DEPARTAMENTO DE SALUD

Environmental Scan Final Report

Environmental Scan (eScan) Project

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Glossary of Acronyms

Acronym	Meaning
AI	Artificial Intelligence
ASES	Administración de Seguros de Salud
BCG	Bridgewater Consulting Group, Inc.
CAH	Critical Access Hospitals
CASS	Colegio de Administradores de Servicios de Salud
CDC	Centers for Disease Control and Prevention
CHIP	Children's Health Insurance Program
CMS	Centers for Medicare & Medicaid Services
COVID-19	Coronavirus Disease 2019
CTA	Call-to-Action
CV	Computer Vision
DID	Direct Inward Dialing
DO	Doctor of Osteopathy
eCQMs	electronic Clinical Quality Measures
EH	Eligible Hospitals
EHR	Electronic Health Record
EP	Eligible Providers
e-prescribing	Electronic Prescribing
eScan	Environmental Scan
FHIR	Fast Health Interoperability Resources
FQHC	Federally Qualified Health Center
HCBS	Home and Community-Based Services
HIE	Health Information Exchange
HIMSS	Health Information Management and Systems Society
HIT	Health Information Technology
HITECH	Health Information Technology for Economic and Clinical Health
HL7	Health Level 7
LOINC	Logical Observation Identifiers Names and Codes

Acronym	Meaning
MA	Medicare Advantage
MD	Medical Doctor
MMIS	Medicaid Management Information System
MPI	Master Patient Index
MPPIPR	Medicaid Promoting Interoperability Program of Puerto Rico
MU	Meaningful Use
NLP	Natural Language Processing
NPI	National Provider Identifier
NPPES	National Plan & Provider Enumeration System
ONC	Office of the National Coordinator of Health Information Technology
PRDoH	Puerto Rico Department of Health
PRMP	Puerto Rico Medicaid Program
RHC	Rural Health Clinics
SaaS	Software-as-a-Service
SMHP	State Medicaid Health Information Technology Plan
SMS	Short Message Service
TAM	Technology Acceptance Model

Glossary

Term	Definition
Artificial Intelligence (AI)	It is a field of research in computer science that develops and studies methods and software that enable machines to perceive their environment and use learning and intelligence to take actions that maximize their chances of achieving defined goals.
Critical Access Hospitals (CAH)	Health clinics or centers (as defined by the state) that previously operated as a hospital before being downsized to a health clinic or center.
Children's Health Insurance Program (CHIP)	A state-run federal health insurance program for uninsured children up to age 19 in families with too much income to qualify for Medicaid (Medical assistance) and that cannot afford to purchase health insurance.
Computer Vision (CV)	Computer vision tasks include methods for acquiring, processing, analyzing and understanding digital images, and extraction of high-dimensional data from the real world in order to produce numerical or symbolic information.
Direct Inward Dialing (DID)	A telephone service that allows a phone number to ring through directly to a specific phone at a business instead of going to a menu or a queue and needing to dial an extension.
electronic Clinical Quality Measures (eCQMs)	Measures specified in a standard electronic format that use data electronically extracted from electronic health records (EHR) and/or health information technology (IT) systems to measure the quality of health care provided.
Eligible Hospital (EH)	An eligible hospital is an acute care facility, e.g., Subsection (d) hospitals in the 50 states or territories paid under the Inpatient Prospective Payment System, and critical access hospitals, meeting eligibility requirements for Promoting Interoperability Program payment adjustments by adopting, implementing, or updating certified EHR technology.
Electronic Health Record (EHR)	A real-time patient health record with access to evidence-based decision support tools that can be used to aid clinicians in decision making. The EHR can automate and streamline a clinician's workflow, ensuring that all clinical information is communicated. It can also prevent delays in response that result in gaps in care. The EHR can also support the collection of data for uses other than clinical care, such as billing, quality management, outcome reporting, and public health disease surveillance and reporting.

Term	Definition
Eligible Provider (EP)	A doctor of medicine or osteopathy, a doctor of dental surgery or dental medicine, a doctor of podiatric medicine, a doctor of optometry, or a chiropractor, who is legally authorized to practice under state law.
Electronic Prescribing (e-prescribing)	A type of computer technology whereby physicians use handheld or personal computer devices to review drug and formulary coverage and to transmit prescriptions to a printer or to a local pharmacy. E-prescribing software can be integrated into existing clinical information systems to allow physician access to patient specific information to screen for drug interactions and allergies.
Fast Health Interoperability Resources (FHIR)	A standard defines how healthcare information can be exchanged between different computer systems regardless of how it is stored in those systems. It allows healthcare information, including clinical and administrative data, to be available securely to those who have a need to access it, and to those who have the right to do so for the benefit of a patient receiving care.
Federally Qualified Health Centers (FQHCs)	Safety net providers that give services in an outpatient clinic setting. Section 1861(aa) of the Social Security Act allows additional FQHC Medicare payments. In Puerto Rico, FQHCs are often referred to as “Centros 330” after the section of the Public Health Service (PHS) Act that defines FQHCs.
Home and Community-Based Services (HCBS)	types of person-centered care delivered in the home and community. A variety of health and human services can be provided. HCBS programs address the needs of people with functional limitations who need assistance with everyday activities, like getting dressed or bathing.
Health Information Exchange (HIE)	HIE encompasses two related concepts: • *Verb*: The appropriate and confidential electronic exchange of clinical information among authorized organizations. • *Noun*: An organization with agreed-upon operational and business rules that provides services to enable the electronic and secure sharing of health-related information.
Health Information Technology (HIT)	The application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data, and knowledge for communication and decision making.
Health Information Technology for Economic and Clinical Health Act or	A law that is part of the American Recovery and Reinvestment Act of 2009 that incentivized the meaningful use of EHRs and strengthened the privacy and security provisions of HIPAA. Among other measures,

Term	Definition
(HITECH)	the HITECH Act extended the reach of the HIPAA Security Rule to Business Associates of Covered Entities, who also had to comply with certain Privacy Rule standards and the new Breach Notification Rule. The Act also introduced tougher penalties for HIPAA compliance failures.
HL7	A set of clinical standards and messaging formats that provide a framework for the management, integration, exchange, and retrieval of electronic information across different healthcare systems. HL7 standards are developed and maintained by Health Level Seven International, a healthcare standards organization.
Logical Observation Identifiers Names and Code (LOINC)s	A code system (i.e., set of identifiers, names, and codes) for clinical and laboratory observations, health care screening/survey instruments, and document type identifiers. Each LOINC record corresponds to a single observation of almost any type (i.e., observables) and is best known for concepts that represent laboratory tests.
Master Patient Index (MPI)	A centralized database that serves as a patient identifier repository within a healthcare organization or across multiple healthcare systems. It acts as a reliable source for linking and managing patient data across various sources, ensuring accurate and comprehensive patient identification.
Meaningful Use (MU)	CMS developed a program that requires physicians using CEHRT to capture, exchange and report specific clinical data and quality measures. The program, which began in 2011, evolved over the course of 3 stages: • Stage 1 established the base requirements for electronic capturing of clinical data. • Stage 2 encouraged the use of EHRs for increased exchange of information and continuous quality improvement at the point of care. • Modified Stage 2, released in October 2015, consolidated Stages 1 and 2 into a new program. These are the current requirements all physicians should follow. While some changes were made to reduce the complexity of the measures, many of the objectives were carried over from Stage 2. • Stage 3 starting in 2018, which requires all eligible physicians to participate.
Natural Language Processing (NLP)	A subfield of computer science and especially artificial intelligence. It is primarily concerned with providing computers with the ability to process data encoded in natural language and is thus closely related to

Term	Definition
	information retrieval, knowledge representation and computational linguistics, a subfield of linguistics. Typically, data is collected in text corpora, using either rule-based, statistical or neural-based approaches in machine learning and deep learning.
National Provider Identifier (NPI)	A Health Insurance Portability and Accountability Act (HIPAA) Administrative Simplification Standard. The NPI is a unique identification number for covered health care providers. Covered health care providers and all health plans and health care clearinghouses must use the NPIs in the administrative and financial transactions adopted under HIPAA. The NPI is a 10-position, intelligence-free numeric identifier (10-digit number). This means that the numbers do not carry other information about healthcare providers, such as the state in which they live or their medical specialty. The NPI must be used in lieu of legacy provider identifiers in the HIPAA standards transactions.
National Plan & Provider Enumeration System (NPPES)	A database administered by CMS to “improve the efficiency and effectiveness of the electronic transmission of health information” by standardizing the format of unique identification for healthcare providers and health plans.
Rural Health Clinics (RHC)	A clinic that is located in a rural area designated as a shortage area, is not a rehabilitation agency or a facility primarily for the care and treatment of mental diseases and meets all other requirements of 42 CFR 405 and 491.
Software-as-a-Service (SaaS)	A cloud computing service model where the provider offers use of application software to a client and manages all needed physical and software resources. Unlike other software delivery models, it separates "the possession and ownership of software from its use"
Short Message Service (SMS)	A text messaging service component of most telephone, Internet and mobile device systems. It uses standardized communication protocols that let mobile phones exchange short text messages, typically transmitted over cellular networks.
Technology Acceptance Model (TAM)	An information systems theory that models how users come to accept and use a technology.

1. Executive Summary

An environmental scan project was undertaken by the Puerto Rico Department of Health (PRDoH) to assess the current state of and the progress in Electronic Health Record (EHR) adoption, historical participation in the Medicaid Promoting Interoperability Program of Puerto Rico (MPPIPR), and barriers towards achieving Health Information Technology (HIT) interoperability among various types of health care providers in Puerto Rico. The environmental scan identified areas of progress or lack thereof since the program's inception in 2012, identified key barriers to further adoption of EHRs and participation in electronic exchange, and set a new baseline for future automation and interoperability efforts in Puerto Rico. Bridgewater Consulting Group, Inc. (BCG) was selected as the contractor for the project through a public request for proposals (RFP) process carried out by the PRDoH in 2023. BCG's proposal for the project included services that were delivered by Impactivo, LLC ("Impactivo") in support of survey methods and provider engagement activities.

The environmental scan project was launched in March 2024 with an initial planning stage to validate provider counts and categories to be included in the project scope, define initial survey methods and outreach approaches, devise an initial survey design, and develop a survey administration, execution, and administration plan. A mobilization stage was initiated and executed alongside the planning stage to engage key project stakeholders such as provider thought leaders and provider professional associations. The engagement facilitated creating awareness about the environmental scan in the provider community, obtaining stakeholder feedback regarding the survey design, and validating outreach approaches to enhance provider participation in the environmental scan survey. The mobilization stage concluded with final statistical sample size calculations and finalizing the operational aspects of the project associated with survey publication and outreach activities. The data gathering stage in which the survey was made available to providers went from July 2 to September 16, 2024. As part of the analysis and reporting stage, a presentation of environmental scan findings and recommendations was delivered to key project stakeholders as a part of the project closing activities that concluded on September 30, 2024.

The target population for the survey included physicians and administrators at health organizations. For Healthcare Administrators (N=483), the calculated sample size was 215 for a 95% confidence level, but the total number of respondents was 146, resulting in a margin of error of 6.78%. For Healthcare Providers (N=9,338), the calculated sample size was 370 for a 95% confidence level, and 868 individuals completed the survey, for a 3.17% margin of error. Qualitative methods were used to collect additional information that facilitated additional insights into the data gathered through the survey. The qualitative evaluation consisted of group interviews with specific physician and health administrator cohorts.

The findings of the environmental scan revealed that Puerto Rico's healthcare landscape is diverse, with significant variations in HIT adoption across different settings. Interviews reveal a contrast in the implementation of electronic health records (EHRs) between federally qualified health centers (FQHCs), hospitals, and smaller private practices. FQHCs have largely adopted EHRs, driven by federal incentives and reporting requirements, while many private practices and hospitals still face challenges such as cost,

infrastructure, and interoperability. The adoption of EHRs in private hospitals, especially those benefiting from federal programs, is more advanced, whereas public hospitals lag behind in this area.

A recurring challenge identified is the lack of interoperability between different EHR systems and across institutions. This limits providers' ability to qualify for the third round of EHR incentives, which require not only EHR adoption but also proof of interoperability. The inability to effectively share information hinders care coordination and diminishes the potential benefits of HIT in improving patient care. Furthermore, smaller private practices face significant challenges in adopting HIT due to the associated costs and complexities.

In Puerto Rico, efforts to establish a Health Information Exchange (HIE) have been unsuccessful. The COVID-19 pandemic accelerated the adoption of certain technologies, particularly telemedicine, with many visits conducted through voice-only calls. While the pandemic pushed some providers toward faster HIT adoption, broader challenges persist, especially for those lacking resources to fully integrate these technologies. HIT adoption remains uneven, lagging behind the mainland United States. While FQHCs and private hospitals have made significant progress, smaller private practices and public hospitals face substantial financial, technological, and structural barriers in adopting HIT systems.

Over the past decade, HIT adoption in Puerto Rico has made progress, largely due to federal incentives and programs like the HITECH Act. However, many providers express mixed feelings, acknowledging the advancements while recognizing that significant gaps remain. A large portion of the healthcare sector, which did not receive incentives, still relies on paper records and faxes. Participants voiced frustration over the lack of communication between different EHR systems. While internal networks for sharing data exist, there is a significant lack of inter-organization data sharing, making it difficult for primary care providers to follow up on patient treatments and ensure continuity of care. Implementing a fully functional HIE remains a challenge in Puerto Rico.

Participants highlighted the absence of a unified, government-supported infrastructure for health information exchange as a significant barrier to interoperability. Despite these challenges, some efforts to improve connectivity were noted, particularly within organizations. These initiatives include adopting cloud-based systems and standardized data formats like HL7. The shift to cloud-based systems has enhanced internal connectivity, making it easier for clinics to share information within their networks. One participant mentioned that moving to the cloud streamlined processes like sending prescriptions. Improvements were also seen in areas like e-prescribing, immunization records, and coordination with the Veteran's Administration.

The introduction of HIT has streamlined organizational processes, especially in documentation and record-keeping. While EHRs have improved the clarity and completeness of patient records, the time required for documentation varies among providers. Some physicians find themselves working late to complete progress notes, while others have seen a reduction in time spent, thanks to tools like voice recognition software and scribes. HIT has also enhanced coordination across departments, particularly in larger healthcare settings, and simplified tasks such as appointment scheduling and prescription management.

However, some providers view EHRs as a time drain and an added administrative burden, reflecting variations in how these systems are configured. The main barriers to HIT adoption identified as a result of the environmental scan were the financial costs of implementing and maintaining HIT systems, resistance to change, lack of digital literacy and training, the dehumanizing effect of using computers during patient interactions, disappointment that the promises of EHRs have not been realized, and the technical challenges associated with operating and maintaining HIT.

Participants shared varied perspectives on the future of HIT in Puerto Rico, balancing optimism for emerging technologies with concerns about ongoing challenges. Many expressed hope that innovations like artificial intelligence (AI) will enhance healthcare delivery, while cloud-based systems are seen as crucial for addressing interoperability issues. Telemedicine and remote monitoring tools are also viewed as key trends for the future, although further investment in reimbursement, infrastructure, and technology is needed to sustain their growth. Participants emphasized that existing barriers, such as financial limitations, interoperability issues, AI-related risks, and resistance to change, must be addressed for HIT to reach its full potential.

To increase provider adoption of HIT, it is essential to implement multi-tiered strategies focused on education, training, and financial support. HIT-related education should be integrated into medical school curricula, professional development, and continuing education programs. These efforts, alongside the PRDoH's HIE initiatives, must include outreach to providers. Clinical workflow integration is also key, with HIT vendors providing guidance to ensure providers benefit from HIT without being overburdened. Additionally, financial incentives, grants, and support programs—both federal and state-level—are necessary to help providers offset the costs of HIT implementation, particularly for those ineligible for federal funding.

To increase health information exchange engagement and participation in Puerto Rico, improving the availability of HIE infrastructure is essential. Currently, providers have limited options for facilitating data exchange with other island providers. PRDoH's efforts to implement a robust infrastructure could significantly boost health information exchange participation by enabling better interoperability among HIT/EHR systems. Showcasing the benefits of health information exchange, such as improved patient outcomes, reduced duplicate testing, and more accurate diagnoses, can further encourage participation. Highlighting success stories from other providers as part of PRDoH's outreach and education efforts could strengthen this engagement. Additionally, minimizing costs and administrative burdens—through subsidized participation or reducing resource requirements—will help overcome financial barriers to adoption.

2. Introduction

The PRDoH is responsible for most of Puerto Rico's health and social service programs and services, including the Puerto Rico Medicaid Program (PRMP), the Children's Health Insurance Program (CHIP), public health services and public hospitals. PRDoH is also the single state agency for the Medicaid program, in conjunction with a cooperative agreement with Administración de Seguros de Salud (ASES) which implements and administers Puerto Rico's island-wide health insurance system. In October 2019, oversight of the MPPIPR and responsibility for the State Medicaid Health Information Technology Plan (SMHP) was transferred from ASES to PRDoH.

PRDoH and ASES participated in the Centers for Medicare & Medicaid Services (CMS) EHR Incentive Payment Program for its Medicaid eligible professionals (EP) and eligible hospitals (EH) (collectively Providers) since October 2012. Prior to program launch, ASES conducted an environmental scan (referred to as the 2011 eScan) to gain a thorough knowledge of the landscape relative to HIT, EHRs, and existing barriers to participation among the Puerto Rico provider community. This 2011 eScan was heavily focused on readiness for participation in the EHR Incentive Payment Program and was a key component of Puerto Rico's SMHP.

In 2018, CMS changed the name of the Electronic Health Record (EHR) Incentive Program to the Promoting Interoperability Program. This change was part of a broader shift to emphasize the goal of improving interoperability and health information exchange between providers and systems, rather than just adopting and using EHRs. As a result, the Puerto Rico EHR Incentive Payment Program was renamed the MPPIPR.

Throughout the course of the MPPIPR, the landscape relative to HIT, EHR adoption, and health information exchange participation has continued to evolve throughout Puerto Rico. To fully understand these changes and the landscape as it exists today, PRDoH undertook a project (the Puerto Rico Environmental Scan or Puerto Rico eScan project) to conduct an updated environmental scan. The findings and recommendations included in this report will be utilized to assist in planning for the HIT and HIE infrastructure needs required to support the PRDoH's vision for healthcare transformation.

2.1 Purpose

The primary purpose of the Puerto Rico Environmental Scan project is to assess the current state of and the progress in EHR adoption, awareness of and participation in the MPPIPR and the state of HIT interoperability among various types of health care providers in Puerto Rico. The environmental scan will identify impacts of the MPPIPR on provider progress in EHR adoption, use, and interoperability and understanding the issues with and barriers to EHR adoption, use, and interoperability among practices that do not currently use an EHR system or electronically exchange health information. This environmental scan will evaluate areas of progress/lack of progress since the MPIPPR's inception in 2012, identify key barriers to EHRs and electronic exchange that currently exist, and set a new baseline for future automation and interoperability efforts in Puerto Rico.

The goals of the Puerto Rico Environmental Scan project are to accomplish the following:

- Conduct an environmental scan of current HIT capabilities and interoperability in the Puerto Rico health care landscape.
- Quantify, analyze, and visualize the current rate of EHR adoption and interoperability among Puerto Rico hospitals, physicians, and other provider types.
- Evaluate EHR adoption and interoperability progress among Puerto Rico hospitals, physicians, and other provider types since the MPPIPR inception.
- Identify ongoing barriers to health care automation and interoperability across the Commonwealth.

2.2 Scope

The scope of this Puerto Rico Environmental Scan project includes the following:

1. Compiling a contact list of provider stakeholders within Puerto Rico.
2. Developing the survey instrument.
3. Delivering the survey.
4. Performing outreach efforts to achieve higher response rates.
5. Carrying out activities to support qualitative data gathering methods.
6. Performing analysis of survey data.
7. Developing a report of findings and recommendations.

3. Puerto Rico Provider Landscape

In August 2023, PRMP compiled data from various sources to generate estimates of the different provider categories in the island, as shown in **Table *1***:

Table 1 – PRMP Estimates of Puerto Rico Providers by Provider Type (August 2023)

Provider Type	Estimated Number
Hospitals	54
Primary Health Centers/FQHCs	467
Independent Physicians	8,442
VA Facilities	8 clinics (information as of May 2021)
Physician Assistants	17
Nurses	51,407
Dentists	1,114
Pharmacies	1,162
Ambulatory Care Providers	29
LTC and Home- and Community-Based Services Providers	Unknown; estimate 6 Skilled Nursing Facilities (Medicate) (information as of May 2021)
Behavioral Health Providers	1,635

The number of providers enrolled with the PRMP by type as of August 2023 (Medicaid providers) is as follows:

Table 2 – Medicaid-Enrolled Approved Providers by Provider Type (August 2023)

Provider Type	Count
Allied Health Professionals (audiologists, chiropractors, nutritionists, optometrists, occupational, physical, and speech therapists)	1,663
Ambulance and Non-Emergency Medical Transport	274
Dentists	1,114
Durable Medical Equipment, Prosthetics and Orthotics	77
Home Health and Hospice	87
Hospital	54
Laboratory and Imaging	980
Mental Health Providers	1,635
Pharmacy	1,162

Provider Type	Count
Physicians, midwives, and physician assistants	8,460
Primary/Outpatient Care (FQHCs, clinics, family planning, urgent care, multidisciplinary groups, vaccination centers)	467
Skilled Nursing and Rehabilitation Facilities	7
Specialty Centers (ambulatory surgery, diagnosis and treatment, dialysis, infusion, wound care)	183
Groups of Corporations	2,605
Rehabilitation facilities (inpatient & outpatient)	11
Value-Added Services	224
Grand Total	**19,003**

One of the key elements of the Puerto Rico provider landscape is the amount of providers that were eligible for participation in the MPPIPR and the Medicare Promoting Interoperability Program, as it is indicative of the provider groupings that were defined in terms of statistical sampling. In addition, this information is informative in terms of the sample sizes that are needed to achieve statistical significance in the environmental scan survey. The two broad provider categories that were eligible for the MPPIPR were as follows

Eligible Professionals (EPs)[1]

Eligible professionals under the Medicare Promoting Interoperability Program include:

- Doctor of Medicine or Osteopathic Medicine
- Doctor of Dental Surgery or Dental Medicine
- Doctor of Podiatry
- Doctor of Optometry
- Chiropractor

Eligible professionals under the MPPIPR include:

- Physicians (primarily doctors of medicine and doctors of osteopathy)
- Dentist
- Physician assistant who furnishes services in an FQHC or Rural Health Clinic (RHC) that is led by a physician assistant.

[1] These professionals must meet specific criteria to demonstrate their meaningful use of EHRs in ways that can be measured significantly in both quality and quantity.

Eligible Hospitals (EHs)[2]

Eligible Hospitals under the Medicare Promoting Interoperability Program include:

- "Subsection (d) hospitals" in the 50 states or territories that are paid under the Inpatient Prospective Payment System (IPPS)
- Critical Access Hospitals (CAHs)
- Medicare Advantage (MA-Affiliated) Hospitals

Eligible Hospitals under the MPPIPR include:

- Acute care hospitals (including CAHs and cancer hospitals) with at least 10% Medicaid patient volume
- Children's hospitals (no Medicaid patient volume requirements)

Given the definition of EPs and EHs that were eligible for participation in the Promoting Interoperability Programs (Medicare and Medicaid), the provider groupings defined for the purposes of calculating statistical sample sizes are as follows:

Table 3 – Provider Grouping – Physicians & Other Providers

Provider Grouping	Categories	Number
Physicians & Other Providers	**Doctor of Medicine or Doctor of Osteopathic Medicine**	9,718
	Primary Care*	5,935
	Specialty Practice*	3,783
	Doctor of Dental Surgery or Dental Medicine	592
	Doctor of Podiatry **	39
	Doctor of Optometry	793
	Chiropractor**	647
	Nurse practitioner**	20
	Certified nurse-midwife**	20
	Physician assistants**	164

Source: *NPI Registry Lookup*. (n.d.). NPIdb. Retrieved April 12, 2024, from https://npidb.org/doctors/

[2] These hospitals must meet specific criteria to demonstrate their meaningful use of EHRs in ways that can be measured significantly in both quality and quantity.

Notes:

* Indicates information gathered from - Levis, M. (2016). Description of Puerto Rico Health Care Environment. Department of Health.

** These provider categories were not eligible for the PR Medicaid Promoting Interoperability Program based on the Puerto Rico SMHP.

Table 4 – Provider Grouping – Hospitals and Other Health Care Facilities

Provider Grouping	Categories	Number	Community Serviced
Hospitals and Other Health Care Facilities	**Acute care hospitals (including CAHs and cancer hospitals) with at least 10% Medicaid patient volume**	67	General population (3.286 million based on the 2020 US Decennial Census)[3]
	Children's hospitals	18	Children up to 18 years old (The 2020 US Decennial Census identified a population of 650,616 under 19 years old)[4]
	Federally Qualified Health Centers (FQHCs)	20	An estimated 346,702 people in underserved communities
	Urgent Care Centers	39	Urgent care clinics provide ambulatory care to walk-in patients.
	Inpatient Mental Health Facilities	8	Auxiliary Administration for Adult Treatment provides a variety of services and levels of care treatment for mental health and substance abuse patients
	Nursing Homes	484	Provide medical services to people who don't need to be in a hospital but can't be cared for at home

Source: *NPI Registry Lookup*. (n.d.). NPIdb. Retrieved April 12, 2024, from https://npidb.org/doctors/

Source: Levis, M. (2016). Description of Puerto Rico Health Care Environment. Department of Health.

[3] https://data.census.gov/profile/Puerto_Rico?g=040XX00US72

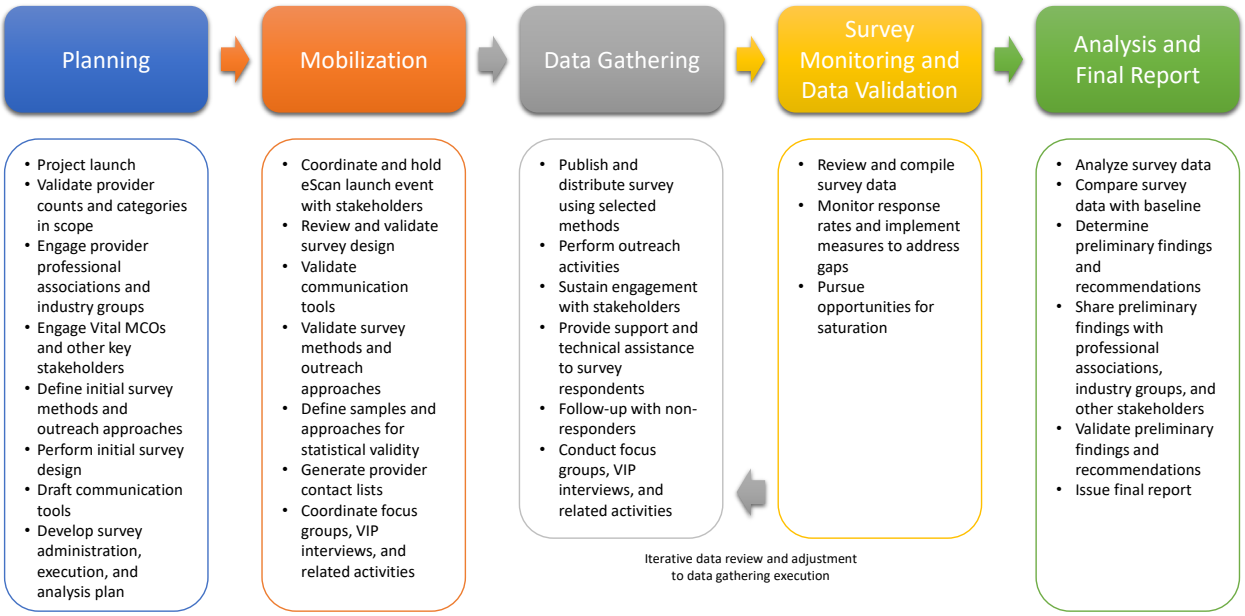
[4] Ibid

4. Methodology

4.1. Introduction

The Puerto Rico Environmental Scan project was conducted according to the following approach and methodology:

Figure 1 – Puerto Rico Environmental Scan Approach and Methodology



4.1.1. Planning

The initial phase laid the groundwork for a successful environmental scan by reviewing and validating the provider categories to be included in data gathering activities as well as defining engagement approaches with provider professional associations or interest groups. Engagement with the latter was critical success factor for the Puerto Rico Environmental Scan project, given that providers as well as their professional associations and interest groups had the most to gain from an eScan with high provider participation levels. Another significant element in the ***Planning*** phase was the initial definition of the survey methods and outreach approaches in collaboration with PRMP project stakeholders. In the ***Planning*** phase, an initial version of the survey was developed, along with initial versions of the communication tools to be used to drive outreach, technical assistance, and other stakeholder engagement activities. The preliminary decisions with regards to survey methods, outreach approaches, survey instruments, and communications tools were intended to be validated by designated environmental external stakeholders (e.g., provider professional associations) in the following phase (***Mobilization***). The different elements of the eScan defined in the ***Planning*** phase were brought together, further developed, and consolidated into a survey administration, execution, and analysis plan. Activities for the ***Planning*** phase were carried out starting on the project launch date of March 18 through June 14, 2024 (12.5 weeks).

4.1.2. Mobilization

The main goal of the second phase was to ensure that data gathering activities could hit the ground running by ensuring that the provider landscape to be surveyed, the provider professional associations and interest groups, as well as any additional stakeholders, were familiar with key aspects of the Puerto Rico Environmental Scan project. In particular, the channels by which providers could access the survey and related communications tools. Activities for the ***Mobilization*** phase were initiated on April 15 and completed on June 21, 2024. (9.5 weeks).

The initial activities in this phase were to share the survey methods, outreach approaches, survey instruments, and communications tools with a group of key external stakeholders. The goal was to obtain their feedback and make adjustments to the survey to promote higher participation levels from providers, establish processes to follow-up with non-responding providers, and promote attainment of project goals. The Puerto Rico Environmental Scan project team coordinated and delivered a launch event where information about the project was shared with providers and other external stakeholders to obtain their feedback. As a result of the feedback from the launch event, the project team refined the initial decisions and artifacts defined in the ***Planning*** phase.

In the ***Mobilization*** phase, BCG and Impactivo defined the sample sizes and approaches to be adopted for statistical validity of the survey results and generated provider contact lists. In addition, Impactivo coordinated a number of qualitative data gathering activities to supplement the quantitative data gathered through the survey. This included group interviews and other activities intended to glean insights that would facilitate the analysis and interpretation of data gathered through the survey instrument.

4.1.3. Data Gathering

This phase represented the bulk of the efforts associated with the Environmental Scan project; focusing on performing the necessary activities to distribute the survey, assisting providers in responding to the survey, and capturing provider responses. The first step was to publish and distribute the survey using the methods defined in the ***Planning*** phase and validated in the ***Mobilization*** phase on July 2, 2024. The publication and distribution of the survey was supported by outreach activities to create provider awareness about the release of the survey. These activities were directed at professional associations and interest groups as well as directly to providers to improve coverage. The intention was to sustain the engagement with external project stakeholders from the ***Planning*** and ***Mobilization*** stages to promote higher participation rates for the two (2) target populations defined for the survey: Healthcare Providers and Healthcare Administrators. In the ***Data Gathering*** phase, activities were undertaken to request collaboration from provider professional associations in reaching out to their constituencies.

The activities in the ***Data Gathering*** phase were planned to be completed by Labor Day. However, in late August, survey response rates were lower than the calculated sample sizes and professional association activities to promote the eScan with their constituents had not been completed. As a result, the deadline for submitting eScan survey responses was extended until September 16, 2024. This resulted in a ***Data Gathering*** phase with a total duration of 11 weeks.

4.1.4. Survey Monitoring and Data Validation

Once the ***Data Gathering*** phase activities were launched, one of the critical success factors for the eScan was to monitor the response rates of the two (2) target populations for the survey. These monitoring activities identified target provider categories for which additional outreach efforts were required or new approaches had to be devised to increase response rates. The survey data submitted by respondents was continuously reviewed and validated by BCG and Impactivo analysts for quality assurance purposes. These activities were intended to ensure that surveys were being counted accurately and were being associated with the correct target population. The ***Survey Monitoring and Data Validation*** phase activities were launched on July 8 and sustained through the duration of the ***Data Gathering*** phase activities, which concluded On September 16, 2024.

4.1.5. Analysis and Final Report

In the last phase, the quantitative and qualitative data gathered through eScan project activities was reviewed and analyzed with three main goals: compare the data with the 2011 eScan baseline, identify key project findings, and draft recommendations to further the adoption and use of HIT/HIE in the Puerto Rico provider landscape. The findings and recommendations were shared with external stakeholders, including provider professional associations, members of the target populations providers, as well as other stakeholders, in a manner similar to the eScan launch in the ***Mobilize*** phase. The activities for this phase were initiated after the conclusion on the Data Gathering phase on September 17 and carried out through project closing on September 30, 2024.

The purpose of the event with external stakeholders is to obtain their feedback to refine how the findings are presented and improve upon the initial set of recommendations. The next step was to incorporate the final version of the findings and recommendations in the final project report. The process of putting together the final report started after the data analysis and review and concluded once the final version of the findings and recommendations were completed.

4.2. Quantitative Methodology

In meeting the goals of the Puerto Rico Environmental Scan project, one of the core activities was obtaining input from providers as to current EHR adoption and use, interoperability capabilities, as well as understanding the barriers to further adoption of HIT and significant increases in health information exchange activity among Puerto Rico providers. The underpinning element of this activity is a quantitative assessment. The quantitative assessment methodology encompasses the development of a survey questionnaire, design and selection of the sample, and the definition of data collection and analysis methods. This methodology is designed to collect data that can be used to support eScan project goals.

4.2.1. Survey Objective and Design

The structured survey aims to evaluate the adoption, utilization, and impact of health IT systems across various healthcare settings. The survey design was crafted to gather quantitative data on the existing landscape, utilization patterns, and emerging trends in health IT systems.

Data was collected from a targeted population survey, comprising two distinct groups: healthcare providers and administrators at healthcare organizations.

4.2.2. Development of Survey Questionnaire

The content of the survey questionnaire was developed using a structured approach, incorporating original eScan questions, insights from an extensive literature review, and feedback from key stakeholders.

Original eScan Questions

To facilitate longitudinal comparisons, track health IT adoption and impact, and identify emerging trends, specific questions from the original 2011 eScan were integrated into the survey.

Literature Review

In addition to incorporating original 2011 eScan questions, our team derived further survey questions from a thorough literature review to ground the survey instrument in established research and past eScans carried out in other states, while also addressing emerging themes and topics.

Insights from Key Stakeholders

Feedback from key stakeholders informed the formulation of survey questions that tackle current and emergent issues, ensuring the survey remained relevant and responsive to real-world challenges and innovations in health IT. This included a face validation of the survey instrument. Draft questions were shared with stakeholders for discussion to ensure they measured the intended constructs and were meaningful to respondents (*Tsang et al., 2017*).

4.2.3. Survey Components

Both the Healthcare Administrators survey and the Healthcare Providers survey consist of the following sections:

1. General Information
2. Electronic Health Record (EHR) Adoption and Usage
3. Health Information Exchange (HIE) Adoption and Usage
4. Telehealth and Digital Health Adoption and Usage
5. Meaningful Use
6. Additional Services
7. Future Directions

A copy of the survey is included in ***Appendix C – Electronic Scan Survey***.

4.2.4. Conducting the Quantitative Assessment

Phase I: Planning

During the ***Planning*** stage, strategies for survey administration, execution, and analysis were developed. Steps included reviewing the face validity of the survey instrument, defining sample populations, and outlining outreach methods.

Sampling Method and Measures to Increase Statistical Validity

The survey was administered online and by telephone from July 2, 2024, to September 16, 2024. The target population included:

1. Physicians
2. Administrators at health organizations

Sampling Frame

The sampling units from which participants were drawn included:

1. The National Provider Identifier (NPI), a unique number assigned to healthcare providers.
2. Lists of eligible hospitals and healthcare professionals under the Medicare and Medicaid EHR Incentive Programs.

Sampling Technique for Quantitative Assessment

The survey participants were originally selected through stratified random sampling to ensure representation across various provider types and locations. The sample size was calculated for a 95% confidence level with a 5% margin of error. Using this sampling method, we were unable to reach the target sample. For this reason, we opened up a one week window to extend the ***Data Gathering*** phase though an email eblast sent by the Colegio de Cirujanos y Medicos de Puerto Rico, Colegio de Administradores de Servicios de Salud and the Puerto Rico chapter of the Health Information Management and Systems Society (HIMSS).

Sample Sizes and Margin of Error

For Healthcare Administrators (N=483), the calculated sample size was 215 for a 95% confidence level, but the total number of respondents was 146, resulting in a margin of error of 6.78%. For Healthcare Providers (N=9,338), the calculated sample size was 370 for a 95% confidence level, and 868 individuals completed the survey, for a 3.17% margin of error . However, a survey participant may not have submitted responses to all the questions in the survey. Therefore, in interpreting the results for each question, it is important to consider the margin of error that resulted from the total number of responses to each particular question. Please refer to ***Appendix B – Margin of Error Calculations*** for margin of error calculations for each individual question based on the number of responses submitted by survey participants.

Phase II: Mobilization

During this phase, initial outreach campaigns and a response monitoring system were established, and the survey was distributed.

Survey Methods

Data collection emphasized participant convenience, allowing access to complete the survey online or via telephone. All data was securely managed within the SMART PCMH system.

Survey Distribution

Outreach activities targeted provider awareness about the survey's purpose and aimed to engage professional associations and interest groups to enhance coverage.

Phase III: Data Gathering

Data collection processes were defined, and outreach activities implemented to maximize survey response rates. Support was provided to participating providers, who were encouraged to assist in reaching out to non-responders.

Follow-up Procedures

BCG analysts conducted quality assurance throughout data collection, ensuring accurate recording and categorization of responses.

In this phase, survey data was reviewed and compiled. Continuous monitoring of response rates was implemented, with strategies enacted to address gaps and enhance sample sizes.

The data management process ensured data integrity from entry to storage, encompassing data entry, cleaning, and secure storage methods compliant with privacy regulations.

Phase IV: Data Analysis and Final Report

Data was analyzed and compared to baseline data in the previous eScan. The data analysis plan outlined the methods for analyzing and interpreting data to explain the eScan findings presented in this report.

Effective communication of findings to key stakeholders is crucial for increasing understanding of the current landscape, identifying barriers, generating actionable insights, and recommending strategies to enhance the digital healthcare infrastructure. Insights from the survey should be shared clearly and meaningfully, enabling decision-makers to understand health IT adoption, identify improvement areas,

4.3. Outreach Campaign and Activities

In order to achieve the sample sizes for the eScan Healthcare Provider and Healthcare Administrator surveys, BCG defined and implemented an outreach campaign. The outreach campaign was designed to engage with the target audience for the surveys, raise awareness about the environmental scan survey, and drive the target audience to complete and submit the survey. The outreach campaign incorporated the components described in this section.

4.3.1. Objectives

The primary goal of the outreach campaign was to motivate the target audiences for the Healthcare Provider and Healthcare Administrator surveys to thoughtfully respond to the eScan survey. The primary means for measuring the overall effectiveness of the outreach campaign was achieving the necessary number of responses to the Healthcare Provider and Healthcare Administrator surveys to meet the established sample sizes.

4.3.2. Target Audience

To contact the target audience for the surveys, BCG used two data sources: a provider list from the Puerto Rico Medicaid program's Medicaid Management Information System (MMIS) and the National Plan & Provider Enumeration System (NPPES) database. The available attributes for the provider contact information in each list were the primary drivers in selecting channels and defining the calendar for outreach activities using each channel. The Puerto Rico Medicaid program's list was valuable in terms of the email channel, while the main value of NPPES was the availability of provider mobile numbers.

4.3.3. Messaging

The messaging for the outreach campaign was intended to inform survey target audiences about the availability of the environmental scan survey and where to access it. The Call-to-Action (CTA) was for the target audience to visit the website where the surveys were published (http://escanpuertorico.com). The tone and style of the communications was formal and informative so that multiple channels could be adapted to deliver the message.

4.3.4. Channels

BCG employed multiple channels to deliver the messaging for the outreach campaign.

Outbound contact center

The primary outreach channel for the eScan was an outbound contact center. The main goal of the contact center was to generate voice calls for providers in the target audience, make them aware of the eScan, gauge their interest in participating in the eScan, and provide them with the necessary information to access the surveys. Outbound calls were generated on weekdays starting on the date eScan surveys were published on July 2 and was available through September 16, 2024.

The eScan contact center was implemented using Amazon Connect, a cloud-based contact center, and staffed by BCG personnel. The eScan contact center had inbound capabilities for providers to return outbound calls originated by the contact center or to inquire about the survey, ask specific questions, or request guidance in completing the survey. The local Direct Inward Dialing (DID) number for the eScan contact center was widely disseminated in eScan promotional activities as described in this section.

Email blasts

SMART PCMH, the web based application that was used to build and publish the surveys has the capability of sending email blasts to intended survey respondents. We sent emails on a weekly basis to all providers

for which BCG had an email address (12,637 providers). The email included a link to the public URL where the surveys were published (http://escanpuertorico.com).

eScan website

BCG published the Healthcare Provider and Healthcare Administrator surveys in both English and Spanish in the aforementioned URL (http://escanpuertorico.com).

Partnerships with provider professional associations

BCG and Impactivo forged partnerships with Colegio de Cirujanos y Médicos de Puerto Rico, Colegio de Administradores de Servicios de Salud (CASS), and the Puerto Rico chapter of HIMSS. As part of the partnerships, each of the provider professional associations committed to send email blasts to their member distribution lists.

Influencers

PRDoH requested support from the CMS Puerto Rico office for the outreach campaign by allowing BCG to participate in monthly meetings where CMS discusses relevant rulemaking, special programs, or other relevant news. BCG made a short presentation regarding the eScan in the June, July, and August meetings.

Promotions

BCG and Impactivo delivered a number of activities intended to create awareness about the eScan and how to access the surveys, as follows:

- Participation in a community healthcare partnership event held by Impactivo in June 2024.
- An official eScan kickoff webinar delivered on June 30, 2024.
- In the group interviews held by Impactivo to support the qualitative analysis, the attendees were reminded to participate in the eScan surveys. The group interviews were held as follows:
    - Puerto Rico Primary Care Association (attended by Healthcare Providers and Healthcare Administrators) on August 12, 2024.
    - Colegio de Cirujanos y Médicos de Puerto Rico (attended by Healthcare Providers) on August 17, 2024.
    - Puerto Rico Health Information Management Association (attended by Healthcare Administrators) on August 23, 2024.
    - Puerto Rico Medical Association (attended by Healthcare Providers) on August 27, 2024.

4.3.5. Monitoring and Adjusting

The results of the outreach campaign were monitored by continuously reviewing the number of surveys submitted for each of the two target populations. This was primarily achieved by counting the number of unique survey response IDs from SMART PCMH. In addition, BCG developed a web-based application to create provider contact lists and assign them to contact center agents so that outbound contacts could be targeted to specific provider populations. The web-based application allowed agents to indicate whether a particular provider was successfully contacted, whether the provider filled out the survey, and whether there are any pending post-contact activities (e.g., send an email). The management dashboard for this application allowed BCG to track the progress of the outbound voice campaigns and how to adjust them to meet the target sample sizes for both surveys.

4.3.6. Outbound Campaign Summary

As previously indicated, outbound calls were generated by the contact center starting on the date eScan surveys were published on July 2 through September 16, the deadline for submitting survey responses. The cumulative results of the outbound voice campaign are shown in **Table *5*** and **Figure *2***.

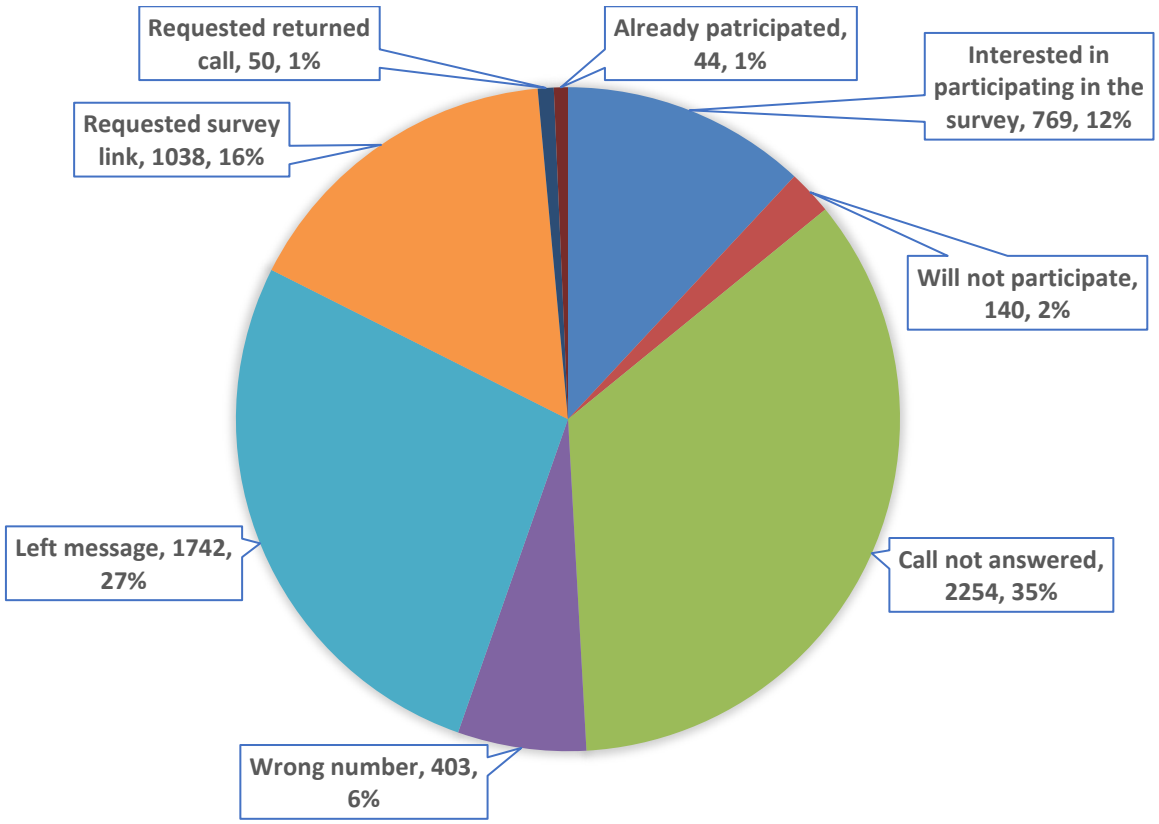
. The statuses in **Table *5*** reflect the outcomes that call center agents could assign after completing an outbound call in the web-based system implemented by BCG to support the outbound campaign.

Table 5 – Outbound Campaign Results Summary

Call Disposition Status	Total Calls
Interested in participating in the survey	769
Will not participate	140
Call not answered	2,254
Wrong number	403
Left message	1,742
Requested survey link	1,038
Requested returned call	50
Already participated	44
Total	**6,440**

Table *5* reflects the totals for all provider contacts as of the closing of data gathering activities. A particular provider could have been assigned different statuses throughout the life of the outbound campaign. For example, an initial attempt to contact a provider may have been unsuccessful, but a second attempt may have resulted in speaking with the provider and, during the contact, the provider requested the survey link. The status for that provider will only be included as "*Requested survey link*".

Figure 2 – Outbound Campaign Results Summary



Given the anonymous nature of the survey, it is not possible to identify whether a provider responded to a survey as a result of a call from the contact center, an email, or simply as a result of word-of-mouth from other providers.

4.4. Qualitative Methods

For the Environmental Scan project, qualitative methods were adopted to offer valuable insights that complement the data gathered through the eScan survey. While the eScan survey provided broad trends and statistical relationships, the qualitative methods allowed for deeper exploration of providers' perspectives, experiences, and reasoning. This combination of quantitative and qualitative methods enhanced the richness of the Environmental Scan project findings. In particular, the group interviews that underpinned the qualitative methods can uncover underlying motivations, clarify ambiguous survey responses, and identify themes that may not have emerged in the structured format of the eScan survey.

4.4.1. Development of the Interview Guide

For this qualitative evaluation, a group interview facilitation guide was developed to collect data related to seven topic areas: (1) Overview of the current status of the use of HIT in Puerto Rico (i.e., technology adoption, main changes in recent years, current EHR use in Puerto Rico; (2) HIT adoption drivers; (3) Benefits and outcomes from using HIT; (4) Challenges; (5) Health information exchange and HIT

interoperability; (6) HIT impact on patient outcomes and organizational systems; and (7) Future outlook. Each topic area included key open-ended questions with probing questions designed to elicit detailed narratives from interviewees.

4.4.2. Participant Selection

A critical case sampling approach was utilized to identify stakeholders that would be well positioned to respond the questions developed to achieve the goals of the environmental scan. Four stakeholder groups were convened to participate in groups interviews. The four groups included stakeholders from different HIT industry sectors in Puerto Rico. The selection of these stakeholder groups was guided to include the associations that represent the groups that were eligible for HITECH Act incentives. While we were able to attain feedback from all stakeholder groups, one group did not participate due to an inability to schedule an interview. Potential group interview participants were invited via email, phone calls and WhatsApp chat between [August 12th , 17th , 23rd, and 27th /2024]. A total of 28 individuals participated in the data collection process.

Group Interviews

Four group interviews were conducted in Spanish with members from: Medical Directors from Federally Qualified Health Centers, Puerto Rico Primary Care Association Health Center Controlled Network, Puerto Rico Health Information Management Association, and Colegio de Médicos Cirujanos de Puerto Rico. The group interviews were conducted by experienced interviewees with a background in health systems and health IT virtually via Microsoft Teams. They lasted between 42-120 minutes. A total of four were audio-recorded and transcribed verbatim. All participants were asked to provide verbal consent prior to initiating the interview process.

4.4.3. Data Analysis

A senior qualitative researcher who had not participated in the interview process coded and analyzed the narratives collected using the six-step thematic analysis approach recommended by *Braun and Clarke (2006)*. The six steps are:

1. Becoming familiar with the data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing a report

After reviewing interview transcripts and the thematic domains included in the interview guide, the senior qualitative researcher produced an initial qualitative code tree (steps 1 and 2). The final coding tree

emerged from a combination of a deductive approach (using codes developed in advance from interview guides) and inductive approach (using open coding).

The transcribed interviews were coded using Dedoose Qualitative Software (*Lieber et al., 2011*). This software facilitates systematically qualitative data coding and analysis. Upon completing the coding process (i.e., organizing and categorizing raw qualitative data into manageable units through assignment of codes or labels or tags assigned to specific pieces of data) the senior qualitative researcher searched, reviewed, and defined themes (steps 3, 4, and 5) guided by an adapted version of the Technology Acceptance Model (TAM), a conceptual framework that is used to explain how individuals accept and adopt information systems, and to identify mechanisms underlying individuals' acceptance of technology (Davis, 1989). These themes were then revised by a second senior researcher that participated in most of the interviews. The TAM has been used as a tool to identify key behaviors associated with successful implementation of technology. In addition to exploring the role of individuals' acceptance of technology (*Marikyan and Papagiannidis, 2023*). The TAM identifies three drivers of technology adoption and use: (1) perceived usefulness; (2) perceived ease of use; and (3) intention to use. Over the years, the TAM has been expanded to include mechanisms contributing to technology adoption and use: experience, voluntariness, subjective norms, image, job relevance, output quality, result demonstrability, behavioral intention, computer self-efficacy, perception of external control, computer anxiety, computer playfulness, perceived enjoyment, and objective usability. The three constructs with their corresponding mechanisms are viewed as related to human decision making in the process of adopting technology.

