



# PwC Global Actuarial Modernization Survey



October 2025

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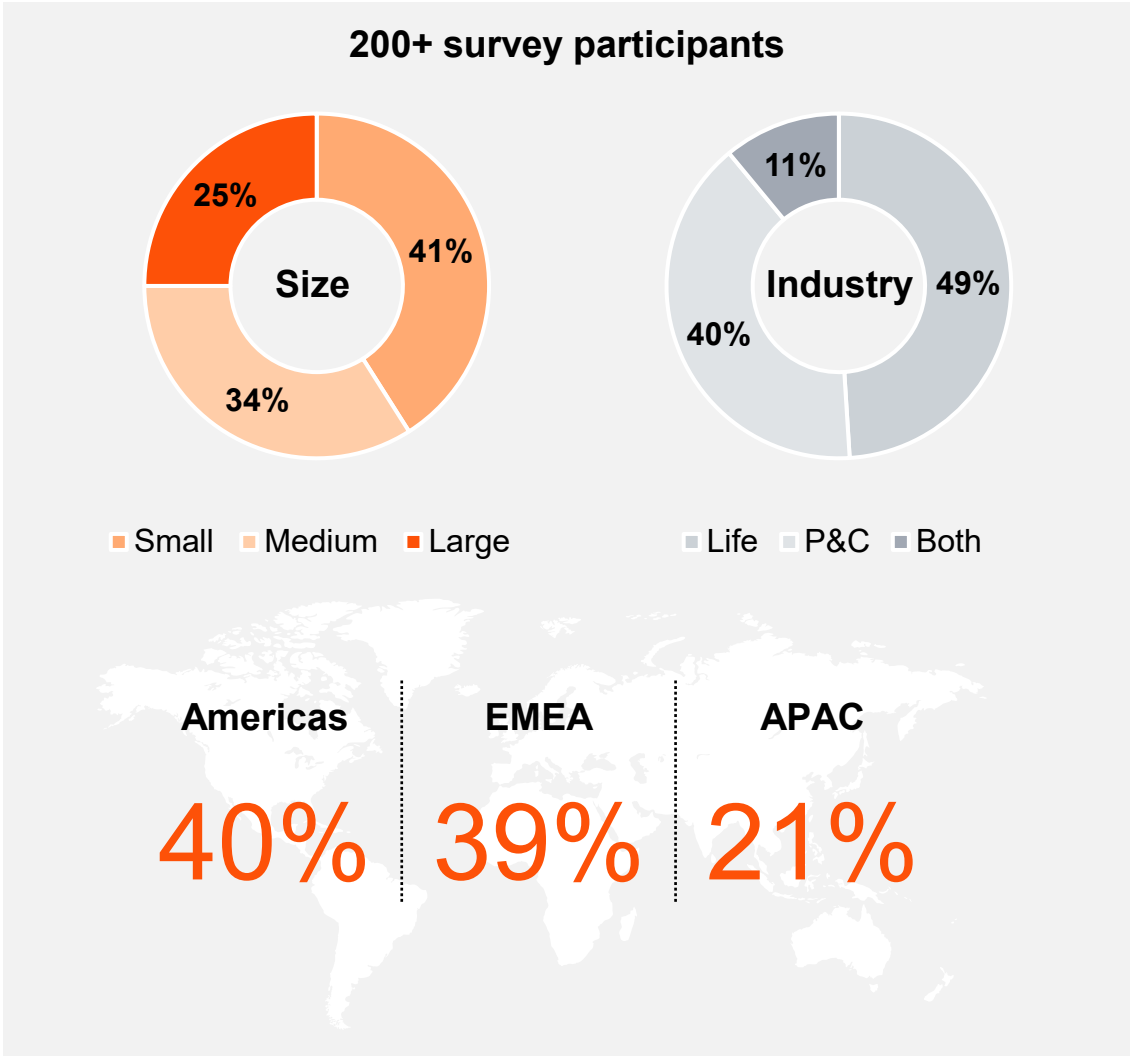
**Actuarial modernization is crucial for an insurer to achieve both their short-term and long-term objectives.**

The insurance industry has passed another few milestones in adoption of new accounting standards, and yet the modernization journey continues as companies navigate a world with increasing data, complexity, uncertainty, multiple reporting bases, evolving capital regimes and rapidly changing technology solutions.

Actuarial processes and people are an integral part of the insurance company’s value chain, and transformation of the actuarial process and skillsets are needed to reflect the changing technological and regulatory environment.

At PwC, we support actuarial modernization across markets and around the world, drawing on deep industry expertise and a strong global network. With modernization more critical than ever, we’re excited to release our third Global Actuarial Modernization Survey, featuring responses from over 200 insurers worldwide following the 2019 and 2023 editions.

A consistent theme over the past two surveys has been the pace and complexity of change and how insurers can enable actuarial teams to deliver greater impact against a background of rising costs. That theme continues in this survey, despite IFRS17 and LDTI implementation being in the rear-view mirror, and we would argue that it is even more important in the face of AI developments. We hope you will enjoy reading this report and that it will spark discussions on how actuaries can support insurance transformation in the best possible way.



