



The Bulletin Board

Updates on important events related to the Reinsurance Section

By Jing Lang



Reinsurance Section Council Members **Front row left to right:** Jean-Marc Fix, Kyle Bauer, Xueli Zhang, Jim Miles **Back row left to right:** Mike Kaster, Nina Han, Sean Kim, Faisal Haddad

PODCAST UPDATE

A pottery teacher did an experiment. For one semester, she instructed half of her class to focus on making one piece of pottery perfectly, and the students would be graded solely based on the quality of that one piece. The other half of her class was instructed to make as many pieces of pottery as possible; their grades would be based solely on quantity.

At the end of the semester, the teacher brought in outside judges to critique all the pieces of pottery, the judges did not know which half of the class made what. Interestingly, all the pottery of the highest quality came from the students who were graded only on quantity. It turns out the students who had an entire semester to work on one piece of pottery spent too much time theorizing and hypothesizing, while the other half simply got more practice. They got better as a result of making mistakes and learning through trial and error.

I first heard this story during a TED talk by Derek Sivers. I thought it was so inspirational that I started applying it to all my creative endeavors: writings, video productions, podcasts. I gave 100 percent to each one of them. I would not release it unless I was happy with it. But, I also reminded myself I should not sit on a project and just keep on fine tuning until it's "perfect," because that would mean I would never finish. I learn much more from the projects I have completed and applying those learnings to the next project.

With SOA section podcasts, I promised myself that I'll continue to try new things and take creative risks. Heavily influenced by "The Tim Ferriss Show," most of the podcasts that have been recorded are long form interviews. But, there has been experimentation with other formats: 73-questions with a celebrity (featuring Ronald Poon-Affat), TED-style talk (Dr. Anthony Chiarlitti—A Defined Path to Leadership) and a mashup format with five "podcastees" (Meet Five Diverse Actuarial Leaders.)



Steve Kopp with the "Best Podcast" award

There has also been collaboration across sections. In 2019, the "Best Podcast" award that went to Steve Kopp was a joint production between Reinsurance and the Education and Research section. The Reinsurance Section also released a "women leadership" series of three podcasts with the Leadership & Development section (Christine Hofbeck, Tonya Manning and Jennifer Marquino). And most recently, a collaboration with the Health Section on COVID-19 with Dr Garcia Zakzuk was aired.

Since I took on the podcast director role in July 2018, 15 podcasts have been released: three in 2018, five in 2019 and seven for 2020 year to date. And as listeners, you can rest assured that I'll continue to push boundaries and thrive for the highest quality through consistent and relentless practice. ■



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Medical Reinsurer’s Reaction to COVID-19

By Mehb Khoja

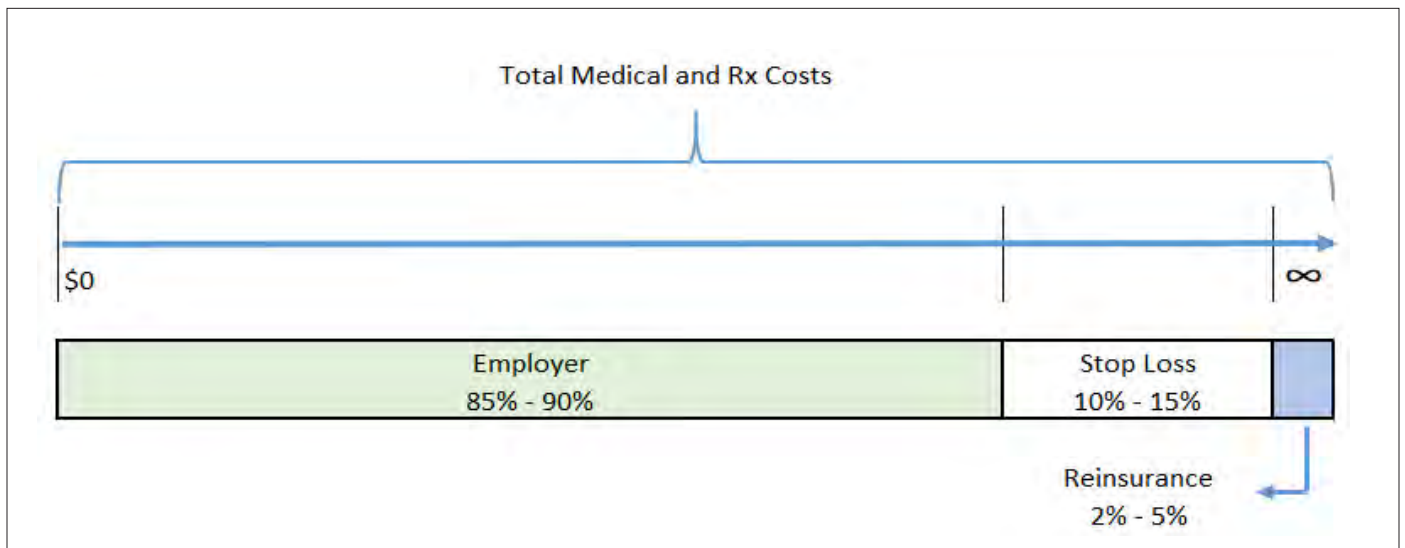


The coronavirus pandemic has the health care market in a volatile place and rightfully so. Health care utilization/outcomes and costs are largely predicicable with the right population size, but COVID-19 has introduced an extreme volatility that no one could have predicted. As actuaries, it is our role to make these predictions. Sometimes we’re right and sometimes we’re not, but there is no honor in indecision!

The growth of the infection and its effect on the American economy, including health insurance, is still in its infancy. The first confirmed case in the U.S. was on Jan. 21, the first death was reported on Feb. 29, and President Trump declared a state of emergency on March 13. Between mid-March and mid-April, individual state governors started closing schools, shuttering businesses, and ordered “shelter-in-place.” During this same

time, we saw insurers and reinsurers react in different ways to the potential impact of COVID-19 on health care costs and we should expect adjustments to those first reactions as new data emerges.

Figure 1
Risk Share Under Excess of Loss Program



How should a health reinsurer respond to a pandemic? Are they equipped with the right tools and resources to understand the impact of a pandemic on the liabilities they assume? Let's start by defining the reinsurer's liability, and because my background is in employer stop-loss coverage, I will focus on the commercial/self-insured market. In a typical arrangement where a reinsurer participates in risk and premium, there is a self-insured employer, an employer stop-loss carrier, and a reinsurer who assumes quota share and/or excess of loss coverage over the stop-loss carrier. Figure 1 describes a typical risk share under an excess of loss program (for carriers who quota share risk with a reinsurer, the "stop loss" section would be proportionately shared amongst the carrier and reinsurer).

We've already mentioned the two forms of reinsurance seen in the employer stop loss space: quota share and excess of loss. Quota share coverage is a significant risk transfer, however, I will first focus on excess of loss.

Excess of loss coverage is a per person, per year risk transfer at very high attachment points: \$1M–\$2M for example. This means the front-line insurance carrier will assume risk up to the excess of loss level and then outsource the remaining risk to a reinsurer. This risk transfer provides volatility protection to the insurance carrier while using a reinsurer's capacity. In Figure 1, you can see the self-insured employer assumes most of the risk (usually between 85 percent to 90 percent) and they purchase employer stop-loss coverage that outsources 10 percent to 15 percent of the risk. The stop-loss carrier purchases excess of loss coverage and transfers unlimited liability to the reinsurer. The reinsurer collects small dollars, but assumes big risk.

Now, let's talk about quota share coverage. This is where the reinsurer partners with the stop-loss carrier to share, proportionately, in risk and premium. So, if an employer elects a \$100,000 deductible and the carrier and reinsurer split the risk/premium 50/50 to an excess of loss of \$1M, the share of risk looks like this:

1. Claims \$0–\$100,000 belong to the employer.
2. Claims \$100,000–\$1M are shared 50/50 by the carrier and reinsurer.
3. Claims above \$1M are assumed by the reinsurer.

In this scenario, the reinsurer is counting on the underwriting practices of the employer stop-loss carrier to appropriately price the quota-share risk. The reinsurer uses its tools/resources to price out the excess of loss exposure, but they primarily rely on the employer stop-loss carrier to price the employer product. Why is this important? Because the types of claims seen predominately by the employer, employer stop-loss carrier, and reinsurer are vastly different.

Employers are used to seeing claims such as preventive care, wellness, sick visits and immunizations. They also see some high-cost/low-frequency events like surgeries. Generally, employers and their advisors are experts at high frequency but generally low cost services. The advisors will spend time with the employer helping them understand the first-dollar value of provider networks and cost containment programs. These are claims the employers know a ton about, but the stop-loss carriers know very little about because the deductible is well above these sort of claims. Conversely, the stop-loss carrier knows a ton about cancer, high cost drug treatments, and congenital anomalies because these are the types of claims that attach (exceed the stop loss deductible). The provider reimbursement models also vary significantly between low dollar and high dollar services.

Historically, a very small percentage of claims have exceeded levels such as \$1M or \$2M and as such the reinsurers have had little line of sight towards these claims. Reinsurance, for the most part, has always been a financial exercise based on experience results: evaluate a large block of business by projecting claims forward, applying margin and expenses, and comparing to today's premium in order to set tomorrow's premium. But claims exceeding reinsurance levels have skyrocketed over the past few years. According to Sun Life¹ "the number of patients with more than \$1.5 million in claims went up 54 percent, from 46 in 2015 to 71 in 2018, and the number of patients with more than \$3 million in claims rose 140 percent, from five in 2015 to 12 in 2018." Not only have high cost claims increased, they're expected to grow further due to the costs of cell and gene therapy solutions that will cure patients (mostly children) of issues such as hemophilia, spinal muscular atrophy, and blindness. These are remarkable achievements in health care, but they'll come at price tags between \$2M² and \$3M³ dollars.

Given the dispersion of risk between employers, employer stop-loss carriers and reinsurers, we should expect reinsurers to be the experts at cell and gene therapy, employer stop-loss carriers to be the experts at cancers, congenital anomalies and high cost drugs, and for employers (and their advisors) to be the experts on claims below traditional stop loss deductible thresholds.

So how do COVID-19 claims fit into this picture? Costs for testing range between \$50 and \$100. Cost for treatment will vary from \$0 (quarantine and self-isolation) to several thousands of dollars for hospital inpatient stays. According to FAIR Health,⁴ the average allowed charges for hospitalization could range between \$20,000 and \$40,000 depending on complications and comorbidity. In the most extreme cases (approximately 1 percent of those infected) we can assume 20 days in the inpatient setting at \$7,500 per day in billed charges (\$150,000). After network discount, even the highest cost COVID-19 treatment could run at most \$100,000 to \$115,000. If we use a \$75,000 deductible as an average (most deductibles for our business range between \$75,000 and \$150,000), this means most of the COVID-19 treatment cost is an employer expense. It has little impact to

the employer stop-loss carrier which means it has little impact to the quota-share reinsurer and virtually no exposure at all on excess of loss. So, are reinsurers in a position to advise about COVID-19 liability when they're as far removed from the underlying expense as they are? In mid-March, we saw many reinsurers expressing conservatism and risk aversion. We heard reinsurers wanting to pad trend rates by 5 percent to 6 percent. We also saw reinsurers increase aggregate corridors from 125 percent to 135 percent in some instances (meaning an employer's claims would need to run at an approximately 40 percent trend year over year in order to see an aggregate claim event). This was based on the notion that countrywide infection rates could range between 20 percent and 40 percent (at the time of this writing, the national infection rate is about .3 percent with just under 2 percent of the country tested). The reinsurers were bracing for the worst.

Fast forward one month to mid-April and we've seen some of the risk aversion settle down. There have been plenty of articles and media coverage regarding the impact to hospital revenue seen from deferred elective surgeries. Not only have surgeries been deferred, but diagnostics such as CTs, MRIs, and x-rays have been postponed. Diagnostics are the precursor to surgeries or other treatments and with their deferral, the hospitals are gearing up to only serve COVID-19 patients. Even if that wave of activity comes, the costs above suggest hospitals will not see nearly the revenue they had anticipated and that translates to lower costs for the employer, employer stop-loss carrier and reinsurer. This hypothesis has already been confirmed by several first-dollar health care insurers on recent earnings calls where the insurers have stated the reduction in deferred expenses outweighs the increase in COVID-19 expenses and will lead to higher profits.

Why were the reinsurers so conservative in mid-March? It could be due to the small premiums they collect in the risk transfer which means the margin for error is much smaller. It could also be due to a lack of tools/resources for truly measuring impact of first-dollar expenses. Reinsurers do not typically have resources that understand provider networks, value-based contracts, or population health. Again, these are issues that the first dollar carrier has to deal with and not typically an issue for the reinsurers. But reinsurers will need to adopt these skills if they want to help their clients price a competitive product. Conservatism may keep your risk down, but it could also keep your sales down—especially if other carriers/reinsurers are not nearly as risk averse, and that could spell trouble for the enterprise. As new data emerges, we can expect positions on the claims impact of COVID-19 to change. It's only been a few months, so we need to cut everybody some slack. ■



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ENDNOTES

- 1 Sun Life 2019 High-cost claims and injectable drug trends report press release: https://www.sunlife.com/us/News+and+insights/Press+releases/2019/ci.3+milion+medical+claims+rose+104+from+2015+to+2018.mobile?vgnLocale=en_CA
- 2 Zolgensma: <https://www.fiercepharma.com/pharma/zolgensma-for-free-novartis-global-access-program-plans-up-to-100-doses-per-year-lottery>
- 3 Biomarin's hemophilia gene therapy: <https://www.wsj.com/articles/biomarin-explodes-pricing-experimental-gene-therapy-at-2-million-to-3-million-11579190318>
- 4 FAIR Health Research Brief: <https://s3.amazonaws.com/media2.fairhealth.org/brief/asset/COVID-19%20-%20The%20Projected%20Economic%20Impact%20of%20the%20COVID-19%20Pandemic%20on%20the%20US%20Healthcare%20System.pdf>



The Impact of Digital on the Reinsurance Industry

By Michael O'Dwyer

The irony that many of today's buzzwords such as big data, ecosystems, and AI rely heavily on statistical analysis has not been lost on reinsurers, which is a sector of the industry that has been honing the same skill sets for decades. Nevertheless, patterns of change are coming into focus that reinsurers must be aware of.

First, the volume, variety and velocity of data available to reinsurers has reached new heights, with significant implications for natural catastrophe (Nat Cat) modeling in particular.

Second, reinsurers are increasingly being turned to for more than just ceding premium. Preventative health care, IoT projects, and advanced analytics are just some of the services that reinsurers will be expected to participate in, if not directly facilitate.

Finally, as the relationship between reinsurers and insurers becomes more complicated, reinsurers will need to explore direct and alternative distribution, and several interesting examples of this are already underway.

In light of these changes, which have been hastened by recent developments, The Digital Insurer has identified five key trends that reinsurers need to consider.

TREND 1) EVOLVING USE OF DATA FOR LIFE & HEALTH UNDERWRITING

New data sources and modeling techniques hold the prospect for less invasive and more accurate medical underwriting, especially for chronic conditions such as hepatitis B, diabetes and even dementia. By identifying potential customers within segments previously considered "uninsurable," such techniques can bring reassurance to those traditionally viewed as high risk. Although many of these startups can extract and parse data, the ability to



interpret what this data means still requires human judgment, and, as practitioners of statistical inference, reinsurers can lead the way in partnering with efforts to make sense of medical data.

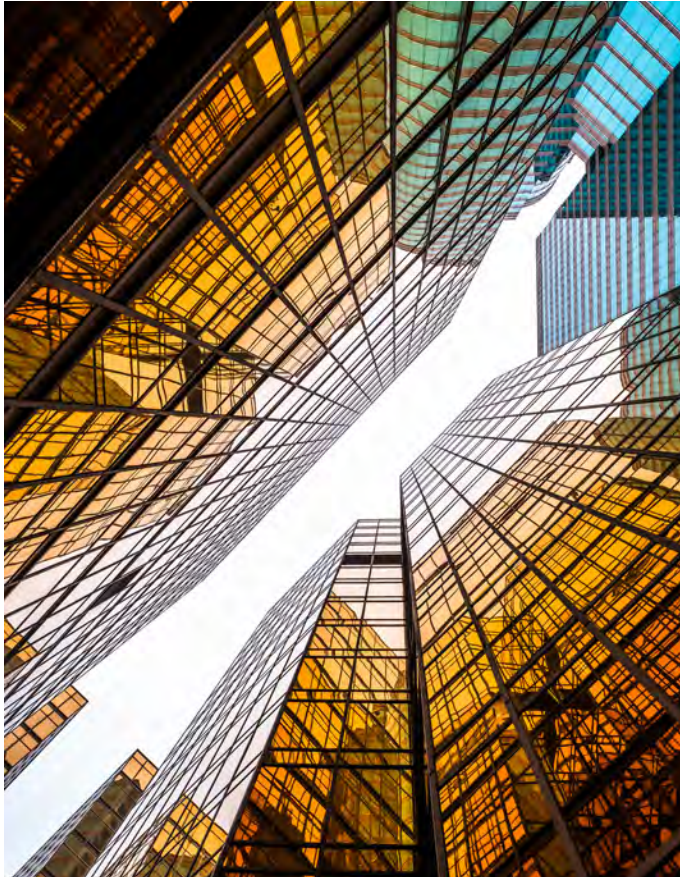
Examples of Evolving Use of Data in Life & Health Underwriting

CausaCloud (China)

CausaCloud is the InsurTech subsidiary of HLT Group, a biotech that supplies advanced analytics to China's state owned health care groups. Given its access to health data, CausaCloud has developed a "medical brain" comprised of more than 3,000 disease models which it uses to aggregate medical data within oncology, immunology and rare diseases. By doing so, CausaCloud can issue new products such as policies for post-surgery breast cancer patients and those diagnosed with thyroid nodules.

Human API (USA)

Human API allows users to access, centralize and share their medical data from a range of American electronic health record (EHR) vendors, labs, pharmacies and hospitals. By coupling the insights generated from medical records with tailored health insurance products, Human API hopes to insure millions of previously "uninsurable" patients.



4Paradigm (China)

Founded by a team from Baidu's machine learning lab, 4Paradigm is China's pre-eminent AI startup. Working with PICC and other state-owned carriers, 4Paradigm successfully developed a data analytics engine that identifies suspicious claims by parsing petabytes of claim data. For reinsurers, startups like 4Paradigm matter as they demonstrate that new underwriting models can and do exist.

TREND 2) MOVE TO PARTNERING WITH COMPANIES OFFERING RISK REDUCTION DIGITAL TECHNOLOGY

The rise of chronic diseases, particularly in Asia, has pushed life & health insurers into preventative health care services that go far beyond wellness apps. However, the fact that almost 30 percent of chronic disease sufferers are undiagnosed remains a challenge. In this case, the opportunity for reinsurers to improve loss ratios opens up new customer segments and becomes an indispensable partner for insurers seeking to develop risk reduction methods.

Wellthy Therapeutics (India)

Wellthy is bringing therapeutics and chronic disease management propositions to insurers across South East Asia. For example, Wellthy has provided its diabetes app to Aviva Singapore's

critical illness policyholders. It is also the only therapeutic in S.E.A. that is allowed to be prescribed by doctors.

Liver Cloud (China)

Unlike many developed countries in the world, hepatitis B is an endemic in China. Approximately one-third of worldwide cases are reported there and 9.8 percent of the population is at risk of premature death from HBV-related liver cancer or cirrhosis. One of the startups tackling this is Liver Cloud, a Beijing-based startup with a range of non-invasive diagnostic products that is being coupled with a medical history and weight management app to promote a broader health/wellness agenda and minimize the contraction of hepatitis B.

PAI Health (North America)

Heart disease remains the deadliest disease in the western world. Although there are many smart watches trying to assess activity levels and prevent health issues before they arise, reducing the risk of cardiovascular disease is a long-term undertaking. Unlike many smart watches, PAI counts everything that elevates your heart rate, in addition to providing continuous data on activity levels, regardless of steps taken as it is based on heart rate. This not only lowers loss ratios but gives insurers insights that were never accessible before, opening up opportunities for segmentation analysis and providing engagement that maximizes renewal rates.

Naluri (Malaysia)

Naluri is a digital therapeutics solution that combines behavioral science, corporate wellness programs, and subscription-based health insurance that resembles Ping An Good Doctor's health care subscriptions. Naluri's founder has encapsulated his company's approach as, "We would rather reduce chronic disease risks for 1,000 people by 50 percent, than to superficially promote health by encouraging 10 million users to do 10,000 steps a day but not make a deep difference to their cholesterol, blood sugar and blood pressure levels."

For reinsurers, startups like Wellthy, PAI Health and Naluri will matter as insurers continue to move from indemnity to prevention, and the associated effect on loss-ratios and customer retention becomes clearer.

TREND 3) ADVANCES IN CAT MODELING

A segment of the industry that has become a bastion for reinsurers, the ability to accurately forecast and model risks associated with natural catastrophes is being reinvented with the use of advanced analytics that can parse petabytes of satellite data. More importantly, governments are now waking up to the fact that historical data can be shared with private reinsurers in order to assist coverage and relief efforts in rural regions that are disproportionately affected by weather events.

WeatherTech (China)

WeatherTech uses satellite data, crop-weather simulation modeling, mobile technologies and deep learning (AI) to allow insurers to efficiently price and administer typhoon insurance across

southern China and S.E.A. Specifically, by combining satellite data and information from China's Meteorological Authority, WeatherTech is better able to price, administer and settle natural catastrophe coverage more accurately and faster than current approaches. This is particularly useful in rural regions where farmers are often compensated at the village level and government loss adjustors struggle to appraise damages quickly. Although Ping An and China United are working on similar offerings, WeatherTech's early entrance into AgriTech and integration with mobile platforms such as WeChat and Weibo has given it an advantage.

TREND 4) PARTNERSHIPS TO GET ACCESS TO PLATFORM TECH (DISTRIBUTION)

The fact that the internet has pushed insurers to embrace direct distribution is known. However, the need for reinsurers to move up-stream and work on distribution projects is still met with trepidation. Thus, reinsurers will need to assess new frontiers and consider accessing distribution channels in order to secure their place in a rapidly changing world.

BoughtByMany

A well-known broker of niche product lines, BoughtByMany has become the U.K.'s biggest pet insurer by grouping consumers that were previously considered high risk (i.e., owners of specific dog breeds) together and then negotiating with insurers on behalf of those consumer groups. BoughtByMany has also begun to develop additional niche products with the help of reinsurers, and this can be examined for global replication in other markets.

Jetty

Many InsurTechs have recognized that the core needs of millennials differ significantly from the previous generation. Jetty sells rental insurance to tenants and acts as a guarantor on leases in exchange for 5- to 10-percent of the annual rent. For renters, instead of forking over a full security deposit, they pay a one-time fee of 17.5 percent of the deposit amount. Jetty then insures and guarantees the full deposit amount for the landlord.

TREND 5) REINSURERS AS PRODUCT DEVELOPMENT PARTNERS FOR NEW CUSTOMER SEGMENTS

In addition to the disruptive nature of internet distribution channels, the emergence of new customer segments is also being driven by changing consumer behavior, and the ability to identify sub-segments within this movement will be a key success factor for insurers. Recognizing this, several InsurTechs are targeting new segments that can now be identified with digital tools, and reinsurers with global risk pools and analytical capabilities are the perfect partners for such efforts.

Datebao (China)

Despite a rich variety of InsurTechs in China, it remains a market of generic life and health products with little differentiation between insurers or products. Recognizing this, Datebao worked

closely with several reinsurers to introduce new health insurance products such as the "million dollar medical product"—a low price, high limit product that is sold in one-week terms as opposed to annual policies that are standard in western markets.

Igloo (South East Asia)

Previously Axinan, Igloo cross-sells Bhinneka, Bukalapak, Lazada, RedDoorz, Shippit, and Shopee. Axinan designs and distributes simple short-term products such as travel, personal accident and device insurance. Igloo is active across Singapore, Indonesia and Malaysia, and is particularly notable for being a licensed reinsurer/insurer itself and represents a warning to those who don't see the link between digital platforms and reinsurance.

Wukongbao (China)

Although the idea of cross-selling insurance online is nothing new, Wukongbao is bringing a new level of sophistication to the practice by providing a data mining API to over 5,000 third party platforms including travel, health, auto and real estate apps. Once embedded, the Wukongbao API parses the server logs of partners in order to identify patterns in user behavior, patterns on which tailored insurance policies can be built and ultimately sold.

CONCLUSION

Ultimately, the digital insurance opportunity for reinsurers offers a range of paths including the ability to open new customer segments, improve loss ratios, and become an indispensable partner for current clients. Considering this, and the startups highlighted in this article, the lessons for reinsurers are threefold:

First, the arrival of new data sources such as medical devices coupled with real-time analytics will allow reinsurers to enter distribution by capturing market segments that were previously viewed as niche or unprofitable.

Second, developments within Nat Cat modeling will challenge a traditional stronghold for reinsurers. In this case, reinsurers will need to move fast to seek out the best and brightest within advanced analytics in order to upgrade their existing NatCat models, in addition to securing public/private partnerships that can provide access to data upon which new analytics tools rely.

Finally, as reinsurers are endowed with analytical strengths and global risk pools, their ability to partner with the next wave of on-demand services is clear, although more effort will be required to attract talent that can identify and capitalize on the possibilities emerging from such sectors. ■



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