

The future of  
actuarial:  
strategic, agile  
and lean



Building a better  
working world

## The winds of change

The insurance industry, like many, is rapidly evolving and innovating in response to persistent growth challenges and key global megatrends:

- ▶ **Low interest rates** have become the new normal and the biggest challenge to growth, especially for life insurers. Coupled with volatile equity markets and the high cost of options and guarantees, the low rates have caused insurers to re-examine the markets they serve and the products they offer. With excess capacity and declining margins, companies also need to cut costs to remain competitive and fund critical strategic investments.
- ▶ **Technology innovation** brings changes in how we live and work that enable and threaten insurers. Greater digitization, along with increased use of big data, internet of things, robotic process automation and artificial intelligence, mean more refined customer sourcing and pricing, better customer experiences and more seamless processes for insurers. New players that are adept at leveraging data and technology also present risks and opportunities. Will InsurTechs be competitors, collaborators or both?
- ▶ **Customer and distributor expectations** have been rising and will only increase. Customers want personalized experiences, digitally-enabled with the human touch and available when and how they want it.
- ▶ **Customer demographics** are evolving. Baby boomers have shifted from accumulating wealth to managing retirement. Millennials will soon dominate the workforce and have different priorities: they approach work differently, are saving less, and delaying marriage and other life events. The composition of the family is evolving, and the US population continues to diversify.

The COVID-19 pandemic presents additional challenges and changes for insurers and their customers. The intermediate- and longer-term implications are not yet clear, but we believe it will accelerate workplace and industry change and create more demand for insurance products and services and more opportunities for nimble insurers.

## Life insurers are responding in a variety of ways:



### Customer centricity and financial well-being

The conventional wisdom about life insurance being sold, not bought, is undergoing a paradigm shift. Insurers and other financial services providers are moving from a product to a customer focus, including multiple aspects of financial well-being such as protection, retirement, health and even managing day-to-day finances. Insurers are evaluating whether to target previously underserved market segments and how to compete in the emerging consumer financial services landscape.

### Digitizing distribution

Insurers everywhere are seeking to master distribution in a digital world. Success requires not just strengthening direct channels, but also providing digital tools so agents and traditional channels can work more productively and attract new talent. Companies want strong digital capabilities and human agents who are skilled, empowered and capable of holding substantive conversations around financial well-being.

### Winning the war for talent

Insurers around the world need new talent and different skills – the “secret sauce” for success. To attract the right talent, they will need to instill a real sense of purpose, provide enriching experiences and better communicate why the industry matters and why it is an appealing sector in which to develop a career.

### Achieving cost efficiency

Past cost management initiatives failed to move the dial, leading insurers to more aggressively adopt multiple strategies and tactics, including process automation, cloud migration and core system transformation, shared services and centers of excellence, outsourcing, ecosystem collaboration and value chain disaggregation/ optimization.

## Future of actuarial

The challenges and changes facing insurers, while difficult, are also opportunities for transformative change. Agile companies with a strategic focus can emerge as industry leaders, stronger than ever.

The financial management community at insurers (broadly including finance, risk, actuarial and investments) are facing increased pressure to successfully navigate change and drive growth while lowering costs. The need for these teams to work closely together has never been greater.

This paper outlines how actuarial (and other financial leaders) can set a bold vision and help drive transformational change to thrive in a period of unprecedented challenges and opportunities for the industry.

### Key focus areas for this paper include:

- ▶ The mission, purpose and vision
- ▶ Strategic focus areas going forward
- ▶ The importance of new technology and new approaches
- ▶ Talent management
- ▶ Organizing for success

While the focus of this paper is on life insurers in the Americas, many of the themes apply broadly to other geographies and non-life companies as well.

## Actuarial mission, purpose and vision

Actuaries are often uniquely positioned to advise and provide strategic direction and decision support for an insurance company. They often have a broad overall understanding of how the company provides value to customers, generates profits and manages risk.

However, there is a diversity of practice as to how actuarial organizations - and individuals on the team - define their mandate. Is the team empowered and passionate about helping to tackle the strategic priorities and challenges, or a siloed group focused on compliance and/or the needs of the past?