For this evaluation, the three core TAM constructs (i.e., perceived ease of use, perceived usefulness, and intention to use) and corresponding mechanisms extracted from the expanded versions of the TAM (i.e., experience, job relevance, output quality, result demonstrability, computer self-efficacy, perception of external control, computer anxiety, and objective usability) were used for analytic purposes. Definitions of constructs and mechanisms are listed in the table below.

Table 6 – TAM Constructs and Underlying Mechanisms

TAM Construct and Underlying Mechanisms	Definition
Intention to Use	A person's subjective probability that they will perform some behavior.
Perceived Ease of Use	The degree to which a person believes that using a particular system would be free of effort.
Computer anxiety	The degree of an individual's apprehension, or even fear, when she/he is faced with the possibility of using computers (Venkatesh, 2000)
Computer self-efficacy	The degree to which an individual believes that he or

TAM Construct and Underlying Mechanisms	Definition
	she has the ability to perform a specific task/job using the computer. (*Compeau & Higgins, 1995*)
Objective usability	A comparison of systems based on the actual level (rather than perceptions) of effort required to complete specific tasks. (*Venkatesh, 2000*)
Perception of external control	The degree to which an individual believes that organizational and technical resources exist to support the use of the system.
Perceived Usefulness	The degree to which a person believes that using a particular system would enhance his or her job performance.
Experience	The passage of time from the initial use of a technology by an individual. (*Venkatesh, Thong & Xu, 2012*)
Job relevance	An individual's perception regarding the degree to which the target system is applicable to his or her job. (*Venkatesh & Davis, 2000*)
Output quality	The degree to which an individual believes that the system performs his or her job tasks well. (*Venkatesh & Davis, 2000*)
Result demonstrability	The tangibility of the results of using the innovation. (*Moore & Benbasat, 1991*)

The process of generating themes is known as thematic analysis and it involves identifying, analyzing, and reporting patterns (themes) within qualitative data. In other words, it is a step further from coding which is used to categorize and organize collected narratives. Thematic analysis builds on coding to provide a deeper and more interpretative understanding of the data's underlying themes and patterns. For the purpose of this evaluation, the themes were generated from the codes that were used to label and extract excerpts of the group discussions in combination from the TAM constructs which outlines the processes leading to technology adoption.

Table 7 – Interview Topic Areas and Related TAM Constructs

Interview Topic Area	TAM Construct
1. Current status of the use of HIT	Experience Result demonstrability
2. HIT adoption drivers	Objective usability Perception of external control Job relevance Output quality

Interview Topic Area	TAM Construct
3. Benefits and outcomes from using HIT	Result demonstrability
4. Challenges	Computer anxiety Computer self-efficacy
5. Health information exchange and HIT interoperability	Experience
6. HIT impact on patient outcomes and organizational systems	Result demonstrability
7. Future outlook	

5. Survey Response Summary

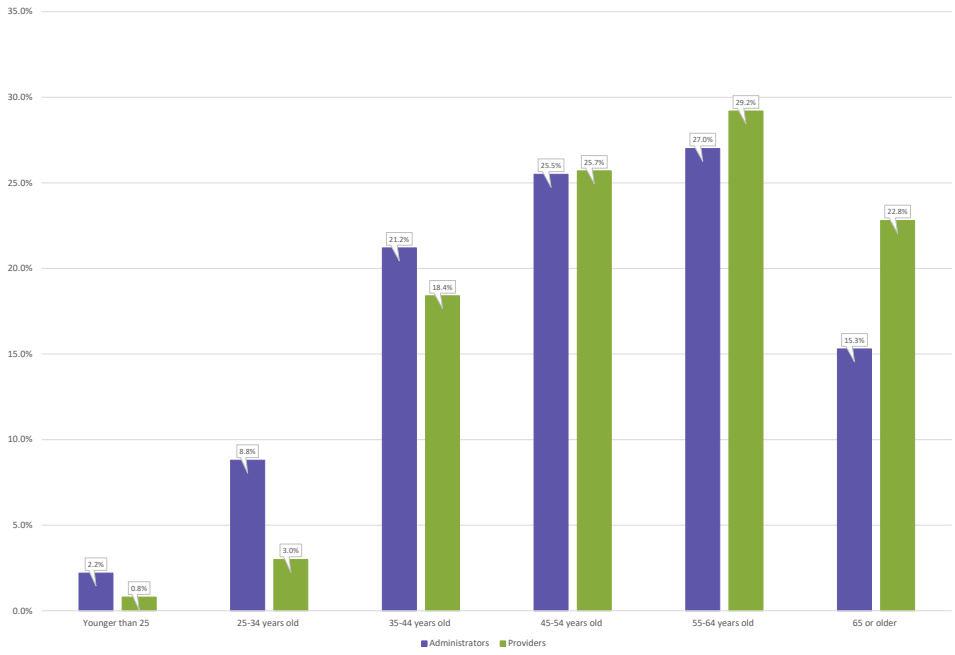
5.1. Introduction

In this section, the survey responses for the most relevant questions in the quantitative assessment vis-à-vis the goals of the Environmental Scan project are presented and discussed. This presentation is intended to establish a quantitative baseline that, combined with the findings of the qualitative assessment in the next section of this report, provides a holistic perspective in terms of the findings resulting from the environmental scan. In this section, the results presented include only those participants that submitted a response to a particular question. For a complete presentation of all the survey questions in the Healthcare Provider and Healthcare Administrator quantitative assessments, please refer to ***Appendix C – Electronic Scan Survey***.

5.2. General Information

Section 1 of both the Healthcare Provider and Healthcare Administrator surveys focused on general information that can be used to develop a profile of the respondents to each surveys. Question 1 asked respondents to identify their age group. The results for both surveys are presented in **Figure 3**.

Figure 3 – Question 1: Survey Participant Age Group



In both the provider and administrator surveys, the most represented age groups were **55-64 years** (29.2% in the provider survey and 27.0% in the administrator survey) and **45-54 years** (25.7% in the provider survey and 25.5% in the administrator survey). The third most represented age group was **65 or older** (22.8% in the provider survey and 15.3% in the administrator survey). It is well known that healthcare

providers in Puerto Rico are an ageing population due to a variety of factors. From this standpoint, survey participants generally reflect the age profile of the healthcare provider population in Puerto Rico.

Question 2 was intended to identify the respondent's primary healthcare organization type. The results for both surveys are presented in **Figure *4*** and **Figure *5***.

Figure 4 – Question 2: Participant Primary Healthcare Organization (Providers)

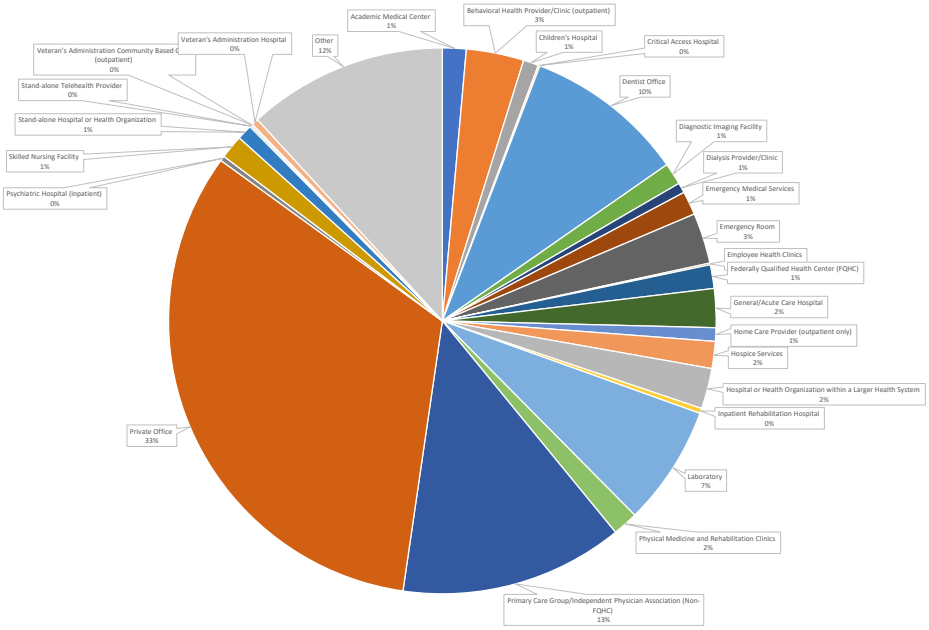
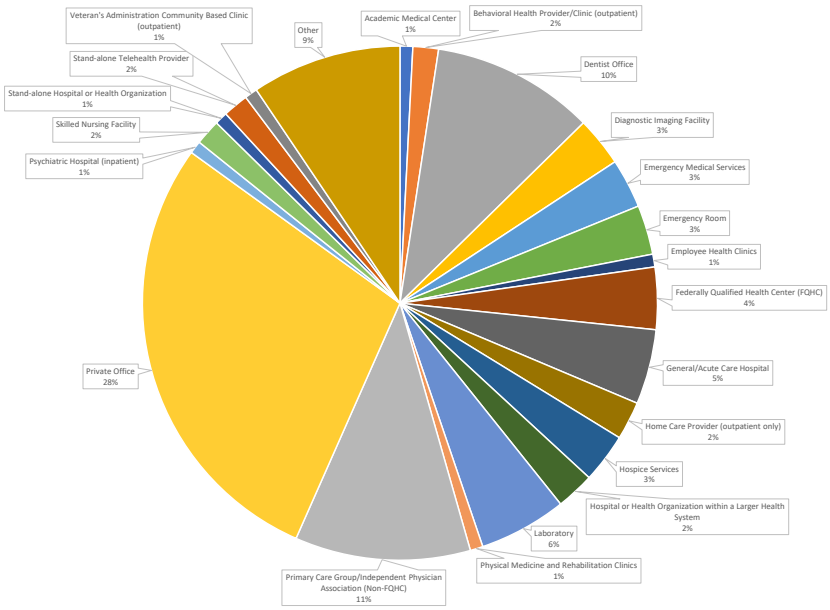


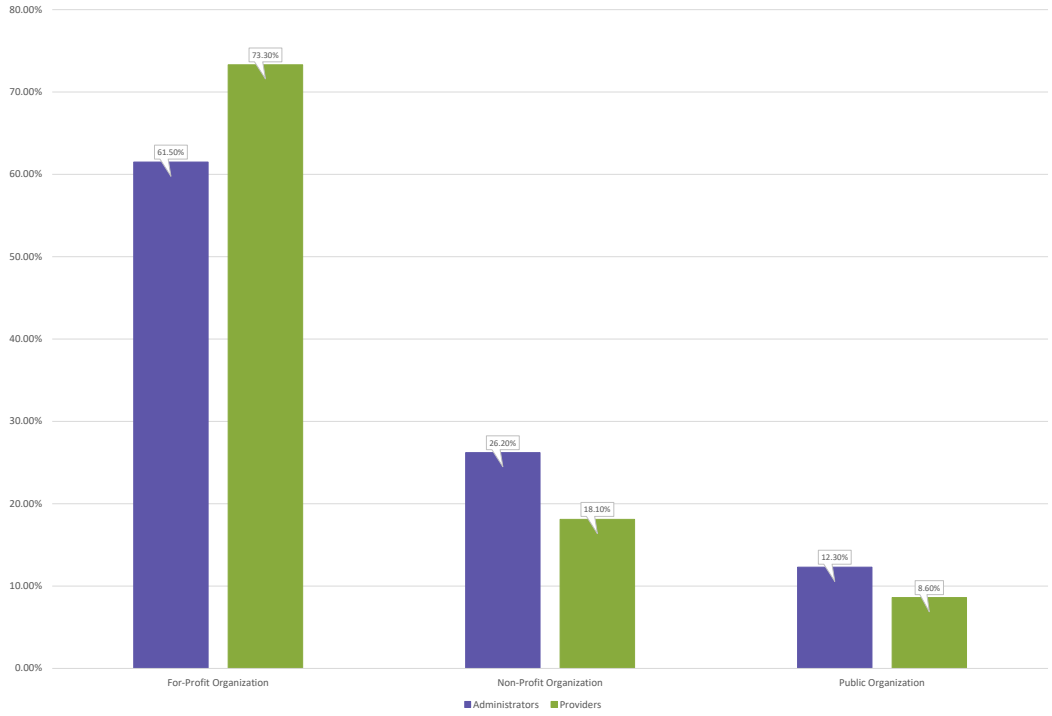
Figure 5 – Question 2: Participant Primary Healthcare Organization (Administrators)



In both surveys, the most represented primary healthcare organizations were **private office** (32.7% in the provider survey and 28.3% in the administrator survey), **Primary Care Group/Independent Physician Association (Non-FQHC)** (13.2% in the provider survey and 11.0% in the administrator survey), **Other** (11.8% in the provider survey and 9.4% in the administrator survey), **Dentist Office** (9.5% in the provider survey and 10.2% in the administrator survey), and **Laboratory** (5.5% in the provider survey and 15.3% in the administrator survey). It is interesting to note that the top five primary healthcare organizations were identical in both surveys with **Other** and **Dentist Office** switching places in the two surveys.

Question 3 was intended to identify the status of the respondent's primary healthcare organization: For-**Profit Organization**, **Non-Profit Organization**, or **Public Organization**. The result for both surveys is presented in **Figure *6***.

Figure 6 – Question 3: Participant Organization Type



The most represented primary healthcare organizations status was **For-Profit Organization** (73.3% in the provider survey and 61.5% in the administrator survey), followed by **Non-Profit Organization** (18.1% in the provider survey and 26.2% in the administrator survey), and **Public Organization** (12.3% in the provider survey and 12.3% in the administrator survey). The responses to questions 2 and 3 generally align with known characteristics of Puerto Rico's provider landscape.

Question 4 asked respondents to identify their role within their primary healthcare organization. The results are shown in **Figure *7*** and **Figure *8***. Given that one survey was intended for providers and another for administrators, the answers that could be selected in each survey were different. For example, the

administrator survey only has four potential alternatives (**Administrator**, **Clinician**, **IT professional**, and **Other**), while the provider survey had 16 potential alternatives.

Figure 7 – Question 4: Participant Role in Primary Healthcare Organization (Providers)

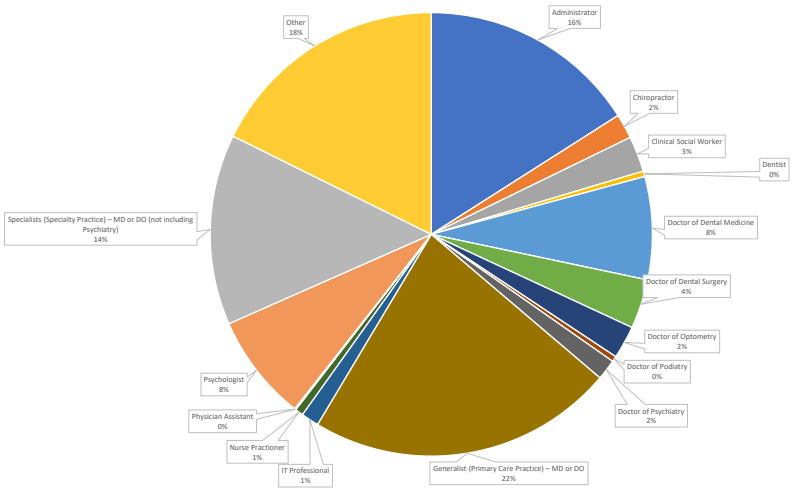
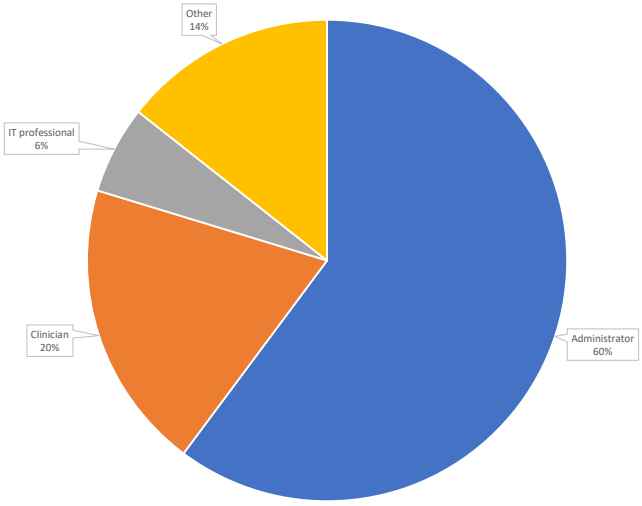


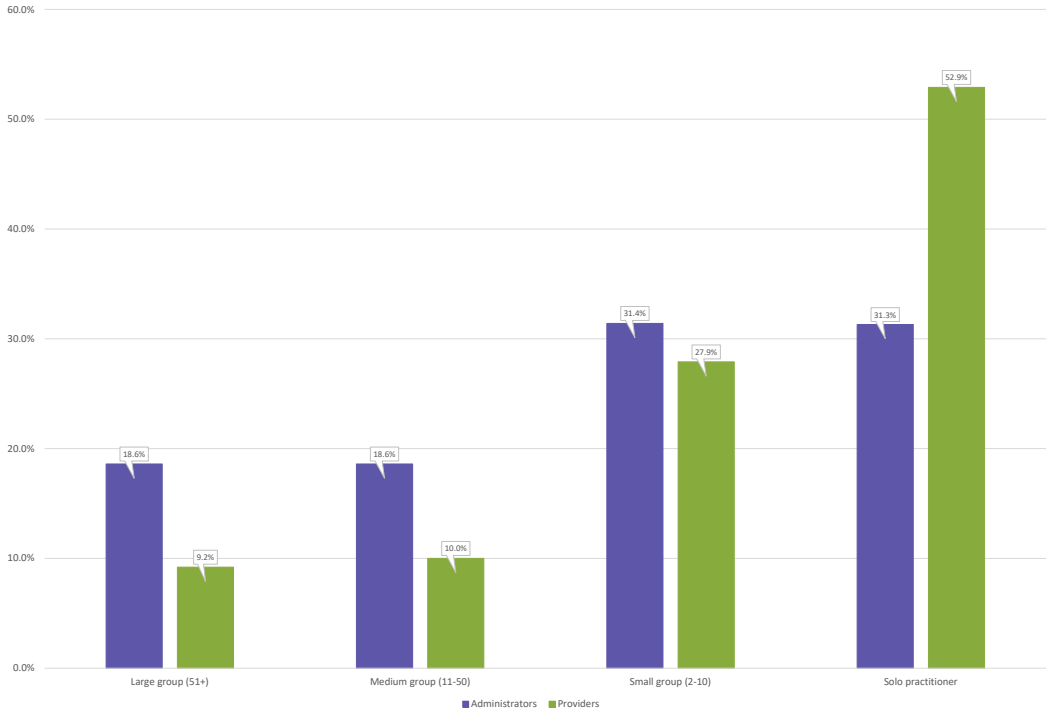
Figure 8 – Question 4: Participant Role in Primary Healthcare Organization (Administrators)



Among provider survey respondents, the most represented roles were **Generalist (Primary Care Practice) – MD or DO** (22.4%), **Other** (17.7%), **Administrator** (16.0%), **Specialists (Specialty Practice) – MD or DO (not including Psychiatry)** (13.9%), and **Doctor of Dental Medicine** (7.5%). Among administrator survey respondents, the most represented roles were **Administrator** (60.2%), **Clinician** (19.5%), **Other** (14.4%), and **IT professional** (5.9%).

Question 5 asked respondents to identify the size of their primary healthcare organization in terms of the number of full-time equivalent independent clinical providers. The results for both surveys are presented in **Figure *9***.

Figure 9 – Question 5: Participant Organization Size



In the provider survey, approximately half the respondents (52.9%) were **solo practitioners**, approximately a quarter (27.9%) belonged to a **small group** (2-10 FTEs), while the rest was distributed between **medium groups** (11-50 FTEs) (10.0%) and **large groups** (51+ FTEs) (9.2%). The distribution in the administrator survey was slightly different, with similar representation for **solo practitioners** (31.3%) and **small groups** (2-10 FTEs) (31.4%), and identical representation for **medium groups** (11-50 FTEs) (18.6%) and **large groups** (51+ FTEs) (18.6%). The relative predominance of solo practitioners in the provider survey when compared to the administrator survey (52.9% to 31.3%) is notable because in a solo practice, the provider can also consider themselves to be the administrator. This points to the possibility that providers may have elected to respond to the administrator survey since they discharge both a provider and an administrator role in their solo practice.

Question 6 asked respondents to identify the municipality in which their primary healthcare organization is located. The results are presented in **Table *8***, **Figure *10***, and **Figure *11***. In both surveys, San Juan, the most populous municipality in the island, was the response selected most often by respondents (15.1% in the provider survey and 20.5% in the administrator survey). Ponce was the second most selected response in both surveys (7.5% in the provider survey and 7.7% in the administrator survey), which is the fourth most populous municipality on the island.

Table 8 – Question 6: Participant Primary Healthcare Organization Municipality (Top 5)

Rank	Provider Survey	Administrator Survey
1	San Juan (15.1%)	San Jun (20.5%)
2	Ponce (7.5%)	Ponce (7.7%)
3	Bayamón (6.7%)	Arecibo (6/8%)
4	Mayagüez (5.6%)	Jayuya (5.1%)
5	Carolina (4.2%)	Mayagüez (4.3%)

Figure 10 – Question 6: Participant Primary Healthcare Organization Municipality (Providers)

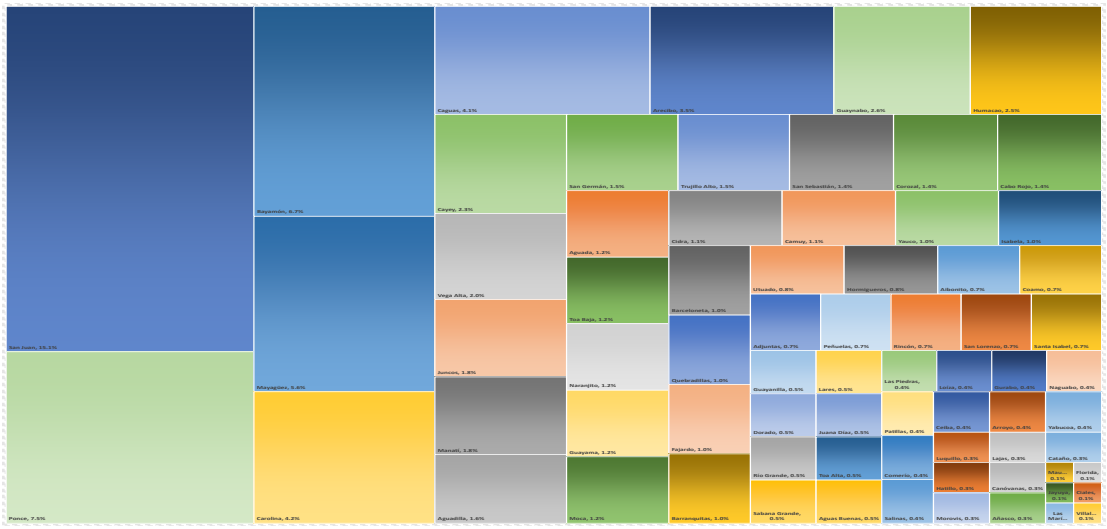
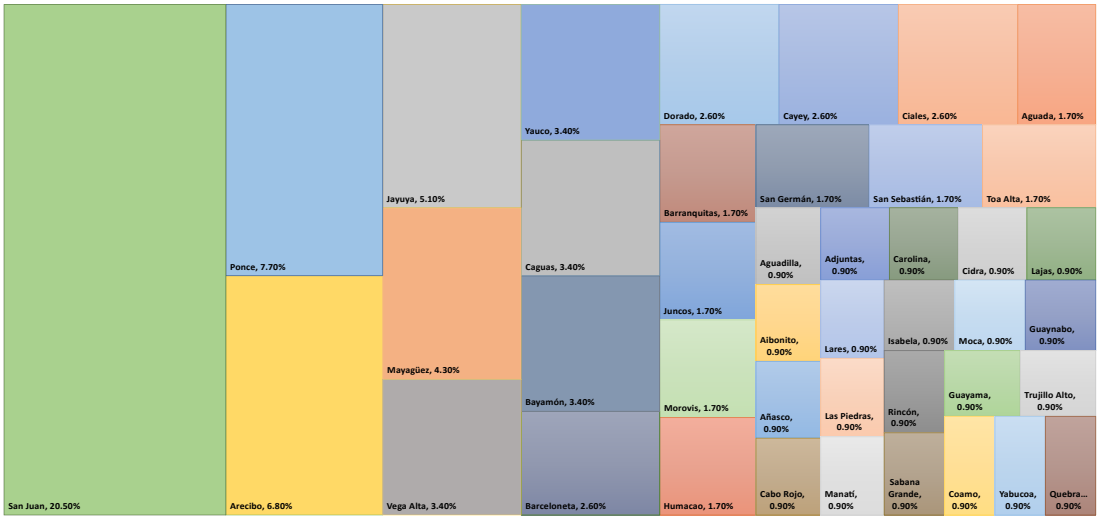


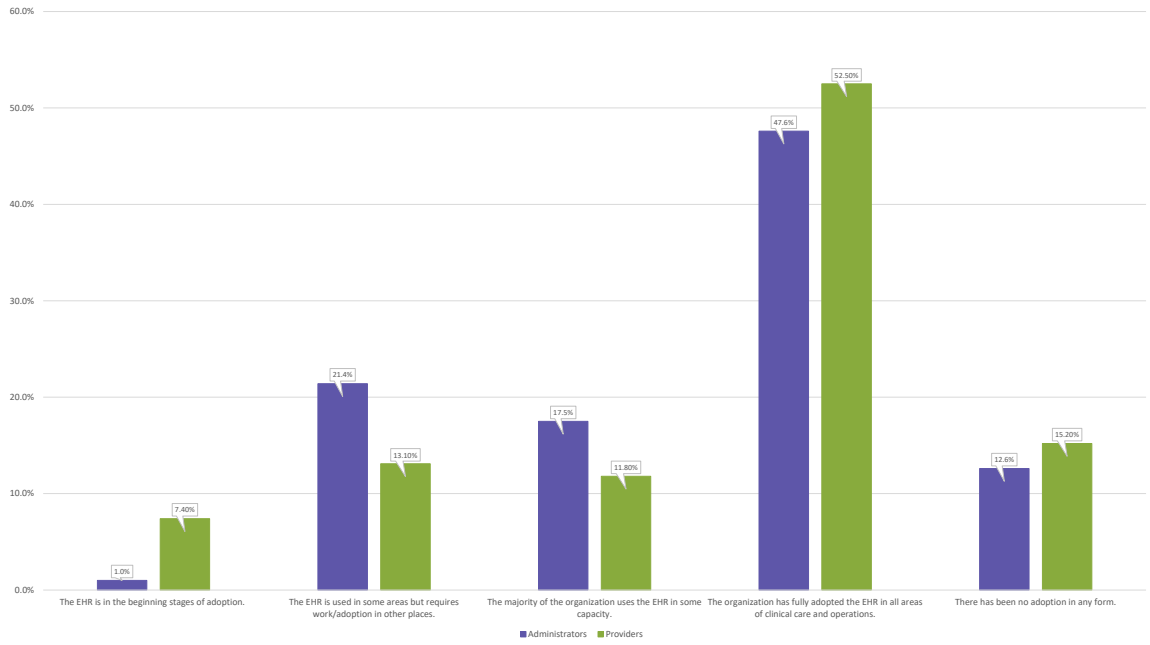
Figure 11 – Question 6: Participant Primary Healthcare Organization Municipality (Administrators)



5.3. Electronic Health Record (EHR) Adoption and Usage

Section 2 of both the Healthcare Provider and Healthcare Administrator surveys focused on Electronic Health Record (EHR) Adoption and Usage. In particular, Question 7 asked respondents to select one of five statements describing the overall adoption rate of the EHR within their primary healthcare organization. The results for both surveys are presented in **Figure *12***.

Figure 12 – Question 7: Overall EHR Adoption Rate



In both surveys, the most common response was "**The organization has fully adopted the EHR in all areas of clinical care and operations**" with 52.5% in the provider survey and 47.6% in the administrator survey, or approximately half of the respondents to both surveys. In the provider survey, the second most common response was "**There has been no adoption in any form**" (15.2%), which combined with the response rate for "**The EHR is in the beginning stages of adoption**" (7.4%), indicates that in the provider survey, almost a quarter of all respondents (22.6%) indicated that an EHR has not been adopted or it is in the early stages. By contrast, in the administrator survey, the combination of those two responses was 13.6%, which is significantly lower than the provider survey.

If a similar exercise is performed combining the remaining two responses, "**The EHR is used in some areas but requires work/adoption in other places**" and "**The majority of the organization uses the EHR in some capacity**", they were selected by 24.9% of the respondents to the provider survey and 38.9% in the case of the administrator survey.

This disparity in terms of EHR adoption between the two surveys is not related to the respondents' practice size (Question 5). As per responses to Question 5 the provider survey, 52.9% of the respondents' organizations consisted of a **solo practitioner**, while 31.3% were **solo practitioners** in the administrator

survey. In both surveys, out of those respondents that indicated "**There has been no adoption in any form**", the responses in Question 5 (practice size) were logged as shown below in **Table *9***:

Table 9 – Practice Size Distribution for EHR Non-Adopters

Q5. Size of your primary healthcare organization (total number of full-time equivalent independent clinical providers who currently work at your primary healthcare organization?	% of Responses on Q5 based on Q7 response of "There has been no adoption in any form"	
	Administrators (Total = 13)	Providers (Total = 102)
Large group (51+)	7.7%	2.0%
Medium group (11-50)	30.8%	9.8%
Small group (2-10)	0.0%	28.4%
Solo practitioner	61.5%	59.8%
Grand Total	**100.0%**	**100.0%**

In **Table *9***, the distribution of provider practice size for the provider survey is very similar to the overall responses in the provider survey in terms of practice size (Question 5 shown in **Figure *9***). Given the small number of responses in the administrator survey that selected "**There has been no adoption in any form**" in Question 7 (Total = 13), comparing the distribution in **Table *9*** to the overall responses for Question 5 is not useful.

In a similar exercise, out of those respondents that indicated "**The EHR is in the beginning states of adoption**" on Question 7, the responses in Question 5 (practice size) were as shown below in **Table *10***:

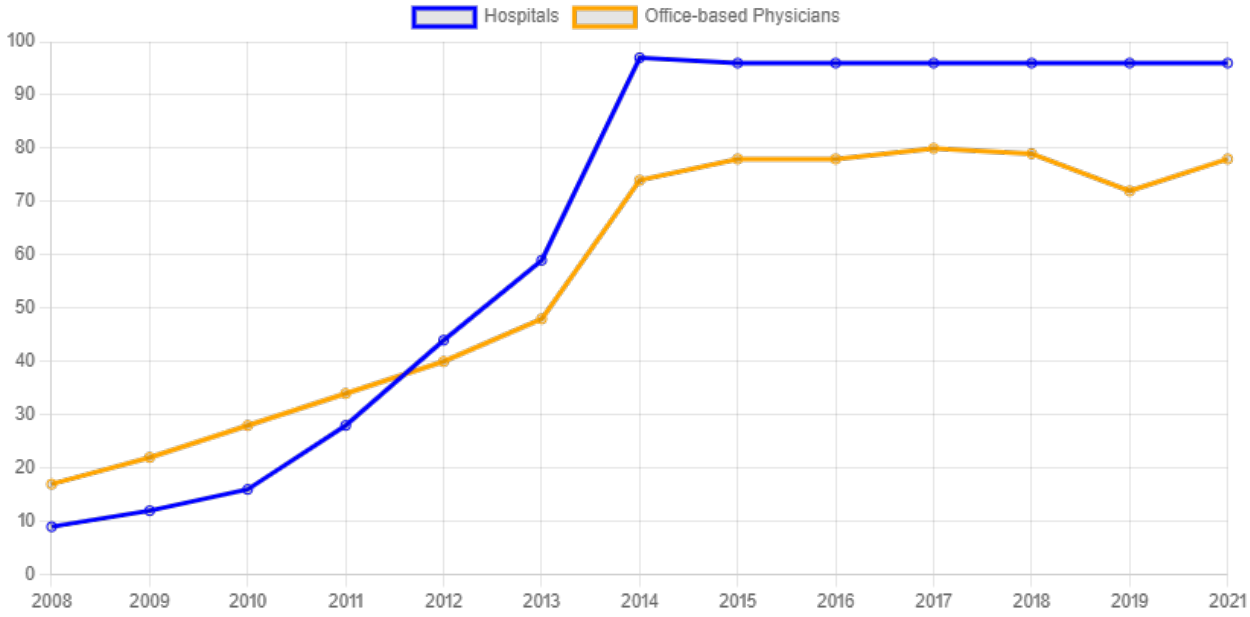
Table 10 – Practice Size Distribution for Organizations in the Beginning Stages of EHR Adoption

Q5. Size of your primary healthcare organization (total number of full-time equivalent independent clinical providers who currently work at your primary healthcare organization?	% of Responses on Q5 based on Q7 response of " The EHR is in the beginning states of adoption "	
	Administrators (Total = 1)	Providers (Total = 50)
Large group (51+)	0.0%	2.0%
Medium group (11-50)	0.0%	4.0%
Small group (2-10)	100.0%	28.0%
Solo practitioner	0.0%	66.0%
Grand Total	**100.0%**	**100.0%**

Again in **Table *10***, the distribution of provider practice size for the provider survey is very similar to the overall responses in the provider survey in terms of practice size (**Figure 9**). A similar comparison for the administrator survey is not useful.

EHR adoption levels in Puerto Rico lag behind the rest of the nation. Based on a survey conducted in 2021 by the Centers for Disease Control and Prevention (CDC)[5], 88.2% of office-based physicians were using EMR/EHR system in 2021, while 77.8% were using a *certified* EMR/EHR system. It is also noteworthy that the national trends in hospital and physician adoption of EHRs has been relatively steady since 2014, as shown in **Figure *13***[6] .

Figure 13 – National Trends in Hospital & Physician EHR Adoption



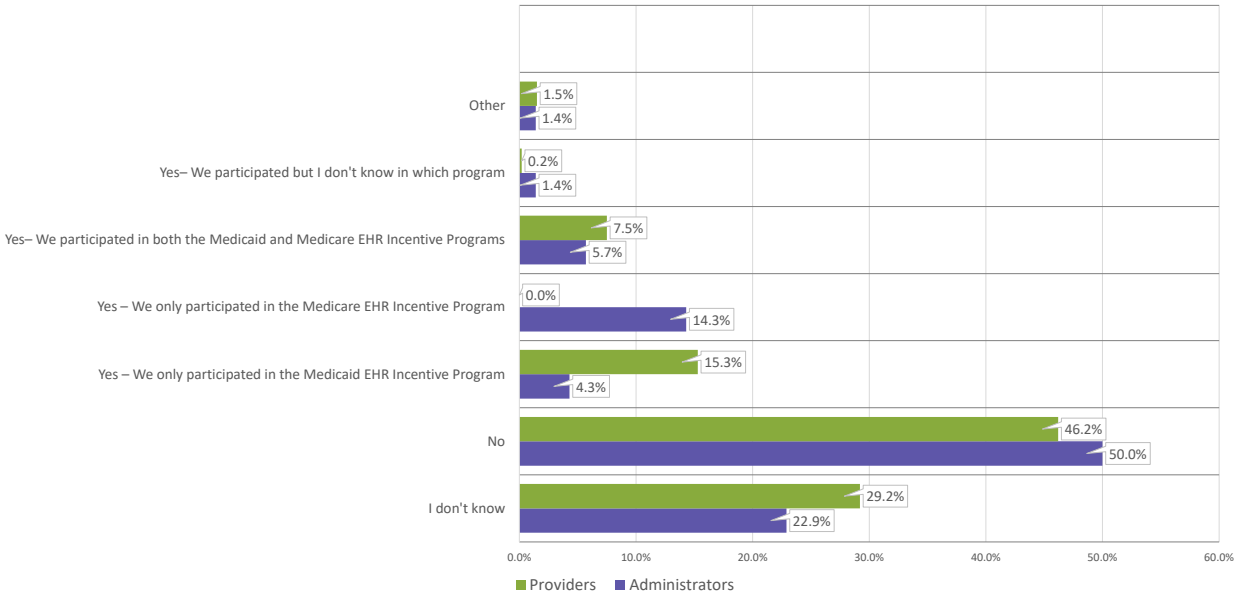
The trends in hospital and physician EHR adoption have apparently reached a plateau at their current levels. Given that the plateau was reached in 2014, it is apparent that the Medicare and Medicaid Incentive Programs, which started nationwide as early as 2010, had a significant role in the growth in EHR adoption levels since that time.

Question 14 focused on whether the respondents' primary healthcare organization participated in the incentive programs associated with the Medicare and/or Medicaid Promoting Interoperability Programs. The results for both surveys are presented in **Figure *14***.

[5] 2021 National Electronic Health Records Survey Public Use File National Weighted Estimates

[6] American Hospital Association (AHA) Annual Survey Information Technology Supplement, 2008-present. National Center for Health Statistics (NCHS) National Ambulatory Care Survey (2008-2011) and National Electronic Health Record Survey (2012-present)

Figure 14 – Question 14: Participation in Medicare and/or Medicaid Incentive Programs



In the provider survey, 46.2% of the participants answered **no**, and 23.0% **participated in at least one program**. In the administrator survey, 50.0% of the participants that submitted a response answered **no** and 25.7% **participated in at least one program**. The low participation levels in the incentive programs are potentially indicative of a significant missed opportunity for the healthcare ecosystem to access significant funding to facilitate EHR adoption and utilization.

In evaluating the responses to Question 14, it is important to take into consideration that the primary healthcare organization for some respondents may be a provider type that was not eligible for the Medicare and Medicaid incentive programs. Out of the respondents that selected **no** in Question 14, the associated distribution of the primary healthcare organization type (Question 2) for both surveys is shown in ***Table 11***, **Figure *15***, and **Figure *16***. In ***Table 11***, the provider types that were eligible for the Medicare and/or Medicaid Incentive Programs are shaded in yellow.

It should be noted that in the incentive programs, Eligible Professionals could apply as individuals and not as a practice. In the case of Eligible Hospitals, it is the organization that could have applied for the incentive and not the individual professional. Therefore, deciding whether a provider type could have participated in the incentive program requires making assumptions about the primary healthcare organization. For example, we are assuming that a laboratory, which is clearly not an Eligible Hospital, does not have a staff member that could have applied for an incentive as an Eligible Professional.

Table 11 – Primary Healthcare Organization for Non-Participants in the EHR Incentive Programs

Q2. Which of the following best describes the primary healthcare organization in which you work?	% of Responses on Q2 based on Q14 response of "No"	
	Administrators (Total = 35)	Providers (Total = 239)
Behavioral Health Provider/Clinic (outpatient)	0.0%	2.1%
Critical Access Hospital	0.0%	0.4%
Dentist Office	14.3%	9.2%
Diagnostic Imaging Facility	8.6%	1.7%
Did not answer	0.0%	1.3%
Emergency Medical Services	0.0%	1.3%
Emergency Room	2.9%	2.1%
Employee Health Clinics	0.0%	0.4%
Federally Qualified Health Center (FQHC)	0.0%	0.4%
General/Acute Care Hospital	2.9%	0.8%
Home Care Provider (outpatient only)	5.7%	2.1%
Hospice Services	5.7%	1.3%
Hospital or Health Organization within a Larger Health System	0.0%	1.7%
Laboratory	2.9%	10.9%
Physical Medicine and Rehabilitation Clinics	2.9%	2.1%
Primary Care Group/Independent Physician Association (Non-FQHC)	8.6%	9.6%
Private Office	34.3%	41.4%
Skilled Nursing Facility	0.0%	0.8%
Stand-alone Telehealth Provider	2.9%	0.0%
Other	8.6%	10.5%
Grand Total	**100.0%**	**100.0%**

Figure 15 – Primary Healthcare Organization for Non-Participants in the EHR Incentive Programs (Providers)

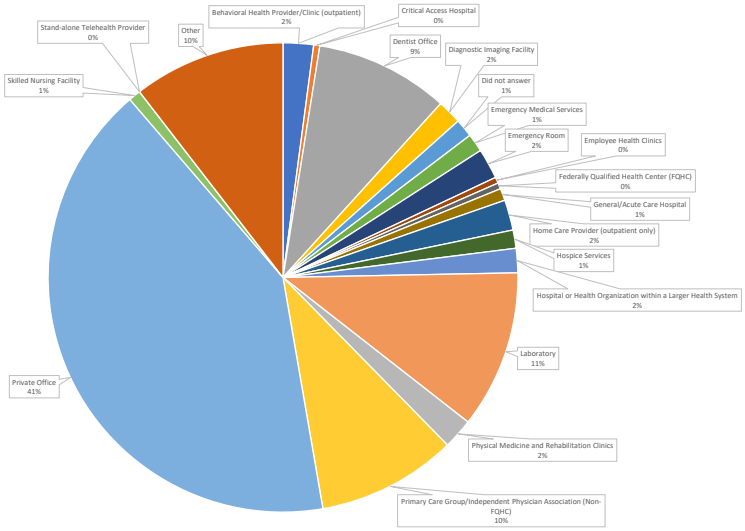
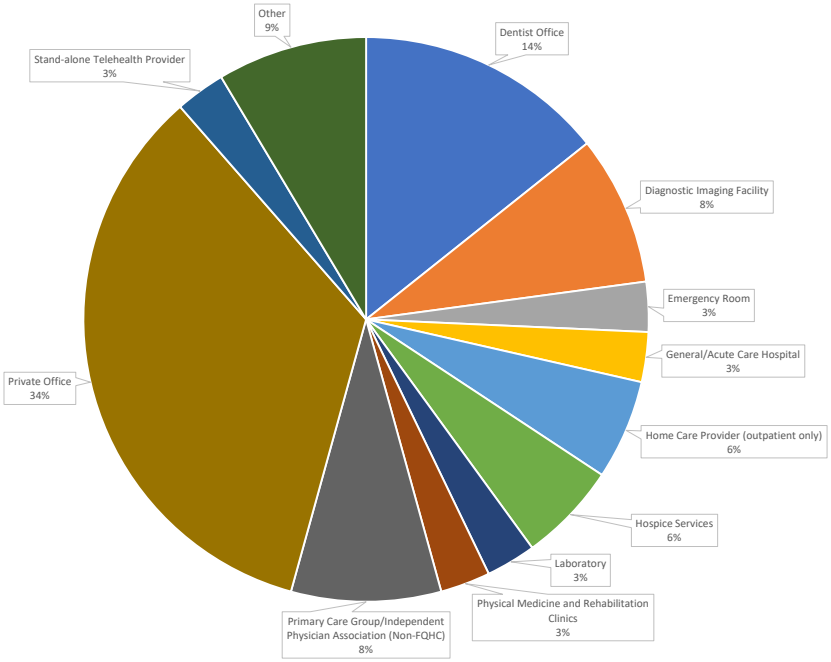


Figure 16 – Primary Healthcare Organization for Non-Participants in the EHR Incentive Programs (Administrators)



In ***Table 11***, if we only consider the primary healthcare organizations that were eligible could have applied for an incentive under the Medicare and/or Medicaid Incentive Programs (shaded in yellow), the results are shown in ***T*****able *12***, **Figure *17***, and ***F*****igure *18***.

Table 12 – Primary Healthcare Organization for Non-Participants in the EHR Incentive Programs by Participation Eligibility

Category	Administrators (Total = 35)	Providers (Total = 239)
Respondents that selected "no" in Question 2	**35** (50.0% of all respondents to Question 2)	**239** (46.2% of all respondents to Question 2)
Primary Healthcare Organizations that were eligible for an incentive out of those that selected "no" in Question 2	**24** (34.3% of all respondents to Question 2)	**183** (35.4% of all respondents to Question 2)

Figure 17 – Primary Healthcare Organization for Non-Participants in the EHR Incentive Programs by Eligibility (Providers)

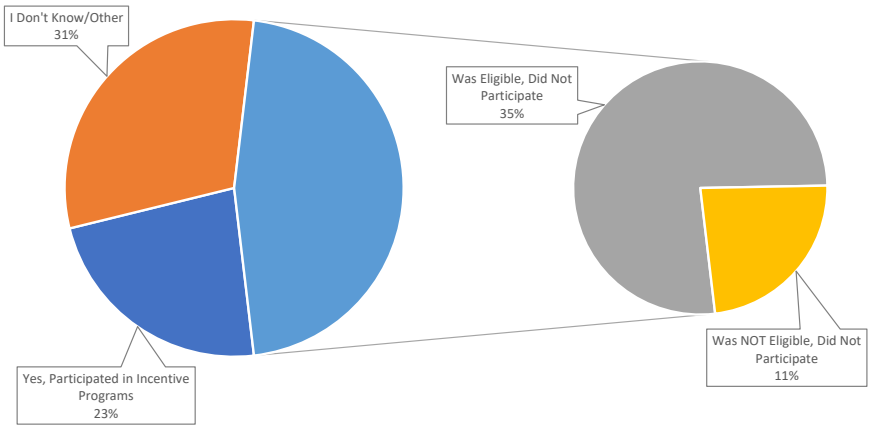


Figure 18 – Primary Healthcare Organization for Non-Participants in the EHR Incentive Programs by Eligibility (Administrators)

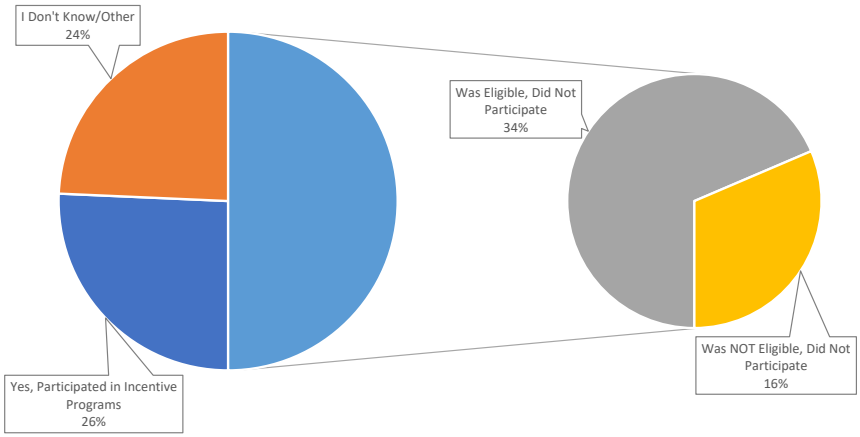
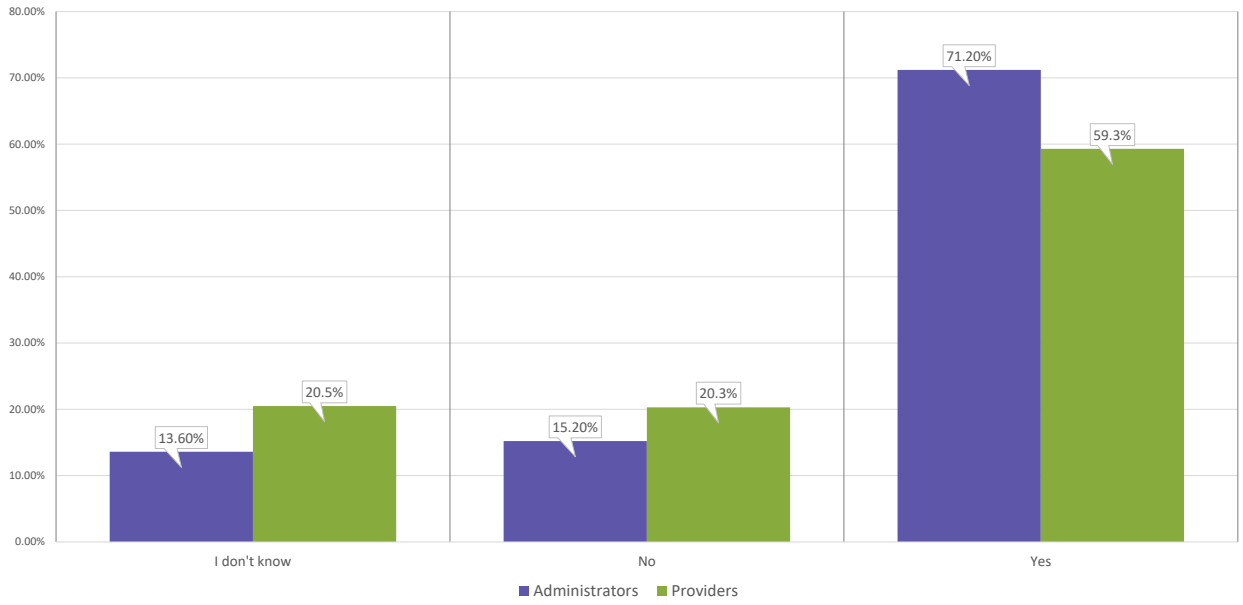


Table 12, **Figure *17***, and ***Figure 18*** sustain the conclusion that low participation levels in the incentive programs as per the responses to Question 14 are indicative of a significant missed opportunity for the healthcare ecosystem to access significant funding to facilitate EHR adoption and utilization. In fact, the overall rate or respondents that did not participate in the Medicare and/or Medicaid Incentive Programs but could have done so is significant: 35.4% of all respondents in the provider survey (Total = 183) and 34.3% of respondents in the administrator survey (Total = 24).

The following question (15) inquired about EHR adoption levels in the respondents' primary healthcare organization. The results for both surveys are presented in **Figure *19***.

Figure 19 – Question 15: Level of EHR Adoption



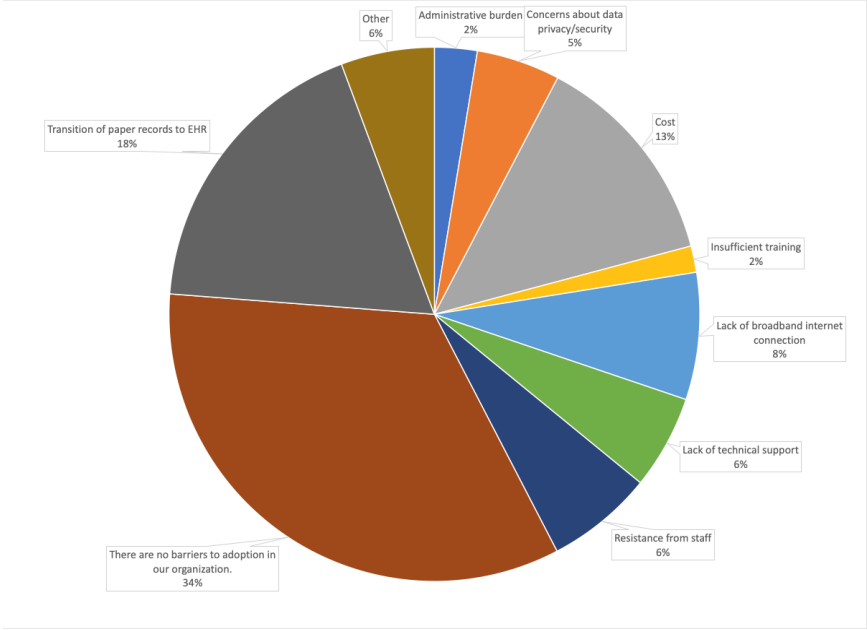
In the provider survey, 59.3% of the participants indicated that **all of the independent clinical providers in their organization regularly use EHR systems** and 20.3% indicated that **their providers do not regularly use EHR systems**. In the administrator survey, 71.2% of the participants who submitted a response replied **yes** and 15.2% replied **no**.

