

CREDIT UNION TECHNOLOGY WATCH: ARTIFICIAL INTELLIGENCE



National
Credit
Union
THE FOUNDATION
Ignite | Inspire | Respond

The advent of the artificial intelligence (AI) revolution introduced new digital solutions to the financial services sector. Today, some institutions are actively using intelligent systems to improve member experiences and internal bandwidth levels. In particular, AI can enhance the front, middle, and back-office functions of credit unions to better compete with larger organizations – all without impacting daily operations. From advanced anti-fraud measures to personal finance to credit underwriting, AI is capable of transforming credit unions. This brief will examine how organizations can take advantage of this new technology.

“ As AI becomes more pervasive in driving decisions, personalization and engagement is at every touchpoint of a member’s journey. Financial institutions who can demonstrate accountability, transparency, fairness, and security in AI will outperform as responsible stewards of members’ trust.”

JYOTI CHAWLA
Chief Technology Officer, IBM



Image Source: <https://www.pexels.com/photo/screen-web-design-developing-codes-1936299/>

CREATING THE CREDIT UNION OF THE FUTURE

What is AI? Depending on the use case, it can be tough to define. Broadly speaking, an AI system is intended to replicate how human intelligence works. Instead of relying on a pre-programmed input or output, AI dynamically executes a decision-making process based on the environment, a specific task at hand, previous experience, and desired outcomes. Pattern recognition and the ability to foresee future events are just some of the tasks that could involve AI.

There are various subsets of AI, including deep learning and neural networks. Machine learning (ML) is one technique that allows a computer to learn on its own beyond programmed algorithms. A machine learning-capable system applies statistics and data to further machine functions. Photo identification is one clear example. If you feed an AI program images of a cat, it can run an algorithm, define set parameters of what a normal cat would look like, and eventually identify other images of cats accurately.

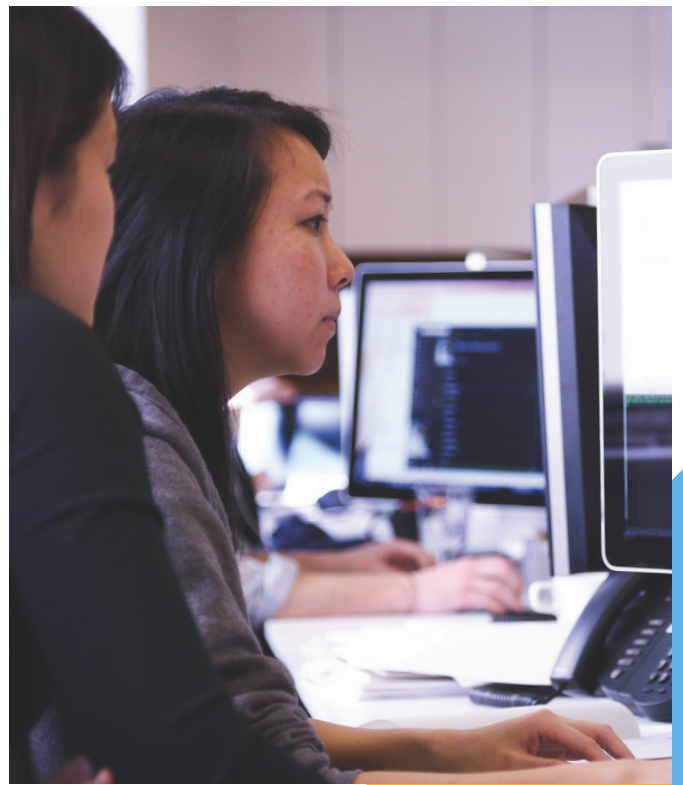
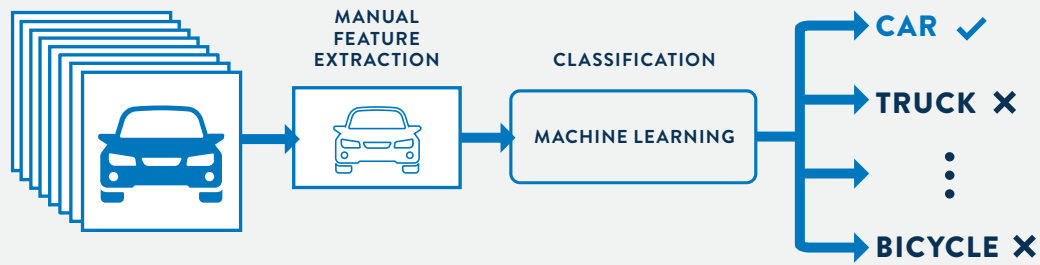
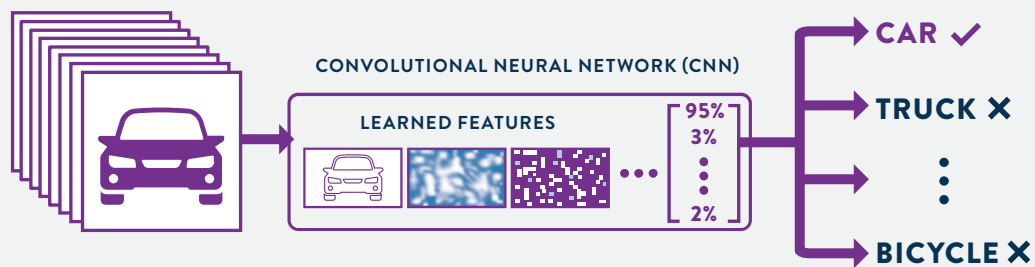


