



Product Matters!

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Experience Studies—Understanding the past while planning for the future

by Matthew Dunscombe and Alex Zaidlin

Introduction

The experience study process serves as a primary foundation of actuarial work. Some of the first known actuarial work used experience study information to solve problems. The use of experience studies spans several centuries: from 17th century astronomer Edmund Halley using data on births and deaths for the town of Breslau for an analysis relating to annuities, all the way to 21st century actuaries who are now preparing to use assumptions derived from experience study output in principles-based reserve calculations.

Experience studies can help actuaries understand key drivers behind historical results. More importantly, conclusions drawn from experience analysis can play a starring role in the development of assumptions for pricing, valuation, and financial analyses. Some of the recent and expected changes in the capital requirements and financial reporting standards require companies to better understand their experience in order to value their business. Because of the need to derive company-specific assumptions, experience studies will continue to increase in importance to insurers in the United States and around the world.

By way of definition: an experience study is an exercise in analyzing certain events that occurred within a predetermined time period and that pertain to a given population. This population is often a block of insurance business. The study typically contrasts the occurred events (actual figures) with previously established expectations (the expected figures). The ratio of the actual figures to the expected figures yields a result popularly known as the actual-to-expected ratio (or A/E ratio). The aforementioned events, often referred to as trigger events, typically change the status of the insurance policy and often result in a financial loss or gain for

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Ken Birk, Donna Megregian, and Tim Rozar

2014 Life & Annuity Symposium Planning:

Jim Filmore, Kurt Guske, Joe Kordovi,
Vera Ljucovic, Donna Megregian, and Tim Rozar

Newsletter Editors

Simpa Baiye, Co-Editor
e: SBaiye@SunAmerica.com

Jim Filmore, Co-Editor
e: JFilmore@MunichRe.com

Kurt Guske, Co-Editor
e: Kurt.Guske@AIG.com

Joe Kordovi, Co-Editor
e: Joe.Kordovi@PacificLife.com

SOA Staff

Kathryn Baker, Staff Editor
e: kbaker@soa.org

Jim Miles, Staff Partner
e: jmiles@soa.org

Ronora Stryker, Staff Research Actuary
e: rstryker@soa.org

Christy Cook, Lead Section Specialist
e: ccook@soa.org

Julissa Sweeney, Graphic Designer
e: jsweeney@soa.org



Articles Needed for the Next Issue of *Product Matters!*

While all articles are welcome, we would especially like to receive articles on topics that would be of interest to Product Development Section members based outside of the United States.

Deadline for article submission for next edition of newsletter: Please email your articles to Simpa Baiye, Jim Filmore, Kurt Guske, or Joe Kordovi by April 2, 2014.

Chairperson's Corner

Leading with Content

By Tim Rozar

Walt Disney is deservedly revered as a creative visionary, but he also had a sharp mind for business strategy. In 1957 he drew a picture, as animators are apt to do, to demonstrate how his company created value. He drew boxes around the names of each revenue-generating business unit: Television, Music, Merchandising, Licensing, Publications, and Disneyland. He connected these boxes with arrows illustrating the synergy of each business driving value to the others. But Walt drew one box, much larger and flashier than the others, at the center of the diagram: "Creative Talent of Studio/ Theatrical Films." He understood that creative output was the heart of the company, pumping sustainable value into a network of interconnected businesses. Over 50 years later, Disney's business model still relies on creating lovable new characters and telling fanciful, engaging stories. The recent purchases of character rights and creative talent from Jim Henson, Pixar, Marvel and Lucasfilm further underscore a simple and enduring truth: content creates value.

Nowadays it seems that everywhere you look, companies are jumping into the original content arena. Netflix has created Emmy-award winning original programming. Microsoft is financing new programs for its Xbox Live platform. Hulu, AOL, Amazon and scores of others are also getting in on the action. James Murdoch, deputy COO of 21st Century Fox, makes the case very directly: "Our starting point is content because our business is about selling the consumer what they want.

To my fellow Product Development Section members who may be growing concerned about my priorities as section council chair, don't worry. I'm not planning on spending your dues to develop a new sitcom about actuaries (although you have to admit that would be kind of awesome). I provide this background only to drive home two points:

- 1) The creative talent of Product Development actuaries is the heart of value creation in the life and annuity industry. Other disciplines may count the beans, sell the beans, or estimate the risk of a 1 in 2000 year drought on the production of beans—but PD actuaries make the beans. As such, we must remain the champions and driving force of innovation to deliver consumers the products they want.
- 2) Original content creation was, is and will always be at the heart of PD Section activities. Our mission statement says that we deliver membership value through "...meetings, seminars, research studies and the generation and dissemination of literature..." In other words, original content.

This will be an exciting year for the PD Section. We have a long and growing list of original research and professional education initiatives planned which will be delivered through an evolving array of platforms including standalone seminars, webcasts, podcasts, social media and—of course—our newsletter, *Product Matters!* ■



Tim Rozar, FSA, CERA, MAAA, is senior vice president, global R&D at RGA in Chesterfield, Mo.



Matthew Dunscombe, FSA, MAAA, is assistant vice president and managing actuary at Employers Reassurance Corporation. He can be reached at Matt.Dunscombe@ge.com.



Alexander Zaidlin, FSA, MAAA, is a manager at Ernst & Young LLP in New York, N.Y. He can be reached at alex.zaidlin@ey.com.

the insurer. Examples include deaths, lapses, incidence of disability, termination of long-term care claims, and many others.

The experience study process

Virtually any event affecting an insurance policy can be the subject of an experience study. This paper focuses on describing mortality experience study methodology and related considerations. A traditional mortality experience study process can be broken down into seven key steps:

1. Gather and prepare source data
2. Perform exposure calculations
3. Calculate actual figures
4. Calculate expected figures
5. Aggregate study output
6. Analyze study output
7. Validate results and produce report

Gather and prepare source data

The first step in the process involves acquiring, understanding, and preparing the source data. This initial step can often be the most time-consuming and labor-intensive step. While scrubbing the data can be laborious, the investment is worth the time and effort and will ultimately result in more reliable study output. At this step, teaming up with the Administration, Claims, and IT departments can bring tremendous benefit to the actuaries conducting the study. Individuals from these areas could identify sources of relevant information, shed light on irregular patterns, and help backfill missing values in the data.

There are two common data structures that can be used to complete an experience study: a policy snapshot dataset and a transactional records dataset. A policy snapshot dataset contains one record for each policy, whether terminated or active, and includes policy specifics and poli-

cyholder characteristics. A transactional records dataset contains one record for each of the transactions administered for the studied policies. Example of transactions include: deaths, renewals, issues, lapses, face amount changes, reinstatements, and conversions.

To incorporate claims data into the study when using the policy snapshot dataset, it is necessary to link claim records (obtained from a separate extract dataset) to the policy records. A unique common field in the policy records and claim records, such as policy ID number, can be used as a key field to link the two files.

Typically, the actuary makes a decision on which data structure(s) to use for the study. Some considerations for deciding on the data structure(s) for a particular study may include: the ease of acquiring each dataset, the size of the source dataset, the level of flexibility needed with regards to changing the study period, the ease in linking policy and claim records, and the degree of precision required for critical study fields. Obtaining both datasets can be beneficial for the purposes of data reconciliation and backfilling missing values.

Once the data structure is selected, the actuary decides which data fields to include in the study. In selecting the desired data fields to be used, the actuary will strive for a delicate balance between granularity and efficiency of the study. Additional data fields allow for more granular analysis of the data, but may create data clutter and slow down the study process. Product and policyholder specifics are crucial to incorporate into the study in order to facilitate robust assumption development. Including these items will allow the actuary to drill into the various potential drivers of experience differences. For instance, the lapse rate structure for level term life policies likely differs from that for universal life policies; separating these products would add value to the experience study. An industry table used by the company can serve as a good starting point for the study data field inventory; however, the final set of data fields in the study should vary with company-specific modeling considerations and particular features of the business.

“ There are two common data structures that can be used to complete an experience study: a policy snapshot dataset and a transactional records dataset. ”

Perform exposure calculations

After selecting the data structure and data fields, acquiring and preparing the data for the use in the experience study, exposure figures (commonly referred to as “exposures”) can be calculated for the studied policies. While a detailed explanation of the nuances involved in the exposure calculations is beyond the scope of this article, a few points will be made.

Exposure figures provide a measure of susceptibility of the studied policies to the trigger event, in our case, mortality. Dividing claims by exposure figures yields a rate of claims. This measure can be presented using count of claims divided by exposure years and summed face amount of claims divided by summed exposure amount – referred to as “by count” and “by amount” rates of claims. Measures by amount are used chiefly by many actuaries, since they quantify the financial impact of the trigger event on the company. Measures by count provide an additional perspective, since claim size is omitted and possible distortions from large claims are removed.