For actuarial leaders looking to drive change within their organizations, step one is to define a compelling mission, vision and purpose to rally and mobilize the team. The actuarial mission should align with and support the organization's overall vision and purpose.

What are the attributes of the actuarial team that you aspire to build and develop?

- ▶ The engineers and stewards of financial well-being for both customers and the company?
- ▶ Creative problem solvers, thought leaders and innovators?
- ▶ Strategic advisors on key questions requiring financial and risk decision support?
- ▶ Agile business partners and change agents?

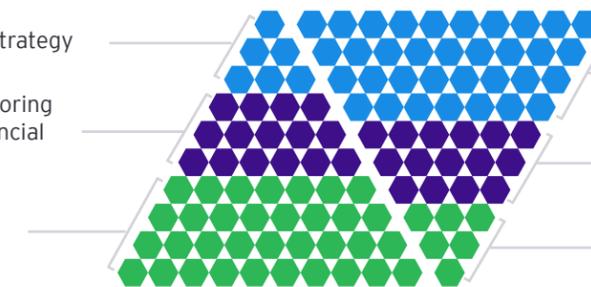
The challenge and opportunity for leaders is to flip the focus and mindshare from process and compliance activities to the strategic agenda and value creation:

### Past

Support company strategy

Performance monitoring and steward of financial well-being

Process-driven, computational, repetitive tasks



### Future

Support company strategy

Performance monitoring and steward of financial well-being

Process-driven, computational, repetitive tasks

The vision and purpose will come to life as actuarial leaders and their teams co-develop with the C-suite the change agenda and the highest and best use for actuarial talent on the issues that matter most. How will this impact the strategic focus for actuaries and their day-to-day activities?

To solve today's complex business problems, actuaries need to work as part of integrated teams including finance, risk, investments, and others to develop and implement solutions. The data and technology environments supporting actuarial have also evolved into enterprise class solutions with industrial strength. It is imperative that companies leverage common data, systems and processes to support their financial management community wherever possible.

# Strategic focus: what's new and different?

To optimize our contributions and value, we should challenge and redefine “what good looks like” for the next decade to align with and support the business and growth agenda. We believe the strategic focus for leading actuarial teams, as a part of agile, cross-functional financial management functions, will evolve as follows:

## Pricing and product development

Innovation of products and services will accelerate on multiple fronts, including protection, savings/retirement and advice as companies navigate changing customer needs and preferences across market segments. New and more simplified solutions will emerge in the digital world. New products for hyper low interest rates are needed. Accelerating the product development life cycle will be a key differentiator in a rapidly changing marketplace, and we need to avoid developing products today that become a legacy technology challenge tomorrow.

## Experience monitoring/Assumption setting

Actuaries have always led the way in analyzing experience and setting assumptions. Historically, this has centered on concepts like homogeneity of data, credibility and the law of large numbers. In a big data world, actuaries partnering with data scientists will lead the way in innovating how experience is analyzed, how assumptions are set and how AI, machine learning and analytics can be integrated into the process.

## Risk management, ALM and Hedging

With accounting and risk/regulatory frameworks moving to forward looking, model/principle-based approaches, companies' net risk exposures will become increasingly transparent. Measuring and managing risk and capital requirements will require more dimensions of measurement and more sophisticated models to capture both current and projected balances and key metrics across a wider range of business and economic scenarios. Risk and ALM frameworks will need to support the strategic imperatives to grow the business profitably while managing shorter- and longer-term risks. COVID-19 illustrates the potential for complex combinations of risks and the critical need for both qualitative and quantitative risk management programs at insurers.

## Customer value

With increased emphasis on developing more customer-centric businesses comes the need to reinvent the analysis of profitability and our historical management reporting frameworks. What is the lifetime value of our customer and distributor relationships (and the associated market segments and channels)? Which customers are adding value and which strategies and investments will have the greatest impact on enterprise value?

## Financial projections

In a model-centric, data-driven business, financial projections will be more critical than ever to provide forward-thinking decision support. The days of an annual plan - focused on a single scenario and taking months to develop - are over. The business demands visibility into more diverse sets of financial and business scenarios and stresses, with multiple accounting lenses, management actions reflected and nimble processes with rapid turnaround times.

