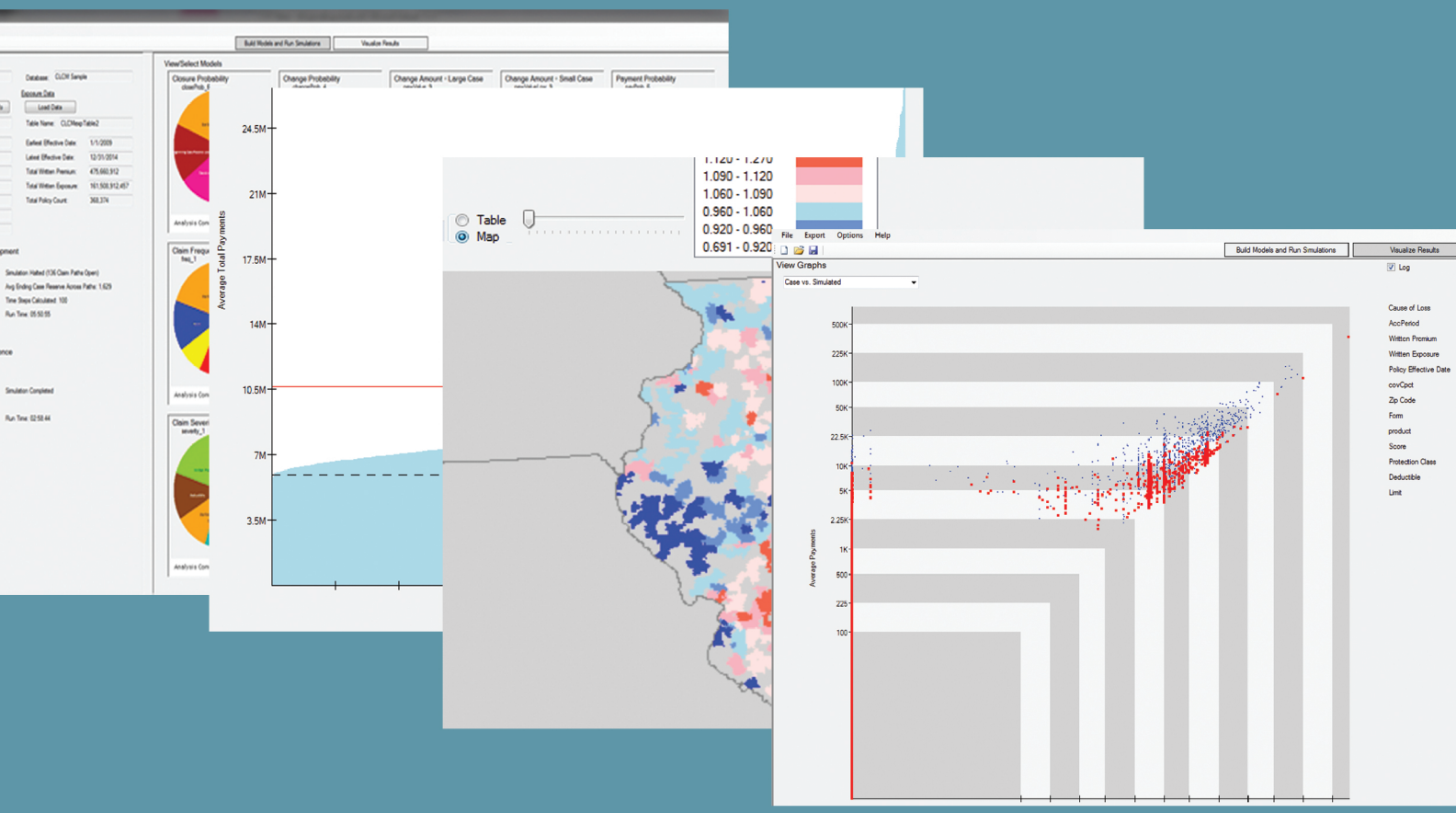
- The ability to expand risk assessment beyond traditional scoring to gain a more complete view of a broader range of risk variables.
- More effective risk segmentation, which can lead to improved volume and profitability.
- A more holistic view of target markets that enables faster and more thorough risk assessment, thereby avoiding adverse risk selection.

Putting it all together

The insurance marketplace is a hyper-competitive environment. The ability to differentiate from the competition is critical. InsurView Attributes supports this differentiation by allowing carriers to easily ingest and use public record information to create effective predictive models that drive improved decision making and provide a competitive edge.