The responses to this question are evidence that, despite the low participation levels in the Medicare and Medicaid incentive programs, providers have implemented and invested in EHRs due to the perceived benefits. In addition, providers who have invested in EHRs have sought to implement them so that all clinical providers use the EHR. This reflects significant progress in comparison with the estimated EHR adoption in the environmental scan performed prior to the launch of the Medicaid Promoting Interoperability Program of Puerto Rico (MPIPPR). At that time, it was estimated that approximately 20% of Puerto Rico physicians has installed a certified EHR in their practice and had begun to utilize its functionalities as of March 31, 2012.

In Question 19, the survey asked participants to identify the barriers to EHR adoption and utilization in their primary healthcare organization. The results for the providers survey are presented in **Figure *20***, while the results for the provider survey are presented in **Figure *21***.

In the provider survey, 33.9% of the participants that submitted a response indicated that there are **no barriers in their organizations**, 18.1% reported **transition of paper records to EHR**, 13.2% reported that **cost is a primary barrier**, while 7.7% identified **lack of broadband connection** as a barrier.

Figure 20 – Question 19: EHR Adoption and Utilization Barriers (Providers)



In the administrators survey, 36.4% of participants indicated that there are **no barriers in their organizations**, 18.2% reported **transition of paper records to EHR**, 15.2% reported that **cost is a primary barrier**, while 12.1% identified **resistance from staff** as a barrier.

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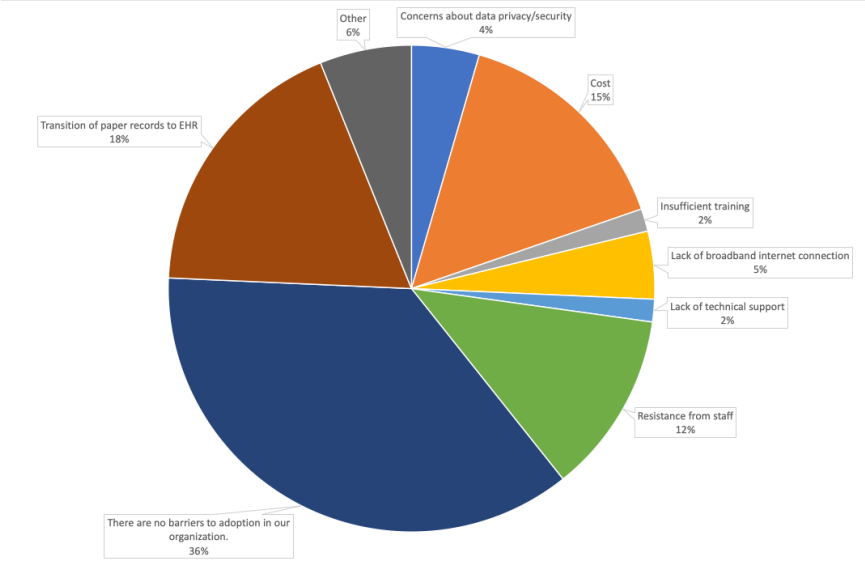
Figure 21 – Question 19: EHR Adoption and Utilization Barriers (Administrators)



The responses in the surveys are consistent from the standpoint that the two most significant barriers to adopting or fully utilizing an EHR system at the respondents' primary healthcare organization are **transition of paper records to EHR** and **cost**. The **transition to paper records** could be indicative of several potential root causes including the learning curve for the staff in fully adopting and using the EHR, that existing paper records are still used because the EHR was only recently implemented, that paper records are somehow used in clinical workflows, or that there are cultural barriers where some staff prefers to continue using paper records. The survey instrument was not designed to delve into the root causes of the barriers to adopting or fully utilizing EHRs.

In the case of the barriers related to cost, there are multiple reasons why respondents may have identified this as a factor. These include upfront costs associated with software licensing, hardware, and installation, ongoing costs associated with maintenance and support, recurring costs associated with software-as-a-service (SaaS) models, or customization and integration costs that could be related to a number of areas, for example, to interoperability initiatives.

Further research may be required to determine if Puerto Rico has reached an EHR adoption plateau at the current levels, as it has nationwide (**Figure *13***). Based on the findings of Question 19, there are a number of factors that could contribute to a plateau in EHR adoption in Puerto Rico, most notably the barriers associated with **cost**, **resistance from staff**, and **lack of broadband connection**.

5.3. Health Information Exchange (HIE) Adoption and Usage

Section 3 of both the provider and administrator surveys focused on HIE Adoption and Usage. Question 22 asked participants to identify the primary obstacles or challenges in accessing and utilizing patient data effectively within HIE systems. The results fare presented in **Table *13***, **Figure *22***, and **Figure *23***.

Table 13 – Question 22: Obstacles or Challenges in Accessing and Using Data in HIE Systems (Top 6)

Rank	Provider Survey	Administrator Survey
1	Resistance to change or reluctance among healthcare professionals to adopt new technologies (24.3%)	Limited interoperability between different health information systems (23.3%)
2	There are no barriers to adoption in our organization (19.6%)	Resistance to change or reluctance among healthcare professionals to adopt new technologies (20.0%)
3	Limited interoperability between different health information systems (18.7%)	There are no barriers to adoption in our organization (15.5%)
4	Concerns regarding patient data privacy and security (15.4%)	Technical difficulties in integrating HIE systems with existing electronic health record (EHR) systems
5	Financial constraints or inadequate funding for implementing HIE systems (6.7%)	Concerns regarding patient data privacy and security (8.3%)
6	Technical difficulties in integrating HIE systems with existing electronic health record (EHR) systems (6.2%)	Financial constraints or inadequate funding for implementing HIE systems (8.3%)

Figure 22 – Question 22: Obstacles/Challenges in Accessing/Using Data in HIE Systems (Providers)

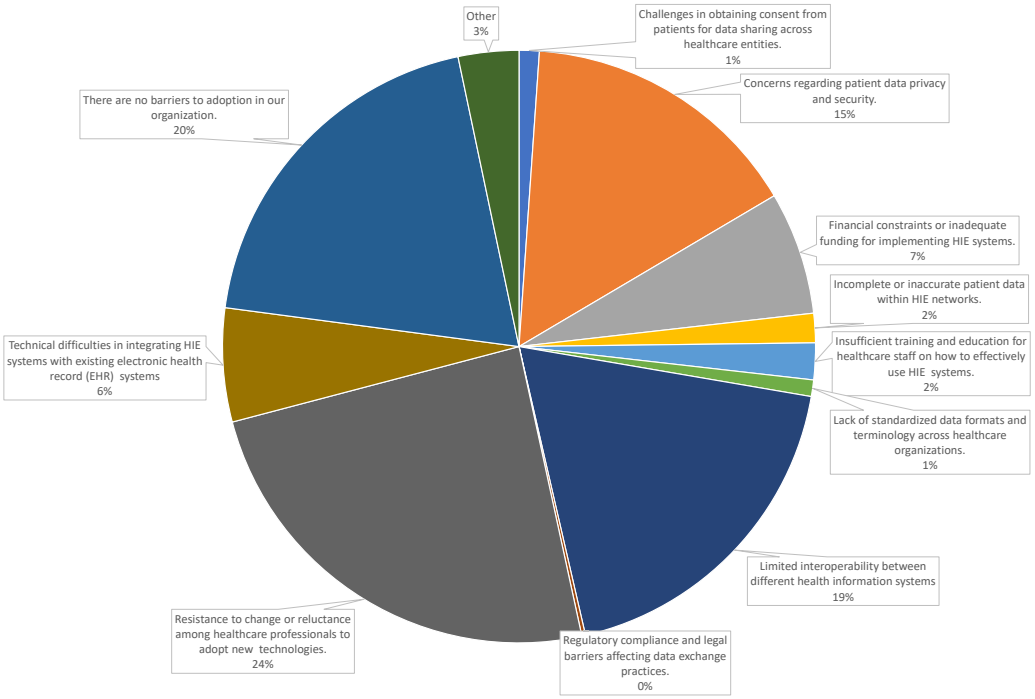
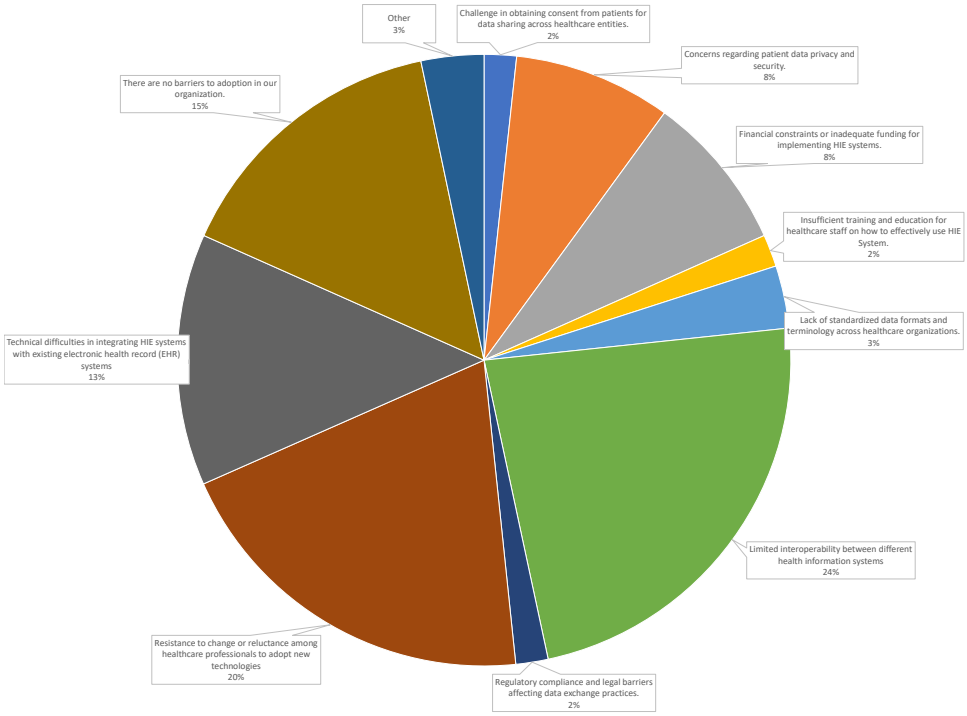


Figure 23 – Question 22: Obstacles/Challenges in Accessing/Using Data in HIE Systems (Administrators)



In **Table *13***, the top 6 answers for the provider and administrator surveys were the same, although in different orders. In the provider survey, the top two obstacles or challenges were "**Resistance to change or reluctance among healthcare professionals to adopt new technologies**" (24.3%) and "**Limited interoperability between different health information systems**" (18.7%), while in the administrator survey, they were "**Limited interoperability between different health information systems**" (23.3%) and "**Resistance to change or reluctance among healthcare professionals to adopt new technologies**" (20.3%). These results are consistent with the findings from the group interviews that supported the environmental scan's qualitative methods.

Providers can take measures to address these top barriers, independently of the availability of an HIE to support health information exchange. The resistance to change is a cultural issue that can be addressed internally by each provider organization. With regards to interoperability, it is important to remember that interoperability is a capability, not a specific feature of function. Interoperability refers to the ability of different systems and software applications to communicate, exchange data, and use the information that has been exchanged. The fact that a particular HIT infrastructure element complies with a set of standards (e.g., HL7, FHIR) is an essential foundation for interoperability. However, achieving true interoperability is a complex, ongoing process that requires significant implementation effort. In this sense, respondents that identified interoperability as a barrier may or may not be aware of the effort required to integrate, for example, an EHR with an HIE, even if their EHR complies with interoperability

standards. Therefore, in Question 22, the option "**Technical difficulties in integrating HIE systems with existing electronic health record (EHR) systems**", may be reflective of a more tangible obstacle in most provider organizations.

The other top challenges identified by respondents include "**Concerns regarding patient data privacy and security**" (15.4% in the provider survey and 8.3% in the administrator survey) and "**Financial constraints or inadequate funding for implementing HIE systems**" (6.7% in the provider survey and 8.3% in the administrator survey). In accessing and using data within HIE systems, there are a number of privacy and security issues that must be addressed, including data breaches resulting from the HIE's attack surface and potential unauthorized access, weak access controls and lack of granular patient consent, data ownership issues, and data sharing with unknown parties. These challenges can be addressed if properly identified and adequate controls are implemented. With regards to financial constraints, providers face a number of challenges including initial setup and integration costs, ongoing maintenance and support, data security and privacy compliance, training and workforce development, potential variable participation costs depending on the volume or data consumption, high switching costs from their current EHR vendors, data storage and management costs, and limited return on investment, especially for smaller provider practices. The key for providers to tackle financial challenges associated with accessing and using data effectively within HIE systems is to identify all potential costs to ensure that they can secure the necessary funding levels to successfully participate in health information exchange.

One final aspect related to Question 22 is the group of respondents that selected "**There are no barriers to adoption in our organization**" (19.6% in the provider survey and 15.5% in the administrator survey). Did the respondents select this answer because their primary healthcare organization already participates in health information exchange or because they believe their primary healthcare organization is in a state of readiness for health information exchange? In other words, did respondents select this answer based on having successfully participated in health information exchange or is it based on a perception of their primary healthcare organization's capabilities? ***Table 14*** shows how respondents that selected "**There are no barriers to adoption in our organization**" in Question 22 responded to Question 25, which asked whether the provider's primary healthcare organization currently exchanges patient health information electronically with at least one other healthcare organization.

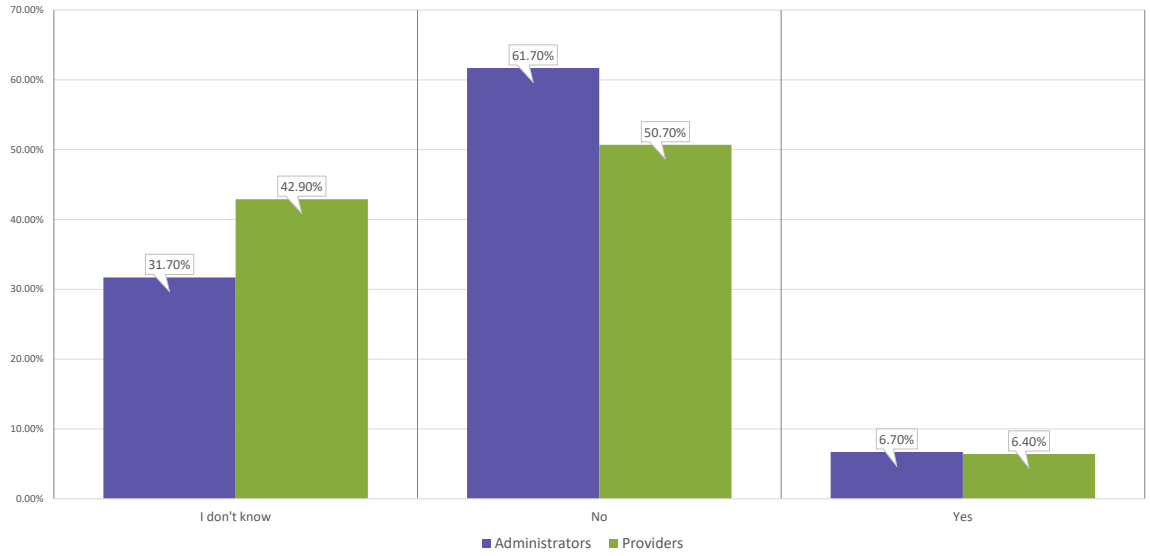
Table 14 – Current Health Information Exchange Activity Status for Participants that Responded "There are no barriers to adoption in our organization" on Question 22

Respondent's Primary Healthcare Organization Currently Exchanges Patient Health Information Electronically with at Least One Other Healthcare Organization	Responded " There are no barriers to adoption in our organization " on Question 22	
	Administrators (Total = 9)	Providers (Total = 81)
Yes	**5** (55.6%)	**16** (19.8%)
No/I don't know	**4** (44.4%)	**65** (80.2%)

Table 14 shows that providers respondents that responded **"There are no barriers to adoption in our organization"** with regards to health information exchange on Question 22 may be doing so based on their perceptions about their primary healthcare organization's capabilities rather than on successfully exchanging health information with other healthcare organizations.

Question 23 asked participants whether their primary healthcare organization is currently in the process of purchasing HIE services. The results for both surveys are presented in **Figure 24**.

Figure 24 – Question 23: Intention to Purchase HIE Services

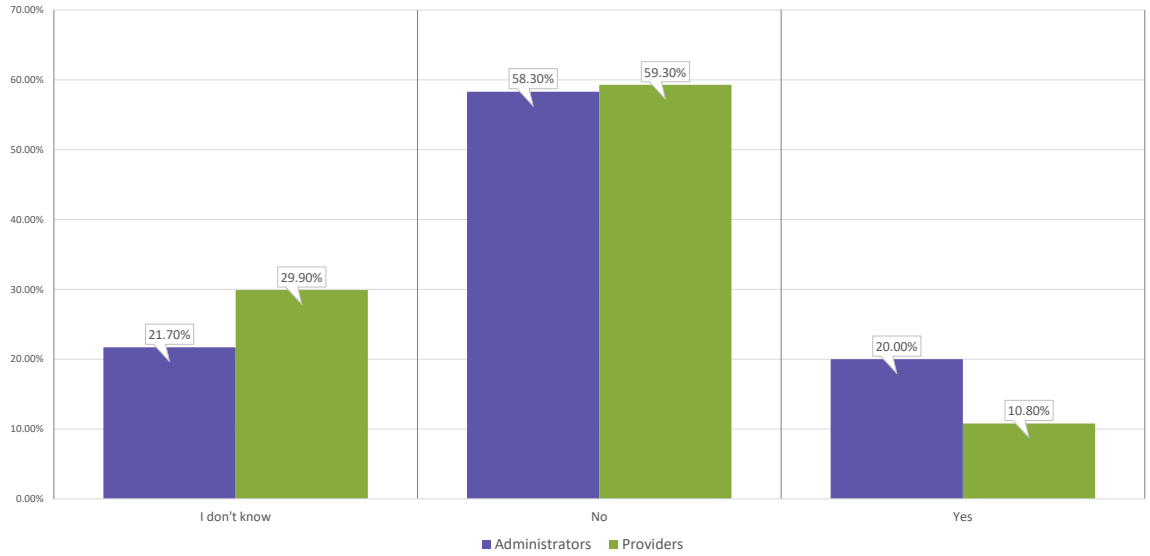


In the provider survey, 50.7% of the participants that submitted a response answered **no**, 6.4% answered **yes**, and 42.9% answered that they **did not know**. In the administrator survey, 61.7% of the participants that submitted a response answered **no**, 6.7% answered **yes**, and 31.7% answered that they **did not know**. The responses to this question are indicative of a low level of interest in purchasing HIE services. These services can be purchased through a healthcare organization's EHR vendor, since many of them offer services that may include data sharing and interoperability, Master Patient Index (MPI), secure messaging and data transmission, patient record querying and retrieval, event notifications, public health reporting, and access to regional health exchanges, among others.

The following question (24) inquired about primary healthcare provider organization participation in the Puerto Rico HIE that is managed by the PRDoH. The results for both surveys are presented in **Figure *25***.

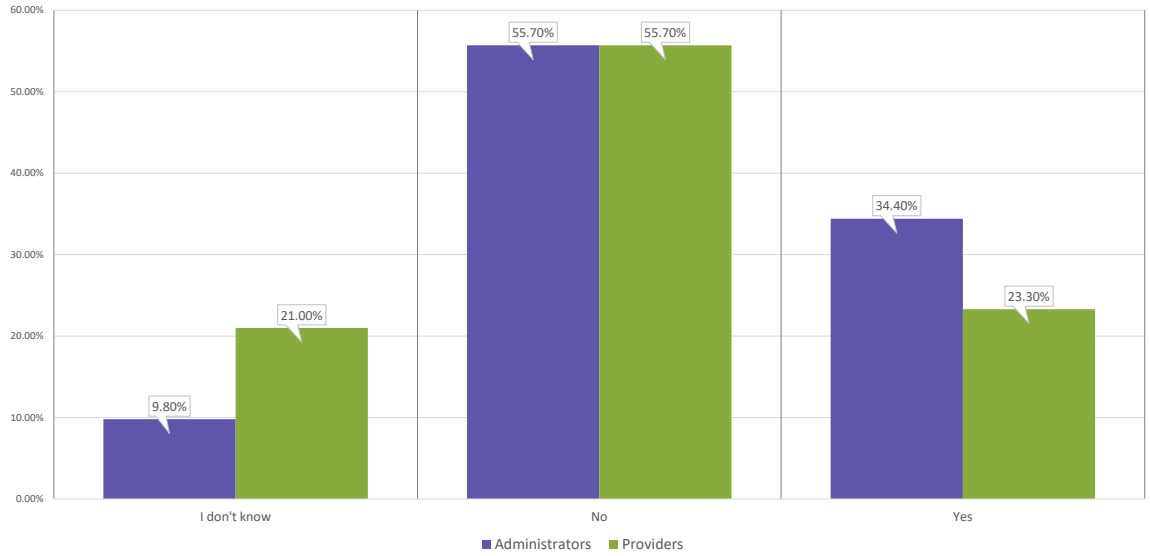
In the provider survey, 10.8% of the participants that submitted a response indicated that their primary healthcare organization uses the Puerto Rico HIE to share health records with other treating clinicians (**yes**), 59.3% replied **no**, and 29.9% **did not know**. In the administrator survey, 20.0% of the participants who submitted a response replied **yes**, 58.3% replied **no**, and 21.7% **did not know**.

Figure 25 – Question 24: Puerto Rico HIE Utilization



The following question (25) explored whether the respondents' primary healthcare organization currently exchanges patient health information electronically with at least one other healthcare organization. The results for both surveys are presented in **Figure *26***.

Figure 26 – Question 25: Level of HIE Activity



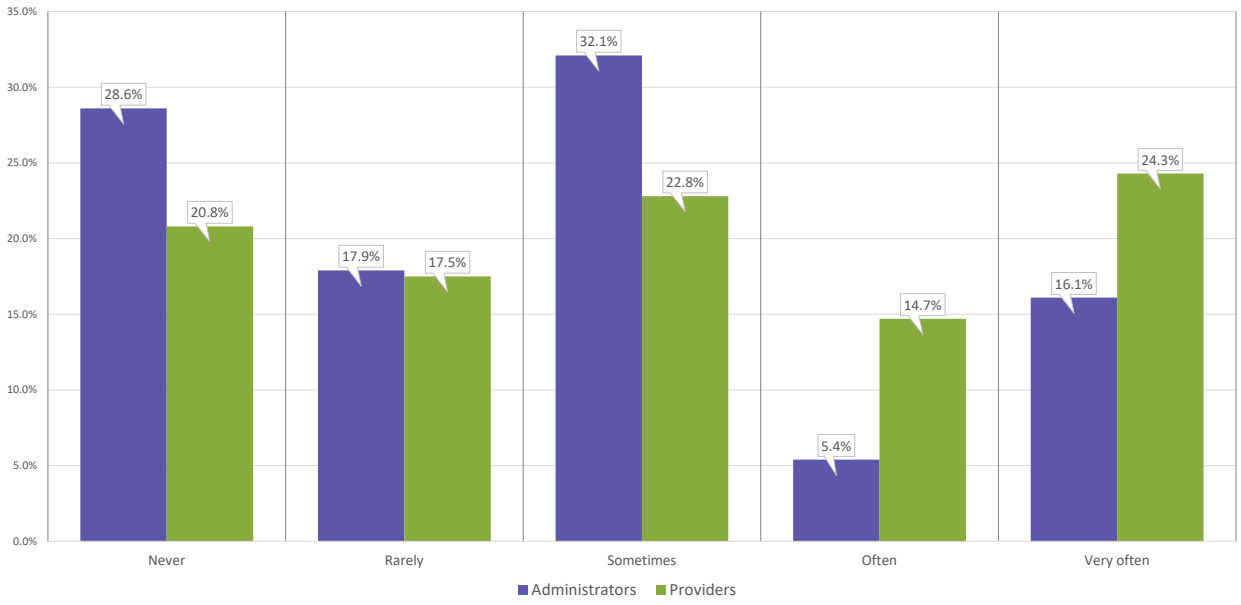
In the provider survey, 23.3% of the participants that submitted a response indicated that their primary healthcare organization currently exchanges patient health information electronically with at least one other healthcare organization (**yes**), 55.7% replied **no**, and 291.0% **did not know**. In the administrator

survey, 34.4% of the participants who submitted a response replied **yes**, 55.7% replied **no**, and 9.8% **did not know**.

Simultaneous consideration of the responses to Questions 23 through 25 seems to imply that healthcare organizations are interested in engaging in health information exchange, but that they may be waiting to onboard to the Puerto Rico HIE. This may explain the relatively low level of activity in terms of purchasing HIE services. Healthcare organizations may be waiting to onboard to the Puerto Rico HIE because it offers a more compelling alternative than an EHR vendor's HIE offering. This includes lower initial and ongoing costs, the ability to exchange health information with a larger set of Puerto Rico providers, and the possibility of achieving interoperability with a broader set of EHR vendors and HIT infrastructure. A less likely scenario is that a significant number of healthcare organizations do not perceive that there is significant value in engaging in health information exchange and are, therefore, not looking to purchase HIE services and may be indifferent to participation in the Puerto Rico HIE.

Question 26 explored the interoperability challenges that providers encounter in health information exchange and how these challenges contribute to administrative burden. The results for both surveys are presented in **Figure *27***.

Figure 27 – Question 26: Frequency of Interoperability Issues that Contribute to Administrative Burden



The results of this question cannot be easily analyzed because no single response stands out as being selected overwhelmingly over the others. Therefore, it may be useful to evaluate the responses to Question 26 in taking into consideration how providers responded to Question 25, as shown in **Figure *28*** and **Figure *29***:

Figure 28 – Correlation of Responses to Questions 25 and 26 (Providers)

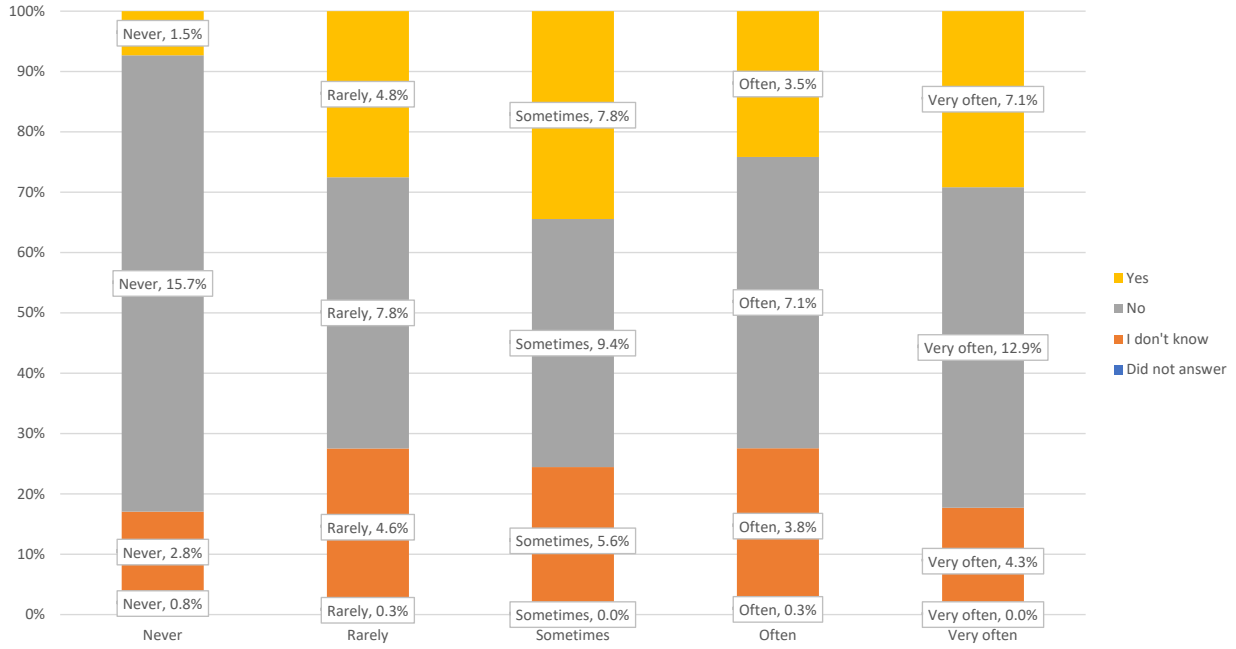
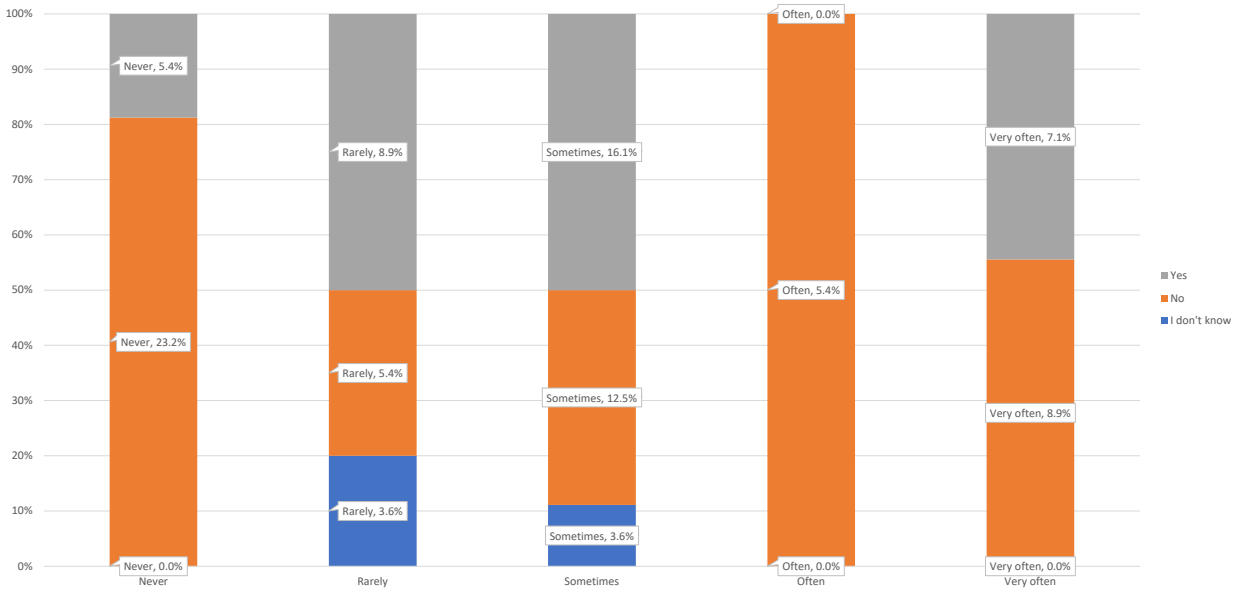


Figure 29 – Correlation of Responses to Questions 25 and 26 (Administrators)



This is a more useful way to evaluate the responses to Question 26. In the providers survey (**Figure *28***), respondents in primary healthcare organizations that participate in patient electronic health information exchange with at least have varying experiences with health information exchange. Few reported **never** (6.1% of those who responded yes on Question 25), while **rarely** (19.4%), or **sometimes** (31.6%), **often**

(14.3%), and **very often** (28.6%) were reported as frequencies in which interoperability issues contribute to administrative burden. Only 19% of those providers in primary healthcare organizations that participate in patient electronic health information exchange with at least one entity said they have interoperability issues that contribute to administrative burden **very often**.

In the administrator survey, respondents in primary healthcare organizations that participate in patient electronic health information exchange with at least one entity mostly tend to **never** (14.3% of those who responded yes on Question 25), **rarely** (23.8%), or **sometimes** (42.9%) have interoperability issues that contribute to administrative burden. Only 19% of those providers in primary healthcare organizations that participate in patient electronic health information exchange with at least one entity said they have interoperability issues that contribute to administrative burden **very often**.

The differences in the results for the provider and administrator surveys may be explainable as follows. In organizations that participate in health information exchange, providers interact with EHRs, HIT, and HIE as part of their daily activities. Therefore, providers would be keenly aware of all interoperability issues and how they impact clinical and administrative processes, whereas administrators may be aware of these issues, but may not have to deal with the consequences as often. This may contribute towards their experience and perception that interoperability issues are less frequent or less impactful in terms of administrative burden.

Question 28 explored the respondent's views on the potential risks or barriers to an electronic exchange of health information to patients and providers. The results for both surveys are presented in **Figure *30*** and **Figure *31***.

Figure 30 – Question 28: Potential Risks of Barriers to Electronic Exchange of Information to Patients and Providers(Providers)

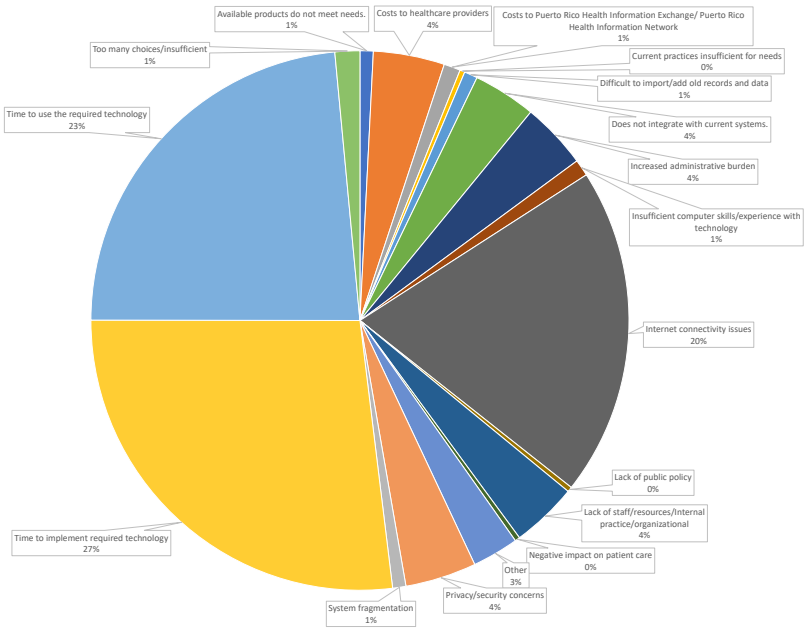
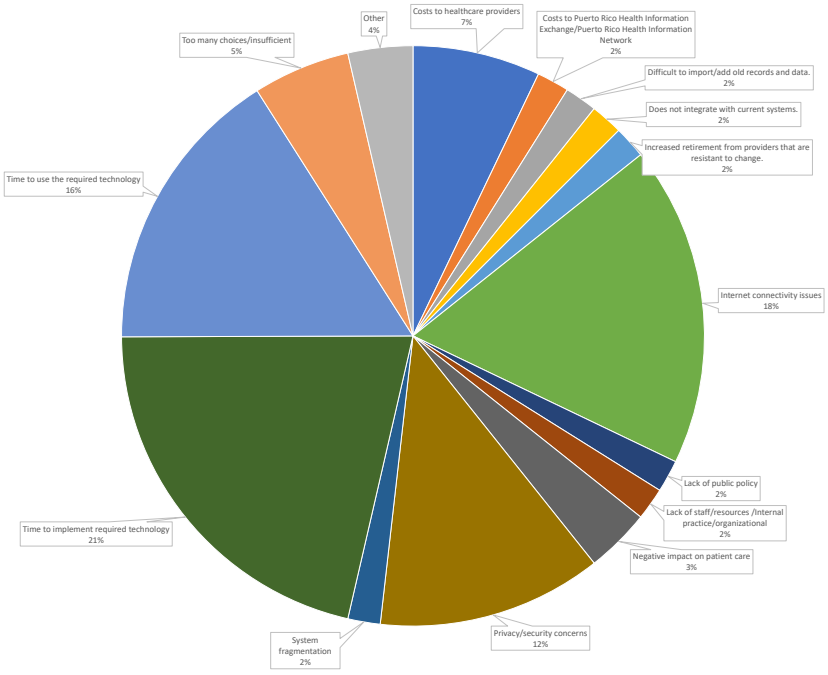


Figure 31 – Question 23: Potential Risks of Barriers to Electronic Exchange of Information to Patients and Providers(Administrators)



The top 3 responses were the same in the provider and administrator survey, but in different orders: "**Time to implement required technology**" (27.1% in the provider survey, 21.4% in the administrator survey), "**Time to use the required technology**" (23.6% in the provider survey, 16.1% in the administrator survey), and "**Internet connectivity issues**" (19.8% in the provider survey, 17.9% in the administrator survey). It is interesting to note that these options were selected by respondents and not others that were also available, including options related to costs, integration with current systems, lack of public policy, lack of staff or other resources, or privacy and security concerns. Therefore, respondents generally perceive that the primary risks or barriers related to electronic exchange of health information to patients and providers include factors that are associated with the technology components that underpin health information exchange.

5.4. Telehealth & Digital Health Adoption and Usage

Section 4 of both the provider and administrator surveys focused on Telehealth and Digital Health Adoption and Usage. In particular, Question 32 asked participants whether their primary healthcare organization currently offers telehealth services. The results for both surveys are presented in **Figure *32***.

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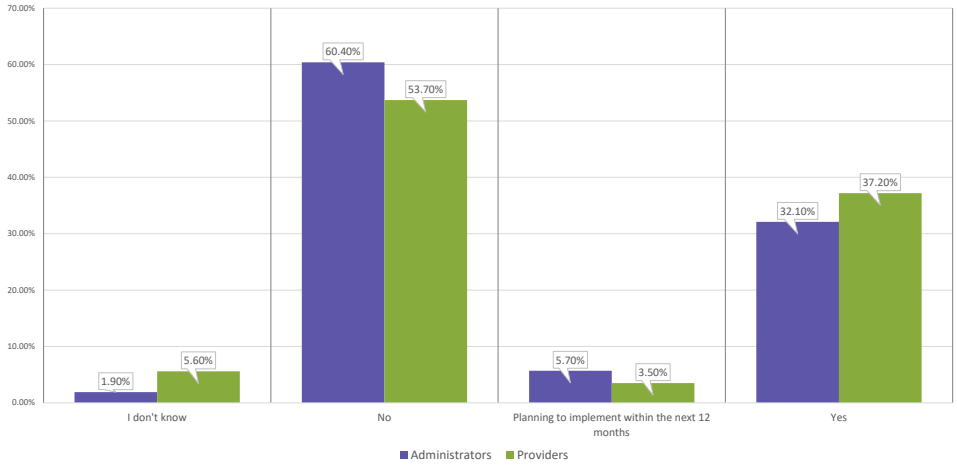
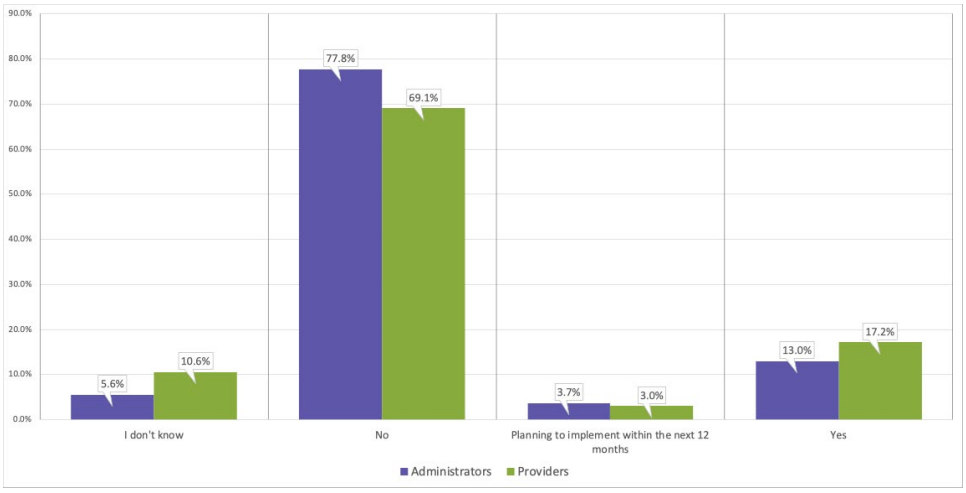
Figure 32 – Question 32: Telehealth Service Offering



In the provider survey, 37.2% of the participants indicated that their primary healthcare organization currently offers telehealth services (**yes**), 3.5% is **planning to implement in the next 12 months**, 53.7% replied **no**, and 5.6% **did not know**. In the administrator survey, 32.1% of the participants who submitted a response replied **yes**, 5.7% is **planning to implement in the next 12 months**, 60.4% replied **no**, and 1.9% **did not know**.

The following question (33) asked participants whether their primary healthcare organization currently offers remote patient monitoring services. The results for both surveys are presented in **Figure *33***.

Figure 33 – Question 33: Remote Patient Monitoring Service Offering

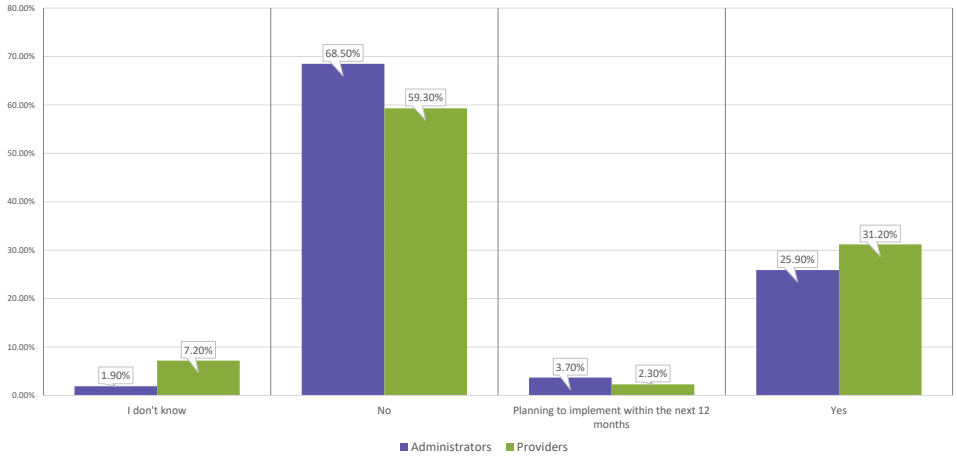


In the provider survey, 17.2% of the participants that submitted a response indicated that their primary healthcare organization currently offers remote patient monitoring services (**yes**), 3.0% is **planning to implement in the next 12 months**, 69.1% replied **no**, and 10.6% **did not know**. In the administrator survey,

13.0% of the participants who submitted a response replied **yes**, 3.7% is **planning to implement in the next 12 months**, 77.8% replied **no**, and 5.6% **did not know**.

The following question (34) asked participants whether their primary healthcare organization currently offers other digital health services. The results for both surveys are presented in **Figure *34***.

Figure 34 – Question 34: Other Digital Health Service Offerings



In the provider survey, 31.2% of the participants that submitted a response indicated that their primary healthcare organization currently offers other digital health services (**yes**), 2.3% is **planning to implement in the next 12 months**, 59.3% replied **no**, and 7.2% **did not know**. In the administrator survey, 25.9% of the participants who submitted a response replied **yes**, 3.7% is **planning to implement in the next 12 months**, 68.5% replied **no**, and 1.9% **did not know**.

The responses to the questions in Section 4 of the provide and administrator surveys point to a group of early adopters of telehealth services, with significant opportunities for further adoption. However, it is interesting to note that the intention to implement telehealth services in the next 12 months was very low. A similar scenario applies to remote patient monitoring services and other digital health services.

Question 37 explored the challenges the respondents' primary healthcare organization encountered while implementing telehealth services. The results are presented in **Table *15***, **Figure *35***, and **Figure *36***.

In both surveys, there was significant overlap in terms of the top 5 responses (**Table *15***). In the provider survey, the top response was "**Provider and clinical staff resistance**" (19.1%), while in the administrator survey, it was "**Patient resistance or lack of awareness**" (18.8%), which was also the third most selected response in the provider survey (15.5%). Additional challenges identified by respondents in the provider survey were "**Reimbursement/Payment issues**" (12.7% and "**Other**" (12.4%). In the administrator survey, additional challenges most often selected were "Other" (14.6%), "**Provider and clinical staff resistance**" (12.5%), and "**Connectivity issues**" (e.g., bandwidth, network stability) (8.3%).

It is important to mention that 17.4% of respondents in the provider survey and 16.7% of respondents in the administrator survey reported that "**There are no challenges to adoption in our organization**". This option may have been selected by providers whose primary healthcare organization has already implemented telehealth services or is planning to implement them in the next 12 months and believe they have an appropriate state of readiness.

Table 15 – Question 37: Challenges in Implementing Telehealth Services (Top 5)

Rank	Provider Survey	Administrator Survey
1	Provider and clinical staff resistance (19.1%)	Patient resistance or lack of awareness (18.8%)
2	There are no challenges to adoption in our organization (17.4%)	There are no challenges to adoption in our organization. (16.7%)
3	Patient resistance or lack of awareness (15.5%)	Other (14.6%)
4	Reimbursement/Payment issues (12.7%)	Provider and clinical staff resistance (12.5%)
5	Other (12.4%)	Connectivity issues (e.g., bandwidth, network stability) (8.3%)

Figure 35 – Question 37: Challenges in Implementing Telehealth Services (Providers)

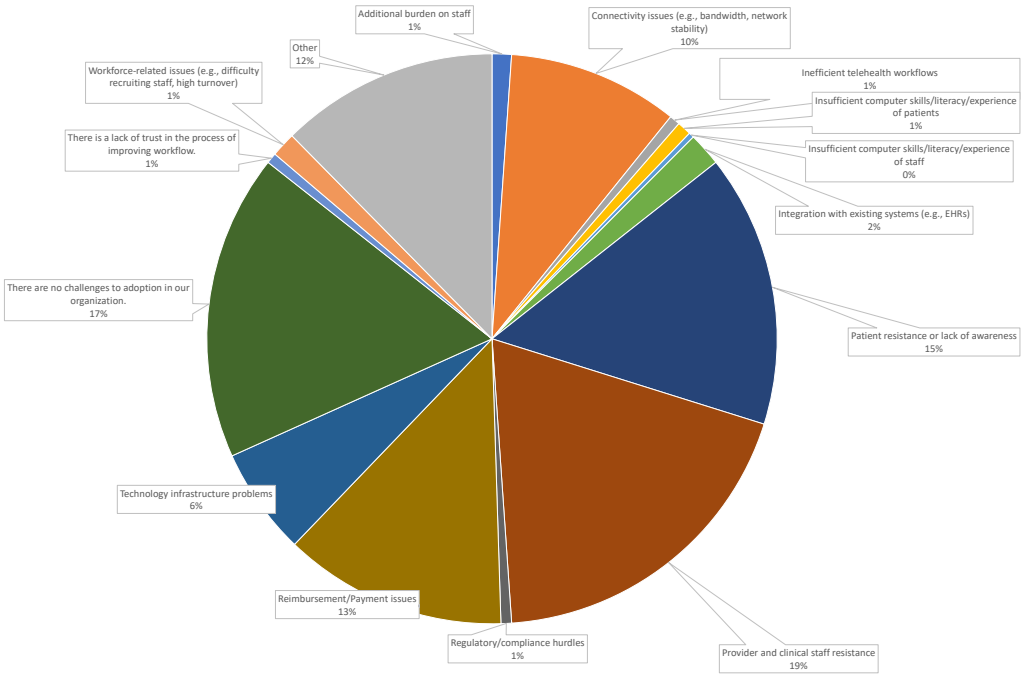
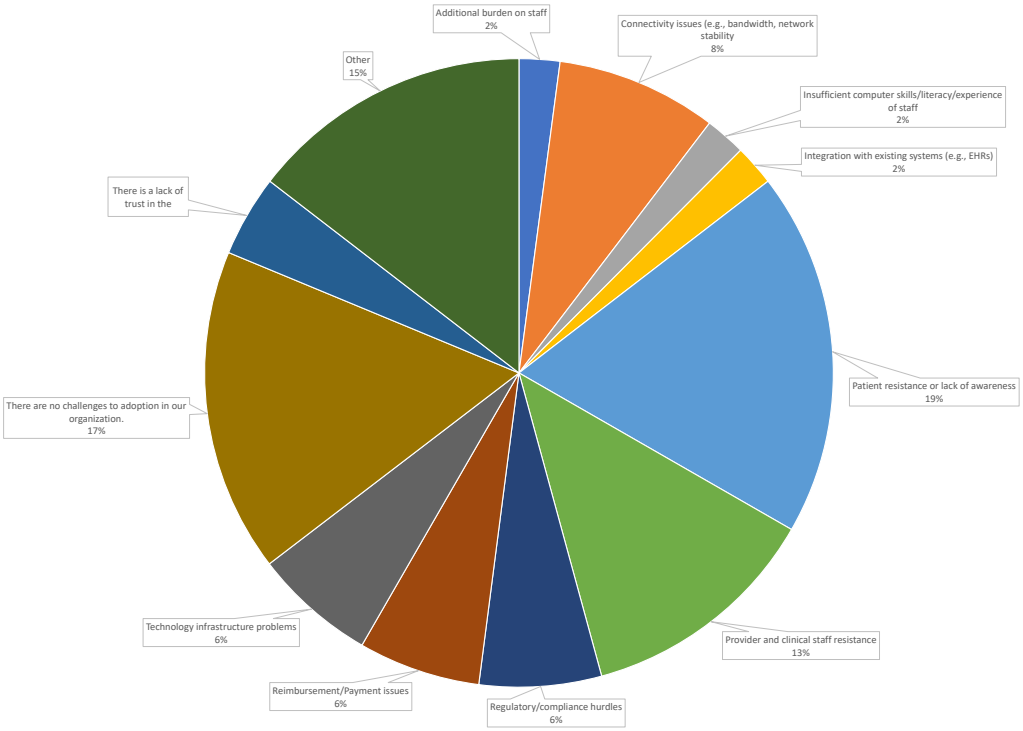


Figure 36 – Question 37: Challenges in Implementing Telehealth Services (Administrators)



Question 38 explored the key barriers preventing further adoption of telehealth/digital health at the providers' primary healthcare organization. The results are presented in **Table *15***, **Figure *35***, and **Figure *36***.

Table 16 – Question 38: Key Barriers Preventing further Adoption of Telehealth/Digital Health (Top 5)

Rank	Provider Survey	Administrator Survey
1	Security and privacy concerns (15.7%)	Security and privacy concerns (25.5%)
2	Financial constraints (14.8%)	Other (17.0%)
3	Cost of technology implementation (12.8%)	Cost of technology implementation (12.8%)
4	Other (12.5%)	Limited staff training/resources (10.6%)
5	Limited staff training/resources (10.0%)	Patient engagement or digital literacy (10.6%)

Figure 37 – Question 38: Key Barriers Preventing further Adoption of Telehealth/Digital Health (Providers)

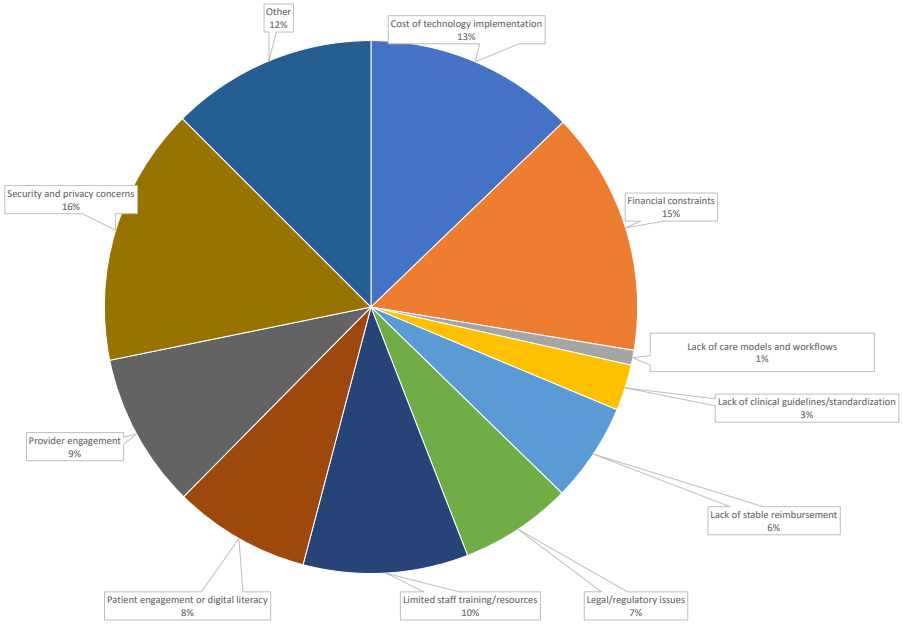
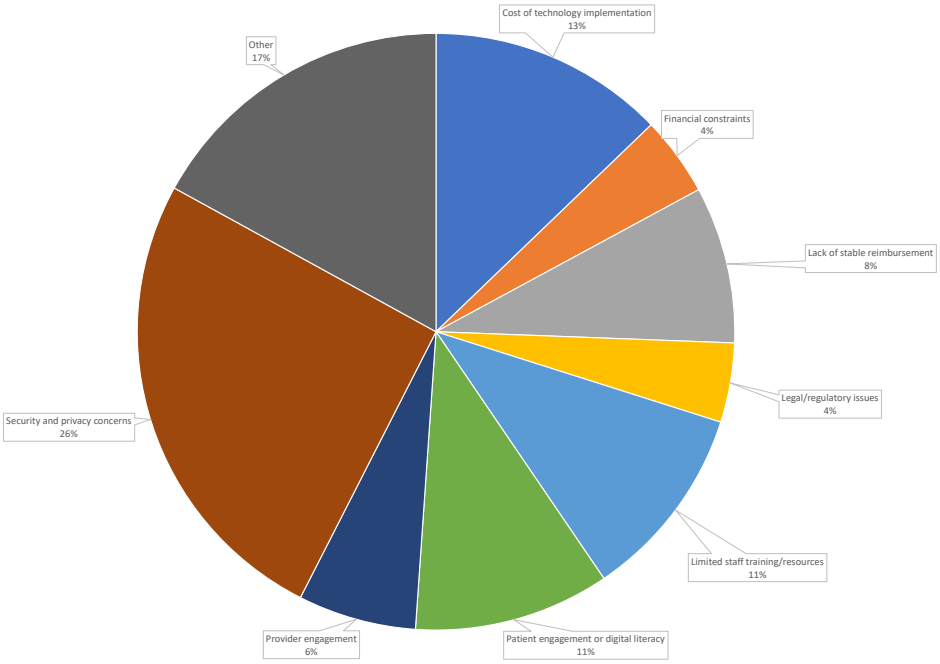


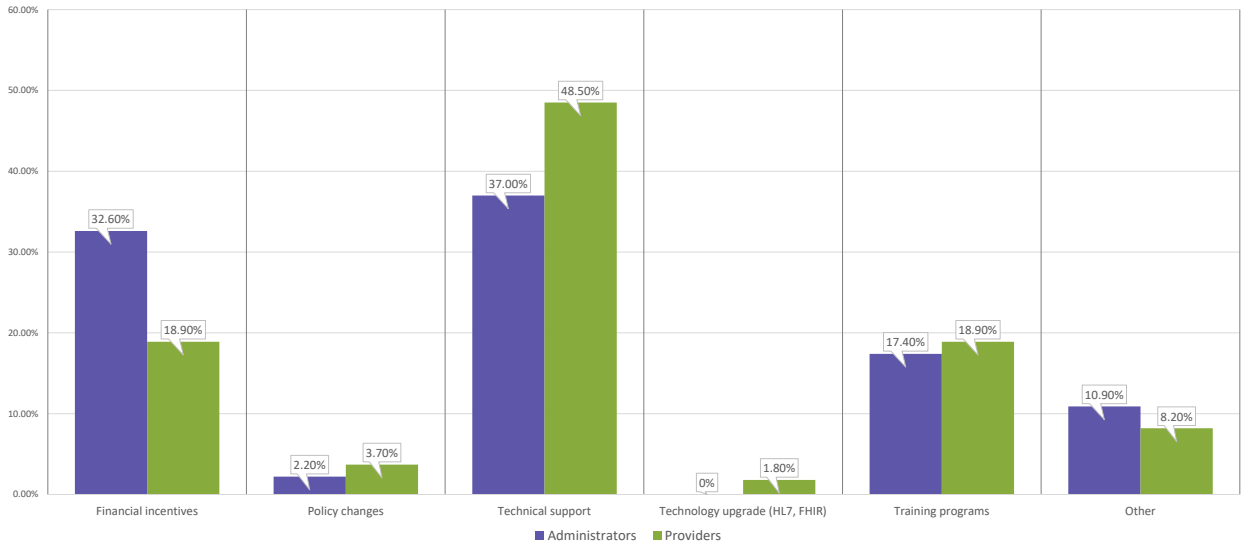
Figure 38 – Question 38: Key Barriers Preventing further Adoption of Telehealth/Digital Health (Administrators)



In both surveys, the top answer was "**Security and privacy concerns**" (15.7% in the provider survey and 25.5% in the administrator survey). In the provider survey, the next four most selected responses were "**Financial constraints**" (14.8%), "**Cost of technology implementation**" (12.8%), "**Other**" (12.5%), and "**Limited staff training/resources**" (10.0%). In the administrator, they were "**Other**", "**Cost of technology implementation**" (12.8%), "**Limited staff training/resources**" (10.6%), and "**Patient engagement or digital literacy**" (10.6%). The responses in the environmental scan surveys suggest that understanding and addressing the barriers preventing further adoption of telehealth/digital health is a complex endeavor.

Question 40 focused on identifying the type of support primary healthcare organizations believe are the most important in terms of overcoming the barriers to telehealth/digital health adoption. The results are presented in **Figure *39***.

Figure 39 – Question 40: Support to Overcome Telehealth/Digital Health Adoption Barriers



In both surveys, the top three answers were identical and in the same order: **Technical support** (48.5% in the provider survey and 37.0% in the administrator survey), **Financial incentives** (48.5% in the provider survey and 37.00% in the administrator survey), and **Training programs** (18.9% in the provider survey and 17.4% in the administrator survey). These responses are generally consistent with Question 38, where the key barriers identified by providers were "**Security and privacy concerns**" (Addressable through technical support and training programs), "**Financial constraints**" (addressable by financial incentives), "**Cost of technology implementation**" (addressable by financial incentives), "**Limited staff training/resources**" (addressable by training programs).

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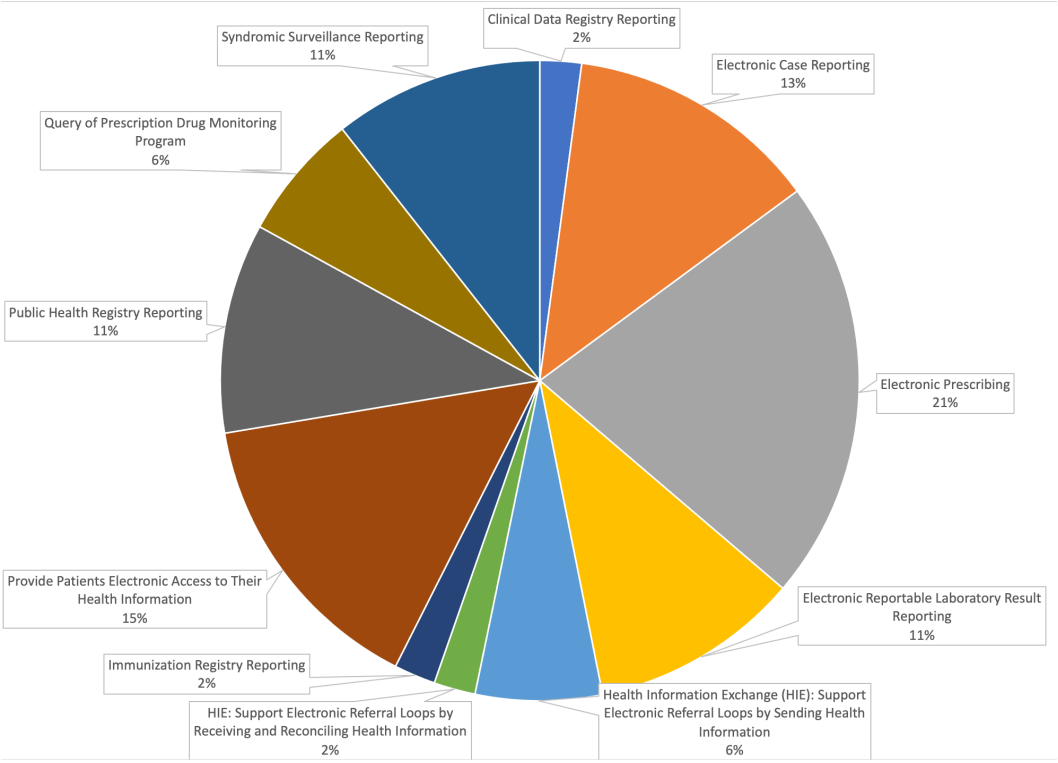
5.5. Meaningful Use

Section 5 of both the provider and administrator surveys focused on Meaningful Use[7]. In particular, Question 47 asked participants to identify the Meaningful Use activities in which their primary healthcare organization participates. The results for both surveys are presented in **Figure *40*** and ***Figure* 41**.

Figure 40 – Question 47: Meaningful Use Activities (Administrators)



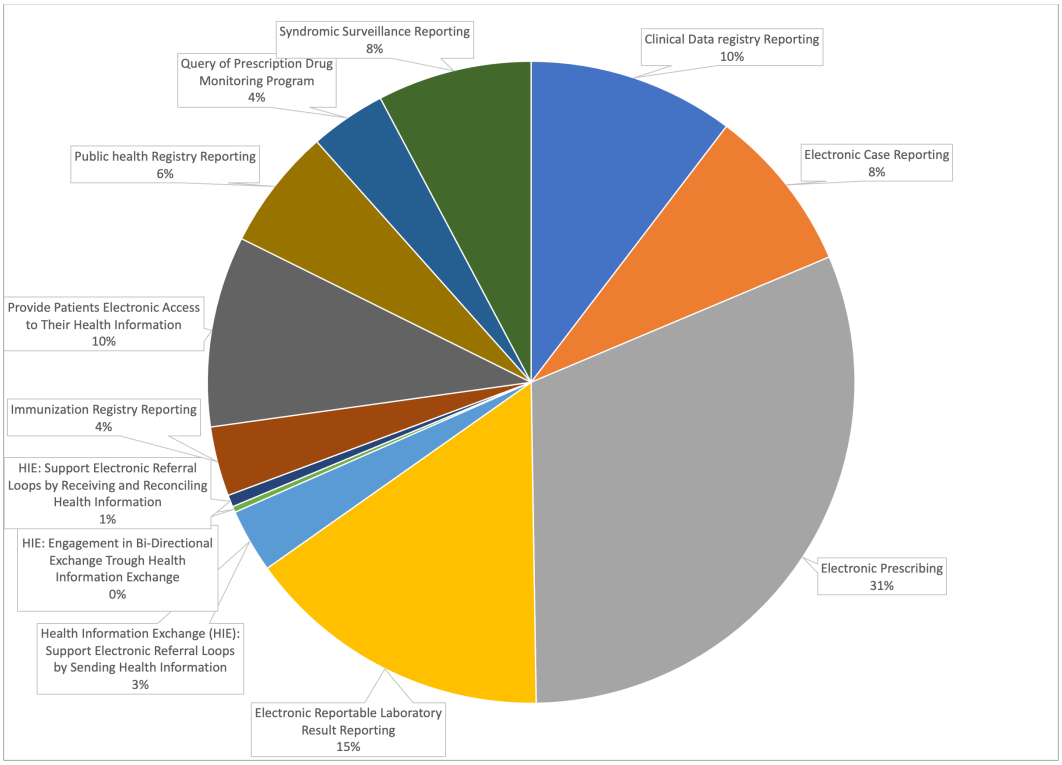
In the case of administrators, 21.3% of participants who responded to the question identified **electronic prescribing** as a Meaningful Use activity that their primary healthcare organization participate in, followed by 14.9% that provided **patients electronic access to their health information**, 12.8% that engaged in **electronic case reporting**, 10.6% that **reported electronic reportable laboratory results**, 10.6% that engaged in **public health registry reporting**, and 10.6% that engaged in **syndromic surveillance reporting**.

In the case of providers, 31.3% of participants who responded to the question identified **electronic prescribing** as a Meaningful Use activity that their primary healthcare organization participate in, followed by 15.4% that **reported electronic reportable laboratory results**, 10.3% that engaged in **clinical data**

[7] To qualify for incentive payments through the Centers for Medicare & Medicaid Services EHR Incentive Programs, eligible providers and hospitals must demonstrate meaningful use of an EHR. In other words, "meaningful use" sets the specific objectives that eligible professionals and hospitals must achieve to participate in the EHR Incentive Programs.

registry reporting, 9.6% that **provided patients electronic access to their health information**, 8.3% that engaged in **electronic case reporting**, and 7.7% that engaged in **syndromic surveillance reporting**.

Figure 41 – Question 47: Meaningful Use Activities (Providers)



The responses to this question are reflective of the current state of affairs where healthcare organizations undertake Meaningful Use activities without the benefit of widespread participation in the Puerto Rico HIE. The most common Meaningful Use activity on both surveys (electronic prescribing) is essentially dependent on an EHR vendor's capability to implement the necessary integration with SureScripts, RxNT, NewCrop, and other electronic prescribing networks. Providing patients electronic access to their health information is another Meaningful Use activity that is associated with a healthcare organization's EHR. The low participation level in other Meaningful Use activities such as clinical data registry reporting, electronic case reporting, electronic reportable laboratory result reporting, public health registry reporting, and syndromic surveillance reporting are primarily a result of the general lack of interoperability capabilities in public health registries, the low participation rate in the Puerto Rico HIE, and the use of quality reporting and analytics services that are not aligned with modern data exchange standards.

6. Qualitative Discussion

6.1. Introduction

In this section, we discuss the results and findings associated with the quantitative methods used in support of the environmental scan.

6.2. Results

6.2.1. Data coding

A total of 396 excerpts were extracted during the data coding process. A total of 73 (18%) excerpts were coded related to the adoption of HIT; 36 (9%) excerpts were related to interoperability, followed by 17 (8%) which combined HIT and interoperability.

6.2.2. Thematic analysis

Four principal themes were generated from the coded data:

- Theme 1: Adoption of HIT in Puerto Rico has been shaped by a combination of individual-, system-, and regulatory-level factors. (Coded excerpts: adopción, evolución, situación actual)
- Theme 2: HIT adoption has impacted patients, providers, and organizations (Coded excerpts: impacto)
- Theme 3: Technology adoption to optimize use of HIT and EHR varies across health care organizations throughout the island (Coded excerpts: data storage, faxes, AI)
- Theme 4: Lack of HIT exchange proficiencies is persistent and limits the interoperability across systems and providers (Coded excerpts: intercambio de información, interoperabilidad, tipos de EHR)

6.2.3. Discussion

1. Overview of HIT Adoption in Puerto Rico

The adoption of HIT in Puerto Rico, according to participants, reveals a complex landscape that varies significantly across healthcare settings. Interviews with healthcare providers highlight the differences in HIT adoption between FQHCs, hospitals, and smaller private practices. While FQHCs have generally embraced EHRs and other forms of HIT, many private practices and hospitals continue to face challenges related to cost, infrastructure, and interoperability.

Several participants described widespread use of EHRs in FQHCs, a development largely attributed to federal incentives and requirements for electronic reporting. As one participant noted, "*One hundred percent of the FQHCs have adopted electronic health records. All of them have also implemented some form of telemedicine platform.*" This points to a pattern where federally supported centers have made significant strides in adopting HIT, while other parts of the healthcare system have been slower to follow.

When it comes to hospitals, the picture appears mixed. Private hospitals, particularly those benefiting from federal programs, seem to have made more progress in adopting EHRs. However, public hospitals remain behind. One participant observed, "*Public hospitals didn't participate in the incentive programs, so they haven't really adopted electronic records. But private hospitals and FQHCs are more active in using and managing EHRs.*" This highlights a gap in adoption between public and private institutions, largely due to their differing access to resources and federal support.

A recurring issue raised by participants was the lack of interoperability between different EHR systems and with other institutions. One respondent shared, "*I want to connect with other doctors, but their system doesn't talk to mine. That's the problem we're facing.*" Another echoed this sentiment, adding, "*Our system doesn't connect with any others, even though that was the promise. Right now, we're stuck in silos.*"

This lack of interoperability also affected providers' ability to access the third round of EHR incentives, which required not just the adoption of an EHR but also the demonstration of interoperability. In Puerto Rico, efforts to establish an HIE have not been successful. As one participant explained, "*The third round of incentives requires more than just adopting an EHR—you have to show that it's interoperable. And that's where we hit a barrier. Without interoperability, many providers here couldn't meet the requirements to access that funding.*" This highlights a broader challenge: in Puerto Rico, providers are required to comply with the same requirements as in the 50 states, but the resources and reimbursement they have available to do so are less than half of what is available for their counterparts in the states.

In addition to interoperability issues, participants highlighted the significant challenges faced by smaller private practices in adopting HIT. One interviewee estimated that "*There are still easily around 3,000 doctors who don't use EHRs,*" primarily because of the costs and complexities involved. Another participant emphasized the difficulties these practices face, noting, "*Solo practices just don't have the infrastructure to adopt these technologies. It's not just about getting the system; it's about keeping it running.*"

The COVID-19 pandemic was frequently cited as a catalyst for the rapid adoption of certain technologies, particularly telemedicine. As one respondent explained, "*COVID sped up that partial acceleration. Suddenly, even those who didn't want to use technology had no choice.*" However, a lot of these telemedicine visits were provided on voice only calls. This suggests that while the pandemic pushed some providers to adopt HIT faster than they otherwise might have, broader challenges still remain, particularly for those who lack the resources to fully integrate these technologies into their practices.

In summary, participants' accounts suggest that HIT adoption in Puerto Rico remains uneven and lags behind that of the mainland United States across the board. While FQHCs and private hospitals have made significant progress in implementing EHRs and other HIT systems, smaller private practices and public hospitals face more substantial barriers. These obstacles are primarily financial, technological, and structural, with many smaller organizations struggling to afford or maintain the necessary infrastructure.

A key challenge highlighted by participants is the ongoing lack of interoperability, which hampers the ability to share information and coordinate care effectively across different systems. This fragmentation limits the potential benefits of HIT, particularly in improving patient care and enabling seamless communication between providers. Without addressing these core issues, the full promise of HIT in Puerto Rico—especially in achieving a coordinated, efficient, and modern healthcare system—remains out of reach.

2. Drivers and Barriers to HIT Adoption

Participants shared a range of experiences regarding the factors that influence the adoption of HIT in Puerto Rico. They described both drivers that have motivated organizations to adopt EHRs and other HIT solutions, as well as significant barriers that have slowed the process, particularly in smaller practices and among older healthcare providers.

Drivers of HIT Adoption

One of the most commonly cited drivers of HIT adoption is the availability of federal incentives, particularly those tied to the HITECH Act and the Meaningful Use program. Several participants noted that these incentives played a critical role in pushing healthcare organizations to adopt EHRs. As one interviewee explained, "*Thanks to the incentives and the fines they were going to take away if we didn't have it, that's what really motivated people. Educating and encouraging alone wasn't enough.*" This sentiment was echoed by others, who reported that the threat of penalties, combined with financial support, made HIT adoption a necessity for many healthcare providers.

Beyond financial incentives, participants also pointed to the perceived benefits of EHRs as a key motivator. Several interviewees described how EHR systems have improved the efficiency of their practices and reduced errors, particularly in areas such as medication management and patient data tracking. One respondent highlighted the positive impact of EHRs, noting, "*The systems provide alerts for things like medication allergies. It benefits the doctor by ensuring they don't prescribe something that could harm the patient.*" This improved safety and efficiency was a recurring theme among those who had successfully implemented HIT.

Another driver that emerged from the interviews was the pressure to modernize and stay competitive. Participants indicated that adopting HIT was often seen as a way to enhance their organization's reputation and ensure they remained competitive in a healthcare landscape that is increasingly competitive. For example, one interviewee stated, "*We knew that to keep up, we had to move to a more advanced system, especially with telemedicine and all the new demands.*" This suggests that for some providers, adopting HIT was not just about meeting regulatory requirements but also about positioning themselves for future success.

Finally, the potential of newer technologies, particularly artificial intelligence AI, was also mentioned as a driver for HIT adoption. Some participants described how AI tools were able to integrate into their systems

to assist with administrative tasks. One participant explained, "*We moved to the cloud because the next step in AI development requires that all the AI tools run on the cloud, not locally.*" This shift toward AI appears to be encouraging some organizations to invest in more sophisticated HIT infrastructure.

Barriers to HIT Adoption

While there are clear drivers for adopting HIT, participants also reported significant barriers, particularly for smaller private practices. One of the most frequently mentioned challenges was the financial cost of implementing and maintaining HIT systems. Several interviewees noted that smaller practices struggled to afford the necessary infrastructure. As one participant described, "*For solo practices, it's hard to invest in these systems.*" For larger systems, the investments are significant, and in a health system where reimbursements are significantly lower than in the states, yet all costs and requirements related to HIT adoption are the same, the financial burden becomes a real strain on organizational capacity.

In addition to financial constraints, resistance to change—particularly among older healthcare providers—was frequently cited as a barrier to adoption. Several participants described how older doctors, who are more accustomed to paper records, were often reluctant to switch to digital systems. One respondent noted, "*The older doctors are the ones who resist using EHRs the most. They don't want to let go of paper.*" This resistance has made it difficult for some organizations to fully transition to HIT, particularly in smaller, independently run practices.

Another barrier mentioned by participants was the lack of digital literacy and training. Several respondents pointed out that even when EHR systems were adopted, many providers lacked the necessary skills to use them effectively. One participant explained, "*We still have a lot of doctors who don't know how to use the systems properly, and that's a big problem.*" This highlights the ongoing need for education and support to ensure that healthcare providers can fully utilize the HIT systems they adopt.

Additionally, several doctors expressed concerns about the dehumanizing effect of using computers during patient interactions. They felt that the introduction of EHRs placed a barrier between them and their patients, detracting from the quality of care. These sentiments reflect a broader skepticism among some providers who feel that the benefits of HIT, particularly EHRs, are outweighed by the disruption they cause to patient care.

Furthermore, many participants voiced disappointment that the promises of EHRs—specifically, the ability to seamlessly share information across different systems—have not been realized. One respondent remarked, "*The original promise of EHRs was that medical information would be much easier to access, and that, electronically, you could share patient records between a specialist's office, my office, and the hospital's lab. That still doesn't exist. I don't know of any hospital where it does.*" This lack of interoperability has left many healthcare providers frustrated, as they see little benefit to the systems they are required to use without the ability to easily share information with other providers.

Finally, technical challenges, including difficulties with system implementation, frequent power outages, unstable access to the internet and ongoing maintenance, were also reported as barriers to adoption. One respondent noted that their EHR system had been difficult to implement and required significant customization to meet their needs, which added to the cost and complexity of the project. Another described ongoing problems with system outages and connectivity, which have made it difficult to rely on the EHR. "*Our system goes down every day,*" one participant shared, "*and that's frustrating for both us and the patients.*" These technical issues underscore the challenges of maintaining a reliable HIT infrastructure, particularly in resource-constrained settings.

3. HIT Interoperability and Health Information Exchange (HIE)

Interoperability—the ability of different health information systems to communicate and exchange data seamlessly—emerged as a major challenge for healthcare providers in Puerto Rico. Through the interviews, participants consistently highlighted the fragmented nature of HIT systems, describing significant barriers to sharing patient information between providers, hospitals, and external systems such as laboratories. These issues with interoperability have directly impacted patient care and contributed to inefficiencies in healthcare delivery.

Challenges with Interoperability

Many participants shared their frustrations with the lack of communication between different EHR systems. Several described how, even when EHR systems were in place, they were often incompatible with those used by other healthcare providers. One respondent summarized the issue: "*I want to connect with other doctors, but their system doesn't communicate with mine. That's the problem we're facing.*" Health information exchange is meant to facilitate the sharing of patient data across different healthcare systems, yet participants reported significant barriers to implementing a fully functional HIE in Puerto Rico.

While many of the informants noted that many of their systems had made an effort for internal networks of sharing information, sharing information with other organizations was practically inexistent. This lack of interoperability means that providers struggle to access the information they need to deliver coordinated care. Physicians noted the difficulty in exchanging information with hospitals and external systems like laboratories. One respondent noted, "*The system we have is not built to connect with others, even though that was the promise.*" This isolation of data within individual systems prevents providers from having a complete picture of a patient's health, particularly when patients receive care from multiple institutions or specialists. As a result, healthcare providers must rely on patients to manually transfer information, which can lead to delays or errors in treatment.

Participants also reported that this fragmentation impacts their ability to coordinate care with specialists. As one participant explained, "*We give information to specialists when we make a referral, but that information rarely comes back to us.*" This unidirectional flow of information makes it difficult for primary care providers to follow up on their patients' treatment and ensure continuity of care. This one-way flow

of data has been a critical limitation, particularly for organizations trying to coordinate care across multiple providers. Another participant echoed this sentiment, stating, "*We get notifications when a patient is admitted or discharged from the hospital, but there's no way for us to send them the information we have.*" Without the ability to fully exchange data, providers often face gaps in critical information that could impact patient care.

Participants pointed to the lack of a unified, government-supported infrastructure for health information exchange as a major barrier. One respondent noted, "*There are individual efforts, but there's no central system in place for Puerto Rico. We have to make connections one by one.*" This decentralized approach makes it difficult to scale health information exchange across the island, particularly for smaller providers who may lack the resources to establish these connections independently.

Efforts to Improve Interoperability

Despite these challenges, participants did describe some efforts aimed at improving interoperability. There was little knowledge about the efforts carried out by the government to improve interoperability, but participants mentioned efforts being carried out within organizations, particularly through the use of cloud-based systems and the adoption of standardized data formats like HL7. Several respondents noted that moving to cloud-based systems has improved internal connectivity between clinics, allowing them to share information more easily within their own networks. One participant explained, "*Since we moved to the cloud, it's been easier for us to connect our own clinics. We can send prescriptions and other information much more smoothly now.*"

Respondents mentioned that some improvements have been made with respect to e-prescribing, immunization records and coordination with the Veterans administration. We were not able to identify any other instances of successful interoperability between providers in our interviews.

4. Impact of HIT on Patient Care and Organizational Efficiency

Participants described a range of experiences regarding how HIT, particularly EHRs, has impacted both patient care and organizational efficiency in Puerto Rico. While many highlighted improvements in access to information, patient safety, and administrative workflows, others reflected on the limitations and challenges that persist in fully integrating HIT into daily operations.

Impact on Patient Care

A key benefit of HIT mentioned by several participants was the ability to access patient information in real time, leading to faster diagnoses and treatment decisions. One participant described how EHRs have allowed them to better manage patient information, stating, "*Since we started using the EHR, it's much easier to access lab results and notes in real time. Patients appreciate getting their results faster.*" This improvement in access to information was seen as a critical step toward delivering more timely and effective care, particularly in complex cases.

Another area where participants reported positive outcomes was in patient safety, specifically through automated alerts within the EHR system. These alerts help prevent potentially harmful situations by flagging allergies, medication interactions, or other risks. One respondent reflected on this feature, noting, "*The systems provide alerts for things like medication allergies. It benefits the doctor by ensuring they don't prescribe something that could harm the patient.*" This function not only improves patient safety but also enhances the confidence of healthcare providers in managing complex treatment regimens.

Participants also pointed to improvements in communication between providers and patients, facilitated by patient portals and other HIT tools. Several interviewees described how patients can have easier access to their medical information, including lab results and clinical notes, which has enhanced transparency and patient engagement. One participant shared, "*The patients have a portal where they can access lab results, images, and even clinical notes once they're completed.*" This accessibility helps patients stay more informed about their care and encourages greater involvement in decision-making.

As noted earlier, some also flagged a dehumanizing effect that affects the therapeutic relationship. One participant stated, "*The clinical interaction, the relationship between the doctor and patient, is much more important than completing a medical record just for billing purposes. That's not good medicine.*" So, there is still much to do to ensure that technology facilitates patient encounters.

Impact on Organizational Efficiency

The introduction of HIT has also streamlined organizational processes, particularly in terms of documentation and record-keeping. Participants mentioned that EHRs have increased for some and reduced for others the time required for documentation and improved the clarity and completeness of patient records. As one participant explained, "*It used to take much longer to write notes by hand. Now, it's faster, and the notes are more complete.*"

On the other hand, some MDs explained how they were staying up late at night finishing patient progress notes. It seems that this variation can be generational but can also be subsided by voice recognition software and scribes to help document encounters with the goal of allowing healthcare providers to focus more on patient care.

Several participants also emphasized how HIT has improved coordination across departments and facilities. For example, one respondent noted, "*With the EHR, we can communicate much better between departments. We know what's happening with a patient in real time, whether it's in the emergency room, outpatient, or laboratory.*" This ability to share information quickly and efficiently has been particularly beneficial in larger healthcare settings where coordination across departments is essential to providing continuous and integrated care.

In addition to documentation and coordination, HIT has also simplified routine tasks such as appointment scheduling and prescription management. One interviewee commented, "*The system lets us manage appointments and prescriptions more easily. It saves time and reduces errors.*" On the other hand, other

providers view EHRs as a drain on their time and a greater administrative burden. This suggests variation in the way that EHRs are configured.

Limitations and Challenges

Despite these positive developments, participants also identified challenges that have arisen from the integration of HIT into their workflows. One of the main concerns was the complexity of using digital systems, particularly for providers who are less familiar with technology. As one participant explained, "*They [physicians] need more training.*" This gap in digital literacy has been a barrier to fully realizing the potential of HIT, especially in settings where older or less tech-savvy providers struggle with the transition from paper records to digital systems.

Technical issues, such as system downtime or connectivity problems, were also mentioned as ongoing challenges. Respondents described the frustrations caused by frequent outages. These interruptions not only disrupt patient care but also undermine the efficiency gains that HIT is supposed to provide. Participants emphasized the need for more reliable systems and stronger infrastructure to support the growing reliance on digital tools.

Another limitation raised by participants was the potential for over-reliance on technology, particularly when it comes to documentation. One interviewee expressed concerns about the use of copy-paste functions in EHRs, noting, "*The notes are clearer, but sometimes doctors just copy-paste, and that can lead to mistakes or outdated information.*" This suggests that while HIT can improve efficiency, it can also introduce new risks if not used thoughtfully and responsibly.

5. Future Outlook on HIT in Puerto Rico

Participants shared a range of perspectives on the future of HIT in Puerto Rico, reflecting both optimism about emerging technologies and ongoing concerns about the challenges that remain. As HIT adoption continues to evolve, participants expressed hope that new tools and innovations, such as AI and cloud-based systems, will play a role in advancing healthcare delivery. However, many also emphasized the need to address existing barriers, particularly related to interoperability, financial limitations, risks related to AI, and resistance to change.

Current Trajectory of HIT Adoption

Several participants reflected on how HIT adoption in Puerto Rico has progressed over the past decade, noting that federal incentives and programs like the HITECH Act were key in jump-starting adoption. One participant remarked, "*Thanks to the federal incentives, we've moved forward, though there's still a long way to go.*" This sentiment captures the mixed feelings among providers, who recognize the progress made but are aware of the significant work that remains to achieve widespread and effective adoption of HIT, particularly because a large segment of the health sector did not receive incentives and are still operating with paper records and faxes.

The COVID-19 pandemic was also cited as a critical factor that accelerated the adoption of certain technologies, particularly telemedicine. As one interviewee explained, "*The pandemic forced many providers to adopt telemedicine and other digital tools. Even those who didn't want to use technology had no choice.*" This shift, while initially driven by necessity, has positioned telemedicine as a more permanent fixture in healthcare delivery, although more needs to be done for it to be a mainstream access option for patients.

Despite these advances, many participants emphasized that HIT adoption is still uneven across the island. While larger healthcare organizations and FQHCs have made significant strides, smaller practices and public hospitals remain behind. One participant observed, "*There are still a lot of solo practices that haven't adopted EHRs because of the cost and complexity. It's a major barrier.*" This reflects the ongoing disparities in HIT adoption between different sectors of the healthcare system in Puerto Rico.

Future Trends in HIT

Looking ahead, many participants expressed optimism about the role that emerging technologies could play in advancing HIT in Puerto Rico. AI was frequently mentioned as a promising tool that could help providers manage large amounts of data and assist with clinical decision-making. One participant noted, "*I think AI is going to help us a lot in the future, especially with tasks like triaging patients and managing large amounts of data.*" This view highlights the potential of AI to alleviate some of the administrative and clinical burdens that providers currently face.

Cloud-based systems were also seen as a key component of the future of HIT, particularly in addressing interoperability challenges. Several participants discussed how moving to the cloud had improved internal connectivity within their organizations, and they anticipated that wider adoption of cloud solutions could help facilitate better data sharing across healthcare settings. As one interviewee explained, "*Since we moved to the cloud, it's been easier for us to connect our own clinics. I think cloud systems will be critical for improving interoperability across the island.*"

Telemedicine and remote monitoring tools were also highlighted as important trends for the future. Participants reflected on how the pandemic had demonstrated the value of these technologies and expressed hope that they would continue to evolve. One participant shared, "*Telemedicine was a lifesaver during the pandemic, and I think it will be an important part of healthcare moving forward. We just need the systems to support it.*" This suggests that while telemedicine has made significant inroads, further investment in reimbursement, planning, infrastructure and technology is needed to sustain it.

Remaining Challenges

While participants were generally optimistic about the future of HIT, many also acknowledged the challenges that remain. Interoperability was a recurring theme. Several participants emphasized that without better systems for sharing data across different platforms, the full potential of HIT would be difficult to achieve. One respondent stated, "*Without government support for interoperability, it's going*

to be difficult to really move forward." This highlights the need for stronger infrastructure and policy initiatives to ensure that different healthcare systems can communicate effectively.

Financial constraints were another challenge frequently mentioned by participants, especially in relation to smaller practices. While larger organizations may have the resources to invest in HIT, many smaller providers continue to struggle with the cost of adopting and maintaining these systems. One participant noted, "*We need more support for smaller practices. The cost is too high for many of them to make the transition to digital systems.*" This underscores the need for additional resources or incentives to ensure that HIT adoption is equitable across the healthcare system.

Resistance to change, particularly among older providers, was also cited as an ongoing barrier. Several participants described how older doctors were hesitant to adopt new technologies, preferring to stick with paper records. One interviewee observed, "*The older doctors are the ones who resist using EHRs the most. They don't want to let go of paper.*" This resistance highlights the importance of continued education and training to help providers adapt to new systems. As one informant indicated, "*It is going to take a while to implement [AI] because we need to audit how it works, right? And there is resistance. As the doctor said, the many of the physicians who are here were not born with technology in their hands. Well, if making HIE work is a risk, then implementing AI is an additional challenge.*"

Recommendations for the Future

Participants offered several recommendations for improving HIT adoption in the future. Many emphasized the need for more robust training programs to help providers, particularly those less familiar with technology, navigate the complexities of HIT. One participant suggested, "*We need better training for doctors who are less comfortable with technology. That would help a lot.*" This reflects the importance of not only providing the tools but also ensuring that providers have the skills to use them effectively.

Another recommendation was to increase government support for building stronger infrastructure, particularly in terms of interoperability. Several participants argued that without a centralized system or stronger guidelines for data sharing, the benefits of HIT would be limited. One participant explained, "*The government needs to do more to support interoperability. We need a centralized system that everyone can use.*" This highlights the need for coordinated efforts to create more integrated platforms that can facilitate seamless communication across healthcare providers.

Finally, participants stressed the importance of continued financial support for HIT adoption, particularly for smaller practices. As one respondent noted, "*Without more financial support, it's going to be hard for small practices to keep up.*" This suggests that future policies and programs should focus on ensuring that all healthcare providers, regardless of size or resources, have the opportunity to benefit from HIT.

6.2.4. Conclusion

The experiences shared by participants reveal a wide range of factors influencing the adoption of HIT in Puerto Rico. While federal incentives, perceived benefits, and the promise of new technologies like AI

have driven adoption in many settings, significant barriers remain. Financial constraints, resistance to change, lack of digital literacy, administrative burden and technical challenges all contribute to the uneven adoption of HIT across the island. The lived experiences of healthcare providers suggest that while progress is being made, additional support—particularly for smaller practices and those facing financial and technical challenges—will be needed to fully realize the potential of HIT in Puerto Rico.

The experiences shared by participants reveal that the lack of interoperability and the limited functionality of health information exchange in Puerto Rico present significant barriers to the effective use of HIT. The fragmented nature of current systems and the absence of bidirectional data exchange hinder efforts to coordinate care, both within healthcare organizations and across the broader healthcare system. While some efforts are being made to improve interoperability, particularly through cloud-based systems and new technology projects, the lived experiences of healthcare providers suggest that much more needs to be done. The development of a centralized, government-supported HIE, along with stronger infrastructure, can be critical to overcoming these barriers and ensuring that HIT can deliver its full potential for patient care across the island.

Participants' reflections on the future of HIT in Puerto Rico reveal a mix of optimism and caution. While new technologies like AI, telemedicine, and cloud-based systems offer significant potential to improve patient care and streamline operations, persistent challenges—especially related to interoperability, humanizing health, financial constraints, and resistance to change—must be addressed. The lived experiences of healthcare providers suggest that with the right support, investment, and training, HIT could continue to evolve and transform the healthcare landscape in Puerto Rico, but these efforts will require coordinated action and sustained commitment to ensure equitable and effective adoption across the system.

Participants' reflections on the impact of HIT reveal both significant improvements and persistent challenges. On one hand, HIT has enhanced patient care by improving access to real-time information, increasing patient safety through automated alerts, and facilitating better communication between providers and patients. On the other hand, the adoption of digital systems has brought challenges, particularly in terms of the complexity of technology use, human touch, system reliability, and the potential for over-reliance on digital documentation tools. Overall, the experiences shared by healthcare providers highlight the transformative potential of HIT while also emphasizing the need for continued support, training, planning and infrastructure improvements to fully realize its benefits.

7. Recommendations

7.1. Introduction

The following preliminary recommendations are intended to address the findings in the previous section and take into consideration comments and recommendations made by participants group discussions in support of the qualitative data analysis.

It is important to understand that to increase healthcare provider adoption of HIT, foster participation in health information exchange, and overcome associated barriers, policymakers need to devise a mix of strategies that address technical and organizational factors.

7.2. Increase Provider HIT Adoption

7.2.1 Education and Training

In the environmental scan survey, education and training issues were identified several as key barriers by survey respondents. In Question 19 (**Figure *20*** and **Figure *21***), **resistance from staff** was identified as a key barrier to EHR adoption and utilization. In Question 22, where obstacles and challenges in accessing and using data with HIE systems was discussed, "**Resistance to change or reluctance among healthcare professionals to adopt new technologies**" was identified as a top concern (**Figure *22***, and **Figure *23***). In that same question, a significant group of the providers and administrators that responded to the question stated that "**There are no barriers to adoption in our organization**". However, the primary healthcare organization for most of the respondents that chose this answer is currently not exchanging electronic patient data with other organizations (***Table 14***), which is evidence that more education and training is needed in this area. From this discussion, it is apparent that in order to implement a multi-tiered education and training program that directly impacts the gaps identified in this environmental scan, the most effective strategy is to leverage the efforts associated with PRDoH's re-launch of the Puerto Rico HIE. As part of the provider and healthcare organization onboarding process, PRDoH should ensure that administrators, clinicians, and technical staff are made aware of the HIT/HIE adoption process, share best practices, and offer additional education training that can be leveraged to promote that the Puerto Rico provider landscape is fully capable of effectively participating in health information exchange.

Provider feedback form the group interviews emphasized the need for more robust education and training programs to help providers. There are multiple barriers associated with education and training, including lack of digital literacy and low exposure to HIT infrastructure, among others. This points to the need for undertaking education and training initiatives as early as possible in a provider's education and training. Therefore, HIT-related education and training programs should be incorporated into medical school education, industry professional development and continued education programs, as well as HIE initiatives undertaken by the PRDoH. In particular, education and training should be coupled with outreach efforts as part of the PRDoH's current initiative to implement HIE infrastructure and jump-start health data exchange on an island-wide basis.

7.2.2 Clinical Workflow Integration and Value Proposition

Beyond education and training programs, providers need to understand how to incorporate HIT into their clinical workflows so that they can reap the associated benefits without imposing excessive burden. This was identified as a barrier in Question 19 (**Figure *20*** and **Figure *21***), **transition of paper records to EHR** was identified as a key barrier to EHR adoption and utilization. In this sense, providers need guidance that can help them make clinical workflow decisions that are the most appropriate for their practice. HIT vendors have a role in furnishing guidance on how providers can derive benefits from their investment in HIT. However, PRDoH, provider professional associations, and other stakeholders can contribute towards provider efforts to incorporate HIT into their clinical workflows by disseminating best practices. This can be accomplished through information sessions and other interactive methods where providers can learn from other providers how they successfully incorporated HIT into their clinical workflows. In addition, best practices can be gathered, curated, updated, and maintained by provider professional associations or similar stakeholders.

7.2.3. Financial Incentives and Support

As discussed by providers in the group interviews, one of the most frequently mentioned challenges in terms of HIT adoption was the financial cost of implementing and maintaining HIT systems. Financial constraints were also identified in the electronic scan survey as a barrier in several areas. In Question 22, where obstacles and challenges in accessing and using data with HIE systems was discussed, "**Financial constraints or inadequate funding for implementing HIE systems**" was identified as a top concern (**Figure *22***, and **Figure *23***). In Question38, which identified key barriers preventing further adoption of telehealth and digital health, "Cost of technology implementation" was a top concern (**Table *15***, **Figure *35***, and **Figure *36***). In Question 40, survey respondents identified **Financial incentives** as the type of support needed to overcome telehealth and digital health adoption barriers (**Figure *39***).

Based on the results of the environmental scan survey, the MPIPPR was effective in driving EHR adoption (**Figure *12***). At the same time, a significant number of providers did not take advantage of the financial incentives available through the Medicare and Medicaid Promoting Interoperability programs (***T*able *12***, **Figure *17***, and ***F*igure *18***.).

Many Puerto Rico providers need financial support, grants, or incentive programs to help offset the initial costs of HIT implementation, especially for smaller practices. Currently available federal programs (e.g., Medicare), or other performance-based initiatives, can be used to encourage adoption with adequate outreach to make eligible providers aware of the requirements and how to qualify. In addition, state-level efforts can be undertaken to fund programs for providers that, based on their provider type, may not qualify for federal financial incentive programs. It is important to ensure that any state-level program to facilitate financial incentives is primarily tied to actually participating in health information exchange activities and not simply to offset initial costs (pay for performance). Given the financial constraints that the Puerto Rico state government faces, financial incentives may take the form of tax credits.

7.3. Increase Engagement and Participation in HIE

7.3.1. Improve HIE Infrastructure Availability

Puerto Rico providers currently have few HIE infrastructure options that can facilitate data exchange with a critical mass of other island providers. Providers are usually limited to cloud-based offerings from their EHR vendor or participation in national exchanges. Neither of these options present a compelling value proposition to Puerto Rico providers taking into consideration the overall investment and resource requirements. Group interview participants pointed to the lack of a unified, government-supported infrastructure for health information exchange as a major barrier. The findings from Questions 23 through 25 of the survey (**Figure 24**, **Figure *25***, and **Figure *26***) imply that healthcare organizations are interested in engaging in health information exchange, but that they may be waiting to onboard to the Puerto Rico HIE. In this sense, PRDoH's current efforts to implement infrastructure that can facilitate data exchange among island providers holds the key to a quantum leap in HIE participation by island providers.

PRDoH has adopted an HIE roadmap that is underpinned by the following goals[8]:

1. Improve healthcare quality and safety and ease access to care
2. Increase patient engagement in achieving health and wellness
3. Gain operational efficiencies and reduce healthcare costs
4. Streamline information access to support clinical decision making
5. Enhance public health prevention, disease management, and emergency response
6. Develop systems to transparently govern health data exchange
7. Participate in national interoperability efforts
8. Advance interoperability in Puerto Rico

These goals address a major challenge for Puerto Rico providers: interoperability. This was mentioned repeatedly in the group interviews by providers as a key barriers. In Question 22, where obstacles and challenges in accessing and using data with HIE systems was discussed, "**Limited interoperability between different health information systems**" was identified as a top concern (**Figure *22***, and **Figure *23***). Once the Puerto Rico HIE can facilitate services that help providers overcome interoperability challenges, they will be eager to undertake efforts to participate in health information exchange. As evidenced by the responses to Question 27, providers and administrators already have a significant awareness level and understanding of the benefits associated with of health information exchange (**Table *43***, **Figure *68***, **Table *98***, and **Figure *123***). Therefore, a critical success factor for the Puerto Rico HIE will be to perform a needs assessment that can facilitate alignment between provider needs and Puerto Rico HIE service offerings.

[8] Puerto Rico Health Information Exchange (PRHIE) Roadmap 2023-2026, v0.1 of September 26, 2023.

7.3.2. Showcase the Benefits of HIE Participation

One of the key elements in promoting provider participation in health information exchange activities is to show how it can lead to better patient outcomes through coordinated care, reduction in duplicate testing, and more accurate diagnosis. This can be accomplished by disseminating success stories achieved by providers through HIE participation in appropriate forums such as provider professional associations, CMS meetings and seminars, or events sponsored by the PRDoH. This could be particularly attractive to providers that have risk-sharing agreements in place with payers and who would have a direct financial benefit from successfully participating in health information exchange. The PRDoH should explore incorporating provider health information exchange success stories as part of its educational, training, and outreach efforts associated with their HIE roadmap.

7.3.3. Minimize Costs and Administrative Burdens

As previously discussed, many providers see financial constraints as a barrier to further EHR adoption and are reluctant to participate in health information exchange due to cost concerns. At the same time, island providers have to deal with lower reimbursement rates than their stateside counterparts yet have to comply with the same requirements in terms of privacy and security, physician self-referrals (Stark Law), clinical compliance, patient protection (Affordable Care Act), as well as Medicare and Medicaid program participation requirements. Offering providers subsidized participation in the Puerto Rico HIE through federal and state programs or making the process less resource-intensive can reduce these barriers. At the same time, federal policymaking should take into consideration the lower reimbursement rates and how providers need to make difficult decisions with regard to ensuring compliance and investing in HIT/HIE adoption.

Appendix A - Detailed Survey Findings

Provider Survey

SECTION 1: General Information

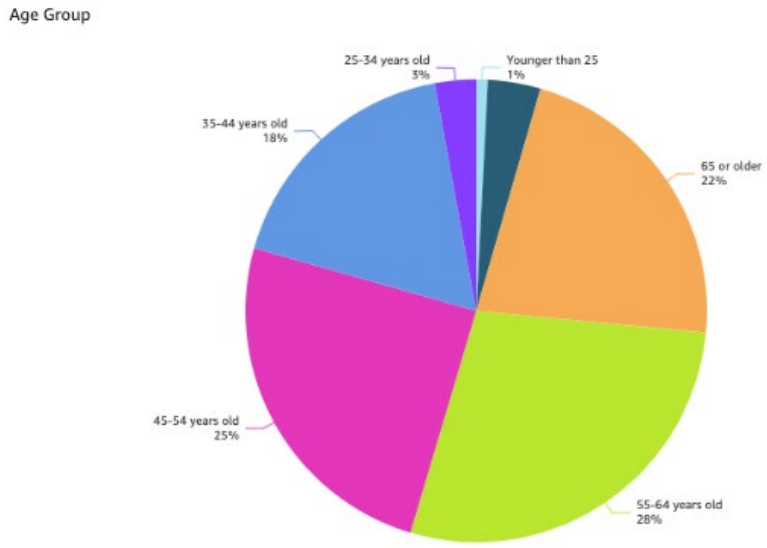
Question 1

The age group with the highest proportion of respondents (28.1%) was 55 – 64 years old. Almost three-quarters of the survey respondents (74.9%) were aged 45 years and above (**Table *17*** and **Figure *42***).

Table 17 – Provider Survey Question 1

Q1. What is your age group?	Age Group (% of all Respondents)	% of Responses (Total = 836)
Younger than 25	0.8%	0.8%
25-34 years old	2.9%	3.0%
35-44 years old	17.7%	18.4%
45-54 years old	24.8%	25.7%
55-64 years old	28.1%	29.2%
65 or older	22.0%	22.8%
Did not answer	3.7%	
Grand Total	**100.0%**	**836**

Figure 42 – Provider Survey Question 1



Question 2

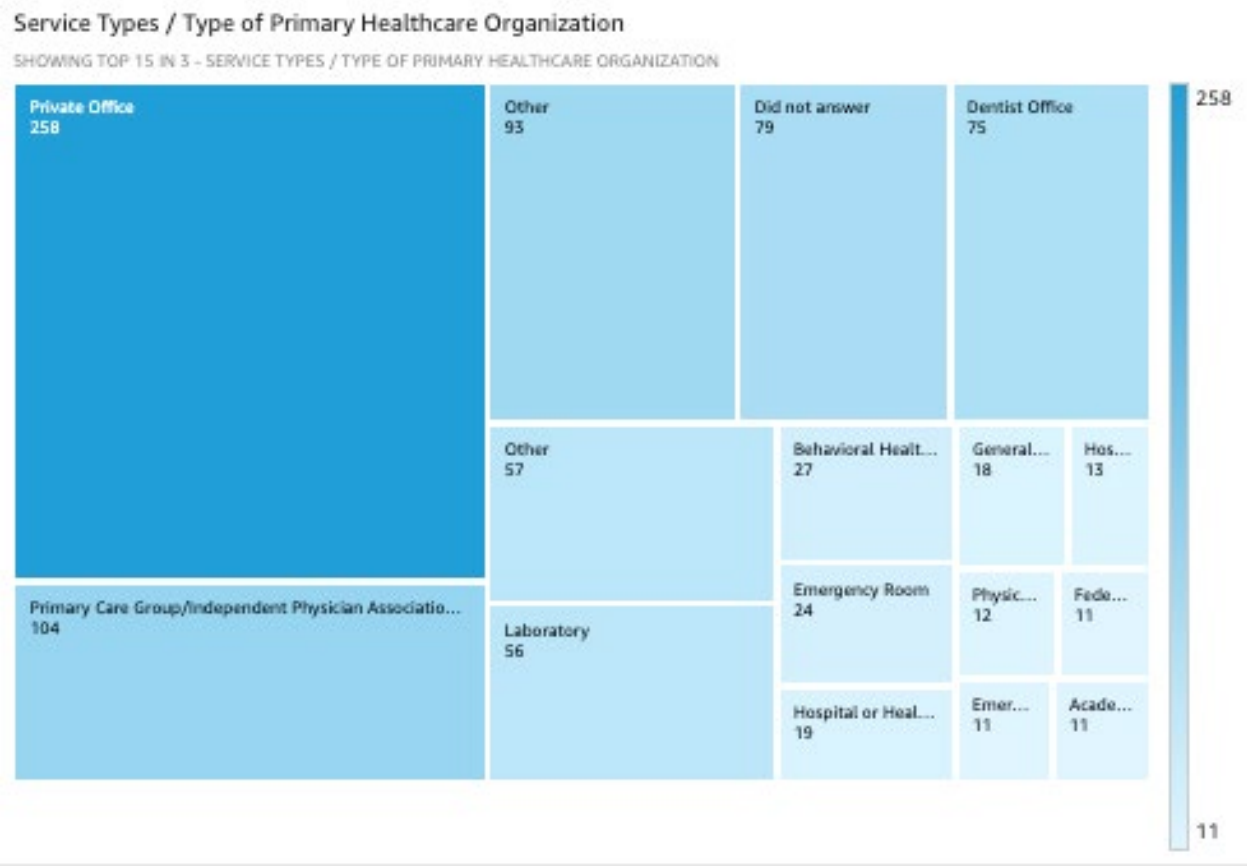
Survey respondents indicated that the top three types of primary healthcare organizations where they work the highest proportion of their time are private offices (29.7%), Primary Care Group/Independent Physician Association (Non-FQHC) (12.0%), and dentist offices (8.6%) (**Table *18*** and **Figure *43***).

Table 18 – Provider Survey Question 2

Q2. Which of the following best describes the primary healthcare organization in which you work? (Select all that apply).	Service Types / Type of Primary Healthcare Organization (% of all Respondents)	% of Responses (Total = 789)
Academic Medical Center	1.3%	1.4%
Behavioral Health Provider/Clinic (outpatient)	3.1%	3.4%
Children's Hospital	0.8%	0.9%
Critical Access Hospital	0.1%	0.1%
Dentist Office	8.6%	9.5%
Diagnostic Imaging Facility	1.2%	1.3%
Dialysis Provider/Clinic	0.6%	0.6%
Emergency Medical Services	1.3%	1.4%
Emergency Room	2.8%	3.0%
Employee Health Clinics	0.1%	0.1%
Federally Qualified Health Center (FQHC)	1.3%	1.4%
General/Acute Care Hospital	2.1%	2.3%
Home Care Provider (outpatient only)	0.7%	0.8%
Hospice Services	1.5%	1.6%
Hospital or Health Organization within a Larger Health System	2.2%	2.4%
Inpatient Rehabilitation Hospital	0.2%	0.3%
Laboratory	6.5%	7.1%
Physical Medicine and Rehabilitation Clinics	1.4%	1.5%
Primary Care Group/Independent Physician Association (Non-FQHC)	12.0%	13.2%
Private Office	29.7%	32.7%
Psychiatric Hospital (inpatient)	0.2%	0.3%
Skilled Nursing Facility	1.3%	1.4%

Q2. Which of the following best describes the primary healthcare organization in which you work? (Select all that apply).	Service Types / Type of Primary Healthcare Organization (% of all Respondents)	% of Responses (Total = 789)
Stand-alone Hospital or Health Organization	0.8%	0.9%
Stand-alone Telehealth Provider	0.1%	0.1%
Veteran's Administration Community Based Clinic (outpatient)	0.1%	0.1%
Veteran's Administration Hospital	0.3%	0.4%
Other	10.7%	11.8%
Did not answer	9.1%	
Grand Total	**100.0%**	**789**

Figure 43 – Provider Survey Question 2



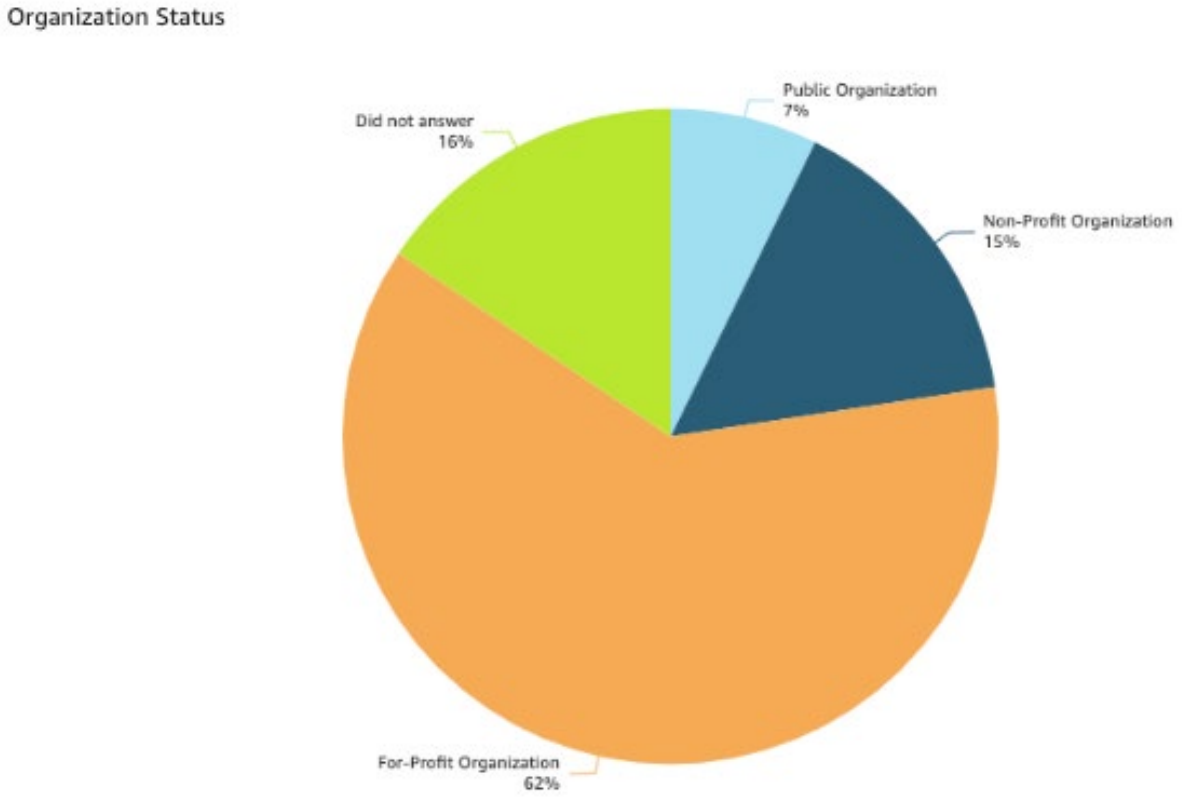
Question 3

Among the respondents, the organization status that dominated was for-profit (61.9%), followed by non-profits (15.3%), and public organizations (7.3%) (**Table *19*** and **Figure *44***).

Table 19 – Provider Survey Question 3

Q3. What is the status of your primary healthcare organization?	Organization Status (% of all Respondents)	% of Responses (Total = 733)
For-Profit Organization	61.9%	73.3%
Non-Profit Organization	15.3%	18.1%
Public Organization	7.3%	8.6%
Did not answer	15.6%	
Grand Total	**100.0%**	**733**

Figure 44 – Provider Survey Question 3



Question 4

The top three roles held by respondents in their primary healthcare organizations were Generalist (Primary Care Practice) – MD or DO (18.5%), administrator (13.2%), and Specialists (Specialty Practice) – MD or DO excluding Psychiatry (11.5%) (**Table *20*** and **Figure *45***).

Table 20 – Provider Survey Question 4

Q4. Please indicate your role within your primary healthcare organization. (Select all that apply)	Role in Organization (% of all Respondents)	% of Responses (Total = 719)
Administrator	13.2%	16.0%
Chiropractor	1.5%	1.8%
Clinical Social Worker	2.2%	2.6%
Dentist	0.3%	0.4%
Doctor of Dental Medicine	6.2%	7.5%
Doctor of Dental Surgery	3.0%	3.6%
Doctor of Optometry	2.0%	2.4%
Doctor of Podiatry	0.3%	0.4%
Doctor of Psychiatry	1.3%	1.5%
Generalist (Primary Care Practice) – MD or DO	18.5%	22.4%
IT Professional	1.0%	1.3%
Nurse Practitioner	0.5%	0.6%
Physician Assistant	0.1%	0.1%
Psychologist	6.5%	7.8%
Specialists (Specialty Practice) – MD or DO (not including Psychiatry)	11.5%	13.9%
Other	14.6%	17.7%
Did not answer	17.2%	
Grand Total	**100.0%**	**719**

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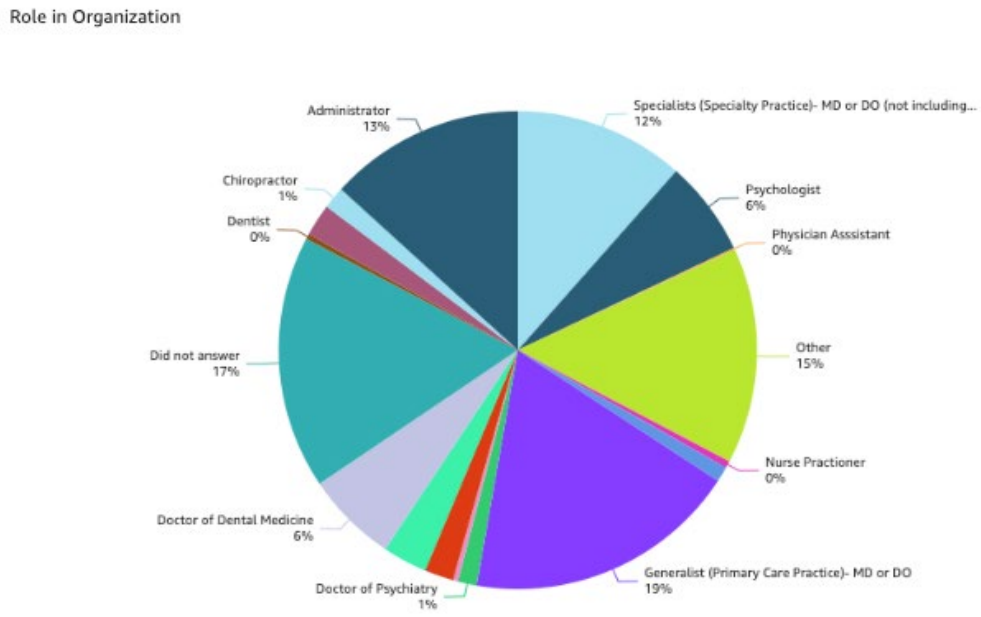
Figure 45 – Provider Survey Question 4



Question 5

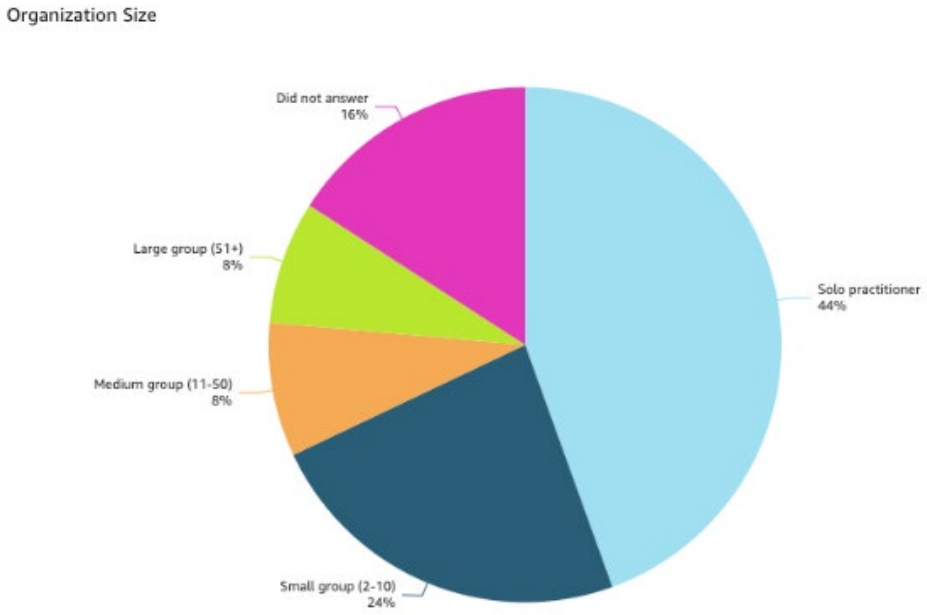
Regarding organization size, 44.5% of survey participants reported that they were solo practitioners, while 23.5% were from small (2 – 10) group practices, and 8.4% from medium (11 – 50) group practices (**Table *21*** and **Figure *46***).

Table 21 – Provider Survey Question 5

Q5. Size of your primary healthcare organization (total number of full-time equivalent independent clinical providers who currently work at your primary healthcare organization?	Organization Size (% of all Respondents)	% of Responses (Total = 730)
Large group (51+)	7.7%	9.2%
Medium group (11-50)	8.4%	10.0%
Small group (2-10)	23.5%	27.9%
Solo practitioner	44.5%	52.9%
Did not answer	15.9%	
Grand Total	**100.0%**	**730**

Note: For the purpose of this study, independent clinical providers include Generalist (Primary Care Practice MD or DO), Specialists (Specialty Practice MD or DO (not including Psychiatry)), Doctor of Psychiatry, Doctor of Podiatry, Doctor of Optometry, Doctor of Dental Surgery, Doctor of Dental Medicine, Advanced Practice Provider, Physician Assistant, Nurse Practitioner, Dentist, Psychologist, Clinical Social Worker & Chiropractor.

Figure 46 – Provider Survey Question 5



Question 6

In terms of practice location, San Juan is home to the largest proportion of respondents (12.8%), followed by Ponce (6.3%), and Bayamón (5.6%) (**Table *22*** and **Figure *47***).

Table 22 – Provider Survey Question 6

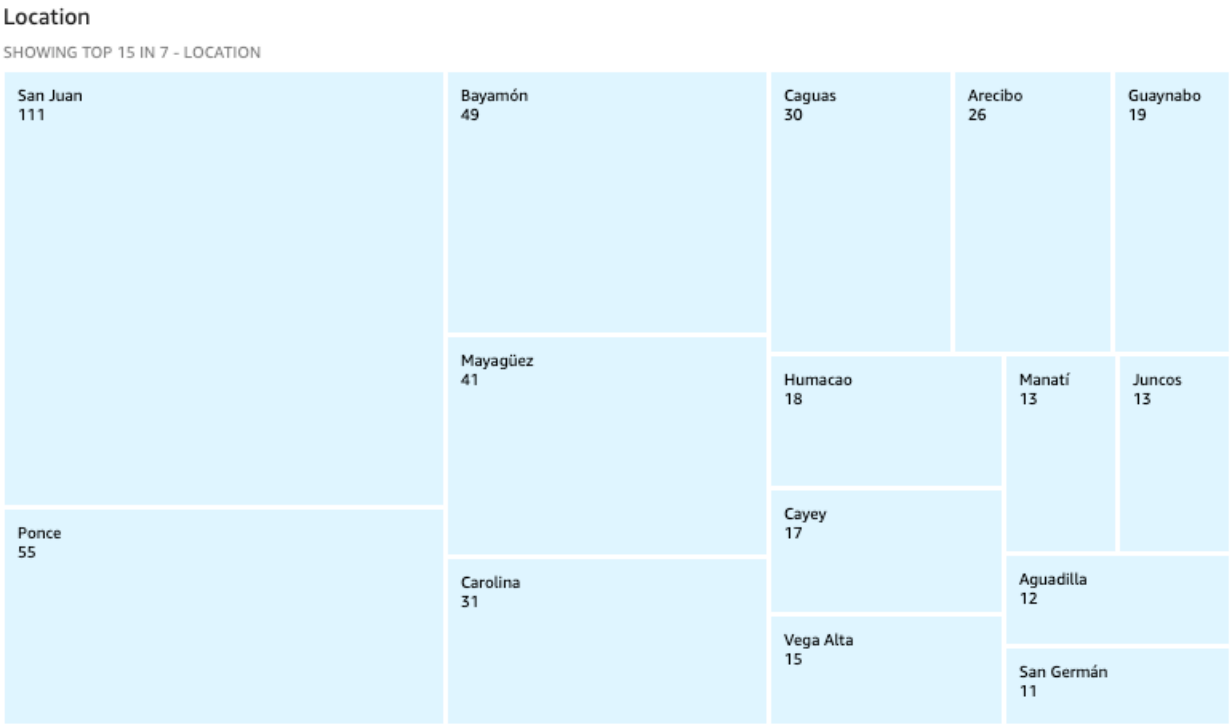
Q6. Location(s) where you practice at your primary healthcare organization (Municipality) (Select all that apply)	Location (% of all Respondents)	% of Responses (Total = 734)
Adjuntas	0.6%	0.7%
Aguada	1.0%	1.2%
Aguadilla	1.4%	1.6%
Aguas Buenas	0.5%	0.5%
Aibonito	0.6%	0.7%
Añasco	0.2%	0.3%
Arecibo	3.0%	3.5%
Arroyo	0.3%	0.4%
Barceloneta	0.8%	1.0%

Q6. Location(s) where you practice at your primary healthcare organization (Municipality) (Select all that apply)	Location (% of all Respondents)	% of Responses (Total = 734)
Barranquitas	0.8%	1.0%
Bayamón	5.6%	6.7%
Cabo Rojo	1.2%	1.4%
Caguas	3.5%	4.1%
Camuy	0.9%	1.1%
Canóvanas	0.2%	0.3%
Carolina	3.6%	4.2%
Cataño	0.2%	0.3%
Cayey	2.0%	2.3%
Ceiba	0.3%	0.4%
Ciales	0.1%	0.1%
Cidra	0.9%	1.1%
Coamo	0.6%	0.7%
Comerío	0.3%	0.4%
Corozal	1.2%	1.4%
Dorado	0.5%	0.5%
Fajardo	0.8%	1.0%
Florida	0.1%	0.1%
Guayama	1.0%	1.2%
Guayanilla	0.5%	0.5%
Guaynabo	2.2%	2.6%
Gurabo	0.3%	0.4%
Hatillo	0.2%	0.3%
Hormigueros	0.7%	0.8%
Humacao	2.1%	2.5%
Isabela	0.8%	1.0%
Jayuya	0.1%	0.1%
Juana Díaz	0.5%	0.5%
Juncos	1.5%	1.8%

Q6. Location(s) where you practice at your primary healthcare organization (Municipality) (Select all that apply)	Location (% of all Respondents)	% of Responses (Total = 734)
Lajas	0.2%	0.3%
Lares	0.5%	0.5%
Las Marías	0.1%	0.1%
Las Piedras	0.3%	0.4%
Loíza	0.3%	0.4%
Luquillo	0.2%	0.3%
Manatí	1.5%	1.8%
Maunabo	0.1%	0.1%
Mayagüez	4.7%	5.6%
Moca	1.0%	1.2%
Morovis	0.2%	0.3%
Naguabo	0.3%	0.4%
Naranjito	1.0%	1.2%
Patillas	0.3%	0.4%
Peñuelas	0.6%	0.7%
Ponce	6.3%	7.5%
Quebradillas	0.8%	1.0%
Rincón	0.6%	0.7%
Río Grande	0.5%	0.5%
Sabana Grande	0.5%	0.5%
Salinas	0.3%	0.4%
San Germán	1.3%	1.5%
San Juan	12.8%	15.1%
San Lorenzo	0.6%	0.7%
San Sebastián	1.2%	1.4%
Santa Isabel	0.6%	0.7%
Toa Alta	0.5%	0.5%
Toa Baja	1.0%	1.2%
Trujillo Alto	1.3%	1.5%

Q6. Location(s) where you practice at your primary healthcare organization (Municipality) (Select all that apply)	Location (% of all Respondents)	% of Responses (Total = 734)
Utuado	0.7%	0.8%
Vega Alta	1.7%	2.0%
Villalba	0.1%	0.1%
Yabucoa	0.3%	0.4%
Yauco	0.8%	1.0%
Did not answer	15.4%	
Grand Total	**100.0%**	**734**

Figure 47 – Provider Survey Question 6



SECTION 2: Electronic Health Record (EHR) Adoption and Usage

Question 7

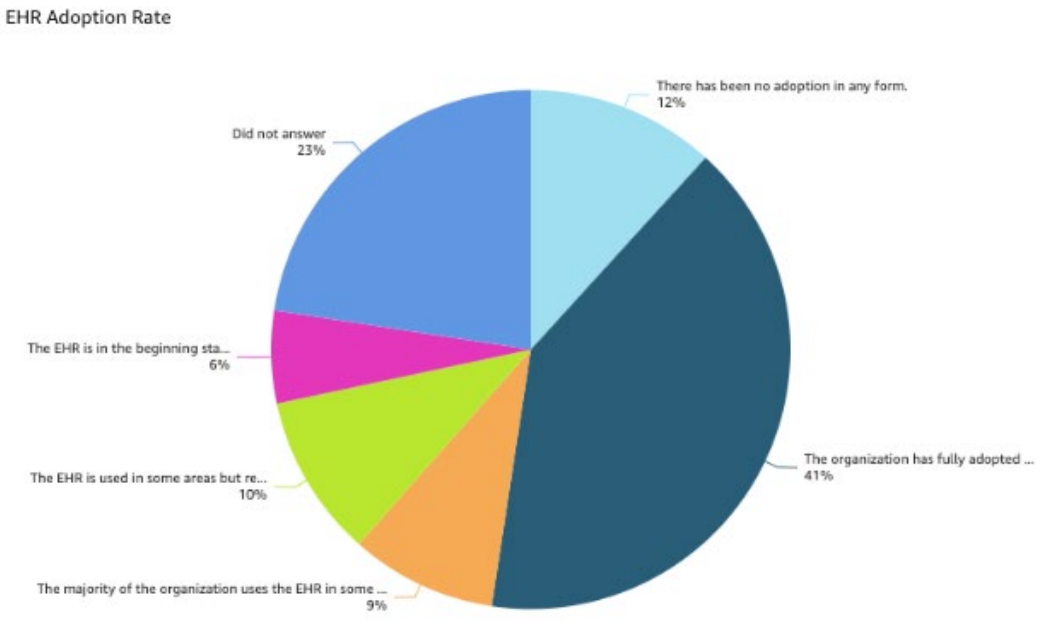
When asked about the overall adoption rate of health IT within their organization, 40.7% of respondents reported that their organization has fully adopted the EHR in all areas of clinical care and operations,

followed by 11.8%, in contrast, reporting that there has been no adoption in any form. Notably, more than one-fifth (22.6%) declined to answer the question (**Table *23*** and **Figure *48***).

Table 23 – Provider Survey Question 7

Q7. How would you describe the overall adoption rate of HIT within your primary healthcare organization? Please select one of the following options that best describes your opinion.	**EHR Adoption Rate (% of all Respondents)**	**% of Responses (Total = 672)**
The EHR is in the beginning stages of adoption.	5.8%	7.4%
The EHR is used in some areas but requires work/adoption in other places.	10.1%	13.1%
The majority of the organization uses the EHR in some capacity.	9.1%	11.8%
The organization has fully adopted the EHR in all areas of clinical care and operations.	40.7%	52.5%
There has been no adoption in any form.	11.8%	15.2%
Did not answer	22.6%	
Grand Total	**100.0%**	**672**

Figure 48 – Provider Survey Question 7



Question 8

On the importance of sharing patient data with other providers within their organizations, 44.4% are of the opinion that it is essential to share patient health data and information within their organizations, while 12.7% report that it is not critical aspect, but somewhat important, and 11.8% understand its significance. More than a quarter (28.1%) did not provide an answer (**Table *24*** and **Figure *49***).

Table 24 – Provider Survey Question 8

Q8. How important is it for you to be able to share your patient's health data and information with other healthcare providers within your primary healthcare organization? Please select one of the following options that best describes your opinion.	**Importance of sharing patient data with other providers (% of all Respondents)**	**% of Responses (Total = 624)**
Although sharing patient data and information within my organization is not my top priority, I understand its significance in providing quality healthcare	11.8%	16.3%
It is essential to share patient health data and information within my organization.	44.4%	61.7%
Sharing patient data and information within my organization is not important at all.	1.0%	1.4%
Sharing patient health data and information with others in my organization is not a priority.	2.1%	2.9%
While not a critical aspect, sharing patient data and information within my organization is still somewhat important.	12.7%	17.6%
Did not answer	28.1%	
Grand Total	**100.0%**	**624**

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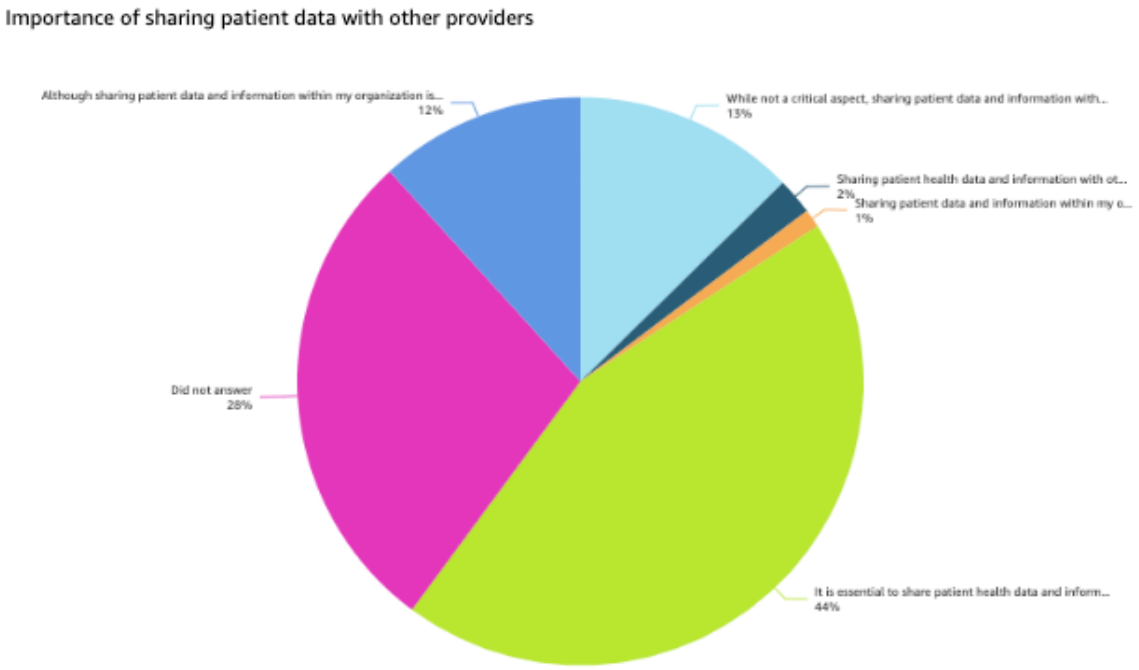
Figure 49 – Provider Survey Question 8



Question 9

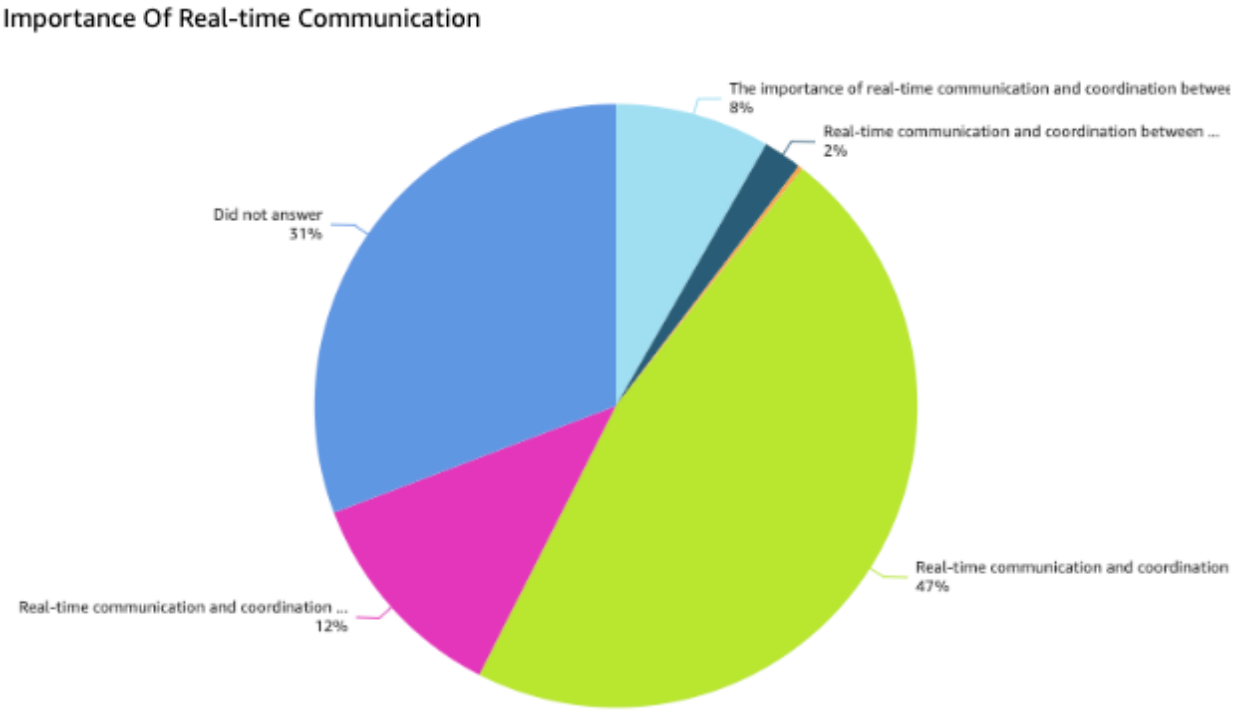
Almost half (46.9%) of respondents believe that real-time communication and coordination between healthcare providers is crucial for ensuring that patients receive the best possible care, while 11.8% believe it is an important aspect of providing high-quality care. Close to a third (30.8%) of participants declined to answer (**Table *25*** and **Figure *50***).

Table 25 – Provider Survey Question 9

Q9. How important do you think real-time communication and coordination between healthcare providers are when treating a patient? Please select one of the following options that best describes your opinion:	**Importance of real-time communication (% of all Respondents)**	**% of Responses (Total = 601)**
Real-time communication and coordination between healthcare providers is an important aspect of providing high-quality care.	11.8%	17.0%
Real-time communication and coordination between healthcare providers is crucial for ensuring that patients receive the best possible care.	46.9%	67.7%

Q9. How important do you think real-time communication and coordination between healthcare providers are when treating a patient? Please select one of the following options that best describes your opinion:	Importance of real-time communication (% of all Respondents)	% of Responses (Total = 601)
Real-time communication and coordination between healthcare providers is not necessary.	0.2%	0.3%
Real-time communication and coordination between healthcare providers may not be crucial in all cases.	2.1%	3.0%
The importance of real-time communication and coordination between healthcare providers may vary depending on the situation.	8.3%	12.0%
Did not answer	30.8%	
Grand Total	**100.0%**	**601**

Figure 50 – Provider Survey Question 9



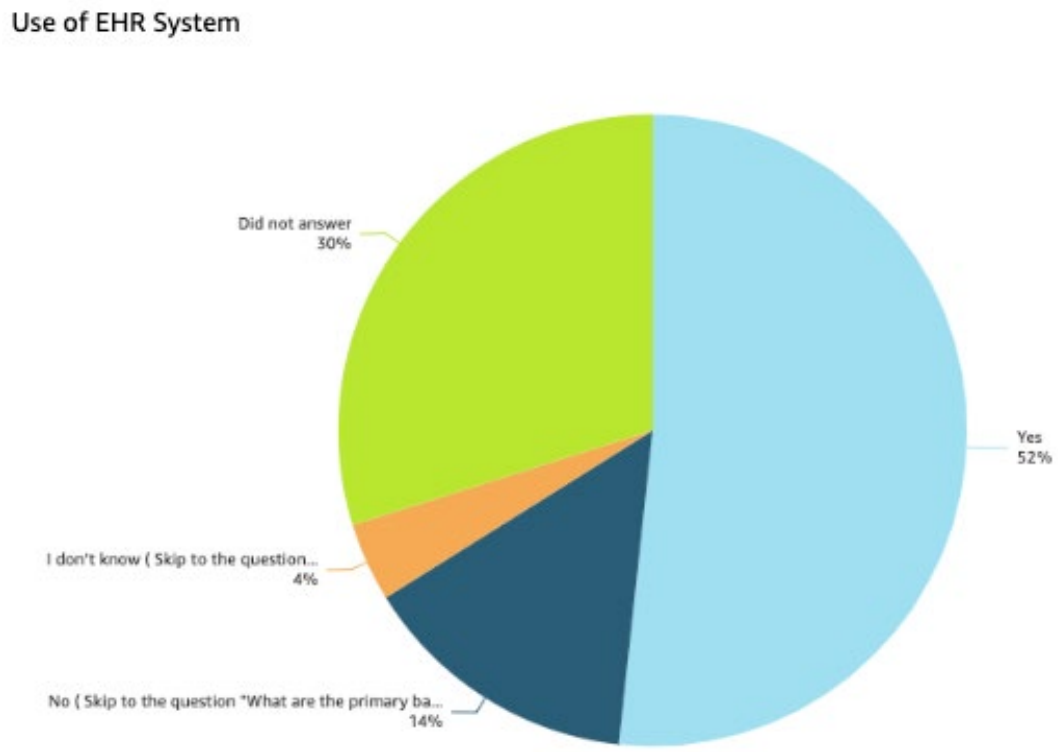
Question 10

Whether their organization currently uses an EHR system, more than half (51.7%) replied yes and 14.4% no, while 29.8% declined to answer (**Table *26*** and **Figure *51***).

Table 26 – Provider Survey Question 10

Q10. Does your primary healthcare organization currently use an Electronic Health Record (EHR) system?	Does your organization use an EHR System (% of all Respondents)	% of Responses (Total = 609)
I don't know (Skip to the question "What are the primary barriers...")	4.0%	5.7%
No (Skip to the question "What are the primary barriers...")	14.4%	20.5%
Yes	51.7%	73.7%
Did not answer	29.8%	
Grand Total	**100.0%**	**609**

Figure 51 – Provider Survey Question 10



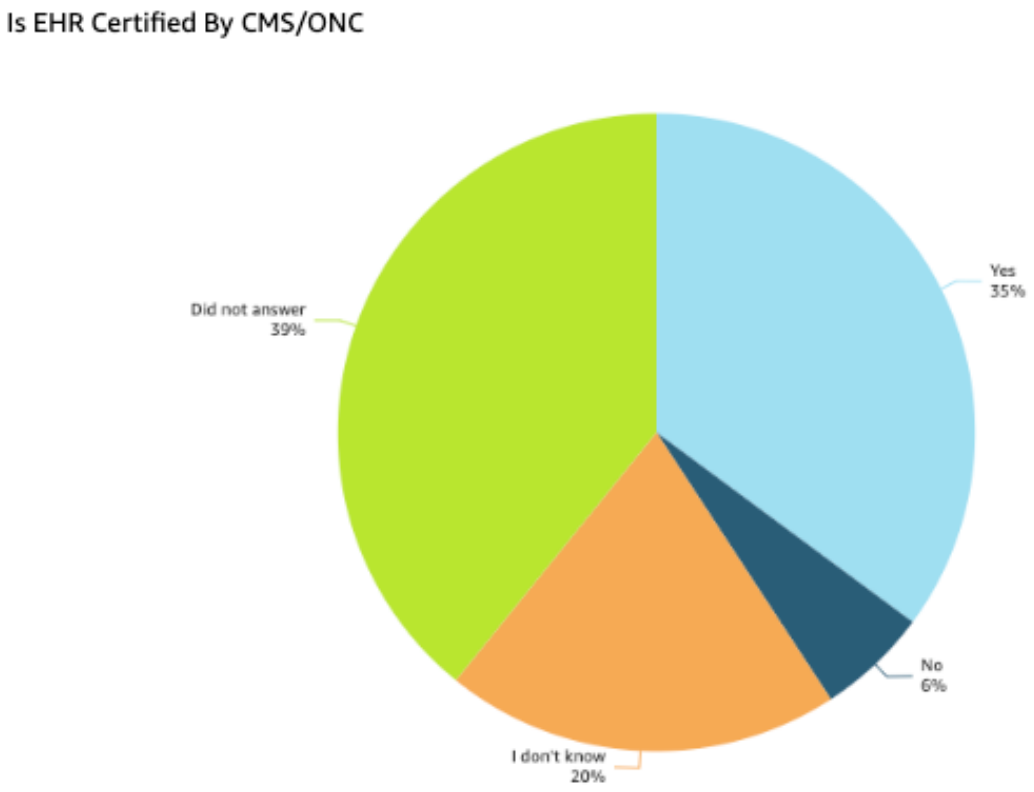
Question 11

To the question on CMS/ONC certification of their organization's EHR system, most respondents declined to answer (39.2%), 35.1% replied yes, and 5.6% replied no. A fifth indicated that they did not know (**Table *27*** and **Figure *52***).

Table 27 – Provider Survey Question 11

Q11. Is the EHR used by your primary healthcare organization currently certified by CMS/ONC?	Is EHR Certified by CMS/ONC (% of all Respondents)	% of Responses (Total = 528)
I don't know	20.0%	33.0%
No	5.6%	9.3%
Yes	35.1%	57.8%
Did not answer	39.2%	
Grand Total	**100.0%**	**528**

Figure 52 – Provider Survey Question 11



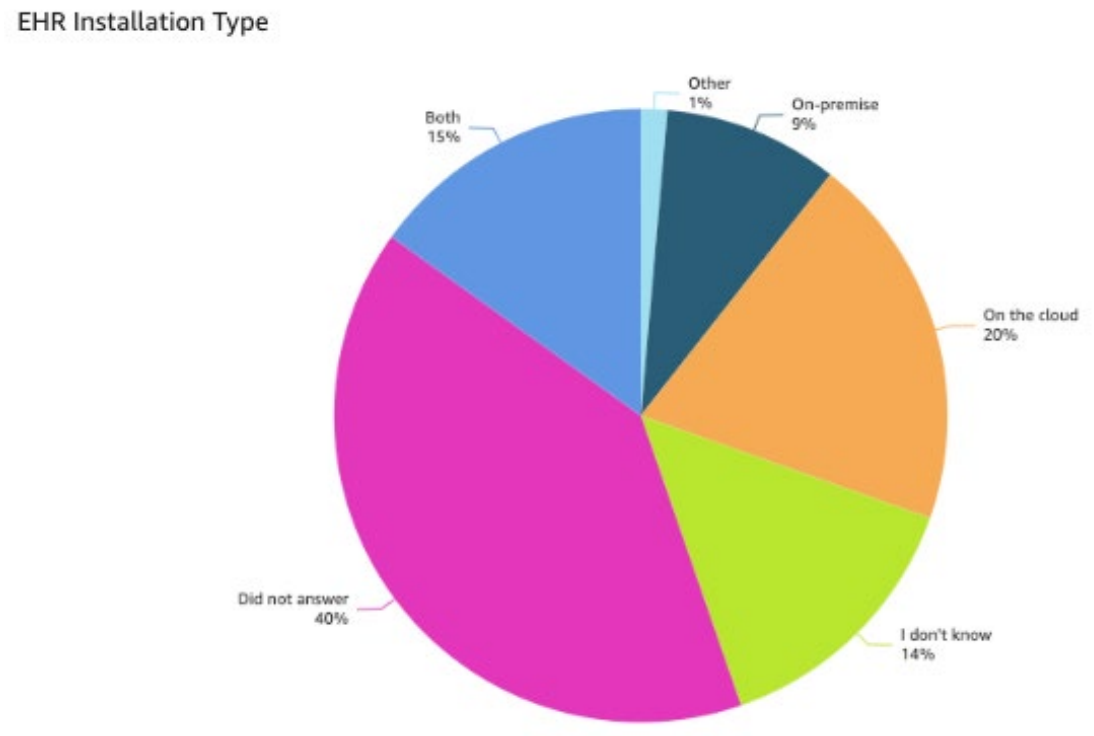
Question 12

Almost a fifth (19.8%) responded that the EHR at their primary health center is on the cloud, 15.1% indicated that their system was on both the cloud and on-premises, and 9.2% on-premises only. Notably, 40.2% did not provide an answer (**Table *28*** and **Figure *53***).

Table 28 – Provider Survey Question 12

Q12. Is the EHR at your primary health center on the cloud or on-premises?	EHR Installation Type (% of all Respondents)	% of Responses (Total = 519)
On the cloud	19.8%	33.1%
Both	15.1%	25.2%
I don't know	14.3%	23.9%
On-premises	9.2%	15.4%
Other	1.4%	2.3%
Did not answer	40.2%	
Grand Total	**100.0%**	**519**

Figure 53 – Provider Survey Question 12



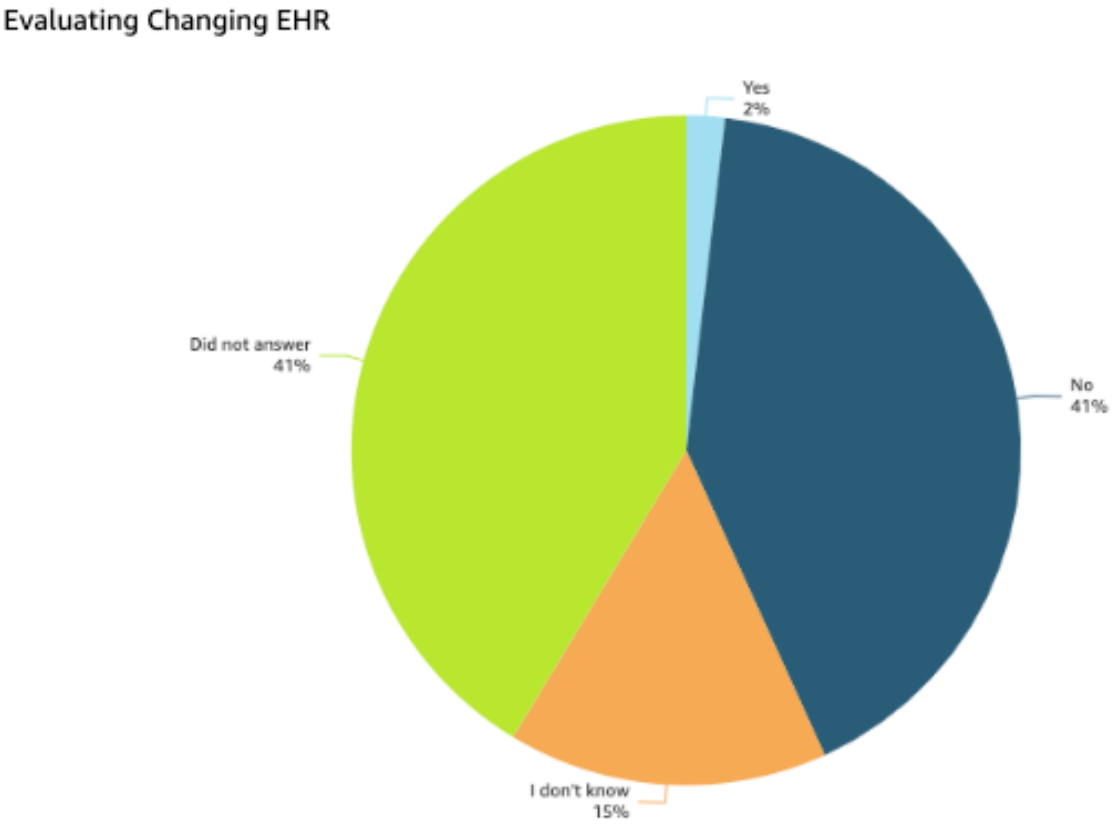
Question 13

On whether they are evaluating a change to a different EHR, 41.4% replied no, 15.4% did not know, and 41.4% did not answer (**Table *29*** and **Figure *54***).

Table 29 – Provider Survey Question 13

Q13. Are you evaluating changing to a different EHR?	Evaluating changing EHR (% of all Respondents)	% of Responses (Total = 509)
No	41.4%	70.5%
I don't know	15.4%	26.3%
Yes	1.8%	3.1%
Did not answer	41.4%	
Grand Total	**100.0%**	**509**

Figure 54 – Provider Survey Question 13



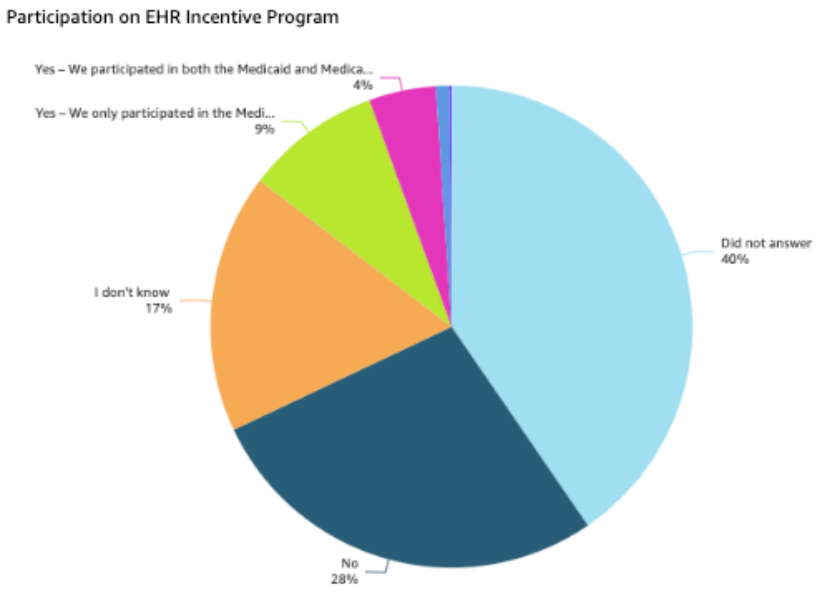
Question 14

Regarding participation in an EHR Incentive Program, most respondents (40.4%) did not answer, 27.5% answered no, and 13.7% participated in at least one program (**Table *30*** and **Figure *55***).

Table 30 – Provider Survey Question 14

Q14. Did your primary healthcare organization participate in an EHR Incentive Program?	Participation in EHR Incentive Program (% of all Respondents)	% of Responses (Total = 517)
I don't know	17.4%	29.2%
No	27.5%	46.2%
Yes – We only participated in the Medicaid EHR Incentive Program	9.1%	15.3%
Yes – We participated in both the Medicaid and Medicare EHR Incentive Programs	4.5%	7.5%
Yes – We participated but I don't know in which program.	0.1%	0.2%
Other	0.9%	1.5%
Did not answer	40.4%	
Grand Total	**100.0%**	**517**

Figure 55 – Provider Survey Question 14



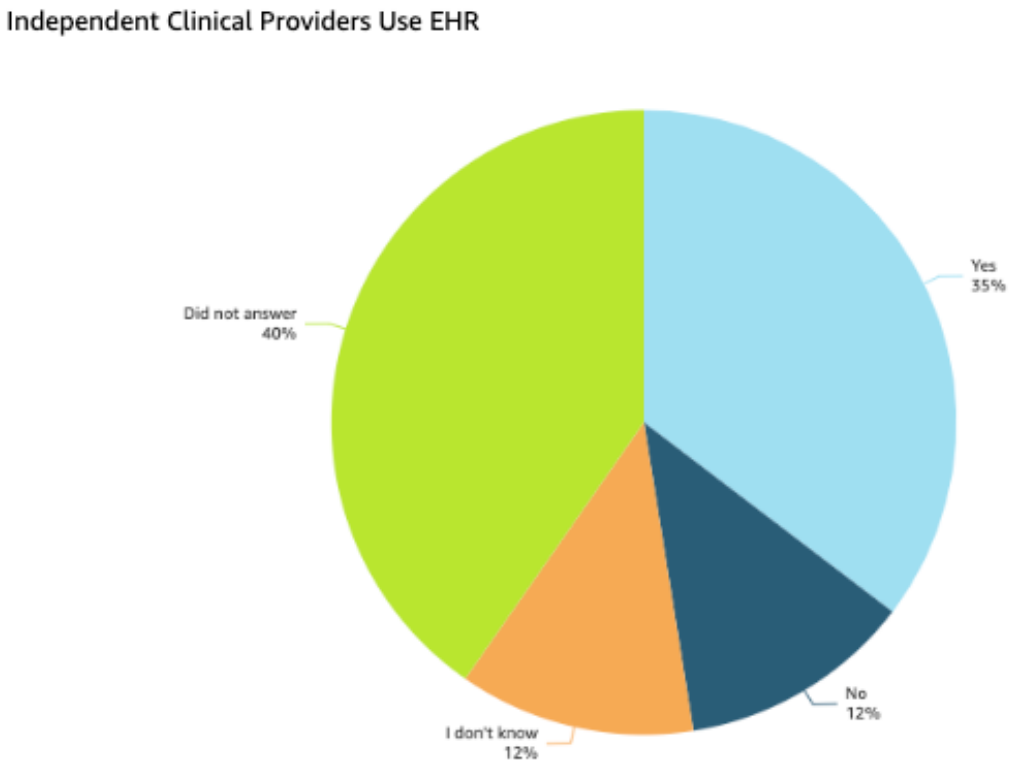
Question 15

More than a third (35.4%) of respondents indicated that all of the independent clinical providers in their organization regularly use EHR systems and 12.1% indicated that their providers do not regularly use EHR systems. Roughly the same proportion of respondents (12.2%) did not know, while the majority (40.3%) declined to answer (**Table *31*** and **Figure *56***).

Table 31 – Provider Survey Question 15

Q15. Do all of the independent clinical providers at your primary healthcare organization regularly use EHR systems?	Independent Clinical Providers use EHR (% of all Respondents)	% of Responses (Total = 518)
Yes	35.4%	59.3%
I don't know	12.2%	20.5%
No	12.1%	20.3%
Did not answer	40.3%	
Grand Total	**100.0%**	**518**

Figure 56 – Provider Survey Question 15



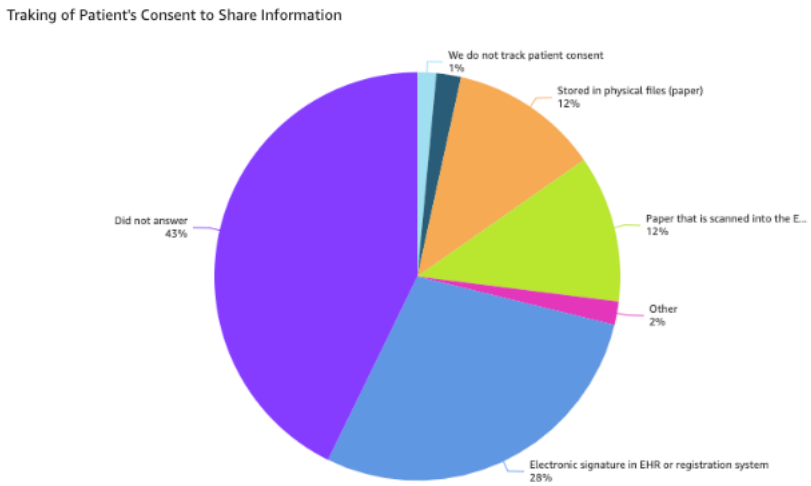
Question 16

On the tracking of patients' consent to share health information electronically, 28.5% of respondents indicated that their organization uses an electronic signature in EHR or a registration system, 11.9% indicated that they are stored in physical files, and 11.6% indicated that paper documents are scanned into the EHR or other IT systems. The largest proportion of respondents (42.7%) did not provide an answer (**Table *32*** and **Figure *57***).

Table 32 – Provider Survey Question 16

Q16. How does your primary healthcare organization track patients' consent to share their health information electronically?	Tracking of Patient's Consent to share information (% of all Respondents)	% of Responses (Total = 371)
Electronic signature in EHR or registration system	28.5%	49.7%
Paper that is scanned into the EHR or other IT system	11.6%	20.3%
Stored in physical files (paper)	11.9%	20.7%
Verbal consent from patient to registration staff, that enters choice into the EHR	2.0%	3.4%
We do not track patient consent	1.5%	2.6%
Other	1.8%	3.2%
Did not answer	42.7%	
Grand Total	**100.0%**	**497**

Figure 57 – Provider Survey Question 16



Question 17

The top EHR care functions in their organizations, as reported by the respondents, were lab and imaging results (16.7%), telemedicine (15.2%), and electronic prescribing (3.9%). Majority of participants (45.5%) declined to answer (***Table 33*** and **Figure *58***).

Table 33 – Provider Survey Question 17

Q17. Which of the following care functions does the EHR system at your primary healthcare organization include? (Select all that apply)	EHR Care Functions (% of all Respondents)	% of Responses (Total = 474)
Automatic reminders and SMS messaging for appointments	2.8%	5.1%
Billing and coding	3.2%	5.9%
Care management	0.2%	0.4%
Clinical documentation	1.0%	1.9%
Computerized Physician Order Entry	0.5%	0.8%
Clinical Documentation	0.1%	0.2%
Electronic Prescribing	3.9%	7.2%
Lab and imaging results	16.7%	30.6%
Patient Portal	2.0%	3.6%
Patient scheduling	2.1%	3.8%
Population health management	0.1%	0.2%
Referrals to providers in other organizations	3.0%	5.5%
Referrals to providers within our organization	0.8%	1.5%
Secure messaging	0.6%	1.1%
Telemedicine	15.2%	27.8%
Other	2.4%	4.4%
Did not answer	45.4%	
Grand Total	**100.0%**	**474**

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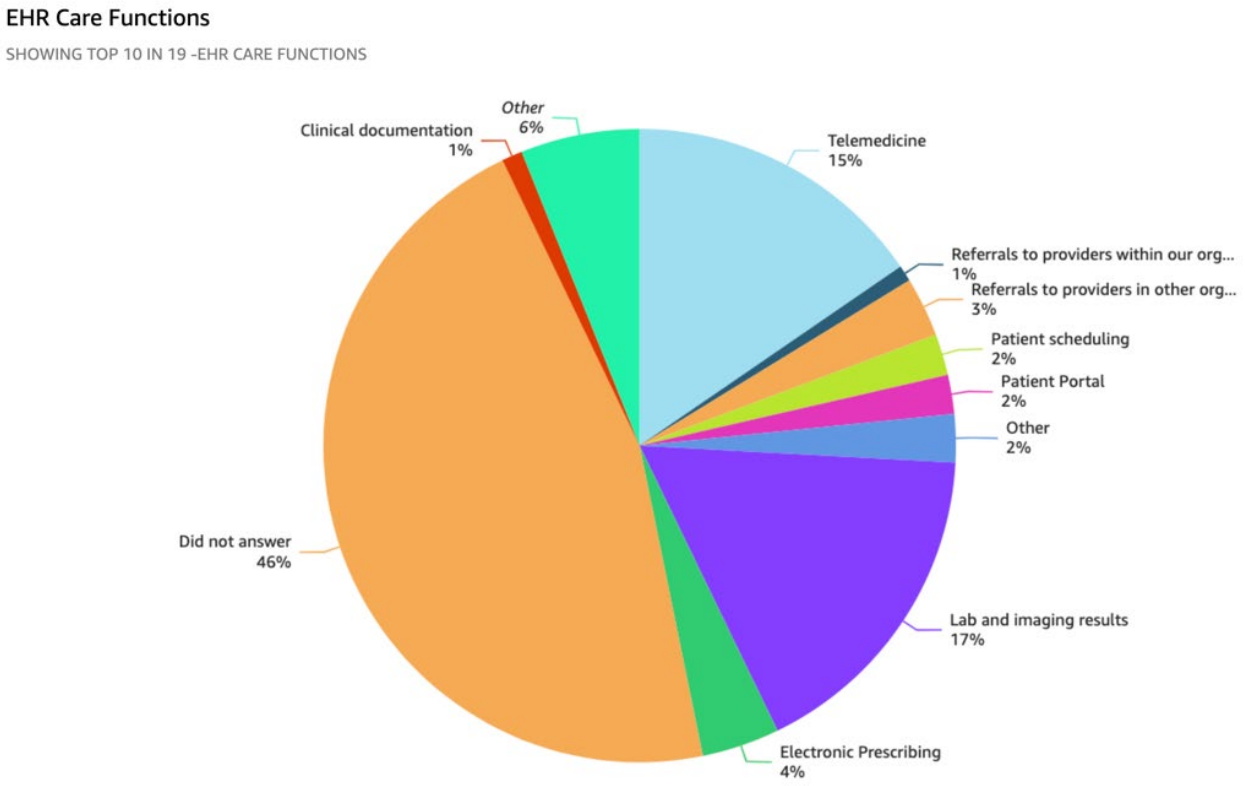
Figure 58 – Provider Survey Question 17



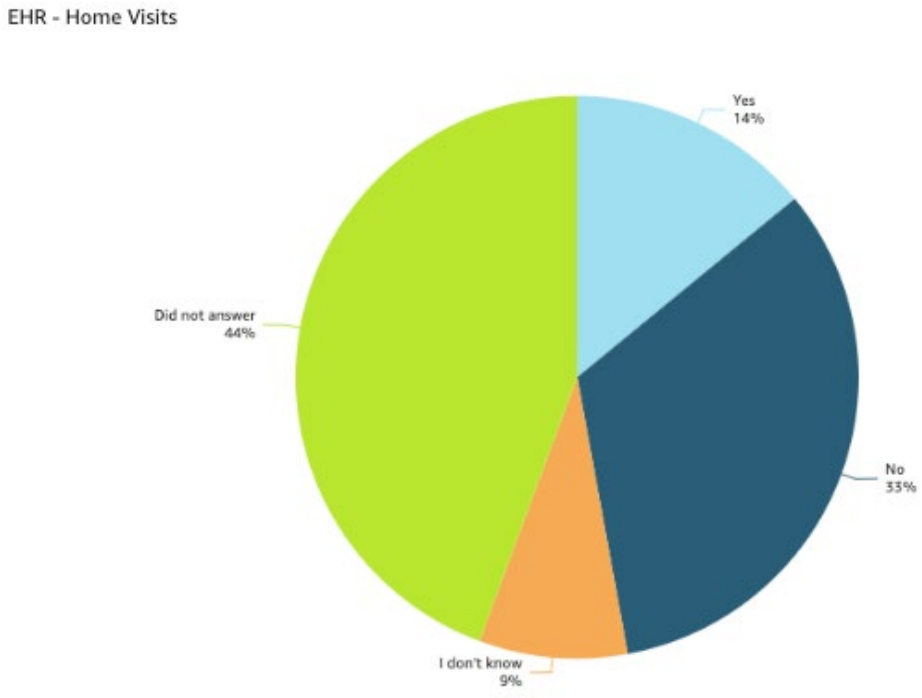
Question 18

On the use of EHRs to provide services during home visits, a third of respondents (33.1%) replied no and 14.1% replied yes, however, 44.4% of respondents did not answer the question (**Table *34*** and **Figure *59***).

Table 34 – Provider Survey Question 18

Q18. Does your primary healthcare organization use EHRs to provide services during home visits?	EHR – Home visits (% of all Respondents)	% of Responses (Total = 483)
I don't know	8.5%	15.3%
No	33.1%	59.4%
Yes	14.1%	25.3%
Did not answer	44.4%	
Grand Total	**100.0%**	**483**

Figure 59 – Provider Survey Question 18



Question 19

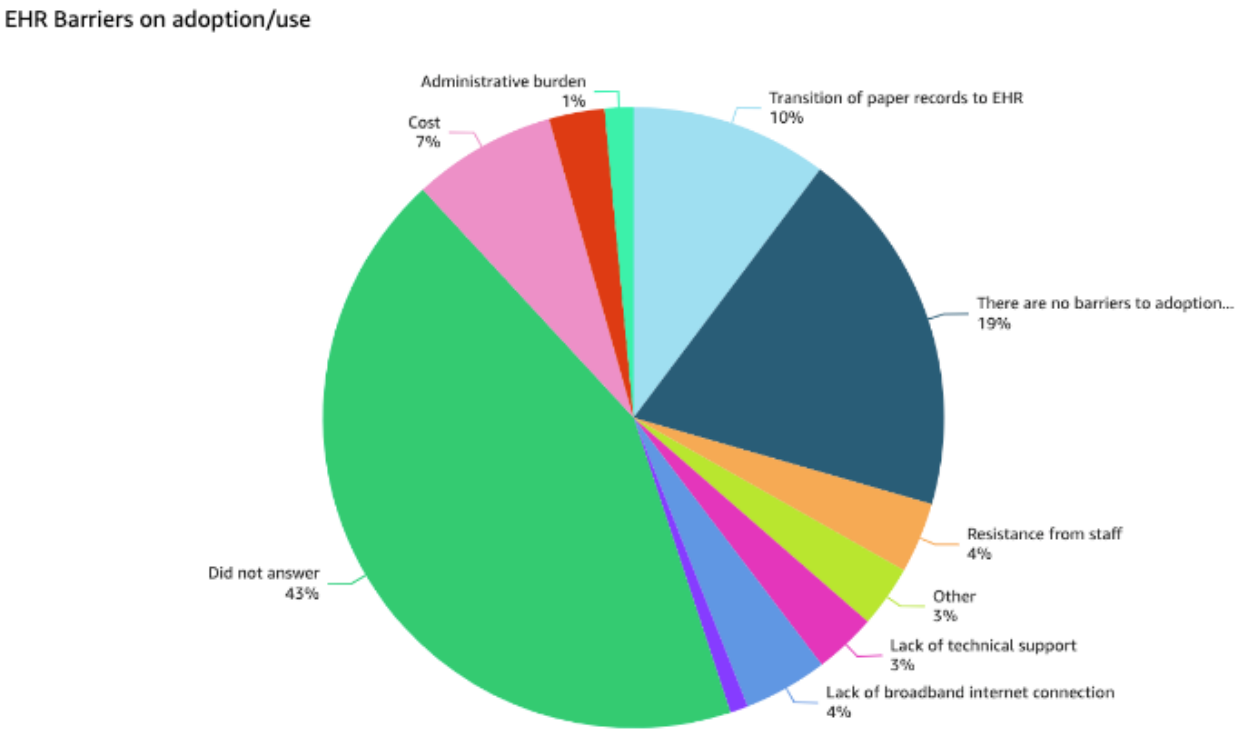
The primary barriers to adopting or fully utilizing an EHR system include transition of paper records to EHR (10.3%), cost (7.5%), lack of broadband internet connection (4.4%), staff resistance (3.7%), and lack of technical support (3.2%). Almost a fifth (19.2%) indicated that they face no barriers to adoption in their respective organizations, while 43.2% declined to answer (**Table *35*** and **Figure *60***).

Table 35 – Provider Survey Question 19

Q19. What are the primary barriers to adopting or fully utilizing an EHR system at your primary healthcare organization? (Select all that apply).	EHR Barriers on adoption/use (% of all Respondents)	% of Responses (Total = 493)
Administrative burden	1.5%	2.6%
Concerns about data privacy/security	2.9%	5.1%
Cost	7.5%	13.2%
Insufficient training	0.9%	1.6%
Lack of broadband internet connection	4.4%	7.7%
Lack of technical support	3.2%	5.7%
Resistance from staff	3.7%	6.5%

Q19. What are the primary barriers to adopting or fully utilizing an EHR system at your primary healthcare organization? (Select all that apply).	EHR Barriers on adoption/use (% of all Respondents)	% of Responses (Total = 493)
There are no barriers to adoption in our organization.	19.2%	33.9%
Transition of paper records to EHR	10.3%	18.1%
Other	3.2%	5.7%
Did not answer	43.2%	
Grand Total	**100.0%**	**493**

Figure 60 – Provider Survey Question 19



Question 20

In light of the barriers to EHR adoption and use, the steps taken to address them include staff training and education program on EHR usage (12.2%), conducting regular assessments and having feedback mechanisms to address user concerns (6.0%), and providing technical support and assistance to healthcare providers (5.6%). Almost half (45.9%) did not answer and 16.5% indicated that no steps have been taken and the barriers have not been addressed (**Table *36*** and **Figure *61***).

Table 36 – Provider Survey Question 20

Q20. What steps has your primary healthcare organization taken to address barriers to EHR adoption and usage? (Select all that apply.)	Steps taken to address EHR adoption/use barriers (% of all Respondents)	% of Responses (Total = 470)
Collaborating with external organizations for interoperability efforts.	0.3%	0.6%
Conducting regular assessments and feedback mechanisms to address user concerns.	6.0%	11.1%
Conducting workflow analysis and redesign to integrate EHR into clinical processes.	3.8%	7.0%
Implementing user-friendly EHR systems.	4.4%	8.1%
Investing in infrastructure improvements to support EHR implementation.	2.2%	4.0%
None. The barriers have not been addressed.	16.5%	30.4%
Offering incentives or rewards for EHR adoption and meaningful use.	0.3%	0.6%
Providing technical support and assistance to healthcare providers	5.6%	10.4%
Staff training and education program on EHR usage	12.2%	22.6%
Other	2.8%	5.1%
Did not answer	45.9%	
Grand Total	**100.0%**	**470**

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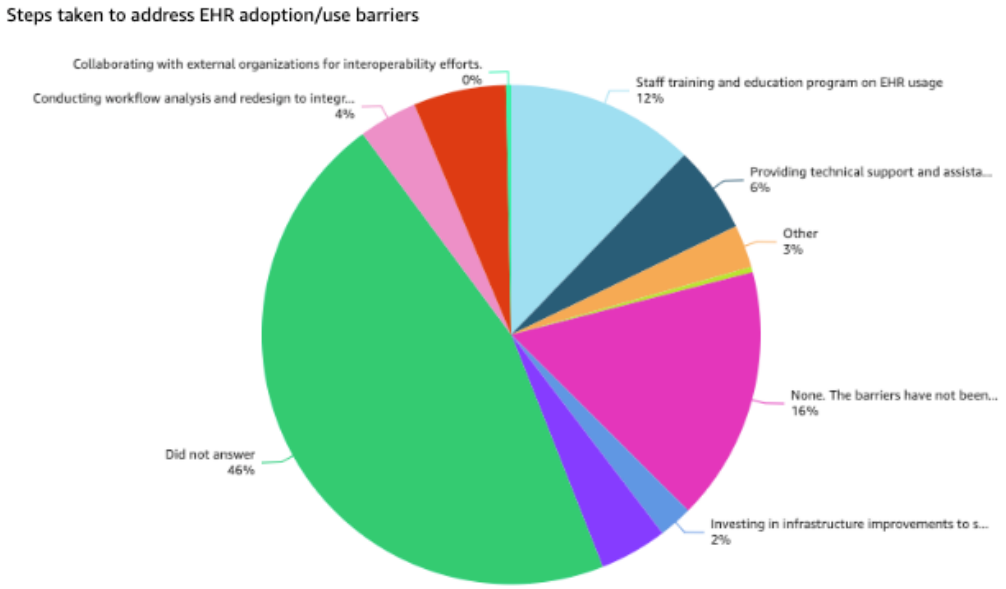
Figure 61 – Provider Survey Question 20



SECTION 3: Health Information Exchange (HIE) Adoption and Usage

Question 21

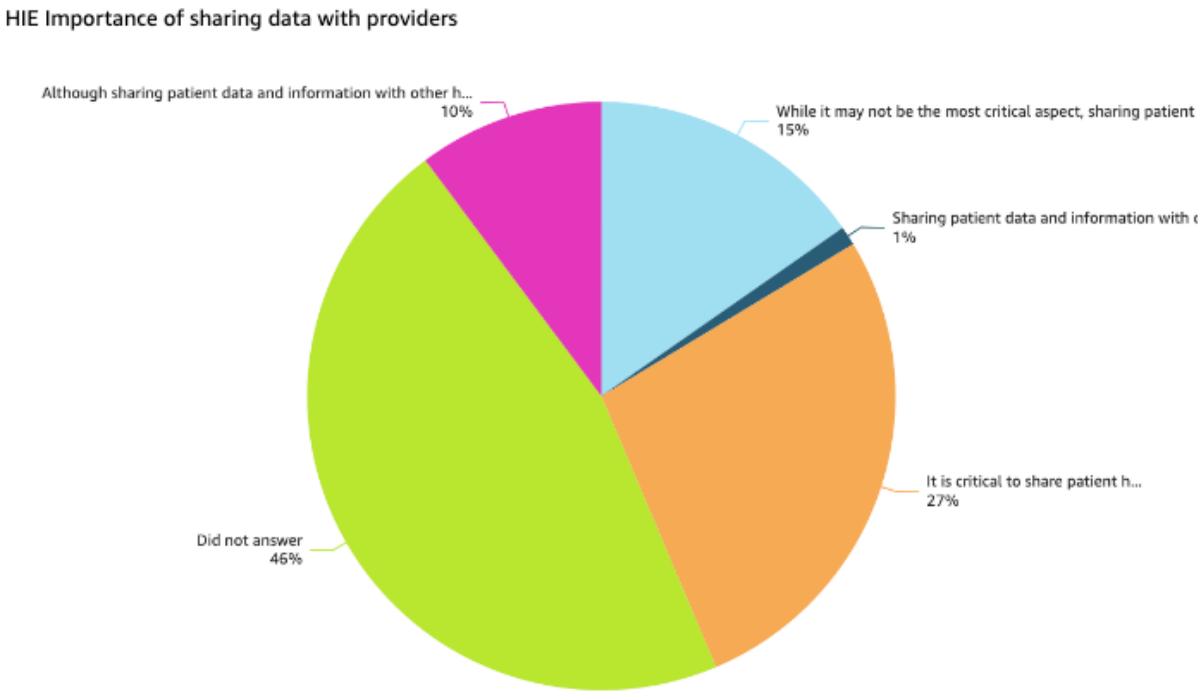
On the importance of sharing patient's health data and information with providers in other practices and health organizations, 27.1% respond that it is critical to do so, 15.2% say it is somewhat important, and 10.1% understand its significance. Most respondents (45.9%) did not answer the question (**Table *37*** and **Figure *62***).

Table 37 – Provider Survey Question 21

Q21. How important is it for you to be able to share your patient's health data and information with healthcare providers in other practices and health organizations? Please select one of the following options that best describes your opinion.	**HIE Importance of sharing data with providers (% of all Respondents)**	**% of Responses (Total = 470)**
Although sharing patient data and information with other healthcare providers in other practices and health organizations is not my top priority, I understand its significance.	10.1%	18.7%
It is critical to share patient health data and information with other healthcare providers in other practices or organizations	27.1%	50.0%

Q21. How important is it for you to be able to share your patient's health data and information with healthcare providers in other practices and health organizations? Please select one of the following options that best describes your opinion.	HIE Importance of sharing data with providers (% of all Respondents)	% of Responses (Total = 470)
Sharing patient data and information with other healthcare providers in other practices and health organizations is not a priority and I do not see any use for it.	0.7%	1.3%
Sharing patient data and information with other healthcare providers in other practices and health organizations is not essential and does not seem relevant to the healthcare process.	1.0%	1.9%
While it may not be the most critical aspect, sharing patient data and information with other healthcare providers is still somewhat important.	15.2%	28.1%
Did not answer	45.9%	
Grand Total	**100.0%**	**470**

Figure 62 – Provider Survey Question 21



Question 22

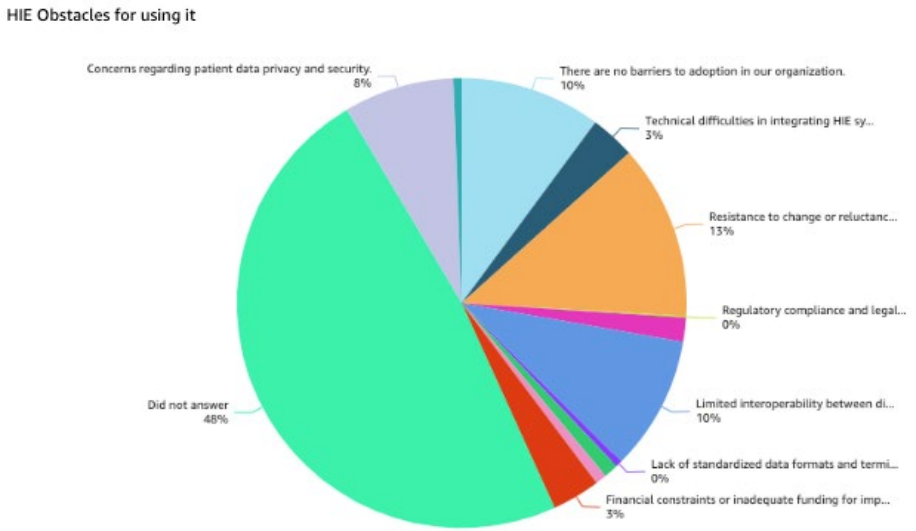
The primary obstacles or challenges healthcare providers in the respondents' primary healthcare organizations face in accessing and utilizing patient data effectively within HIE infrastructure include the resistance to change or reluctance among healthcare professionals to adopt new technologies (12.6%) and limited interoperability between different health information systems (9.7%). Close to half of respondents (48.3%) did not provide an answer (***Table 38*** and **Figure *63***).

Table 38 – Provider Survey Question 22

Q22. What are the primary obstacles or challenges healthcare providers in your primary healthcare organization face in accessing and utilizing patient data effectively within Health Information Exchange (HIE) systems? (Select all that apply)	**HIE Obstacles for using it (% of all Respondents)**	**% of Responses (Total = 449)**
Challenges in obtaining consent from patients for data sharing across healthcare entities.	0.6%	1.1%
Concerns regarding patient data privacy and security.	7.9%	15.4%
Financial constraints or inadequate funding for implementing HIE systems.	3.5%	6.7%
Incomplete or inaccurate patient data within HIE networks.	0.8%	1.6%
Insufficient training and education for healthcare staff on how to effectively use HIE systems.	1.0%	2.0%
Lack of standardized data formats and terminology across healthcare organizations.	0.5%	0.9%
Limited interoperability between different health information systems	9.7%	18.7%
Regulatory compliance and legal barriers affecting data exchange practices.	0.1%	0.2%
Resistance to change or reluctance among healthcare professionals to adopt new technologies.	12.6%	24.3%
Technical difficulties in integrating HIE systems with existing electronic health record (EHR) systems	3.2%	6.2%
There are no barriers to adoption in our organization.	10.1%	19.6%
Other	1.7%	3.3%

Q22. What are the primary obstacles or challenges healthcare providers in your primary healthcare organization face in accessing and utilizing patient data effectively within Health Information Exchange (HIE) systems? (Select all that apply)	HIE Obstacles for using it (% of all Respondents)	% of Responses (Total = 449)
Did not answer	48.3%	
Grand Total	**100.0%**	**449**

Figure 63 – Provider Survey Question 22



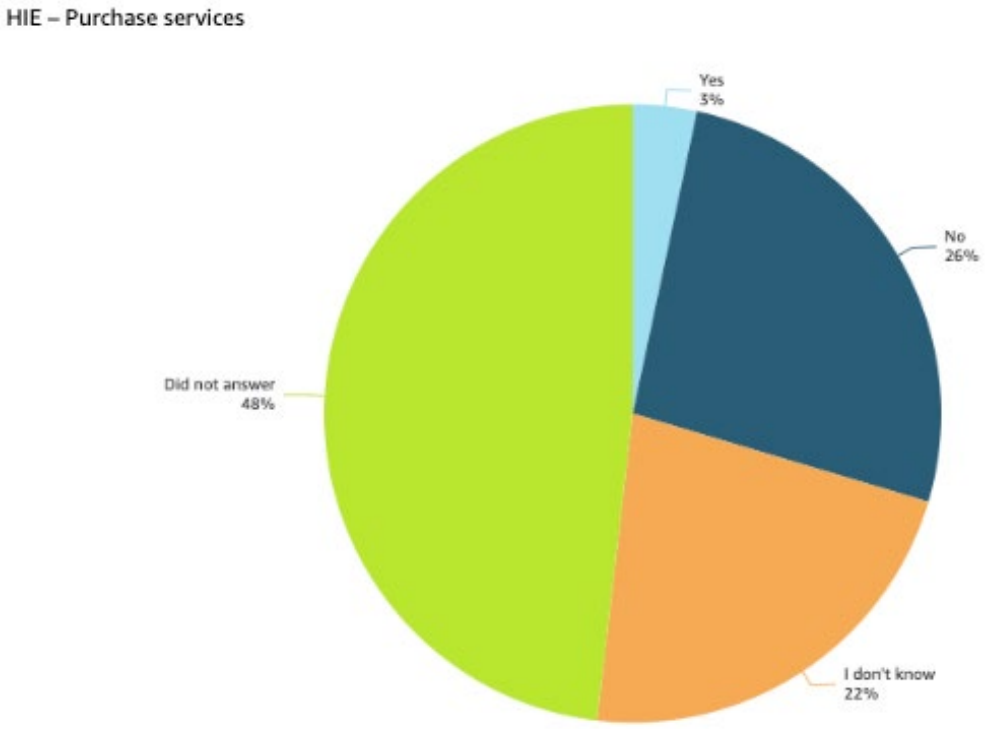
Question 23

According to 26.3% of respondents, their primary healthcare organizations were not in the process of purchasing HIE services, while 22.2% did not know, and 48.2% did not answer (**Table *39*** and **Figure *64***).

Table 39 – Provider Survey Question 23

Q23. Is your primary healthcare organization currently in the process of purchasing HIE services?	HIE – Purchase services (% of all Respondents)	% of Responses (Total = 450)
No	26.3%	50.7%
I don't know	22.2%	42.9%
Yes	3.3%	6.4%
Did not answer	48.2%	
Grand Total	**100.0%**	**450**

Figure 64 – Provider Survey Question 23



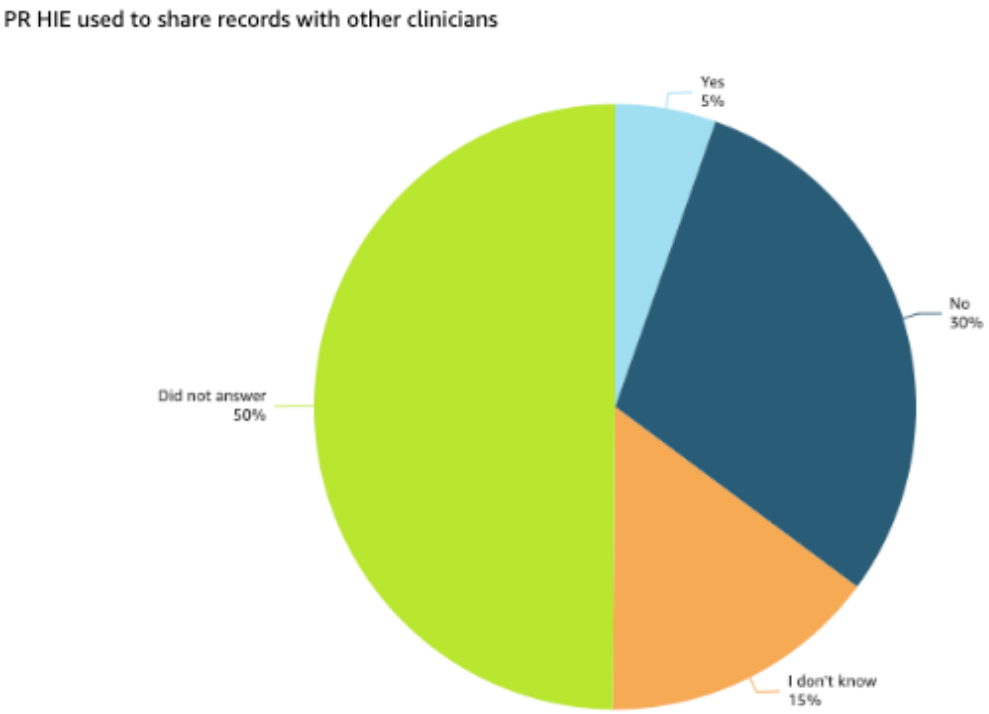
Question 24

While half the respondents (49.9%) declined to answer, 29.7% indicated that their organizations do not use Puerto Rico's HIE to share health records with other treating clinicians, 5.4% replied yes, their organizations use it, and 15.0% did not know (**Table *40*** and **Figure *65***).

Table 40 – Provider Survey Question 24

Q24. Does your primary healthcare organization use Puerto Rico's HIE to share health records with other treating clinicians?	PR HIE used to share records with other clinicians (% of all Respondents)	% of Responses (Total = 435)
No	29.7%	59.3%
I don't know	15.0%	29.9%
Yes	5.4%	10.8%
Did not answer	49.9%	
Grand Total	**100.0%**	**435**

Figure 65 – Provider Survey Question 24



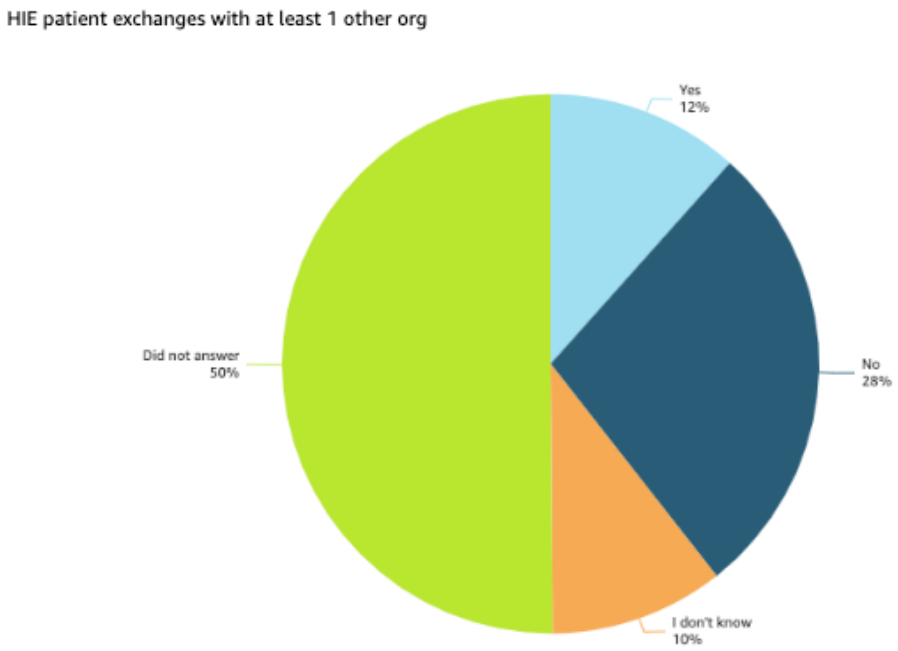
Question 25

On health information exchange patient exchanges with at least one other healthcare organization, 27.8% of respondents report that their organizations do not, 11.6% report that their organizations do, and 10.5% do not know. The remaining half (50.1%) declined to respond (**Table *41*** and **Figure *66***).

Table 41 – Provider Survey Question 25

Q25. Does your primary healthcare organization currently exchange patient health information electronically with at least one other healthcare organization?	HIE patient exchanges with at least 1 other org. (% of all Respondents)	% of Responses (Total = 433)
No	27.8%	55.7%
I don't know	10.5%	21.0%
Yes	11.6%	23.3%
Did not answer	50.1%	
Grand Total	**100.0%**	**433**

Figure 66 – Provider Survey Question 25



Question 26

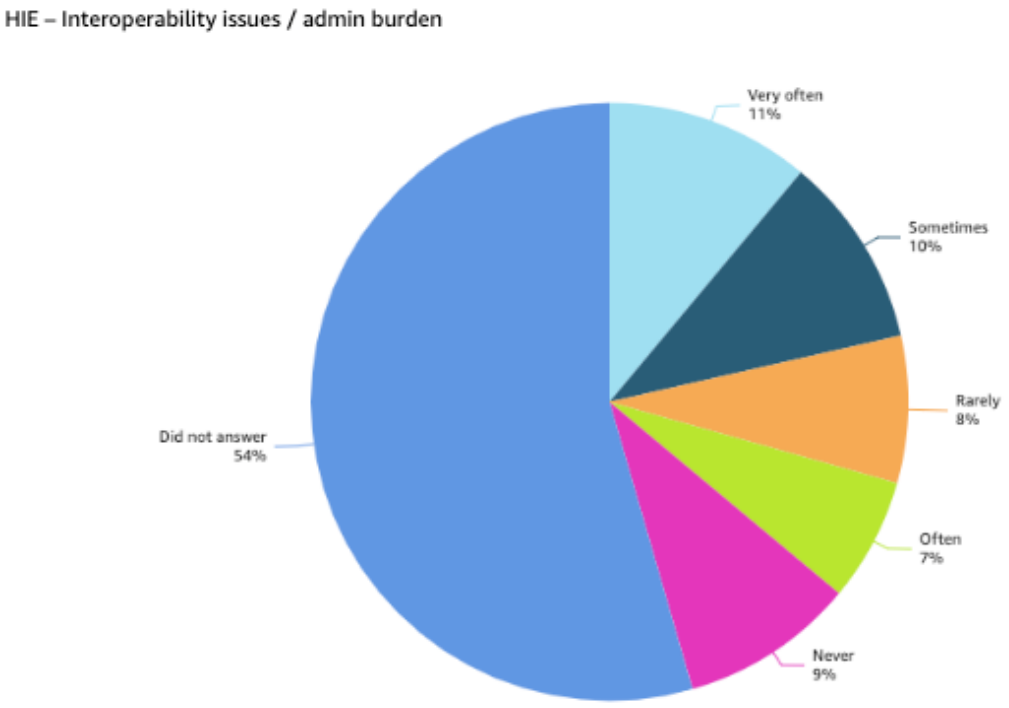
More than half of respondents (54.5%) declined to answer the question on HIE interoperability issues that contribute to increased administrative burden, while 17.3% indicate that it rarely or never happens, and an almost equal proportion (17.8%) indicate that it happens often or very often (**Table *42*** and **Figure *67***).

Table 42 – Provider Survey Question 26

Q26. How often do you encounter issues with interoperability that contribute to increased administrative burden?	HIE – Interoperability issues / admin burden (% of all Respondents)	% of Responses (Total = 395)
Never	9.4%	20.8%
Rarely	7.9%	17.5%
Sometimes	10.4%	22.8%
Often	6.7%	14.7%
Very often	11.1%	24.3%
Did not answer	54.5%	
Grand Total	**100.0%**	**395**

Note: Interoperability is the ability of different health information systems to exchange health records electronically.

Figure 67 – Provider Survey Question 26



Question 27

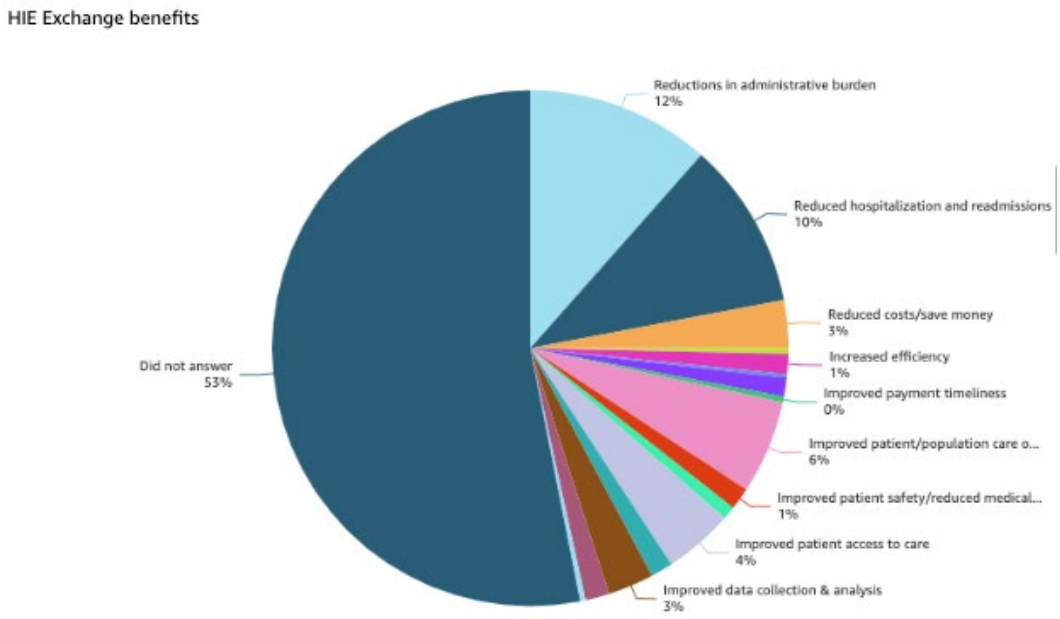
The top three potential benefits of health information exchange to patients and providers in Puerto Rico include reductions in administrative burden (11.5%), reduced hospitalization and readmissions (10.5%), and improved patient/population care outcomes (5.9%). More than half (53.1%) did not provide an answer (**Table *43*** and **Figure *68***).

Table 43 – Provider Survey Question 27

Q27. What do you believe are the potential benefits of the electronic exchange of health information to patients and providers in Puerto Rico? (Select all that apply)	**HIE Exchange benefits (% of all Respondents)**	**% of Responses (Total = 407)**
Improved access to and modification of care	0.3%	0.7%
Improved care management/planning	1.5%	3.2%
Improved data collection & analysis	2.9%	6.1%
Improved disease management	1.4%	2.9%
Improved patient access to care	4.4%	9.3%

Q27. What do you believe are the potential benefits of the electronic exchange of health information to patients and providers in Puerto Rico? (Select all that apply)	HIE Exchange benefits (% of all Respondents)	% of Responses (Total = 407)
Improved patient engagement	0.8%	1.7%
Improved patient safety/reduced medical issues	1.4%	2.9%
Improved patient/population care outcomes	5.9%	12.5%
Improved payment timeliness	0.3%	0.7%
Improved transitions of care	1.2%	2.5%
Improved utilization management and review	0.2%	0.5%
Increased efficiency	1.3%	2.7%
Reduced costs/save money	3.0%	6.4%
Reduced hospitalization and readmissions	10.5%	22.4%
Reductions in administrative burden	11.5%	24.6%
Other	0.3%	0.7%
Did not answer	53.1%	
Grand Total	**100.0%**	**407**

Figure 68 – Provider Survey Question 27



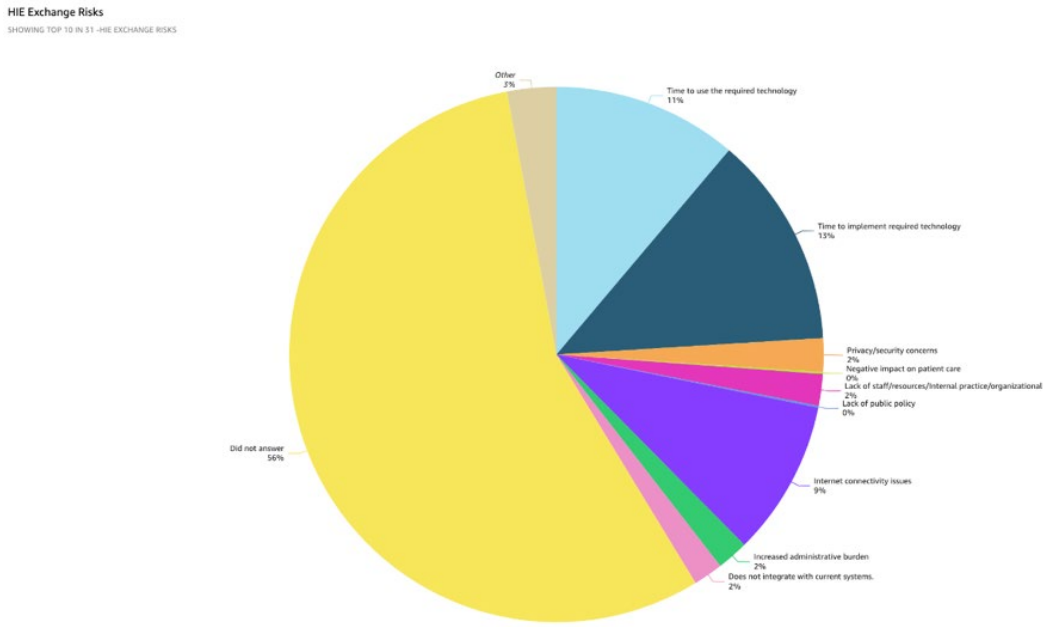
Question 28

On potential risks or barriers to the electronic exchange of health information to patients and providers in Puerto Rico, 12.4% replied the time to implement required technology, 10.8% replied the time to use the required technology, and 9.1% internet connectivity issues. Over half (54.0%) did not respond (**Table *44*** and **Figure *69***).

Table 44 – Provider Survey Question 28

Q28. What do you believe are the potential risks or barriers to the electronic exchange of health information to patients and providers in Puerto Rico? (Select all that apply)	HIE Exchange Risks (% of all Respondents)	% of Responses (Total = 399)
Available products do not meet needs.	0.3%	0.8%
Costs to healthcare providers	2.0%	4.3%
Costs to Puerto Rico Health Information Exchange/ Puerto Rico Health Information Network	0.5%	1.0%
Current practices insufficient for needs	0.1%	0.3%
Difficult to import/add old records and data	0.3%	0.8%
Does not integrate with current systems.	1.7%	3.8%
Increased administrative burden	1.8%	4.0%
Insufficient computer skills/experience with technology	0.5%	1.0%
Internet connectivity issues	9.1%	19.8%
Lack of public policy	0.1%	0.3%
Lack of staff/resources/Internal practice/organizational	1.8%	4.0%
Negative impact on patient care	0.1%	0.3%
Privacy/security concerns	2.0%	4.3%
System fragmentation	0.3%	0.8%
Time to implement required technology	12.4%	27.1%
Time to use the required technology	10.8%	23.6%
Too many choices/insufficient	0.7%	1.5%
Other	1.3%	2.8%
Did not answer	54.0%	
Grand Total	**100.0%**	**399**

Figure 69 – Provider Survey Question 28



Question 29

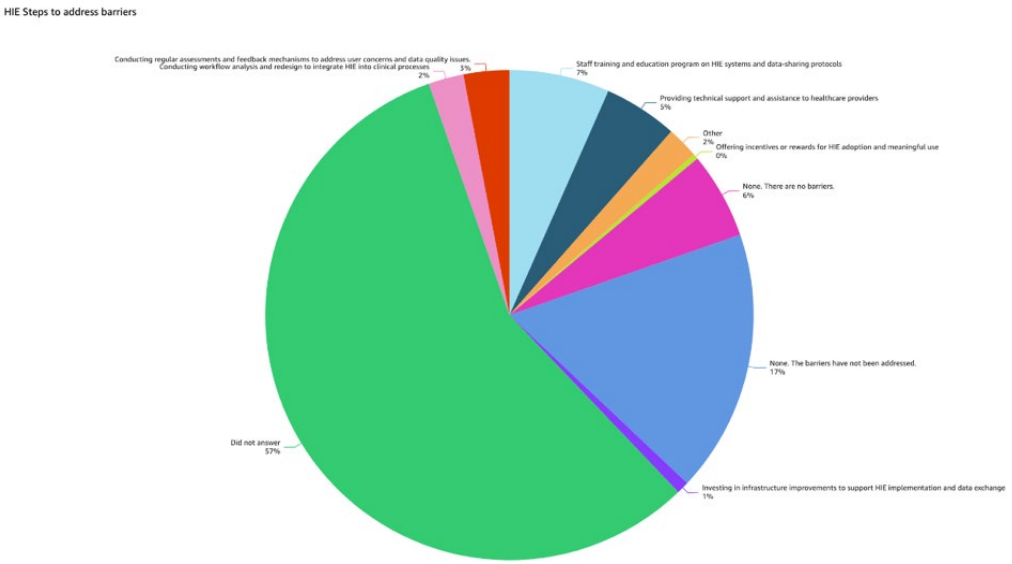
To address barriers to participation with HIE adoption and usage, 6.6% indicate that their primary healthcare organization provides staff training and education programs on HIE systems and data-sharing protocols and 4.8% indicate that their organization provides technical support and assistance to healthcare providers. More than half (56.3%) did not provide an answer and 17.2% replied that no steps have been taken (**Table *45*** and **Figure *70***).

Table 45 – Provider Survey Question 29

Q29. What steps has your primary healthcare organization taken to address barriers to participation with the HIE adoption and usage? (Select all that apply.)	**HIE Steps to address barriers (% of all Respondents)**	**% of Responses (Total = 380)**
Collaborating with external organizations and stakeholders to establish data-sharing agreements and standards	0.7%	1.6%
Conducting regular assessments and feedback mechanisms to address user concerns and data quality issues.	3.0%	6.8%

Q29. What steps has your primary healthcare organization taken to address barriers to participation with the HIE adoption and usage? (Select all that apply.)	HIE Steps to address barriers (% of all Respondents)	% of Responses (Total = 380)
Conducting workflow analysis and redesign to integrate HIE into clinical processes	2.3%	5.3%
Implementing user-friendly HIE interfaces and tools	0.3%	0.8%
Investing in infrastructure improvements to support HIE implementation and data exchange	0.8%	1.8%
None. The barriers have not been addressed.	17.2%	39.2%
None. There are no barriers.	5.6%	12.9%
Offering incentives or rewards for HIE adoption and meaningful use	0.3%	0.8%
Providing technical support and assistance to healthcare providers	4.8%	11.1%
Staff training and education program on HIE systems and data-sharing protocols	6.6%	15.0%
Other	2.1%	4.7%
Did not answer	56.2%	
Grand Total	**100.0%**	**380**

Figure 70 – Provider Survey Question 29



Question 30

When asked to identify areas of healthcare they believed have the greatest need for HIE services, 10.3% selected telehealth, 8.1% behavioral health, and 6.3% medications. More than half (55.6%) declined to answer (***Table 46*** and **Figure *71***).

Table 46 – Provider Survey Question 30

Q30. Which area(s) of healthcare do you believe have the greatest need for HIE services? (Select all that apply)	HIE areas with greatest needs (% of all Respondents)	% of Responses (Total = 385)
Behavioral health	8.1%	18.2%
Care coordination	0.8%	1.8%
Clinical decision support	0.3%	0.8%
Diagnostic imaging	0.8%	1.8%
Emergency care	0.8%	1.8%
Labs	4.5%	10.1%
Long-term and post-acute care	0.5%	1.0%
Medications	6.3%	14.3%
Patient records	5.8%	13.0%
Public health reporting	0.9%	2.1%
Referrals	4.1%	9.4%
Telehealth	10.3%	23.1%
Other	1.2%	2.6%
Did not answer	55.6%	
Grand Total	**100.0%**	**385**

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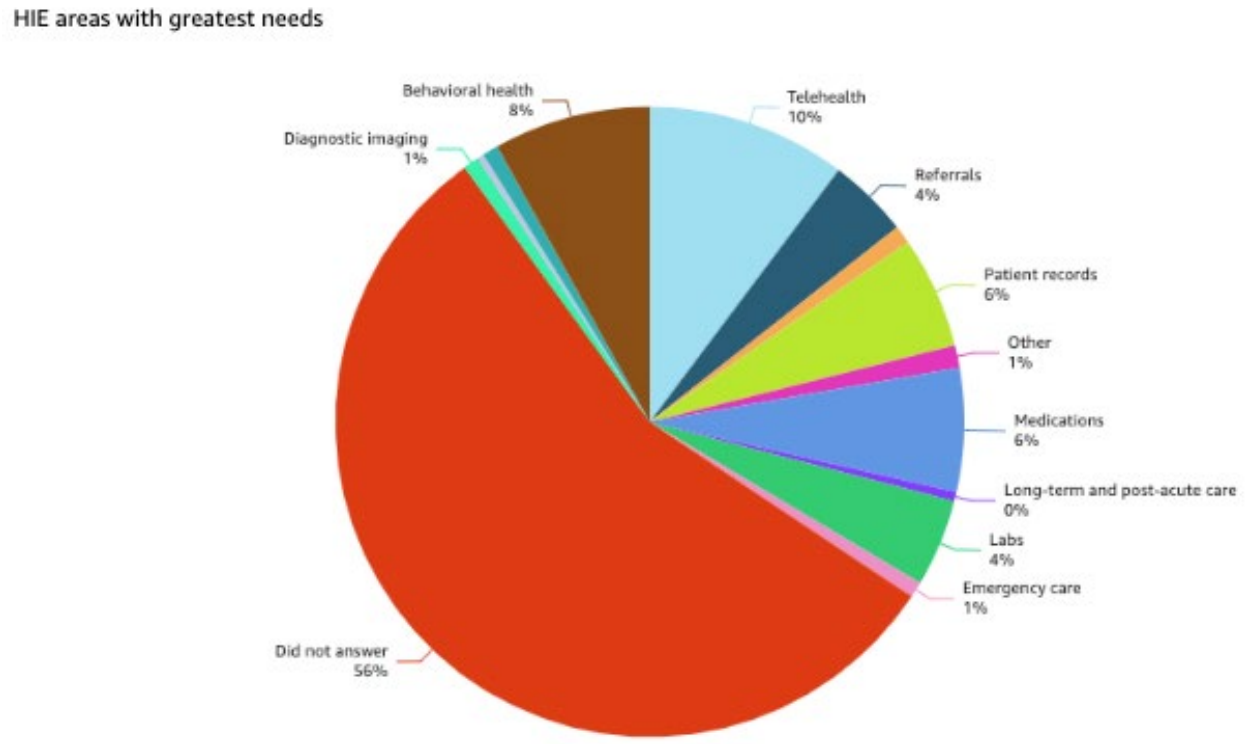
Figure 71 – Provider Survey Question 30



SECTION 4: Telehealth & Digital Health Adoption and Usage

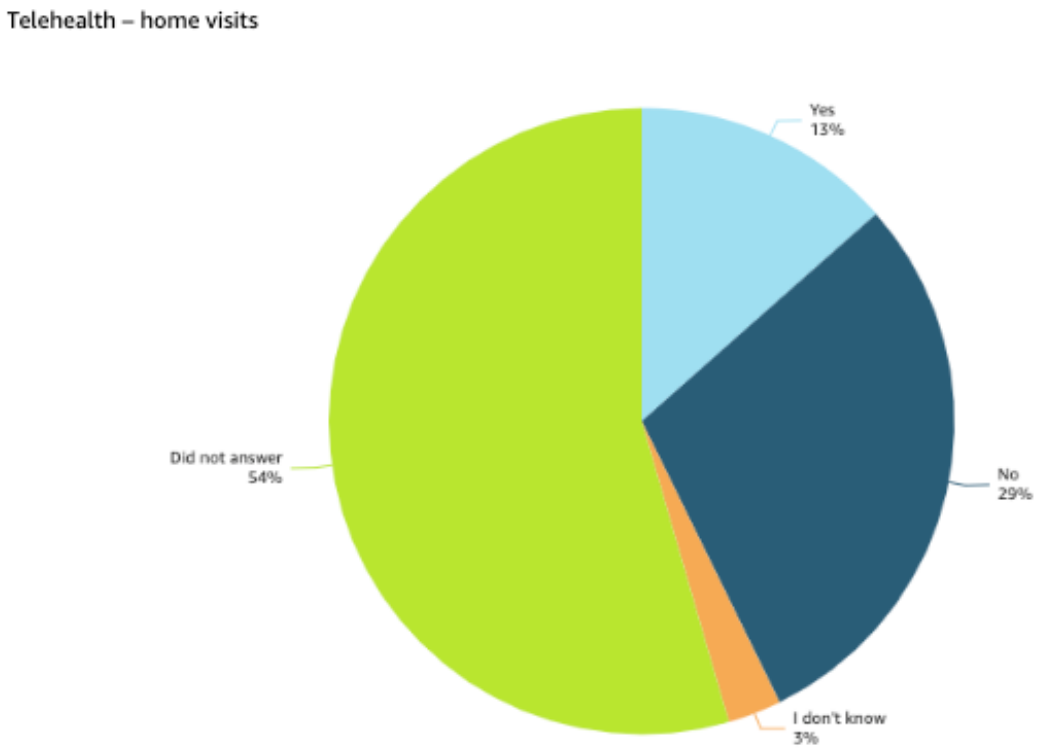
Question 31

While more than half (54.5%) did not respond, 29.3% responded that their primary healthcare organizations do not provide home visits and 13.5% responded that they do (**Table *47*** and **Figure *72***).

