AI
In Focus:
THE HEALTHCARE TECHNOLOGY ROADMAP

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AI In Focus: The Healthcare Technology Roadmap, a collaboration between PYMNTS and Brighterion, a Mastercard company, explores the challenges and responsibilities healthcare providers have faced over the past year and details why they are bringing the fight against fraud, waste and abuse to the forefront. Our analysis is based on a survey of 100 healthcare executives who either have intimate knowledge of or hold leadership responsibilities in fraud detection and analysis, financial planning and analysis, claims payments or risk management. The survey was conducted from April 21 to May 11, 2021.

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Introduction

The toll that fraud, waste and abuse (FWA) in healthcare takes on insurers is severe and double-sided: Fraudulent claims cost insurers — and plan members — a lot of money, and ineffective efforts to crack down on FWA can divert human resources and strain relationships with good providers and customers.

The pandemic has in many ways intensified these challenges. FWA makes it more difficult and costly for healthcare payors to support vital treatment, whether virus-related or care that may have been deferred over the past year and a half. The pandemic has also created new risks of problematic claims, such as excessive telehealth appointments.[1]

Artificial intelligence (AI) has the potential to vastly improve how insurers handle the challenging and complex work of identifying and preventing FWA. By analyzing large volumes of provider and customer payment-related data in real time, the technology can potentially flag risky claims long before they are paid, avoiding the time-consuming — and often unsuccessful — process of recovering funds.

PYMNTS' research shows that awareness of and interest in AI has grown substantially among healthcare executives in recent years. Approximately 12 percent of surveyed healthcare payors and insurers are currently using AI for payment-related purposes — a threefold increase from 2019, when we last examined AI use in the healthcare space. Close to three-quarters of executives plan to invest in the technology over the next three years.

This situation has given rise to a unique moment in healthcare administration. Many executives are acutely aware of the shortcomings of their current FWA practices, and they are knowledgeable and intrigued about AI's potential to improve these processes. Many nevertheless are not exactly sure how to get from point A to point B in actually putting AI to work to improve payment integrity.

The AI In Focus series, a collaboration with Brighterion, a Mastercard company, aims to help bridge these gaps. The Healthcare Technology Roadmap Playbook explores how AI can improve specific aspects of the claims process, identifies some of the barriers that stand in the way of broader implementation and explains how these can be addressed. It also offers perspectives from an insurer that has put AI into practice in its daily operations.

The playbook is based on an extensive survey of executives from 100 health insurers and payors who have direct knowledge of the payment and claims processes. Here's what we learned.

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1. Turner, M. Fraud, waste and abuse in health care claims: A bad situation worsened by the pandemic. BenefitsPRO. April 2021. https://www.benefitspro.com/2021/04/07/fraud-waste-and-abuse-in-health-care-claims-a-bad-situation-worsened-by-the-pandemic/?slreturn=20210614125835. Accessed July 2021.

Key Insights

The bulk of health insurers' FWA investigations take place after claims are paid, not before — and consumer payments are a particular blind spot.

FWA severely impacts insurers, costing them 12 percent of their annual revenues on average, according to our research. This does not mean that they are not trying to address this vexing problem. Insurers flagged an average of 22 percent of claims for possible FWA overall during Q1 2021, including 39 percent of post-payment claims, a remarkably large share that suggests they are casting a wide — and imprecise — net.

Insurers are more than twice as likely to investigate suspected FWA after claims are paid as they are to investigate before claims payment. Just 16 percent of provider pre-payment claims were investigated, according to our survey. A similar dynamic is observable in consumer payments, which on the whole are far less likely to be investigated for FWA than provider-based ones. One-quarter of post-payment claims were flagged for possible FWA, while just 7 percent of pre-payment ones were.

These patterns do not necessarily reflect a lower incidence of consumer fraud. Our data instead indicates that insurers
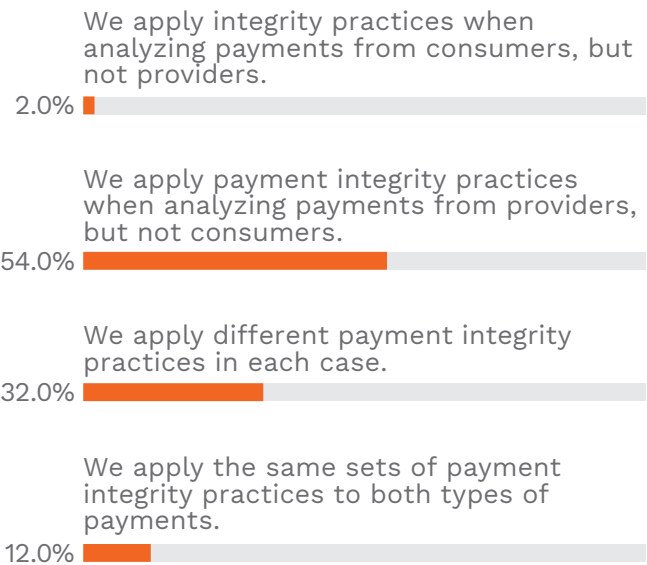
FIGURE 1:
FWA claims investigated