Image Source: <https://www.pexels.com/photo/working-woman-technology-computer-7374/>

MACHINE LEARNING



DEEP LEARNING



Compare machine learning with an advanced deep learning model. In the latter, the first set of neurons would examine simple shapes and edges. Using that data, the next layer of neurons would detect more complex shapes and features associated with cars, for example – similar to how a human would come to a conclusion. More significantly, a deep learning algorithm can determine on its own if a prediction is accurate through its own neural network.¹ This requires large amounts of processing power, of course.

A more simplified, lightweight machine learning model parses data, learns from it, and reaches an informed decision. If the system misidentifies a prediction, human intervention is needed. With additional guidance and more data, machine learning can progressively improve its power and accuracy.

Source: <https://www.mathworks.com/solutions/image-video-processing/object-recognition.html>

As AI capabilities continue to develop, so are business opportunities in the financial services sector. In fact, many institutions are already using AI technologies. According to an OpenText survey, 75% of respondents at banks with over \$100 billion in assets are currently implementing AI strategies.² Finance-adjacent sectors like insurance are also using AI to make faster and more efficient decisions.

AI's potential for other industries and use cases is being realized as well. The average consumer already engages with AI tools like Siri or Alexa – basic ML assistants that help manage everyday tasks. It's even possible that you might have read an [AI-written story from an outlet like MSN without realizing it](#).³

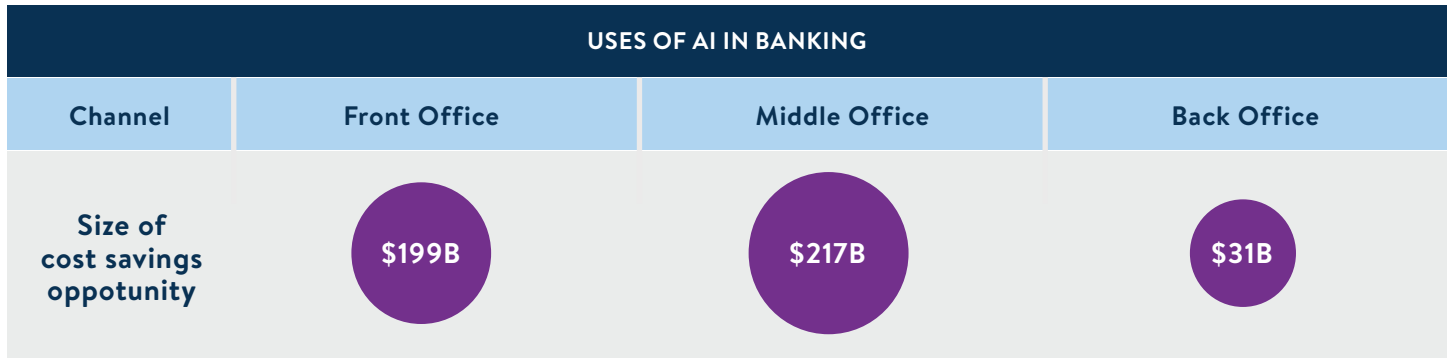
¹ Brett Grosfeld, "Deep learning vs machine learning: a simple way to understand the difference," Zendesk, 2020.