The mortality experience study can be conducted either by policy year or calendar year. Policy year studies allow for simpler policy duration calculations, since each study year would correspond to a specific policy duration. On the other hand, calendar year studies require some manipulation to align policy durations with calendar years. A common practice for a calendar year study is to include two exposure segments for each policy, within each calendar year in the study horizon. The first exposure segment would be for the time interval prior to the policy anniversary, while the second exposure segment would be for the time interval after the policy anniversary. Relevant dates for each policy are central to the exposure calculations. Depending on the available source data, the policy duration may need to be calculated by the actuary or may be available directly as a field in the source data.

Here is an example of applying exposure calculations to a policy record. Table 1 shows the policy record.

Table 1: Policy Data

Policy Number	Issue Date	Face Amount
11111	04/01/06	200,000

For a calendar year study covering a study period from 2010-2012, the policy record generates six exposure segments, as illustrated in Table 2 (on page 6).

Calculate actual figures

Claims data is used to calculate actual claim figures (commonly referred to as “actuals”) for the mortality experience study. Actuaries often struggle with understanding and verifying data elements in the claim files, as these data elements are frequently less systematic and consistent than data in the policy administration system. Maintaining open dialogue between actuaries conducting the study and the claims staff is critical, in order to ensure proper interpretation and use of the claims data.

Claim records will need to be joined to the corresponding policy records when using the policy snapshot dataset. Each claim record should have a corresponding policy record in the policy snapshot—this ensures that only claims relevant to the studied block are selected. Depending on the data structure within the company, claims data may contain additional information that could be of interest to the actuary conducting the study. For instance, cause or location of death could be used when grouping the study results and may provide a different perspective on the experience.

Calculate expected figures

The next major step involves importing mortality rates and other assumptions from external sources to the experience study engine. These rates and assumptions are applied to the exposure figures calculated earlier in the process. Expected figures are then calculated using various expected bases. Expected bases may include industry tables, pricing assumptions, modeling or valuation assumptions, and/or other bases relevant to the specific study. The expected claims under the various bases can be compared to the actual claims observed over the study period.

Table 3 (on page 6) displays a sample experience study record, with calculated exposure of 0.50 years.

For this example, we will use an industry table, the SOA 1975-80 Table, as the basis for expected claims. This

CONTINUED ON PAGE 6

Table 2: Study Records after Applying Exposure Calculations

Policy Number	Study Year	Face Amount	Next Anniversary	Exposure Start Date	Exposure End Date	Policy Year	Exposure Count	Exposure Amount
11111	2010	200,000	04/01/10	01/01/10	03/31/10	4	0.25	50,000
11111	2010	200,000	04/01/11	04/01/10	12/31/10	5	0.75	150,000
11111	2011	200,000	04/01/11	01/01/11	03/31/11	5	0.25	50,000
11111	2011	200,000	04/01/12	04/01/11	12/31/11	6	0.75	150,000
11111	2012	200,000	04/01/12	01/01/12	03/31/12	6	0.25	50,000
11111	2012	200,000	04/01/13	04/01/12	12/31/12	7	0.75	150,000

Table 3: Sample Policy Record after Exposure Calculation

Policy Number	Gender	Issue Age	Age Basis	Policy Year	Exposure Count	Exposure Amount
12345	M	40	ANB	8	0.50	100,000

example policy was issued to a 40-year-old male on the age nearest birthday basis and is currently in policy duration 8. For this record, the tabular mortality rate from the above industry table is 0.00279.

The tabular mortality rate can be applied to the exposure count and exposure amount to derive the tabular count and tabular amount. For the policy in the example, this is as follows.

$$\begin{aligned} \text{Tabular count} &= \text{exposure count} \times \text{tabular rate} = \\ &= 0.50 \times 0.00279 = 0.001395. \\ \text{Tabular amount} &= \text{exposure amount} \times \text{tabular rate} = \\ &= 100,000 \times 0.00279 = 279. \end{aligned}$$

Aggregate study output

At this step, the actual and expected figures are aggregated in accordance with the study requirements. The level of aggregation will vary based on the goal of the study. In setting or assessing pricing assumptions, for instance, the groupings may be more refined than when setting or assessing valuation assumptions.

To clearly illustrate the aggregation process, the only grouping criterion used in the example below is gender. There are six records in Table 4. Each record belongs to a unique policy. In this example, the tabular amount column contains the expected figures.

After grouping by gender, the table is condensed from six records to two records, as shown in Table 5.

The compressed table is smaller and retains only the fields defined in the grouping criteria. The amount fields (actual amount, exposure amount, and tabular amount) in the grouped table are summed within each grouped record. Note that the total of the amount fields should be the same for the seriatim record set as it is for the grouped record set.

Considerations central in setting the aggregation criteria relate to the credibility of the output groupings (also referred to as cells.) These considerations can play a major role in determining the reliability and utility of experience study output. There are several methods in current practice that can be used to calculate credibility of study output. It is up to the actuary conducting the study to decide on a preferred method. One popular approach blends partially credible results with a chosen benchmark table (e.g., adjusted industry tables or currently used assumption tables). For some companies or blocks of business, it may be reasonable to forgo a detailed breakdown by risk factors in favor of obtaining credible business segment cells. It is common practice to group pseudo-continuous variables, such as age or policy duration, to generate more credible results for low-credibility business segments. A relatively new methodology to improve the credibility of study output involves the use of generalized linear models. By relying on Bayesian credibility theory, these models arrive at a posterior distribution of study output using some prior function and partially credible information derived from the study.

Table 4: Seriatim Records

Policy Number	Issue Date	Gender	Issue Age	Actual Amount	Exposure Amount	Tabular Amount
11112	04/01/06	F	48	0	200,000	564
22222	07/01/04	M	34	0	50,000	79
33333	03/01/08	M	42	100,000	100,000	180
44444	08/01/97	M	41	0	75,000	534
55555	12/31/99	M	45	0	250,000	1,268
66666	06/01/10	F	37	0	125,000	73
Total				100,000	800,000	2,698

Table 5: Grouped Records

Gender	Actual Amount	Exposure Amount	Tabular Amount
F	0	325,000	637
M	100,000	475,000	2,061
Total	100,000	800,000	2,698

Analyze study output

The experience study output, often containing unexpected or even surprising patterns, represents the recent history of the block of business. There are many considerations that arise when it is time to review the resulting actual-to-expected experience ratios. While not exhaustive, the list below includes some key issues to consider.

1. Trends

- Did the experience improve or worsen over time?
- Were the changes in experience over time aligned with changes in underwriting or other risk management practices?
- Were the changes in experience over time aligned with any economic or regulatory changes?
- Were there any sharp spikes or troughs in certain years? If so, why did they occur?
- Were there certain blocks of business that exhibited different than expected trends? Why?
- Were experience changes driven by a shift in the mix of covered products? Did changes in the demographic mix have any impact on the experience?
- Did the experience generally move in one direction over the years, or did it fluctuate in a seemingly random manner?

2. Outliers

- Were there any business cells that showed significantly different results from the rest of the business? Were extreme values caused by large claims or data issues?
 - Did external factors come into play in the experience of a block of business? Could these factors affect the business in the future?
 - What can be done in the future to mitigate the impact of outliers on experience?
- #### 3. Relationships
- What were the key risk factors driving the experience?
 - How did various risk factors interact with each other? Did result analysis show any correlation between factors?
 - How did mortality experience by underwriting class fare? Was mortality for preferred risk classes lower than mortality for residual risk classes? If so, by how much?

Since analyzing study output is a key step in the experience study process, it is good practice to have an independent peer review process in place. The peer reviewer would provide an additional level of assurance that the study output is interpreted appropriately and could offer additional insight from the reviewer's personal experience.