Average share of claims flagged for FWA, post- and pre-payment and consumer versus provider

Average
21.9%

Provider post-payment claims
39.4%

Consumer post-payment claims
25.1%

Provider pre-payment claims
16.2%

Consumer pre-payment claims
7.0%
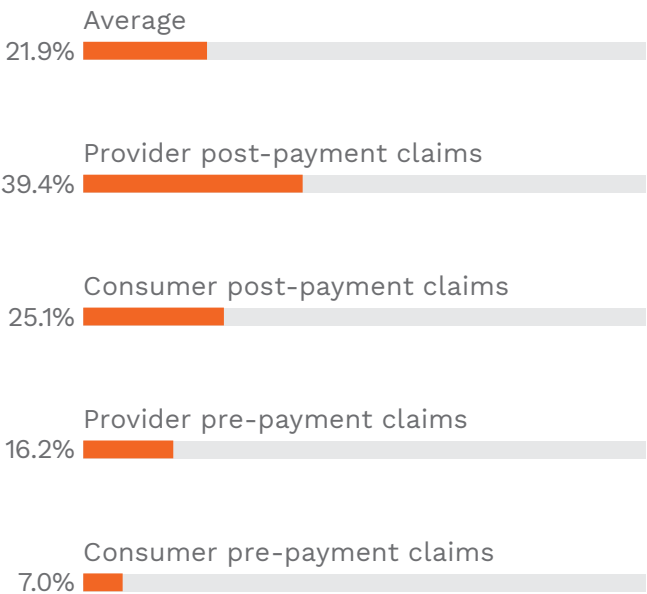
Source: PYMNTS.com | Brighterion
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apply far less scrutiny to consumer payments than to provider ones. More than half of insurers (54 percent) say they apply payment integrity practices when analyzing payments from providers but not from consumers. Another 12 percent apply the same practices in each case, which is itself potentially problematic,

FIGURE 2:
Payment integrity practices, providers versus consumers

Share of insurers that take select approaches to payment integrity

We apply integrity practices when analyzing payments from consumers, but not providers.
2.0%

We apply payment integrity practices when analyzing payments from providers, but not consumers.
54.0%

We apply different payment integrity practices in each case.
32.0%

We apply the same sets of payment integrity practices to both types of payments.
12.0%

Source: PYMNTS.com | Brighterion
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considering that providers and consumers have different risk profiles. Thirty-two percent apply different payment integrity practices in each case.

These trends may reflect some of the inherent limitations of the tools insurers most commonly use to address FWA:

Insurers are more than **twice as likely** to investigate provider claims for possible FWA after payment as to investigate before.

rules-based algorithms, which are based on the parameters set by human programmers. Such systems may thus be ill-equipped to identify new and emerging suspicious patterns in real time.
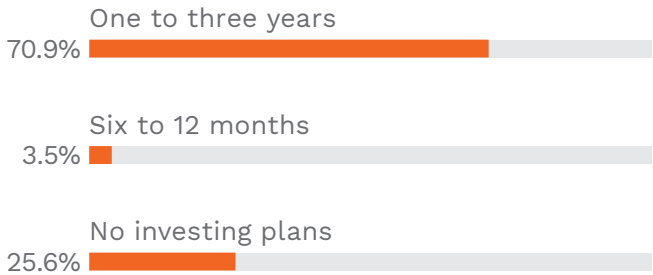
The share of firms utilizing AI to combat FWA is projected to increase fivefold over the next three years, based on healthcare executives' plans.

Rules-based algorithms, along with data mining, are the main computing systems that health insurers use today to address FWA, whereas approximately 12 percent of them use AI for this purpose. Trend lines suggest that AI may become a much more significant part of insurers' technology resources in the near future. Seventy-one percent of insurers that do not currently use AI to detect FWA plan to invest in the technology for this purpose within the next one to three years. AI is a universal pursuit among larger organizations: 100 percent of those with more than $1 billion in annual revenues plan to invest in the technology, as do 89 percent of those with annual revenues between $100 million and $1 billion.
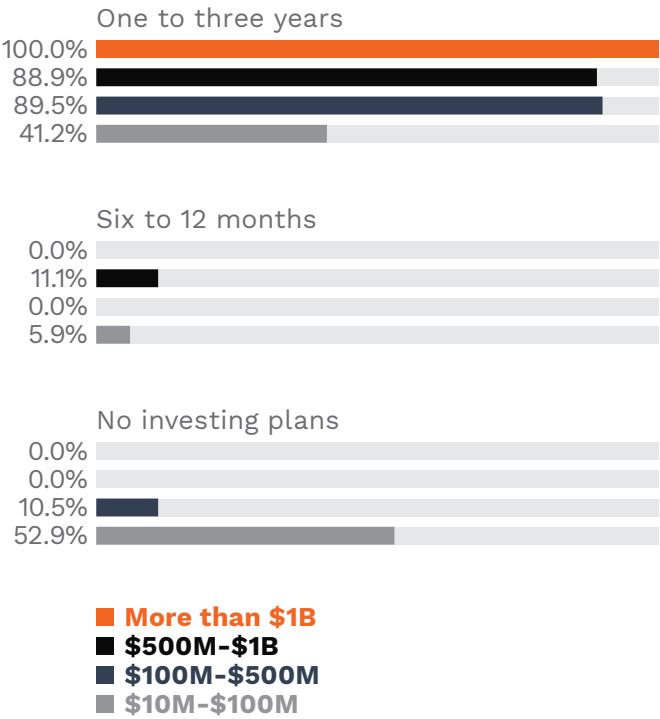
Insurers are also eyeing other machine learning (ML)-based technologies — specifically deep learning and neural networks — for investment: 70 percent of firms that are planning to invest in AI to detect FWA are also planning to invest in such systems over the next 12 months. Conversely, just 5 percent plan to invest in systems employing rules-based algorithms.

FIGURE 3:

Insurers' AI investment plans

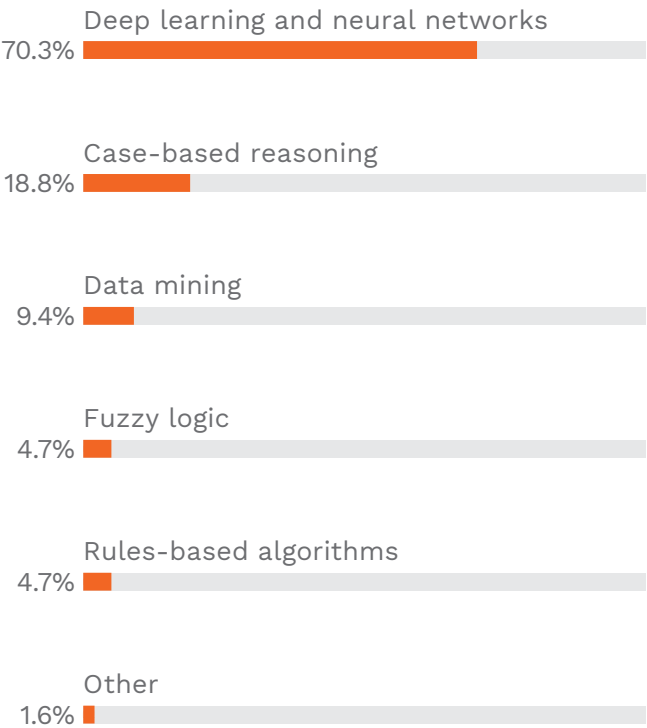**3A: Share of firms planning to invest in AI to improve payment integrity in select time frames**

One to three years
70.9%

Six to 12 months
3.5%

No investing plans
25.6%

3B: Select time frames, by firm size

One to three years
100.0%
88.9%
89.5%
41.2%

Six to 12 months
0.0%
11.1%
0.0%
5.9%

No investing plans
0.0%
0.0%
10.5%
52.9%

■ **More than $1B**
■ **$500M-$1B**
■ **$100M-$500M**
■ **$10M-$100M**

Source: PYMNTS.com | Brighterion
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FIGURE 4:

Insurers' technology system investment plans

Share of firms planning to invest in AI that are also planning to invest in select systems within the next 12 months

Deep learning and neural networks
70.3%

Case-based reasoning
18.8%

Data mining
9.4%

Fuzzy logic
4.7%

Rules-based algorithms
4.7%

Other
1.6%

Source: PYMNTS.com | Brighterion
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71%

of insurers plan to **invest in AI for payment integrity purposes** within one to three years.

Health insurance executives' top priorities for AI tools to improve payment integrity are real-time responsiveness to threats, accuracy and ease of integration.

One of the running themes in our research is that AI has wide-ranging benefits and applications in each of the industries in which it is being applied. Health insurers similarly expect to get a lot out of the specific AI tools they seek to employ. Some characteristics emerge as paramount in our survey, however: adaptability and accuracy in detecting FWA. Nearly all executives surveyed (97 percent) consider the ability to adapt to changing behaviors exhibited in claims data "very" or "extremely" important, and 95 percent have the same view regarding a high level of accuracy in detecting FWA.
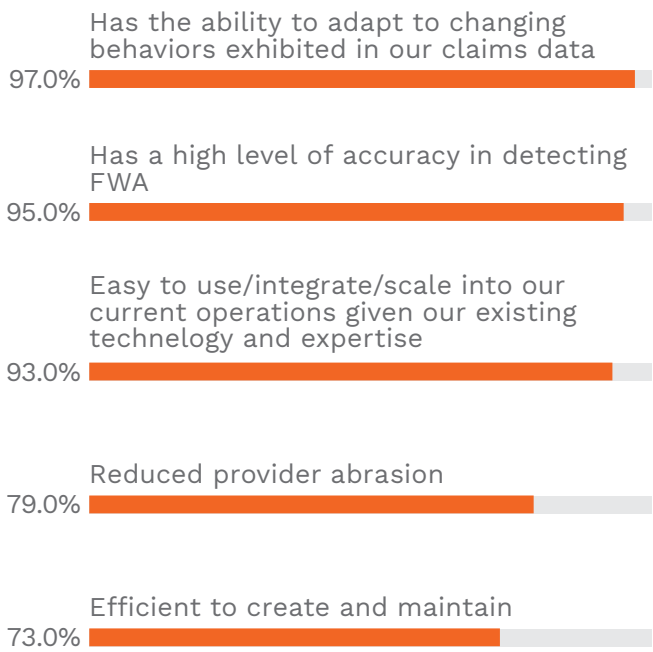
Another important consideration remains at the top of health insurance executives' minds when they think of adopting specific AI tools: ease of integration into current operations, which 93 percent cite as a "very" or "extremely" important factor.