# Modernization landscape changes in the last 3 years

**The top four drivers for actuarial modernization remain consistent from our last survey: efficiency and quality of processes, improved management insights, and regulatory changes. However, this year's survey shows a pronounced emphasis on process efficiency which is not surprising as companies shift from a focus on adoption to now driving down cost.**

Coming off the heels of LDTI and IFRS 17 adoption, it is unsurprising that regulatory changes has slipped down the impetus for modernization from 77% to 54%, although regulatory changes such as US Statutory PBR,

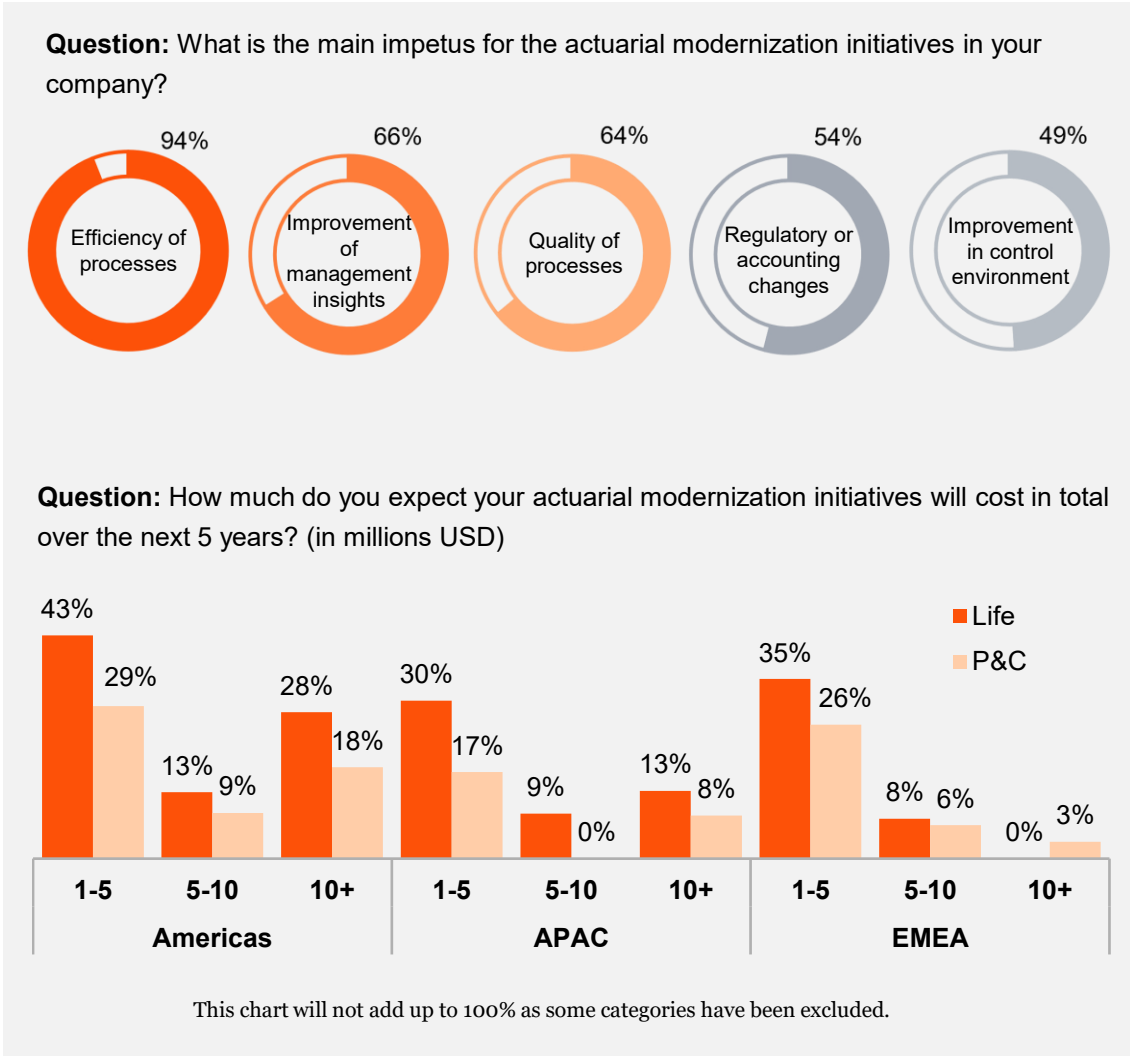
Bermuda CP2 and ICS will continue to drive future modernization efforts. Other top drivers indicated by insurers point to a growing focus on strengthening analysis, improving governance, managing expenses, and building more resilient teams. Companies are also prioritizing better data foundations to support analytics and automation.

Another modernization driver indicated was upskilling or reducing key person risk at 39% of responses, which had the largest increase from the last survey from 19%. This highlights a growing concern around talent retention and addressing knowledge gaps.

Global actuarial modernization spending is set to exceed \$5 billion for the next 5 years, which reflects a similar level of modernization effort as our last survey.

87%

of respondents are currently undergoing an actuarial modernization journey, up from 75% in the 2023 survey.



# Key Themes

**Question: What is at the top of your mind for actuarial modernization?**

The word cloud summarizes top responses from survey participants in terms of modernization. Unsurprisingly, efficiency, data quality, and automation are prominent themes. GenAI and advanced analytics are new in this survey and showing increased importance.

Also as expected, there were a moderate level of responses for cultural change and talent acquisition and development – in our view, the biggest reason for lack of progress with modernization efforts over the past 7 years has been resourcing and upskilling challenges.





