Top Actuarial Technologies of 2022-2023

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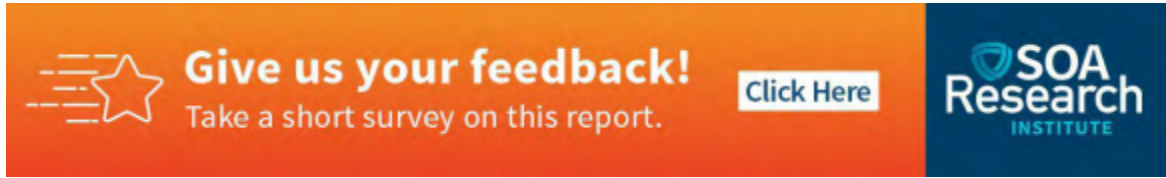
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Over the past decade, the emergence and application of new technologies and the growth of data science have

presented both challenges and opportunities for actuaries and the role of the profession. In order to keep actuaries informed about new technologies and their impact on the future direction of the industry and the profession, the SOA commissioned LIMRA to conduct a research study on the Top Actuarial Technologies of 2019 to examine top actuarial technologies currently in use, as well as those expected to grow in the future.

This report represents the second installment of the ongoing series. Top Actuarial Technologies of 2022-2023 provides updates on the current and planned uses of various technology types and tools, highlights those

technologies expected to grow the fastest among actuaries in the next 12 months, and assesses the status of adoption versus expectations from 2019.

Key Findings

Primary Actuarial Technologies

- The three main technologies used by survey respondents in their actuarial work during 2022-23 are data

  visualization, predictive modeling, and cloud computing/storage. This was also the case for the 2019 study of top actuarial technologies.

- Other technologies less often cited as used in current actuarial work include blockchain/distributed ledger technology, version control/shared coding platforms, and robotic process automation.

- There are also emerging technologies that actuaries expect to leverage in their work beyond 2023. Those most commonly identified include Artificial Intelligence, Machine Learning, ChatBots, and Unstructured Data.
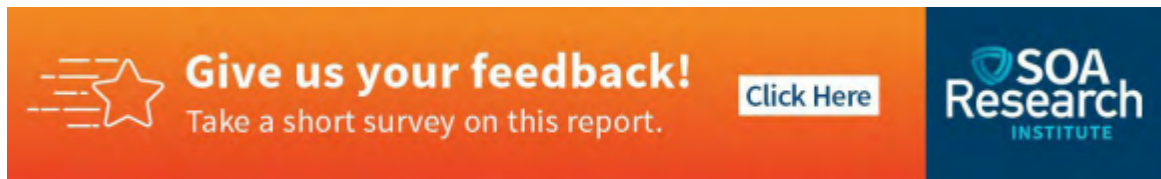
Frequency of Use

- Although the top three technologies in use for 2022-23 are the same as those cited in 2019, significant

  increases in the frequency of use for the three main actuarial technologies have occurred. The percentage of survey respondents frequently using data visualization, predictive modeling, and cloud computing technologies has grown significantly since 2019 - from 42% to 60% (data visualization), 16% to 40% (predictive modeling),

  and 31% to 60% (cloud storage and computing).

- Data visualization is not only the fastest growing technology among actuaries; it is also used by more actuaries compared to other technologies in the survey. In terms of expectations regarding growth in the technologies used beyond 2023, actuaries expect to see continual increases in the usage of the three main technologies,

  with no one surveyed expecting to see a decrease.

- Factors driving the increased use of these technologies include both accounting and regulatory changes, new

  approaches to experience analysis of mortality, morbidity, and behavior factors, and the drive toward faster and more effective risk selection techniques.

- Data analytics experts interviewed as part of this project are optimistic that actuaries are capable of learning new skills, adapting, and effectively using new technologies in their work.

Software and Tools

- Predictive modeling tools most often cited by surveyed actuaries include Excel, R, Python, and SAS.

- Data visualization tools with the greatest use among survey respondents include Microsoft Office Tools (Excel, PowerPoint, Access) (88% of respondents), Power BI (65% of respondents) and Tableau (47% respondents).

- Cloud computing and storage vendors most often cited by actuaries include Microsoft Azure Cloud (32%) and Amazon Web Services (AWS) (23%).

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