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CRE Reading Program Questions

All quizzes MUST be taken online.

*Questions will be **available online April 13, 2020.***

The Use of Big Data and Data Analytics to Enhance Insurer Operations in Asia-Pacific

True or False Questions — Submit Answers Online

1. According to the Society of Actuaries, Big Data analysis will play a bigger role in the future for underwriting, pricing & profitability, and risk selection as compared to now.

   a. True
   b. False

2. The Asia-Pacific region has more strict or comprehensive privacy regulations on the use of data than the United States.

   a. True
   b. False

3. One of the drawbacks of using Big Data Analytics is not having large enough data sets to ensure high data quality to make an informed decision.

   a. True
   b. False

4. Fairness-Ethics-Accountability-Transparency (FEAT) regulation was passed by the Monetary Authority of Singapore to provide guidance on responsible use of artificial intelligence and data analytics.

   a. True
   b. False

5. Regulations will still be rule-based with the development of Big Data Analytics in insurance operations.

   a. True
   b. False

InsurTech in 2020 and Beyond

Multiple Choice and True or False Questions — Submit Answers Online

6. The complete installation and roll-out of 5G technology is expected to be complete nationwide by the end of 2020.

    a. True
    b. False

7. A quantum computer can perform a calculation in three minutes that previously would have taken an early generation computer 10,000 years.

    a. True
    b. False

8. Insurance companies, particularly life insurance and health insurance companies, have found that predictive analytics are not useful to the insurance industry.

    a. True
    b. False

9. Blockchain technology, although initially developed for bitcoin transactions, has useful applications in the insurance industry.

    a. True
    b. False

10. The NAIC has determined that artificial intelligence is not currently an important issue in the insurance industry.

    a. True
    b. False

Ralph Breaks the Examination

Multiple Choice and True or False Questions — Submit Answers Online

11. Which of the following is a general characteristic of a Leader?

    a. Gives Answers
    b. Directs
    c. Demands Results
    d. Focuses on the Team

12. Which of the following is a general characteristic of coaching?

    a. Webinar-based
    b. Informal, Conversational
    c. Demands Results
    d. Points Out Weaknesses

13. Which of the following is not one of the three major buckets for employee development discussed in the article?

    a. Leadership
    b. Specialization
    c. Training
    d. Coaching

14. Being emotionally intelligent means considering the perception we give off and the way we provide instruction or advice.

    a. True
    b. False

15. Although mistakes generally have a negative connotation, they have become the third most important part of learning.

    a. True
    b. False

Pharmacy Benefit Managers: Understanding Their Roles and Impact on Insurers and Policyholders

Multiple Choice Questions — Submit Answers Online

16. PBMs typically provide all of the following services to health plans, except for _____.
    a. Establishing a network of pharmacies
    b. Processing pharmacy claims
    c. Maintaining formularies
    d. Recommending new pharmaceutical drug trials

17. The key value of PBMs to health insurers are their relationships with _____.
    a. Pharmaceutical manufacturers
    b. Mail order pharmacy companies
    c. Local pharmacy chains
    d. Doctors and hospitals

18. Pharmacy rebates were designed to _____.
    a. Give discounts to consumers
    b. Give discounts to pharmacy benefit managers
    c. Give discounts to health insurance companies
    d. Both B & C

19. All of following factors impact the cost of pharmaceuticals, except for _____.
    a. Drug patents
    b. Alternative medications
    c. Manufacturer competition
    d. Pharmacy rebates

20. All of the following are currently major PBMs in the United States, except for _____.
    a. OptumRx
    b. CVS Caremark
    c. WalgreensRx
    d. Express Scripts

SOFE Editor's Note
There are no CRE Reading Program Questions for the Bonus Feature: "Once Upon a Time, 100 Years Ago in NAIC History."

The Use of Big Data and Data Analytics to Enhance Insurer Operations in Asia-Pacific

By Veronika Cooper, FSA, MAAA
Risk & Regulatory Consulting, LLC

Definitions

Big Data: the study and applications of data sets that are so big and complex that traditional data-processing application software are inadequate to deal with them.

Data Analytics: a process of inspecting, cleansing, transforming and modeling data with the goal of discovering useful information, informing conclusions and supporting decision-making.

Introduction

In 2019, Risk & Regulatory Consulting, LLC authored a study sponsored by the Society of Actuaries (SOA) that covered the extent of the use of Big Data or Data Analytics to enhance insurer operations, including sales, distribution, product development, underwriting, and claim management within various markets within the Asia-Pacific region where the SOA has a strong and growing member population. The Asia-Pacific markets in focus primarily included **Hong Kong, Indonesia, Malaysia, Singapore, South Korea, Taiwan, and Thailand**; however, other markets were considered as well. The research was completed using approaches that included a review of technical specifics from relevant literature along with interviews of individual experts on the use of Big Data within the Asia-Pacific region. The results of the research were analyzed and summarized in a final report published by the SOA (https://www.soa.org/resources/research-reports/2019/use-big-data-asia/).

The research involved identifying underlying drivers of the issues and opportunities associated with the use of Big Data and Data Analytics by insurers in the Asia-Pacific region, as well as a review of the regulatory environment. This included consideration of the manner in which the regulatory process potentially influences insurer practices.

The first step in the study was to conduct initial research and identify jurisdictions, followed by surveys of industry practitioners and regulatory interviews. We used a mix of written questionnaires and interviews to accomplish our objectives. Based on our past experience conducting cross-border research through a survey approach, some respondents prefer to use email responses, which can help address language and time zone barriers, and others prefer to discuss questions over the phone, which allows for clarifying questions and may be less time consuming for the participant. We recruited participants via our existing network, where feasible, but also leveraged SOA contacts in other countries. We then worked with the SOA and the Project Oversight Group (POG) to identify and secure many of the key participants to be included in the survey to enable a strong representation of practices across each jurisdiction, including a range of company sizes and product types. The survey participants, which were selected for the study, hold various positions in modeling, actuarial, data and technology departments, mainly within the insurance industry. Overall, the research reflected input from many different sources – seven industry practitioners, three regulatory bodies, 11 members of the POG as well as representatives from the SOA.

Summary

Overall, participants believe that there are many benefits of Big Data and Data Analytics for the markets, industry and products. Some of these benefits are focused on the customer and others on the insurer. The following list of benefits captures a mix of both:

- New data sources that enable better classification of risk

- Better understanding of customer behavior

- Better prioritization of cases for fraud investigation

- Increase in revenue, business growth, efficiency and customer retention

- More efficient processes

- Improvement in customer interaction, persistency and financial protection

There is a great interest in studying, applying and expanding the use of Big Data in underwriting, marketing, sales and distribution, claims, risk management, customer experience management (including customer demographics and behavior) and in the banking and financial services sector. In addition, there are several areas surrounding the concept of Big Data and Data Analytics that companies would like to explore further, such as regulation around sources of Big Data (such as requirements for data sharing and transfer), privacy, controls as well as availability of Big Data platforms, accessibility of software, availability of knowledgeable personnel, cost and time.

From the regulatory perspective, the study showed that existing regulations generally do not contemplate the technological developments that have taken place in the insurance industry. Fundamentally, regulators want to make sure that insurers are treating the customer fairly. A rule-based approach may not be an effective framework for achieving this goal with respect to Big Data and Data Analytics. Fixed rules can potentially be circumvented as technologies continue to develop. Instead, a principle-based approach, with clear guidelines and consequences for compliance failures may be the preferred framework for the development of regulations focused on the use of Big Data and Data Analytics in the insurance industry.

Use of Big Data in Insurance

Insurance companies are very interested in studying and applying Big Data applications. For example, many auto insurance companies in China are experimenting with Telematics (which refers to any device which merges telecommunications and informatics. It includes anything from GPS systems to navigation systems), which is a classic Big Data application. Many insurers in the region are investing in the development of various Data Analytics models such as cross sell/upsell (selling additional products or services to an existing customer or inducing the customer to purchase more expensive items, upgrades or other add-ons in an attempt to make a more profitable sale), claim fraud analytics, claims orientation analytics and underwriting and pricing analytics, to

name a few. In addition, insurance professionals are striving to understand the demographics, behavior and potential needs of existing clients or target markets by using various methods such as gathering data from administration systems or wearable fitness devices and analyzing social media data for product pricing. There has been a movement towards greater optimization of clients' experience with digital/non-digital touch points, real time product recommendations and streamlined claims processes with machine learning models.

Most insurance products use data analytics in one of two ways: they are either analytics-driven products, where analytics drive the product development; or traditional insurance products, which use analytics, as experience under the insurance product is accumulated. Ultimately, all insurance products tend to incorporate Big Data and Data Analytics in some form.