## Key Themes

94%

of survey participants chose efficiency as a top modernization driver

50%

of survey participants spend more than 50% of their time on data

... however, 69% of

participants would like to spend less than 25% of their time on data

65%

Of survey participants are keen to develop GenAI, yet a significant number remain unclear about its value proposition

### Achieving efficiency through automation

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Survey participants were nearly unanimous (94%) in choosing efficiency as the main driver for their modernization initiatives, showing a significant increase from the last survey, however automation progress remains limited.

While survey responses indicate automation is relatively higher in some areas than others, automation as a whole is an area of untapped potential which could free actuaries to focus more on higher level activities such as drawing insights from analysis and decision making.

### Effective data management

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Actuaries are currently still spending more time on data preparation instead of analysis. This is driven by increasing data demands and a data ecosystem that may be partially missing key elements, such as automated data pipelines, easy to use ETL processes, and standardized and centralized data sources.

While most companies can access accurate and timely data, without streamlined processes and a data ecosystem to support analysis, this can create rework and leads to reduced efficiency. Modernization efforts should focus on enabling downstream processes, not just immediate data needs.

### GenAI implementation is on the rise

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The disruption and potential of GenAI is enormous, and while insurance use cases are being developed, we recognize the broader business environment and GenAI offerings will continue to evolve.

Some survey participants have made strides in GenAI adoption, where around a third of respondents have gathered use cases and almost half are well on their way to setting up governance frameworks.

Of those companies who have implemented some form of AI, benefits have been observed in modelling, productivity, documentation, data extraction and reporting.



## Key Themes

73%

of survey participants realized enhanced capacity as a result of outsourcing

40%

of life insurers now use vendor-hosted cloud environments

\$1.8m

is the average annual cloud compute costs for large companies

### Tactical approach to outsourcing

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To maintain a competitive edge, the need for increased capacity continues to rise. Firms choosing to offshore or outsource are discovering these strategies provide an opportunity to boost capacity and reduce costs. However, outsourcing does come with challenges and identifying those challenges early can provide management options on how to mitigate those challenges.

Effective outsourcing hinges on a strategic, focused approach. By grouping like tasks together and assigning them to a dedicated team that produces consistent deliverables, this can simplify workflow reviews and make it easier to enforce robust controls.

### Modeling Ecosystem and cost navigation

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As modeling capabilities grow, so do vendor-related cloud costs—often exceeding traditional software or hardware fees.

Some insurers are consolidating platforms to lower costs and improve governance. While some currently operate more than six platforms, the majority aim to reduce this number to just one or two.

As the complexity and volume of model runs increase, insurers will need to find effective ways to manage the rising costs of maintaining modern modeling ecosystems and optimizing model runs for efficiency and precision.

### Increased Actuarial Involvement

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Actuaries are now vital to enterprise-wide modernization—even in areas beyond traditional actuarial work. It is becoming evident to insurance companies that actuaries and other business users such as IT and Finance should be involved at an early stage to drive the business requirements for modernization.

It is crucial for actuaries to continue to establish strong and proactive cross functional collaboration with other departments who sponsor enterprise-wide modernization efforts.

### The Actuary's Future

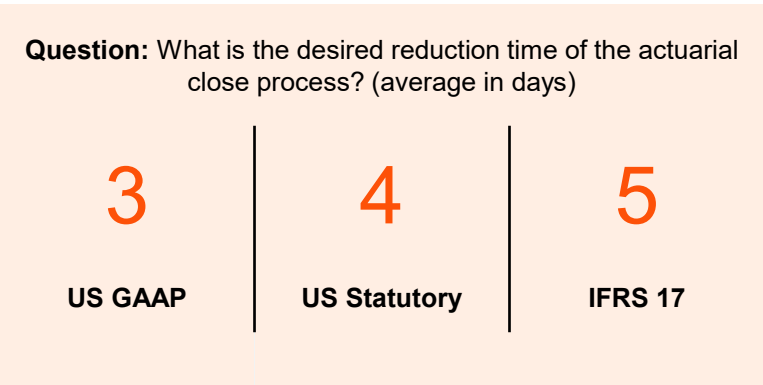
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The actuarial role is expanding beyond traditional boundaries, with increasing involvement in modernization areas like FP&A, advanced analytics, data science, cloud & data strategy, and GenAI. Over 60% of survey participants recognize the same key competencies as potential skill gaps, alongside soft skills like communication, leadership and project management.

# Achieving efficiency through automation

**Survey participants were nearly unanimous (94%) in choosing efficiency as the main driver for their modernization initiatives, increased from the last survey (77%). While it may not be surprising that efficiency tops the list, how each company seeks efficiency gains will differ.**

While the survey themes and observations highlighted throughout the rest of this report explore efficiency gains in some way, this section highlights how automation in the actuarial value chain can ease efforts, as companies are targeting a shorter close process across all accounting bases.



Results indicate that companies have surprisingly made limited progress in expanding the use of automation since the 2023 survey. While areas such as data sourcing and preparation, modeling, and results consolidation score better on automation than others, we observe that the average self-assessment score is a 2.5 out of 5. This is not surprising given the scope and scale of many of the automation programs. The low maturity score combined with new Agentic tools underscores a significant opportunity to achieve efficiencies across the actuarial value chain.

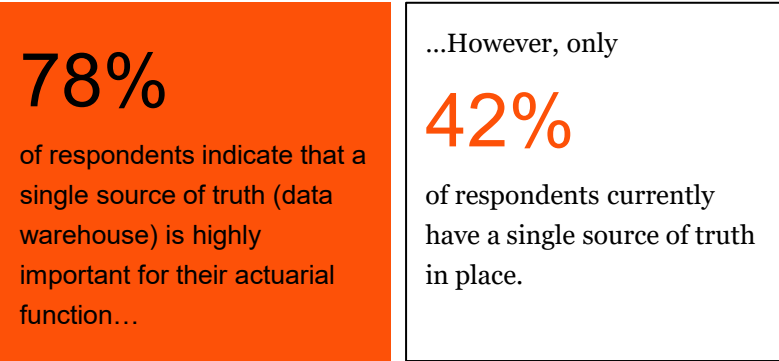
Specifically, there is untapped potential to automate the end-to-end process of experience study and assumption management in one governed repository, which can automatically push assumption approvals. The assumption repository can also automatically generate model-ready assumption tables and populate analysis dashboards to improve data integrity and analytics quality, so that actuaries can free up to focus more on insights and decision making.



# Effective data management

**Although data is the life blood of insurance, less than half of companies have consistent, normalized and automated data. Actuaries are still spending more than half of their time on data preparation instead of analysis, which falls short of the ideal state of spending less than a quarter of their time.**

Evidence-based decision making and regulatory requirements are increasing the volume of data that must be managed. This, in turn, makes it imperative to enable teams with curated data and downstream processes such as visualization or data analytics. Other data components important for the actuarial function that are often still lacking include single source of truth, standardized and granular data, ETL processes, and automated workflows.



Although companies are getting the data they need, they might not be getting the data they want. More than 70% of companies report they can obtain accurate and timely data, which is essential to the actuarial close process.

However, there are “high priority” data elements which are considered highly important as a consensus among survey participants but not in place today for more than half of insurers. We believe that introducing these data components will reduce re-work and improve analytics. Also flagged as highly important by 50-70% of participants are the “future focus” data elements.

An effective modernization roadmap which includes input from all stakeholders, not just actuarial, should identify and solve not just immediate data needs but also facilitate downstream processes.

**Question:** Which data environment and technology attributes are most important for actuarial function? Which of these do you have in place today?

<b>High priority</b>	<b>Consider important:</b>
<ul style="list-style-type: none"><li>Single source of truth/data warehouse</li><li>Standardized &amp; granular data</li><li>Automated process for data ETL</li></ul>	<b>&gt; 70%</b> <b>In place today:</b> <b>&lt; 50%</b>
<b>Future focus</b>	<b>Consider important:</b>
<ul style="list-style-type: none"><li>Automated workflows for key processes</li><li>Effective data visualization and analysis tools</li><li>Simple-to-use query and analysis tools</li><li>Data quality governance and controls</li><li>Self-service and automated reporting</li></ul>	<b>50-70%</b> <b>In place today:</b> <b>&lt; 50%</b>
<b>Essential &amp; established</b>	<b>Consider important:</b>
<ul style="list-style-type: none"><li>Accurate and timely availability of data</li><li>Accessibility of data sources</li></ul>	<b>&gt; 80%</b> <b>In place today:</b> <b>&gt; 70%</b>
<b>Beneficial</b>	<b>Consider important:</b>
<ul style="list-style-type: none"><li>Data dictionary</li><li>Bespoke data models for actuarial use cases</li></ul>	<b>&lt; 60%</b> <b>In place today:</b> <b>&gt; 50%</b>



# GenAI implementation is on the rise

**The disruption and potential of GenAI is enormous, and while some use cases are in production and many more are being developed, we recognize the broader business environment and GenAI offerings will continue to evolve. We are seeing businesses shifting to the “how” – how to create measurable value, how to prioritize, how to keep up with emerging technologies, and how to deliver responsible solutions – our survey results show that insurance companies are starting to define their GenAI governance strategy and exploring business use cases.**

Some companies have made strides in GenAI adoption, with 32% already finished gathering use cases. Roughly 45% of companies expect to finish setting up governance frameworks within 2 years, and roughly 47% of companies expect to be done upskilling staff within the same timeframe.

Among use cases explored, survey results indicate that benefits of GenAI have been observed in modeling, particularly model building and model documentation. There are also some benefits observed in areas such as productivity, documentation, data extraction, and reporting.

PwC has also seen GenAI application in practical use cases such as policy and reinsurance contract extraction, underwriting and model validation. In many cases where GenAI has been deployed, the observed benefits have so far been limited—indicating that organizations may be grappling with how to effectively harness its potential. This underscores a broader truth common to the adoption of any emerging technology: realizing meaningful business value often takes time.

Overall, survey results highlight that insurance companies are continuing to innovate, developing value propositions, firming up GenAI governance, and exploring integration strategies. In this age of AI, we expect that nimble and agile companies will have an advantage as opportunities continue to arise. At the same time, the key to successful adoption will be trust. Adopting responsible AI principles and implementing them through to the execution of AI-driven transformation is essential.