Executives also value other characteristics in AI tools, albeit to slightly lesser degrees. Seventy-three percent and 79 percent of respondents cited tools being
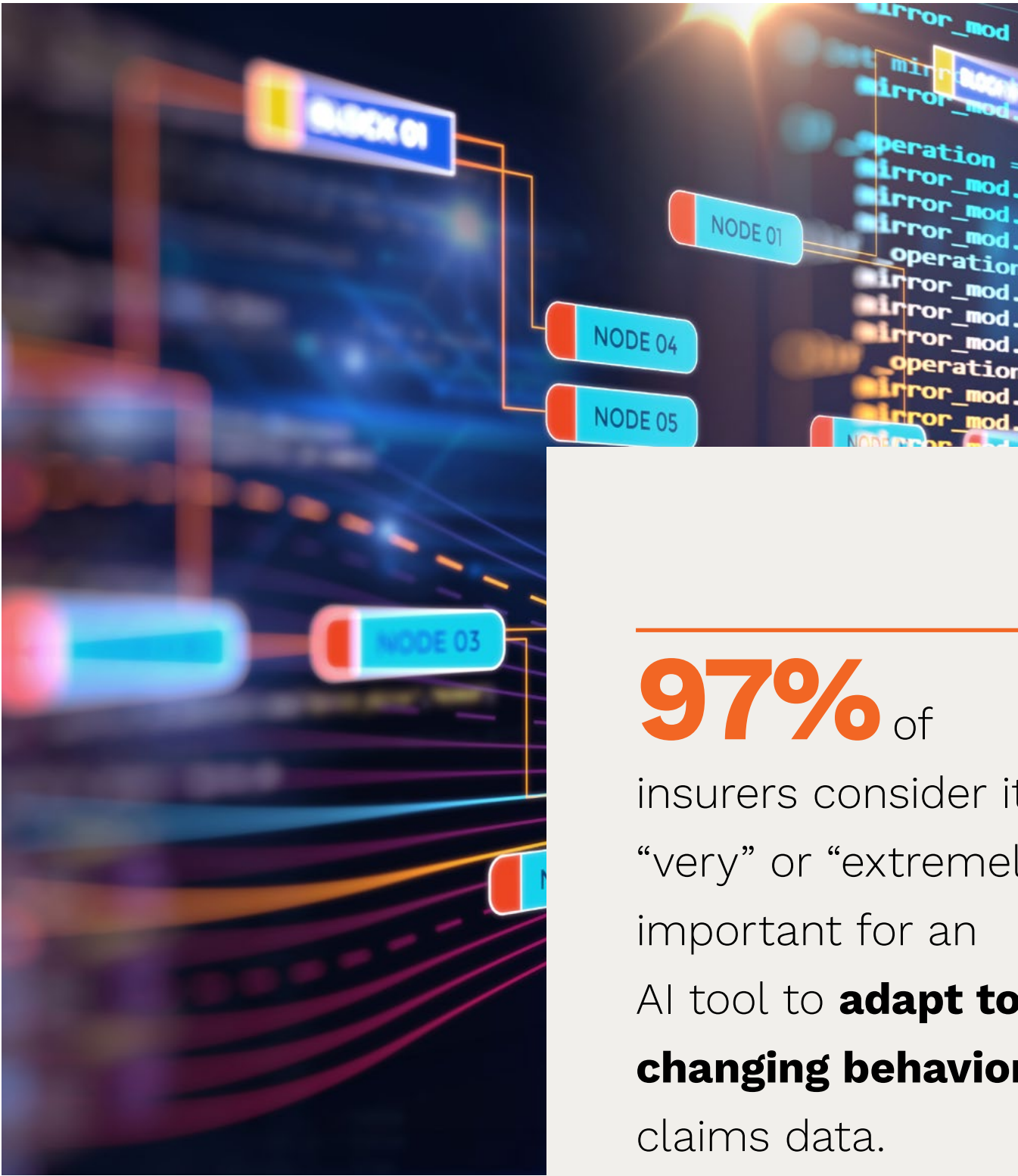
"efficient to create and maintain" and having "reduced provider abrasion" as highly important factors, respectively.

These represent a lot of boxes to check on firms' AI wish lists. This underscores the importance of AI tools that not only have powerful fraud detection capabilities but that also are easily configurable with existing systems.

FIGURE 5:

Important characteristics of AI tools

Share of insurers that view select characteristics of specific AI tools as "very" or "extremely" important

Has the ability to adapt to changing behaviors exhibited in our claims data
97.0%

Has a high level of accuracy in detecting FWA
95.0%

Easy to use/integrate/scale into our current operations given our existing technology and expertise
93.0%

Reduced provider abrasion
79.0%

Efficient to create and maintain
73.0%

Source: PYMNTS.com | Brighterion
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97% of insurers consider it "very" or "extremely" important for an AI tool to **adapt to changing behavior** in claims data.

