

Analytics and the Actuary



SOCIETY OF
ACTUARIES

LIMRA[®]

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Overview

Big data and the advanced analytics applied to it are becoming core components of doing business in financial services. More specifically, analytics are increasingly the driver of both marketing and distribution initiatives — getting the right message to the right people at the right time through the right channel. The role of data scientist — the ones who wrangle all the data and create meaning from it — is currently quite popular. Data wranglers have existed for years — actuaries have been core to our business since the birth of the industry. So what do data scientists have that actuaries don't? Aside from the cachet of being “trendy” right now, maybe there's not as much difference as you think.

LIMRA collaborated with the Marketing and Distribution, and Predictive Analytics and Futurism sections of the Society of Actuaries to understand the role of actuaries in today's marketing and distribution analytics efforts. Actuaries and analytics executives responded to an online survey at the end of 2016. We received 55 responses from 53 companies. Half of the respondents were actuaries. This report also includes some examples of the types of analytics applications being used in marketing and distribution today.

Helping Plan Participants Increase Retirement Preparedness

A retirement plans provider was looking to help clients increase their preparedness for achieving their retirement income objectives. Using a combination of internal variables (such as contribution patterns, interactions with the plan provider, and basic demographics) and externally sourced data, the provider built a propensity to increase retirement contributions model. The model first identified those participants who are most likely to increase their contributions and then, using direct mail and email, applied a marketing stimulus encouraging participants to increase contributions. Although the participants had been preselected as those most likely to increase contributions, the result was the marketing stimulus increased the likelihood of the actual increase.

Analytics in Marketing and Distribution

The applications of analytics in marketing and distribution are varied. Four in five companies have initiatives that focus on the consumer, and two in five have ones that touch on implementations with distribution.

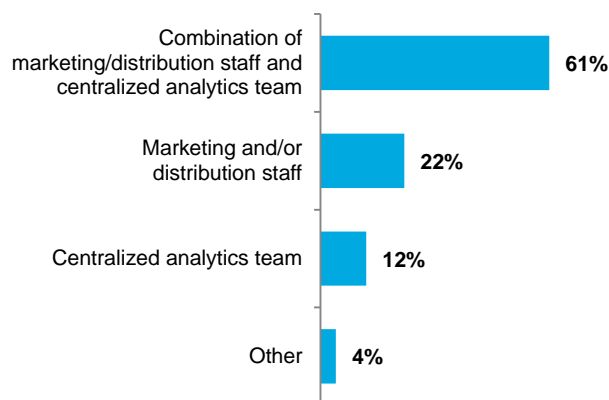
- **Propensity models:** Many companies have built models that predict and try to influence consumer or customer behaviors. These range from the propensity to apply, buy, respond, persist, submit a claim, and convert (from term to permanent insurance).
- **Consumer and customer analytics:** There are literally thousands of consumer-level attributes available for purchase. Companies are realizing there are many ways to capitalize on this new source of data. Examples of their use include profiling consumers, building segmentation models, lapse and mortality models, customer value, and others.
- **Distribution and sales analytics:** There are numerous ways in which data is being used to improve distribution effectiveness. This often includes the realization that financial professionals (FPs) are consumers too, and that the very data sources available for consumers and customers can be appended to them, as well. Distribution analytics can be split into two categories: those *for* distribution, and those *about* distribution. The former category includes lead generation and cross-sell models that may be made available to distribution. In the latter category are FP segmentation, recruiting, productivity, and retention models.

Appendix B provides a complete list of applications developed among survey participants.

ANALYTICS SUPPORT FOR MARKETING AND DISTRIBUTION

While marketing and distribution organizations use analytics in a variety of ways, most receive support from corporate analytics areas to complete these initiatives (Figure 1).

Figure 1 — Resources Supporting Analytics in Marketing and Distribution



Base: All respondents.

Improving Term Conversions

A major life insurance carrier built a model to identify the best prospects for term conversion. They sent lists to eligible financial professionals that included a score indicating likelihood to convert. The result was a 5 percent lift in conversions. Communicating these lists is a manual process so the company is looking to get management support to fund operationalizing the model and build it into field systems.