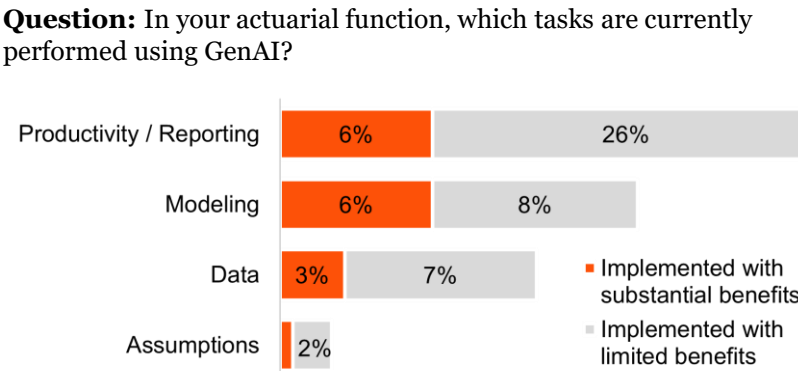
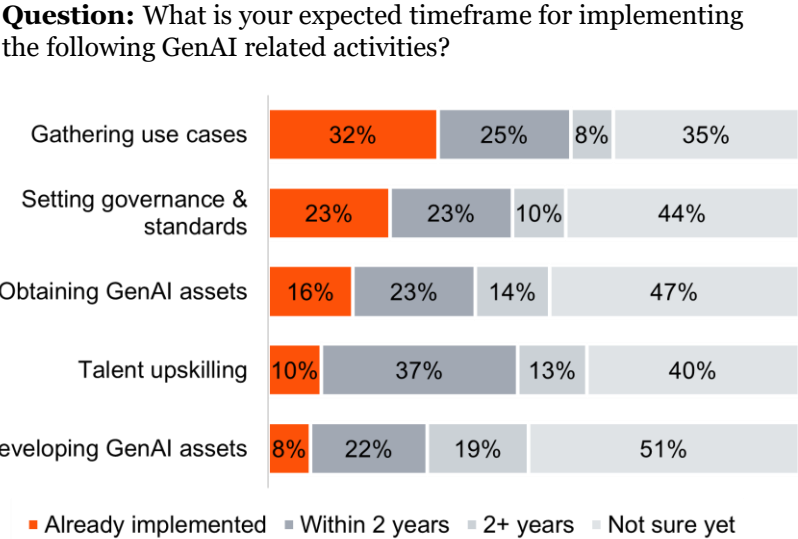
40-50%

of respondents face constraints around GenAI in the form of limited capacity and cost or budget constraints...

...Whereas only

17%

of respondents note lack of senior management buy-in as a constraint to their GenAI initiatives.



This chart will not add up to 100% as some categories have been excluded.

# Tactical approach to outsourcing

**As companies face transformative accounting changes and relentless pressure to maintain a competitive edge, the need for increased capacity continues. Firms choosing to offshore or outsource are discovering these strategies provide an opportunity to boost capacity and reduce costs.**

The top four tasks outsourced are related to actuarial models (model design, testing, maintenance and run execution) and data preparation. This suggests that these organizations aim to create capacity to focus more on analysis and other high-value activities, including results analysis and design of controls.

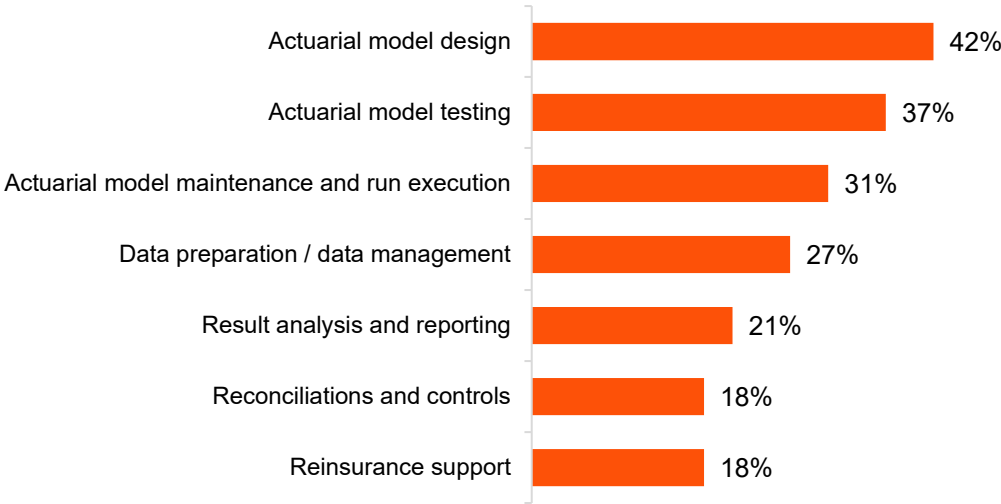
Among the benefits realized by participants due to outsourcing, 73% indicate an increase in capacity and 51% recognize ongoing cost savings, which are the primary reasons companies choose to outsource.

Survey participants also indicated they realized additional benefits such as skill diversification and knowledge sharing. This could result in secondary benefits such as job satisfaction as roles and skillsets are expanding and staff are called to lead and share knowledge with others.

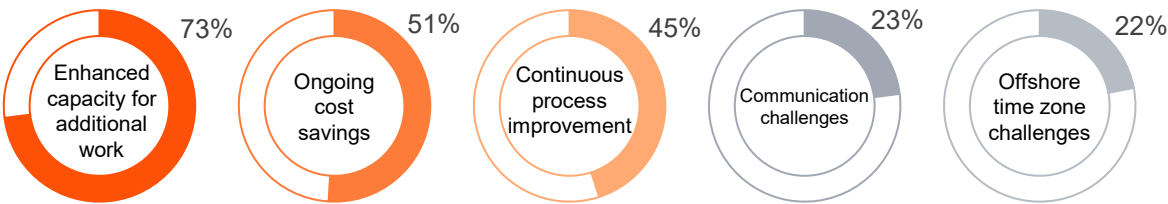
Challenges such as worsened quality and controls see mixed results as some companies see those realized and a good portion have not. Success in using outsourcing often stems from a targeted and tactical approach. A centralization of similar work effort and a focused workforce to produce standardized outputs makes process workflows easier to review and controls easier to implement.