## Valuation, financial reporting and analysis

Actuarial valuation processes will be automated and efficient end-to-end processes supported by enterprise class technologies and IT professionals. Areas of emphasis will include: (a) designing, managing, controlling and leveraging complex systems, processes and data, and (b) analyzing results and providing actionable business insights and recommendations, with increased focus on economic value and both macro and micro views of the business with visualization. Total throughput must increase to meet the increasing demands of business leaders and external constituencies in a faster paced world.

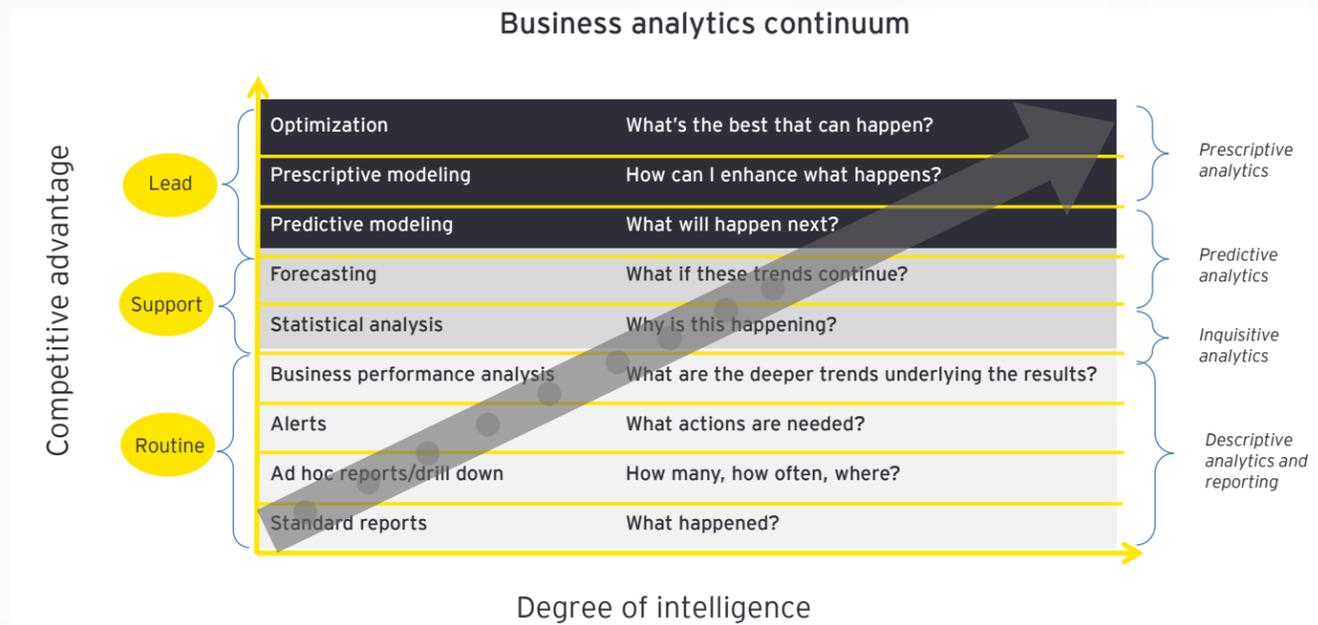
# Embracing new technology

Technical expertise has always been a prerequisite for actuaries' success, and emerging technologies can be leveraged to improve the services provided and reduce costs. A few examples include:

- ▶ **Programming languages for data science** - Powerful and easy-to-learn languages allow for efficiently working with large data sets, incorporating external data as needed, and applying AI, ML and analytic concepts
- ▶ **Business intelligence and data visualization tools** - To better analyze complex models and provide greater business insights, visualization tools can be leveraged to more easily spot patterns, trends and outliers in groups of data
- ▶ **Automation and workflow management tools** - End-to-end data analytics and process automation platforms have emerged that allow actuaries to transform and fully automate their manual processes, and enhance their reporting with visualization and analytics
- ▶ **Cloud** - Actuarial technology environments will increasingly leverage the cloud for hosted modeling, computing, analytic and data management purposes.