² "Powering business growth: Driving innovation in FinServ through digital intelligence," OpenText, 2020.

³ Justin Herrick, "Microsoft Choosing AI to Run MSN, Not Journalists," PC, May 31, 2020.

CREDIT UNION OPPORTUNITIES FOR AI

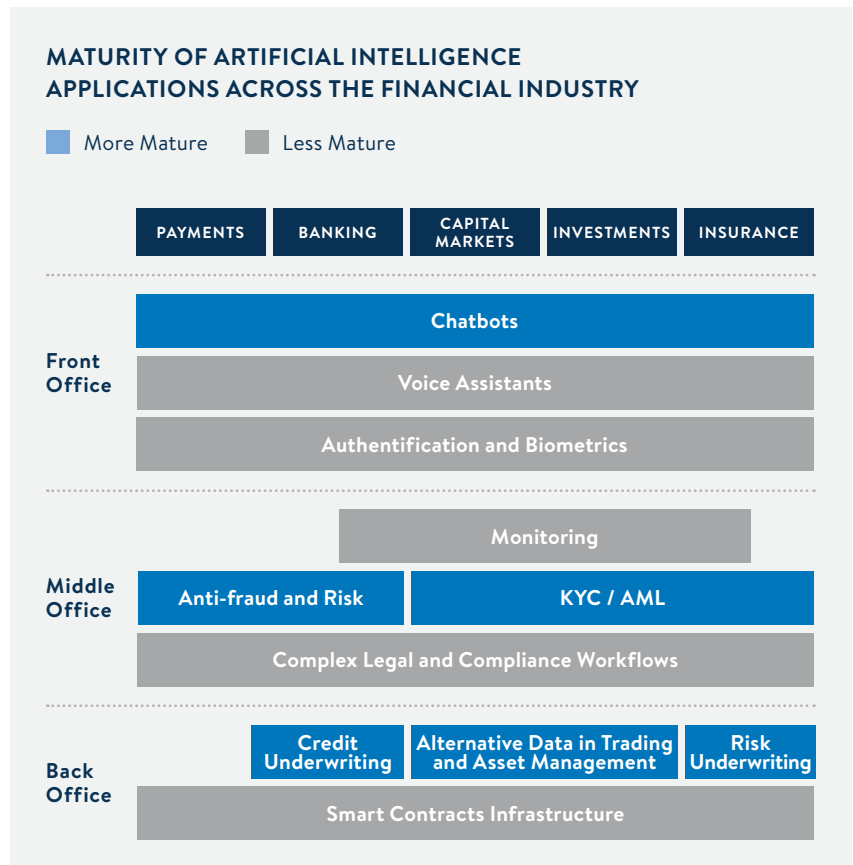
At its core, AI's greatest benefit is its capacity for autonomous learning. For credit unions, this enables automated banking activities, thereby reducing operational expenses. Experts estimate that [AI will cut costs for financial institutions by 22%](#).⁴



The implementation of AI can save the industry both time and resources.

Source: <https://www.businessinsider.com/ai-in-banking-report>

Credit unions should consider AI as a tool, not as a replacement for labor, however. By supporting better decision-making, AI can free up workers from menial tasks. Whether for member-facing or employee-centered efforts, AI's ability to augment most services is where its main advantage lies. An intelligent chatbot could help members navigate account issues that require large amounts of employee bandwidth. As an example, AI-powered underwriting allows credit union teams to assess risk faster and assist more applicants. This enables loan officers to better align their resources and time.



A breakdown of some AI applications throughout a credit union.

Source: <https://thefinancialbrand.com/72653/artificial-intelligence-trends-banking-industry/>

⁴ "Artificial Intelligence and the Banking Industry's \$1 Trillion Opportunity," The Financial Brand, 2020.

FOR CREDIT UNIONS, THERE ARE THREE MAIN CATEGORIES WHERE AI CAN BE A MAJOR BENEFIT

1 FRONT OFFICE

The front office, or member-facing portion of a credit union, can benefit immensely from AI technologies. Intelligent chatbots and digital assistants can help members deal with account troubleshooting and improve financial health through nudges, budget reminders, and content geared around financial well-being. AI is also emerging as a way to better connect with members. Over 60% of millennials prefer engaging with chatbots because of convenience and ease.⁵

Intelligent Chatbots

Chatbots, while implemented widely, can be better serviced with an AI system. Eventually, credit unions can adopt translation services, opening them up to new regions and populations. Members can experience greater convenience with shorter lines and access to services around the clock. Many are already familiar with [Bank of America's Erica](#) product, but tech providers like [Posh Technologies](#) also offer in-depth conversational technologies to those in the credit union space.

