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**2024**



# NATIONAL TRENDS REPORT



# 2024 NATIONAL TRENDS REPORT

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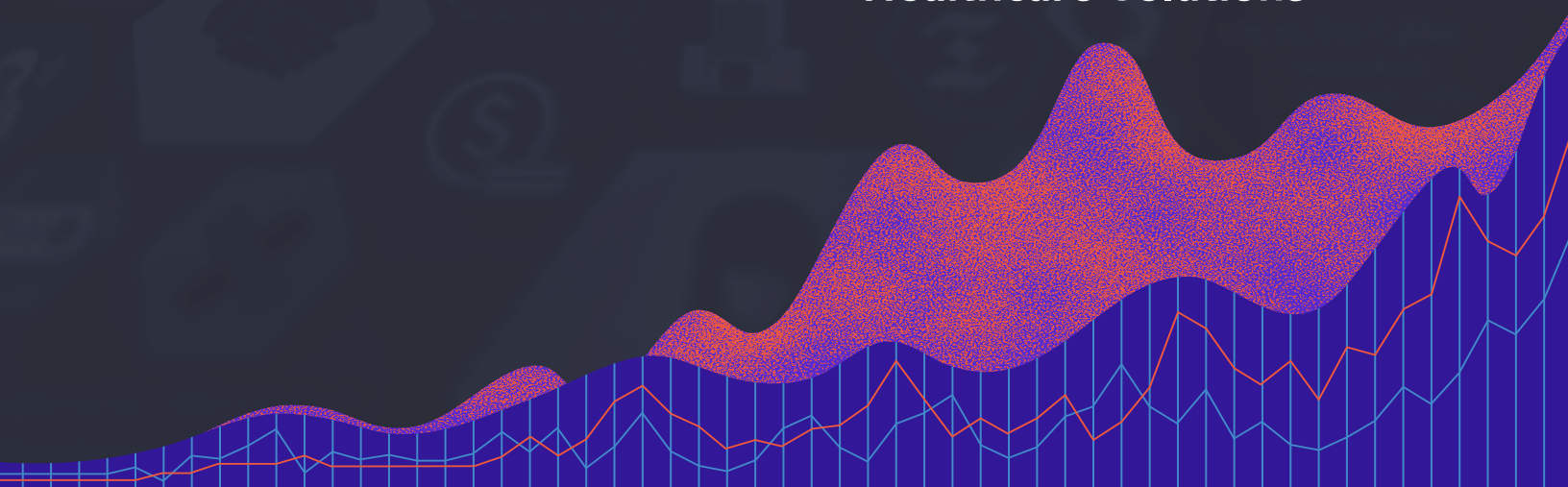
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# Digital Health Most Wired: National Trends 2024

Advancing Health Outcomes through Digitally Enabled Care

## 2024 Survey Results Highlight Role of Governance in Effective Technology Use Across High-Priority Digital Domains

The annual CHIME Digital Health Most Wired (DHMW) survey continues to be a leading benchmark for tracking the digital health progress of healthcare organizations (HCOs) across the world. This survey delivers critical insights into digital health trends, offering healthcare leaders benchmarking data and peer comparisons to guide strategic decision-making. Through Level designations (see below), the DHMW program encourages HCOs to adopt and optimally use information technology to advance care delivery and improve patient outcomes.

While largely based on the same questions as the 2023 survey, the 2024 survey yielded different results. Last year's survey showed that HCOs are using data as an accelerator toward outcomes, and the 2024 survey reveals that HCOs are also focusing on governance for technology decision-making, education, and deployment to ensure data and insights are leveraged effectively. This focus on technology governance and automation is seen in a number of key digital domains, such as infrastructure, cybersecurity, and patient engagement.

### DHMW Methodology

The DHMW survey assesses HCOs across **seven key digital health domains**, scoring their performance based on the meaningful adoption of digital health technology and data analytics. HCOs receive a score for each key area as well as an overall score, with points assigned according to their capability level (on a 1-10 scale). The total points earned determines each HCO's DHMW Level.

Since organizations participate in the DHMW survey voluntarily, this data set *does not* represent a random sample of HCOs. Additionally, note that the surveys are most often completed by the organization's CIO. To provide comprehensive and accurate information, these CIOs are encouraged to consult with team members who have ownership over the seven digital health domains. Survey respondents who are not CIOs are typically high-level decision-makers and are similarly encouraged to collaborate with peers when taking the survey.

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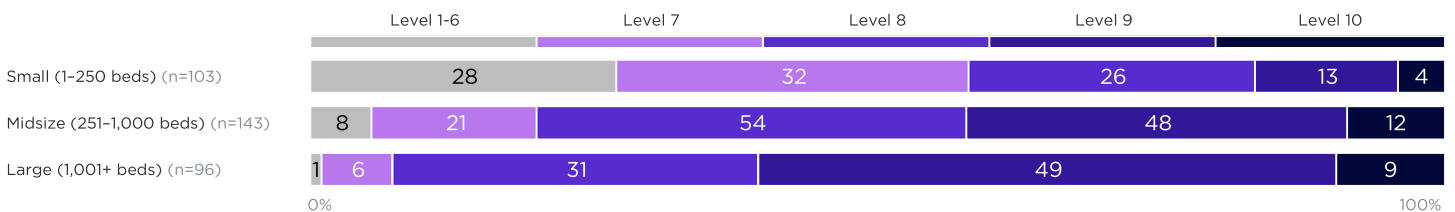
## Overall Trends from 2024 Survey

### Success at Any Size: Larger Organizations Achieve Award-Winning Recognition Levels Most Frequently; One-Third of Small Organizations Also Earn High Recognition

A significant number of HCOs who participated in the 2024 DHMW survey achieved the highest levels of recognition (Level 8 or higher). Many of these are larger organizations that have leveraged extensive resources to implement core technologies and pilot new innovations. Some smaller organizations have also received the highest DHMW Levels by improving and maximizing adoption of existing technologies, not just deploying new innovations.

Of organizations who participated in both the 2023 and 2024 DHMW surveys, most either maintained or improved their DHMW Levels, even in newer technology areas like AI and remote patient monitoring (RPM). Some HCOs saw a decline in their levels for telehealth and RPM, as the high user adoption they saw at the peak of the COVID-19 pandemic has slowed. Despite this, the industry continues to push for broader telehealth and RPM adoption, which should increase as organizations deploy more deliberate strategies and as reimbursement for those areas changes.

#### Distribution of 2024 Most Wired Levels—by Organization Size (1–10 scale)



### The Most-Significant Increases in HCO Technology Adoption Year-over-Year Are in Patient Engagement

The 2024 DHMW survey results show that participating HCOs have made significant progress with adopting patient engagement tools (e.g., apps, portals) that empower patients and caregivers, with 8.6 being the average level across respondents. This emphasis on patient-facing tools reflects a broader industry trend of adopting tools that enhance patient care delivery and outcomes. Other key areas in which organizations are prioritizing technology adoption include clinical quality and safety and infrastructure; technology improvements in these areas can contribute to clinician well-being and efficiency as organizations continue to grapple with staffing challenges.