# Analytics and big data

Big data and analytics are transforming the world. The insurance industry is leveraging advanced analytics techniques and big data across a spectrum of opportunities for business intelligence and competitive advantage. Leading companies are increasingly focused on the upper segments of the business analytics continuum – prescriptive and predictive analytics:



## Some examples of key success stories to date include the following:

- ▶ **Claims:** reduce claims expense while improving the claims experience and customer satisfaction and leveraging claims capabilities to promote new business growth.
- ▶ **Underwriting:** dramatically automate, accelerate and improve the underwriting experience and process, increase the win rates, reduce costs and enable a direct-to-consumer business model.
- ▶ **Marketing and distribution:** achieve new ways of seamlessly engaging customers through digital, mobile and nontraditional channels; identify groups of customers based on common characteristics to support enhanced experiences, marketing and product development; empower, enable and support distributors.

**Lessons learned from the property and casualty (P&C) sector:** the P&C industry has been using big data and analytics for many years across the insurance value chain. Some of the lessons learned include:

- ▶ The future of actuarial involves a hybrid/multidisciplinary working model, where actuaries need to partner with data scientists. Each group has a valuable mix of skill sets that are complementary. Actuaries should understand the analytical concepts and the impacts that the analytical models could have on the business but not necessarily build all the models.
- ▶ As insurance companies leverage new analytical models for an increasing array of business applications, they need to bring them into their model risk management (MRM) framework. Actuaries can leverage their business translator skills to evaluate inputs, assess the methodology and technical risks, and articulate the stakeholder impact.
- ▶ While some advanced analytics techniques can be quite powerful and efficient, they can also be less transparent and more difficult to understand. Actuaries have a long history of interacting with business functions and regulators and are well equipped to explore multiple techniques and evaluate explainability, transparency and overall lack of bias.
- ▶ Expectations are rising – policyholders are looking for insurers to provide a tailored experience similar to what the big tech companies provide. Actuaries should continually explore new third-party data sources that can potentially replace the traditional predictive variables with more behavioral insights (wearables for life insurance and telematics for auto) and will allow them to tailor products based on behaviors and preferences.

# Artificial intelligence and machine learning (AIML)

AIML has begun to transform many industries. Insurance companies have made significant investments in AIML on the claims and underwriting side, but few have explored whether or how AIML could revolutionize actuarial work.

Many insurers are now realizing the benefits of modernizing their actuarial data, systems and processes; AIML (and analytics) could be the next big thing for actuarial in areas such as the following.

## Advanced stochastic modeling

As the need for complex modeling has grown to support more advanced accounting and risk metrics, demand for computing power has increased exponentially along with the associated spend. However, with current tools and techniques, in many cases, it is still prohibitively time-consuming, costly and impractical to perform projections that involve nested stochastic “inner loop” calculations at each time step in an “outer loop” path or scenario. AIML could be the silver bullet we have been looking for.

## Hedging and asset-liability management

The banking sector has been increasingly exploring the use of AIML to manage the risk of trading operations and improve portfolio asset selection. In particular, deep hedging could allow actuaries to cover risks beyond the instantaneous changes in fair value or statutory capital and, in doing so, significantly increase the efficiency of the hedging operations.

Similarly, asset management firms have explored potential AIML solutions to inform and improve asset allocation decisions. This concept will likely be extended to the asset-liability management function of insurance companies.