The following two charts from the SOA report illustrate a comparison of current and expected future uses of Big Data in insurance as identified by the surveys:

Current Uses
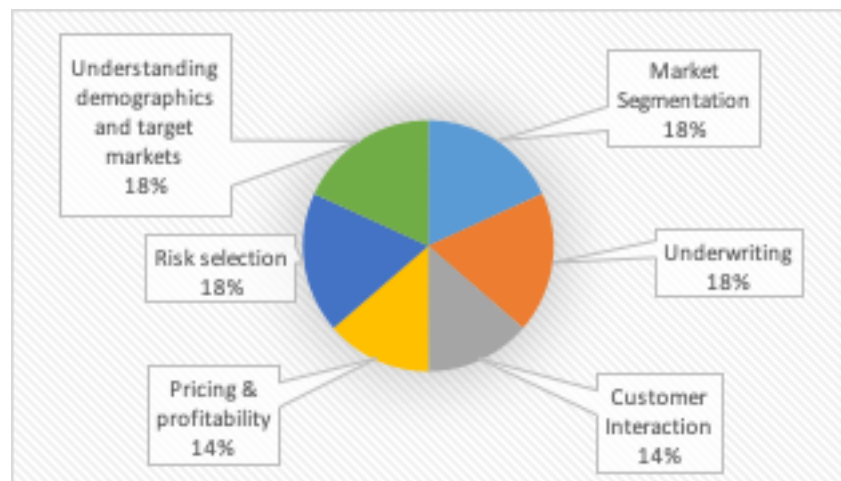
Future Uses
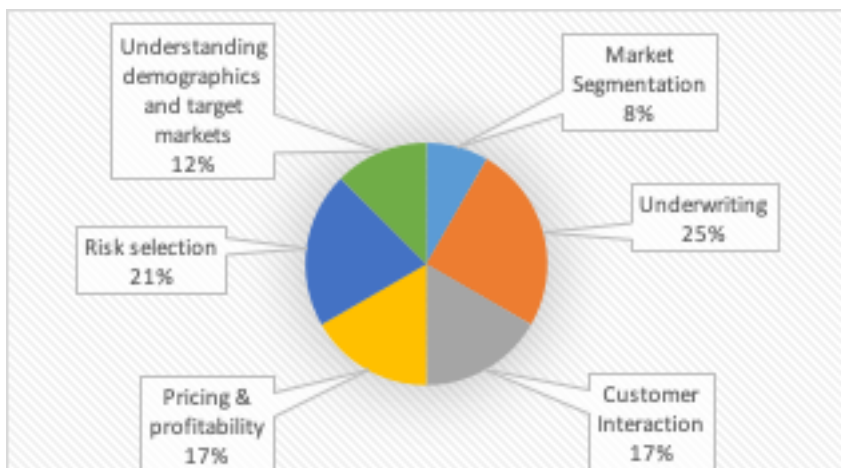
In regards to the use of Big Data in insurance applications in Asia-Pacific, the study noted that the Asia-Pacific region generally has significant privacy regulations in place on the use of data. In some cases, privacy regulations are stricter or more comprehensive than those in the U.S., leading to more restrictive use of certain information in insurance applications. For example, in the U.S., the use of credit scores or personal financial data for lines of business such as Auto and Home is typical, but in Asia-Pacific, this practice is uncommon, because there are more privacy regulations (such as Personal Data Protection Act) on the data than in the U.S. As a result, using third party vendors' data or external data is more restricted. There are also regulations around usage of personal data with respect to customer consent and data storage that are applicable and need to be incorporated. In many of the countries such as India, Japan and North Korea, only anonymized data can be exported from the country. With respect to South Korea, no data is permitted to leave the country.

Pros and Cons of using Big Data
Despite the many potential challenges, it appears that there is general acceptance that Big Data and Data Analytics-based approaches will only continue to grow in use in the Asia-Pacific region. The potential benefits are viewed as significant, both in terms of competitive advantage and in terms of customer satisfaction and product availability. It seems likely that the use of Big Data and Data Analytics will increase slowly but surely over time. Many of the challenges relate to the availability of data and data quality; addressing these challenges typically requires significant investment. Insurers in the region generally appear to be willing to make these investments in order to be in a position to realize the benefits of Big Data and Data Analytics across the breadth of their operations.

Below is a sample of some of the benefits and drawbacks of Big Data and Data Analytics as identified by the surveys:

Benefits
- Higher accuracy and quality of analysis that are a result of much larger sets of data being analyzed. The chances of missing smaller details, outliers and/or certain clusters of data decrease as the volume of data increases.

- Ability to develop products that better fit clients' needs (better understanding of customer behavior). Big Data can help insurers focus on the right data to be studied through efficient aggregating of user data from multiple points across different products and through more targeted analysis of markets, regions and even countries.

- Ability to improve client persistency and reveal potential upsell opportunities through more detailed analysis of client behavior.

- Ability to streamline underwriting processes for ease of doing business (more efficient processes).

- Improved distribution channel analysis and advisor performance forecasting by improving companies' ability to identify new opportunities quickly and efficiently.

- Ability to use digital assets and enhance client interactions. There are many Big Data digital platforms that companies can choose from that can provide unique analysis of large sets of data. More advanced Big Data technology can also generate more sophisticated Big Data models that take into account the bigger picture of the collected data.

- New data sources that enable better classification of risk.

- Increase in revenue, business growth, efficiency and customer retention through analyzing higher volumes of data and at higher speeds than was done traditionally.

Drawbacks

- Restrictions on data usage, including regulatory and public concerns.

- Inability to implement recommendations due to lack of sufficient tools.

- Inability to gather large sets of data (low volume of data), which leads to low data quality, which, in turn, makes it difficult to use Big Data to drive decision-making (if not enough samples are available, analyst should be careful to caveat the findings).

- Data privacy issues and the danger of "data dredging" (which is the use of data mining to uncover patterns in data that can be presented as statistically significant without first devising a specific hypothesis as to the underlying causality).

- Limits on availability of technology to gather and analyze data.

- Business stakeholders' lack of understanding of the data.

Considering the potential benefits and drawbacks mentioned above, insurance companies should be aware of risks such as adverse selection, potential for lower customer satisfaction and potential for lower operational efficiency. It is important to start small and start as soon as possible to be able to manage competitive pressure and gain access to skilled expertise. In addition, the companies should increase collaboration between practitioners with different backgrounds (for example, information technology, statistical, modeling, actuarial and business), particularly if they are not trained data scientists and/or do not have insurance backgrounds (the training process could be lengthy and expensive and may involve bringing a team (or multiple teams) of external experts to lay the foundation of an internal data science team). Also, the stakeholders will need to transition from the traditional understanding of insurance to accepting new insights generated from Big Data and Data Analytics.

Regulatory Challenges

To gain a deeper understanding of Big Data and Data Analytics from a regulatory perspective in Asia-Pacific, we conducted interviews with individuals from the following organizations:

- Monetary Authority of Singapore (MAS)

- Insurance Authority of Hong Kong

- Office of Insurance Commission of Thailand (OIC)

The study showed that new regulations emerging in the region in response to the increasing use of Big Data and Data Analytics generally relate to privacy concerns, along with the fair treatment of customers. An example includes MAS's principles-based Fairness-Ethics-Accountability-Transparency (FEAT) regulation, which provides guidance to firms offering financial products and services on the responsible use of Artificial Intelligence (AI) and data analytics, and how to strengthen internal governance around data management and use. This is intended to foster greater confidence and trust in the use of AI and data analytics, as firms increasingly adopt technology tools and solutions to support business strategies and in risk management.

Greater use of algorithms and AI by insurers and their service providers will challenge regulators' ability to supervise these processes adequately. The potential risks that they pose (e.g. operational, cyber-security) could also be impacted by the potentially limited expertise in most insurers at present, and the lack of robust and tested risk management systems and controls with respect to advanced technologies.

If such a function is outsourced, then the insurer and the regulator will have the added challenge of overseeing and conducting due diligence on such activities.

These developments also mean that supervisors will have to develop new skill sets. Regulators will need to build a better understanding of how these technologies and business models work, be able to monitor the behavior of such firms and assess their impact on the market, and develop/hire the skill sets necessary to supervise these activities. Given the shortage of talent in some of these fields, supervisors may also find it challenging to compete with the industry for them.

Collaboration between supervisors, insurers, and technology providers is a key requirement in the development of effective regulation of Big Data and Data Analytics. An example of a collaborative measure taken by a supervisor is the use of sandbox, provided by the supervisor, which allows insurers to test new algorithms prior to implementation.