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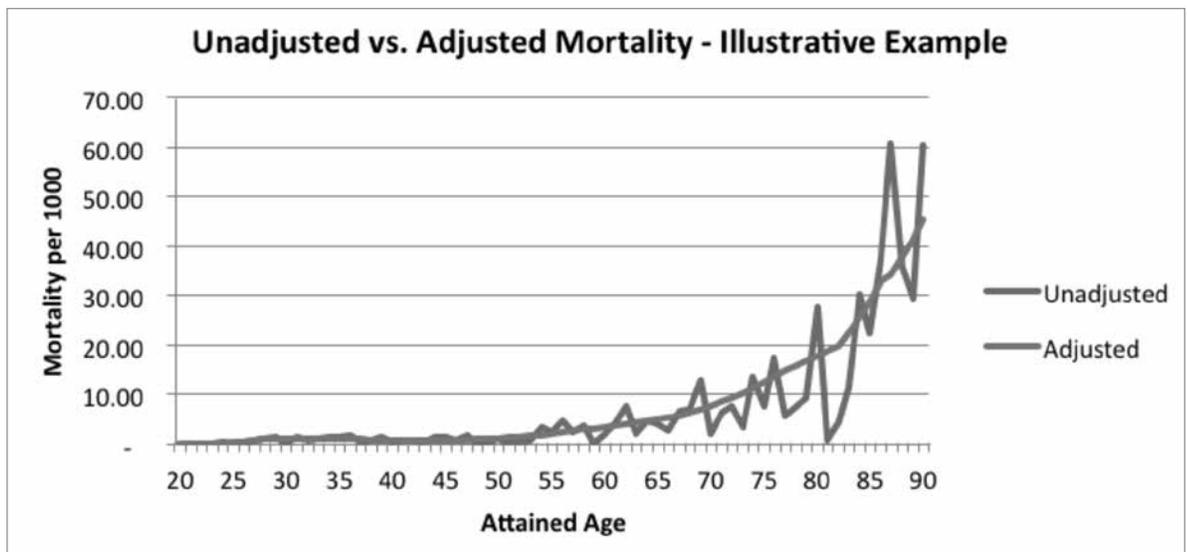
Once the output is reviewed and the actuary is comfortable with the trends, outliers, and relationships observed in the study, the actuary may consider making manual adjustments to the study output. Manual adjustments are often critical to make study results useable. Result volatility is inevitable, especially around low credibility data points. Consequently, smoothing results based on high credibility data points is often required. To ensure that results make actuarial sense (e.g., rising mortality rates with age), the actuary may interpolate between two points on a volatile interval. Additional adjustments can be made to include or exclude a block of business, or to reflect the impact of an external factor or another event that has affected the experience in the past or has the potential of affecting it in the future. Communication is important at this step, as business-unit actuaries, the corporate function, underwriting and claims departments all need to agree on any manual adjustments to be made to the study output to create the adjusted study results. Actuarial experience and judgment carry much weight at this stage. Adjustments for external factors, incurred but not reported (IBNR)/in course of settlement (ICOS), smoothing, and trending are only a subset of the potential modifications that can be made to study output. The process of making manual study adjustments is an iterative process, as experience movement is analyzed as each individual adjustment is made. Attribution analysis should be conducted and the impact of each adjustment should be documented in the final report, along with the reason for the adjustment.

The chart below presents an illustrative example of an unadjusted study output curve and the same curve following a number of manual adjustments. While illustrative, this chart showcases the need to apply manual adjustments, such as smoothing, to the study output.

Validate results and produce report

Before publishing experience study conclusions and recommendations, it is important to validate the study results. An appropriately validated study lends reliability and credibility to the study results. Some of the most common validation techniques include the methods below:

1. Reconciling study inputs and outputs to control totals / external sources—The actuary should obtain policy exhibits or inforce reports to compare to exposure amounts. Similarly, claims reports can be obtained for comparison to actual claims in the study output. The comparison should be done by count and by amount. This validation is meant to catch incorrect exposure calculations and data defects.
2. Sampling individual records and reproducing study engine output from first principles—Calculations can be set up in a spreadsheet and compared to records in the experience study engine. This validation tests that the experience study engine performs calculations as expected.
3. Analytical review of mortality rates—There are many possibilities to validate the study results through study variable relationships. The actuary may validate that



smoker mortality rates are higher than non-smoker mortality rates, all else kept constant. The actuary could also check whether male rates are higher than female rates and that the rates increase with age. If the expected relationships do not hold, it may be a sign that further investigation is warranted.

Once the experience study results are validated, a findings and recommendations report should be produced. The report should document the study methodology, process, assumptions used, manual adjustments, and other components of the study in detail. Proposed mortality assumptions should be included in the documentation, along with any additional considerations or caveats for using these assumptions in the future.

Additional considerations

While this article describes the overall experience study process, we would likely need to write a book to provide an exhaustive and complete guide for conducting an end-to-end experience study. Nevertheless, additional considerations that we thought were important are included in the sections below. In addition to the items outlined below, applicable Actuarial Standards of Practice (ASOPs) should be used as guiding principles for experience study projects.

IBNR and ICOS

A company's incurred but not reported (IBNR) run-off period will vary with claims practices, administrative capabilities, reporting frequency, and other factors. In order to determine the additional anticipated experience resulting from claims that have not yet been reported, an IBNR study should be conducted. The IBNR study is a study of time lags between incurred claim dates and reported claim dates. Following this study, a company should be able to estimate additional claims (count and dollar amount) that occurred but were not reported during the experience study period. The resulting IBNR estimates can be added to the actual claims to adjust for additional claims to be reported for the relevant study period following the study cut-off date. Recent experience should be considered more reliable, as IBNR claims typically show a decreasing trend over time. As administrative and reporting processes within the company improve, the IBNR run-off period will likely shorten. However, in

some extreme scenarios, for instance disability income business with an elimination period of 730 days, the IBNR run-off period can extend to several years. IBNR could also be seasonal or cyclical (for instance, claim reporting slows down in December and January as claim administrators are on holiday breaks).

If the typical reporting lag is not particularly lengthy, there is another approach to treat IBNR. The actuary can wait to start the study until the likely IBNR claims are at a negligible level. For example, assume that the actuary was completing a study on the experience for calendar year 2012. If the actuary commenced the study work on Jan. 15, 2013, there would probably be material IBNR claims for policies with dates of death in 2012. If the actuary waited until June 30, 2013 to begin work on the study, the IBNR for policies with dates of death in 2012 would probably be inconsiderable, although the actuary may still choose to make a small IBNR adjustment within the study. The approach of waiting a length of time before commencing the study should be used with caution if there is a sizeable risk of material claims yet to be reported when the study is finally commenced.

In course of settlement (ICOS) claims are claims that are open at the time of the study, but are not yet paid. Those claims could include claims in review, claims in litigation, claims that were put on hold, and other similar circumstances. In certain instances, these claims may be administered outside of the system and would therefore need to be retrieved from the claims department's working files. Since ICOS experience is typically less significant than IBNR, an extensive study may not be necessary for these claims. A simplified solution could entail derivation of a flat multiple from the company's recent experience. This multiple would be applied to open claims to derive the portion of open claims likely to be paid. The actuary should be careful to not double-count open claims as both IBNR and ICOS experience.

It is good practice to summarize study results with and without late reported experience. This would highlight certain risks of late reported experience, improve the decision-making process, and add value to the study as a whole.

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External factors

External factors are typically understood to be factors that drive change in the company's experience, but are not related to the organic operations of the company's business. These factors include changes in the competitive environment, impacts of new state and federal regulations, the purchase and sale of blocks of business, and market movements. An increase in unemployment, for instance, may have an effect on the company's disability insurance block, while a natural disaster may affect the experience of a life insurance portfolio.

Since there is no defined methodology around contemplating external factors, the actuary has significant room for judgment when it comes to identifying these factors and measuring their impact on the experience. Additional uncertainty arises around the impact of these factors on a company's business in future years. Some actuaries see external factor analysis as redundant when the study period spans far enough back to account for experience fluctuation due to various external factors. For example, a significantly long study period may capture the full iteration of an economic cycle. Other actuaries are of the opinion that shocks resulting from external factors should be applied on top of baseline best estimate assumptions and therefore need to be developed independently. It is often difficult to isolate the external factor impact on experience, as several factors affect experience in tandem. Recursive impact testing would need to be conducted by adjusting each of the factors, one at a time, and analyzing the impact of the change on the experience. Generalized linear models and other advanced statistical techniques may be utilized to dissect the experience into drivers of change.

Technology

The experience study technology selection process should be carried out at the initial stages of the study. Factors to be considered in this process include costs, benefits, resources needs, ease of use, complexity, efficiency, adaptability, internal training needs, and the support needed from external consultants. Companies often revert to the MS Office suite components for their experience study needs by using Access as a data repository and Excel as the front-end reporting platform. SQL Server software has become a popular choice for analysis, especially as the volume of experience data increases.

Technology vendors, who understand the need for governance and consistency in experience study methodologies, have been using SQL Server technology to build "out of the box" platforms for experience analysis. Yet another application that is commonly used for experience studies is SAS. SAS has the ability to manage and process large volumes of records fairly rapidly with the benefits of allowing the user to conduct further statistical analysis on the data.

Conclusion

Experience study work is largely data and process oriented in nature and comes with a healthy dose of design, analysis, and results interpretation. There are many considerations—of which this article certainly does not provide an exhaustive list—that need to be reflected in the experience study process. Actuaries should spend time understanding patterns in experience and validating study results. Keeping open communication lines with other key functions within the company will improve the experience study process. The insights learned from the analysis of experience study output can inform good decision-making in the setting of assumptions and are equally applicable to actuaries working in pricing, valuation, or risk management capacities.

The views expressed herein are those of the authors and do not necessarily reflect the views of their respective organizations. □

Free Tacos!

By Steve Rueschhoff

If you are reading this, then the title must have captured your attention. And why wouldn't it? The only thing better than tacos, are free tacos, right? Naturally, you might be wondering what free tacos have to do with Insurance Product development? To explain, allow me to take you back in time to the year 2009.

In the shiny glass and steel headquarters of Taco Bell, CEO Greg Creed throws down the innovation gauntlet: "It's time to think outside the bun!" he declares. Numerous concepts are vetted and one that glimmers promise is what will come to be known as the Doritos Locos Taco™. This item takes your pedestrian crispy taco shell and "Doritotizes" it (is that a word?) to give it the look, feel and—most importantly—taste of Nacho Cheese Doritos® chips. That's it. A tweak. A one-off. No big deal, right? Well, fast-forward to 2013, and Taco Bell has sold 450 million "Locos" in a little over one year—that's over two tacos for every adult in the United States! Taco bell had to hire over 15,000 employees—that's two to three per store—just to keep up with demand. Their parent company stock jumped over 25 percent in the six months after launch, outpacing S&P 500 performance nearly 3-to-1.

So, what happened between 2009 and the 2012 launch? Testing, that's what happened. Testing, testing, testing. In that three year span Taco Bell tested over 40 recipes for the Doritos Locos Taco™. In fact, their first test in

2009 with 200 consumers was a total flop. Consumers were excited by the concept, but the execution (flavor, texture, taste) missed the mark. Undaunted, Taco Bell pressed on for three more years of trial and error until they perfected their product.

Fascinating, you say, but still struggling to see the connection to insurance product development? Imagine if the insurance industry could do this same rigorous testing before a product went to market. Could we achieve better results and gain a larger share of consumers' wallets?

Obviously, there are some distinct differences between tacos and insurance products. This is a very complicated dynamic, so I have created the table below to help illustrate the primary differences.

Now, this is not intended to understate the time, difficulty, effort and money behind testing and perfecting the Doritos Locos Taco™. The millions of dollars spent over three years are a testament to that. In fact, history may prove the Doritos® taco shell is the engineering marvel of our time. Still, Taco Bell manufactures a product where consumer engagement and comprehension barriers are very low. Not only does the insurance industry need to clear those barriers, but our products, once in market, can last for 10, 20, 50 years or longer. That is a very long time to "live with" a potential flop.



Steve Rueschhoff, FSA, MAAA, is Director of Product Management at Allstate Financial. He can be reached at sruess@allstate.com.

	Taco	Insurance
Engagement: Natural interest in the topic	Yeah, Dude!	Yawn... what was the question?
Comprehension: Ability to understand the subject matter	Easy (Jeff Spicoli)	Difficult (Albert Einstein)
Development Expense: Cost to produce one item	Pocket Change (\$5-\$20)	Pocket Change... for Bill Gates (\$500K - \$1M)
Resources: Time to make one item	20 minutes	9-12 months
Test Life Span: Shelf life of one item	30 minutes	10-50 years
Regulatory Framework: Level of regulator control	Broad (It can't be poison!)	Narrow (It can't use 9 point font!)

CONTINUED ON PAGE 12

However, this is not to suggest that there is no hope for our industry. The following are some practical tips for pre-market research and testing for insurance products. These techniques have been culminated over several years of product testing successes, and more importantly, failures (after all, we often learn more from our failures than our successes). Some are generalizations, and you may disagree with a few, but in general these will help you efficiently conduct pre-market product research and testing.

1. Create a Producer Advisory Group and Use

Them... a lot.

I mentioned the engagement and comprehension barrier that the insurance industry faces with consumers at large. However, there is a large audience that does “go loco” for insurance products: insurance producers. Their entire livelihood depends upon their ability to take intangible, often complex, products and help consumers understand and value them so much they are willing to part with their hard earned money to buy them. This is a skill set that should not be overlooked when it comes to research and development.

While producer research can not and should not supplant good consumer research, having a “go to” network of producers that can be called upon for input on any topic, large or small, is indispensable. This group is typically well versed in products, features and the competition, but they also are in touch with literally hundreds of consumers on a weekly basis. Gathering feedback with this group can be done very quickly, usually measured in hours or days—not months.

Furthermore, your advisory group doesn’t have to be a formal, standing “committee” that meets on a regular basis with titles and procedures. It can actually be better to just have an informal network—a contact list of producers ready to offer their input via a quick phone call or email. In your contact database, it is helpful to make some notes like, “big annuity writer, serves mostly middle market, writes a lot of long-term care, etc.” The more “searchable” these notes, the better.

It is rare to find a producer who is not ready, willing, and yes, even excited, to share their thoughts on the topic at hand. Now, there can be some tricks to using this advisory network effectively. One of the best ways to do that is...

2. Watch a Few Cop Shows

In almost every cop show, you will see the following scene: A crime has been committed, and the detectives round up a few “perps” and bring them into the station for questioning. When the cops really need to get to the bottom of the situation, do they bring all of the perps together in one room to have a “crime scene focus group”? Of course not! Perp A is in one room and Perp B is in a separate room, and so on. The Perps may get the same questions, but the cops gather information about how each Perp answers independently. Then, they compare notes, probe deeper as necessary and ultimately get more reliable intelligence.

Following a similar approach with careful and well documented individual interviews can yield some compelling results. A key to pulling this off is asking each interviewee the same questions in the same way and meticulously documenting the responses and dialogue. Given that each viewpoint was shared during a private, one-on-one conversation, it doesn’t take that many interviewees to achieve reliable information. If you split the research duties among four people doing three calls each, in an afternoon you can end up with a database rich with information on trends and preferences. The other nice thing about splitting up the questioner role is it also diminishes the chance of “questioner bias” coming through the survey.

3. Become “Cost” Conscious

Milton Friedman once said, “People never spend other people’s money as carefully as they spend their own.” By corollary, I would add “People never spend fake money as carefully as they spend their own.” For proof, talk to your resident online poker player (come on, you are an actuary, you know one or two of them). Ask them the difference between an online “cash game” and an online “free game” with fake chips. They will likely tell you that invariably, the players act, strategize and play completely differently.

Therefore, be cognizant of this behavioral tendency when researching “how much would you pay?” whether in qualitative or quantitative testing. Life is always about trade-offs, and so any questions about the “cost” of a product should be put in the context of trade-offs. In the insurance industry, we often think of our competition as our insurance provider peers. But, in reality, our competition is much broader than that. Our competition really includes cable TV, internet service providers, Amazon, The App Store, Miller Brewing Co., etc. Taking a trade-off approach is one of the advantages of the following testing technique:

4. Be Conjoint at the Hip with this Test

Conjoint testing is a powerful statistical technique for determining how your audience values different features of a product. In the test, different product features are randomly interchanged, and the survey participant must select their “favorite” or force-rank within the array of choices. With enough random samples and survey participants, you will have a rich database of “optimal” product design trade-offs.

The internet has enabled testing companies to conduct broad conjoint analysis surveys relatively quickly and inexpensively. This testing technique is especially useful if you are focused on a particular category. (e.g., Variable annuities with guarantee lifetime withdrawal benefits) and you need to testing different design features / benefits within that category (e.g., the level of bonus, roll-up percent, step-up frequency, withdrawal percent, etc.). You will also have consumers’ “utility” for any particular feature. That is, if consumers value a feature more than it’s cost to deliver, then you have discovered product design “gold.”

5. Build and Test a Prototype

What really is an insurance product anyway? Is it the contract? The illustration? The “experience” encompassing every interaction with the customer pre- and post-sale? The answer is really “all of the above.” That being said, if a financial product manifests as an illustration and discussion with a sales representative, how difficult is it to create and test prototypes of this interaction?



In a previous issue of *Product Matters*, Lance Poole of Protective Life Corp. shared some great insights about prototyping in his article “Design Thinking: This Will Change Everything.” If you have not read it, I encourage you to check it out. One key take-away is that if you really want to solicit feedback, it’s important that your prototype looks “rough around the edges.” Hand drawn cards or diagrams, post-it notes, etc. just beg to be “tinkered” with because it engages people into creation (rather than showing something so buttoned up and polished that people naturally resist trying to change it).

However, that is not to say there is no place for a more polished looking prototype. Let’s say you are nearing your final design and you are testing producer-consumer experience during the illustration and sales process. In this case, applications like Excel are easily adaptable to creating some very slick looking user interfaces to illustrate your prototype product. I think we all know a few Gen Y computer whiz-kids that are brilliant coders that can bring this to life.

Once an application like this has been created, instead of doing consumer focus groups with a paid professional moderator, consider testing with a real live insurance producer and real live consumer in a testing facility.

CONTINUED ON PAGE 14

Here, one-on-one testing is also preferred since it simulates “the real thing” as much as possible. There is real power in basic observation, and this approach is a great way to work out the kinks in a design pre-market, or gain insights on totally new-to-the world concepts. Yes, there are some potential drawbacks such as a producer may not be “unbiased” like a professional moderator. It is also important to have some sort of “control” in this type of test so relevant comparisons can be made. For example, your test producer could show an existing “in market” product in this environment to benchmark receptivity of the new concepts.

6. Hedge your Bets

When testing a “new to the world” concept, you should ask the question “is there an existing market for this or am I attempting to create a market?” An example of creating a new market is the Apple iPad. Five years ago, this device—in fact the entire category—barely existed. Now, we all can’t live without our iPads! If you are attempting to create a new market, that is not bad, it just may mean that you are farther out on the risk/reward spectrum (greater chance of failure—greater return if the concept is a hit). If there is an existing market, then the chance of failure may be lower, all things being equal. In the case of the Doritos Locos Taco™, the market for both tacos and Doritos® was large and well established. In insurance product parlance, the Combo Life-LTC products, such as Lincoln’s MoneyGuard, come to mind as a successful “smash-up” of two large and well established markets.

7. Make Sure the C-Suite has your Back

This may be the most important element when it comes to rigorous R&D. The CEO of Taco Bell didn’t say reinvent the taco by year-end—he painted a three-year vision and gave his teams the support they needed to get it right. Too often, the desire to see sales this quarter, or this year can interfere with the long-term success that can come from robust experimentation. One way to address this with management is to have a portfolio of



“bets” that are well diversified on the risk/return scale. For more advice on this, check out Jack Welch’s brilliant “Eating and Dreaming” article on LinkedIn.

It’s true, testing insurance products may be more of a challenge than testing tacos, but hopefully you have come away with a few practical tips on how to efficiently test new concepts. The knowledge and insights gained are more likely to lead to successes in market.

Now, who’s hungry?

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Playing to Win

By Lance Poole



Lance Poole, FSA, MAAA, is VP, Annuity Product Development for Protective Life Corp. He can be contacted at lance.poole@protective.com. Lance can be followed on Twitter at @lancepoole.

What do you think of when someone says “business strategy?” The term likely elicits two responses. One, you think about all-day meetings—days of your life you will never get back. Or two, you think about obscure business speak—“creating holistic synergies...” At a minimum, you may have a desire to flip to the next article in the newsletter.

Please allow me to set your fears at ease—this article will only take a few minutes (not days) to read and we’ll look at strategy without the business speak. I’ve recently read *Playing to Win* by A.G. Lafley (current Procter & Gamble CEO) and Roger Martin (author and former dean of Rotman School of Management, University of Toronto). It’s a delightful book on strategy AND it’s not what you might typically think about when the words “business strategy” are mentioned.

So what is different about Lafley and Martin’s approach? The winning is strongly linked to delivering superior value to your customers... i.e., you win when your customer wins.

Peter Drucker said, “The purpose of a business is to create a customer.” Contrast this with what is taught in every Economics 101 class, “the purpose of a business is to maximize profit.”

What Lafley and Martin show us (in this book and Martin’s articles) is that the way to maximize profit (the Econ 101 definition) is to maximize customer satisfaction. The ideas are related, but those that put the profit maximization ahead of making the customers happy will not win in the long run.

I think Johnson and Johnson’s credo is a great example of this idea. I’ve include the entire credo below (highlight is mine).

Our Credo

We believe our first responsibility is to the doctors, nurses and patients, to mothers and fathers and all others who use our products and services. In meeting their needs, everything we do must be of high quality. We must constantly strive to reduce our costs in order to maintain reasonable prices. Customers’ orders must

be serviced promptly and accurately. Our supplies and distributors must have an opportunity to make a fair profit.

We are responsible to our employees, the men and women who work with us throughout the world. Everyone must be considered as an individual. We must respect their dignity and recognize their merit. They must have a sense of security in their jobs. Compensation must be fair and adequate, and working conditions clean, orderly and safe. We must be mindful of ways to help our employees fulfill their family responsibilities. Employees must feel free to make suggestions and complaints. There must be equal opportunity for employment, development and advancement for those qualified. We must provide competent management, and their actions must be just and ethical.

We are responsible to the communities in which we live and work and to the world community as well. We must be good citizens – support good works and charities and bear our fair share of taxes. We must encourage civic improvements and better health and education. We must maintain in good order the property we are privileged to use, protecting the environment and natural resources.

Our final responsibility is to our stockholders. Business must make a sound profit. We must experiment with new ideas. Research must be carried on, innovative programs developed and mistakes paid for. New equipment must be purchased, new facilities provided and new products launched. Reserves must be created to provide for adverse times. When we operate according to these principles, the stockholders should realize a fair return.

Notice the order in the credo:

1. Customers
2. Suppliers and Distributors
3. Employees
4. Communities
5. Shareholders

The shareholders are listed LAST! Does J&J care about their shareholders? Absolutely, but they ensure that the shareholders win by taking care of 1-4 on the list above.

“When we operate according to these principles, the stockholders should realize a fair return.”

I’ll end this with a few questions, what do you think would motivate your employee base (or yourself)? A: Solving an important problem for your customer, somehow making their lives better, etc. or B: Improving returns for shareholders?

I get excited about discovering and meeting our customer’s needs. I want to help ensure that they are delighted. And better yet, when we meet customer’s needs, we improve returns for shareholders.

As Jeff Bezos wrote in his letter to Amazon shareholders this year, “Take a long-term view, and the interests of customers and shareholders align.”

What should we be teaching students in economics? The purpose of the firm is to maximize profits? Or should it be that the purpose of the firm is to maximize customer value? Which one would attract the best and the brightest into business? Again, I believe we could dramatically change the experience of most business school students by focusing on improving the lives of customers.

Strategy is about winning and winning is about delighting customers. Given this approach, who wouldn’t want to learn more about strategy? □

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Product Development Section Council 2014 Election Results

By Jim Filmore



Jim Filmore, FSA, MAAA, is a vice president and actuary responsible for Munich Re's U.S. individual life pricing teams. He can be reached at JFilmore@MunichRe.com.

There is an often quoted proverb that states “For every ending, there is a new beginning.” That applies to the Product Development Section Council just as it applies to life in general. In this case, the “end” refers to the end of the formal tenure on the council for Paula Hodges, Rhonda Elming, Stephen Peeples, and Dave Moran. We appreciate the contributions that each of these individuals made to the council and hope they are able to continue to volunteer in the capacity as Friends of the Council.

That ending brings the beginning of the three-year terms for the newly elected members of the council: Simpa Baiye, Jeremy Bill, Ken Birk, and Dennis Martin. We welcome these new members of the council and are excited to work with them to serve the needs of the SOA Product Development Section.

Returning members to the council are: Tim Rozar (new chairman), Jim Filmore (new vice-chairman), Kurt Guske, Joe Kordovi, and Vera Ljucovic.

Here is a biography of each incoming member of the council to better acquaint you with these individuals:

Simpa Baiye, FSA, MAAA

Simpa is currently vice president of annuity product engineering with AIG Life and Retirement in Woodland Hills, Calif. He has over 11 years of expertise in the design and financial management of retirement income products. Prior to joining AIG in 2012, Simpa was responsible for providing custom reinsurance solutions to annuity insurance carriers at SCOR Reinsurance (formerly Transamerica Reinsurance.) He has also held annuity product management and pricing roles at Hartford Financial and MetLife (formerly Travelers Life).

Simpa has been a fellow of the Society of Actuaries and a member of the American Academy of Actuaries since 2004. He is a charter holder of the CFA institute and a 2001 graduate of the master's degree program in actuarial science from the University of Waterloo.

Jeremy Bill, FSA, MAAA

Jeremy has spent his entire career with the Sammons Financial Group (SFG), which includes Midland National Life and North American Company for Life and Health (NACOLAH). His roles have been primarily in the product development area, where he helped to develop Term, UL, VUL, and Indexed UL products. Currently, he oversees the product development area for individual life products, which includes the pricing, filing, and actuarial implementation support for all individual life insurance products.

In addition to his work at SFG, Jeremy also served as an instructor for students preparing for actuarial exams. Jeremy recently “retired” as an instructor for The Infinite Actuary, where he covered the Design and Pricing exam for the past six years. This role allowed him to stay current on the topics that new students are learning and to interact with the next generation of actuarial talent.

Ken Birk, FSA, CERA, MAAA

Ken is currently director of individual life pricing and product development at Prudential. Before joining Prudential in 2013, Ken held various product development, pricing, hedging, risk management and valuation roles in life insurance, annuities, international annuities and health insurance at The Hartford, CIGNA, Aetna, and Aon Consulting.