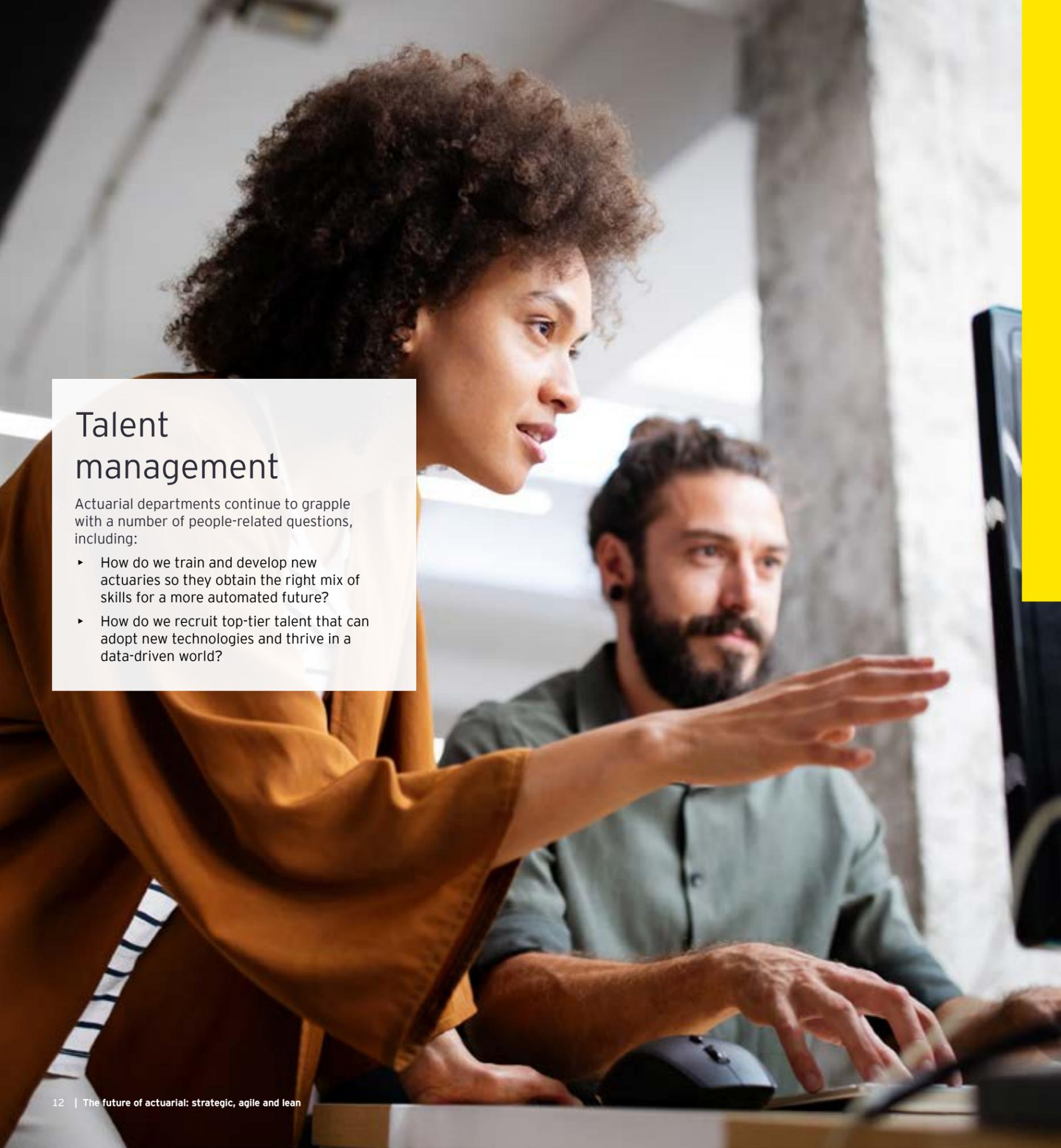
## Experience monitoring and assumption setting

While most companies have become increasingly granular in analysis, and some have leveraged data science and predictive analytics to further augment assumption setting, most have yet to determine how data science techniques can be more fully integrated into their experience monitoring and assumption-setting processes.

A common misconception is the notion that AIML and big data will replace actuarial judgment. Rather, actuaries should look at techniques rooted in data science to better understand what drives risks and behaviors while monitoring the ethical use of data and preventing unintended discrimination.

## Internal controls

Even with increased automation and more rigorous controls, critical actuarial modeling and valuation processes remain a risk area for insurance companies. Defects in data or complex actuarial models can be difficult if not impossible to detect with traditional control techniques. With AIML, actuaries can move beyond traditional checks and train models to automate both the prevention of errors and the detection of anomalies.



## Talent management

Actuarial departments continue to grapple with a number of people-related questions, including:

- ▶ How do we train and develop new actuaries so they obtain the right mix of skills for a more automated future?
- ▶ How do we recruit top-tier talent that can adopt new technologies and thrive in a data-driven world?

## Skills and training

The Fellow of the Society of Actuaries (FSA) credential, while important, has never been sufficient to guarantee success. The most valuable actuaries are usually those who build on their strong technical foundation and grow into business leaders - often beyond traditional actuarial functions. Over the years, complementing an FSA designation with a CPA, CFA or MBA has proved to be valuable.