The Role of Actuaries in Analytics

The current role of actuaries in support of analytics — within marketing and distribution, at least — is generally limited (Table 1). For 6 in 10 companies, actuaries have little to no involvement. Companies may use data from actuarial teams, and may use them for help in bringing analytics models into the “real world” by reviewing and interpreting the results within an actuarial context.

Table 1 — Role of Actuaries in Marketing and Distribution Analytics Initiatives

Actuaries play a lead/significant role	13%
Embedded as part of the team	4%
Minor role/for specific needs	21%
Little to no involvement	62%

Actuaries help bring a balance between analytics results and actual application in product design and distribution. They see the different parties involved in innovative projects.

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A few companies, however, integrate actuaries into their analytics teams.

Our analytics team is staffed by a combination of data scientists and actuaries. The data scientists build the predictive models and the actuaries apply those models in setting mortality.

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Is there a place for actuaries in supporting marketing and distribution analytics? What can the skills and experience of an actuary contribute to the success of these analytics efforts?

Lead Generation with a Risk Component

A provider is using a cross-sell model to provide strong life insurance leads to agents. The original model evaluated current customers for their propensity to buy life insurance. Agents were unhappy with the results when the leads were actually substandard or denied coverage, potentially jeopardizing the agent’s existing relationship with their client. The new model takes into account (mortality) risk to provide leads that not only have a high propensity to buy, but are also likely to be scored as standard or preferred. In addition to providing better leads to agents, the agents have noted actual purchase has increased with the change.

The Actuary and the Data Scientist

Actuaries have the business knowledge and the analytical foundation to be good data scientists; data scientists have analytical skills, but usually no business insights to make sound decisions. Therefore, it is important that actuaries and data scientists work together. In addition, actuaries should brush up on analytical skills to become data scientist themselves.

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Many of the differences between the roles and skills of actuaries and data scientists can be grouped into a few broad areas (Table 2).

Table 2 — Perceived Differences between Actuaries and Data Scientists

	Actuaries	Data Scientists	
Knowledge	Business	Statistics	<i>Subject matter knowledge on the business side [actuaries] vs. subject matter knowledge on the pure quant, analytical/statistical techniques [data scientist].</i>
			ACTUARY
Approach	Traditional	Exploratory	<i>In general, actuaries use established methods. Data scientists use more methods depending on what the data is telling them.</i>
			NON-ACTUARY
Focus	Groups	Individuals	<i>Actuaries compile historical experience studies on groups/cohorts of policies... Data scientists will examine individual policy records... to predict the likelihood that an individual policy will lapse, etc.</i>
			NON-ACTUARY
	Risk	Opportunity	<i>Actuaries focus on risk while data scientists focus on opportunity. [A] partnership would be healthy if structured correctly.</i>
			NON-ACTUARY

Both actuaries and non-actuaries agree that actuaries generally have more business knowledge than data scientists, who tend to have stronger statistical knowledge than actuaries. Actuaries also see themselves as having a stronger focus on risk than their data counterparts. Non-actuaries also see differences in general approaches to work. They perceive the actuarial role as using more traditional methods to look at broad trends, whereas the data scientist takes a more exploratory approach focusing on individual cases.

The actuarial profession is better defined and has more defined standards [than the data scientist's]. An actuary can work in a data scientist role, but a data scientist typically cannot work as an actuary. An actuary is required to have more in-depth business knowledge of insurance than a data scientist has.

NON-ACTUARY

ACTUARY STRENGTHS

Where actuaries excel is in understanding the business and keeping focus on business results.

A good actuary can serve as a partner to analyze the impact of the changes based on data, and help keep focus on that which matters. Otherwise, sales and marketing folks sometimes have scope creep and want to do things that really have no financial advantage.

NON-ACTUARY

Understanding the business includes in-depth knowledge of products and how an insurance company works.

Strong understanding of product which lends itself to better understanding of profitability based on client behavior.