Conclusion

The use of Big Data and Data Analytics in Asia-Pacific appears to be evolving in a practical and well thought out manner. Insurers are generally implementing

new technologies, and slowly incorporating the information from those technologies into pricing and other areas of insurance operations. This is a prudent approach, as significant time is required to develop a credible volume of experience under evolving technologies and changing behaviors.

The use of Big Data and Data Analytics is perceived to be widespread, at the very least in terms of insurer aspirations if not implementation. We believe that there is a general expectation that the use of sophisticated modeling and technologies will only grow in the future. There is also optimism from both the industry and the regulatory perspective that these technologies can have a significant positive impact on the insurance industry – in terms of customer satisfaction, product development, lower costs, and safer and healthier consumers.

There is also an understanding that there are significant risks associated with the implementation of Big Data and Data Analytics-based approaches. Such risks include privacy, the fair treatment of consumers, unexpected costs of developing new solutions, and the acceptance of technological-based information as the basis for decision making by the management of insurers. It appears that the industry and the regulatory community are proactively and collaboratively developing new strategies to address these challenges, understanding that the potential benefits of Big Data and Data Analytics make its continued development in the insurance industry within the Asia-Pacific region all but inevitable.

The regulatory environment in Asia-Pacific is developing in concert with the increasing use of Big Data and Data Analytics. There is a general consensus that regulatory capabilities need to be expanded in order to effectively supervise insurers. Regulations need to evolve in order to catch up to changes in the way insurers do business. Those regulations are likely to be principles-based rather than rules-based as a means of setting guidelines for insurers without being overly prescriptive. Regulators in the region appear to be open to the responsible use of Big Data and Data Analytics in their jurisdictions and support exploration and further development of techniques related to Big Data and Data Analytics among insurers.

About the Author

Veronika Cooper, **FSA, MAAA**, is an actuarial consultant at Risk & Regulatory Consulting, LLC. Veronika provides life, health and P&C actuarial consulting and financial exam support on behalf of state insurance departments. Since joining Risk and Regulatory Consulting, Veronika's main focus has been Risk Focused Examinations for companies of various sizes and characteristics (which includes thorough examination of company's materials and background, performing recalculations, where and if necessary, and documenting processes and results). Veronika has also worked on various projects for commercial clients, such as MassMutual internal audit and review of Company's model validation as well as assisted in the ORSA review for Prudential Financial Inc. Veronika has also worked on multiple research projects for the Society of Actuaries and supported the team in preparing and updating the Valuation Law Manual for the Academy of Actuaries. Veronika graduated from Georgia State University, Summa Cum Laude, with a Bachelors of Business Administration in Actuarial Science and Computer Information Systems. Veronika is a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. She can be contacted at veronika.cooper@riskreg.com.

InsurTech in 2020 and Beyond

Alex Pirie, CPA, CFE, CMA, CIA, CFE (Fraud)

Risk & Regulatory Consulting, LLC

A recent article in the *Journal of Accountancy* asserts that a "Fourth Industrial Revolution (after the revolutions in water and steam power, electrical power, and electronics and information technology) is underway globally" (Steven Mezzio, Robin Stein & Stein, 2019).

So, what is it about the present that makes experts confidently predict a burgeoning Fourth Industrial Revolution in the near future?

The impetus for this revolution is a confluence of factors including advancements in technology infrastructure (5G, Internet of Things, the Cloud, and quantum computers), and innovations in disruptive technologies (predictive analytics, robotic process automation, blockchain/distributed ledger technology, and artificial intelligence). The emergence of increasingly disruptive technologies also brings attention to new regulatory concerns.

Advancements in Technology Infrastructure

5th Generation (5G)

The advent of 5th Generation (5G) wireless networking technology, while not being revolutionary in and of itself, will be instrumental in heralding innovation by upgrading existing outdated infrastructure and drastically improving capabilities.

We have all been inundated with the term 5G from cell phone carrier commercials that spam the airwaves incessantly claiming to have the biggest and best network, including 5G technology. While most often associated with cell phone coverage, the prospects of 5G are significantly greater than just being able to watch more cat videos while commuting.

From a marketing prospective, the "generation" nomenclature is underwhelming in providing prospective for the improvements over existing technology. Every generation thinks that theirs is the best; what makes this generation different from the historically modest improvements of the previous four? First, 5G can accommodate up to one million devices per square kilometer, compared to just 60 thousand with 4G. Secondly, 5G speeds are exponentially faster than 4G. The chart below from a *Journal of Accountancy* article summarizes just how significant the addition of 5G technology will be, with regards to networking speeds:

Year	Data Standard	Speed
1991	2G	0.1 Mb/second
1998	3G	0.1-8 Mb/second
2008	4G	15 Mb/second
2020	5G	1-10 Gb/second

(J. Carlton Collins, 2019)

The caveat to this is that the roll-out of 5G technology is not as simple as flipping a switch; it requires physically installing new infrastructure. The process, both lengthy and expensive, will take years to implement, and will start only in large cities. Additionally, even if a city has 5G in place, outdated products may not be able to use it, just as the average pocket calculator does not have the capacity to use Wi-Fi or Bluetooth. Even more complicated for larger companies with a global footprint will be having multiple locations, around the world, on separate networks and having to retain compatibility with older technology to avoid locations being unable to share data due to lack of a global standard (The Economist, 2019).

Internet of Things [IoT]
Though it will take time to implement, improved infrastructure is necessary to accommodate the growing IoT world, which includes Internet-connected devices from smart phones, tablets, and watches, to home appliances, automobiles, and even light bulbs. The average refrigerator has more advanced computers than Blackberry phones from the early 2000's, which were considered revolutionary in their time. The common denominator, and increasingly most valuable asset for all of these devices, is the accumulation and transmission of data.

The explosiveness of social media spawned an entirely new industry dedicated to analyzing data and attempting to identify potential new customers. Data has become an invaluable commodity, but until now companies were limited to analyzing high-level trends based on the masses. Increasingly, the focus is on the accumulation of individualized data specific to each person. Auto insurers requesting permission from policyholders to monitor driving habits is only the beginning. John Hancock, for example, has altered marketing and pricing strategies, using data generated from fitness trackers, to generate a steady stream of data about buyers in return for price discounts on life insurance (Horton, et al., 2019).

Many consumers are unaware of how and when their data is being used by corporations. Others who understand that corporations collect their personal data are happy to pay the hidden cost in return for increased convenience. In 2017, Deloitte estimated that 35.6M people in the US will have used a voice-activated assistant device at least once a month; a jump of almost 130% over 2016 (Deloitte, 2017).

The Cloud
Improving the network infrastructure hardware for increased size and speed of data transmissions also means that there is less need for physical storage maintained onsite by individual companies, which is why many are moving, at least in part, to the Cloud. Depending on the quantity of data and length of time it will be stored, leveraging the benefits of the Cloud can be an economical method for storing the gargantuan quantity of data that includes not just text, but images, sounds, and videos. Storing information on the Cloud can help mitigate the need for individual companies to build and maintain their own servers for storing and processing massive quantities of data, while also allowing it to be accessed nearly anywhere at any time.

One company, 24 Hour Fitness, is an example of how to leverage the Cloud and improvements in technology to deliver more personalized service. Per Deloitte, "They realized the need to offer members more personalized offers, with customized pricing and contracts, but its premise-based data architecture was unable to do that. Therefore, the company moved its key data to a cloud-based data warehouse. Now, its data is refreshed 40 percent faster, and data from nine different sources flows into a single cloud repository" (Davenport, Linthicum, & Verma, 2019).

Quantum Computers

Companies now have access to increasingly more data, transmitted in real-time, that can be accessed anywhere. The billion dollar question is what to do with all of this data? Not only is new software necessary to handle the computations associated with data analysis, but new computing hardware as well, due to the increasing complexity and sheer size of the calculations. While still years away from commercial viability, researchers are experimenting with quantum computers, which are exponentially faster than even the 'super computers' of today. *The Economist* noted that "A team of researchers at Google described how they had used a quantum computer to complete, in three minutes, a calculation that would have taken a classical machine 10,000 years to crunch through" (The Economist, 2019).

Innovations in Disruptive Technology

Follows is a summary of some of the most promising technologies poised to disrupt the insurance industry in the next few years, including predictive analytics, robotic process automation, blockchain/distributed ledger technology, and artificial intelligence. This list is in order of technology that has the most immediate viability and wide-spread use versus technology that is still more theoretical than practical. That said, one thing for certain is that the full potential of each of these technologies has not yet been realized; technological advancements and breakthroughs are happening at an exponential rate.