#### Average 2024 Digital Health Most Wired Level—by Digital Health Domain (1–10 scale) (n=342)

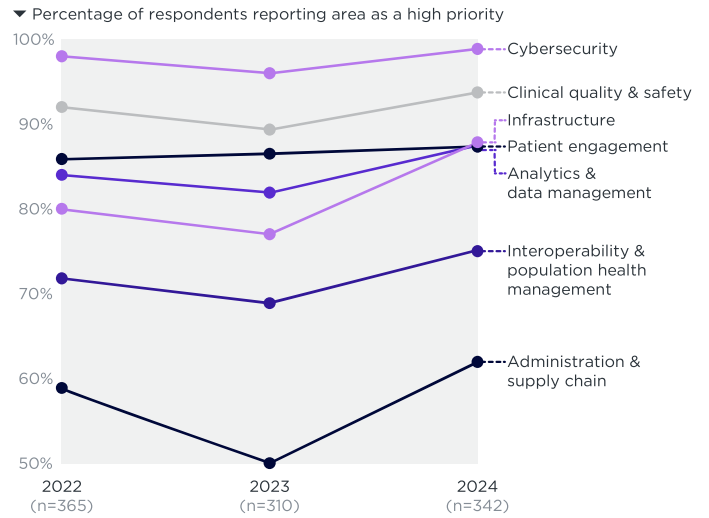




## Security & Infrastructure Are Top Priorities for Future Digital Health Investment

Both HCOs and healthcare IT (HIT) vendors have experienced notable security breaches, and as cyber threats continue to rise, cybersecurity has become essential for HCOs. Investment in this area has remained consistent over the past few years—demonstrating how cybersecurity is a top priority for organizations. Additionally, investment in software infrastructure has seen a notable increase in recent years, with organizations emphasizing policy development and governance programs to support other high-priority security efforts. By investing in these areas, organizations demonstrate their commitment to safeguarding patient data and improving their operational efficiency.

## Digital Health Transformation Priorities, 2022–2024

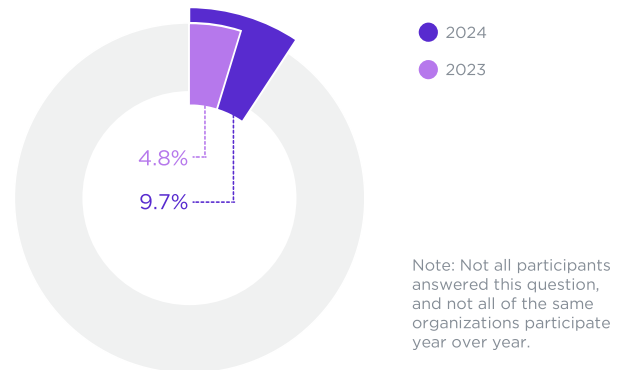


## Organizations Are Allocating Larger Portions of Their Overall Budget to IT

Surveyed HCOs are increasing their financial commitment to IT, with average budget allocations for IT systems and initiatives nearly doubling year over year. Within IT budgets, a quarter of investments are often directed toward adopting new solutions and optimizing existing technology. In general, HCOs are transitioning from capital expenditures to operational ones, with a growing emphasis on moving systems and data to the public cloud to improve security, reduce costs, and enhance system reliability. These operational costs also account for servers and licensing, which now fall under IT budgets.

## Percentage of Fiscal Year Budget Allocated to IT Systems & Initiatives, 2023 vs. 2024

(n=331 organizations who participated in both the 2023 and 2024 surveys)



# Key Domains of Digital Health

Sections arranged according to their order within the DHMW survey

## Infrastructure

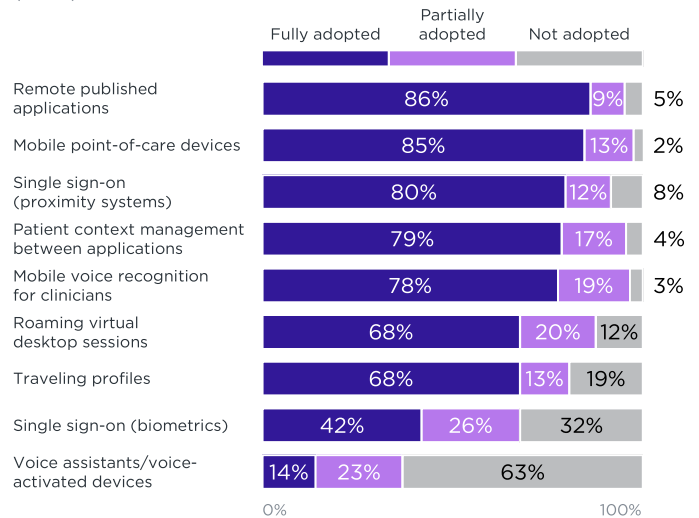
IT infrastructure—the combined components needed for the operation and management of enterprise IT services and environments—is foundational to the success of any HCO's digital strategy. Additionally, successful infrastructure can help combat clinician and IT staffing shortages as well as boost overall organizational efficiency. Technologies such as automation, issue identification, people and equipment tracking, and RPM help to reduce bottlenecks and streamline processes.

### *HCOs Streamlining Caregiver Workflows by Providing More Devices (e.g., Voice Assistants); Adoption of Employee-Owned Devices & BYOD Programs Also Growing*

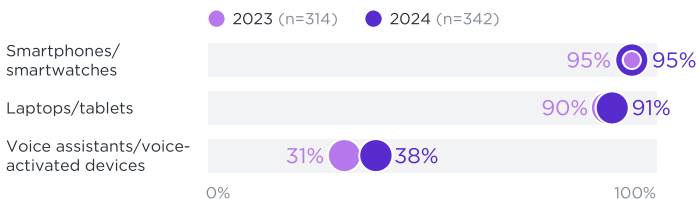
HCOs are heavily investing in organization-owned devices and automated technologies aimed at streamlining caregiver workflows, focusing particularly on point-of-care devices and voice recognition systems that reduce the clinician burden and enhance care delivery. Additionally, many HCOs are piloting voice-activated systems and have seen promising results regarding improved efficiency.

In addition to organization-owned devices, the authorized use of employee-owned devices (e.g., smartphones, laptops, etc.) has significantly increased to support patient care delivery. This increase in BYOD policies reflects a shift toward more flexible, technology-driven care environments. HCOs of all sizes are making strides in enhancing their BYOD policies by defining acceptable use, access control, and key terminology. Large organizations often face gaps related to educating staff on appropriate use of employee-owned devices in healthcare settings, and many smaller organizations are working to incorporate BYOD legislation and noncompliance guidelines.