NON-ACTUARY

ROOM TO GROW

Actuaries serve a critical role for companies in the industry. To expand their value to analytics initiatives, respondents recommended a few skills.

- **Statistics/techniques/modeling.** Actuaries use more traditional, established methods in their work, and typically aren't trained specifically for data modeling. Exposure to more contemporary methods would allow their value to expand into new areas.
- **Business processes.** While understanding of the industry and the economics behind it is strong among actuaries, they could benefit from a better understanding of marketing and the sales process if they are to help support those functions with analytics.
- **Flexibility.** Actuaries and non-actuaries alike believe actuaries could benefit from more out-of-the-box thinking and innovative approaches.

Appendix A — Participating Companies

Aetna	GPM Life	Pacific Life
Aon Benfield	Hannover Re	Principal
Athene	Industrial Alliance	Prudential
AXA US	Investors Heritage Life Insurance	Reliance Standard Life
Baltimore Life Insurance	Jackson National Life	RGA Canada
Blue Cross Blue Shield MA	John Hancock	RiverSource Life
Cigna	Kansas City Life	SBLI
Cincinnati Life	La Capitale Financial Group	Security Mutual Life Insurance Company of New York
Colonial Life & Accident Insurance Company	Liberty Mutual	State Farm
Columbus Life Insurance Company	Lincoln Financial Group	Swiss Re
Combined Insurance Company of America	Modern Woodmen of America	Texas Life Insurance Company
Dearborn National	Munich Re	The Co-operators
Deloitte Consulting	National Life Group	The Standard Insurance
Farm Bureau Insurance of Michigan	Nationwide	Torchmark Corporation
GE/ERAC	Northwestern Mutual	Transamerica
Gen Re	OneAmerica	Western & Southern Financial Group
	Optimum Re Insurance	

Appendix B — Analytics Applications in Marketing and Distribution

Propensity Models

- Propensity to buy (5)

- Customer propensity to buy (by product)

- Predictive behavior modeling for propensity to purchase using specific client attributes related to the purchase of specific types of products

- Likely to apply models

- Likely to respond models

- Next best product to sell in a household

- Predicting which policyholders are at greater risk for lapse

- Orphan client propensity to re-engage model

- Term conversion propensity model

- Predicting which policyholders are at greater risk for excessive claims

Customer Analytics

- Consumer analytics: behavior based on product detention, behavior based on other particularities, personalized e-mailing or mailing

- Consumer profile marketing tool

- Market and customer segmentation models

- Consumer segmentation (4)

- Customers at risk of lapsing

- Lapse risk models

- Experience studies/assumption development

- Probable persistency of future sales in a zipcode

- Retention models (3)

- Reviewing profiles of our life insurance and annuity buyers

- Using external sources to better understand our clients (persona) and make marketing initiatives based on that assessment

- Value of customer/household

Distribution Analytics	Monitoring profitability by distribution channel
	Producer segmentation
	Using BI to better understand the "persona" of our distribution network
	We've developed a very rudimentary database (in Access) that we use to do basic segmentation on our producers
	Producer segmentation and focused marketing messaging based on practice attributes, client mix and agent behavior
	Predicting the risk of churn of our agent base
	Producer success analysis
	Productivity
	Recruiting and development
	Retention models
	Veteran agent retention model
	Sales quality scoring by sales team hierarchy
	Scoring resumes from sales recruits
	Successful recruit selection model
	Use Call Centers to recruit agents
	Talent forecasting
Targeted marketing	
Sales	Acquisition Targeting
	Identify good life insurance leads for P&C distribution that they may want to devote resources to market to
	Leads for Final Expense
	Correlations between the demographics of sales agent and potential client — who should sell to whom
	Online sales platform combined with a buyer's behavior analytic framework
	CRM
	Cross sell models (6)
	Predictive product cross-sell to existing customers
	Marketing automation platform
	Predictive targeted marketing retirement plan premium increase
	Sales cycle
	Web analytics: tracking codes, a/b testing, building of audiences based on interest, particularities
	Web and campaign analytics