Predictive Analytics

Much of the time technological innovation is simply finding more efficient ways to perform existing tasks and/or expounding upon the capabilities of existing procedures. This concept holds true for predictive analytics as well. Everyone is comfortable and familiar with the idea of using analytics to identify trends and patterns in historical data; predictive analytics takes that one step further by forecasting outcomes with an acceptable level of reliability based on existing data sets.

All growing businesses have used basic predictive analytics in predicting future staffing needs based on production. The major breakthroughs in this area are due to dramatic increases in the quantity of data available, as well as the computational power of modern computers. The difference can be likened to preparing a general ledger and trial balance with pencil and line paper compared to performing the same tasks with a dedicated general ledger software.

A 2018 survey by Willis Towers Watson, which surveyed life insurers about how they use predictive analytics to assess business performance, reported that "fraud detection and prevention are key targets, with 86% of participants planning to use predictive analytics to assess fraud potential"(Willis Towers Watson, 2018). Predictive analytics are being utilized in the healthcare and insurance industries in a variety of new and exciting ways, including, but not limited to:

- Fraud detection

- Predicting epidemics and outbreaks

- Predicting natural disasters

- Optimizing hospital staffing to achieve optimal patient-to-staff ratios (Watson, 2019)

- Identify the risk profile of aged-care services (Watson, 2019)

- Advise on the risk of deaths in surgery based on the patient's current condition, previous medical history, and drug prescriptions (Watson, 2019)

Robotic Process Automation

An apt description of robotic process automation (RPA) from the *Journal of Accountancy* states: "Most current RPA iterations are perhaps best described as Microsoft Excel macros on steroids" (Drew & Tysiac, 2019). The premise of RPA technology is that it can perform routine monotonous tasks across multiple types of software. As a simplified example, assume that one task an employee performs is to login to a website every morning, look up the current balance and enter that amount into the company's proprietary software; an RPA could be built to perform this function automatically.

Before interns and associates around the world start rejoicing at the thought of having repetitive tasks, such as downloading files, taken from them, there is a drawback to using RPA. The drawback is that they can be costly and time consuming to set up, due to the significant amount of nuance necessary to make them function seamlessly. A task that would be performed only a handful of times and would take a few minutes to be performed by an employee is likely not worth the effort to automate, as it would take longer to setup the RPA than it would to just perform the task normally.

There are some instances where the use of RPA can be useful for one-time projects, such as a mergers and acquisitions, with the end goal of merging disparate systems into one. Depending on the size of the companies and level of compatibility between the existing software applications, this can be an arduous process requiring thousands of hours. The use of RPA to pull information from one or multiple systems and enter it into another system can streamline this labor-intensive process (RSM US LLP, 2019).

Another practical example of the use of RPA within the health care industry was highlighted by Richard Kes, a health care partner and industry senior analyst at RSM US, which involves the use of RPA for eligibility checking. Richard notes that, "Inaccurate insurance information is one of the leading causes of denials. By leveraging the bots to conduct the website lookups, organizations can strengthen their denials prevention processes and increase revenue while decreasing days in accounts receivable" (RSM US LLP, 2019).

Blockchain & Distributed Ledger Technology

Blockchain used to be synonymous with "bitcoin," a term that most people had never heard of before 2017 when bitcoin's price and popularity skyrocketed. Just like bitcoin, blockchain technology has persisted as part of the modern IT dialect, but has since grown beyond the scope of bitcoin. At its core, a blockchain and other distributed ledger technologies are just a newer method of sharing information using cryptography and distributed computing.

The benefits of cryptography in blockchain and distributed ledger technology are non-reputability and immutability. Without going into too much detail, cryptography is used so that each transaction block has a digital signature (asymmetric encryption) and each transaction block has a digital fingerprint (cryptographic hashing). A digital signature is a 'private key' that is bound to a particular user, so they cannot later deny validity of their signature, thus making the transaction non-reputable. A digital fingerprint is created by a mathematical hashing process used to write new transactions into a block. It's a sequence of letters and numbers that creates a 'fingerprint' for each transaction. If a transaction were subsequently tampered with, it would be easy to detect as the resulting fingerprint would no longer match the original fingerprint. This makes the transactions immutable because it essentially guarantees that no transaction has been tampered with. Even if a hacker could pull this off, they'd have to do it simultaneously across every computer on the distributed network.

The potential benefits of distributed ledger technology as a "universal source of truth" are evident in the healthcare industry. With blockchain, a patient's medical history could be centralized in a blockchain, giving patients control over their medical records, allowing doctors, patients, insurers to see the relevant health information needed for enhanced patient care and experience (Smith, et al., 2018). Several companies have even begun working on such initiatives. For instance, "in September 2018, IBM's blockchain division announced plans for a new app that uses a private blockchain to allow users to retain complete control over their healthcare data" (Price, 2018). Another proof of concept developed by Deloitte Netherlands, in collaboration with SNS Bank and Radboud, referred to as Prescript, would give "patients complete ownership of their medical records, allowing them to grant and revoke provider access to their data" (Smith, et al., 2018).

There are several other initiatives growing within the world of insurance, including two prominent alliances focused on bringing efficiencies to insurance using blockchain and distributed ledger technology; the Blockchain Insurance Industry Initiative (B3i) (https://b3i.tech/home.html) and The Institutes Risk-Stream Collaborative (https://www.theinstitutes.org/guide/riskstream-collaborative).

Artificial Intelligence (AI)

At its core, AI is just a compilation of advanced algorithms and analytics. An article in Strategic Finance summarized AI as follows:

> AI is considered "first wave" when it follows clear, logic-based rules to arrive at a decision or recommendation, e.g., how AI is used in computerized chess. The "second wave" of AI uses sophisticated statistical learning to arrive at an answer to solve problems, as seen with an image-recognition system. The "third wave" of AI is at the leading edge. It performs duties of the second wave and explains the logic or reasoning behind the decision at which it arrived. In other words, it tells you that the image it sees is an airplane and why it thinks it's an airplane. The potential positive applications to the accounting and finance functions are endless. (Monterio, 2019)

Even the "third wave" described herein is a far cry from the self-aware Skynet in the Terminator series of movies as modern day AI is still mastering board games. In 2016, Google's AI beat the human champion of Go, the Chinese board game; for reference, the first chess-playing computer that defeated a reigning world chess champion, Deep Blue, was in 1997. In each instance, the AI plays an infinite series of games, making every conceivable move, compiling notes on the strategies that result in a win.

The good news is that commercial applications of AI are substantially less complicated than mastering Go or chess. Current applications of AI include ranking money-laundering schemes based on the degree of risk, which is based on the nature of the transaction, predicting employee expense abuse, and more (Applegate & Koenig, 2019).

A December 2019 article by Deloitte concluded that the use of AI in insurance is lagging behind other industries (Hupfer, 2019). The insurance industry in particular is rife with possibilities for the use of AI due to the large quantity of data, as well as the potential for reducing the amount of judgment used in evaluating potential coverage and/or claims. Different brokers at the same company reviewing identical information could substantiate two drastically different quotes; the same is true for claims analysis.

Regulatory Concerns

Disruptive technologies are still in the infancy stage, comparatively, and are prone to errors, biases, and unintentional discrimination. Especially when first implementing AI in areas that have historically required significant judgement, such as claims and underwriting, these technologies may be best used in conjunction with human beings to avoid regulatory concerns.

Inevitably, there are more resources, including personnel and capital, attempting to devise new technology or exploit existing technology, than there are regulators. However, regulators have not been complacent in monitoring the use and manipulation of data. In response to the proliferation in the size and complexity of algorithms, the NAIC organized an Artificial Intelligence Executive Working Group. This working group will develop regulatory guidance, beginning with guiding principles, and make other recommendations to the Innovation and Technology Executive Task Force by the 2020 Summer National Meeting. Additionally, a team of state insurance regulators at the NAIC released an AI regulatory principles draft that starts by declaring that AI systems efforts should be fair and ethical, and accountable (Bell, 2019).

Lawmakers, as well, are not ignorant of the risks of algorithms that function as black boxes. At the federal level, Congress has introduced a bill requiring companies to investigate and fix algorithm bias within their systems (Fasman, 2019). At the state level, New York City convened a task force in 2018 to examine how its agencies use algorithms (Fasman, 2019). Similar actions are being taken globally. As of December 2019, "twenty-six countries (and counting) have published national AI strategies or frameworks to foster growth, and many are backing up their ambitions by making investments, setting up programs, sponsoring research, and establishing partnerships" (Hupfer, 2019).