Deep Dive: Tackling AI hurdles head-on

The story of AI in the health insurance sector is thus far one divided between actual and potential use. Its use to improve FWA processes today is quite limited, but large majorities of insurers plan to invest in such systems for this purpose in the coming years. This raises an important question: What are some of the barriers that have so far hindered adoption? The following Deep Dive will explore these barriers in greater depth and reveal why they may have less to do with the technology itself than with some of the ways organizations have so far approached its implementation.

Data management concerns loom largest as impediments to adopting AI tools to improve payment integrity. Three-quarters of health insurers consider higher data management costs an important challenge, including a 68 percent subgroup that cite it as the most important factor. Smaller organizations are especially likely to view data management costs as a challenge: 83 percent of those with revenues between $10 million and $100 million hold this view.

Other common concerns are regulatory problems associated with automated systems, which 59 percent of health insurers consider an impediment,

including 15 percent that consider them to be the greatest challenge. Larger organizations are far likelier than smaller ones to perceive these as a barrier: More than one-third of those with more than $1 billion in revenue view these problems as the greatest challenge. A related concern, data privacy and security, is also viewed as a potential barrier, with 62 percent of insurers citing it as important.

It bears noting that AI's complexity is far less likely to be viewed as a challenge, with just 32 percent viewing it this way. This represents a decline from our earlier studies, suggesting that familiarity with the technology has grown in recent years.

Challenges associated with implementing AI tools

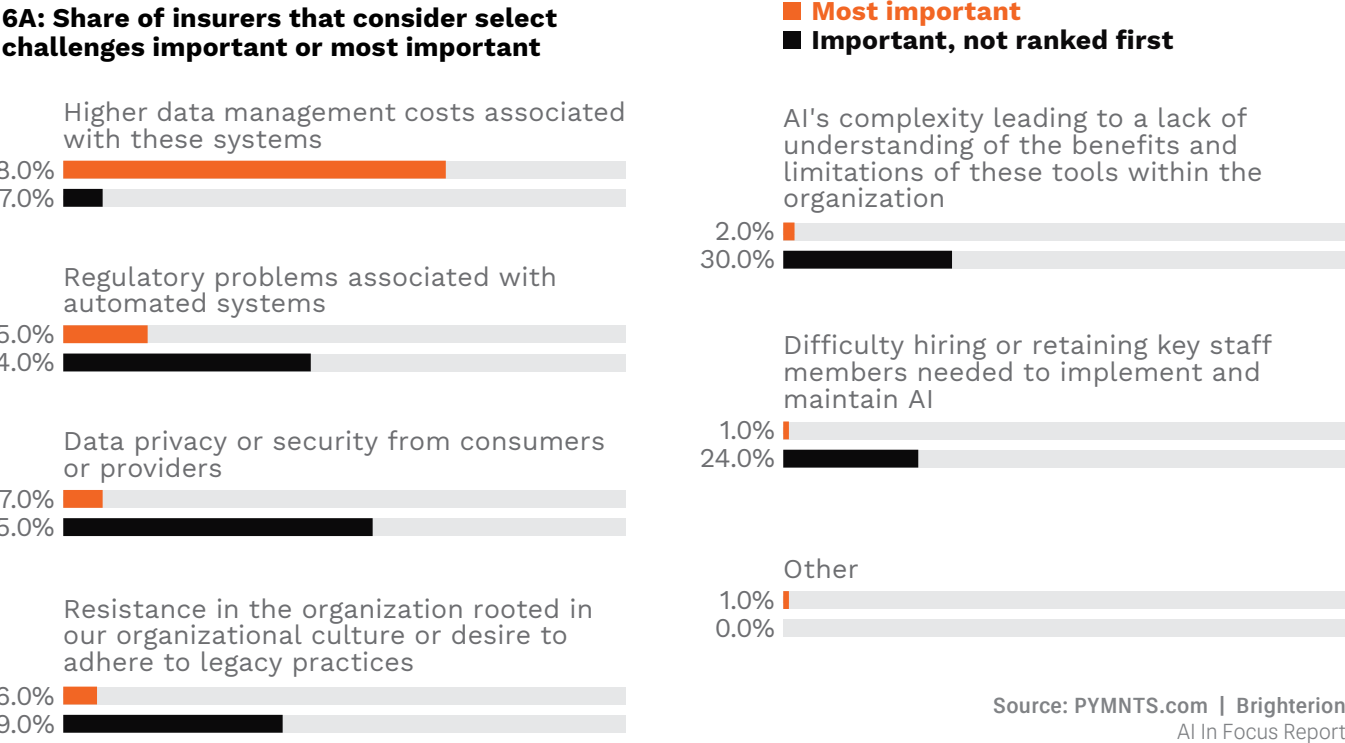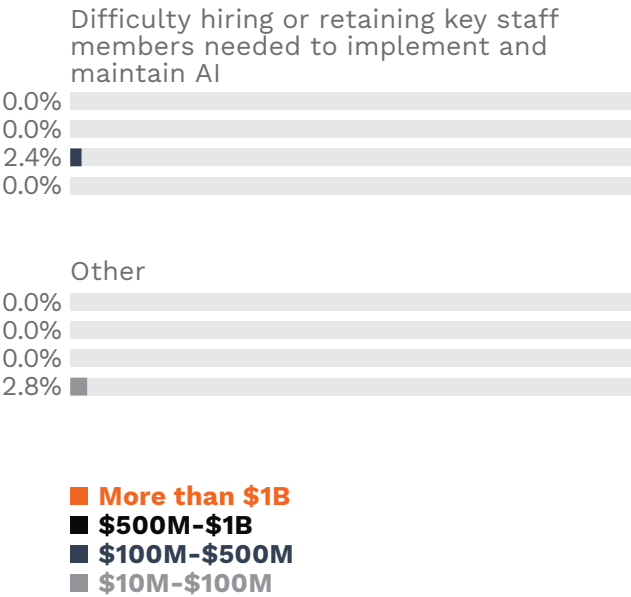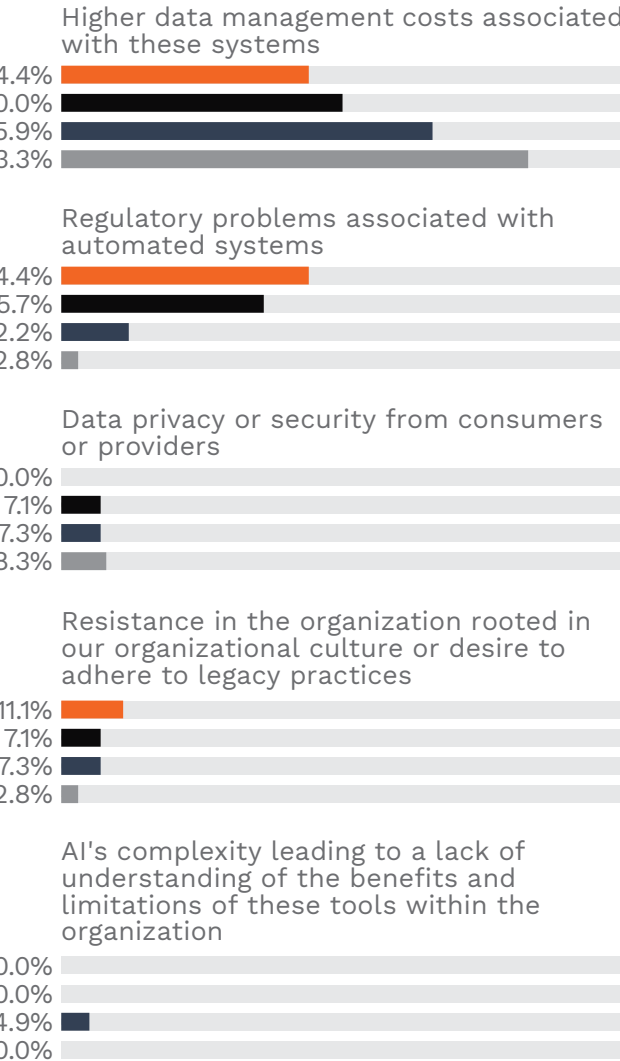**6A: Share of insurers that consider select challenges important or most important**