The educational training route for actuaries continues to evolve and has been a large focus for the SOA and the colleges and universities that train future actuaries. These formal programs have been evolving to produce more “cross-functional” actuaries, with a broader curriculum covering data science, analytics and related applications. The focus is not to make actuaries data scientists but rather to train actuaries to synthesize disparate concepts (e.g., data science, risk management, finance and innovation) to develop the best solutions for the business.

However, formal education will never be enough, and a large part of an actuary’s development will come from work experience. The industry needs to consider how we develop actuaries in a more automated future world, without the daily use of Excel or the need to perform manual processes. Leading companies will look to augment the standard actuarial “rotation” programs to involve stints in the risk, finance, technology, analytics or innovation teams. This will help to broaden the horizons of actuaries and to position more for C-suite roles.

## Recruiting

Some actuarial roles are slowly growing obsolete due to automation and new technologies. Unless actuarial functions evolve, there may be significant downside pressure on the size of actuarial departments. On the other hand, demand for high performers with key competencies will likely increase.

To attract the right talent, actuarial departments will need to instill a real sense of purpose and provide enriching experiences and opportunities for the future actuary. People are drawn to situations with an attractive set of challenges and compelling experiences that allow them to grow, thrive and develop their careers. Companies that provide this will have greater success in landing and retaining the “cream of the crop.”

## Organizing for success

Most major life insurers are already well down the path of actuarial transformation or modernization, driven in part by increasing complexity, accounting and regulatory change and the need to reduce cost. Over the last decade, we have seen many important developments:

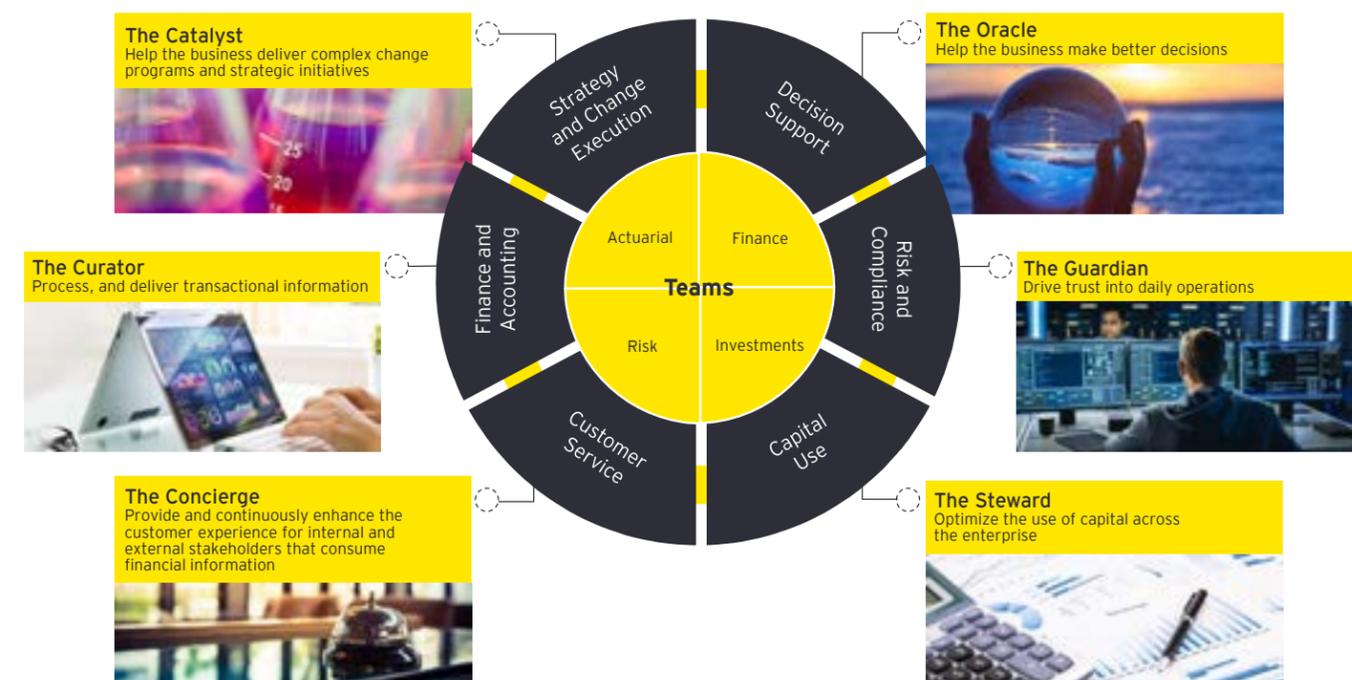
- ▶ **Standardization and centralization** - Companies have moved aggressively to standardize and centralize the actuarial function. This has been driven by the need for quality, leveraging technology investments across the business and reducing costs.
- ▶ **Location strategies** - Increasing demand for actuarial resources, talent shortages and the cost of talent in the major cities have caused a number of companies to expand their location footprint, including increased use of low-cost offshore resources in some cases.
- ▶ **The gig economy** - For many, the gig economy provides the right fit. Retiring baby boomers will also increase the supply of contingent workers, as some will look for a smooth transition to retirement and the opportunity to stay professionally engaged and supplement their retirement income. Technology enables remote work and supports the matchmaking process.
- ▶ **Adopting agile** - Agile concepts are now widely reflected in software development and program management approaches, both formally and informally, and increasingly reflected in the operating models used to run the business. With more nimble and agile approaches, more cross-functional teams and a focus on minimum viable products, companies and actuaries can accelerate results while reducing costs and risk