Conclusion

Whether it be today, tomorrow, or years from now, the inexorable progress of technology has become as certain as Ben Franklin's oft quoted death and taxes. History is littered with companies that remained complacent and became obsolete, such as Kodak and Blockbuster. Organizations should start planning now for upgrades to their technology infrastructure while considering the potential regulatory risks from disruptive technologies.

When asked by the next generation where you were when the Fourth Industrial Revolution happened, what will be your response?

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Ralph Breaks the Examination

By Rachel Schmoyer, CPA, CISA and John Romano, CPA, CFE, CSM, CITP

Baker Tilly Virchow Krause, LLP

Note to Reader: The purpose of this article is to provide a teaser into some of the topics that will be discussed as part of the SOFE Career Development Seminar (CDS) 2020 presentation – Ralph Breaks the Examination. At the conclusion of this article you will have the ability to participate in an <u>anonymous</u> survey that will assist Baker Tilly in obtaining data for the presentation in July. This data will be shared to all attendees during the presentation, and the raw data will be made available, when requested, in Excel & PowerPoint.

The world is constantly changing, whether it be changes in the work environment, work culture, or the speed of technological advancements, it is now more important than ever for us all to remain adaptive to our employees development needs. Over the next 5 – 10 years, there will be an influx of new team members, not only in the insurance companies but also at state insurance departments. So although we cannot guarantee what the next 5 – 10 years will look like, we can guarantee is that all of us will have new team members. The new employees, hopefully, will be starting with a lot of aspiration and motivation. Our responsibility and obligation to them is to train and provide them with the building blocks to be successful.

What we have found is that most new team members, either recent graduates from a university or transitioning from a different career, have little to no insurance experience, other than understanding that it is something that they need to buy for their car or for the new apartment they started renting. So how do we effectively train, inspire, and continue to grow team members into critical thinkers and thought leaders in insurance industry, regulatory examinations and analysis? Well that is the 1-million-dollar question, generally easier said than done, and candidly, there is no clear cut answer. However, this article is a starting point to provide a high level overview of certain mindsets and actions that yield positive results for the better.

Experienced employees, supervisors, managers and executives need to aspire to be effective leaders, provide thoughtful training, and on-the-job coaching. The historical motivational approach that includes direction of "get it done", and "do it only this way" does not provide positive results in the long term and generally leads to lower retention of new employees. There is a correlation between three (3) major buckets: leadership, training, and coaching, that when effectively used in harmonization yield happier employees, strong growth, and work product(s).

Leadership:
The buzzword that everyone continues to throw around as an aspiration for most senior or tenured employees. But what does "being a leader" actually mean. If we're being honest, there is no right answer, no clear cut definition or "checklist" to define a leader, but, according to Volaris Group, the general characteristics of a leader vs. a boss are:

BOSS	LEADER
A know it all	Always willing to Learn
Talks more than they listen	Listens more than they talk
Gives Answers	Seeks solutions
Criticizes	Encourages
Points out weaknesses	Recognizes natural gifts
Directs	Coaches
Defends their ego	Reveals vulnerability
Focuses on themselves	Focuses on the team
Puts blame on others	Takes Responsibility
Demands results	Inspires Performance

How does the above correlate with motivating and growing staff? We would say everything. Generally, most team members respond better to characteristics on the right, than on the left. Let's walkthrough a hypothetical but often real example. If you are part of a larger organization, it allows you to not only reflect on your own group, but to see the challenges and the successes of other groups. In this example we will utilize a new team members with about 1-2 years of experience:

An Insurance Department has an increase in insurance companies required to be examined for the as of year, and as a result, new team member has been assigned to two (2) examinations at the same time. The first examination is being managed by Supervisor A that generally encompasses the meaning of a "boss", while the second examination is being managed by Supervisor B that generally encompasses the meaning of a "leader". While both the boss and leader want positive results, an examination performed timely, appropriately and within accreditation standards, there is a clear distinction in the approach and outcomes. The leader or Supervisor B, looks to inspire, and obtain solutions to best approach a set of guidelines from the new team members while providing coaching opportunities, versus the boss, Supervisor A, that provides only a set checklist, requirements, basic expectations and minimal learning opportunities and autonomy. Supervisor B, the leader, has consistently found that the new team member is performing at or exceeding expectations, while the Supervisor A tends to find that, while results are sufficient, the team member does not appear to be motivated, which reflects in their work product and how proactive they are.

So what is going on here? Well, put yourself in the new team member's shoes, would you rather work for a supervisor that tells you what to do and when to do it, or a supervisor that invests in you, considers your ideas or improvements, seeing the value of your work, and the ability to continue to drive the department forward? Most team members have better and more consistent performance with supervisors that have the characteristics similar to Supervisor B in our example. Further, teams that have taken an approach similar to Supervisor B have had increased growth, as well as increased efficiency and accuracy. Our

presentation will delve into these results more, and why we see less leaders than bosses, what makes it so hard to be a leader, what things we can try to do to make ourselves better leaders, and some tips on how acting like a leader inspires and motivates your team.

Training & Coaching:
Just as leadership motivates, inspires, and encourages creativity, training transfers knowledge providing the team member(s) with the needed foundational concepts, and coaching enhances that foundational knowledge to provide the ability to think proactively, and outside the box. One cannot have leadership without training & coaching and vice versa, all three (3) are critical to the success of your department/organization. Just to note, for the purpose of this article, we will be utilizing coaching and mentoring as one instead of two (2) separate methods, as we believe an effective coach should have the characteristics of a mentor, such as looking to develop new leaders, seek to pass on internal expertise and experience, and develop employees to remove barriers that hinder their path to success. What is the difference between training and coaching? Two (2) words that most managers utilize interchangeably, however there is an important distinction. Based on Maestro Design & Technology, the following are the major differences between training and coaching:

Training	Coaching
Transferring knowledge	Enhancing knowledge or skills
Often used in a group setting	Usually one-on-one
Frequently off-site or at a specific facility	Usually on-the-job
Formal	Informal, conversational
Usually structured	Usually unstructured
Depends on telling	Depends on asking
Learning Focused	Development Focused

With regards to coaching & training, there are three (3) levels we see most teams fall into:

1. Currently provide no webinars/in-person training, and rely heavily on "on the job" coaching.

2. Provide some webinars/in-person training, and rely on "on the job" coaching to supplement real word examples to the information learned during the webinar/in-person training.

3. Provide webinars/in-person training, and then rely that the team members/individual will be able to execute an examination with little to no guidance/coaching.

Although training is specific to the team, and should be assessed by the leader as to what will provide the greatest value to their employees, we find that number two (2), generally, provides the best outcome. The webinar/in-person training provides the team members with base level knowledge to work off of when they are executing an examination and allows the team members to feel independent enough, and better adept to be proactive and work though questions. Most managers ask why can't they only provide webinar/in-person training, it is usually a lot easier as it speaks to the masses and requires less effort? Based on research completed by Learning Solutions, as it relates to training, "the forgetting curve shows that within one (1) hour, people will have forgotten an average of 50% of the information you presented. Within 24 hours, they have forgotten an average of 70% of new information, and within a week, [employees forget] an average of 90% of [the information taught]." In short, training is not enough.

Coaching, a subcomponent of leadership, provides the employee the real-world application of the foundational concepts retained during the webinar/in-person training. Coaching and leadership, when the foundation has been set, allows employees to understand the process, provide the ability for the employee to think outside the box when attacking a challenge, and allows the coach to obtain feedback on the process. In order for coaching to be effective, and achieve the results outlined above, the coach must be willing to know that their ideas are not always the best, the processes currently in-effect may not be (and generally is not) the best, and mistakes should be welcomed and are a critical part of learning.

Mistakes generally have a negative connotation, however they are probably the most important part of learning. People generally have a higher rate of learning quickly and successfully through making mistakes. It is with mistakes that great things can happen, or terrible things that then provide a great learning experience for those involved. It is important that as coaches, we do not demoralize individuals for learning mistakes made, as coaches we are supposed to oversee, provide guidance, and let learning mistakes happen (when appropriate), but protect the individual from "falling off the ledge". Then after the mistakes happen, it is important to reflect as a team and provide the "why", and the "how".

As mentors, we must also be **emotionally intelligent**, considering the perception we give off, and the way we provide the instruction or advice. Employees are individuals first, and therefore will handle and perceive things differently, it is important that we remain cognizant of that and keep a constant line of communication open should they need it.

Mentors should also be **role models**, and provide their team members advice on career advancement, laying out experience and advice that has lead them to the position they are currently in. Mentors should not just seek to make the employees good at their job, but rather, strive to make them leaders and be as successful as they can be.