■ **Most important**
■ **Important, not ranked first**

Higher data management costs associated with these systems
68.0%
7.0%

Regulatory problems associated with automated systems
15.0%
44.0%

Data privacy or security from consumers or providers
7.0%
55.0%

Resistance in the organization rooted in our organizational culture or desire to adhere to legacy practices
6.0%
39.0%

AI's complexity leading to a lack of understanding of the benefits and limitations of these tools within the organization
2.0%
30.0%

Difficulty hiring or retaining key staff members needed to implement and maintain AI
1.0%
24.0%

Other
1.0%
0.0%

Source: PYMNTS.com | Brighterion
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FIGURE 6 (continued):

Challenges associated with implementing AI tools

6B: Most important challenge by organization size

Higher data management costs associated with these systems

44.4%
50.0%
65.9%
83.3%

Regulatory problems associated with automated systems

44.4%
35.7%
12.2%
2.8%

Data privacy or security from consumers or providers

0.0%
7.1%
7.3%
8.3%

Resistance in the organization rooted in our organizational culture or desire to adhere to legacy practices

11.1%
7.1%
7.3%
2.8%

AI's complexity leading to a lack of understanding of the benefits and limitations of these tools within the organization

0.0%
0.0%
4.9%
0.0%

Difficulty hiring or retaining key staff members needed to implement and maintain AI

0.0%
0.0%
2.4%
0.0%

Other

0.0%
0.0%
0.0%
2.8%

■ **More than $1B**
■ **$500M–$1B**
■ **$100M–$500M**
■ **$10M–$100M**

Source: PYMNTS.com | Brighterion
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Data management costs and regulatory matters are among the top concerns insurers have regarding AI tool implementation.