Table 47 – Provider Survey Question 31

Q31. Does your primary healthcare organization provide home visits?	Telehealth – home visits (% of all Respondents)	% of Responses (Total = 395)
I don't know	2.8%	6.1%
No	29.3%	64.3%
Yes	13.5%	29.6%
Did not answer	54.5%	
Grand Total	**100.0%**	**395**

Figure 72 – Provider Survey Question 31



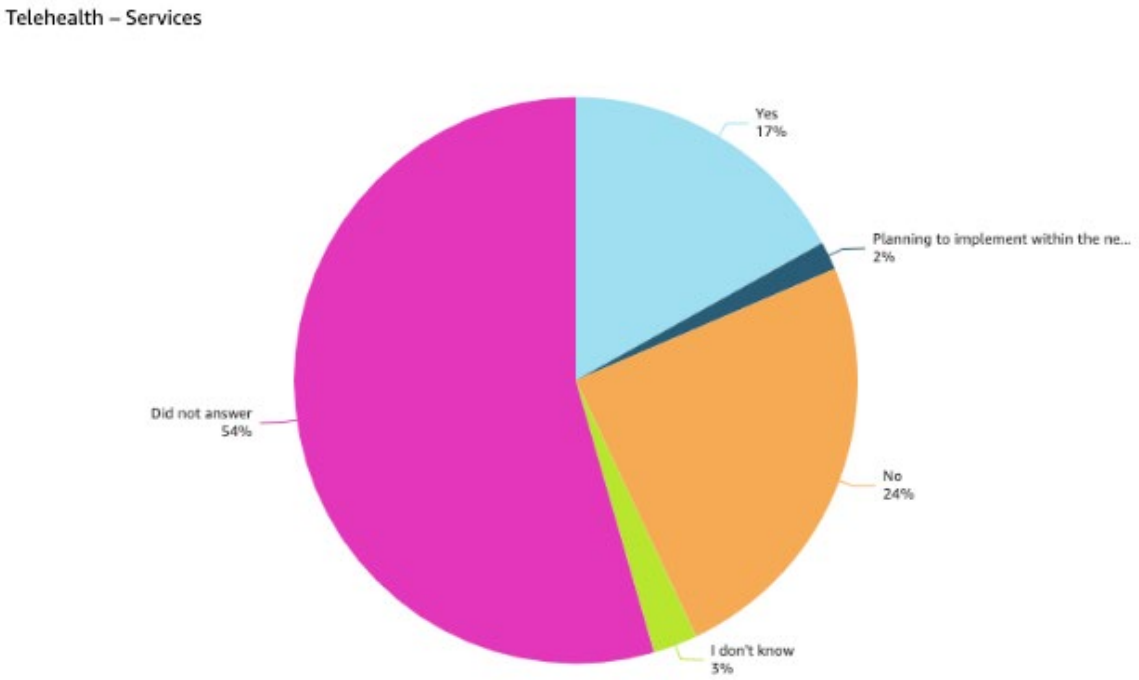
Question 32

On telehealth services, 24.4% indicated that their organizations do not currently offer telehealth services, 16.9% indicated that their organizations do, and 54.5% did not respond (**Table *48*** and **Figure *73***).

Table 48 – Provider Survey Question 32

Q32. Does your primary healthcare organization currently offer telehealth services?	Telehealth services (% of all Respondents)	% of Responses (Total = 395)
I don't know	2.5%	5.6%
No	24.4%	53.7%
Planning to implement within the next 12 months	1.6%	3.5%
Yes	16.9%	37.2%
Did not answer	54.5%	
Grand Total	**100.0%**	**395**

Figure 73 – Provider Survey Question 32



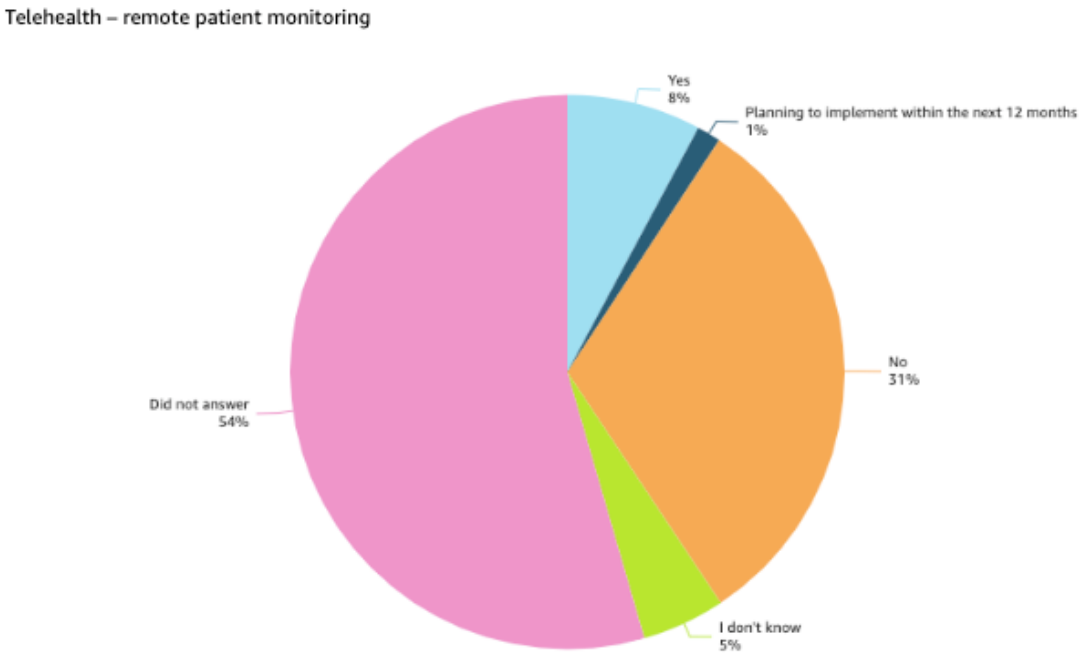
Question 33

Remote patient monitoring services are provided in the organizations of 7.8% of respondents, not provided in 31.5%, and in planning for implementation within 12 months for 1.4% of respondents' organizations (**Table *49*** and **Figure *74***).

Table 49 – Provider Survey Question 33

Q33. Does your primary healthcare organization currently offer remote patient monitoring services?	Telehealth – remote patient monitoring (% of all Respondents)	% of Responses (Total = 395)
No	31.5%	69.1%
Yes	7.8%	17.2%
Planning to implement within the next 12 months	1.4%	3.0%
I don't know	4.8%	10.6%
Did not answer	54.5%	
Grand Total	**100.0%**	**395**

Figure 74 – Provider Survey Question 33



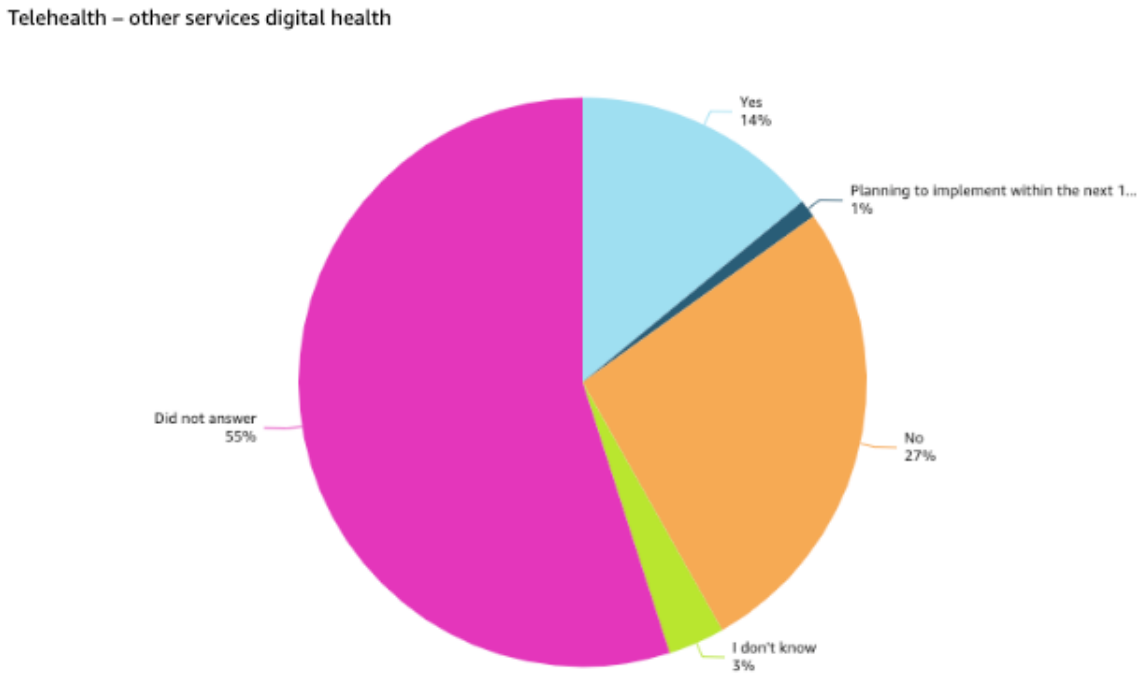
Question 34

Other digital health services, e.g., telemedicine consultations, are offered by 14.1% of respondents' organizations, in planning for implementation within 12 months in 1.0%, and not offered in 26.7% of respondents' organizations. More than half (55.0%) of respondents did not answer the question (**Table *50*** and **Figure *75***).

Table 50 – Provider Survey Question 34

Q34. Does your primary healthcare organization currently offer other digital health services? (i.e., telemedicine consultations, etc.)	Telehealth – other services digital health (% of all Respondents)	% of Responses (Total = 391)
I don't know	3.2%	7.2%
No	26.7%	59.3%
Planning to implement within the next 12 months	1.0%	2.3%
Yes	14.1%	31.2%
Did not answer	55.0%	
Grand Total	**100.0%**	**391**

Figure 75 – Provider Survey Question 34



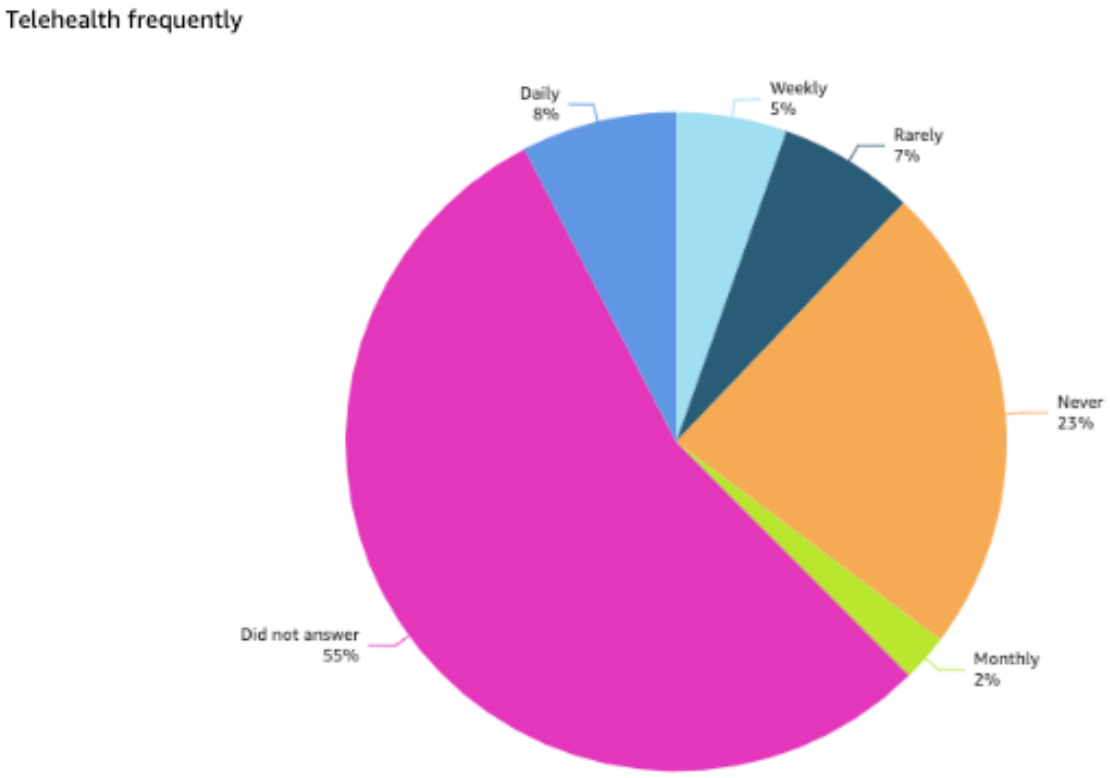
Question 35

On the frequency of using telehealth services, 7.6% of respondents' organizations use it daily, 5.4% use it weekly, 2.3% use it monthly, and 29.9% use it rarely or never have. Over half (54.8%) declined to answer (**Table *51*** and **Figure *76***).

Table 51 – Provider Survey Question 35

Q35. How frequently does your primary healthcare organization use telehealth services for patient care?	Telehealth frequency (% of all Respondents)	% of Responses (Total = 392)
Daily	7.6%	16.8%
Weekly	5.4%	12.0%
Monthly	2.3%	5.1%
Rarely	6.7%	14.8%
Never	23.2%	51.3%
Did not answer	54.8%	
Grand Total	**100.0%**	**392**

Figure 76 – Provider Survey Question 35



Question 36

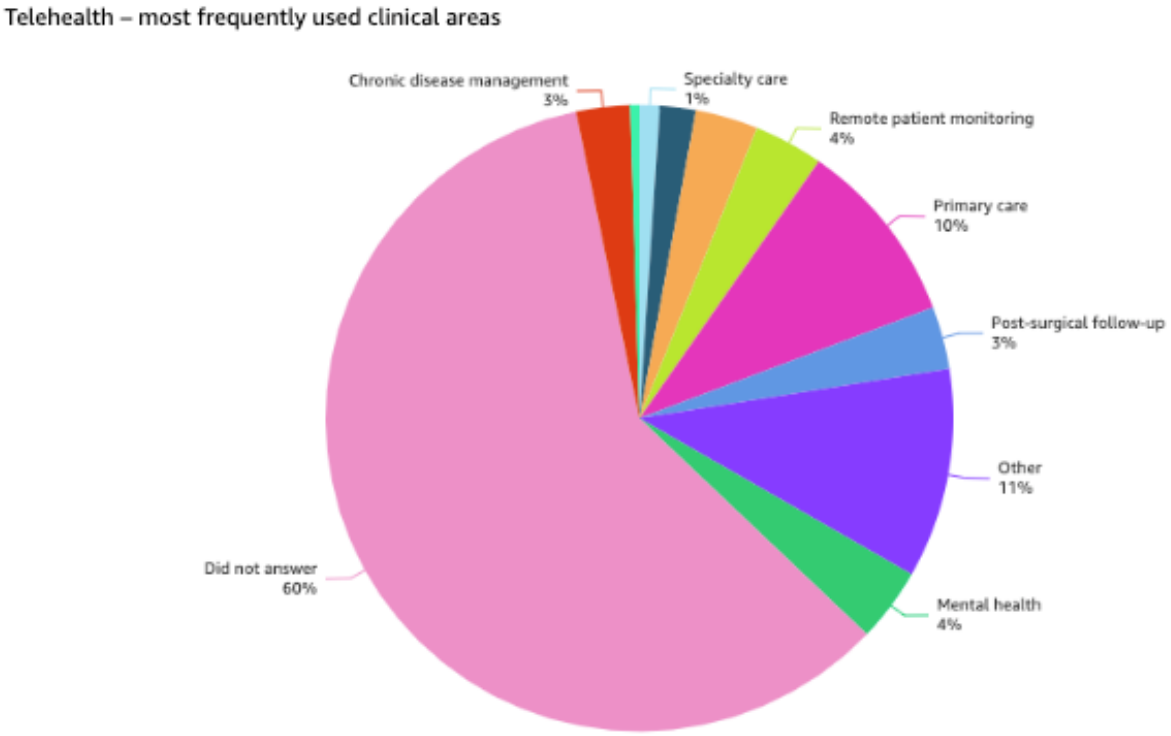
The clinical areas or reasons that telehealth or digital health are most frequently used by respondents' primary healthcare organizations include primary care (9.6%), mental health (3.8%), and remote patient monitoring (3.6%). Almost 60.0% of respondents declined to respond (**Table *52*** and **Figure *77***).

Table 52 – Provider Survey Question 36

Q36. In what clinical areas/reasons are telehealth/digital health most frequently utilized at your primary healthcare organization? (Select all that apply)	Telehealth – most frequently used clinical areas (% of all Respondents)	% of Responses (Total = 350)
Care management	0.5%	1.1%
Chronic disease management	2.8%	6.9%
Mental health	3.8%	9.4%
Post-surgical follow-up	3.2%	8.0%
Primary care	9.6%	23.7%

Q36. In what clinical areas/reasons are telehealth/digital health most frequently utilized at your primary healthcare organization? (Select all that apply)	Telehealth – most frequently used clinical areas (% of all Respondents)	% of Responses (Total = 350)
Remote patient monitoring	3.6%	8.9%
Remote patient therapeutic	3.2%	8.0%
Social supports	1.8%	4.6%
Specialty care	1.0%	2.6%
Other	10.8%	26.9%
Did not answer	59.7%	
Grand Total	**100.0%**	**350**

Figure 77 – Provider Survey Question 36



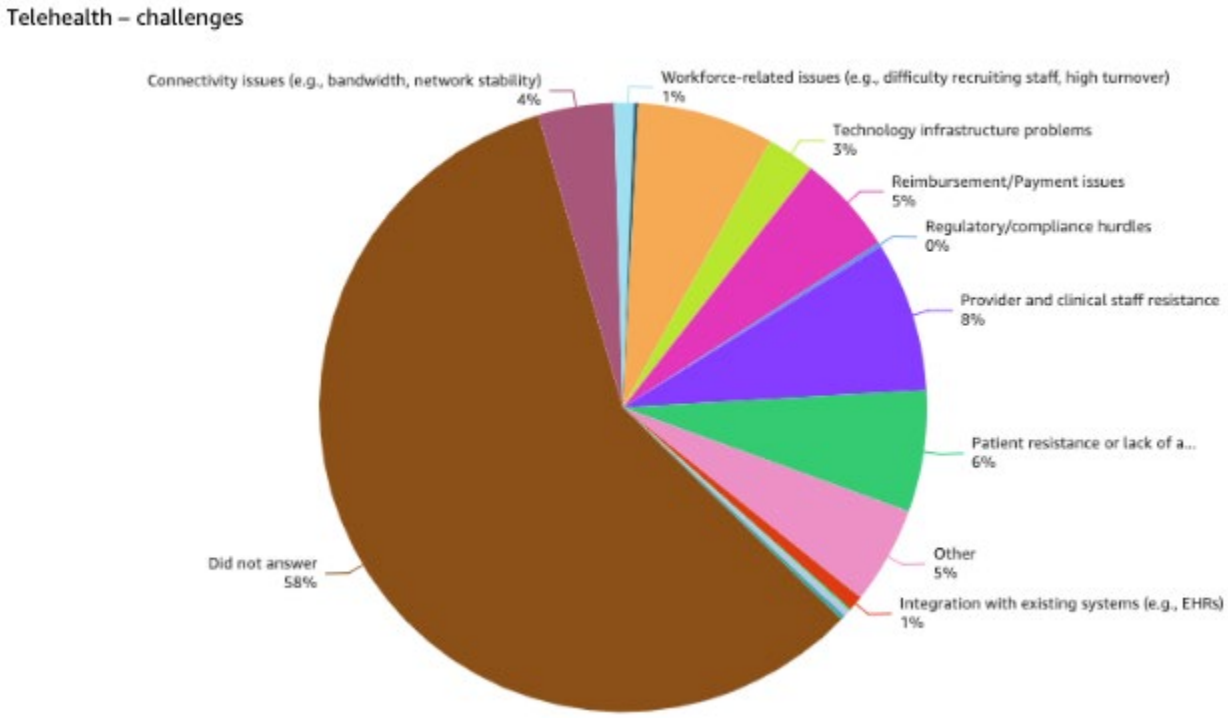
Question 37

Asked to identify challenges faced by their organizations while implementing telehealth services, 7.9% of respondents reported provider and clinical staff resistance, 6.5% reported patient resistance or lack of awareness, and 5.3% reported reimbursement or payment issues. Close to 60.0% of respondents did not respond (**Table *53*** and **Figure *78***).

Table 53 – Provider Survey Question 37

Q37. What challenges has your primary healthcare organization encountered while implementing telehealth services? (Select all that apply)	Telehealth – challenges (% of all Respondents)	% of Responses (Total = 362)
Additional burden on staff	0.5%	1.1%
Connectivity issues (e.g., bandwidth, network stability)	4.0%	9.7%
Inefficient telehealth workflows	0.2%	0.6%
Insufficient computer skills/literacy/experience of patients	0.3%	0.8%
Insufficient computer skills/literacy/experience of staff	0.1%	0.3%
Integration with existing systems (e.g., EHRs)	0.8%	1.9%
Patient resistance or lack of awareness	6.5%	15.5%
Provider and clinical staff resistance	7.9%	19.1%
Regulatory/compliance hurdles	0.2%	0.6%
Reimbursement/Payment issues	5.3%	12.7%
Technology infrastructure problems	2.5%	6.1%
There are no challenges to adoption in our organization.	7.3%	17.4%
There is a lack of trust in the process of improving workflow.	0.2%	0.6%
Workforce-related issues (e.g., difficulty recruiting staff, high turnover)	0.6%	1.4%
Other	5.2%	12.4%
Did not answer	58.3%	
Grand Total	**100.0%**	**362**

Figure 78 – Provider Survey Question 37



Question 38

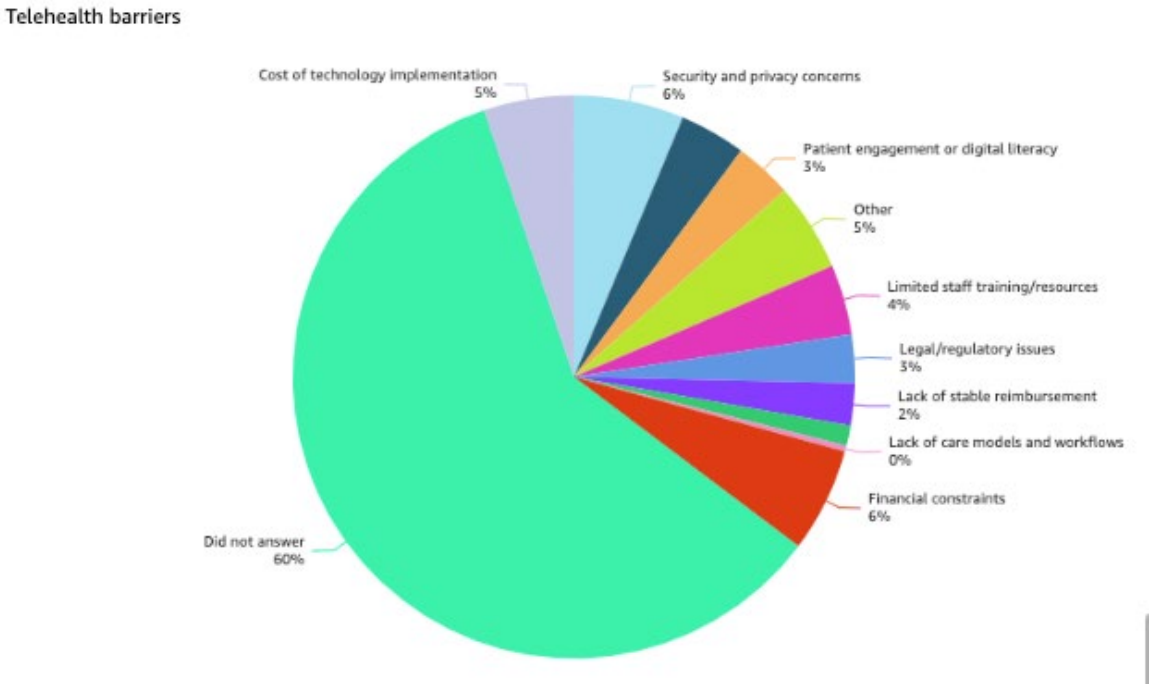
The key barriers that prevent further adoption of telehealth and digital health in respondents' organizations include security and privacy concerns (6.3%), financial constraints (6.0%), and the cost of technology implementation (5.2%). Majority of respondents (59.6%) did not respond to the question (**Table *54*** and **Figure *79***).

Table 54 – Provider Survey Question 38

Q38. What are the key barriers preventing further adoption of telehealth/digital health at your primary healthcare organization? (Select all that apply)	Telehealth barriers (% of all Respondents)	% of Responses (Total = 351)
Cost of technology implementation	5.2%	12.8%
Financial constraints	6.0%	14.8%
Lack of care models and workflows	0.3%	0.9%
Lack of clinical guidelines/standardization	1.2%	2.8%
Lack of stable reimbursement	2.4%	6.0%
Legal/regulatory issues	2.8%	6.8%

Q38. What are the key barriers preventing further adoption of telehealth/digital health at your primary healthcare organization? (Select all that apply)	Telehealth barriers (% of all Respondents)	% of Responses (Total = 351)
Limited staff training/resources	4.0%	10.0%
Patient engagement or digital literacy	3.3%	8.3%
Provider engagement	3.8%	9.4%
Security and privacy concerns	6.3%	15.7%
Other	5.1%	12.5%
Did not answer	59.6%	
Grand Total	**100.0%**	**351**

Figure 79 – Provider Survey Question 38



Question 39

To address barriers to telehealth adoption and usage, 7.9% of respondents' organizations provide staff training and education program on telehealth technologies and best practices, 2.4% provide technical support and assistance to healthcare providers, and 2.0% conduct regular assessments and feedback mechanisms to address user and patient concerns (**Table *55*** and **Figure *80***).

Table 55 – Provider Survey Question 39

Q39. What steps has your primary healthcare organization taken to address barriers to telehealth adoption and usage? (Select all that apply)	Telehealth steps to address barriers (% of all Respondents)	% of Responses (Total = 358)
Conducting regular assessments and feedback mechanisms to address user and patient concerns	2.0%	4.7%
Conducting workflow analysis and redesign to integrate telehealth into clinical processes	0.9%	2.2%
Implementing user-friendly telehealth platforms and tools	0.7%	1.7%
Investing in infrastructure improvements (e.g., broadband connectivity, video conferencing systems) to support telehealth implementation.	1.6%	3.9%
None. The barriers have not been addressed.	23.4%	56.7%
Offering incentives or rewards for telehealth adoption and utilization	0.2%	0.6%
Providing technical support and assistance to healthcare providers	2.4%	5.9%
Staff training and education program on telehealth technologies and best practices	7.9%	19.3%
Other	2.1%	5.0%
Did not answer	58.8%	
Grand Total	**100.0%**	**358**

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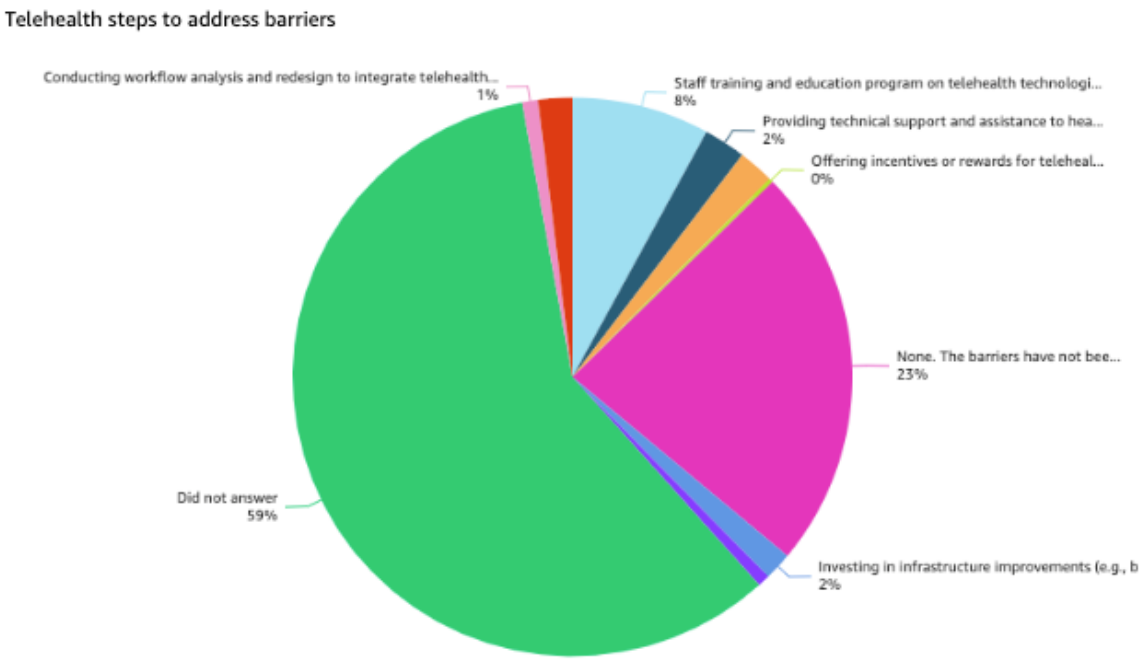
Figure 80 – Provider Survey Question 39



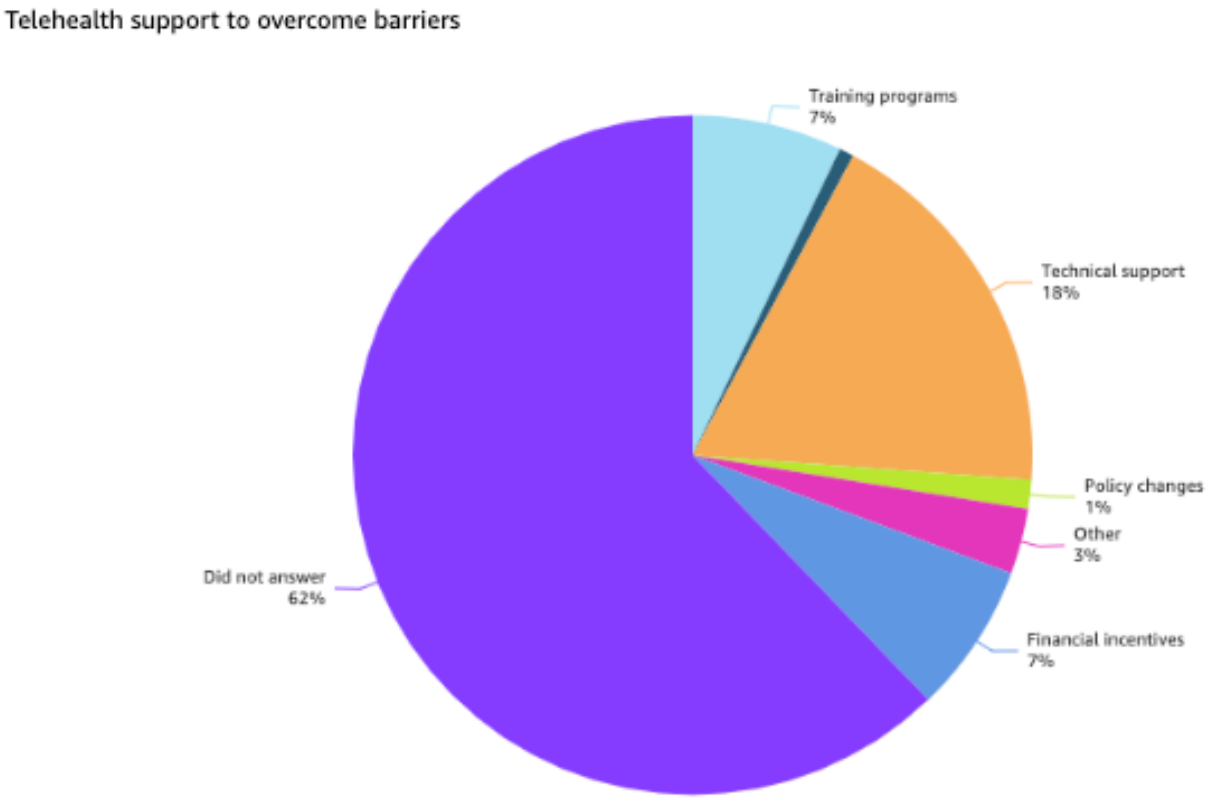
Question 40

The types of support respondents believe would most help their organizations overcome these barriers include technical support (18.3%), financial incentives (7.1%), and training programs (7.1%). Over 60.0% of respondents declined to respond (**Table *56*** and **Figure *81***).

Table 56 – Provider Survey Question 40

Q40. What support would most help your primary healthcare organization overcome these barriers? (Select all that apply).	Telehealth support to overcome barriers (% of all Respondents)	% of Responses (Total = 328)
Financial incentives	7.1%	18.9%
Policy changes	1.4%	3.7%
Technical support	18.3%	48.5%
Technology upgrade (HL7, FHIR)	0.7%	1.8%
Training programs	7.1%	18.9%
Other	3.1%	8.2%
Did not answer	62.2%	
Grand Total	**100.0%**	**328**

Figure 81 – Provider Survey Question 40



SECTION 5: Meaningful Use

Question 41

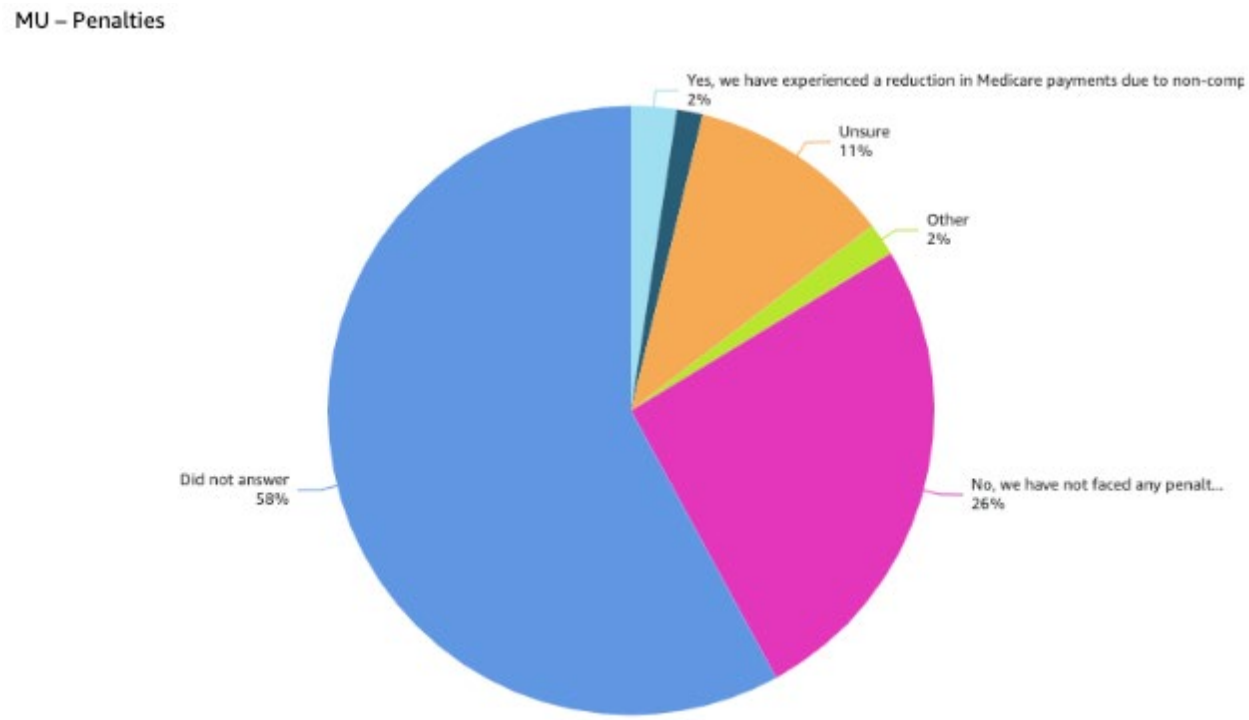
While 57.9% of respondents did not respond to the question on Meaningful Use penalties, 25.7% indicated that their organizations have not faced any penalties, 10.8% were unsure, and 3.8% have faced penalties (**Table *57*** and **Figure *82***).

Table 57 – Provider Survey Question 41

Q41. Has your primary healthcare organization faced any penalties related to the Puerto Rico Medicaid Meaningful Use (MU) program?	MU – Penalties (% of all Respondents)	% of Responses (Total = 365)
No, we have not faced any penalties related to the Meaningful Use program.	25.7%	61.1%
Unsure	10.8%	25.8%
Yes, we have been notified of potential reductions in future Medicare payments due to non-compliance with MU requirements.	1.4%	3.3%

Q41. Has your primary healthcare organization faced any penalties related to the Puerto Rico Medicaid Meaningful Use (MU) program?	MU – Penalties (% of all Respondents)	% of Responses (Total = 365)
Yes, we have experienced a reduction in Medicare payments due to non-compliance with MU requirements.	2.4%	5.8%
Other	1.7%	4.1%
Did not answer	57.9%	
Grand Total	**100.0%**	**365**

Figure 82 – Provider Survey Question 41



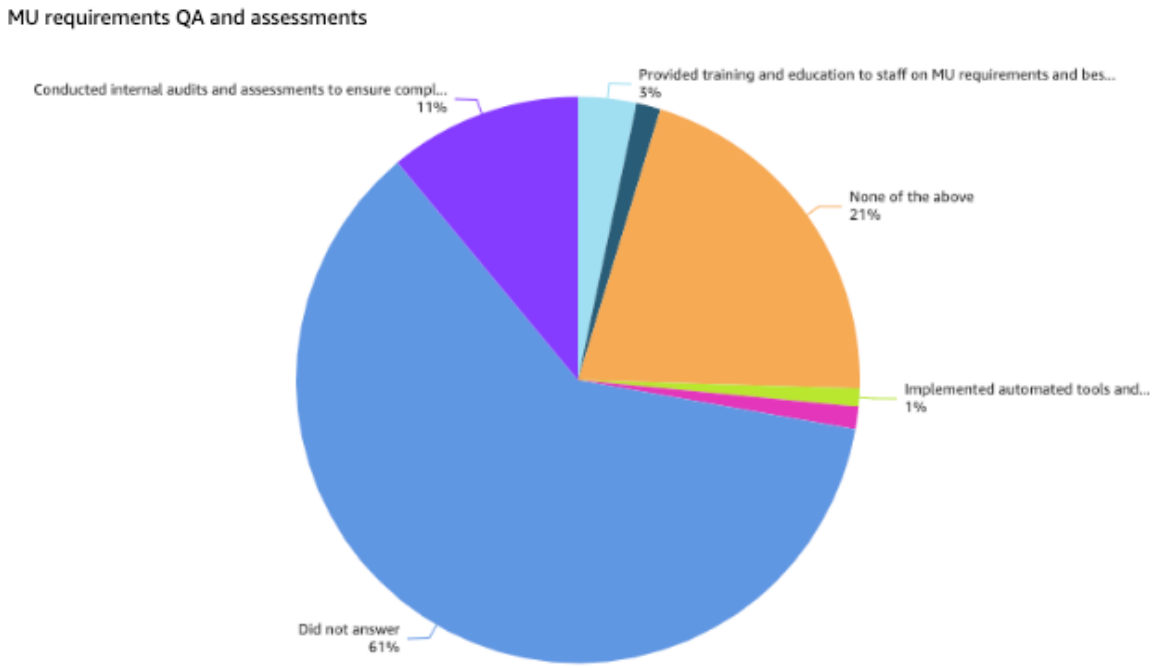
Question 42

Respondents' organizations have addressed quality assurance and assessments related to MU requirements in various ways including internal audits and assessments to ensure compliance with MU requirements (11.1%) and training and education to staff on MU requirements and best practices (3.3%) (**Table *58*** and **Figure *83***).

Table 58 – Provider Survey Question 42

Q42. How has your organization addressed quality assurance and assessments related to Meaningful Use requirements? (Select all that apply)	MU requirements QA and assessments (% of all Respondents)	% of Responses (Total = 337)
Conducted internal audits and assessments to ensure compliance with MU requirements	11.1%	28.5%
Engaged external consultants or vendors to assist with MU quality assurance and assessments.	1.3%	3.3%
Implemented automated tools and processes to monitor and validate MU compliance	1.0%	2.7%
Provided training and education to staff on MU requirements and best practices	3.3%	8.6%
None of the above	20.7%	53.4%
Other	1.4%	3.6%
Did not answer	61.2%	
Grand Total	**100.0%**	**337**

Figure 83 – Provider Survey Question 42



Question 43

Challenges faced by respondents' organizations in implementing and reporting electronic Clinical Quality Measures (eCQMs) include insufficient resources or expertise to implement and maintain eCQM reporting processes (10.1%), difficulties in extracting accurate and complete data from EHR systems for eCQM reporting (4.6%), and lack of standardization and consistency in eCQM specifications and calculations (2.5%). Majority of participants (60.6%) declined to answer this question (**Table *59*** and **Figure *84***).

Table 59 – Provider Survey Question 43

Q43. Which of the following challenges has your organization faced in implementing and reporting electronic Clinical Quality Measures (eCQMs)? (Select all that apply)	eCQMs implementation (challenges) (% of all Respondents)	% of Responses (Total = 342)
Challenges in meeting eCQM specifications and calculations	0.6%	1.5%
Difficulties in extracting accurate and complete data from EHR systems for eCQM reporting	4.6%	11.7%
Insufficient resources or expertise to implement and maintain eCQM reporting processes	10.1%	25.7%
Lack of standardization and consistency in eCQM specifications and calculations	2.5%	6.4%
None of the above	20.9%	52.9%
Other	0.7%	1.8%
Did not answer	60.6%	
Grand Total	**100.0%**	**342**

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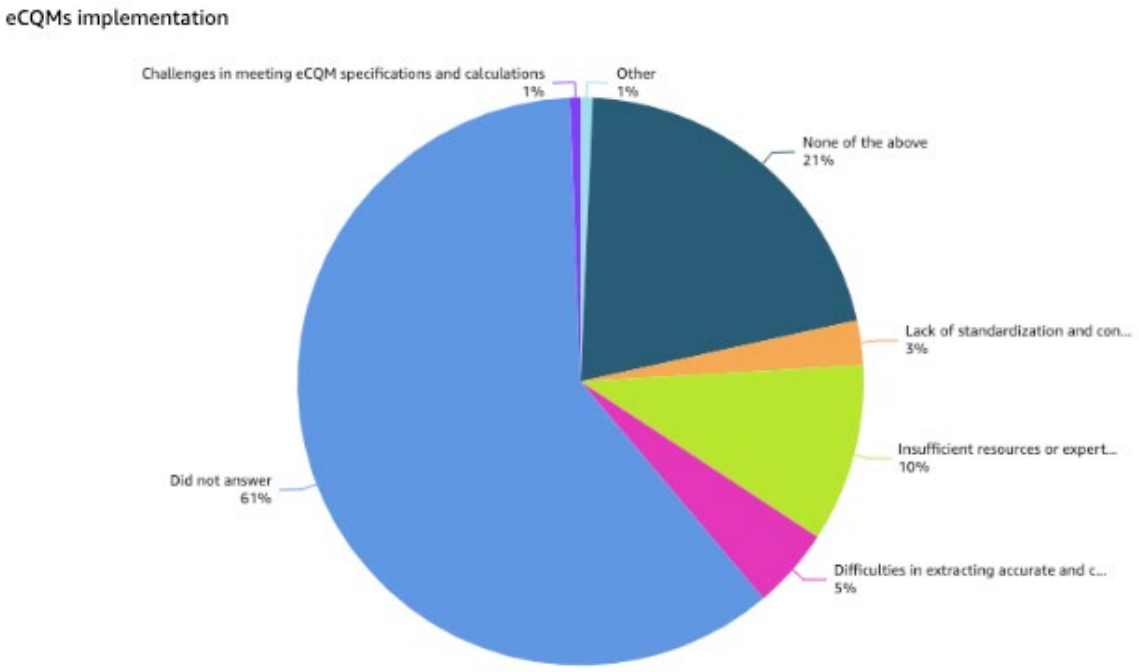
Figure 84 – Provider Survey Question 43



Question 44

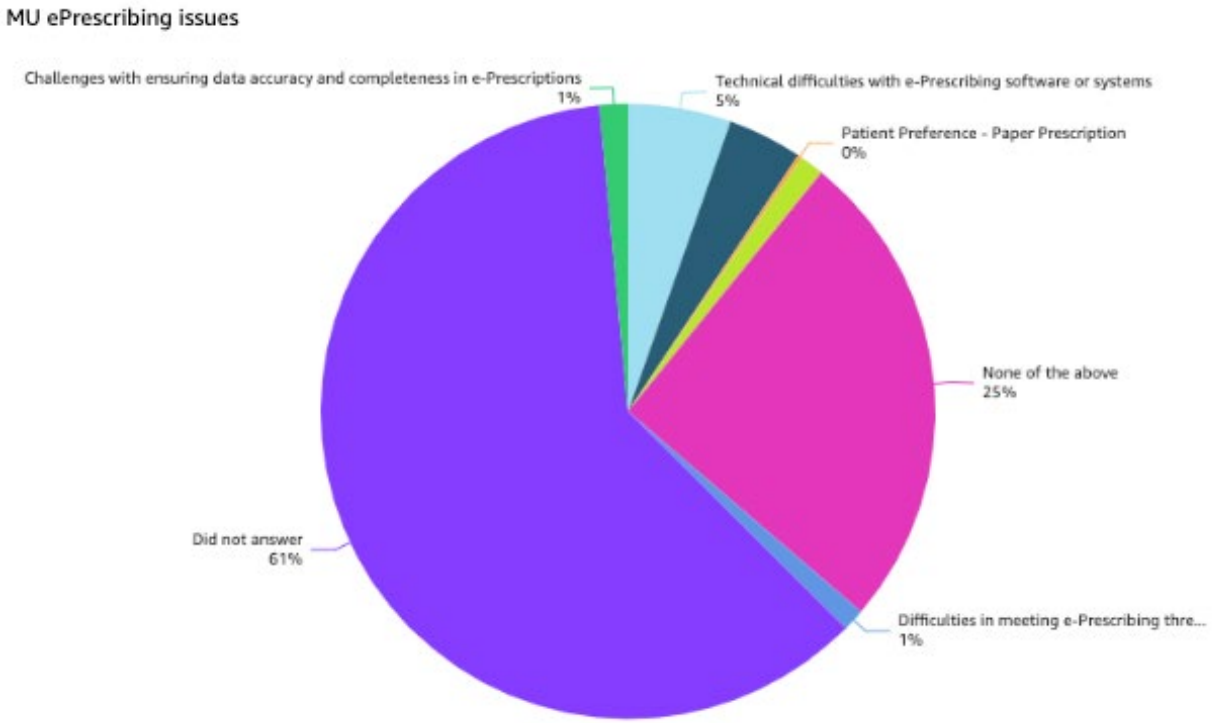
Specifically on the e-prescribing component of MU, issues faced by organizations include technical difficulties with e-prescribing software or systems (5.4%), resistance from prescribers to adopt e-prescribing practices (3.9%), and challenges with ensuring data accuracy and completeness in e-Prescriptions (1.5%) (**Table *60*** and **Figure *85***).