Lastly, growth and advancements often occur when a coach **listens** versus just instructs, takes the feedback from the employee, and is constantly open to new ideas, or new processes. Sometimes the requested ideas or processes provided may not make sense to implement, however, we should always be able to provide the "why", if we cannot explain the "why" (and we are not talking about the "because I told you so" or "that's the way it was always done"), then it may be time to rethink how your team has been completing that process.

At this point you may be saying to yourself, this all great, but as part of our examinations/analysis we have required procedures/guidance that must be adhered to. There are certain standards that must be met, but who says that they have to be done a certain way or with a set template. If we are achieving the same outcome, but more efficiently or effectively couldn't you argue that the way we were completing it wasn't appropriate? Fortunately, for example, the NAIC Financial Condition Examiners Handbook is primarily guidance and not necessarily required step by step procedures, therefore there is great flexibility and opportunity to allow innovation and autonomy while achieving the required accreditation standards.

Being a mentor is not easy, especially as work becomes busy or overwhelming, however, in the end it will reduce overall work effort of the team, and provide a better culture.

In summation, leadership, training, and coaching, when completed, in unision can provide a culture that is "people first" resulting in high success rate for the department/organization. We should always keep in mind, is that improvement is never done, a process, an enhancement, is never finalized. We should all continue to listen, grow, and adapt.

Join Us

Thank you for taking the time to read our article. We hope that it has provided some insight! As previously mentioned, we will be elaborating on the topics aforementioned, as well as a few additional, during our session at the SOFE 2020 Career Development Seminar – Ralph Breaks the Examination. We ask that everyone come with some challenges that they have faced with their teams. These will be utilized to help guide and tailor the presentation. If there is anything specific you would like to request in advance that we dive into, please feel free to email Rachel Schmoyer at Rachel.Schmoyer@bakertilly.com. We look forward to seeing you there!

Please see the link below, if you would like to participate or provide to your new (1-3 experience, or 1-3 years in the department or organization) team members to complete the anonymous survey:

https://www.surveymonkey.com/r/examinerengagementsurvey

The more participation we can receive the better data we can provide to the group during our presentation.

About the Authors

Rachel Schmoyer, **CPA, CISA** is a manager at Baker Tilly with over 4 years of experience in the regulatory insurance practice. Rachel has participated in risk-focused examinations, and information technology examinations, of property & casualty, health, and life insurers.

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Pharmacy Benefit Managers: Understanding Their Roles and Impact on Insurers and Policyholders

By Phil Talerico, CPA, CFE, MCM
Baker Tilly Virchow Krause, LLP

Have you ever Googled the term "pharmacy benefit manager"? If you do, you will see the Wikipedia definition for pharmacy benefit management; which states, "In the United States, a pharmacy benefit manager is a third-party administrator of prescription drug programs for commercial health plans, self-insured employer plans, Medicare Part D plans, the Federal Employees Health Benefits Program, and state government employee plans." Another definition right below the search bar will describe a pharmacy benefit manager ("PBM") and note they process and pay prescription drug claims and are responsible for creating and updating your health plans' drug formulary[1]. Further down the page will be links with titles like "Pharmacy Benefit Managers and Their Role in Drug Spending," "The Value of PBMs," and "Are pharmacy benefit managers the good guys or bad guys."

You could click through these Google results for a while. Navigating to the Videos Tab will provide you a number of short clips containing their share of animated cartoons and graphics published by health organizations, news outlets, and PBMs themselves trying to explain PBMs and their purpose. Though one of the main points this article attempts to discuss (or debate[2]) is "Why do we need pharmacy benefit managers?"

What are PBMs?

As previously noted, PBMs are entities that administer, or handle, the drug benefit program for health plans. Mostly, these entities serve as intermediaries between the health plan (or employer) and the policyholders (or employees) prescription medications. In serving as the middleman; PBMs will interact with almost all the steps within the supply chain while performing services under contract with a health plan that include:

- Managing prescription (Rx) distribution,

- Establishing a network of pharmacies,

- Operating mail order Rx,

- Processing Rx claims,

- Maintaining formularies,

- Negotiating rebates,

- Performing drug utilization review, and

- Overseeing compliance.

These services are not necessarily new to the prescription drug process. Sure, mail order prescriptions likely became possible, or at least more prevalent, with the growth of PBMs. However, health plans created formularies, managed utilization, delivered prescriptions, and established pharmacy networks for members to obtain prescription medications before PBMs, as we know them today.

History of PBMs

Employers providing health care benefits to employees relied on health plans to ensure that these necessary benefits were provided to members efficiently. These health insurers would outsource certain functions, one of which being pharmacy benefit administration primarily to process claims and establish pharmacy networks. Over time, the health plans expectations from these pharmacy administrators grew.

The PBM industry we know today was born out of the traditional pharmacy claims processing services originally offered. Specifically, this evolution started with the invention of the drug card, which allowed a more efficient way for plans and pharmacies to process claims. A member's drug card allowed for simple benefit management features such as administering incentive programs and communication of pharmaceutical limitations (i.e. covered and uncovered medications).

With the growing needs of health plans and the evolution of technology, the PBM services offered started to expand. First, the ability to process claims online. Development of formularies and drug utilization reviews followed as standard services provided to health insurers by PBMs. The ability and desire for additional pharmacy services, along with the separation of pharmacy from the major medical benefit, helped accelerate the development of the current PBM service offerings. Further, the pharmaceutical industry's response to PBMs created the staying power of PBMs within the supply chain.

What is a PBMs Value, Today?

With health insurers contracting with PBMs for greater service and benefits for its members, it appears natural that this relationship would stick. In an article published on verywellhealth.com, Anthem is quoted as describing PBMs as "an organization that provides programs and services designed to help maximize drug effectiveness and contain drug expenditures by appropriately influencing the behaviors of prescribing physicians, pharmacists, and members." Containing drug expenditures while also ensuring the best possible care for members has an obvious benefit for health plans that should also filter down to its members.

The true staying power of PBMs may ultimately be attributed to their relationships with the pharmaceutical manufacturers. The following diagram[3] provides a visual of the interactions a PBM has and the flow of services and funds between the parties; that result in the maximizing of drug effectiveness described by Anthem.
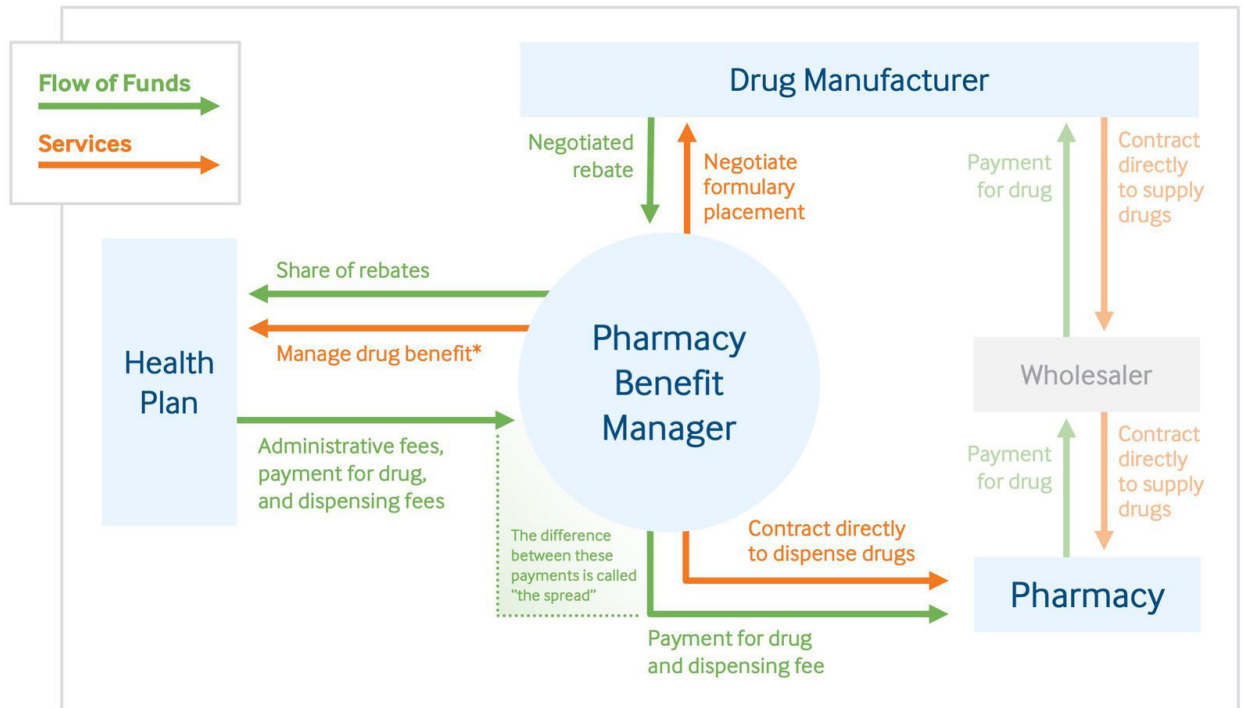
When health plans outsourced formulary development to the PBMs, it created an incentive for drug manufacturers to develop a relationship with the PBMs. Drug Manufacturers started rebate programs designed to encourage PBMs to place the manufacturer's drugs on the formulary. As demonstrated in the diagram above, rebates flow to the PBM and are shared with the health plan. While this rebate process may have evolved over the years, it essentially works as follows:

1. A Drug Manufacturer creates a new medication and establishes a price for the drug.

2. PBMs negotiate rebates on behalf of the health plans and employer groups they represent; which ultimately lower the cost of the medication paid to the manufacturer.

3. As members fill prescriptions through pharmacies, the manufacturer price is paid by the health insurers / PBMs / and Members (via co-pays)

4. PBMs then submit to the drug manufacturer to receive the negotiated rebate amount and share this savings with the health plan

It seems like a win-win-win, right? PBMs leverage their negotiating power to reduce the cost of medication and receive compensation, in the form of a share of the rebate, for their services. Drug manufacturers receive placement on a health plan(s) formulary that provides the likelihood of sales of their medication. Finally, health plans reduce costs through their share of these rebates and

pass the savings on to the member, either through lower premiums or reduced co-pays for specific drugs.

Why all the PBM Confusion?

So if manufacturers are selling their prescription drugs, PBMs are compensated for their services, and health plans experience lower costs that are passed to their members. What are the potential problems?

First off, let us start with the relationship between the Drug Manufacturer and the PBM. As PBMs leverage formulary placement in exchange for rebates, there could be a natural conflict created.

Rebates are usually determined as a percentage of a drugs cost. A drugs cost[4] could be impacted by the number of alternative medications available in the market and/or whether a patent[5] is in place by the manufacturer for that drug. As an example, if two drugs exist for the treatment of a certain illness, one costing $10 to fill and the other $100, with a PBM negotiated 20% rebate on both; there is an obvious incentive created for the PBM to include the drug costing $100 on the formulary over the $10 costing drug.

Now this example provided was hypothetical and designed to illustrate a basic point. In reality, it is not so much a one or another choice when it comes to making drug selections for the formulary. More likely, both drugs would be included and the objective of favoring the use of the higher cost drug, if that was desired, would be achieved through utilization management techniques such as tiering[6].

The previous potential issue aside, there could be instances when a higher costing drug would be selected for "valid" reasons. Whether it is more effective at treating the illness, causes less side effects, or is simply the best (and only) option. At least with the PBM negotiating rebates and sharing in these cost savings with the health plans; the benefit ultimately makes its way to the members (in addition to receiving the most effective medicine for their illness).

While this is likely true for large health plans and employer groups, who carry influence with their contracted PBMs and can ensure the cost savings of rebates are mostly passed through[7], small to mid-sized health plans may not have the same negotiating power. Further, with PBM and Drug Manufacturers typically keeping contracts confidential and drug-specific rebates a secret; there is very little information available to health plans of any size to assess their savings from pharmacy rebates (other than requesting the information from the PBM directly).

These transparency flaws in the system do not consider the revenue spreads[8] and Gag Clause[9] created and used by PBMs through within their relationships with the pharmacies themselves. Both of these practices are additional examples of limited transparency within PBM operations that result in confusion of their true value.

So What is Next?

The national debate surrounding high prescription drug costs does not appear to be ending soon and with the fingers pointed by all parties (Manufacturers, Health Plans, and PBMs) we are likely a long ways off from a resolution. Further, the PBM market has undergone a period of consolidation, resulting in three major PBMs, Express Scripts, CVS Caremark and Optum[10], creating a sort of monopoly-like environment that could exacerbate some of the current operational issues discussed.

So how as regulators should we be reviewing these relationships and the risks they present to the health plans we regulate. A material financial risk that exists is the credit risk associated with a health plans rebate receivables. How about the reputational risk that could exist and potential issues that could occur because of an inadequate vendor oversight program? Finally, with both political parties recognizing high drug costs as an issue most Americans face, what responsibility (or benefit) would be placed on health plans as potential legislation to force transparency from PBMs (and other parties in the supply chain)? And should this be addressed through some kind of prospective risk?

Join Us

These regulatory considerations are one of the planned objectives of my 2020 SOFE CDS Presentation titled, Pharmacy Benefit Managers: Understanding their Roles and Impact on Insurers and Policyholders[11]. Therefore, I hope you can join me in Orlando, FL to discuss this evolving topic further.

Source Citations

1- Essentially a list of covered / approved prescriptions drugs applicable for members of a health plan.

2- The point of this article is to create a dialogue related to PBMs, their role in the Rx drug supply chain, and generate a thought around how PBMs are considered during the regulatory oversight performed by State Insurance Regulators.

3- Diagram was obtained from commonwealthfund.org

4- Some would argue, Drug Manufacturers specifically, that rebates paid to PBMs are a factor increasing the cost of prescription drugs.

5- Patents would provide an exclusive right to sell a specific drug to the manufacturer who created it.

6- Tiering is the process of placing drugs on a formulary into buckets; called Tiers. A drugs placement within a tier is based on whether it is generic or name brand, its overall cost (and co-pay cost), the plans preference for the use of the drug, and whether the drug requires pre-authorization for the member to receive it.

7- In an article published on The Commonwealth Fund (commonwealthfund.org) it notes that PBMs indicate that 90% of rebate amounts received are passed back to the health plans; though it is hard to verify.

8- A way PBMs have created revenue from reimbursement to pharmacies. Essentially, PBMs would create a schedule of max cost they would reimburse a pharmacy for a list of certain generic non-patent drugs. These reimbursement amounts were confidential and would allow the PBM to charge a health plan or employer more than what was reimbursed the pharmacy; creating a revenue spread for the PBM.

9- These clauses, which were a PBM requirement for a pharmacy contract, would prohibit the pharmacist from disclosing to a patient the drugs cost if paid directly and not through insurance; which was sometimes cheaper.

10- Estimated to total 71% of Medicaid membership and 86% of the private market. Further all three are integrated within a major health plan organization.

11- Tentatively scheduled as session C7 during the 8:55am slot on Wednesday, July 8.

About the Author

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Phil works in the Financial Services - Risk and Internal Audit Consulting group with eight years experience in insurance regulation. Phil has been with Baker Tilly since June 2014 and prior was an Examiner with the Maryland Insurance Administration. Over the course of his career, Phil has served as an Examiner, Examiner-in-Charge, and as an Analyst performing Risk-Focused Financial Examinations and Analysis. These regulatory engagements have included of Life, Health, and Property & Casualty Insurers entities, as well as examinations for various State Insurance Departments over Captive Insurers. Phil holds the designation Certified Public Accountant, Certified Financial Examiner, and Market Conduct Management. Phil is a member of the Society of Financial Examiners, Maryland Association of Certified Public Accountants, Insurance Regulatory Examiners Society, and Institute of Internal Auditors.

Bonus Feature: Once Upon a Time, 100 Years Ago in NAIC History

By Connie Roland and Stacey Mitchell, MLIS
National Association of Insurance Commissioners

1919: When world events and insurance collide

1919 was the end of the influenza pandemic, the most severe pandemic of any in recent history. Mortality was high in almost every age group, resulting in an estimated 50 million deaths worldwide. This, in turn, created heavy and unexpected burdens on life, accident and health insurance companies.

A paper "The Effect of Influenza on Insurance" prepared by the Honorable Burton Mansfield, Insurance Commissioner of Connecticut and Thomas F. Tarbell, Actuary for the Connecticut Department, was presented during the *Proceedings of the National Convention of Insurance Commissioners* in September 1919.

The Effect of Influenza on Insurance, 1919 NAIC Proceedings, pgs. 302-311.

THE EFFECT OF INFLUENZA ON INSURANCE
By Thomas F. Tarbell, Actuary, Connecticut Department

At the time of publishing Part II of the Connecticut Insurance Report for 1919 (Business of 1918) a circular letter designed to obtain statistics showing, among other things, the effect of influenza upon mortality, was sent out by the Honorable Burton Mansfield, Insurance Commissioner of Connecticut, to the thirty-two life insurance companies doing business in that State. I had the honor of assisting Mr. Mansfield in the preparation of the resulting statistics. Special stress was put upon the increase over the normal rate of mortality both as respects the year 1918 and also the total period affected. Owing to the fact that many of the companies were not able to furnish complete statistics, and replies were received from only sixteen companies at the time the report went to press, the results of our investigation were not entirely satisfactory. I was therefore pleased to have an opportunity to go into the matter again and report the results of this Convention.

I have divided the present investigation into three parts: first the effect of influenza upon mortality and sickness, second the effect of influenza upon the increase in new business, and third, the effect of influenza upon premium rates. As regards influenza claims I wish to point out that I have included therewith claims due to la grippe and pneumonia. The three are so closely related that, as I found from the previous investigation, more satisfactory results would be obtained by taking them together than by making an attempt to segregate the claims due solely to influenza. For instance, in many cases the cause of death was pneumonia following influenza, and many deaths are stated as due to la grippe which unquestionably were due to influenza.

I quote below the information requested from the various life companies, companies writing health and accident insurance and fraternal societies doing business in Connecticut, upon which the present investigation is based.

Life Companies.

1. Amount of insurance written during the first six months of the years 1916, 1917, 1918 and 1919. (Written basis.)
2. Total amount of death claims incurred during the period from October 1, 1918, to March 31, 1919.
3. Amount of such claims due to influenza, la grippe and pneumonia.
4. Has your company increased rates on any forms of policies since October 1, 1918? If so, what principal factor influenced such increase, or increases?

Tarbell's report was also widely published and distributed in other insurance publications at the time, such as The Eastern Underwriter (Sept. 12, 1919) and The Spectator (Sept. 18, 1919).

The Eastern Underwriter

The Spectator

***The Effect of Influenza on Insurance*: Report Background & Major Findings**

A circular letter was sent out to 32 life insurance companies doing business in the state of Connecticut to collect statistics on the effect of influenza upon mortality.

Mr. Tarbell's investigation was divided into three parts based on claims incurred during the same six periods dated October 1, 1915 – March 31, 1919:

1. The effect of influenza upon **mortality and sickness**
2. The effect of influenza upon the **increase in new business**
3. The effect of influenza upon **premium rates**

It was estimated that there was a **25% increase** over the normal rate of mortality due to influenza, as respects to claims incurred up to December 31st, 1918.

So…what about those life insurance claims?

The influenza and kindred claims represented **47.8**% of the total claims.

Life Insurance Claims Filed Between 10/1/1918 - 3/21/1919
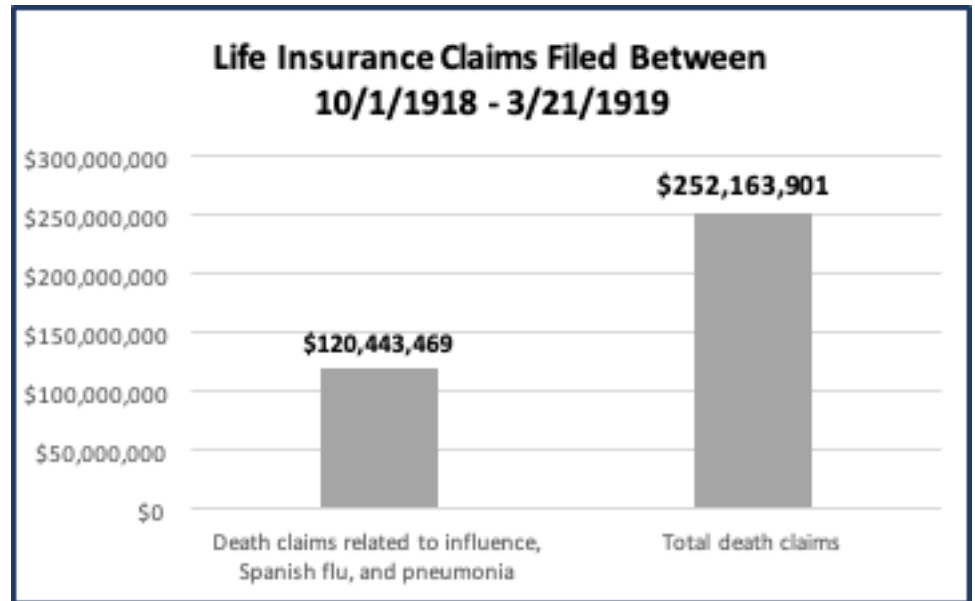
Other Reported Statistics

Fatalities by Age

Influenza, Spanish Flu, and Pneumonia Deaths by Age

Between October 1918 – March 1919

Over 40	517
Under 40	1,489

• 74% of influenza fatalities affected those younger than forty.

• In many cases influenza itself was not the cause of death, but rather a secondary infection (pneumonia) as a result of the influenza virus.

Total Death Claims Incurred

	Number of death certificates/ death claims
10/1/1915 – 3/31/1916	1,122
10/1/1916 – 3/31/1917	1,095
10/1/1917 – 3/31/1918	994
10/1/1918 – 3/31/1919*	1,972

*During this last period, **1,069** death claims were due to influenza, la grippe (Spanish flu) and pneumonia.

Was influenza "good for (insurance) business"? Yes, but that's not the entire story…

In 1919, there was a **78.9%** increase in the amount of new business written by life companies compared to the 23.5% increase in 1917. What else besides influenza accounted for this surge?

Mr. Tarbell concluded that the top three most likely reasons for the increase in insurance uptake, in his actuarial opinion, were (in order):

1.) General economic prosperity

2.) Influenza

3.) Government insurance for sailors and soldiers.

Mr. Tarbell acknowledged that it was difficult to attribute causation to one specific event. Even though there were many variables in play that could account for the increase in insurance business, in his opinion influenza did play a big role. However, the booming economy at the time (in part due to the manufacturing of munitions for the war effort) made insurance more afford-able for consumers and was probably also a major factor for the increase in business.

New Life Insurance Written By 29 Companies (1916-1919)
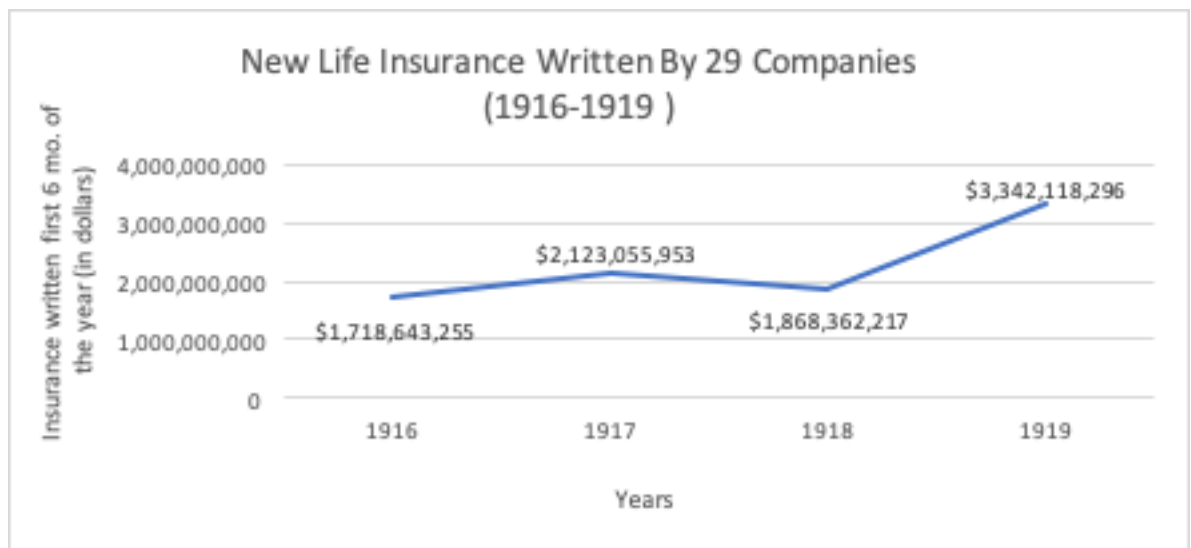
The effect of influenza on premiums
- At the end of 1918, out of 31 life insurance companies surveyed, **only 3** indicated that they made increases in premium rates. Two of the companies attributed the increase to the influenza epidemic.

- Increase in premium rates by 13 companies writing health and accident insurance were **nearly all attributed to influenza** (with the caveat that "the need for increased rates had been felt for some time"). Nine other health and accident companies reported that they did not raise

premiums. One company had not yet decided at the time of the survey whether an increase was forthcoming.

Source Citation:
The full report can be found in the **1919 NAIC Proceedings** on the Library website: http://library.naic.org/. Historical research compiled and analyzed by the NAIC Research Library.

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