Data and regulatory matters

The concern that health insurance exec-utives have around data management is understandable. Large volumes of data power effective AI systems. Managing data is already a complex endeavor for large organizations, especially those in healthcare. Some executives may feel that having to configure and host the data necessary to support AI applications could only make this task more costly and challenging. Regulatory concerns are also understandable, considering the heavy regulation already present in the healthcare and insurance environments.

These unique challenges highlight the importance of partnership when it comes to integrating AI systems into healthcare administration. Assembling and hosting the data sets to support AI systems would be a daunting task even for organizations with large in-house IT departments.

One reason data management and regu-latory matters are viewed as significant impediments to AI integration may have to do with the reality that organizations have so far tended to take on this for-midable task on their own. More than 85 percent of insurers that are using AI to identify FWA employ in-house

solutions, according to our research, and among large organizations — the most robust adopters of AI — all of them do so. Just 28 percent report using AI solu-tions from outside providers, with 21 percent employing AI for pre-payment claims and 7 percent doing so for post-payment ones.

FIGURE 7:

In-house versus outsourced AI systems

7A: Share of insurers that has developed some AI solutions in-house or through outside providers

Solutions developed in-house

85.7%

A pre-payment AI product acquired from an outside provider

21.4%

A post-payment AI product acquired from an outside provider

7.1%
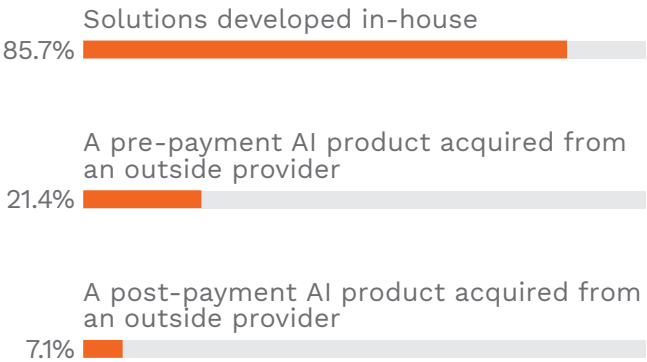
Source: PYMNTS.com | Brighterion
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One can appreciate health insurers' interest in designing and implementing in-house IT solutions that are tailored to their organizations' needs. AI is a dif-ferent matter, however. The attention and expertise required to assemble and manage data on a real-time basis could easily stretch the capacity of the most well-resourced IT teams — who likely already have plenty on their plates as it is.

7B: Solution types by organization size

Solutions developed in-house

100.0%
100.0%
66.7%
50.0%

A pre-payment AI product acquired from an outside provider

0.0%
0.0%
100.0%
0.0%

A post-payment AI product acquired from an outside provider

0.0%
0.0%
0.0%
50.0%

■ **More than $1B**
■ **$500M-$1B**
■ **$100M-$500M**
■ **$10M-$100M**
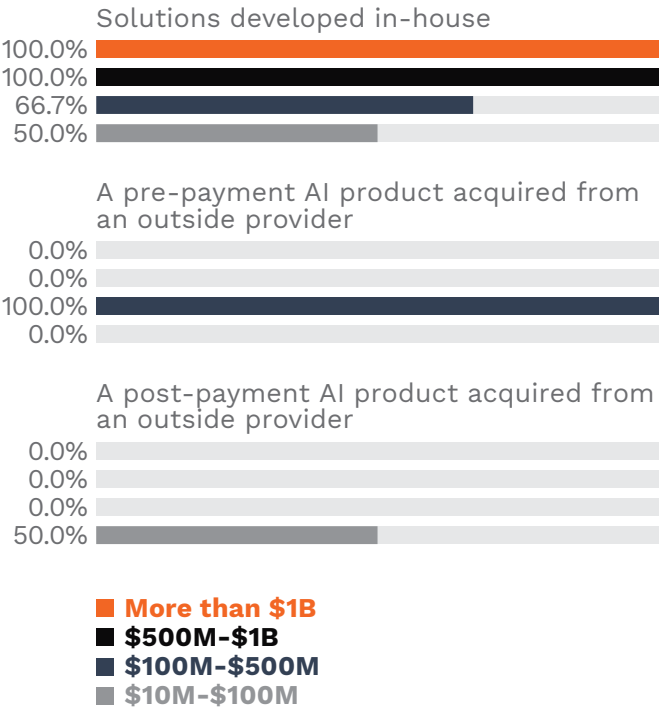
86%
of current AI users are relying on **in-house developed systems.**

Case Study:

CEDAR HEALTH ON WHY AI IS KEY TO TACKLING HEALTHCARE FRAUD, WASTE AND ABUSE

Healthcare management as an industry has experienced a wave of modernization over the past few years that ranges from billing digitization to improved payment choice for patients. Removing friction from the payments process for both healthcare institutions and patients now is a priority, as healthcare systems face new pressures to grow and retain revenue. The use of advanced learning technologies such as AI are increasingly at the heart of these efforts. According to healthcare financial engagement platform Cedar's co-chief maker Anshul Amar, advanced technologies such as AI are playing a critically important role for insurers who face a daunting path to digital adoption in core areas of billing — especially when seeking to avoid costly errors in certain facets of claims processing, such as prior authorization for payment.