INNOVATION SPOTLIGHT:



ABAKA

[ABAKA](#) helps financial institutions collate, process, and extract intelligent insights from the large amounts of customer data that the institutions collect and own. Their proprietary chatbot provides members with comprehensive self-help solutions while reducing call center workload. Capabilities like financial education, advice, and transactional reviews can offer personalized user journeys to better financial health.

“As an industry, we need to do more to help individuals to plan for their future. Part of that solution entails technologies that are personalized enough to follow the specific challenges members face. This can be in the form of targeted content and chatbots. Not only will AI and ML help customers achieve financial goals, credit unions can experience greater levels of cost and internal efficiency.”

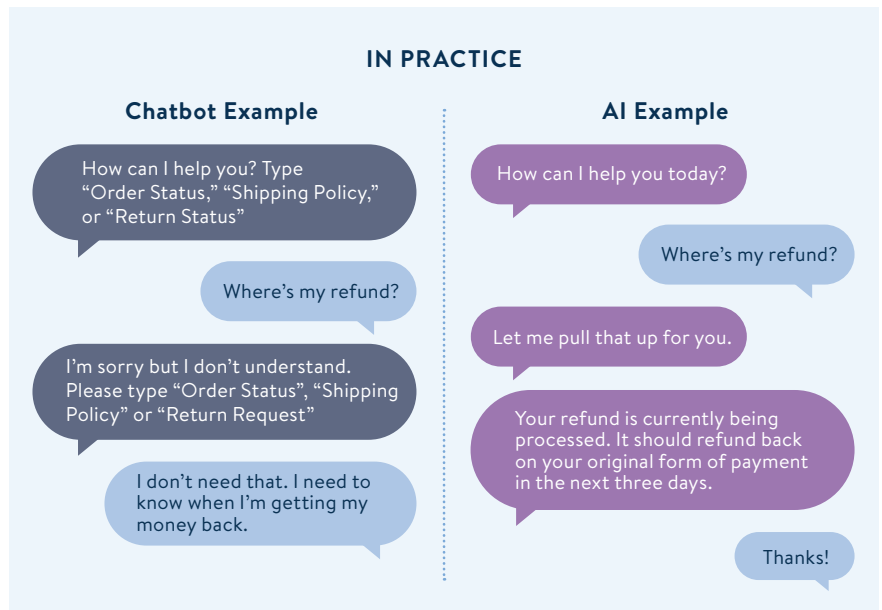
FAHD RACHIDY
Founder and Chief Executive Officer, ABAKA

⁵ [“60% of millennials use chatbots. Are you empowering or alienating them?”](#) Firstsource, 2019.

Assistants

Digital assistants with financial know-how can also offer a tailored experience for members. Unlike chatbots, assistants perform a wider range of tasks, learn from interactions, and interact through both text and voice.

Imagine the possibilities where a widely used smart home assistant like Siri guides purchasing decisions based on account information and spending habits. Voice-enabled commands could also manage funds and coordinate meetings with customer service representatives.



Examining the differences between chatbots and AI-backed assistants. Chatbots are more limited in their responses.

Source: <https://www.netomi.com/chatbots-vs-ai-whats-the-difference>

**INNOVATION
SPOTLIGHT:**
fiserv.

Fiserv's Virtual Banking Assistant allows members to understand their financial information through platforms such as Alexa and Google Home. In addition to providing actionable insights about purchasing habits, members can search past transactions, view bills, and connect to live support when needed.⁶

2 MIDDLE OFFICE

The middle office of a credit union typically incorporates risk management efforts. Know Your Customer (KYC) measures prevent fraudulent actors from bypassing the onboarding process and creating "ghost identities." These crimes are called synthetic identity theft, or the act of using both real and fake information to introduce a new identity. It is the fastest-growing financial crime in the United States and poses an increasing threat to credit unions.⁷ Last year, Notre Dame Federal Credit Union fell victim to fake accounts and ended up losing over \$200,000.⁸

The advisory services group Auriemma Insights estimates that U.S. lenders lose \$6 billion annually to synthetic fraud.⁹

Credit unions in particular are vulnerable now, as credit card and identity theft have skyrocketed during the COVID-19 pandemic. Cyber fraud generally increases during times of economic downturn, and according to the FBI, [digital crimes have risen by 75%](#) during stay-at-home orders. Interpol's cybercrime division also reports that criminal networks have moved away from

⁶ "Financial Institutions Can Connect with Consumers via Conversational Banking Capability from Fiserv," Fiserv, June 1, 2020.