Other challenges identified are communication barriers, time zone differences, and disruption of team culture. In our experience, companies have successfully overcome these obstacles by using overlapping work hours, clearly defining roles and responsibilities, communicating transparently with local teams on the goal of offshoring and offering cross-cultural exchanges to communicate “ways of working”.

**Question:** Given that you outsource, which tasks do you outsource?



**Question:** What potential benefits and challenges of outsourcing have you realized?



# Modeling ecosystem and cost navigation

**As modeling capabilities expand and regulatory requirements continue to increase in the form of detailed disclosures, so does demand for runtime. Cloud costs are growing faster than hardware or software licensing costs, with cloud usage costs at or exceeding licensing costs for large and medium companies.**

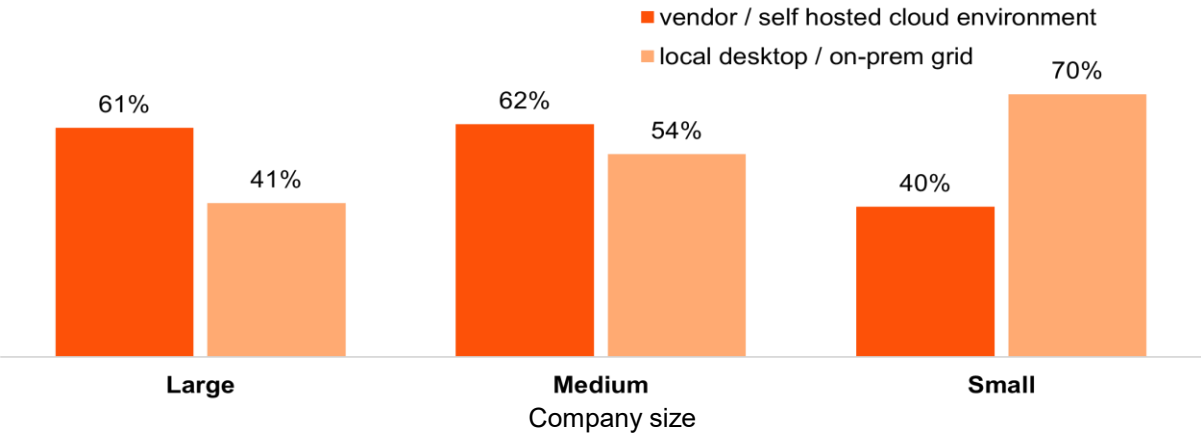
Smaller companies have managed to keep cloud usage costs low through lower volume and through lower reliance on the cloud, as 70% of respondents use local desktop or on-premise grid, as compared to large companies where less than half of participants indicated the same. Vendor-hosted cloud environments remain the most common choice of model run set up.

Question: What are your average annual costs related to the maintenance of actuarial technology and infrastructure? (in millions USD)			
	Company size		
	Large	Medium	Small
Software licensing fees	1.8	0.8	0.4
Cloud usage costs	1.8	1.3	0.1

Even with the recent wave of model consolidation spurred by LDTI and IFRS 17, life insurers are still looking to consolidate their actuarial modeling platforms. While some currently operate more than six platforms, the majority aim to reduce this number to just one or two. Model consolidation has many benefits, including standardizing model outputs, simplifying model inputs and the amount of ETL processes, reducing the amount of assumption tables that need to be updated, lowering software licensing costs and simplifying model governance and controls.

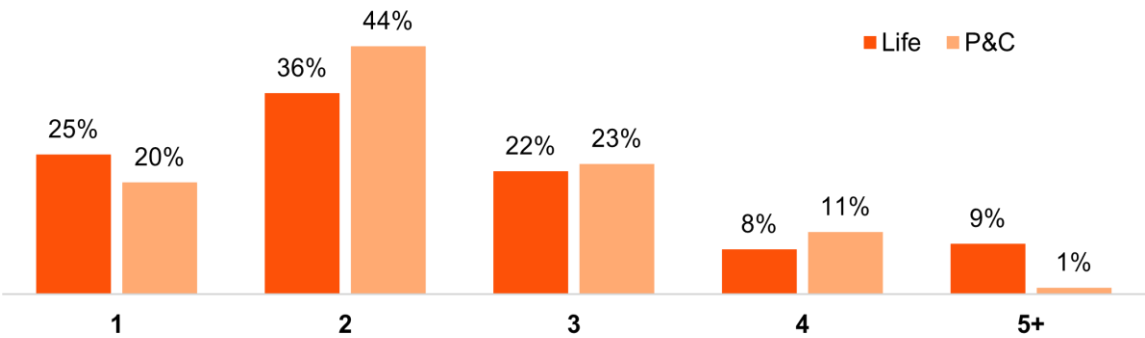
As the actuarial landscape evolves and cloud adoption accelerates, insurers will need to find efficient ways to manage the rising computational costs, balancing speed, model precision and costs per model run.

**Question:** What is the current state of your actuarial modeling ecosystem?



Responses add up to more than 100% as respondents were allowed to select more than one option.

**Question:** How many actuarial platforms do you currently use for pricing and reserving?



# Increased actuarial involvement

**Actuaries are becoming increasingly essential to numerous enterprise-wide modernization efforts, even in areas typically not deemed actuarial specialties. As capabilities evolve in emerging technology such as AI, it is crucial for insurers to involve actuaries at the early stages to inform business requirements and to help make these initiatives beneficial to the key business users.**

Cross-functional collaboration is also essential for a modernization initiative to succeed. IT is often a key sponsor and driver of data-related initiatives, which includes actuarial data strategy.

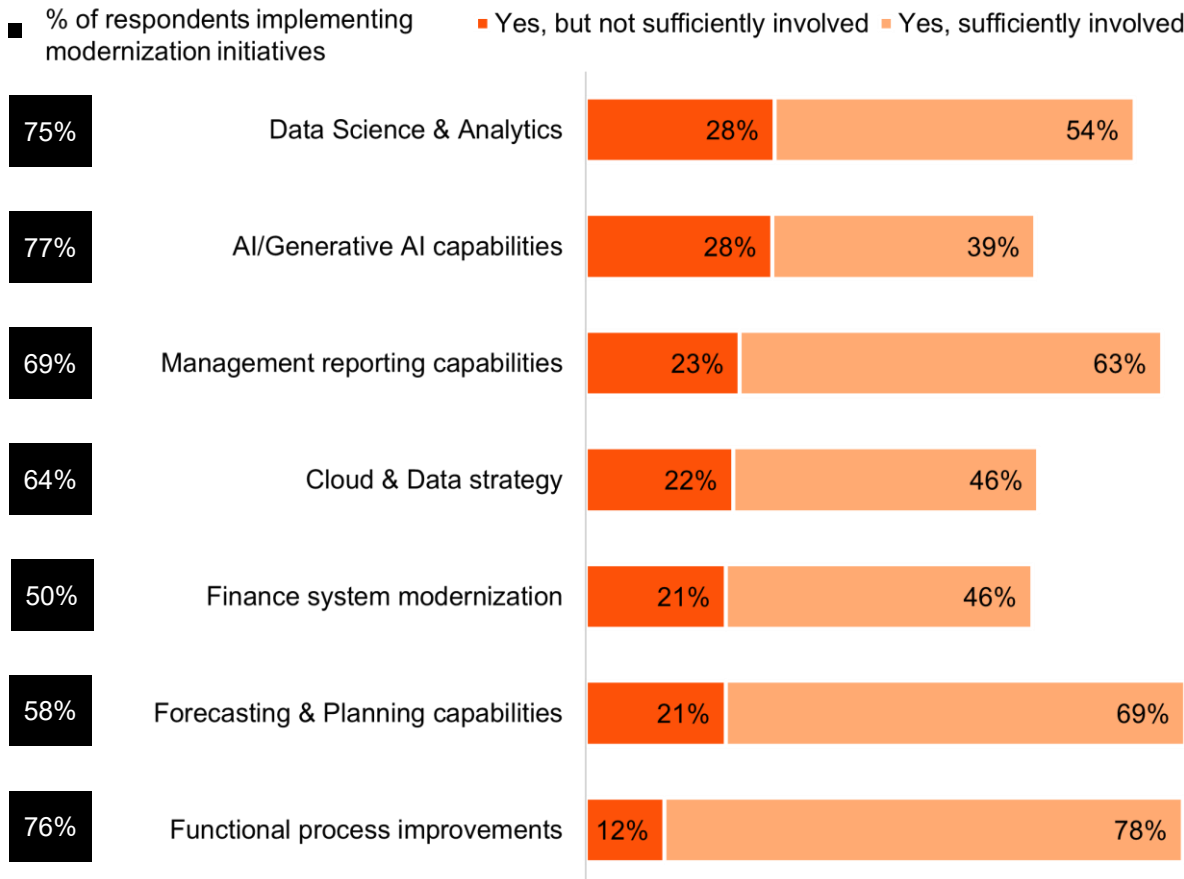
~ 45-55%

of respondents indicate that actuaries are sufficiently involved in their company's Data Science & Analytics, Gen AI and cloud initiatives.

Finance and FP&A own enterprise reporting and projections, which require actuarial projections. Partnering with the right business users can bring actuaries to the table and spotlight actuarial priorities.

From the survey responses, we note that across initiatives, actuaries are generally involved throughout an organization's enterprise-wide modernization initiatives. While involvement is higher in other areas, we note that involvement could be higher in the technology space e.g. Data Science, AI, and Cloud & Data Strategy. To make the most from these enterprise investments, all stakeholders, including actuarial, should be brought in early to enable consistent messaging across the wider stakeholder community.

**Question:** Are actuarial stakeholders involved in your company's modernization efforts within the following functional areas?



These bars will not add up to 100% as some categories have been excluded.

# The Actuary's future

**The actuarial role is not only evolving with new technology; actuaries are increasingly participating in enterprise-wide modernization initiatives beyond their traditional scope.**

Actuaries are increasingly involved in enterprise-wide initiatives in areas such as Data Science & Analytics, Cloud & Data Strategy, and Gen AI (see [Page 12](#)). However, less than 50% of participants indicated that their actuaries are proficiently skilled in these areas, highlighting that most companies need their actuaries to further develop these capabilities to take advantage of the benefits of these technologies.