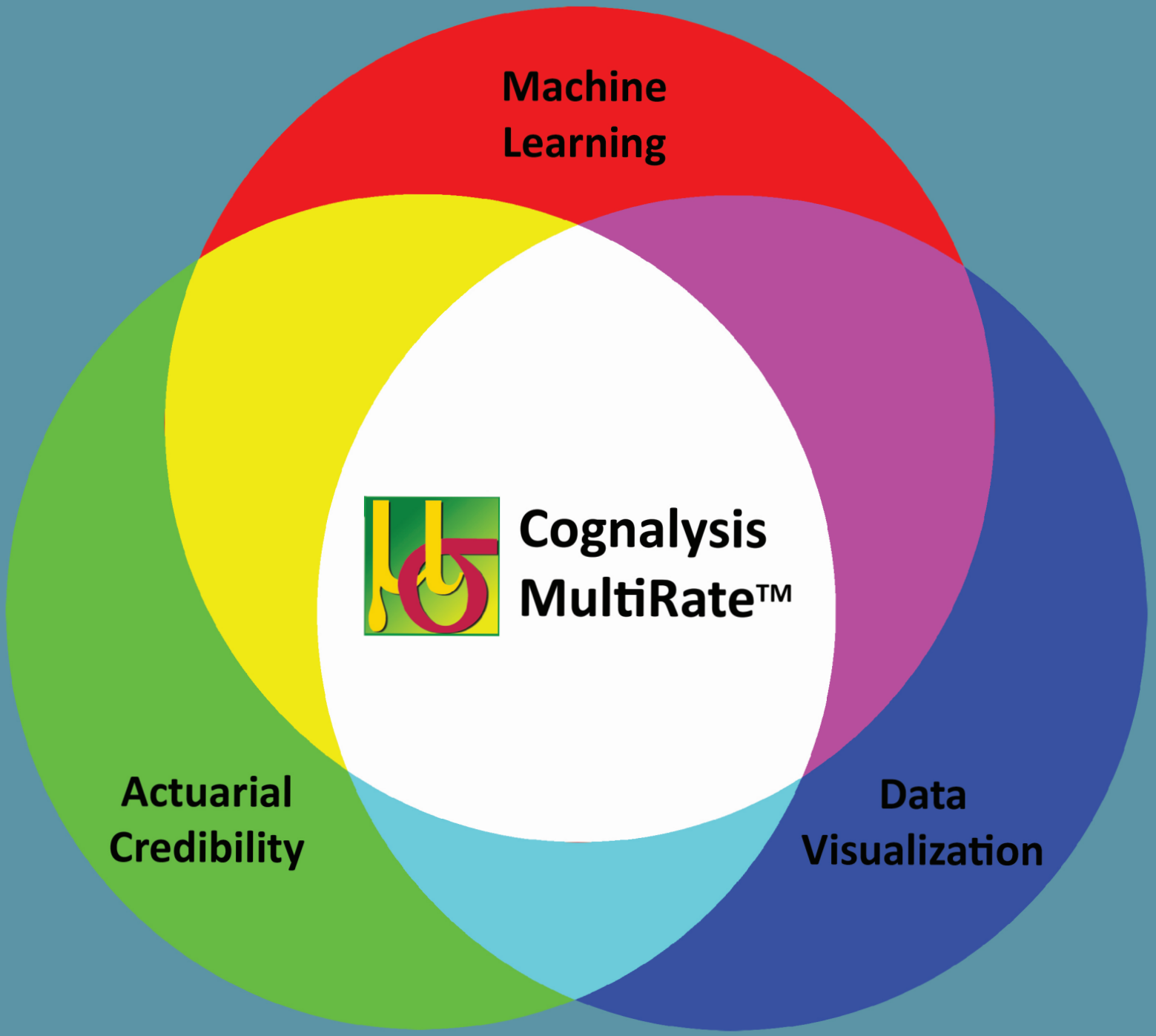
For more information, call **800.458.9197,**
email **insurance.sales@lexisnexisrisk.com,**
or visit **risk.lexisnexis.com/insurance.**

Cognalysis CLCM™



The biggest problem with your pricing model is your reserving model!

For more information contact chris.gross@cgconsult.com



For more information contact chris.gross@cgconsult.com

Break into the promising private flood insurance market

Meet expectations, then exceed them. Broad coverages are available, providing a new approach to underwriting and pricing risks.

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Verisk

Verisk can help you make informed decisions about cyber risk

One of the biggest challenges to underwriting cyber insurance is lack of access to data. ISO provides access to refined class-level pricing related information, enabling you to account for industry-specific differences in risk.

- Frequency model based on more than 1.7 million distinct risks
- Severity model based on $2.5 billion in losses
- Highly granular class-level segmentation—up to 4 digit NAICS codes
- Increased limit factors for high- and low-hazard groups

For more information, email
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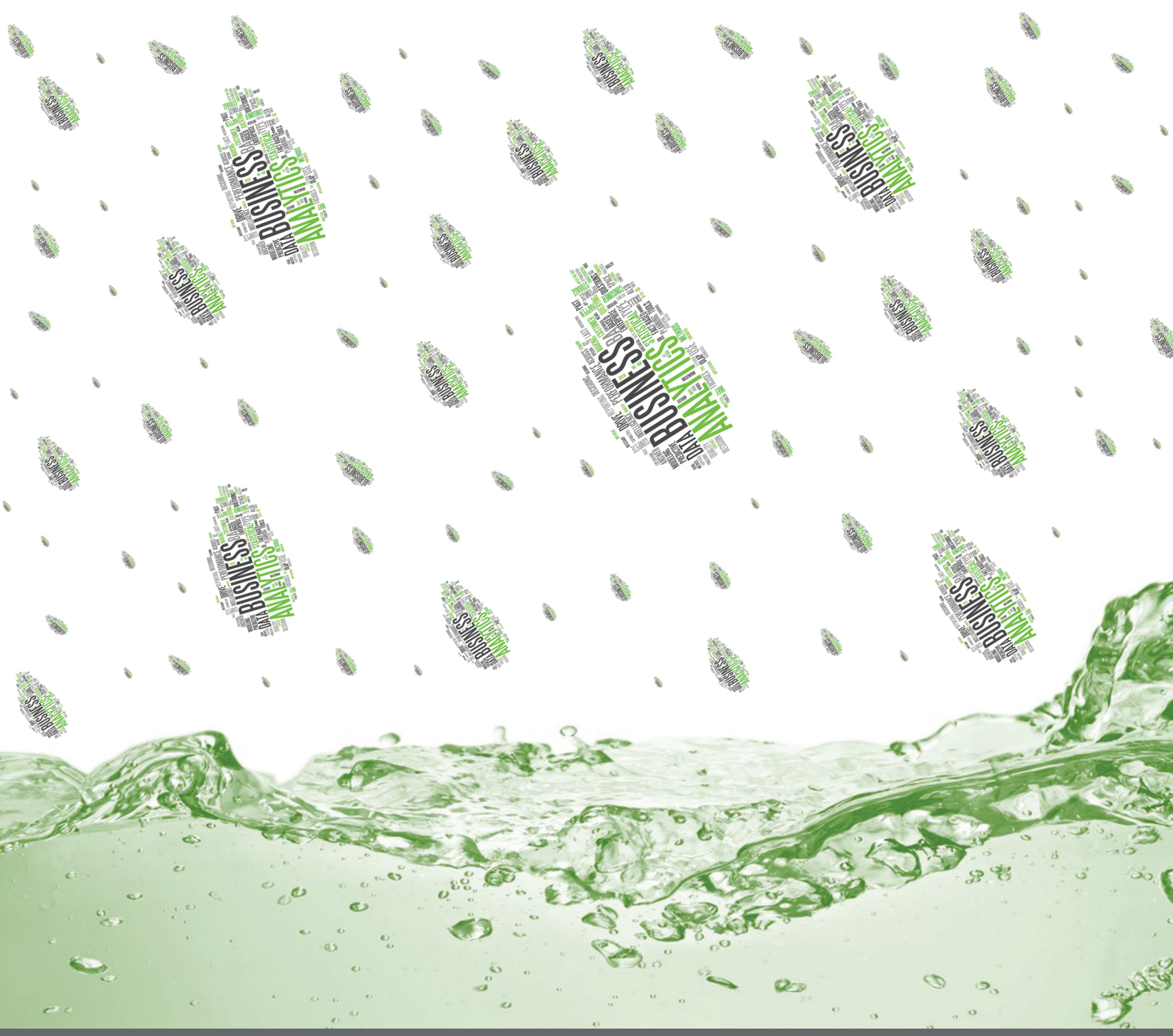

Drowning in Data?

We merge your internal assets with external data to maximize the explanatory power of the models we help you deploy. We provide bespoke descriptive, predictive, and prescriptive analytic solutions, independent model validation, and regulatory review/interface.

MERLINOS actuaries consultants

merlinosinc.com/solutions