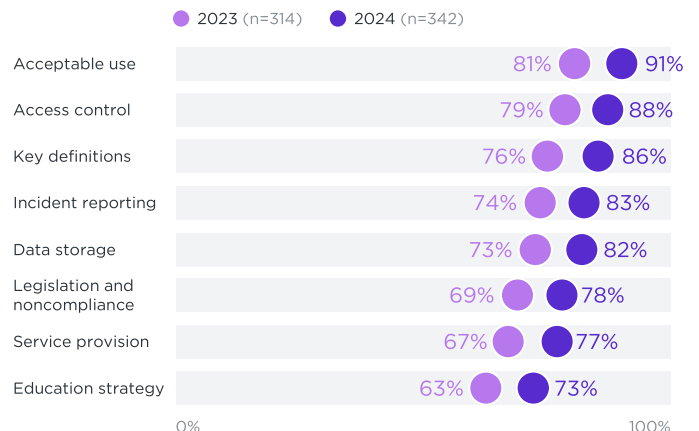
#### Technologies Used to Improve Caregiver Workflows (n=342)



#### Authorized Employee-Owned Devices Used for Patient Care, 2023 vs. 2024



#### Elements of BYOD Policy, 2023 vs. 2024





# Cybersecurity

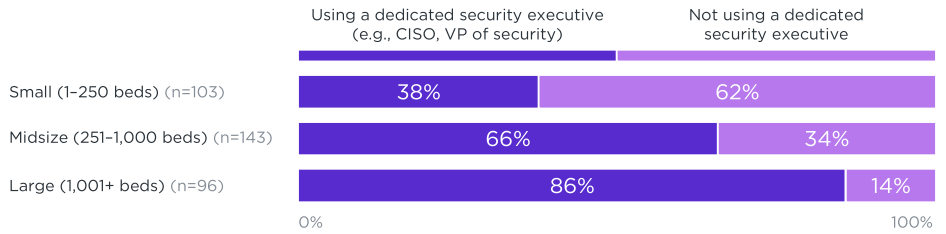
IT cybersecurity measures are designed to protect critical systems and sensitive information from digital attacks—whether those originate from inside or outside of an organization. As HCOs increase the number of devices and software applications connected to their networks, the potential for security breaches (and subsequent liability) also increases. Security risks from medical devices or poor access management can negatively impact not only information security but also patient safety. Access management tools, data encryption, and healthcare internet of things (IoT) tools can help HCOs actively manage and reduce day-to-day security risks.

## Security-Specific Executives Facing Higher Burden Due to Increasing Frequency of Security Governance Activities & Stakeholder Reporting

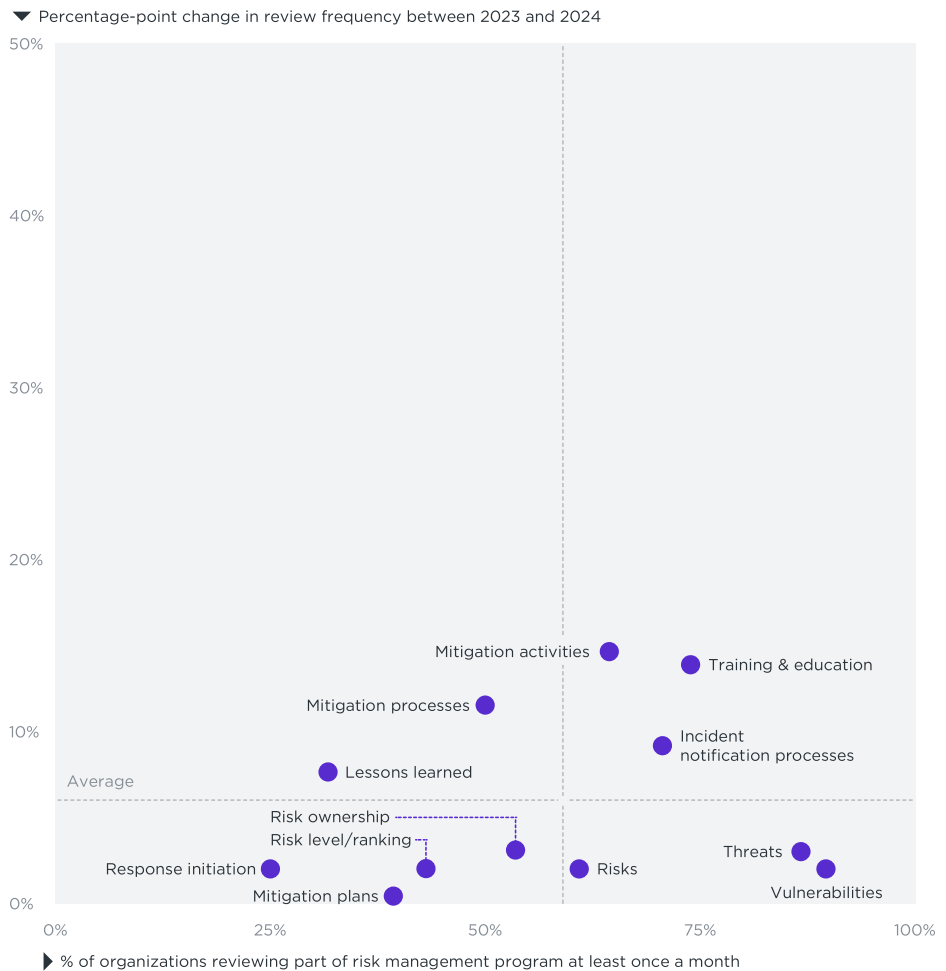
Due to the rising need for cybersecurity, HCOs are increasingly appointing dedicated security executives (e.g., chief information security officers, VPs of security) to lead information security programs. Large organizations more often have formal security positions and governance structures. While there has been an increase in the number of small organizations appointing security-specific executives, more than half of surveyed small organizations still rely on existing CIOs or department leaders.

The number of stakeholders (e.g., executives, board members) who receive regular cybersecurity updates has also increased, and this growing involvement has heightened the demands on security teams. Consequently, many HCOs are more frequently reviewing and enhancing their risk management programs, especially regarding security training, mitigation activities, and incident notification processes.

### Security Program Leadership—by Organization Size



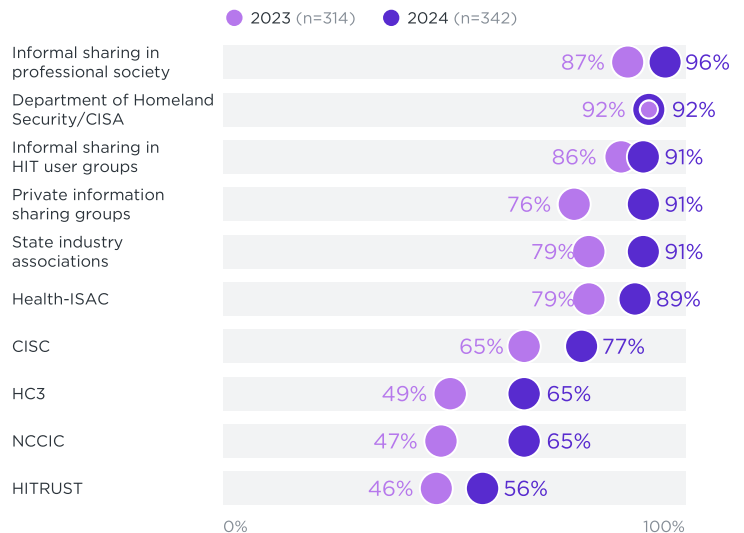
### Change in Frequency of Risk Management Program Review, 2023 vs. 2024 (n=342)



## HCOs Are Engaging Third-Party Firms to Manage Higher Security Demands

Another way HCOs are working to meet growing cybersecurity needs is by increasing their partnership with third-party firms for threat identification and risk assessments. Engagements with these external firms help HCOs identify compliance gaps and security vulnerabilities, thus enabling organizations to avoid potential threats. Regular third-party evaluations have become an essential component of robust cybersecurity strategies for many HCOs.