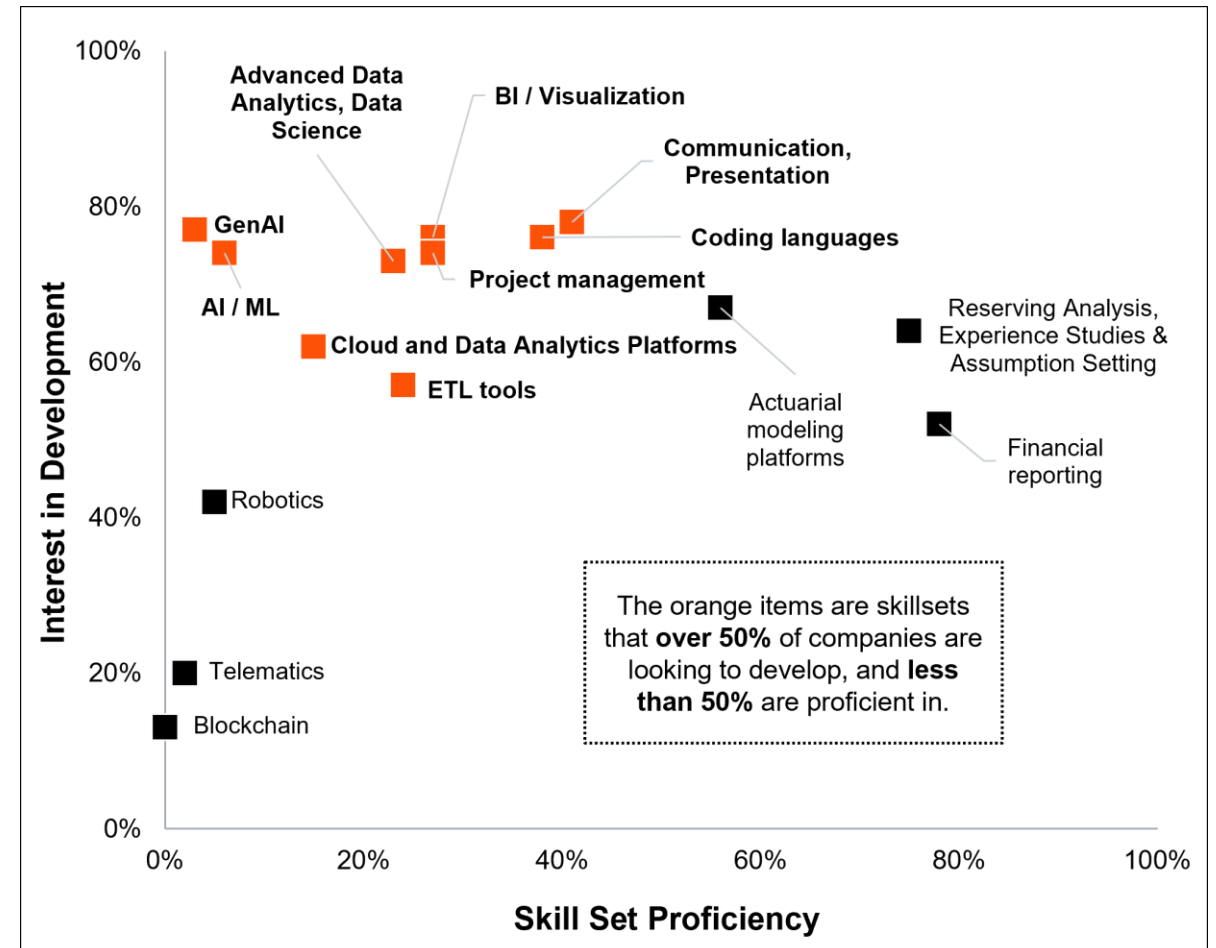
Over 60% of respondents indicated that they want their actuaries to continue developing project management, advanced data analytics, predictive analytics, data science, business

intelligence, and coding languages as these capabilities are essential competencies for actuaries to effectively leverage emerging technologies.

While many of the respondents are looking to develop these skills internally through recruiting and upskilling, around 20% of respondents are looking to develop these skills externally by outsourcing to consultants or hiring contractors. This highlights the need for consultants to also develop these capabilities to be support these companies when needed.

Additionally, around 70% of participants also want their actuaries to acquire or enhance soft skills, such as communication, leadership, and relationship management, to better liaise with other areas of the organization.

**Question:** What is the proficiency level of your actuarial team in the following skills? Which skills are you interested in developing further?



# Modernization success factors

Actuarial modernization is an integral part of achieving many essential goals of the actuarial function. Through our experiences and learnings with modernization projects, we observed the following success factors:

Start small with focused bite-sized initiatives that build momentum—through proof of concepts and **empowered** teams driving real **change**. Prioritize what matters most and bring in expert support where it makes a **difference**.

At PwC, we're ready to help you turn ideas into **impact**. Tap into our experience and let's **move forward—together**.



Establish strong executive sponsor with visible senior leadership to drive effort.



Proactively manage change to maximize the investment and bring the entire organization along for the transformation journey.



Put mechanisms in place to measure outcomes, not just activities.



Operate cross-functionally – involve Finance, Actuarial, IT – in defining objectives and developing squads.



Continuously show progress by pursuing quick win, utilizing MVPs, and breaking the work down into tangible components.



Enable adoption of new tools and new ways of working with sufficient training and documentation



Over-communicate the transformation objectives, goals, and benefits.



Develop clear governance to drive accountability and decision making.



Create a sense of urgency, with regular milestones to measure project progress.



Plan for the interim states along the journey.



# Local representatives

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# Thank you