⁷ "Synthetic Identity Theft," Investopedia.

⁸ Kate Rooney, "Criminals are using 'Frankenstein identities' to steal from banks and credit unions," CNBC, January 16, 2020.

⁹ "Synthetic Identity Theft On The Rise," PYMTS, September 14, 2017.

individuals and small businesses to targeting larger institutions and critical infrastructure. This threat is further compounded as some [credit unions](#) currently lack an auditing department or only have weak internal controls.

Security and Real-Time Authentication

AI can play a large role in verifying the identity of members. An AI system can monitor for malicious transactions and guard against synthetic accounts, saving credit unions valuable resources. AI is capable of sifting through massive amounts of data without the need for constant manual intervention.

INNOVATION
SPOTLIGHT:



[Socure](#) applies AI to its identity verification system. Its ID+ platform ensures that financial services organizations can approve digital transactions automatically by building a footprint of a consumer's digital identity. That includes securing personally identifiable information (PII) data through online resources and offline data sources like credit bureaus, email history, phone records, IP addresses, and social networks. This real-time analysis recognizes risk far faster than humans or rule-based systems.

3 BACK OFFICE

In addition to these high-profile examples and industry trends, there are many improvements AI platforms can provide in the back office. The back office enables all member-facing parts of the credit union to operate, though it is often hindered by slow legacy systems and isolated data warehouses. Back-office AI platforms provide efficiency and automation for high-volume areas of a credit union, while reducing the workload for human workers. Requiring human cognitive capabilities for tedious and time-consuming tasks is problematic. Credit unions should consider using AI platforms as a way to shift from depending on human ingenuity to realizing the value of enhanced performance.¹⁰

“ AI brings an explosion of potential smarter futures for financial services businesses and their customers. Right now, many companies are still architecting their data and planning data acquisition strategies that will power more robust AI capabilities in the future. Industry leaders, on the other hand, have already invested in the back-office infrastructure and tools and are using both structured and unstructured data today. In the next few years, all financial institutions will use AI to power smarter, more efficient, and more pleasing customer experiences throughout their customer journeys.”

GERIEL THORNBURG MAY
Worldwide Director of Customer Experience, Lenovo

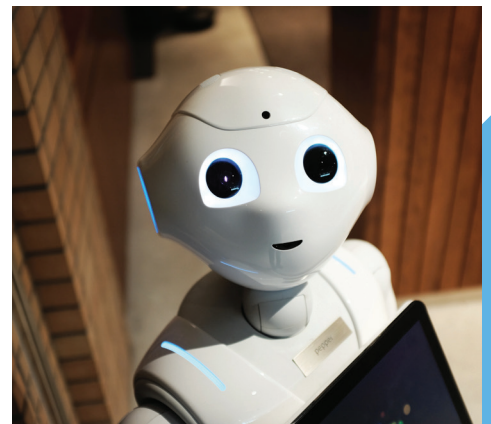


Image Source: <https://www.pexels.com/photo/high-angle-photo-of-robot-2599244/>

¹⁰ “The new physics of financial services: How artificial intelligence is transforming the financial ecosystem.” Deloitte, 2018.

Underwriting

AI provides a faster, more accurate assessment of a potential borrower at less cost, and accounts for a wider variety of factors. This helps the credit union make a more comprehensive, data-backed decision. The use of AI in underwriting is based on more complex and sophisticated rules. From a financial health perspective, this expansion embraces greater financial inclusion and allows more members to adopt high-quality credit products. Additionally, the use of AI in underwriting is not likely to be biased since it uses objective data to arrive at credit decisions. Industry examples suggest that leveraging AI in underwriting can cut significant losses.¹¹

RegTech

Beyond credit scoring and lending, AI has also influenced the way credit unions assess and manage risk and how they build and interpret different contracts.

In this highly regulated industry, credit unions can leverage AI platforms to improve compliance. Identifying regulatory obligations is complicated, time-consuming, and costly. By leveraging an AI knowledge platform that streamlines the most error-prone parts of compliance, a credit union can achieve certainty in its compliance program at a fraction of its current cost.