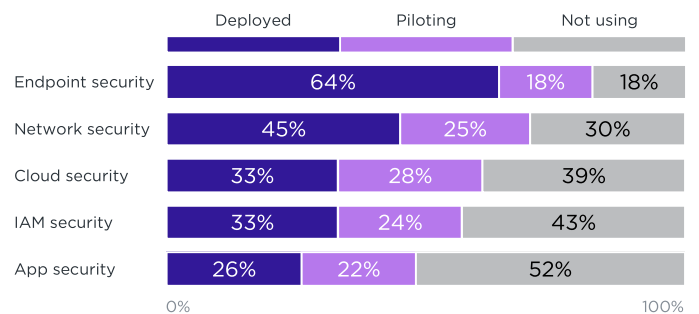
## Use of Third-Party Firms for Threat & Vulnerability Identification, 2023 vs. 2024



## Cybersecurity Departments Looking to AI for Help with Program Management; Many Organizations Piloting Use Cases

Many HCOs are deploying artificial intelligence (AI) to enhance their cybersecurity programs—particularly for endpoints, networks, and cloud environments. Endpoint security has seen the most mature AI adoption, with many organizations moving beyond pilot phases to full implementations. While AI is widely used for cybersecurity by organizations of all sizes, larger organizations more commonly adopt AI for cloud security and identity management, reflecting their specific needs related to cloud adoption and their more-complex identity and access management environments.

## State of Cybersecurity AI Deployment (n=342)



## Administration & Supply Chain

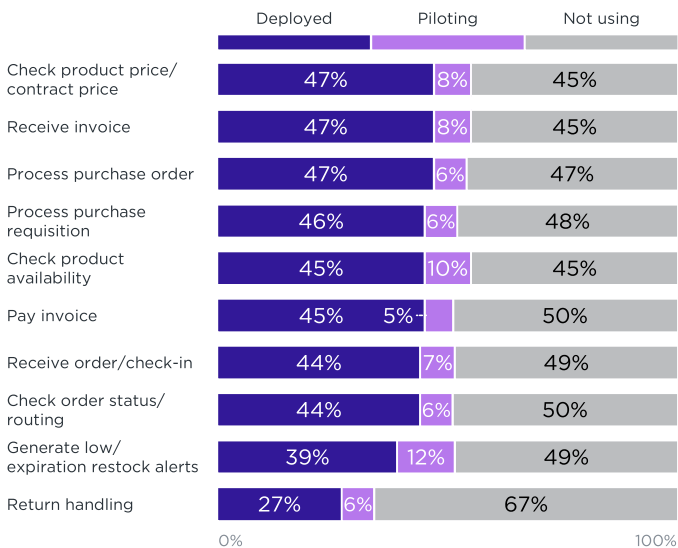
Administrative and supply chain technologies play a critical role in the operational success of HCOs. As organizations are faced with rising financial pressures and increasingly thin margins, administrative and supply chain tools enable them to effectively manage valued resources as well as their spending on equipment, pharmaceuticals, and human capital. Many HCOs report that managing costs effectively is a weak spot for their organizations, and they are turning to effective technologies and process optimization to achieve their operational goals.

## HCOs Using AI to Drive Efficiency for Revenue Cycle & Contract Management Processes

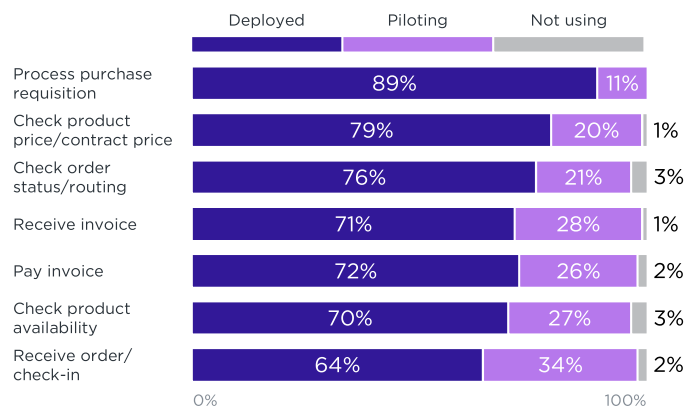
AI is widely used by HCOs to streamline revenue cycle and contract management processes and improve staff efficiency. These AI use cases are considered low risk and easy to deploy, making them attractive to organizations of all sizes. In contrast, adoption of AI for supply chain processes remains lower—particularly in cases where HCOs (1) are focused on leveraging automation from their ERP rather than adopting third-party AI solutions or (2) have not standardized workflows enough to take advantage of AI.



## State of Supply Chain AI Deployment (n=342)



## State of Revenue Cycle/Contract Management AI Deployment (n=342)

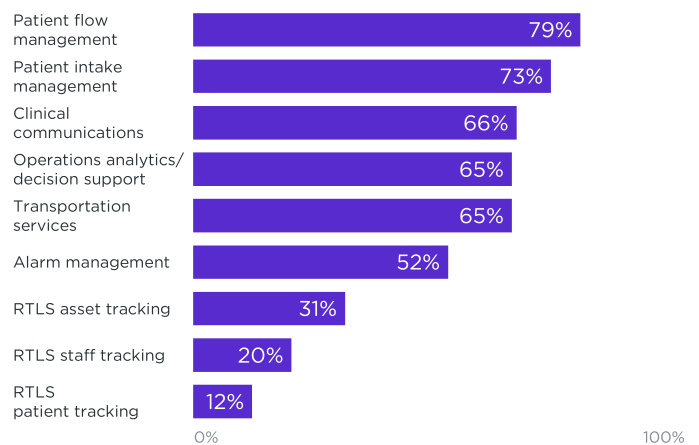


## HCOs Employing RFID & RTLS via Command Centers to Improve Organizational Efficiency & Patient Flow

Adoption of radio frequency identification (RFID) and real-time location systems (RTLS)—while still comparatively low—is increasing as HCOs seek to improve their inventory and patient flow management. Organizations are also investing in patient flow management via integrated patient logistics systems and transfer centers, which are often managed through operational command centers. Whether on premises or remote, command centers use clinical communications tools to coordinate patient services and improve the efficiency of care delivery.

## Services Provided by Operational Command Centers

Percentage of respondents using service (n=342)



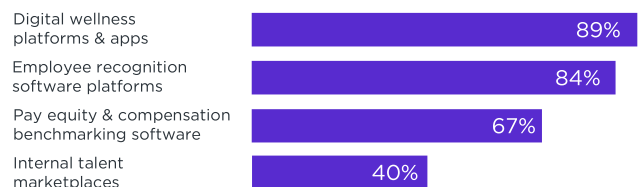
## Efforts to Increase Employee Retention through Digital Tools Focus Largely on Responding to Needs; Tools to Deeply Understand Employee Experience Not Often Adopted

In addition to improving patient care, HCOs are focused on enhancing employee retention by investing in tools that improve the staff experience. Digital wellness and employee recognition platforms are frequently deployed; in contrast, adoption is lagging for tools that provide deeper insights into the drivers of employees' positive and negative experiences. While 77% of surveyed HCOs use platforms that capture employee feedback, most are not pairing those platforms with deeper retention and sentiment analysis tools.

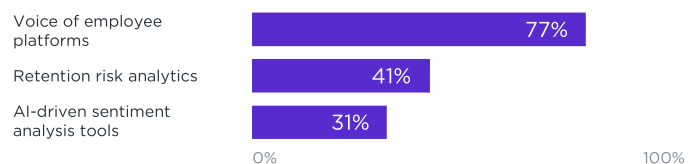
## Technologies Used to Support Employee Retention

(n=342)

### Technologies that help organizations improve the employee experience



### Technologies that help organizations understand the employee experience



## Analytics & Data Management

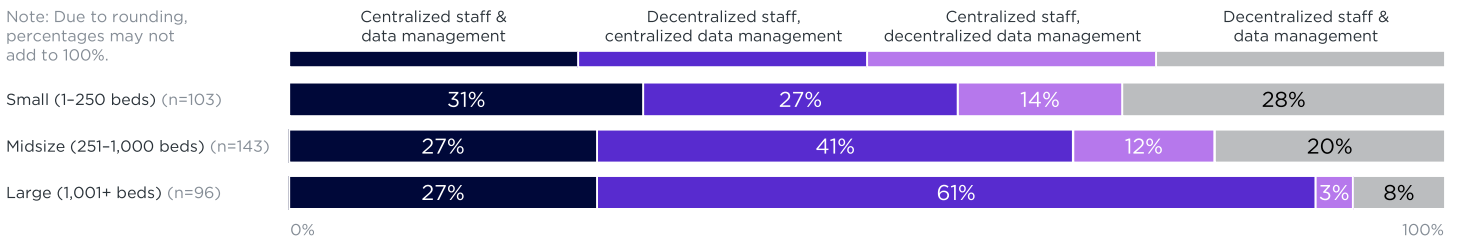
HCOs' need for broad, deep analytics has grown dramatically, and organizations are looking for consolidated, end-to-end analytics platforms that offer a wide variety of capabilities. Breaking down data silos has been a challenge for HCOs as they attempt to coordinate with their vendors, consolidate data, and acquire the internal expertise to build the needed advanced algorithms and views to drive value. Despite the challenges, healthcare leaders widely agree that success in this area will be key to digital health maturity.

### HCOs Hope Access to Accurate Data Can Improve Decision-Making

In a post-pandemic world, HCOs recognize that having access to accurate, trusted data can drive faster and more effective decision-making, leading them to focus more on centralizing their analytics and data management. By ensuring that data is well curated and centrally managed, organizations can take a federated approach to analytics staff, allowing them to be embedded across departments while maintaining consistent, high-quality insights.

#### Approaches to Analytics Staffing & Data Management—by Organization Size

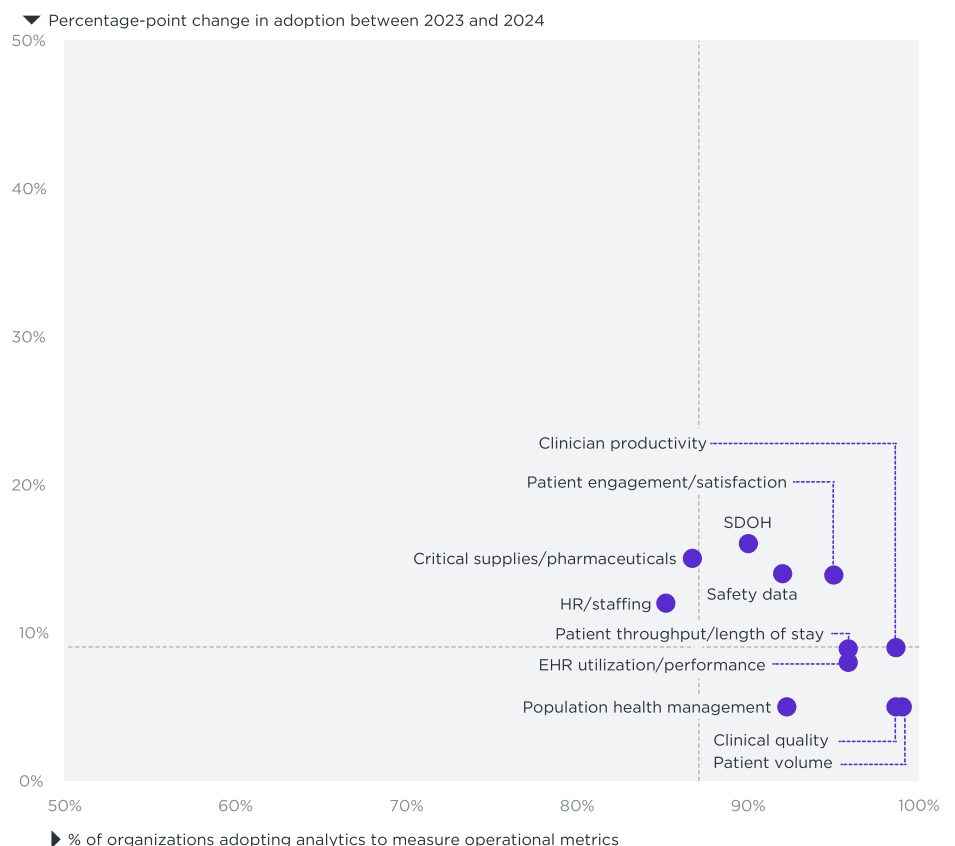
Note: Due to rounding, percentages may not add to 100%.



### Clinical & Operational Leaders Are More Frequently Using Real-Time Insights & Data Visualization

Many HCOs are adopting real-time dashboards and data visualization tools to enable their clinical and operational leaders to access actionable insights and make more informed decisions, ultimately improving operational efficiency and patient care. Adoption of these tools is particularly high for patient engagement, patient and staff safety, and social determinants of health; adoption for staffing and supply chain is also beginning to gain traction.

#### Adoption of Real-Time Dashboards & Data Visualization, 2023 vs. 2024 (n=342)



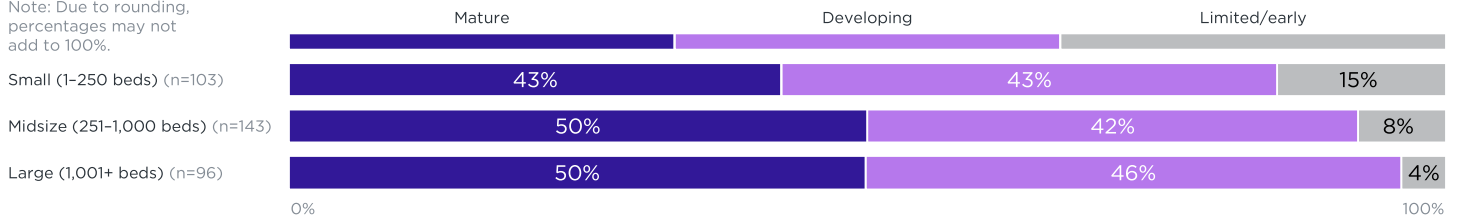


## Data Governance Programs Are Maturing as Organizations Centralize Data Management

Across HCOs of all sizes, data governance programs are maturing, with roughly half of surveyed organizations having a clearly defined strategy and leadership buy-in. Many organizations currently developing governance strategies are gaining increased support from their leadership, though many are still reactive in their approach—taking advantage of technologies and analytics capabilities before fully mapping out governance use cases. As HCOs' data governance programs continue to mature, the organizations will be better positioned to leverage data for decision-making, leading to improved outcomes.

### Maturity of Data Governance Program—by Organization Size

Note: Due to rounding, percentages may not add to 100%.



## Interoperability & Population Health Management

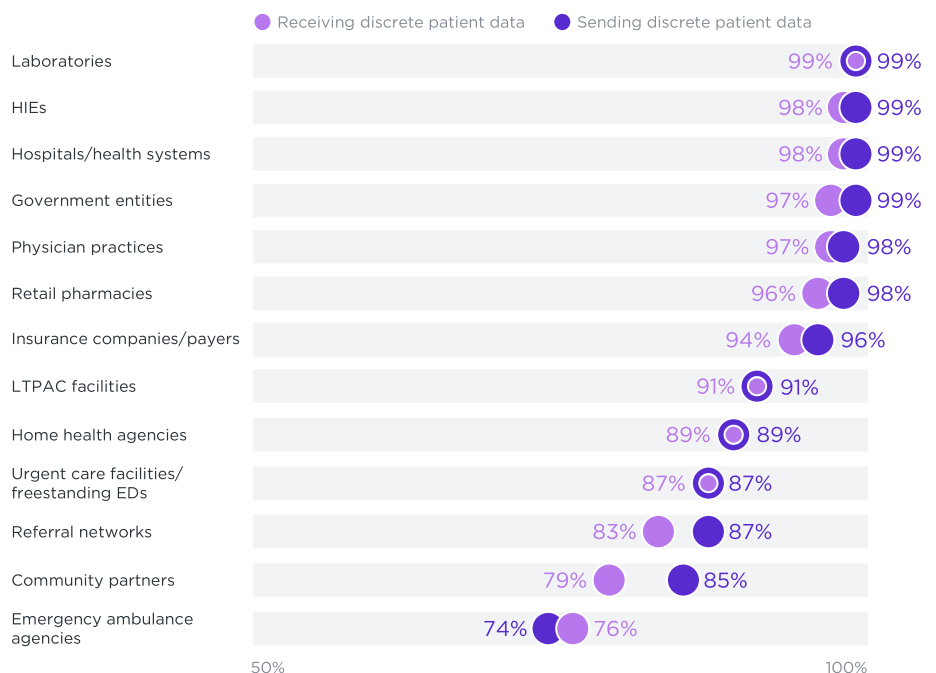
Interoperability—the ability of two or more systems to exchange health information and of clinicians to use that shared data—continues to be a critical area of focus for the healthcare industry. Sharing patient data creates a more comprehensive view of a patient's health, which can enable HCOs to positively impact the health statuses and outcomes of specific populations (i.e., population health management).

While the industry has undoubtedly progressed with making data connections, there is still significant room for improvement in making data exchanges meaningful. Meaningful interoperability requires many elements to come together: connectivity for health information sharing, utility of shared data for stakeholders and partners, strong adoption of interoperability use cases, proof of interoperability-enabled outcomes, and broad adoption of interoperable tools across organizations.

## Healthcare Entities Are Increasingly Leveraging EHRs to Send & Receive Patient Data

EHRs play a critical role in supporting interoperability between hospitals, laboratories, and other healthcare entities. While emergency services agencies are lagging in EHR adoption, community partners report the greatest increase in EHR use for data exchange over the past year, marking a step forward in seamless data exchange across the healthcare ecosystem.

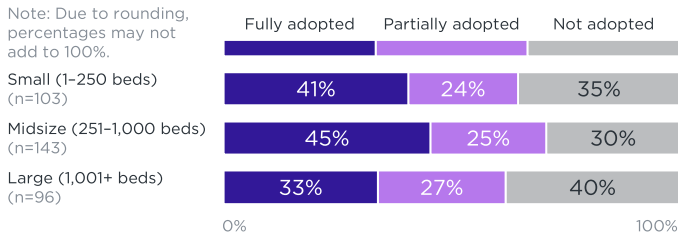
### Percentage of Participants Who Report Using EHR to Exchange Patient Data with External Entities (n=342)



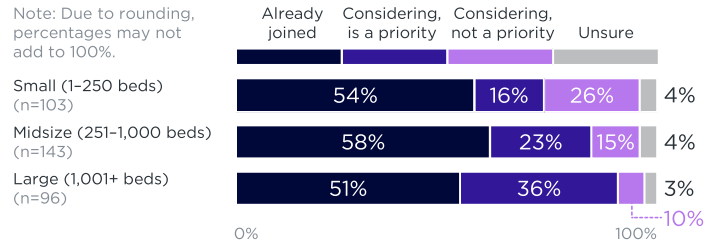
## HCOs Are Adopting TEFCA Standards & Participating in QHINs

Small and midsize organizations are making progress toward adopting Trusted Exchange Framework and Common Agreement (TEFCA) standards, and many are also joining Qualified Health Information Networks (QHINs). Of note, in this data set, the majority of HCOs participating in QHINs are Epic organizations. As both of these initiatives are still relatively new, it remains to be seen how they will impact interoperability.

### Adoption of TEFCA Standards—by Organization Size



### Approach to Joining a QHIN—by Organization Size



## Patient Engagement

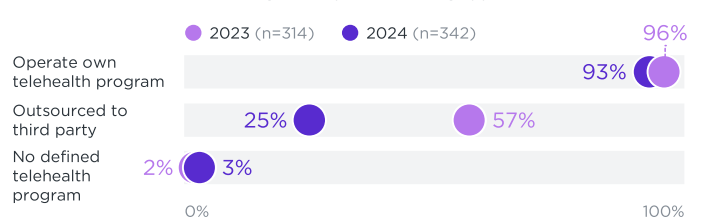
Patient engagement refers to a patient's desire and capability to actively participate in their care journey, maximize their health outcomes, and improve their care experience. As such, patient engagement involves both processes and behavior,

shaped by the relationship between a patient, their provider, and their care environment. The patient engagement market has evolved from HCOs using disparate tools to using a one-stop-shop solution that spans all phases of the patient journey—including pre-visit engagement and registration, tools used during a visit (e.g., real-time experience improvement tools and telehealth services), and post-visit tools for bill pay and communication. Amid financial challenges, many HCOs are focused on developing their digital front door and providing self-scheduling and registration capabilities to improve patient volumes and throughput.

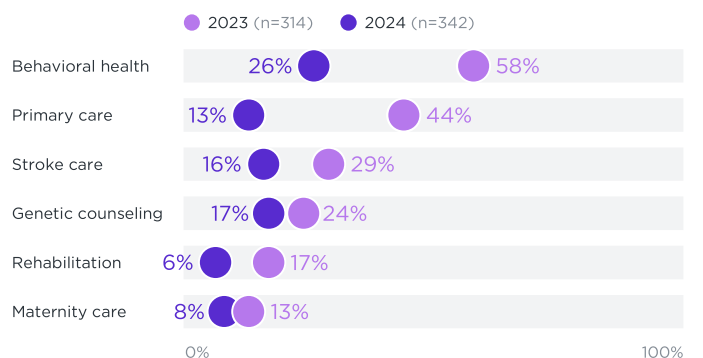
### Shift to In-House Telehealth Management Reflects More-Centralized Approach to Virtual Health Services

The majority of HCOs plan to continue providing telehealth services, even as the number of telehealth visits is generally declining as the effects of the pandemic recede. Many organizations are planning to shift to managing telehealth programs exclusively in-house. Historically, most organizations have also relied on third-party vendors to run their telehealth services due to a lack of dedicated leadership and unclear strategies. However, the 2024 DHMW results show a noticeable reduction in telehealth outsourcing as more organizations are taking greater ownership of their programs. This shift reflects the growing permanence of telehealth, which was rapidly adopted at the beginning of the COVID-19 pandemic. Telehealth is particularly used for underserved populations and in specialty areas where there are fewer physicians. By integrating telehealth services more closely with other operations, HCOs aim to better ensure coordination, access to care, and long-term success.

### HCO Approaches to Delivering Telehealth Services, 2023 vs. 2024



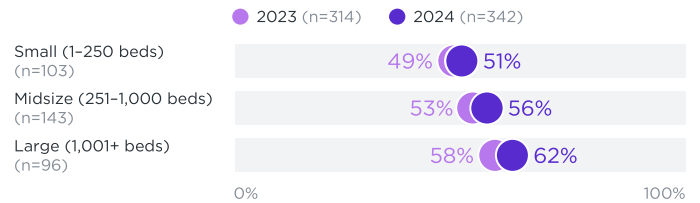
### Diagnostic & Therapeutic Appointments Conducted via Telehealth, 2023 vs. 2024



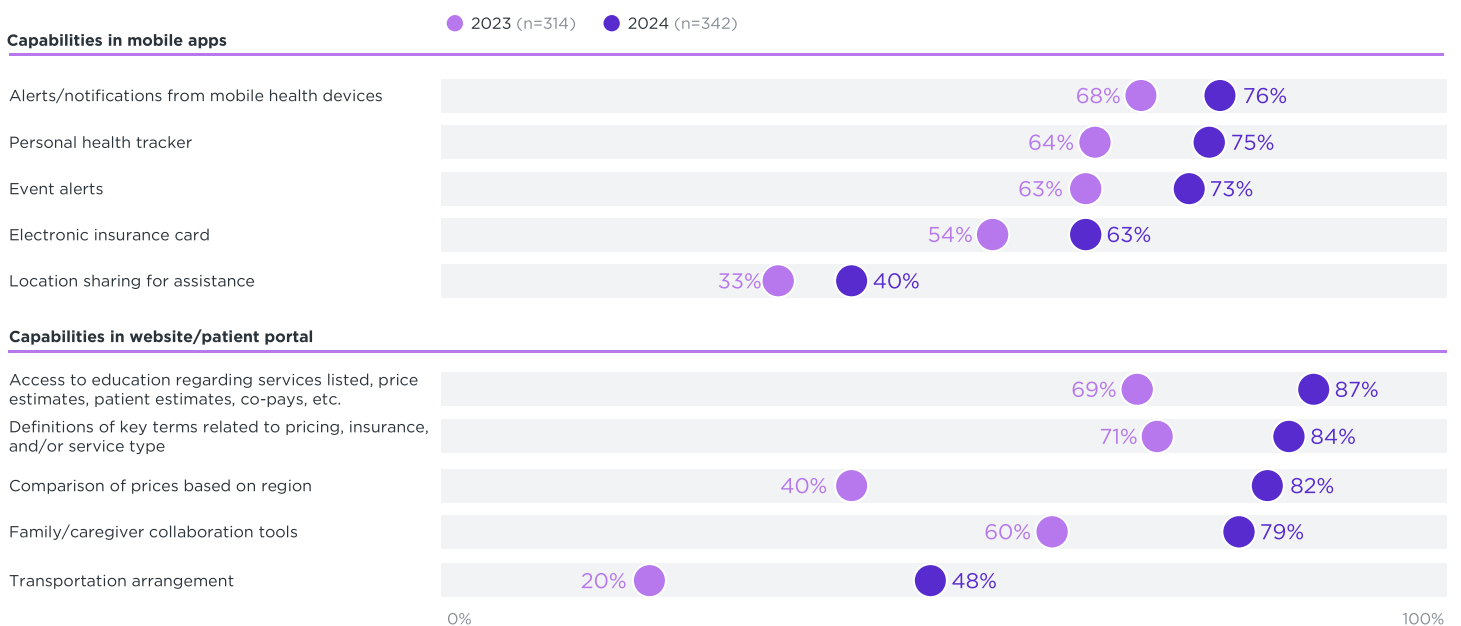
## Patient Empowerment Tools Are Expanding Beyond Basic Portal Functions

Beyond telehealth, HCOs are adopting technologies that empower patients to more actively engage in their care. Patient portal usage has increased minimally, but the way patients use portals has evolved significantly. In particular, patients are increasingly using portals to navigate financial aspects of care, such as price estimation and price comparison. Additionally, mobile apps for patients are becoming more prevalent, with many HCOs sending alerts to personal health devices and trackers to engage patients beyond clinical visits.

### Percentage of Patients Accessing Portal, 2023 vs. 2024—by Organization Size



### Percentage of Patients Adopting External Functionalities, 2023 vs. 2024



## Clinical Quality & Safety

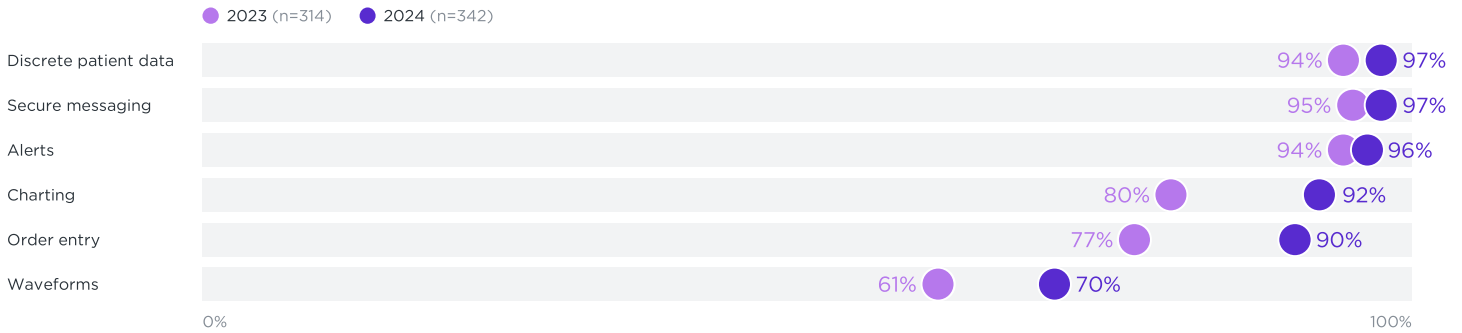
Improving clinical quality while reducing the staff burden is a key focus for HCOs. Many organizations use real-time reporting and retrospective decision-making to manage controlled substances and receive patient safety alerts.