In addition to developing various variable annuities base products, annuity living benefit riders, universal life, variable universal life, indexed universal life and combination product & innovative life riders, Ken also played a pivotal role in laying the groundwork for a Japanese variable annuity hedging program.

He is a summa cum laude graduate of Penn State University, with a bachelor's degree in actuarial science, a fellow of the Society of Actuaries, a member of the American Academy of Actuaries and a Chartered Enterprise Risk Analyst. Ken recently completed his term as the President of the Actuaries' Club of Hartford and Springfield.



Dennis Martin, FSA, FCIA, MAAA

Dennis has more than 20 years of progressive experience in Canada and the United States which is primarily focused on individual life and annuity products through a variety of distribution channels. Throughout his career, Dennis has been fortunate enough to have the opportunity to work closely with various distribution partners, individual producers, and numerous client situations to get first hand exposure to see how product solutions meet real customer needs.

His experience encompasses all areas of product development including marketing and consumer research, product design and pricing, product development process management, administrative system design, product marketing and illustrations, field support, marketing rollout and field presentations.

Currently, Dennis is responsible for the financial operations of the Individual Life & Financial Services division for OneAmerica. That includes product development and pricing resources across all product lines (traditional life, fixed/indexed/variable annuities, and combination products such as life/LTC and annuity/LTC). □



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Disruptive Innovation: Look Out Below

By Tim Rozar

“Faster. Cheaper. Better.” This mantra has been repeated in board rooms and bookstores to inspire the worthy pursuit of perfection in product and process innovations. To create sustainable efficiencies, innovations must be “faster. To create sustainable consumer demand and profit margin, innovations must be “cheaper.” To create sustainable competitive advantage, innovations must be “better.” Burdened with glorious purpose, would-be innovators seek the panacea that will unleash a torrent of value upon unsuspecting consumers and shareholders; but quickly they become paralyzed by the daunting nature of their quixotic quest.

Instead of faster, cheaper and better, what if a product or process innovation was twice as expensive but had speed and quality that were 10 times superior? Perhaps more interestingly, what if a product or business process had speed and quality that were only half as good as its competitors, but its price was 10 times cheaper? These innovations offer the potential to be truly disruptive to existing market competitors and, of greatest concern, often seem to appear out of thin air. Effective innovators will keep a keen eye open for the warning signals of lurking market disruptors. Most importantly, they will actively seek to disrupt their own existing business models rather than passively stand by while someone else does.

Characteristics of Disruptive Innovations

The term “disruptive innovation,” first introduced by Harvard Professor Clay Christensen more than 20 years ago, is perhaps one of the most used and misunderstood business concepts in recent memory. It can be confused with related concepts such as “radical innovation,” “breakthrough innovation,” or even “sustaining innovation.” Heated intellectual debate erupts in the blogosphere and Ivy League lecture halls as to which innovations are truly “disruptive.” (For example: the iPad—probably disruptive but not necessarily breakthrough; the iPhone—probably breakthrough but not necessarily disruptive.) Much of this linguistic folly can be discounted as mere semantics, but there are a

few key characteristics that distinguish innovations that are truly disruptive.

1) Redefine how product performance is measured

Disruptive innovations change the way consumers view product performance. In Christensen’s classic case of low-end disruption, a new product or service will be dismissed by existing market competitors as inferior despite having a compelling value proposition along non-traditional performance dimensions. For example, despite inferior strength and durability, paper disrupted parchment due to its lower production cost and broader usability. Despite inferior computational performance, handheld calculators disrupted desktop calculators due to their portability and convenience.

Disruptors understand that it might be ok to be inferior along traditional performance measures if they are disproportionately superior on others.

2) Create new consumer segments

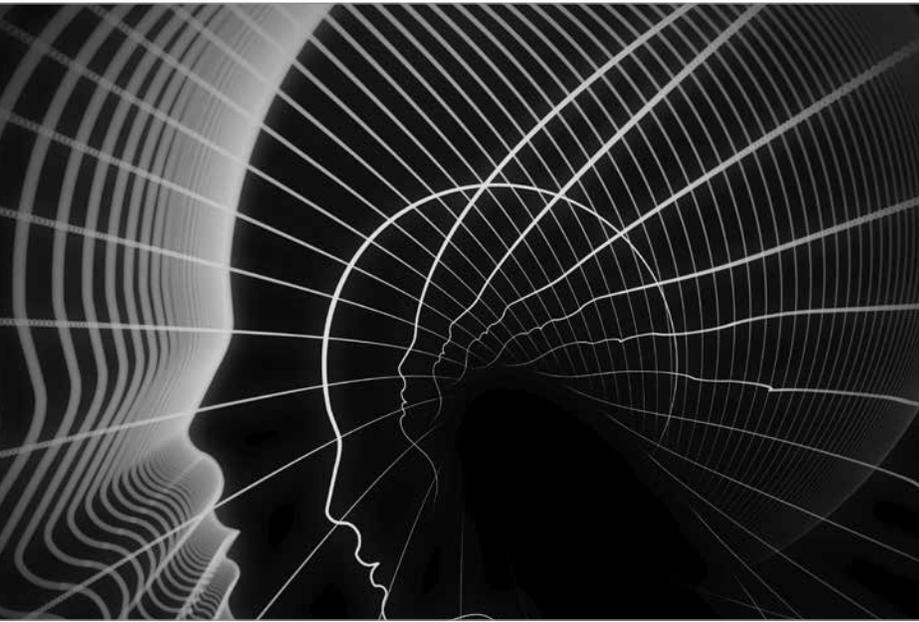
Disruptive innovations may appeal to new consumers who have not been previously served by the existing market competitors. These new markets may at first seem unattractive to current market competitors: the profit margin may be lower, the market segments may be smaller, and the products may lack sophistication. For example, manufacturers of 14-inch disk drives were so focused on meeting the speed and storage capacity needs of their existing mainframe customers that they missed out on the emerging minicomputer market. Ironically the 8-inch disk drive manufacturers, who arrived to fill that need, in turn largely ignored the emerging personal computer market that was better served by a 5.25-inch drive.

Disruptors realize that new consumer segments often grow to be larger and more profitable than anyone could have envisioned.



Tim Rozar, FSA, CERA, MAAA, is senior vice president, global R&D at RGA in Chesterfield, Mo.

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3) Change the business model and industry structure for existing market competitors

Disruptive innovations go well beyond technological advances and often redefine the existing paradigm and structure of the industry. These innovations challenge closely held assumptions within their industry and often turn them upside down. Henry Ford disrupted the automobile industry by challenging the assumption that cars could only be a high-end, customized luxury good. Amazon disrupted the retail industry by challenging the assumption that consumers would only buy books in bookstores.

Disruptors throw out preconceived notions based on what has not worked in the past and envision what might flourish in the future.

4) Steadily improve and then take off exponentially

Disruptive innovations that enter a market as “inferior” are often characterized by a rapid increase in performance. This trajectory can create solutions that eventually satisfy the needs of both new and traditional customers alike. As megapixels increased, digital cameras were able to credibly compete with traditional

film cameras and eventually came to dominate both the amateur and professional photography markets. Despite inventing digital photography, Kodak saw its lucrative film business become disrupted by digital competitors.

Disruptors see new innovations not for what they currently are, but for what they may become.

5) Seem obvious in retrospect

Disruptive innovations, especially those that transform an industry’s business model, often seem obvious in retrospect. In fact, the idea may seem too simple and compelling to understand how existing market competitors were unable to recognize it at the time. Blockbuster Video’s business relied on renting physical video tapes and DVDs in thousands of specialized retail outlets. In retrospect, the convenience and lower cost structure of both a DVD-by-mail model (Netflix) or a retail kiosk model (Redbox) seem like an obvious improvement to the business model. These new improved business models are now also under pressure from online streaming and the increased bargaining power of content providers. New innovations will undoubtedly emerge to respond to these threats, and although they may be difficult to imagine today, in retrospect they will probably seem obvious.

Disruptors can perform ante mortems on business models that seem ripe for change.

How to Disrupt Your Own Business

Motivated action is critical for survival in the face of disruptive forces. Inertia, denial and fear can immobilize seemingly smart, well-managed companies but if you are not prepared to disrupt your current business, someone else will. Here is a framework for identifying potential sources of disruption and proactively creating value from disruption.

1) Identify key trends and how they will intersect

No one has a crystal ball, but we may at least be able to recognize many of the major external and internal forces that influence our business and see how they may intersect. For example, Amazon was able to

take advantage of the intersection of trends in online technology, consumer purchasing preferences, and outbound logistics to create a disruptive retail business model.

Participants at the RGA Innovation Series at the 2013 Society of Actuaries Annual Meeting identified trends that would influence the insurance industry including: demographics, data analytics, technology, consumer preferences, fitness trends, macroeconomics, regulation, social attitudes, globalization and medical/diagnostics. By combining several of these trends together, participants could begin to envision emerging opportunities.

Choose a handful of specific trends and imagine how they might converge to generate disruptive opportunities.

2) Identify closely held assumptions—then throw them away

Disruptors view the assumptions that define an industry's collective mindset as an opportunity for differentiation. Many of these assumptions may be grounded in strong empirical evidence, but they can still be challenged in the right context.

At the RGA Innovation Series, Professor Anjan Thakor from Washington University's Olin Business School collected a list of insurance industry assumptions from attendees. Most table groups independently listed "life insurance is sold not bought" as the number one assumption that pervades the current business paradigm. Examples of other assumptions:

- "Life insurance is too complicated to sell online"
- "Customers need and want an agent"
- "Invasive underwriting is needed to effectively assess risk"
- "Insurance is a commodity product"
- "Mortality will always improve"

“ The best way to generate ideas is to generate a lot of ideas. Ideas should be sourced from a diverse group of associates, customers, distributors and partners. ”

Make a list of the assumptions that you think the industry or your company take for granted and imagine the business models, products or processes that could emerge when these assumptions are discarded.

3) Create a culture with a disciplined approach to idea generation and experimentation

The best way to generate great ideas is to generate a lot of ideas. Ideas should be sourced from a diverse group of associates, customers, distributors and partners. The difficulty is creating a mechanism to quickly filter through all of those ideas in a systematic manner. This search for speed is well-illustrated by the IDEO design-thinking approach using rapid prototyping: "fail faster to succeed sooner." Some ideas are discarded immediately because they are not feasible, scalable or strategically aligned. Parts of some ideas might be combined with another idea to create something new and original. Incentivize creativity and then experiment with purpose to find disruptive new market opportunities.

4) Partner with adjacent and non-adjacent businesses

It is impossible for any single company to be expert at everything. Interesting opportunities for innovation often appear by combining the strengths, capabilities and consumer relationships of two or more companies. For example, the insurance industry has long partnered with the medical research and diagnostic community to innovate the risk selection and stratification process.

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Inspiration may even come from companies in entirely unrelated industries. Progressive Insurance has partnered with SimCity to embed casualty insurance in the virtual gaming world to demonstrate the value of insurance to an underserved consumer market.

Collaborate with partners who have complementary skills, assets and determination to create innovative new solutions.

5) Define yourself by what you can do, not by what you sell

Effective business strategy requires companies to make disciplined choices within limited resources, but this does not mean that they should narrowly define themselves within the confines of their existing markets. Apple could have long ago made the sheltered strategic choice to be a “personal computer company” and continued to compete head-to-head with IBM, Dell, Compaq and scores of others. Instead, that “personal computer” company managed to redefine the handheld device market and sell more than 25 billion downloaded songs.

Look to your capabilities and those of your strategic partners and identify how those strengths might be leveraged in new ways.

6) Identify what customers need, even when they don't realize it yet themselves

Innovation occurs as a result of meeting the unique needs of customers, both existing and emerging. A company's current business can be improved by listening to the customers and sales force to identify pain points and opportunities for incremental improvement. Disruptive innovations on the other hand can be found by identifying needs that consumers may not even realize that they have. Tim Cook has said that “Apple has made products for years that people didn't know they wanted and now they can't live without.”

Perform controlled experiments to learn how consumers react in the real-world to new product offerings or sales processes.

Conclusion

Disruptive innovations redefine the competitive landscape of an industry. Disruptors look for new ways to compete by ignoring commonly held beliefs about consumer preferences. The insurance industry's reputation for strength and stability may create a perception that innovation is unnecessary, but this is simply not true. Disruptive innovations are necessary to sustain that strength and stability into the future. Change is already developing in the insurance industry as trends in technology, demographics and consumer preferences converge. The innovative solutions at the intersection of these trends may emerge from within the four walls of a century-old insurance company, or they may come from an ambitious upstart in a college dorm room. Either way, these solutions will redefine the way that consumers, distributors and insurance companies think about what insurance is and how it is sold. ■

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Highlights of Sessions at the October 2013 SOA Annual Meeting

by Kurt A. Guske



Kurt A. Guske, FSA, MAAA, is vice president at AIG Life and Retirement in Nashville, Tenn. He can be reached at kurt.guske@aig.com.

This article contains a summary of some of the presentations given at the October 2013 SOA Annual Meeting in San Diego. While this article covers only a portion of sessions that are related to product development, it shares observations that have been made by various members of the SOA Product Development Section Council. We encourage everyone to join our LinkedIn group where you can participate in discussions on these or any other topics that are relevant to our business.

Session 85 Workshop: Illustration Model Regulation Compliance by Donna Megregian

Moderator/Presenter/Facilitator: Donna Megregian (Milliman)

Donna moderated an interactive session focused on the revised 2013 illustration model regulation practice notes. Attendees discussed current issues surrounding the regulation, such as with new business and in-force compliance, administration of the lapse and self-support tests, and annual certification considerations

and suggestions. The attendees also conferred on hot topics including:

- how to deal with expenses
- compliance issues around indexed life products
- non-illustrated product projections showing only guarantees
- the appropriateness of reflecting inflation in expenses

For a copy of the latest practice notes, go to the American Academy of Actuaries website link:

http://www.actuary.org/files/Life_Illustrations_Practice_Note_8-29-13.%5Beventyyy%5D.8.pdf

Session 166 Term In-Force Management by Donna Megregian

Moderator/Presenter: Donna Megregian (Milliman)

Presenter: Sebastian Kleber (Swiss Re)

Presenter: Stephanie J. Koch (RGA)



Donna opened the session by giving a quick overview of the term market. She stated that the estimated 2012 term (both group and individual) face amount in-force of \$22 Trillion requires the insurance industry to manage a large amount of business. She opined that term business can often be thought of having little optionality. While in fact with features such as lapse provisions, conversion and other options like guaranteed insurability, planning is required to both retain the business and keep the desired profitability levels originally anticipated for the block. The company has options as well. A corporate strategy may be to incent the policyholder to exercise options available that would help the company meet its financial goals.

Next, Seb discussed insights from Swiss Re's term conversion experience study and an administration survey recently sponsored by Swiss Re. The administration of conversions is often manual and quality of data is critical to creating an accurate study based on the original policy information especially the original issue date and plan.

The experience study results are showing that there is a clear uptick in the conversion rate for 10-year term business in the last year of the conversion period. Associated with this has been an increase in the overall mortality for those later duration conversions. Conversions occurring in the first four years of the policy tend to have similar mortality as expected for newly issued policies. Policies converting in years five to eight tend to have an increased mortality compared to non-converted policies in those durations, and still higher mortality for those in durations nine to eleven. Seb also showed results by age. One interesting point is that most companies have an age limitation on their conversion privilege. Older issue ages having to convert earlier due to the limitation exhibited better mortality than younger issue ages that have the option to wait until the end of the full level term period.

Stephanie then presented preliminary results from an SOA post-level term assumption analysis, not yet available at the time this article was written. This is an update to the previous studies published in 2007 and 2009. Experience study results will follow the assump-

tion study. Stephanie also layered RGA experience with the assumptions from the SOA study. Shock lapse is often discussed relative to the increase in premium from the level premium period. One of the more startling observations of the results was how consistently steep the relationship of the mortality shock experience is to the premium jump. There was a steeper shock lapse increase for premium ratios up to 10 times. The shock lapse rate increase leveled off on ratios from 10 to 30 times.

She discussed company mitigation strategies to the shock lapse level. They often include changing or lowering the post level premium scale. Certain considerations around this strategy include having the ability to change premium (allowed by the policy form), compliance with illustration testing for non-guaranteed elements on illustrated policy forms, compliance with actuarial guideline 22, and the New York self-support test when changes are made to the policy form.

This topic will again be covered at the May 2014 SOA Life and Annuity Symposium in Atlanta. Please be sure to attend it if you didn't get the chance at the SOA Annual Meeting.

Session 97 – Perspectives on Mortality Trends by Paula Hodges

Moderator: Michael L. Kaster (Willis Re)

Presenter: Brian Ivanovic (Swiss Re)

Presenter: Chris Breaux (Risk Management Solutions)

Presenter: Rob Foster (SCOR)

The session on Mortality Trends brought together three panelists who presented varying perspectives on mortality trends as within the general population and also how those trends may differ from the insured populations.

Brian reviewed recent cause of death trends in the US population, identifying key causal drivers by age and further providing information on how those trends vary by per capita income grouping. At younger ages Brian shared information on how the recent economic recession might have contributed to a mid-2000's

CONTINUED ON PAGE 28

abrupt decline in motor vehicle deaths, raising a question about what trends might be observed as we move further out of the recession. Brian also noted some interesting trends regarding mortality increases related to abuse of prescription drugs in middle ages, which is becoming an even more important cause of death at these ages than motor vehicle accidents. Because COD proportions have some similarity between population and insured groups analyzing key causal drivers of population mortality trends can have benefit in predicting the emergence of similar trends in insured groups.

Chris discussed how we might need to approach modeling changes in mortality as various trends emerge. Identifying inflection points in mortality curves is challenging to identify when they occur, and only become apparent several years later. For example, mortality due to cardiovascular disease has been decreasing linearly since 1970, but will need to hit an inflection point and begin to level out. It is hard to tell if this has already occurred. Chris also discussed various parameters that can be effectively used when modeling mortality trends. These include lifestyle, health environment, medical intervention, regenerative medicine and the biology of aging. The challenge is quantifying each of these and putting reasonable bounds on the simulations.

Rob discussed approaches for modeling mortality improvements. He discussed the difference between generational improvement (adjusting for past mortality improvements) and durational improvement (adjusting for future mortality improvements). Due to the large amounts of data required to study these improvements, Rob referred to general population data, rather than insured data. When choosing whether to use mortality improvement in actuarial models, considerations need to be given for whether it is practical to consider the improvement, whether there are regulatory restrictions in the application, and whether the improvement will persist over time.

Session 113 – Assumption Setting in a SOX/MAR/PBR World by Paula Hodges

Moderator: Paula Hodges (Ameritas)

Presenter: Bill Winterman (SCOR)

Presenter: Yvonne McCullough (Nationwide Financial)

Bill provided an overview of the increased scrutiny that will be placed on assumption setting that will be required if/when Principles Based Reserves become adopted. The assumptions that companies will use will need to be substantiated by a certain level of experience credibility. In lieu of the credibility, industry assumption tables will be required to be used. The regulation will also require margins for adverse deviation when calculating the reserves.

Yvonne McCullough discussed the importance of strong governance around assumption management. Many companies are increasing the rigor around assumptions estimation, documentation, the approval process and assumption consistency. Companies are addressing these challenges in various ways. She shared some of the best practices for presenting assumption proposals, maintaining assumption histories, and the benefits that can be gained by implementing stronger governance and controls around assumptions.

Session 45 – Current Research Topics Concerning Mortality by Dave Moran

Moderator: David Wylde (SCOR)

Presenter: Dieter Gaubatz (Munich Re)

Presenter: Al Klein (Milliman)

Presenter: Tim Rozar (RGA)

At this session, the expert panelists reviewed the results of three recent mortality studies/surveys. Dieter Gaubatz reviewed the 2008-2009 SOA Individual Life Experience Study. He covered topics such as preferred wear-off, term mortality during the post-level period, and older-age mortality (issue ages 70+) by experience year.

Al Klein discussed preliminary results from the Society's survey of select period mortality assumptions. This survey included several different types of analysis. Among these were various duration to duration ratio analyses, ranking analyses to determine stability of rates among different companies, and examinations of the use of preferred wear-off and durational mortality improvement assumptions.

Tim Rozar covered the summarized responses to a recent survey on older age mortality and other actuarial assumptions. This survey received data from 20 different companies, 18 of which included responses for fully-underwritten life products while five also included responses for long-term care insurance. The survey report includes analysis of product designs and sales trends by age, underwriting requirements at older ages, and actuarial assumptions at older ages. These assumptions include selection factors, preferred discounts, mortality improvement, and lapse assumptions.

Session 59 – Regulatory and Tax Update by Dave Moran

Moderator: Brian King (Ernst & Young)

Presenter: Kristin Norberg (Ernst & Young)

Presenter: Sim Segal (SimErgy Consulting)

Presenter: Craig Springfield (Davis & Harman LLP)

Craig Springfield began the session with an overview of anticipated updates to 7702 and 7702A. Most of these updates focused on expected guidance for the definition of Cash Surrender Value and issues regarding secondary guarantees and cash values. There was also some discussion of recent approaches to the accounting of accelerated death benefits. Finally, Craig provided an update on the tax treatment of insurance products for same-sex marriages based on the recent Supreme Court case of *United States v. Windsor*.

Kristin Norberg then provided an overview of recent changes to and emerging issues surrounding AG 38, including the NYDFS letter of Sept. 11, 2013 and the insurance industry's response.

Sim Segal presented a brief discussion on ORSA (Own Risk Solvency Assessment), highlighting key requirements and their potential impacts on product design, including:

- new risks, such as strategic and operational risks;
- more risk scenarios, including upside scenarios;
- changes to risk limits, due to linkages to risk appetite;
- re-pricing for changes in risk-return profile, including capital allocation; and
- changes to reinsurance, due to an enhanced decision-making framework and deeper understanding of risk interactions. □



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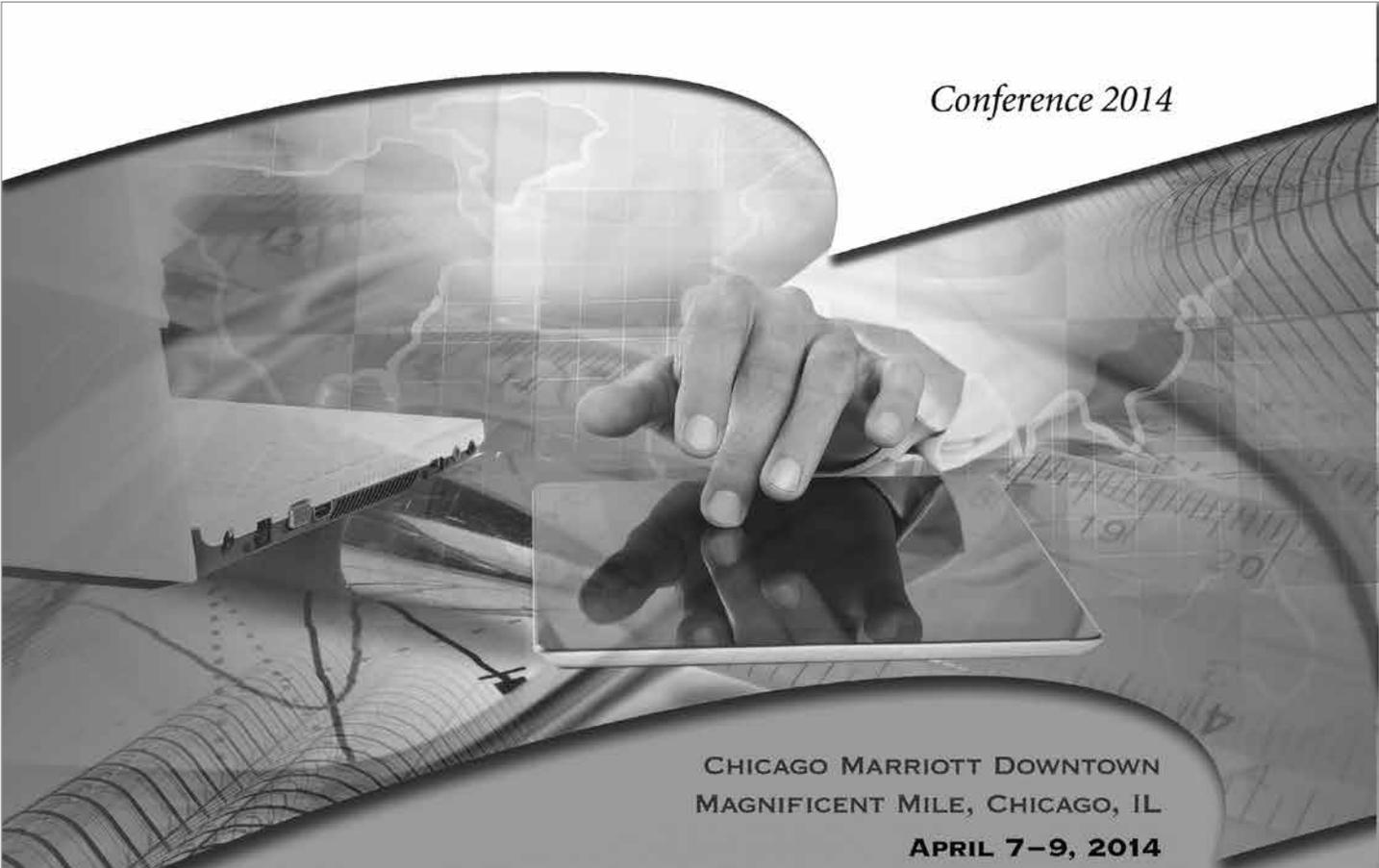


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