"One of the sources of confusion and difficulty in the claim cycle comes in through the prior authorization system. Prior authorization does not affect a majority of claims — in fact [it affects] well under 10 percent," Amar said. "However, those are often some of the most difficult, complex and expensive

claims to process, with potentially lots and lots of errors introduced through the prior authorization process, involving the reworking of claims and so on."

Amar stated that AI technology extends valuable insight to areas of payments and billing that often are opaque to healthcare providers and systems as well as to patients. AI also helps respond effectively to the human needs behind claims by making complex claims easier to construct and process at each touch point.

One of the key challenges relates to the coding process, in which a provider will render services and then determine how to construct a claim from that.

"There's a lot of art and science that goes into that. There are things that vary based on an individual manual biller's judgment, and that can affect how it's going to be treated later," Amar said. "And then the second [aspect] is that there is a stack of rules. Nowadays, we see fairly high automation rates on the claim pipeline — 85 percent plus. But even within that 85 percent that are treated in an automated way, there are errors in the logic. The logic is extremely complex and often opaque even to the insurance plan

itself. The system can become a little bit of a black box; [insurers] don't necessarily know exactly what's going to come out."

According to Amar, the solution is to focus on delivering a frictionless digital billing experience using the human logic of an experienced solutions provider coupled with the power of AI and ML-optimized technology. This can help personalize billing experiences by using a deep understanding of patient behaviors and healthcare system and insurer requirements, as well as real-time data drawn from AI-powered insights.

AI and ML technologies can also extend beyond reducing claim fraud and abuse. These technologies can be used to ensure patients benefit from simplified and transparent billing practices.

"We've seen that using AI and ML helps to abstract complex medical records. It's still a manual process, but now it's AI-supported or AI-enhanced," Amar said, adding that the use of these technologies gives patients more clarity, insight and ability to understand and resolve their own medical bills.

"AI and ML can modify, customize and present a personalized experience," he said, "and we think that is an exciting new trend."

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> AI and ML can **modify, customize and present a personalized experience,** and we think that is an exciting new trend.
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> "

Conclusion

Health insurers have so far taken only limited steps toward adopting AI systems to improve payment integrity and reduce FWA. This appears poised to change: AI use has increased threefold over the past two years, and a large majority of healthcare organizations plan to integrate such systems over the next three years.

The reasons for this accelerating interest and adoption have a lot to do with the inherent capabilities of AI to detect fraud risks in real time, which can allow organizations to intervene before costly claims are paid. Time is often of the essence in healthcare decisions, after all. AI also promises more precision in fraud detection, potentially avoiding false positives, which also have severe impacts on organizations.

Our research shows that many health insurers are taking a go-it-alone approach toward adopting AI technologies, however. This strategy may be risky and misguided. Implementing such initiatives with on-premises computing systems — without the benefit of secure cloud and hybrid systems — could result in long time frames for implementation, and this means that solutions could be in need of updating by the time they are up and running. This underscores the importance of choosing AI technology providers wisely. Vendors must bring high levels of healthcare-specific expertise to the table — knowledge that includes the particularities of medical coding and the voluminous regulations governing the industry — and they should be prepared to act as partners in ensuring that AI systems are integrated effectively and seamlessly.
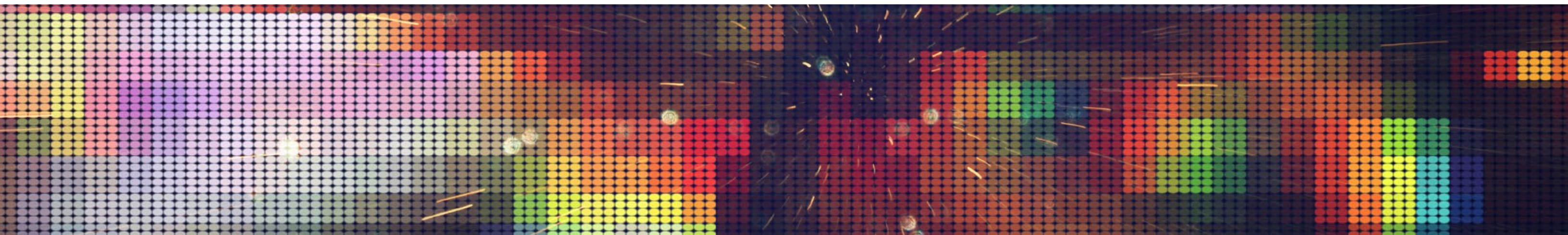
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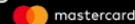
Brighterion, a Mastercard company, was founded in 2000 and acquired by Mastercard in 2017. We deliver a leading artificial intelligence and machine learning platform that provides real-time mission critical intelligence from any data source, regardless of type, complexity or volume. Our AI solutions fight financial crime and fraud, reduce credit risk, prevent healthcare fraud, waste and abuse, and more. Currently we serve 74 of the 100 largest U.S. banks and more than 2,000 customers worldwide, processing more than 100 billion transactions annually. For more information, please visit us on the web, our blog, LinkedIn, Twitter or Facebook.

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