We expect operating models to continue evolving and discuss some of the emerging trends below.

## Future of financial management: finance, risk, actuarial and investments alignment

Traditionally, insurance companies operated in silos, dividing up complex business problems and opportunities, assigning the pieces to different divisions and then later bringing everything together.

In recent years, most companies have started to break down historic functional silos across the organization by teaming better together. However, the demands on the financial management community to provide more insightful support to the business at a cheaper cost is going to force new bold ways of looking at work. Defining the work that is done by key capabilities helps focus the teams on their objectives. Companies can then start to create more agile, cross-functional teams focused on a particular capability and break down the artificial lines between groups. This will enable a clean look at end-to-end requirements and identify the right people, process and technology.



## Virtual/remote work environment

For years, employers have faced choices related to having single or multi-site locations for on-premises work, and to what extent they will accommodate or emphasize a virtual workforce. Each approach has its pros and cons:

### On premises

### Virtual/remote

Easier to manage and develop talent	Access to a deeper talent pool and lower-cost locations
Easier to team and execute	Eliminate commuting time and expense
Better and stronger relationships	Easier to recruit with more degrees of freedom

The COVID-19 experience illustrates the potential for virtual work, at least for the short term to intermediate term, enabled by new and better technologies for collaborating and teaming. We expect the reliance on remote workers to increase, perhaps significantly. Challenges will come when new teams need to be put together “100% online,” or we need to onboard new hires remotely. However, the experience of companies in 2020 will likely accelerate these changes and provide companies with the experience and confidence to continue down this path.



## Actuarial managed services

Managed services involve outsourcing of specific activities, processes and/or functions on an ongoing basis to improve operations and/or reduce costs. Managed services have long been leveraged for technology-related and other services, and interest in actuarial managed services is increasing as companies look to:

- ▶ Reduce costs and become more efficient
- ▶ Focus management attention on value-added activities
- ▶ Increase quality and better leverage leading practices
- ▶ Avoid significant investments in actuarial software and technology
- ▶ Increase speed to market and agility

As competitive pressures increase and more success stories emerge, look for the use of actuarial managed services to grow.

## Innovation centers of excellence

Centers of excellence have been used in various forms for various purposes, and we expect the use – both actuarial-centric and multidisciplinary – to increase. Innovation COEs can provide the critical mass of resources and expertise to support focused innovation on multiple fronts, allow companies to test and learn quickly, and support the rollout of successful pilot solutions across the business.

## Closing comments

The insurance industry has a critical role in safeguarding against financial losses and promoting growth and the well-being of individuals/families, businesses and society at large. The pace of change in the insurance industry, however, is accelerating and the disruption to the industry and the actuarial profession will continue.

To help their business successfully navigate the winds of change in the insurance industry, actuarial leaders need to better integrate their teams with complementary skill sets in their organizations while inspiring and challenging their talented teams to set the bar higher and achieve more.

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