INNOVATION SPOTLIGHT:



Founded in 2009 and headquartered in Los Angeles, [Zest AI](#) makes the power of machine learning safe to use in credit underwriting, enabling greater financial inclusion. Credit unions that leverage platforms like Zest are able to make better decisions and better loans, thereby increasing revenue while reducing risk.

INNOVATION SPOTLIGHT:



[Ascent](#) combines practical regulatory expertise with AI in order to help credit unions focus on the rules and obligations that matter. The platform delivers credit unions' obligations and rule changes faster and more accurately than humans alone. This lowers compliance costs while increasing efficiencies and giving credit union leaders much-needed peace of mind.

“ RegTech allows credit unions to reduce risk in ways that weren't previously accessible. In the case of Ascent, credit firms can automate certain tasks that are vulnerable to human error, thus significantly reducing their regulatory risk and avoiding fines more easily. Today's technology allows credit unions to take a modular approach, selecting the tools that fit their specific processes and needs.”

BRIAN CLARK
CEO, Ascent

¹¹ Arthur Bachinskiy, [“The Growing Impact of AI in Financial Services: Six Examples.”](#) Towards Data Science, February 21, 2019.

Automating Workflows (via RPAs)

Credit unions can leverage AI applications to automate repetitive, clerical tasks through the use of robotics process automation (RPA). In this scenario, bots are trained to perform work, rather than APIs that must be integrated into an IT environment.¹² These applications provide an opportunity to reskill roles and enhance organizational culture.

Manual processing is slow and costly, and relying solely on people leads to higher degrees of inconsistency and errors. By implementing RPA tools built on an AI platform, a credit union can lower false positives and human error, save significant resources, and repurpose its workforce to focus on improving members' financial health.

INNOVATION
SPOTLIGHT:



[CU NextGen's](#) (MRM) platform uses RPA to virtually integrate a credit union's siloed systems, allowing staff to act on member-facing needs from within a single set of screens. The MRM platform's portfolio of ancillary services, offered across several modules, has been designed to enhance member experience and make credit union operations more efficient. Per a Forrester study, the return on investment results when implementing RPA solutions is encouraging.¹³ [Research from Ernst & Young](#) suggests RPA can reduce costs of manual operations by 25-40%.¹⁴

EMPOWERING CREDIT UNIONS WITH AI

Intelligent automation is the future for the credit union workforce and member engagement. AI is positioned to simplify processes and operations as more members expect personalization and increased control over their financial futures. To prepare for these advancements, credit unions should first identify the right technology providers and tools to prioritize engagement and efficiency.

As you consider the role of AI in your operations, remember its scalability. The more data that's collected, the more sophisticated AI systems will become. In a matter of years, we will witness products with more accuracy and better capabilities to improve member and employee financial health.

¹² ["Automated workflows and RPA: What's the difference and how do they work together?,"](#) Nintex, April 25, 2019.

¹³ ["Forrester TEI study demonstrates 186% ROI with Pega Robotic Process Automation,"](#) Pegasystems.

¹⁴ ["Intelligent automation in financial services,"](#) EY, May 14, 2019.

ACKNOWLEDGMENTS

The author would like to thank the following individuals for their valuable guidance on this report: Gigi Hyland (National Credit Union Foundation); Sarah Lietz (Members Development Company); Matt Jefferson, Kevin Martin, Ben Maxim, Ben Morales, Noreen Schafer, Mike Valentine (Emerging Technologies Advisory Council).

This report also benefited from the insights of Adam Blimes, Jyoti Chawla, Brian Clark, Henry Vaage Iversen, Karan Kashyap, Geriel Thornburg May, Pawel Mikler, and Fahd Rachidy.

This report is made possible through the financial support of Members Development Company (MDC) and National Credit Union Foundation (NCUF). The opinions expressed in this report are those of the Financial Health Network and do not necessarily represent those of our sponsors.



For additional information, contact Brenton Peck at bpeck@finhealthnetwork.org.



The Financial Health Network is the leading authority on financial health. We are a trusted resource for business leaders, policymakers, and innovators united in a mission to improve the financial health of their customers, employees, and communities. Through research, advisory services, measurement tools, and opportunities for cross-sector collaboration, we advance awareness, understanding, and proven best practices in support of improved financial health for all.

For more on the Financial Health Network, go to finhealthnetwork.org and join the conversation online:

