Primary Care Telehealth Visits

SAT5001- Introduction to Health Informatics-Fall 2024

Prof. Dan Boyle

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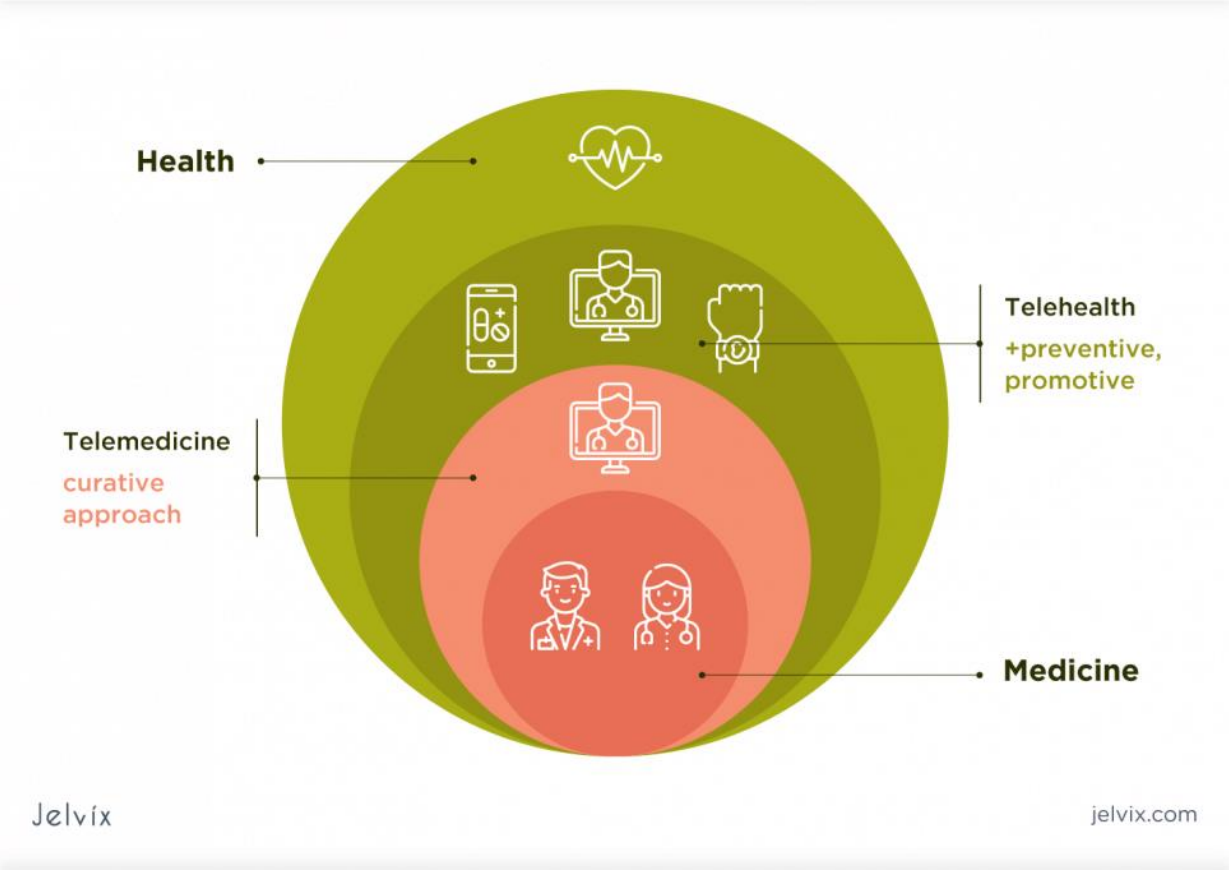
Objective	Explore telehealth’s impact on primary care
Focus	Improving clinical workflows, accessibility, and patient outcomes
Scope	Examining historical background, benefits, current technologies, and future integration

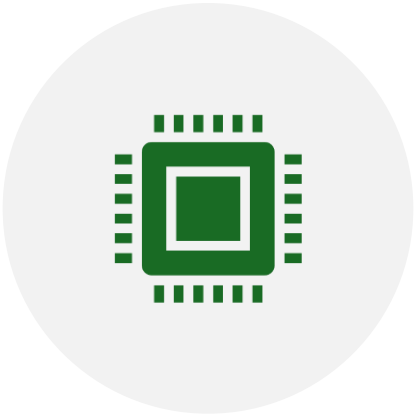
What Is Telehealth?

Delivery of healthcare services through digital communication tools.



History of Primary Care Telehealth Visits

Early adoption: used mainly in remote or rural areas with limited resources



Challenges: limited internet speeds and lack of integration with EHR systems.

Pre-pandemic: primarily supplemental, gradually gaining acceptance in urban settings

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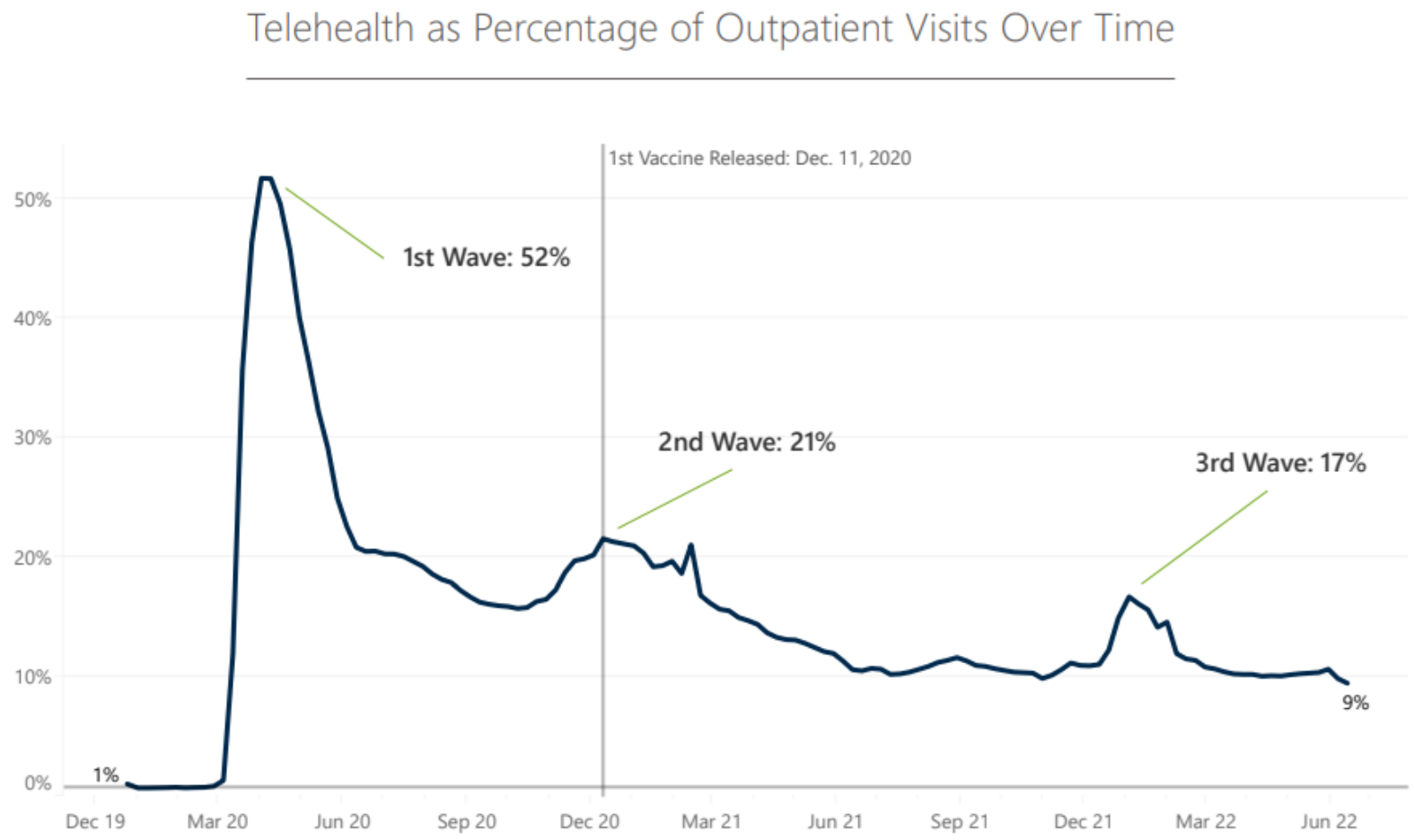
Telehealth Before COVID-19

- Before the COVID-19 pandemic, telehealth adoption was gradual but hindered by several barriers.
- Limited use in outpatient and primary care: telehealth was primarily utilized for niche applications like remote monitoring of chronic diseases and telepsychiatry.
- Slow adoption: from 2017 to 2022, telemedicine saw incremental growth driven by technology advancements and gradual policy adjustments.

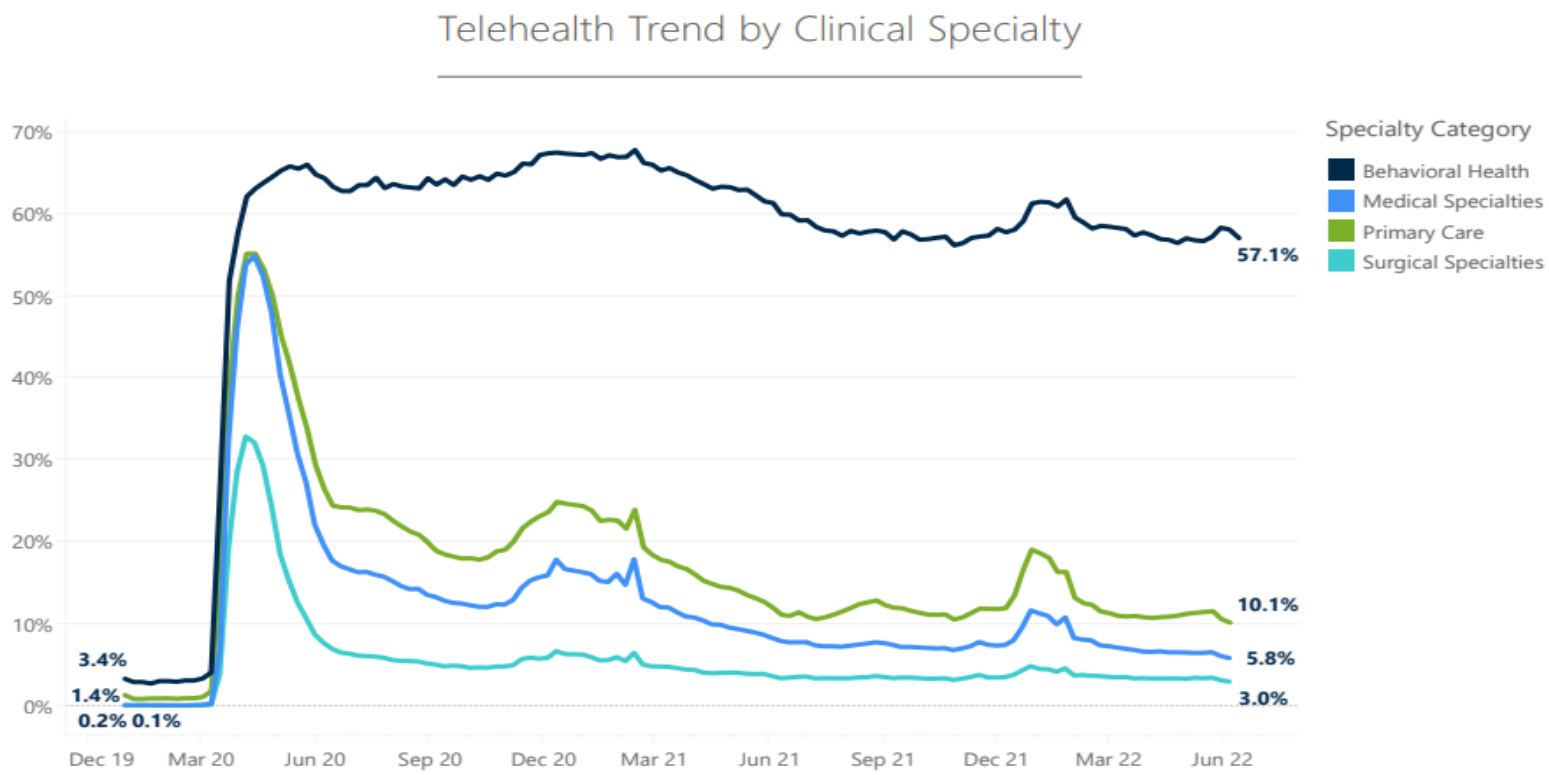
The Pandemic Effect



Figure's ref: https://www.chartis.com/sites/default/files/documents/Chartis_Telehealth_Trend_Analysis_OCT-2022.pdf

Primary care and other specialties telehealth adoption in the first two years of the pandemic

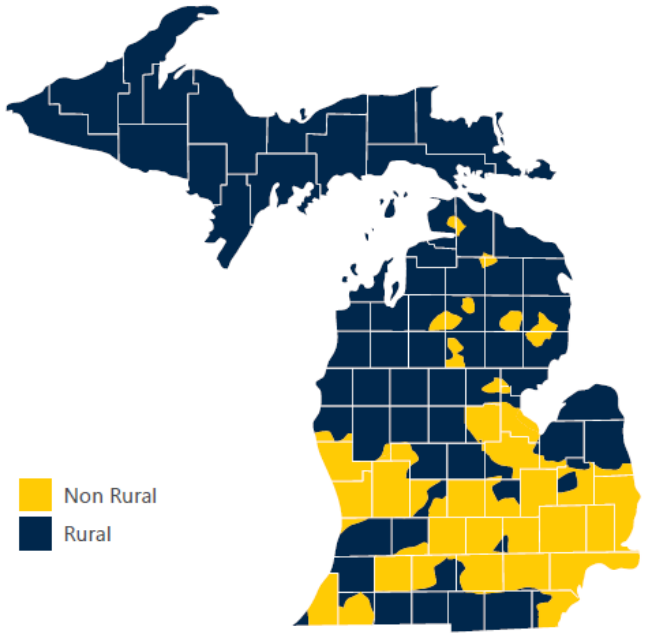
By April of 2020, **nearly all** primary care physicians (97%) were using telemedicine to treat patients[1].

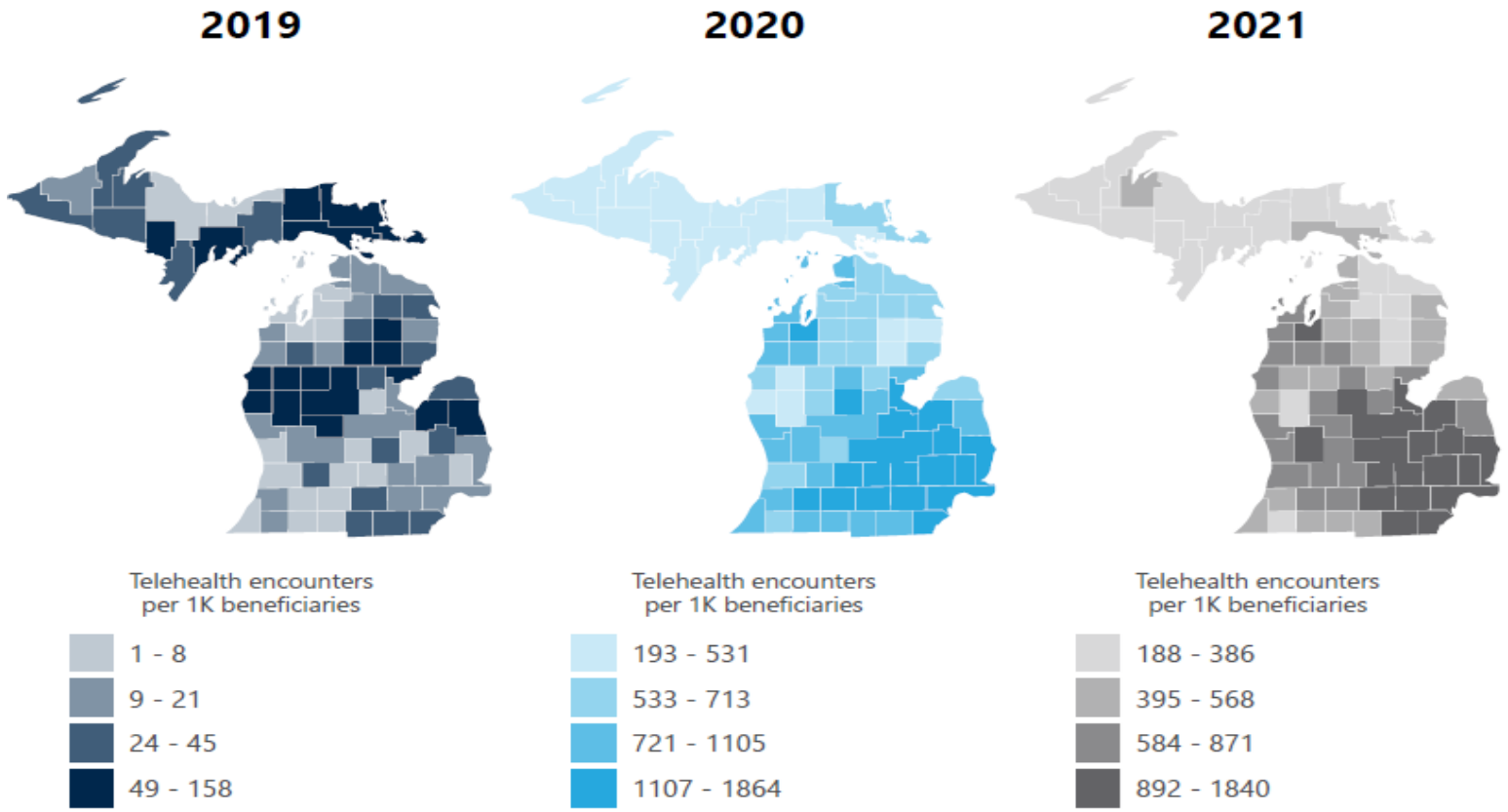


[1] https://www.americantelemed.org/resources/the-adoption-of-telehealth/

Figure's ref: https://www.chartis.com/sites/default/files/documents/Chartis_Telehealth_Trend_Analysis_OCT-2022.pdf

Change in telehealth use in rural/non-rural areas in Michigan before and after Covid-19

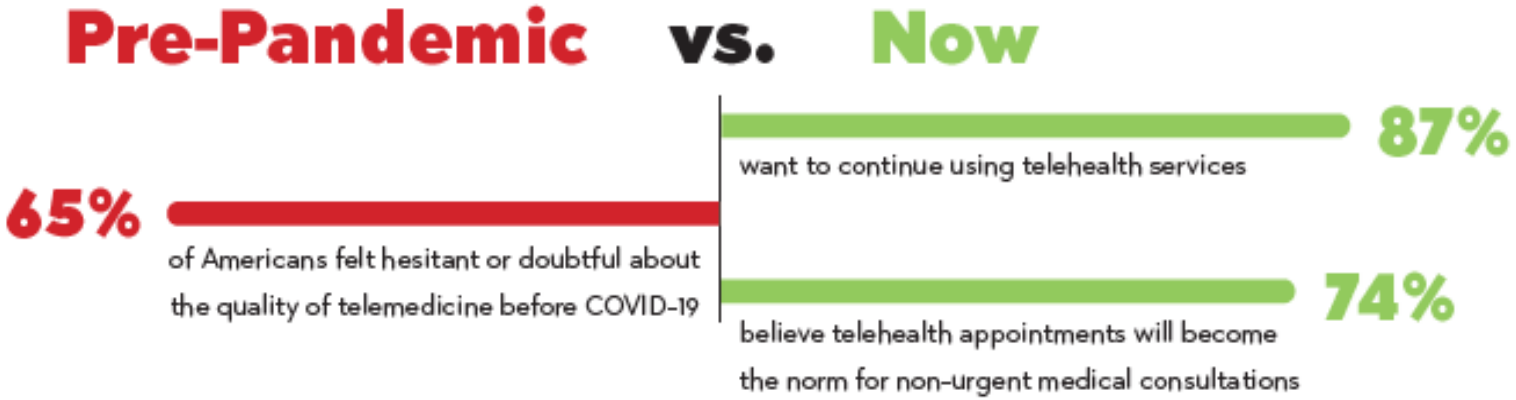




Figures' ref: Ellimoottil, C., et al. "Telehealth in Michigan: insights and data for effective policymaking. Michigan Health Endowment Fund and Ethel & James Flinn Foundation; 2023: 1–53."

Impact of COVID-19 on Telehealth

- **Pandemic Catalyst:** Rapid telehealth adoption for non-emergency and chronic care.
- **Regulatory Shifts:** Temporary policy changes to expand reimbursement and accessibility.
- **Increased Acceptance:** Patient and provider perceptions shift, viewing telehealth as essential.



Figure's ref: Patient Satisfaction with Virtual Care/ www.americantelemed.org-

Primary Care Telehealth

- **Primary Care Telehealth** enables physicians, ob-gyns, pediatricians, and other primary care specialists to provide consultations via video & audio calls and instant messaging. It helps patients get treatment for minor diseases, discuss their health and well-being, and visit behavioral therapy sessions remotely.
- Custom telemedicine solutions for primary care have particular value for several reasons:

1. They streamline care coordination between primary care providers and other healthcare professionals.
2. They also enable the delivery of personalized interventions, which contributes to better chronic disease management and preventive care.
3. In addition, custom software effectively caters to the unique needs of primary care clinics with a specialized focus, e.g., on pediatrics, geriatrics, psychiatry, or women's health. Also, it seamlessly integrates with the existing systems, helping avoid workflow disruptions.
4. Primary Care Telemedicine covers the shortage in primary care staff in rural areas.

Primary Care Telehealth in 2021

Figure 1. Percentage of visits with telemedicine use, by physician specialty: United States, 2021

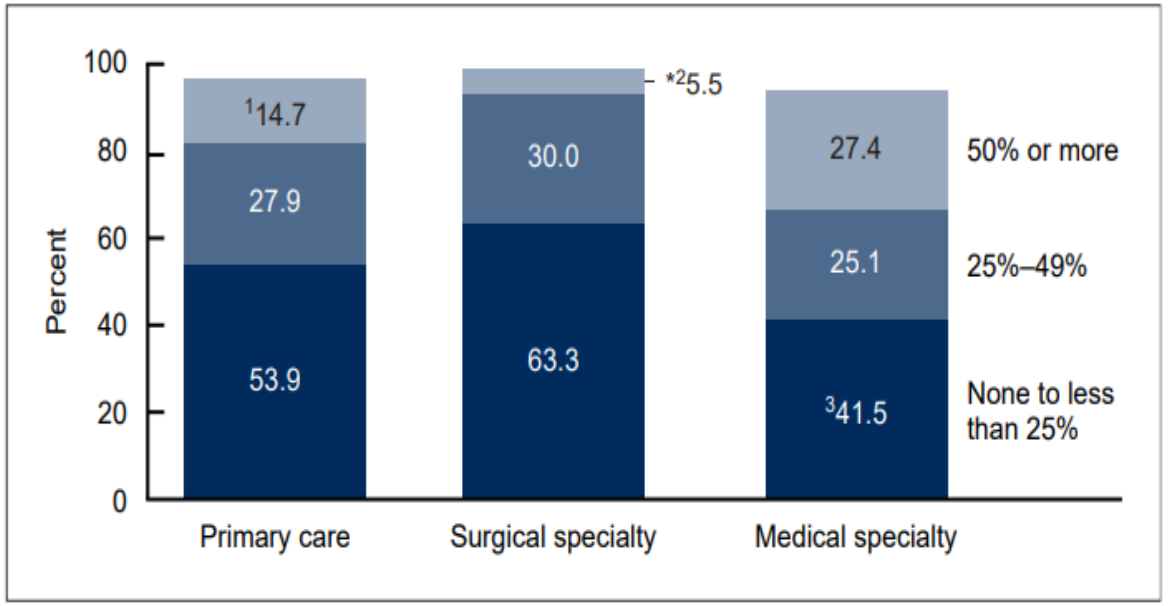
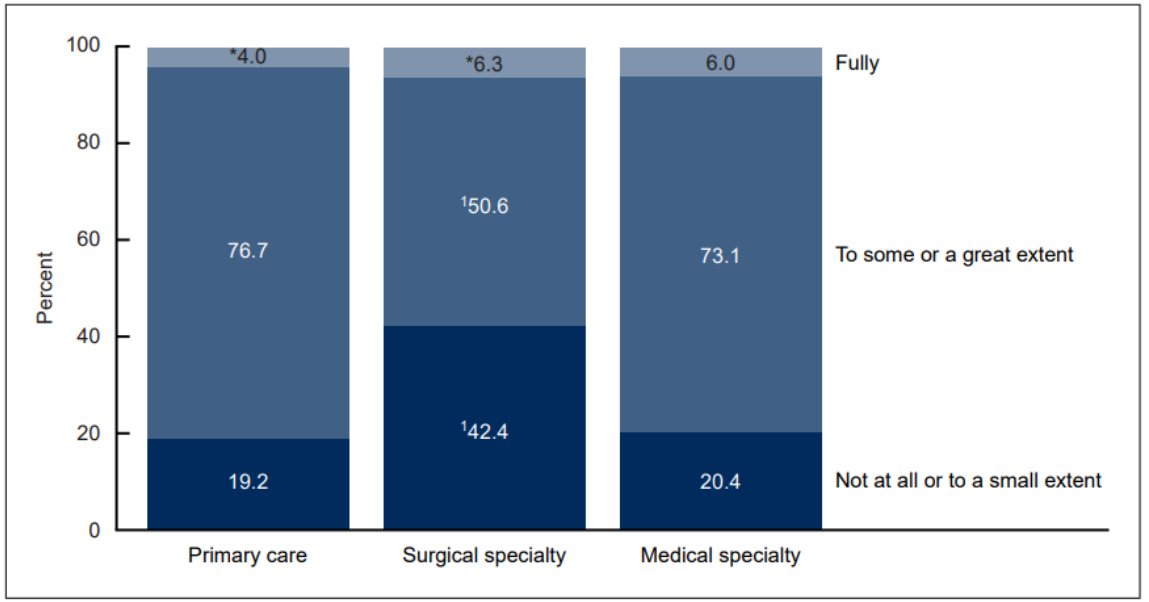


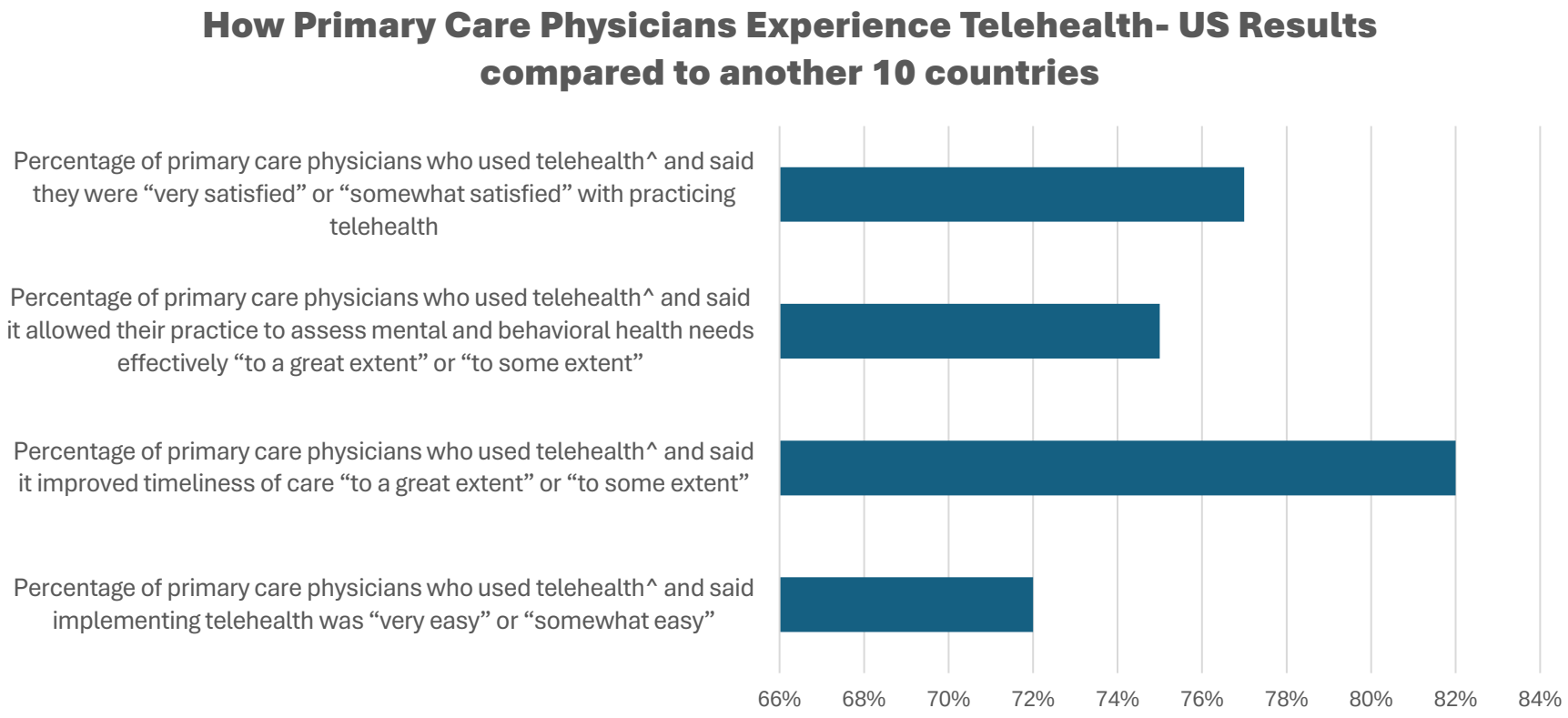
Figure 2. Percentage of physicians able to provide a similar quality of care at telemedicine visits as during in-person visits, by physician specialty: United States, 2021



Figure's ref: https://www.cdc.gov/nchs/data/databriefs/db493.pdf

Two years after COVID-19 results

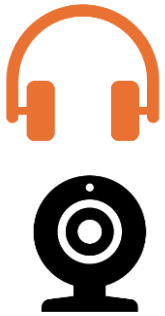
- According to a 2022 research by the Commonwealth Fund, **82%** of US primary care physicians felt telehealth improved the timeliness of care delivery, **75%** said telehealth allowed them to assess mental and behavioral health needs more effectively, and **77%** reported satisfaction with practicing telehealth.



Data ref: https://www.commonwealthfund.org/publications/issue-briefs/2023/apr/primary-care-physicians-telehealth-2022-international-survey

Key tools for telehealth visits

Stable Internet Connection

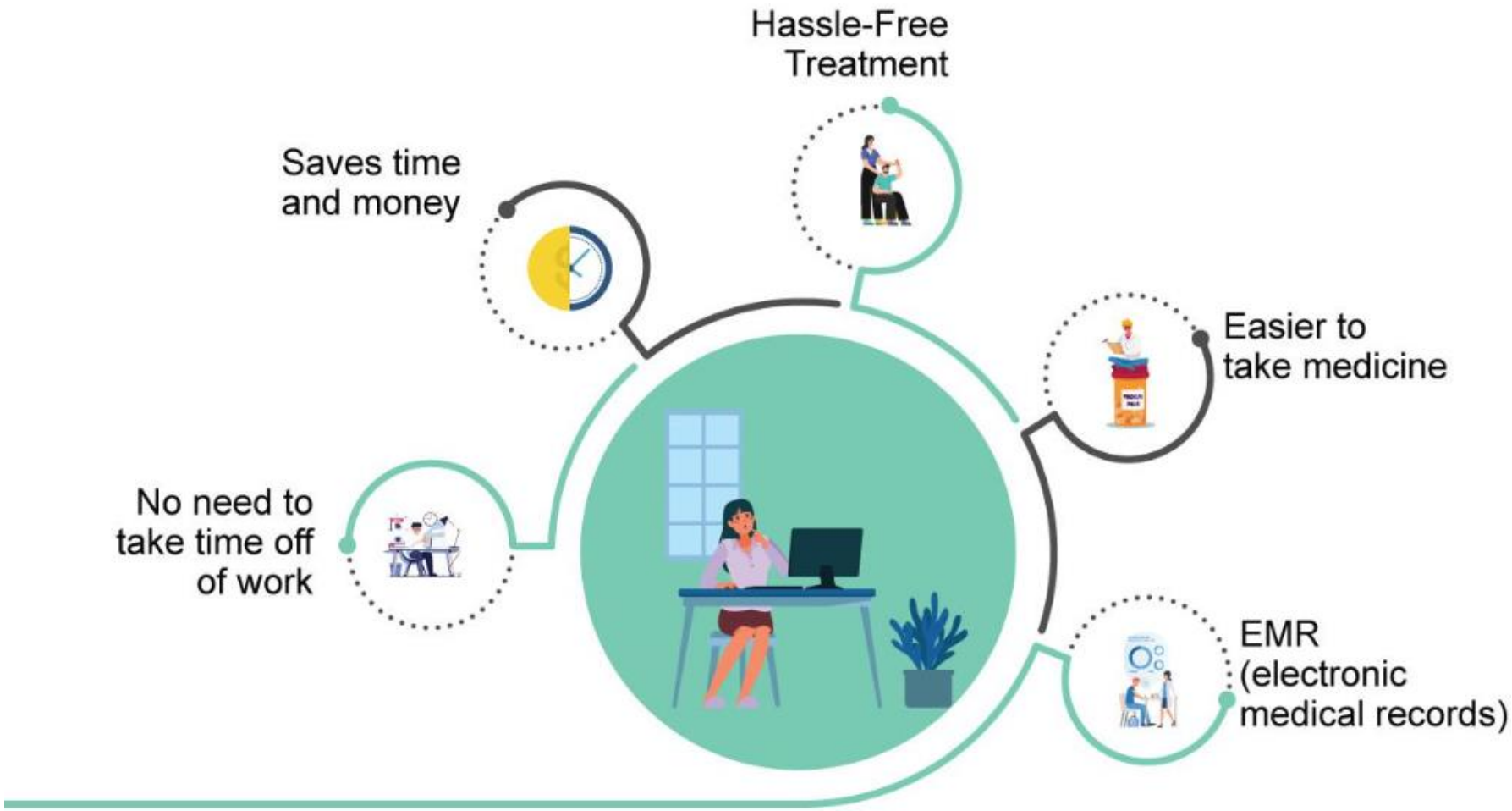


Headphones and Webcam (usually on provider's side)

Devices that support video conferencing

In addition to the above hardware components, there is a need for a HIPAA-compliant telehealth platform where a patient can safely share their data and electronic medical records.

Benefits of Telehealth for Patients



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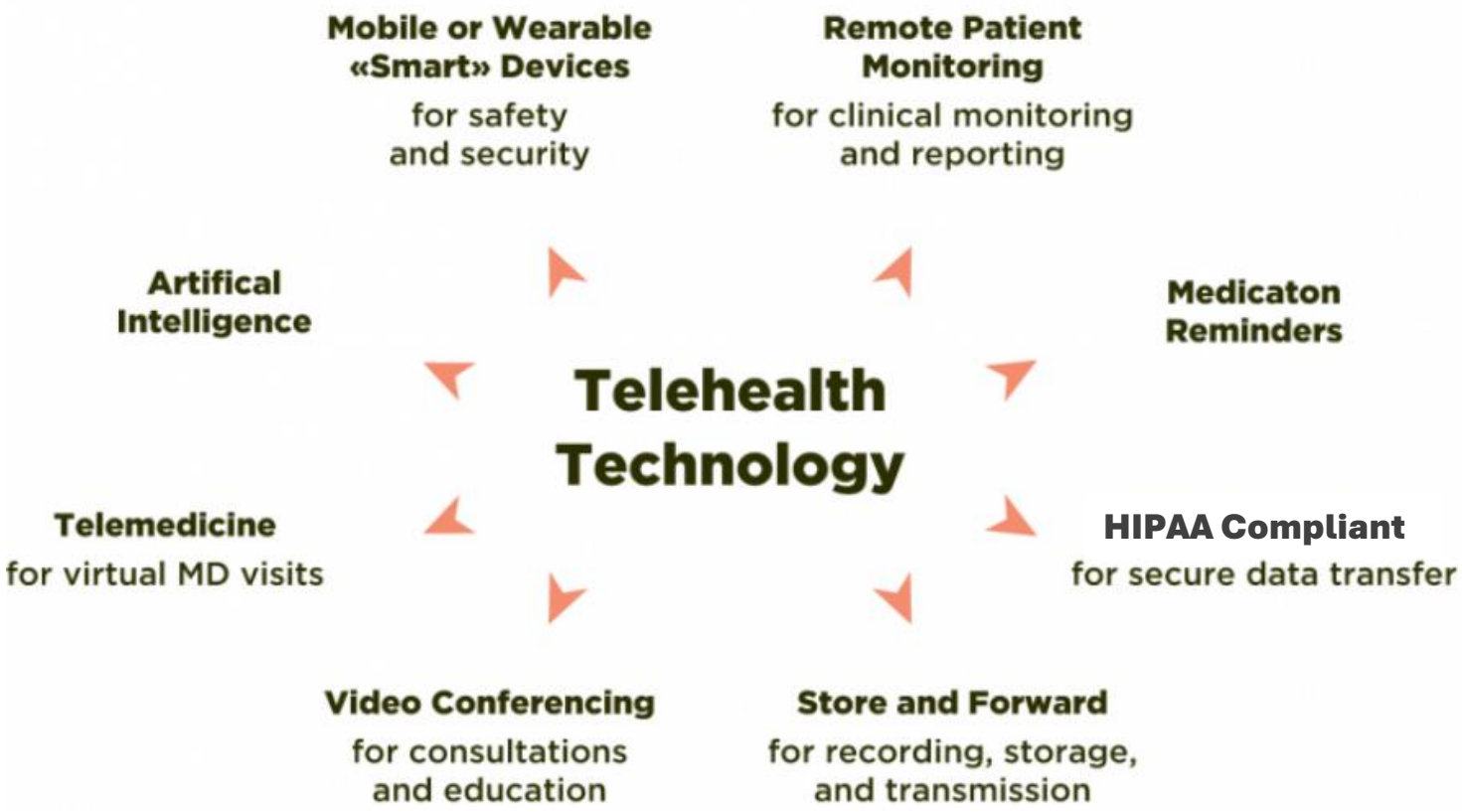
Benefits of Telehealth for Providers

1. Better Engagement and Outcomes.
2. Added Revenue Stream.
3. Telehealth Cuts Down on Re-admission from Hospitals
4. Work/Life Balance Improved
5. Reduced Overhead Cost
6. An Advanced, More Profitable Business Model

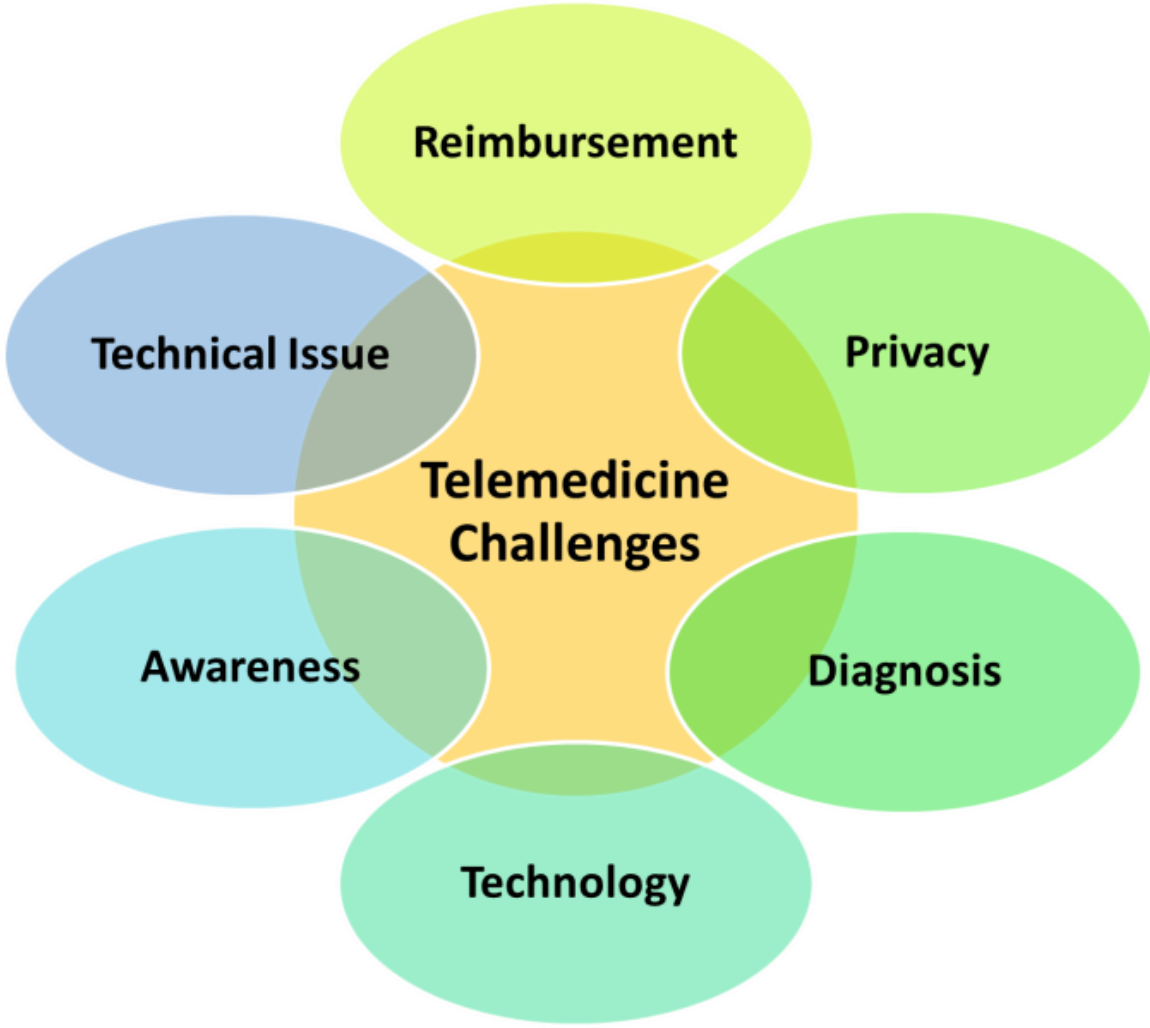
Telehealth Approaches and Technologies



Challenges and Limitations

Other challenges than the ones in the figure:

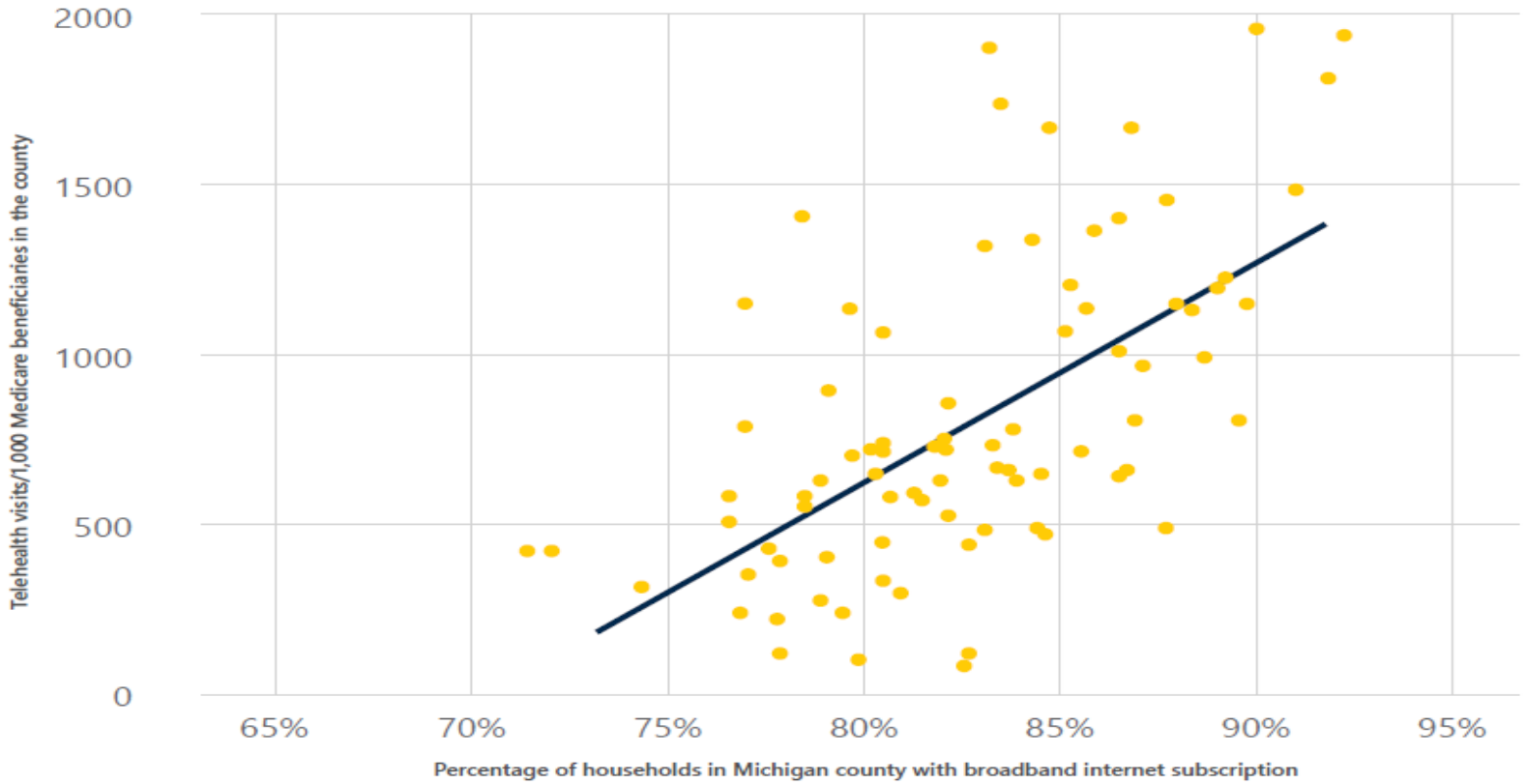
- Quality of Care
- Licensure and State Limitations
- Lack of integration with EHRs



Challenges and Limitations

- **Technical Barriers:**

  Digital divide issues—patients in low-resource areas might lack access to reliable internet or devices for telemedicine.



Correlation at the County Level between Broadband Access and Telehealth Visits in Michigan

Figure's ref: Ellimoottil, C., et al. "Telehealth in Michigan: insights and data for effective policymaking. Michigan Health Endowment Fund and Ethel & James Flinn Foundation; 2023: 1–53."

Challenges and Limitations

- **Data Privacy in Telehealth**

- **What is Data Privacy in Telehealth?**

-Telehealth involves sensitive information like medical records, prescriptions, and private conversations between patients and doctors.

-Protecting this data ensures that patients feel safe using telehealth services.

- **Why is Data Privacy Important?**
- **Building Trust:**

-Patients trust doctors to keep their health information confidential.

-If privacy is breached, patients may avoid telehealth or medical care altogether.

- **Legal Requirements:**

-Laws like HIPAA (Health Insurance Portability and Accountability Act) require healthcare providers to protect patient data.

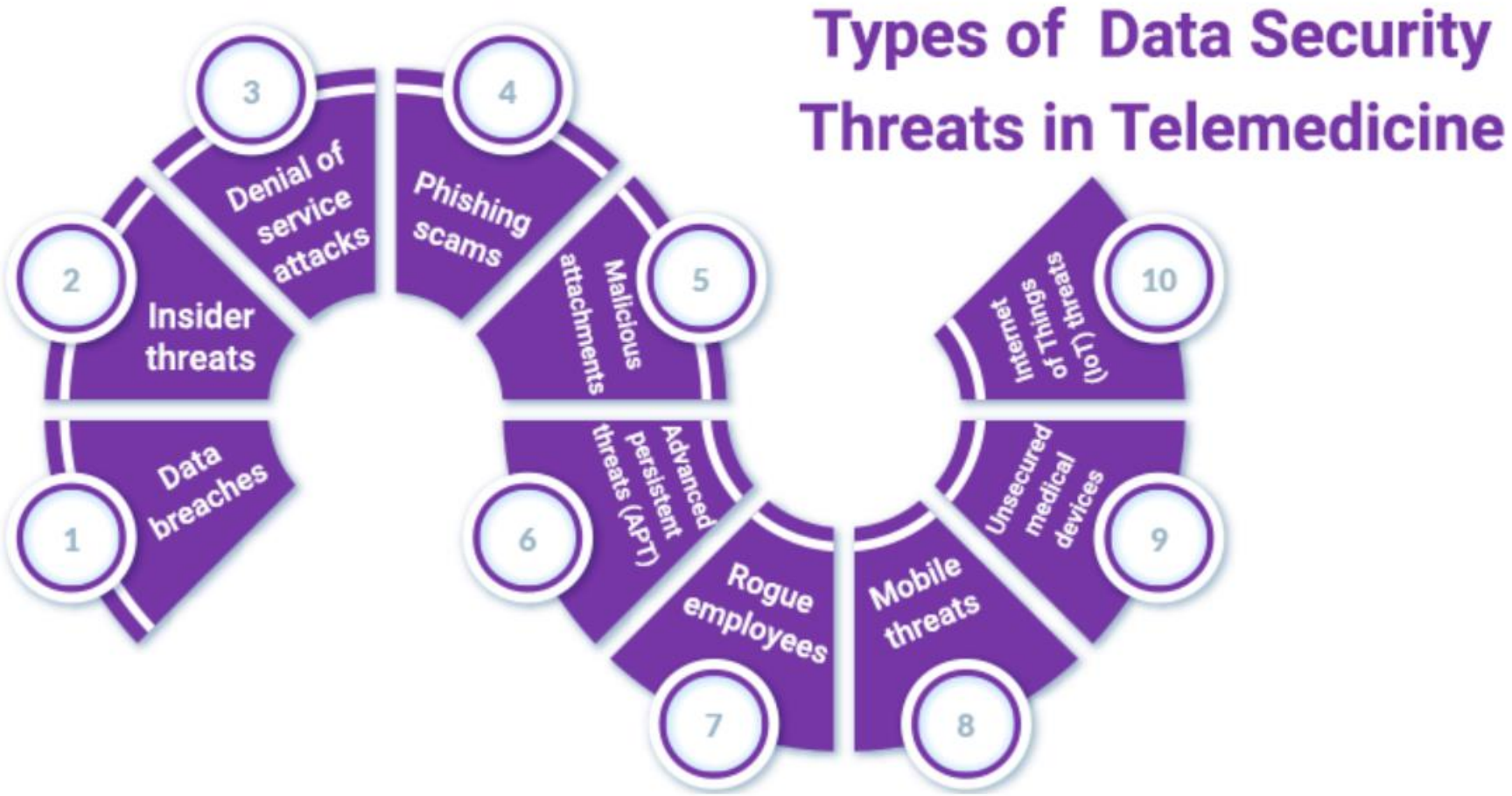
-Providers who fail to secure data can face penalties or lawsuits.

- **Cybersecurity Risks:**

-Hackers can target telehealth platforms. healthcare organizations saw a 55% increase in cyberattacks.

-Threats include ransomware attacks (locking data until money is paid) or data theft.

DATA PRIVACY IN TELEHEALTH



Challenges and Limitations

- **Regulations: State Limitation, Licensure, and Reimbursement**

	The Practice	The Payment
Federal	Telehealth, like other types of healthcare services, **is largely regulated at the state not federal level.** Federal government focuses on certain areas including: DEA/Remote Prescribing, HIPPA, FDA regulation, and FTC/antitrust	**Federal public insurance coverage** for telehealth services is regulated extensively specifically in: • Federal law on public payers like Medicare, Medicaid, Veterans Health Administration, Indian Health Service, and Tricare • Policies and Rules originating from the Centers for Medicare & Medicaid Services (CMS)
State	Telehealth is regulated **extensively at the state level** and differs significantly between the states. States' telehealth policies may differ in their regulation of: • Acceptable telehealth modalities (synchronous, asynchronous, and remote patient monitoring technologies) • Which practitioners are permitted to provide telehealth services • Establishment of a valid patient/provider relationship • Out-of-state practitioners treating patients in the state remotely without a license	**Public and private coverage and reimbursement** for telehealth services are also extensively regulated at the state level. States differ in their approaches to the following issues: • Telehealth coverage requirements for public and private health plans • Reimbursement for services provided via telehealth • Eligibility of providers to deliver reimbursable services

Source and more information: How Telehealth is Regulated - ATA (americantelemed.org)

Ref: ATA Webinar, Telehealth Policy 101, https://americantelemed.wistia.com/medias/5qxf0mf03q

Challenges and Limitations

State Limit and Licensure

- It is recommended that care across state lines be enabled, breaking down geographic barriers to care across state lines whenever and wherever possible.
- The promise of telehealth has to ensure that all providers, physicians, and nonphysician providers alike can have their services when appropriate consistent with the standard of care, covered, and accessible via telehealth.
- by actively promoting policies that enable telehealth across state lines, healthcare systems can significantly improve patient access to quality care, enhance patient choice, and promote greater healthcare equity across the country.
- **In November 2024**, the DEA and HHS announced **extending telemedicine flexibilities through 2025**. This decision was made in response to the feedback and discussion that took place after the DEA received over 38,000 comments on proposed telemedicine rules in 2023 [1].

[1] https://www.dea.gov/sites/default/files/2024-11/HHS-DEA.pdf

Challenges and Limitations

- **Governmental Reimbursements – by Fall 2023**

50 Fifty states and Washington DC provide reimbursement for some form of live video in Medicaid fee-for-service.

33 Thirty-three state Medicaid programs reimburse for store-and-forward.

37 Thirty-seven state Medicaid programs provide reimbursement for remote patient monitoring (RPM). Three states, (Florida, Idaho, and Iowa) added reimbursement for RPM since Spring 2023.

43 Forty-three states and DC Medicaid programs reimburse for audio-only telephone in some capacity; however, often with limitations.

25 Twenty-five state Medicaid programs reimburse for all four modalities (live video, store-and-forward, remote patient monitoring and audio-only), although certain limitations may apply.

43 Forty-three states, the District of Columbia and Virgin Islands have a private-payer law that addresses telehealth reimbursement.

Source: https://www.cchpca.org/resources/state-telehealth-laws-and-reimbursement-policies-report-fall-2023-2/

AI Applications in Telehealth

Diagnostics:

e.g. Reading X-rays

Predictive Analytics:

e.g. High-risk warnings

Virtual Health Assistants:

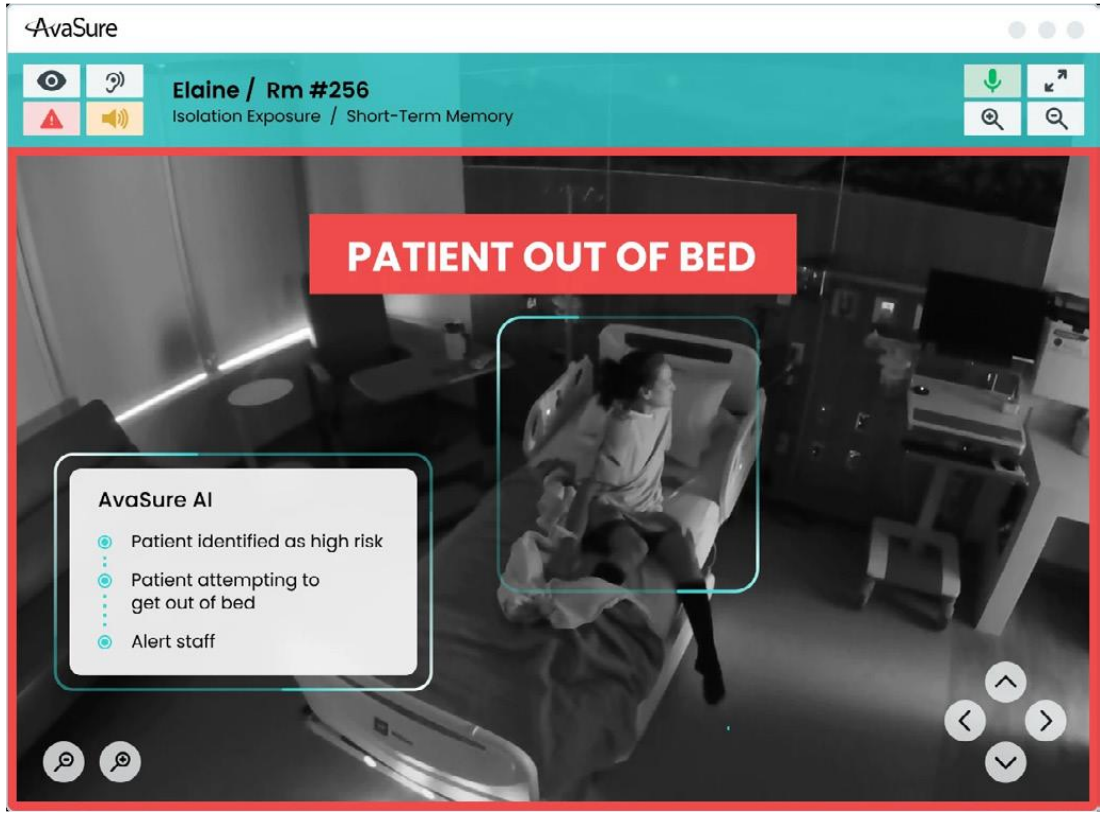
e.g. Booking appointments, Chatbots.

Remote Monitoring:

Wearable devices for vital signs, and blood sugar monitoring.

Computer Vision in Hospitals:

Fall prevention, Elopement prevention, Violence prevention.



Figure's ref: AI in Virtual Care- AvaSure whitepapers

AI Challenges in Telehealth

Avoiding false positives and false negatives:

False positives reduce trust and add to alarm fatigue. False negatives leave signs of risk unnoticed.

Compliance and ethics

With any video monitoring technology, privacy should be a top concern.

Integration with existing systems and workflows

To get the full benefits of AI, healthcare systems must integrate monitoring and risk prevention tools into their greater ecosystem.

Staff training and acceptance

It’s best to involve both clinical and IT teams early on.

Balancing efficiency and safety AI isn’t about replacing staff—it’s about striking a balance where computer vision helps each team member do their best work.

Primary Care Telehealth Return on Investment ROI

The Return on Investment (ROI) for telehealth in primary care can be

significant, primarily due to:

1. Reduced operational costs

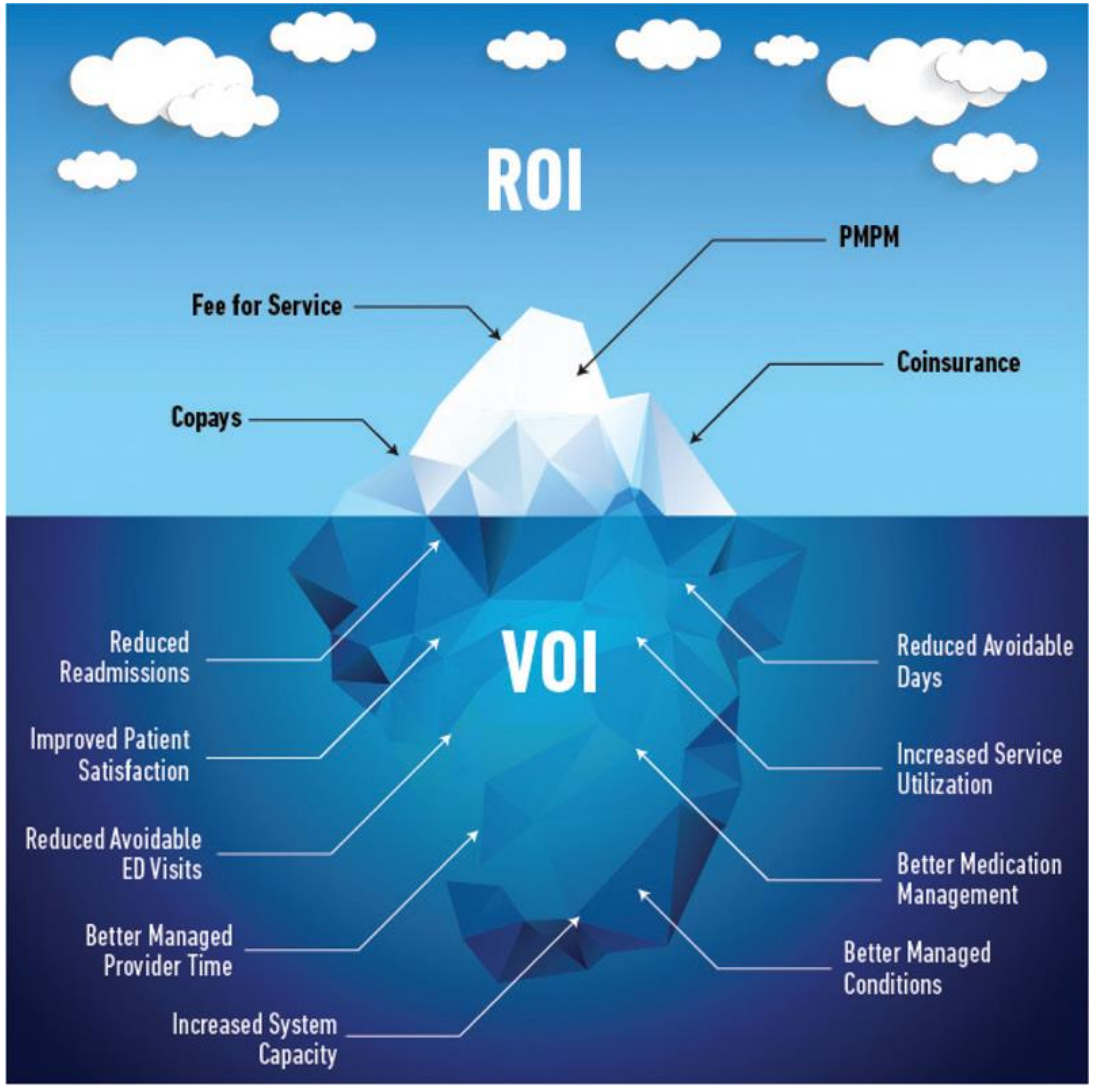
2. Increased patient access

3. Improved appointment utilization

4. Efficient provider workflow

5. Potential for better health outcomes

Defining a financial ROI for a telehealth service or program may require considering new inputs and variables that translate to returns in the form of value, or **VOI**, yielding benefit and goodwill that can be translated to financial realization and profits.



Considerations and Guiding Questions for Evaluating Telehealth ROI

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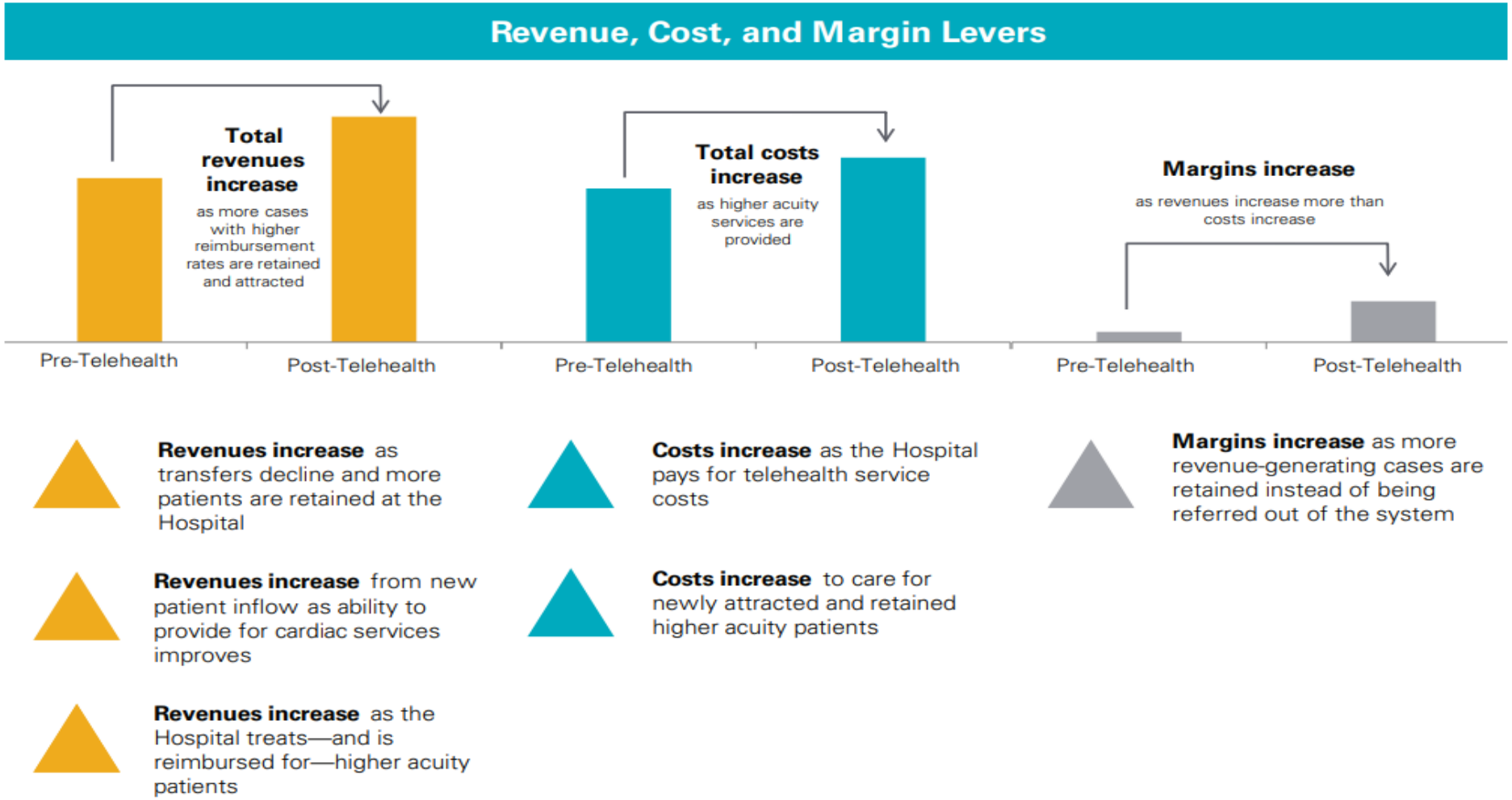
Institution Type	Potential Considerations
Patient acuity mix	• Will the telehealth program impact the average patient acuity level? • How will revenue and costs change as the patient acuity levels shift?
Cost savings	• Will the telehealth program result in cost savings (e.g., redistribution of services within a system, delivery of care in a lower-cost setting)?
New-patient volume	• Will the telehealth program result in increased patient volume?
Patient retention	• Will the program result in higher patient retention rates?
Reimbursement or contract revenue	• Are these telehealth services reimbursable under: – State Medicaid program and Medicaid managed care organizations? – Fee-for-service Medicare and Medicare Advantage? – Private payers? • Will the telehealth program bring in other forms of direct revenue for the institution (e.g., payment from a distant site for a teleconsult)?
Technology	• What are the hardware and software costs to implement the program?
Program and program management	• What are the programmatic costs to design, implement and operate the service?
Staffing	• What are the staffing requirements to provide the program? • Will there be associated training costs? • Can we reduce costs by leveraging mid-level providers to provide the service? • Does this program automate existing tasks, thereby reducing professional costs?

Table's ref: https://www.manatt.com/Manatt/media/Documents/Articles/TelehealthROIWhitePaper.pdf

Case Study: Financial Impact for Telecardiology Program at Rural Community Hospital



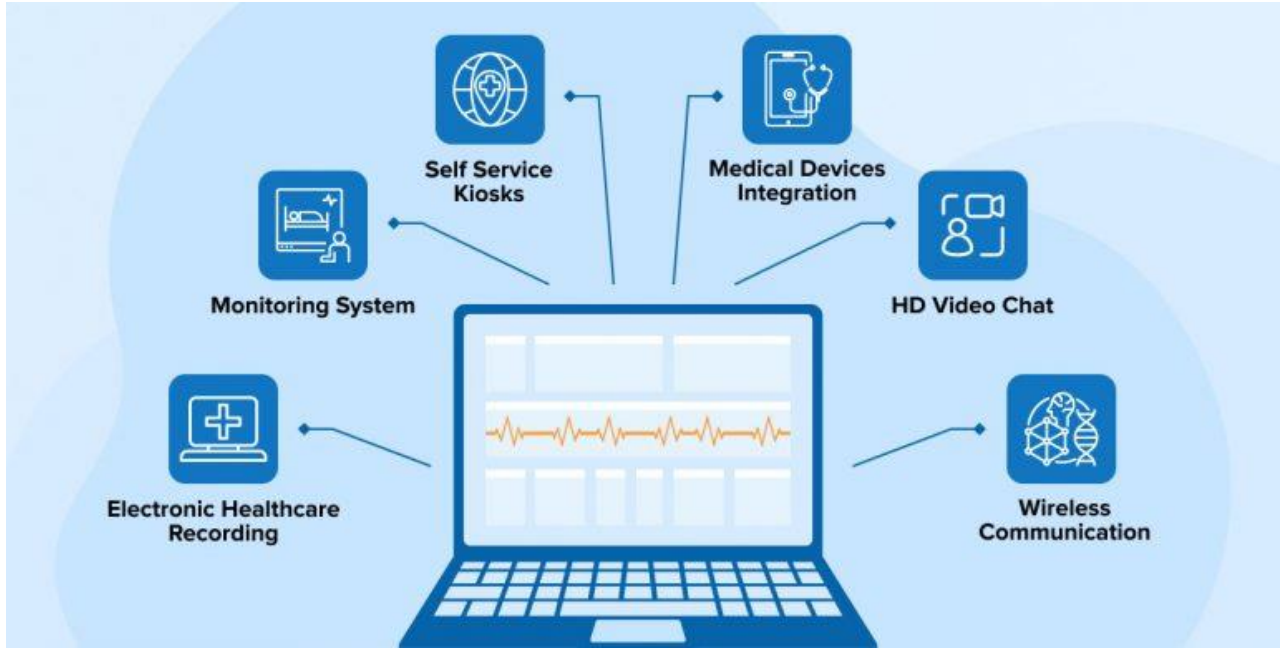
Figure's ref: https://www.manatt.com/Manatt/media/Documents/Articles/TelehealthROIWhitePaper.pdf

Telehealth Platforms and Vendors

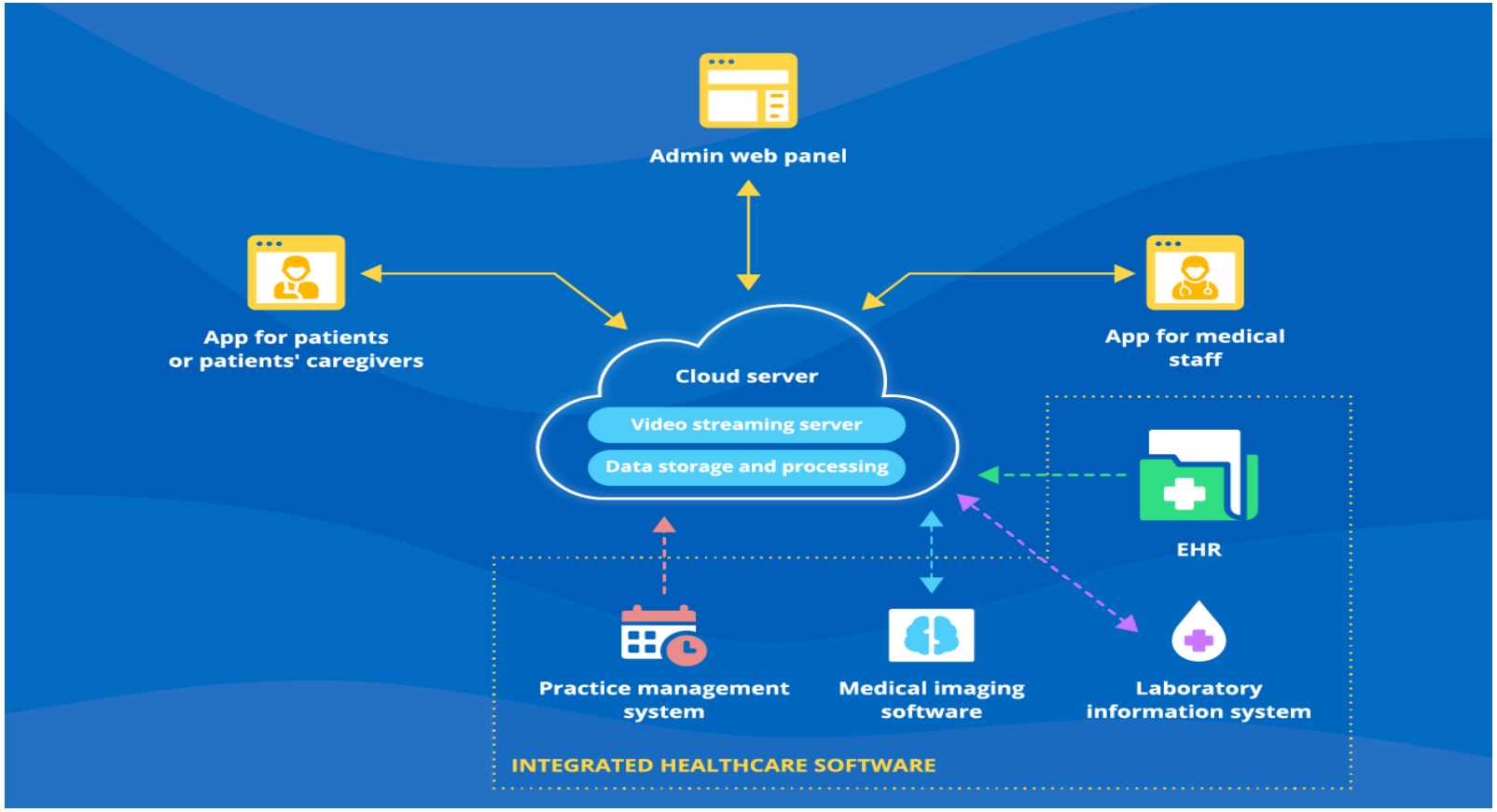
A telehealth platform is a virtual platform that uses technology to provide healthcare services remotely

Properties of telehealth platforms:

HIPAA compliance
Remote monitoring
EHR integration
Activity tracking
AI and big data
User-friendly interface
Appointment scheduling

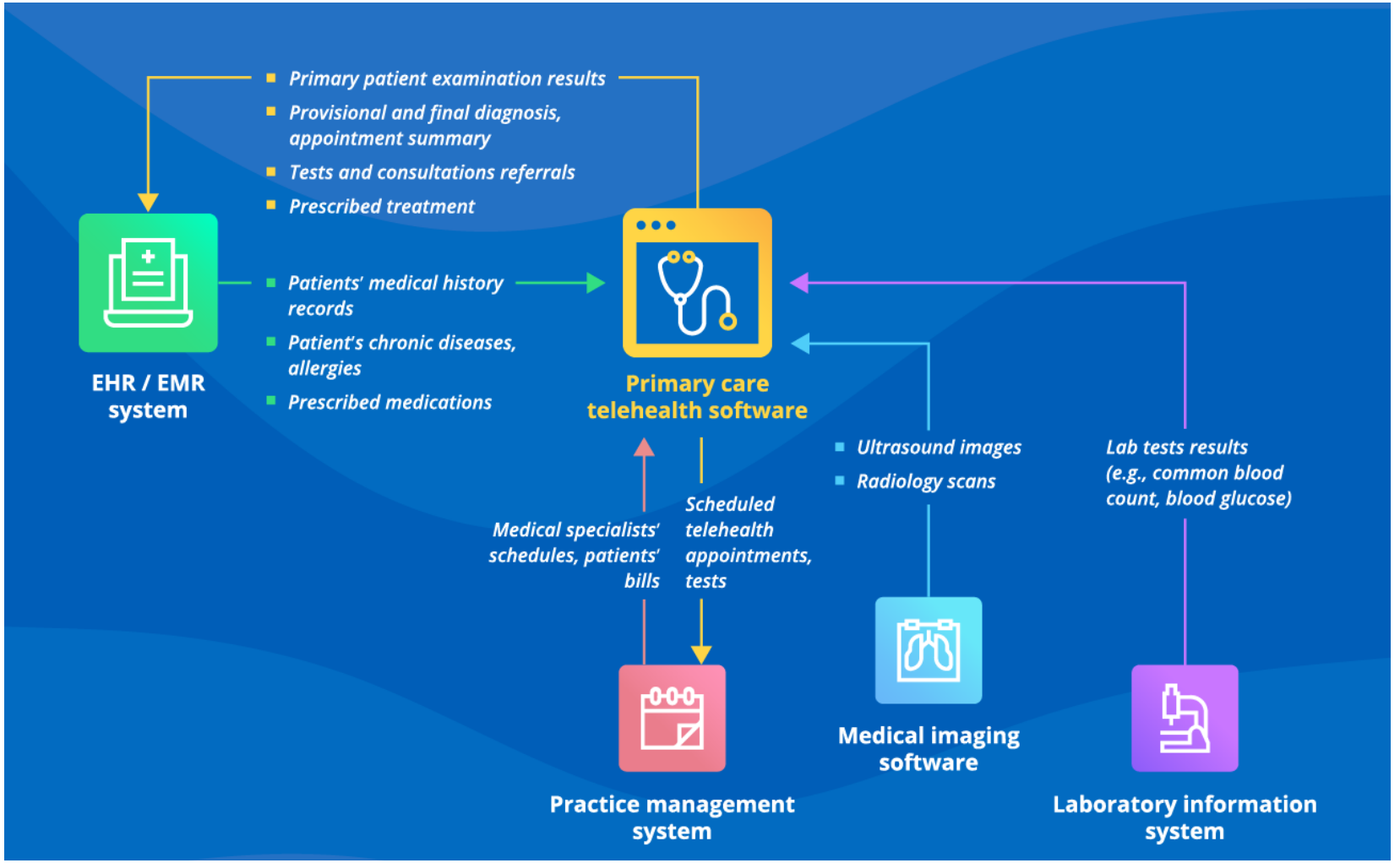


The Architecture of Primary Care Telemedicine Software



Ref: https://www.scnsoft.com/healthcare/telemedicine/primary-care

Key Integrations for Primary Care Telehealth Software



https://www.scnsoft.com/healthcare/telemedicine/primary-care#integrations

Steps to take when crafting custom primary care telehealth solutions

- Evaluating the needs
- Eliciting a feature set
- Defining the architecture and tech stack design.
- Planning the project
- Building the user and server sides of the primary care telehealth solution
- Integrating the software with existing systems and smart medical devices
- Performing testing and QA activities to ensure the solution’s quality and reliability.
- Ensuring the software’s comfortable adoption by your healthcare organization’s staff and patients
- Offering continuous support and maintenance

2024 Capterra Shortlist for Telemedicine

Capterra is a free online marketplace that helps businesses find software solutions by providing reviews, ratings, and comparisons.
Find the Full list with Scoring Methodology on https://www.capterra.com/telemedicine-software/shortlist/

Doxy.me
4.6 (1194)
99 /100

Jane
4.8 (408)
99 /100

NextGen Office
4.0 (1273)
93 /100

A closer look into telehealth platforms examples that provide primary care services

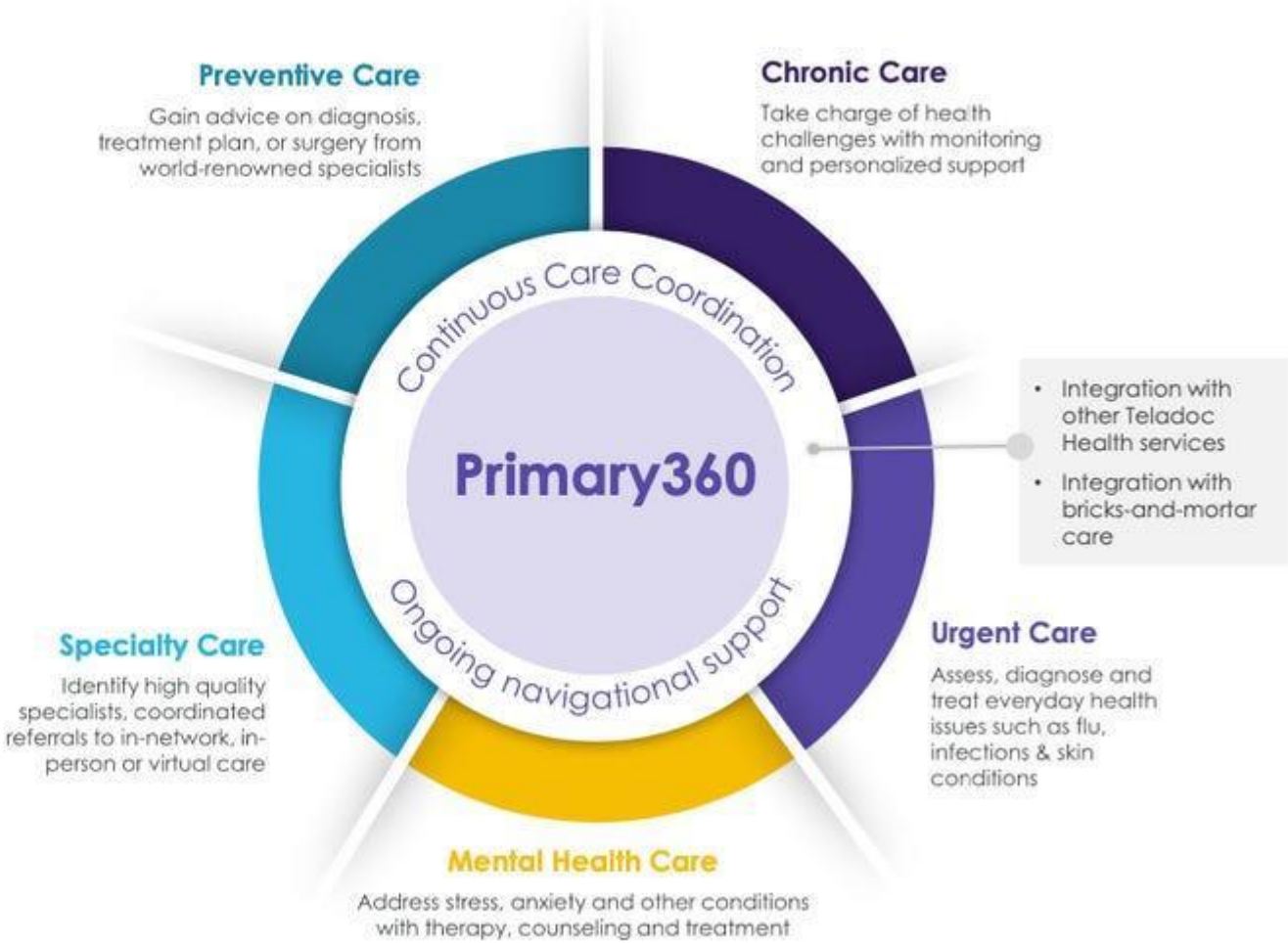
1. Teladoc Health is a virtual healthcare provider offering a range of telemedicine services including primary care, and more. Teladoc doctors can prescribe medication that patients can pick up at a local pharmacy. Healthline considers Teladoc to be the best telehealth company for insurance coverage according to Forbes's best Telemedicine Applications of 2024.

Founded in 2002, it aims to make healthcare more accessible and continuous by allowing patients to consult with doctors via phone, video, or app anytime, from anywhere

BCBS cooperated with Teladoc Health® — to provide access to virtual urgent care, virtual therapy, and virtual psychiatry visits for some of their plans subscribers.

Primary360

Powering whole-person care through a unified, virtual-first experience



A closer look into telehealth platforms examples that provide primary care services

2. CareConvene, founded in 2014, is a comprehensive digital platform connecting care teams and their patients on-demand, removing barriers to effective communication and engagement.

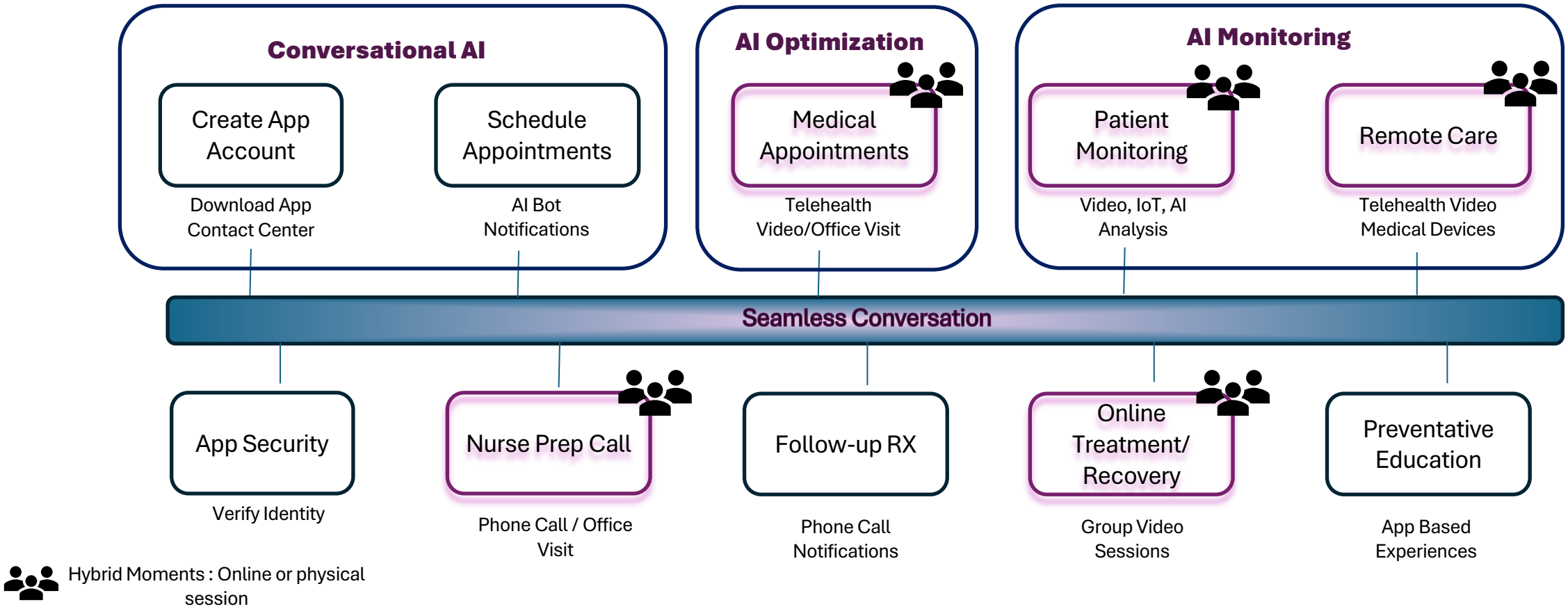
A telehealth platform that offers a variety of services, including patient and provider communications, care coordination, admission, discharge, and transitions, outreach campaigns, and clinical collaboration.

A closer look into telehealth platforms that provide primary care services

MiHIN and **CareConvene** partnered to advance telehealth & health information exchange in Michigan, supporting BCBS advanced HIE innovation program.

In an interview with Mr. Chris Bailey, CareConvene's co-founder, he said that one of the advantages of the platform for patients is that it serves as a personal health record for them, a record they can share with other providers easily whenever they need to. They, at CareConvene, focused on providing instant value for the patients, allowing them to ask for whatever they need anytime and passively wait for a doctor to answer instead of the long waiting time in Emergency Departments.

Patient Healthcare Journey



Hybrid journeys require integrated end to end processes

Ref: Chart re-generated from Expanding Telehealth for Remote and At-Home Patient Care ATA Webinar. Oct 24, 2024

Future Vision

- **Telehealth has mainly focused on a single use case: a doctor or therapist talking to a single patient.**
- **There are other possible expanded healthcare use cases like :**

➢ Patient Session Optimization including ambient listening

➢ Remote video patient monitoring within hospitals (“virtual nursing”) where a single nurse can watch many beds at the same time.

➢ At-home patient monitoring with easy escalation to voice or video sessions between the patient and remote medical staff as needed.

➢ Automated scheduling and deeper EHR integration.

➢ Interpreter contact centers and group sessions to include family members for older or vulnerable populations.

➢ Group therapy sessions for mental health, addiction recovery, and healthcare education, expanding beyond individual care.

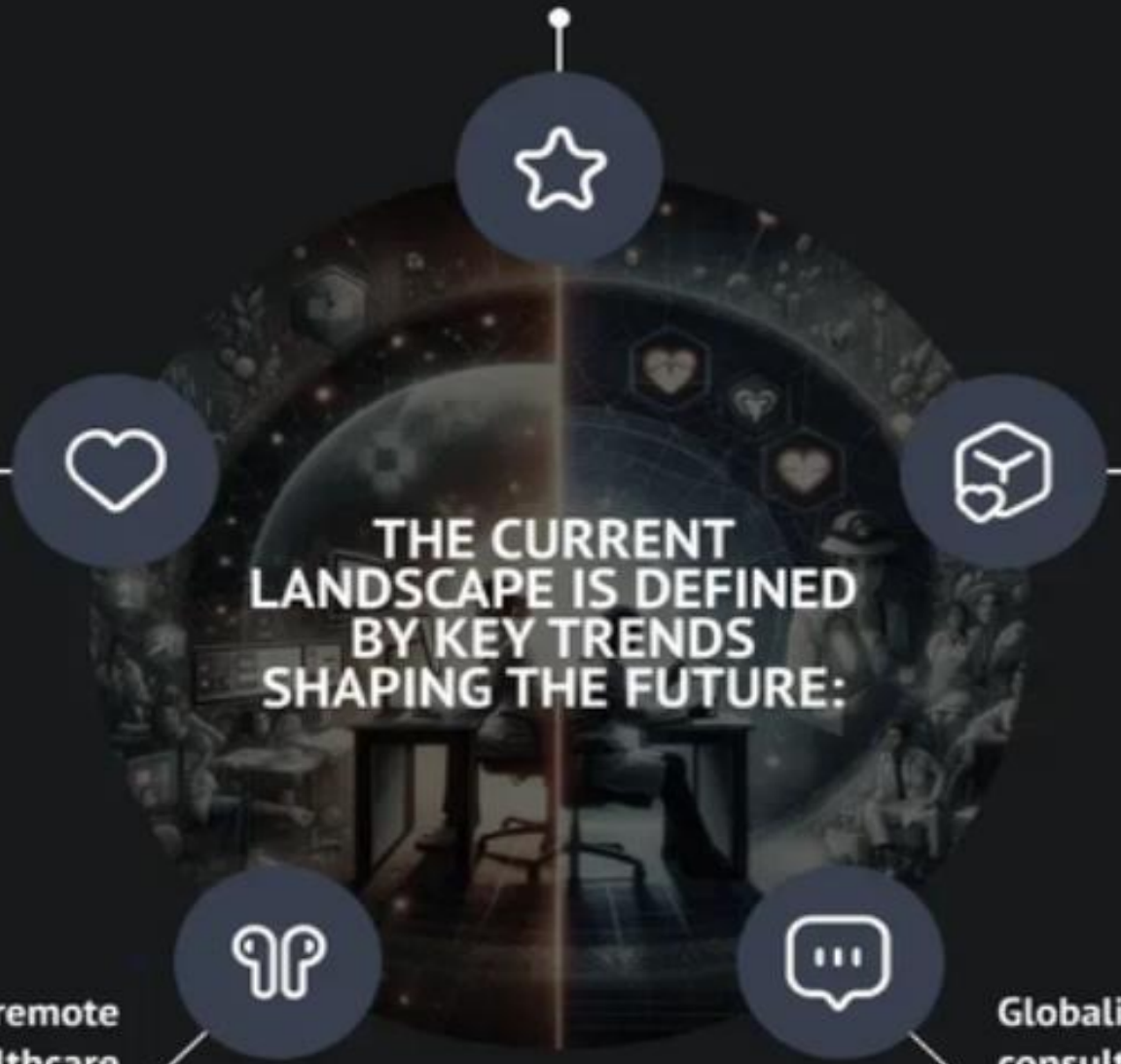
➢ Health Education

➢ Better Regulations.

➢ Enhancing Patients Privacy

Hybrid care models blend in-person and virtual interactions, offering flexibility.

AI and data analytics enhance diagnostics and decision-making



Specialized telehealth services expand into fields like telesurgery and telepsychiatry.

Wearable technology and remote monitoring empower proactive healthcare management, while evolving policies support sustainable telemedicine growth.

Globalization brings cross-border consultations, collaborations, and mental health support, creating a more connected and accessible healthcare ecosystem.

Telemedicine Growth

- **“According to LinkedIn’s latest research, the future of telemedicine looks promising in the next 5 years.** As of 2022, the global telemedicine market was estimated at USD 34799.9 million, and it’s anticipated to reach USD 63852.92 million in 2028, with a Compound Annual Growth Rate CAGR of 10.65”
- **“The Global Telemedicine market is anticipated to rise at a considerable rate during the forecast period, between 2023 and 2031.** In 2022, the market is growing at a steady rate, and with the rising adoption of strategies by key players, the market is expected to rise over the projected horizon.”

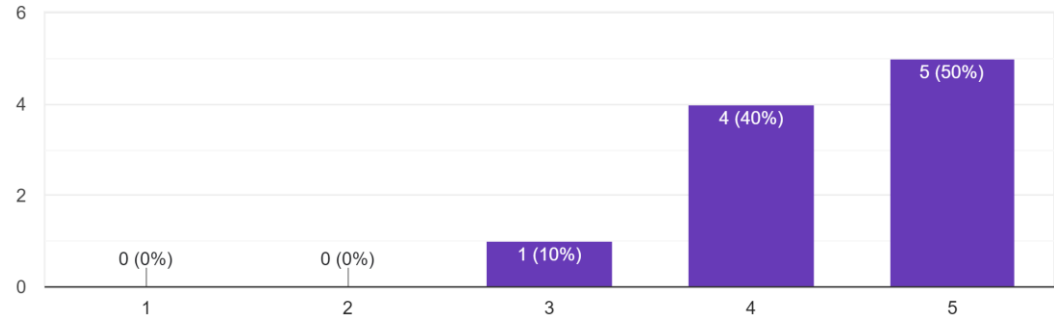
https://devabit.com/blog/7-telemedicine-trends-that-build-the-future-of-telemedicine/#the-future-of-telemedicine-current-landscape

Our Questionnaires Outcomes

We created a questionnaire for physicians and got 10 responses, 6 of them are based in Michigan. Here are part of the outcomes that support our presentation.

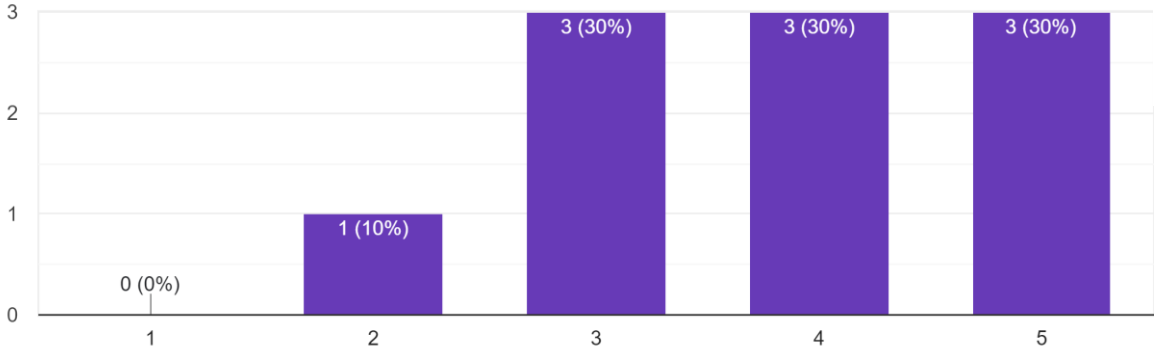
How comfortable are you with the technology used for Telehealth?

10 responses



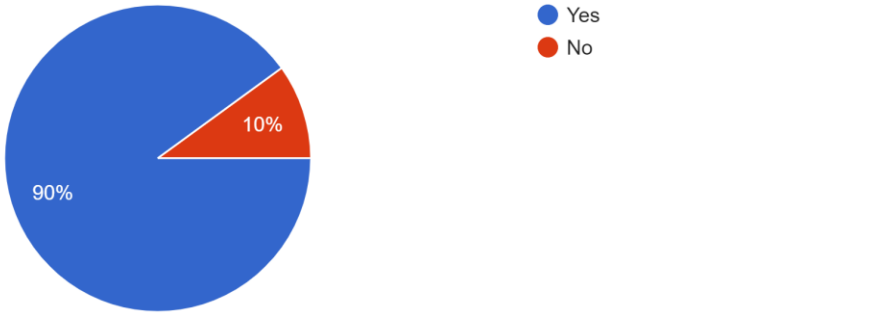
How do you think your patients have responded to telehealth services?

10 responses



Do you think telehealth decreased the percentage of missed appointments or "no-shows"?

10 responses



For other questions and responses please visit : https://docs.google.com/forms/d/1GcJ_XLilKTq21FKVI5c4whh8OL7-Mw_F0LesTOBjsNA/edit#responses.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THANK YOU !
Please contact us for any questions!