## Voice Assistants & Ambient Speech Technologies Enhance Care Team Efficiency

As mentioned before, the increased adoption of organization-owned and employee-owned devices at the point of care has led to increased access to functionality for care team members. Specifically, voice assistants and ambient speech technologies are being adopted to streamline charting and order-entry processes. Early adopters of these technologies report significant benefits, including increased efficiency, a reduced clinician workload, and more time with patients—signaling that investment in these technologies is valuable.



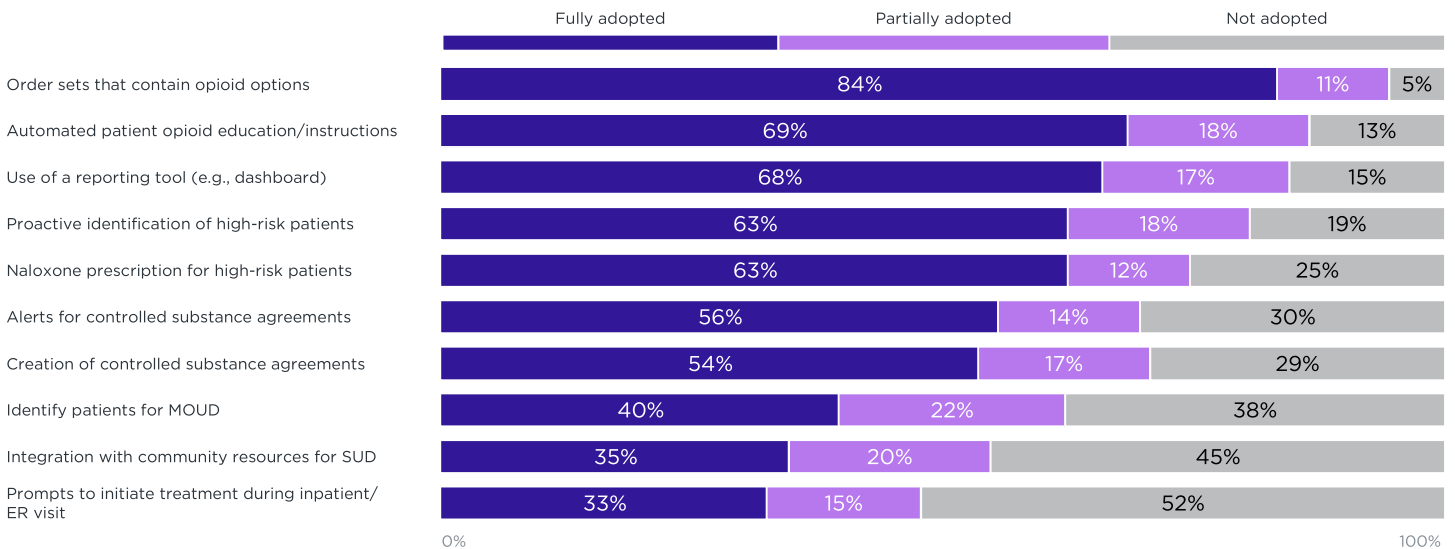
## Capabilities Available to Care Team Members Using Point-of-Care Devices



## Technology Plays Crucial Role in Reducing Opioid Use & Supporting At-Risk Patients

Reducing the use of opioids remains an important focus for HCOs, and technology plays a pivotal role in (1) improving clinical practices to reduce opioid use and (2) supporting individuals at high risk for addiction by connecting them with community resources. Across the industry, HCOs are more often leveraging social determinants of health (SDOH) information to provide comprehensive care beyond hospital walls, ensuring better well-being and support for patients.

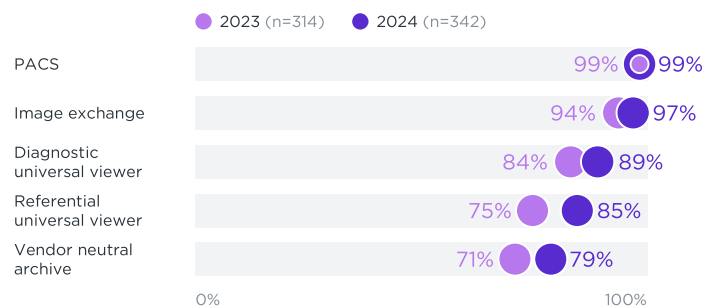
### Adoption of Technologies that Support Reduction of Opioid Use (n=342)



## Centralized Imaging Strategies Can Improve Clinical Quality & Access

Enterprise imaging continues to advance clinical quality by providing clinicians with centralized access to patient images. Vendor neutral archives (VNAs)—which consolidate relevant patient images—have seen notable growth in adoption in recent years. As HCOs' enterprise imaging strategies mature, organizations are expanding use of VNAs to include non-radiology images (e.g., point-of-care ultrasounds). In order to provide increased access to images, many HCOs report offering referential viewers through their EHR.

### Adoption of Enterprise Imaging Solutions, 2023 vs. 2024





## About CHIME

The College of Healthcare Information Management Executives (CHIME) is an executive organization dedicated to serving chief information officers (CIOs), chief medical information officers (CMIOs), chief nursing information officers (CNIOs), chief innovation officers (CIOs), chief digital officers (CDOs), and other senior healthcare IT leaders. With more than 5,000 members in 58 countries plus 2 US territories and over 190 healthcare IT business partners and professional services firms, CHIME and its three associations provide a highly interactive, trusted environment enabling senior professional and industry leaders to collaborate, exchange best practices, address professional development needs, and advocate the effective use of information management to improve the health and care in the communities they serve. For more information, please visit [chimecentral.org](http://chimecentral.org).



## About Digital Health Analytics

Digital Health Analytics (DHA) is a global market intelligence and survey research hub for digital health technology. Provided by the College of Healthcare Information Management Executives (CHIME), DHA was created in 2022 to supercharge organizations' digital health transformation capabilities by moving from a one-snapshot-in-time, static Most Wired survey to a 365/24/7 data and analytics resource. DHA is the gateway for provider organizations and companies to better understand how digital technology supports leaders in transforming health and care and delivering data insights that help them make the greatest business impact possible. For more information, please visit [dhanalytics.org](http://dhanalytics.org).



## About KLAS Research

Established in 1996, KLAS Research provides accurate, honest, and impartial insights for the healthcare IT (HIT) industry. Our mission is to improve the world's healthcare by amplifying the voice of providers and payers. The scope of our research is constantly expanding to best fit market needs as technology becomes increasingly sophisticated. KLAS finds the hard-to-get HIT data by building strong relationships with our payer and provider friends in the industry. Visit [klasresearch.com](http://klasresearch.com) for more information.