



# Data Science - When Big Data Isn't An Option

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These days it is impossible to go long without reading somewhere about the promise of “big data” and predictive analytics. Indeed, we live in an age when our personal data is captured and employed by a range of industries to predict behavior, customize product offerings and improve service. In the insurance sector, when we think of “big data,” we typically think of personal lines, conjuring images of vast quantities of personal information on individual insureds, ranging from where we live and what we buy, to how we drive. What is less well-appreciated is how predictive analytics are transforming the commercial lines industry and how specialty insurers are harnessing these tools to bolster underwriting, pricing and risk evaluation.

Creative use of analytics is increasing transparency and fairness, enabling insurers to identify risks and price for them more fairly. Yet, in the specialty product sectors, big data is typically not an option. Insurers have to be resourceful. Several tactics employed include capitalizing on a larger pool of submission data, creative use of external data and leading-edge modeling techniques.

Commercial lines insurers simply do not write as many policies as mass market personal lines carriers, and often policies are more diverse and customized to individual insureds. However, a company like Ironshore receives submissions and issues quotes on far more business than it ultimately writes. By capturing submission data, Ironshore has created a body of data far larger, and with a longer history, than we currently have on our books. This data source allows us to “punch above our weight” when employing analytic techniques.



## HARNESSING EXTERNAL DATA

Insurers have long known that external sources of data can have strong predictive power. Credit scores, for example, proved to be highly predictive of auto insurance claims and have revolutionized risk evaluation. For commercial lines, insurers are increasingly finding value from unexpected sources of data. These might include data on weather risks not captured by natural catastrophe models, government data on hospital readmission rates, geo-demographic data on voter preferences or text-mining of claim reports and even social media for mention of specific sources of litigation. The possibilities are endless and demand knowledge of the underlying business. The challenge lies less in unearthing new data sources than in creatively forging available data into composite variables suitable for pricing or underwriting (analogous to a credit score, comprising a range of underlying data elements).



## EVOLVING ANALYTICAL METHODOLOGIES

When large quantities of data are available, blunt techniques might suffice to harvest significant predictive insights. For smaller, less homogeneous data “mines”, more refined techniques are needed. Fortunately, the analytics field has enjoyed a proliferation of models and tools of late, and some of these have made their way into the insurance field. Included among these are Ridge and LASSO/ Ridge Regression, Generalized Mixed Modeling & Bayesian Regression techniques, which Ironshore has found especially useful in avoiding the false sense of security from fitting a model more powerful than the data can and should support (i.e., “over-fitting”). Data visualization is an integral part of the process, as it enables not only efficient analysis of the data but also effective dissemination of the conclusions to stakeholders within the organization.

Nonetheless, even the most robust, refined techniques stand to benefit from close collaboration with seasoned claims and underwriting experts. The best results invariably arise out of a combination of quantitative techniques and domain knowledge from the business.

Living in the information age, we have come to expect that our auto and homeowners premiums and product offerings are the result of intensive predictive analytics. As these techniques spread across the industry, though, specialty insurers might just be at the leading edge.

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