Table 60 – Provider Survey Question 44

Q44. Which of the following issues has your organization encountered with the e-Prescribing component of Meaningful Use? (Select all that apply)	MU ePrescribing issues (% of all Respondents)	% of Responses (Total = 338)
Challenges with ensuring data accuracy and completeness in e-Prescriptions	1.5%	3.8%
Difficulties in meeting e-Prescribing threshold requirements	1.2%	3.0%
Patient Preference - Paper Prescription	0.2%	0.6%
Resistance from prescribers to adopt e-Prescribing practices	3.9%	10.1%

Q44. Which of the following issues has your organization encountered with the e-Prescribing component of Meaningful Use? (Select all that apply)	MU ePrescribing issues (% of all Respondents)	% of Responses (Total = 338)
Technical difficulties with e-Prescribing software or systems	5.4%	13.9%
None of the above	25.5%	65.4%
Other	1.3%	3.3%
Did not answer	61.1%	
Grand Total	**100.0%**	**338**

Figure 85 – Provider Survey Question 44



Question 45

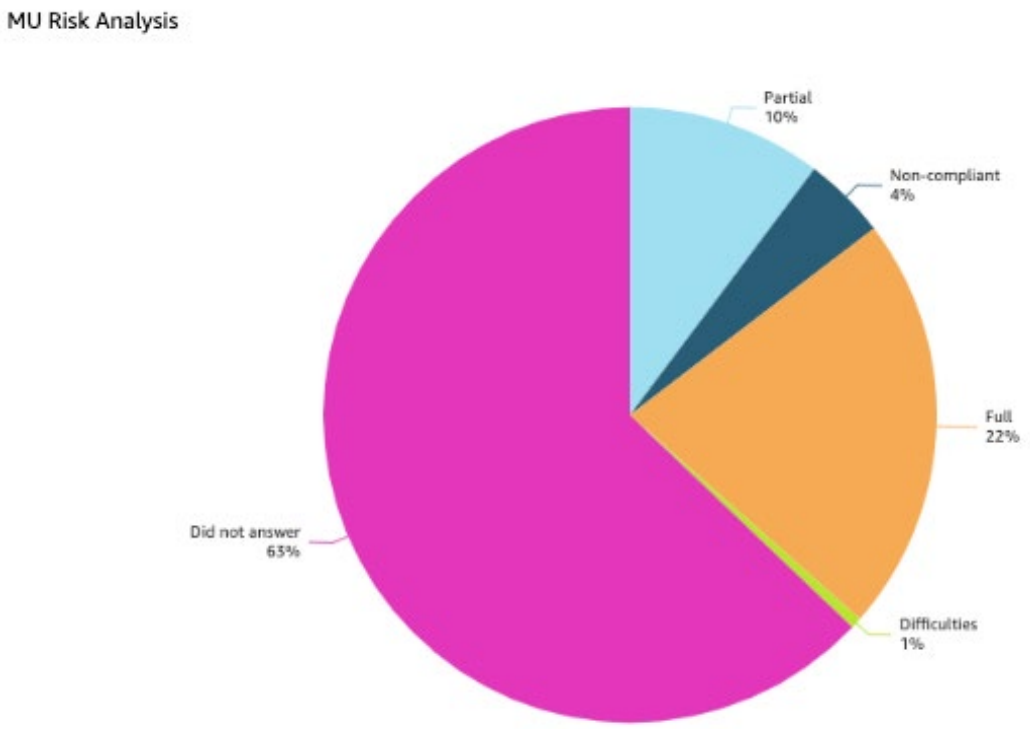
On the level of compliance and difficulties encountered by their organizations when

(a) conducting security risk analysis, 21.9% of participants indicated they were in full compliance, 10.3% partially compliant, and 4.4% non-compliant, while 62.9% declined to answer (**Table *61*** and **Figure *86***).

Table 61 – Provider Survey Question 45(a)

Q45(a) Conducting security risk analysis	MU Risk Analysis (% of all Respondents)	% of Responses (Total = 322)
Difficulties	0.6%	1.6%
Full	21.9%	59.0%
Non-compliant	4.4%	11.8%
Partial	10.3%	27.6%
Did not answer	62.9%	
Grand Total	**100.0%**	**322**

Figure 86 – Provider Survey Question 45(a)

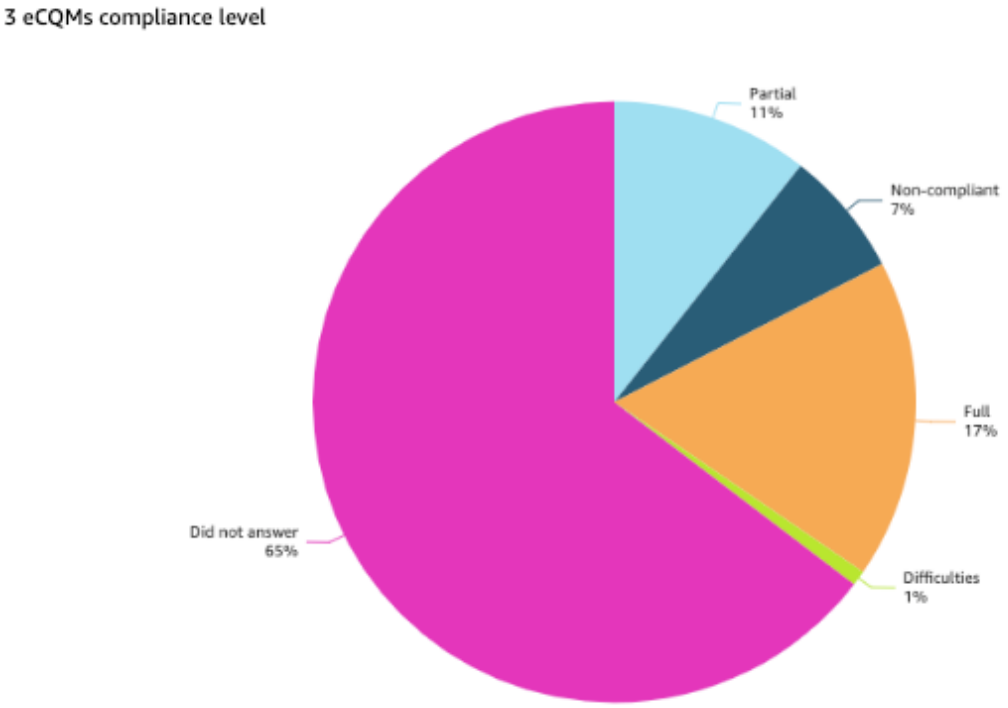


(b) reporting on three self-selected eCQMs, 17.2% indicated they were in full compliance, 10.6% partially compliant, and 6.8% non-compliant, while 64.6% declined to answer (**Table *62*** and **Figure *87***).

Table 62 – Provider Survey Question 45(b)

Q45(b) Reporting on 3 self-selected eCQMs	3 eCQMs compliance level (% of all Respondents)	% of Responses (Total = 307)
Difficulties	0.8%	2.3%
Full	17.2%	48.5%
Non-compliant	6.8%	19.2%
Partial	10.6%	30.0%
Did not answer	64.6%	
Grand Total	**100.0%**	**307**

Figure 87 – Provider Survey Question 45(b)

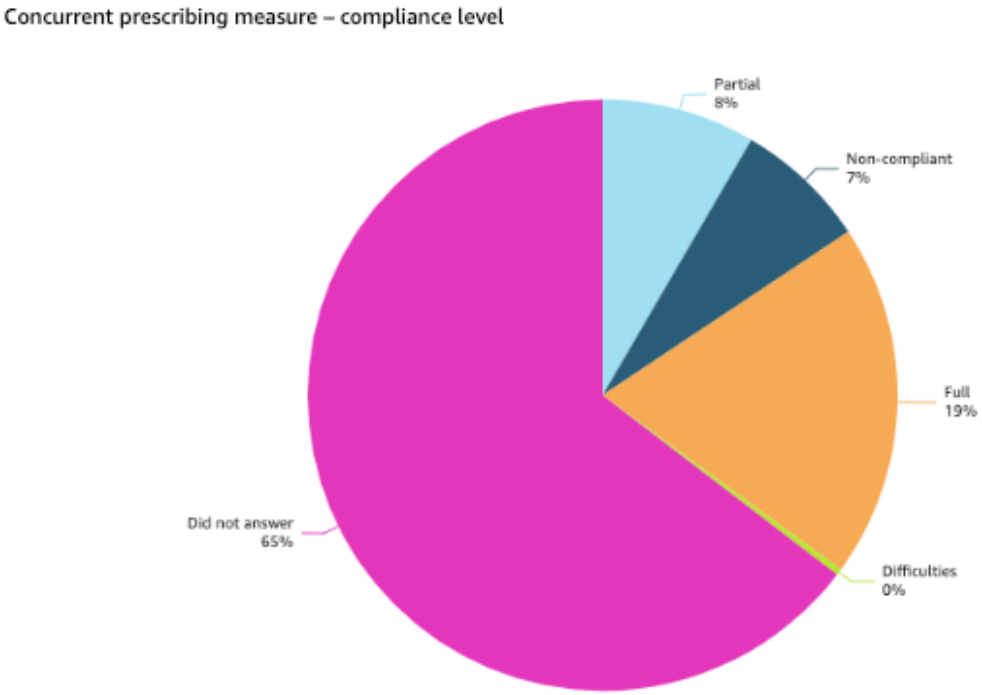


(c) reporting on the safe use of opioids – concurrent prescribing measure, 19.4% indicated they were in full compliance, 8.4% partially compliant, and 7.3% non-compliant, while 64.6% declined to answer (**Table *63*** and **Figure *88***).

Table 63 – Provider Survey Question 45(c)

Q45(c) Reporting on the Safe Use of Opioids – Concurrent Prescribing measure	Concurrent prescribing measure – compliance level (% of all Respondents)	% of Responses (Total = 307)
Difficulties	0.3%	1.0%
Full	19.4%	54.7%
Non-compliant	7.3%	20.5%
Partial	8.4%	23.8%
Did not answer	64.6%	
Grand Total	**100.0%**	**307**

Figure 88 – Provider Survey Question 45(c)



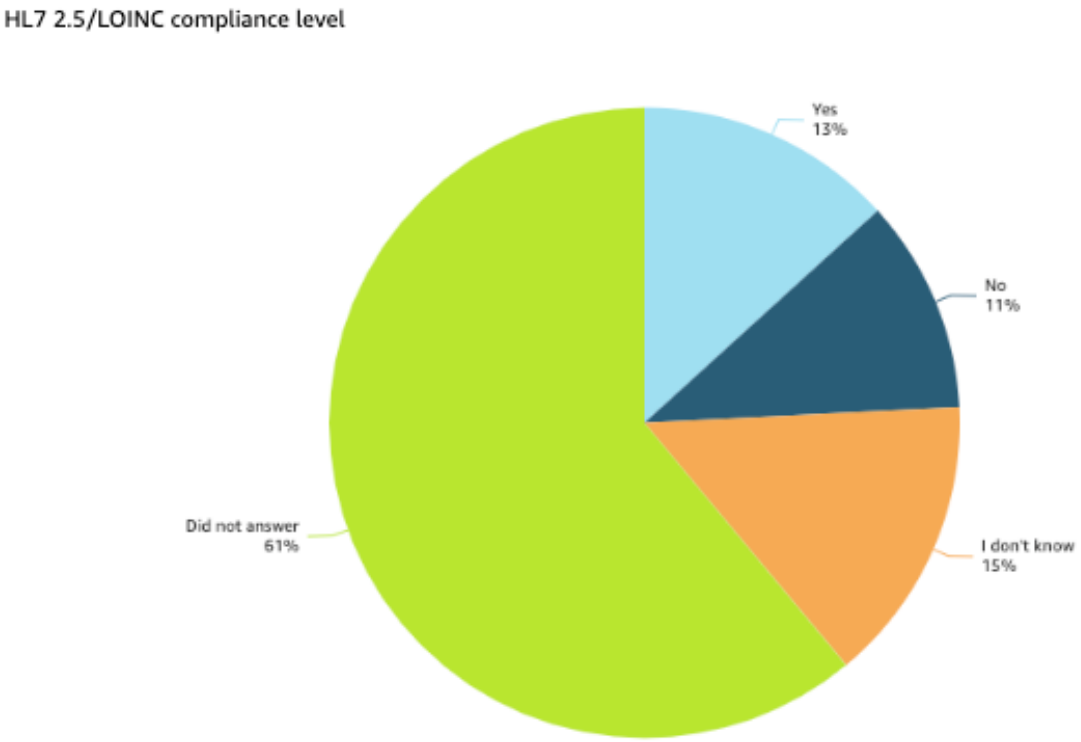
Question 46

On the level of HL7 2.5/LOINC compliance, 13.2% responded that their organizations are reporting public health data to the Puerto Rico Department of Health in accordance with their standards (HL7 2.5/LOINC codes), 11.0% indicated that they are not, and 14.7% do not know (**Table *64*** and **Figure *89***).

Table 64 – Provider Survey Question 46

Q46. Is your organization reporting Public Health data to the Puerto Rico Department of Health in accordance with their standards (HL7 2.5/LOINC codes)?	HL7 2.5/LOINC compliance level (% of all Respondents)	% of Responses (Total = 338)
I don't know	14.7%	37.9%
Yes	13.2%	34.0%
No	11.0%	28.1%
Did not answer	61.1%	
Grand Total	**100.0%**	**338**

Figure 89 – Provider Survey Question 46



Question 47

Respondents' organizations participate in Electronic Prescribing (11.2%), Electronic Reportable Laboratory Result Reporting (5.5%), and clinical data registry reporting (3.7%), amongst others (**Table *65*** and **Figure *90***).

Table 65 – Provider Survey Question 47

Q47. Please indicate your organization's participation in the following: (Select all that apply)	Main Org. Participation (% of all Respondents)	% of Responses (Total = 312)
Clinical Data registry Reporting	3.7%	10.3%
Electronic Case Reporting	3.0%	8.3%
Electronic Prescribing	11.2%	31.1%
Electronic Reportable Laboratory Result Reporting	5.5%	15.4%
Health Information Exchange (HIE): Support Electronic Referral Loops by Sending Health Information	1.2%	3.2%
HIE: Engagement in Bi-Directional Exchange Trough Health Information Exchange	0.1%	0.3%
HIE: Support Electronic Referral Loops by Receiving and Reconciling Health Information	0.2%	0.6%
Immunization Registry Reporting	1.3%	3.5%
Provide Patients Electronic Access to Their Health Information	3.5%	9.6%
Public health Registry Reporting	2.2%	6.1%
Query of Prescription Drug Monitoring Program	1.4%	3.8%
Syndromic Surveillance Reporting	2.8%	7.7%
Did not answer	64.1%	
Grand Total	**100.0%**	**312**

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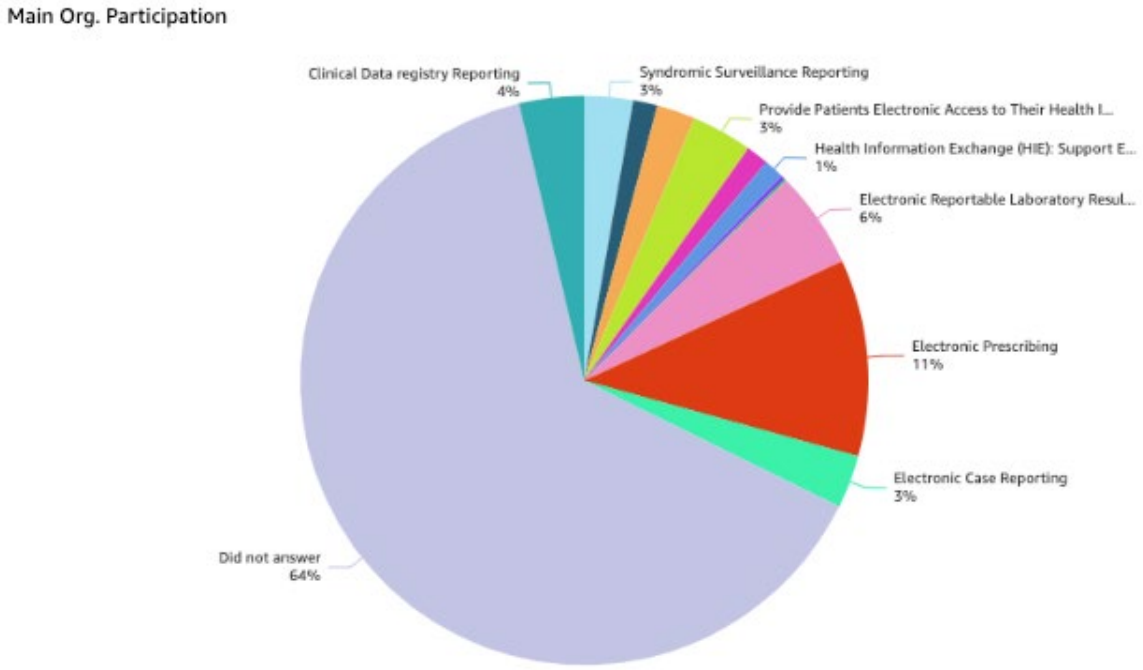
Figure 90 – Provider Survey Question 47



SECTION 6: Additional services

Question 48

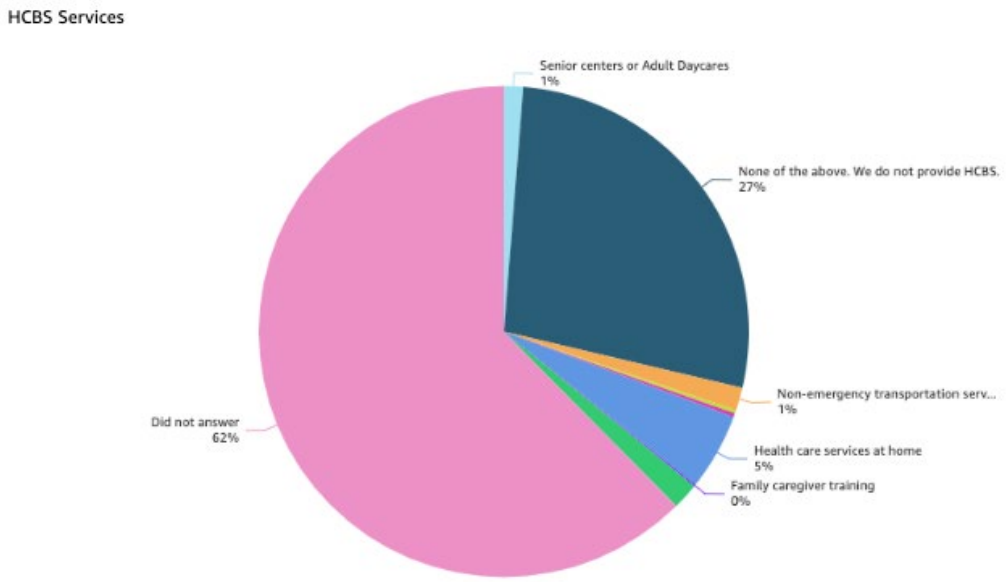
Regarding home and community-based services (HCBS), 27.4% of respondents indicate that they do not provide HCBS, 5.1% provide healthcare services at home, 1.7% provide direct service workers / direct care workers, and 1.5% provide non-emergency transportation services (**Table *66*** and **Figure *91***).

Table 66 – Provider Survey Question 48

Q48. Does your organization provide any of the following home and community-based services (HCBS)? Select all that apply.	Count of 54 - HCBS Services	% of Responses (Total = 326)
Direct service worker / Direct care workers	1.7%	4.6%
Family caregiver training	0.1%	0.3%
Health care services at home	5.1%	13.5%
Home safety evaluations and modifications	0.2%	0.6%
Hospice and palliative care	0.2%	0.6%
Non-emergency transportation services	1.5%	4.0%
Senior centers or Adult Daycares	1.3%	3.4%

Q48. Does your organization provide any of the following home and community-based services (HCBS)? Select all that apply.	Count of 54 - HCBS Services	% of Responses (Total = 326)
None of the above. We do not provide HCBS.	27.4%	73.0%
Did not answer	62.4%	
Grand Total	**100.0%**	**326**

Figure 91 – Provider Survey Question 48



SECTION 7: Future Direction

Question 49

On the use of AI for clinical tasks in healthcare, 10.9% of respondents believe AI can be beneficial for certain clinical tasks, but its use should be carefully regulated and supervised by qualified healthcare professionals, 9.6% do not believe AI should be used for clinical tasks, and 7.7% believe AI should be widely adopted for clinical tasks, as it has the potential to significantly improve patient outcomes and healthcare efficiency. Majority of participants (61.4%) declined to answer (**Table *67*** and **Figure *92***).

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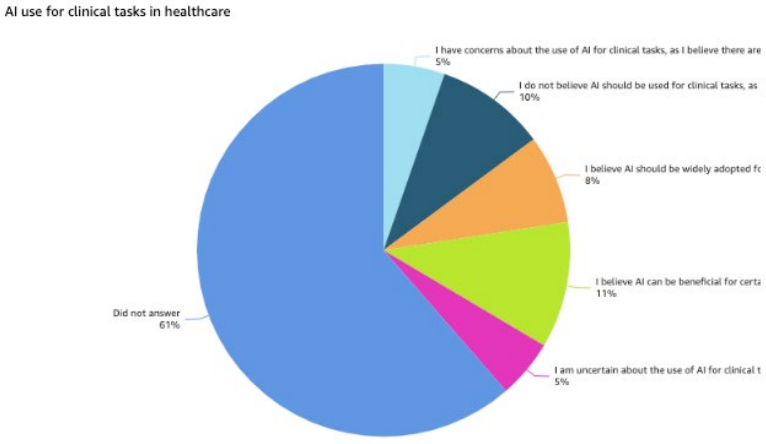
Table 67 – Provider Survey Question 49

Q49. How comfortable are you with the use of AI for clinical tasks in healthcare? (e.g., diagnosis, treatment planning, and patient monitoring)	AI use for clinical tasks in healthcare (% of all Respondents)	% of Responses (Total = 335)
I am uncertain about the use of AI for clinical tasks, as I feel there is insufficient evidence to support its widespread adoption at this time.	5.1%	13.1%
I believe AI can be beneficial for certain clinical tasks, but its use should be carefully regulated and supervised by qualified healthcare professionals.	10.9%	28.4%
I believe AI should be widely adopted for clinical tasks, as it has the potential to significantly improve patient outcomes and healthcare efficiency.	7.7%	20.0%
I do not believe AI should be used for clinical tasks, as I feel it cannot replace the expertise and judgment of trained healthcare professionals.	9.6%	24.8%
I have concerns about the use of AI for clinical tasks, as I believe there are potential risks to patient safety and privacy that need to be addressed.	5.3%	13.7%
Did not answer	61.4%	
Grand Total	**100.0%**	**335**

Figure 92 – Provider Survey Question 49



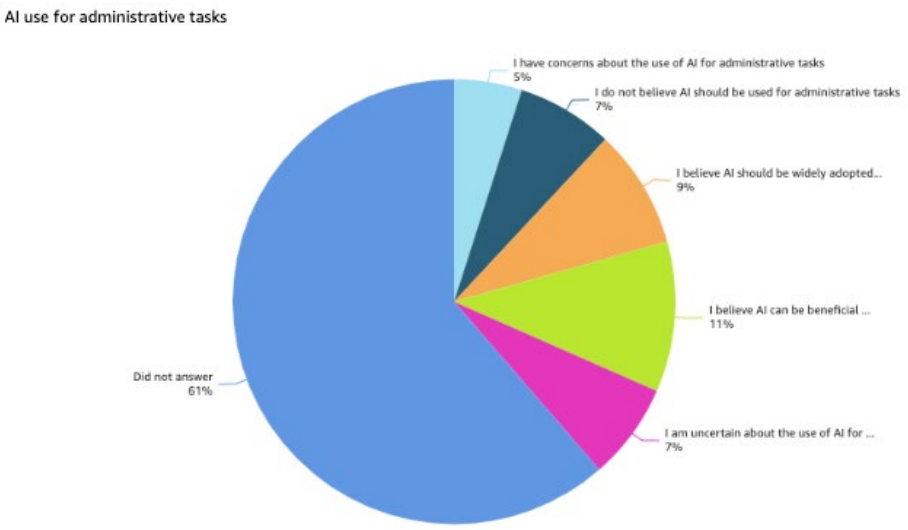
Question 50

On the use of AI for administrative tasks in healthcare, 10.9% believe AI can be beneficial for certain administrative tasks, while 8.6% believe AI should be widely adopted for administrative tasks (**Table *68*** and **Figure *93***).

Table 68 – Provider Survey Question 50

Q50. How comfortable are you with the use of AI for administrative tasks in healthcare? (e.g., scheduling, documentation, and robotic process automation)	AI use for administrative tasks (% of all Respondents)	% of Responses (Total = 335)
I am uncertain about the use of AI for administrative tasks	7.0%	18.2%
I believe AI can be beneficial for certain administrative tasks	10.9%	28.4%
I believe AI should be widely adopted for administrative tasks	8.6%	22.4%
I do not believe AI should be used for administrative tasks	7.0%	18.2%
I have concerns about the use of AI for administrative tasks	5.0%	12.8%
Did not answer	61.4%	
Grand Total	**100.0%**	**335**

Figure 93 – Provider Survey Question 50



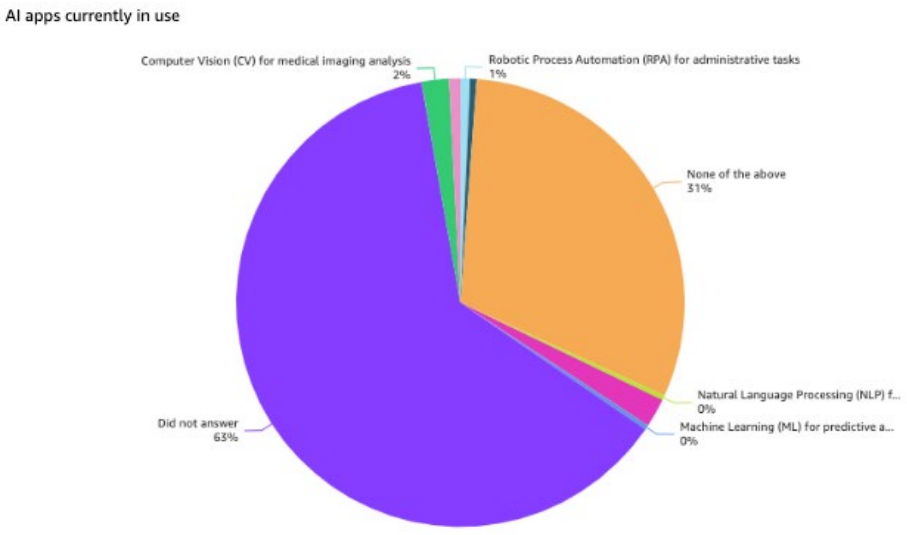
Question 51

In the respondents' organizations, AI applications currently used include Natural Language Processing (NLP) for clinical documentation (2.4%) and Computer Vision (CV) for medical imaging analysis (2.0%), while 30.6% use none of the apps listed and 62.7% declined to answer (**Table *69*** and **Figure *94***).

Table 69 – Provider Survey Question 51

Q51. Which of the following AI applications are currently being used in your organization? (Select all that apply)	AI apps currently in use (% of all Respondents)	% of Responses (Total = 324)
Chatbots for patient engagement and support	0.8%	2.2%
Computer Vision (CV) for medical imaging analysis	2.0%	5.2%
Machine Learning (ML) for predictive analytics	0.3%	0.9%
Natural Language Processing (NLP) for Clinical documentation	2.4%	6.5%
Robotic Process Automation (RPA) for administrative tasks	0.7%	1.9%
None of the above	30.6%	82.1%
Other	0.5%	1.2%
Did not answer	62.7%	
Grand Total	**100.0%**	**324**

Figure 94 – Provider Survey Question 51



Question 52

The likelihood of respondents' organizations to adopt or expand the use of AI-enabled medical scribes for clinical documentation in the five years to follow varies from neutral (12.2%) to somewhat unlikely (8.6%), and somewhat likely (7.0%) (***Table 70*** and **Figure *95***).

Table 70 – Provider Survey Question 52

Q52. How likely is your primary healthcare organization to adopt or expand the use of AI-enabled medical scribes for clinical documentation in the next 5 years?	AI medical scribes probability next - 5 years (% of all Respondents)	% of Responses (Total = 335)
Neutral, as there has been no consideration of using AI-enabled medical scribes and/or there isa need to evaluate their potential impact on our organization.	12.2%	31.6%
Somewhat likely, as there is an interest in exploring the potential benefits of AI-enabled medical scribes but need more evidence of their effectiveness.	7.0%	18.2%
Somewhat unlikely, as there are concerns about the accuracy and reliability of AI enabled medical scribes in capturing clinical information.	8.6%	22.4%
Very likely, as AI-enabled medical scribes can significantly reduce documentation burden and improve clinical efficiency.	4.1%	10.7%
Very unlikely, AI-enabled medical scribes are not a priority or fit for our organization's needs and goals	6.6%	17.0%
Did not answer	61.4%	
Grand Total	**100.0%**	**335**

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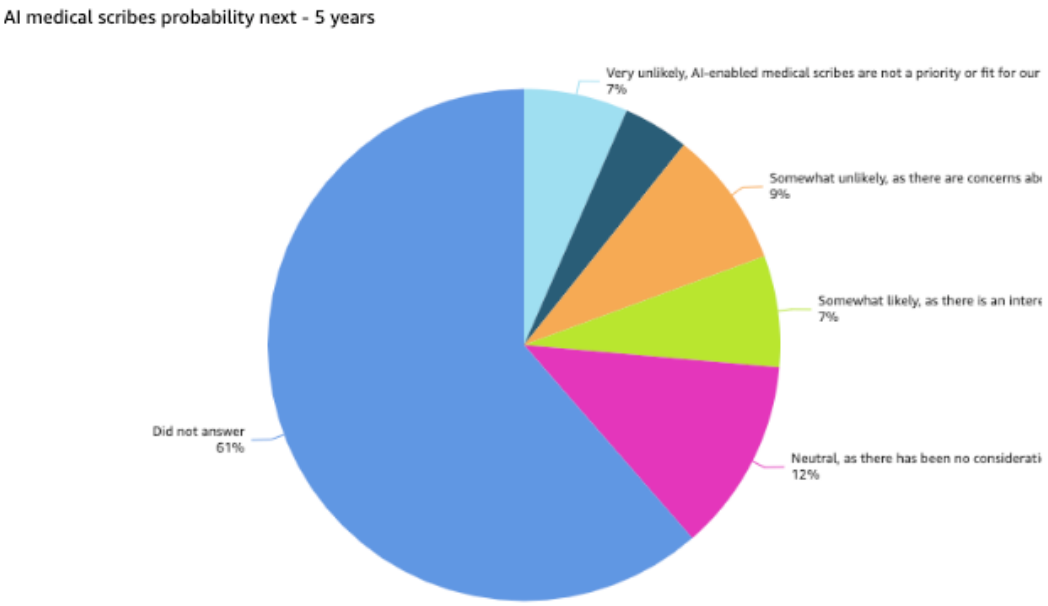
Figure 95 – Provider Survey Question 52



Question 53

This question asked participants whether they hand any comments or suggestions to improve HIT in Puerto Rico and, therefore, was an open question without a set of responses that could be tabulated.

Question 54

Table 71 – Provider Survey Question 54

54. Would you like to submit a survey for another organization at which you work?	Send survey to another organization (% of all Respondents)	% of Responses (Total = 359)
No	38.5%	93.0%
Yes	2.9%	7.0%
Did not answer	58.6%	
Grand Total	**100.0%**	**359**

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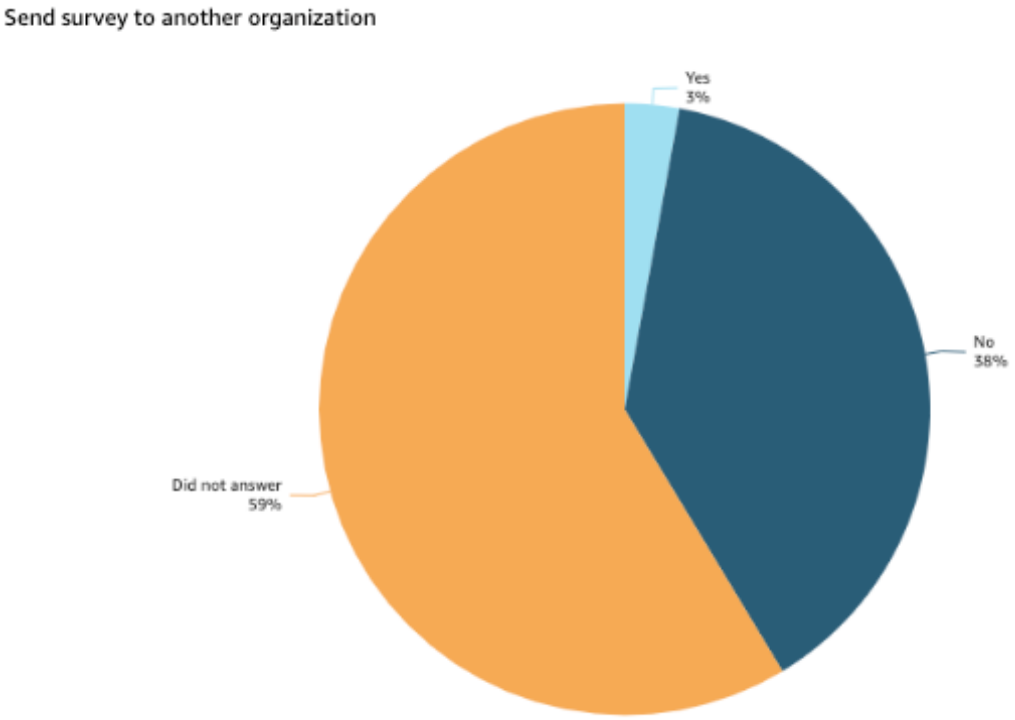
Figure 96 – Provider Survey Question 54



Administrator Survey

SECTION 1: General Information

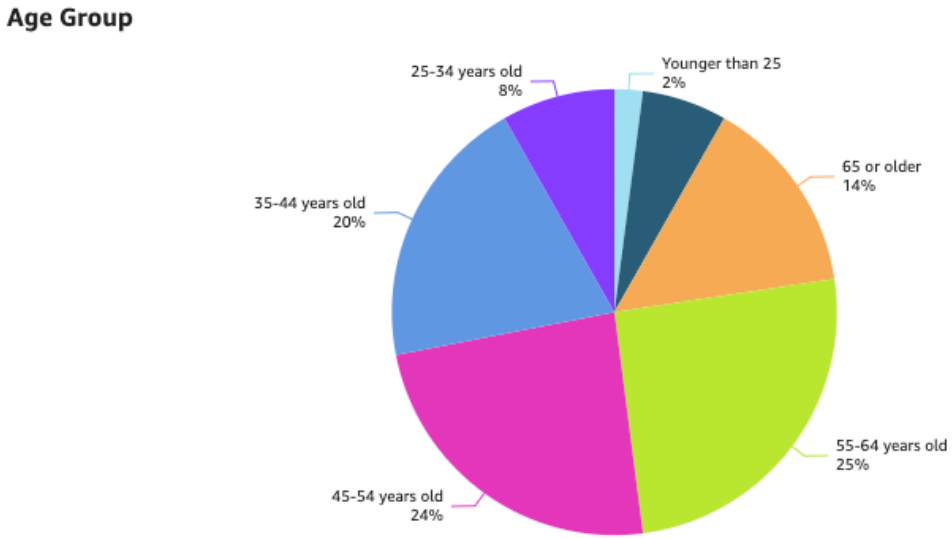
Question 1

Of the respondents who answered the question on age group (93.8%) of respondents, almost 67.8% were aged 45 years and above, with the largest proportion of respondents in the 55 – 64 years old group (27.0%), followed by 45 – 45 years old (25.5%). Approximately one third (32.2%) were aged 44 years and below (**Table *72*** and **Figure *97***).

Table 72 – Administrator Survey Question 1

Q1. What is your age group?	% of all Respondents	% of Responses (Total = 137)
Younger than 25	2.1%	2.2%
25-34 years old	8.2%	8.8%
35-44 years old	19.9%	21.2%
45-54 years old	24.0%	25.5%
55-64 years old	25.3%	27.0%
65 or older	14.4%	15.3%
Did not answer	6.2%	
Grand Total	**100.0%**	**137**

Figure 97 – Administrator Survey Question 1



Question 2

The type of primary healthcare organization most respondents described as their workplace is a private office (24.7% of respondents), followed by Primary Care Group/Independent Physician Association (Non-FQHC) (9.6%) and dentist office (18.9%), while 13.0% did not provide an answer (**Table *73*** and **Figure *98***).

Note: For the purpose of this survey, your primary healthcare organization is the organization where you work the highest proportion of hours.

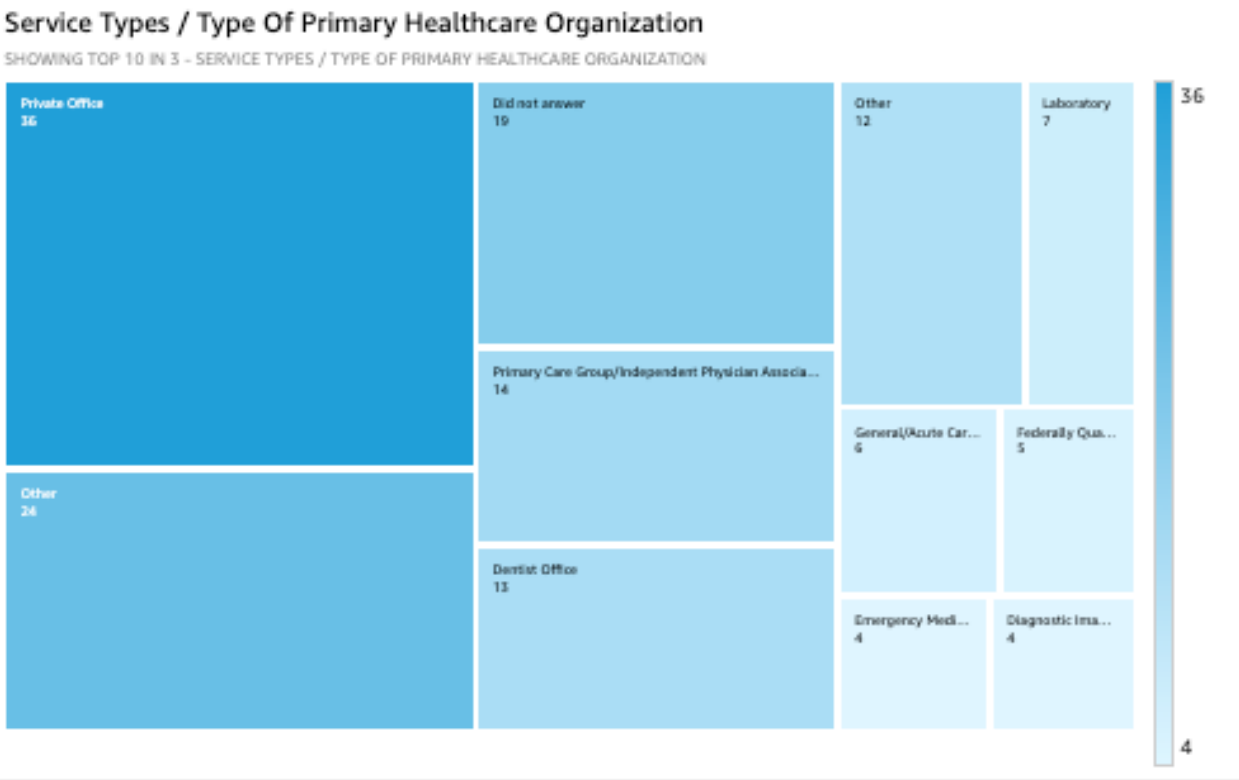
Table 73 – Administrator Survey Question 2

Q2. Which of the following best describes the primary healthcare organization in which you work? (Select all that apply)	Service Types / Type of Primary Healthcare Organization (% of all Respondents)	% of Responses (Total = 127)
Academic Medical Center	0.7%	0.8%
Behavioral Health Provider/Clinic (outpatient)	1.4%	1.6%
Dentist Office	8.9%	10.2%
Diagnostic Imaging Facility	2.7%	3.1%
Emergency Medical Services	2.7%	3.1%
Emergency Room	2.7%	3.1%
Employee Health Clinics	0.7%	0.8%
Federally Qualified Health Center (FQHC)	3.4%	3.9%
General/Acute Care Hospital	4.1%	4.7%
Home Care Provider (outpatient only)	2.1%	2.4%
Hospice Services	2.7%	3.1%
Hospital or Health Organization within a Larger Health System	2.1%	2.4%
Laboratory	4.8%	5.5%
Physical Medicine and Rehabilitation Clinics	0.7%	0.8%
Primary Care Group/Independent Physician Association (Non-FQHC)	9.6%	11.0%
Private Office	24.7%	28.3%
Psychiatric Hospital (inpatient)	0.7%	0.8%
Skilled Nursing Facility	1.4%	1.6%
Stand-alone Hospital or Health Organization	0.7%	0.8%
Stand-alone Telehealth Provider	1.4%	1.6%

Q2. Which of the following best describes the primary healthcare organization in which you work? (Select all that apply)	Service Types / Type of Primary Healthcare Organization (% of all Respondents)	% of Responses (Total = 127)
Veteran's Administration Community Based Clinic (outpatient)	0.7%	0.8%
Other	8.2%	9.4%
Did not answer	13.0%	
Grand Total	**100.0%**	**127**

Others include: Immunization (1), Neonatal Services Corporation (1), Eye Clinic (2), Insurance company (1), Medication Assisted Treatment Clinic (1), Pharmacy (2), Ambulance/Transportation services (3), Epidemiology Center (1)

Figure 98 – Administrator Survey Question 2



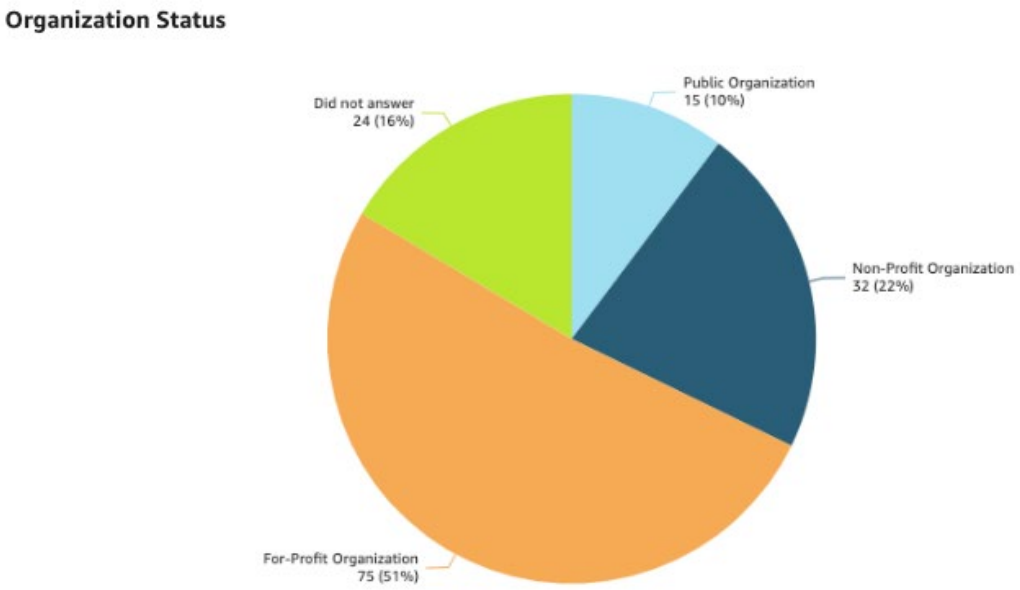
Question 3

More than half of all respondents (51.4%) answered that theirs is a for-profit organization, while 21.9% were from non-profits, and 10.3% from public organizations. Note that 16.4% of respondents did not answer this question (**Table *74*** and **Figure *99***).

Table 74 – Administrator Survey Question 3

Q3. What is the status of your primary healthcare organization?	% of all Respondents	% of Responses (Total = 122)
For-Profit Organization	51.4%	61.5%
Non-Profit Organization	21.9%	26.2%
Public Organization	10.3%	12.3%
Did not answer	16.4%	
Grand Total	**100.0%**	**122**

Figure 99 – Administrator Survey Question 3



Question 4

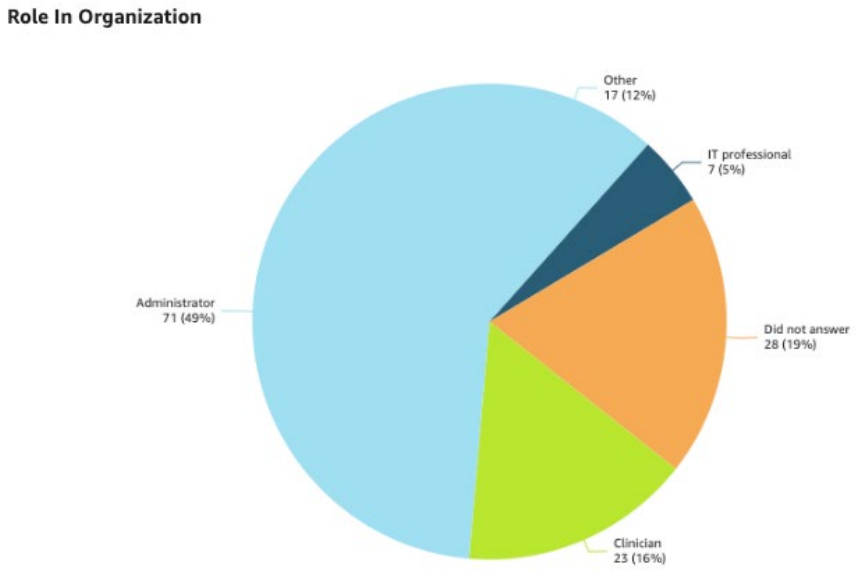
Of note, less than half of all respondents (48.6%) indicated that they were administrators and almost one fifth (19.2%) declined from answering the question. Other roles held by respondents included clinician (15.8%) and IT professional (4.8%) (**Table *75*** and **Figure *100***).

Table 75 – Administrator Survey Question 4

Q4. Please indicate your role within your primary healthcare organization. (Select all that apply)	Role in Organization (% of all Respondents)	% of Responses (Total = 118)
Administrator	48.6%	60.2%
Clinician	15.8%	19.5%
IT professional	4.8%	5.9%
Other	11.6%	14.4%
Did not answer	19.2%	
Grand Total	**100.0%**	**118**

Others include: Billing (1), Billing Supervisor (1), Contracting (1), Contracting Officer (1), Credentials Official (1), Eye Clinic (1), Gestoria (1), Human Resources (3), MD (1), Medical Technician (1), Quality Director (1), Secretary (4)

Figure 100 – Administrator Survey Question 4



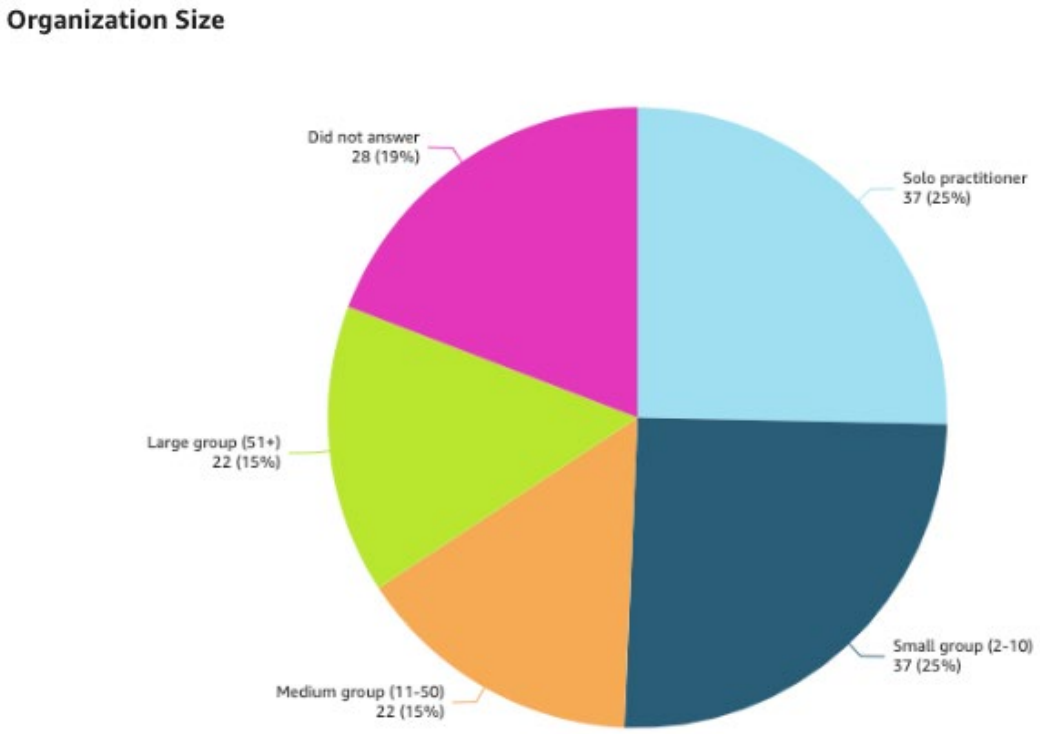
Question 5

On the size of the organization, most respondents were either solo practitioners (25.3%) or from small group (2-10) organizations (25.3%), noting that 19.2% declined to respond (**Table *76*** and **Figure *101***).

Table 76 – Administrator Survey Question 5

Q5. Size of that organization (total number of full-time equivalent independent clinical providers who currently work at your primary healthcare organization?	% of all Respondents	% of Responses (Total = 118)
Solo practitioner	25.3%	31.3%
Large group (51+)	15.1%	18.6%
Medium group (11-50)	15.1%	18.6%
Small group (2-10)	25.3%	31.4%
Did not answer	19.2%	
Grand Total	**100.00%**	118

Figure 101 – Administrator Survey Question 5



Question 6

The top three municipalities where respondents' primary healthcare organizations were located were San Juan (16.4% of respondents), Ponce (6.2%), and Arecibo (5.5%). Interestingly, 19.9% of respondents did not answer this question (**Table *77*** and **Figure *102***).

Table 77 – Administrator Survey Question 6

Q6. Location(s) of your primary healthcare organization (Municipality) (Select all that apply)	Location (% of all Respondents)	% of Responses (Total = 117)
Adjuntas	0.7%	0.9%
Aguada	1.4%	1.7%
Aguadilla	0.7%	0.9%
Aibonito	0.7%	0.9%
Añasco	0.7%	0.9%
Arecibo	5.5%	6.8%
Barceloneta	2.1%	2.6%
Barranquitas	1.4%	1.7%
Bayamón	2.7%	3.4%
Cabo Rojo	0.7%	0.9%
Caguas	2.7%	3.4%
Carolina	0.7%	0.9%
Cayey	2.1%	2.6%
Ciales	2.1%	2.6%
Cidra	0.7%	0.9%
Coamo	0.7%	0.9%
Dorado	2.1%	2.6%
Guayama	0.7%	0.9%
Guaynabo	0.7%	0.9%
Humacao	1.4%	1.7%
Isabela	0.7%	0.9%
Jayuya	4.1%	5.1%
Juncos	1.4%	1.7%
Lajas	0.7%	0.9%

Q6. Location(s) of your primary healthcare organization (Municipality) (Select all that apply)	Location (% of all Respondents)	% of Responses (Total = 117)
Lares	0.7%	0.9%
Las Piedras	0.7%	0.9%
Manatí	0.7%	0.9%
Mayagüez	3.4%	4.3%
Moca	0.7%	0.9%
Morovis	1.4%	1.7%
Ponce	6.2%	7.7%
Quebradillas	0.7%	0.9%
Rincón	0.7%	0.9%
Sabana Grande	0.7%	0.9%
San Germán	1.4%	1.7%
San Juan	16.4%	20.5%
San Sebastián	1.4%	1.7%
Toa Alta	1.4%	1.7%
Trujillo Alto	0.7%	0.9%
Vega Alta	2.7%	3.4%
Yabucoa	0.7%	0.9%
Yauco	2.7%	3.4%
Did not answer	19.9%	
Grand Total	**100.0%**	**117**

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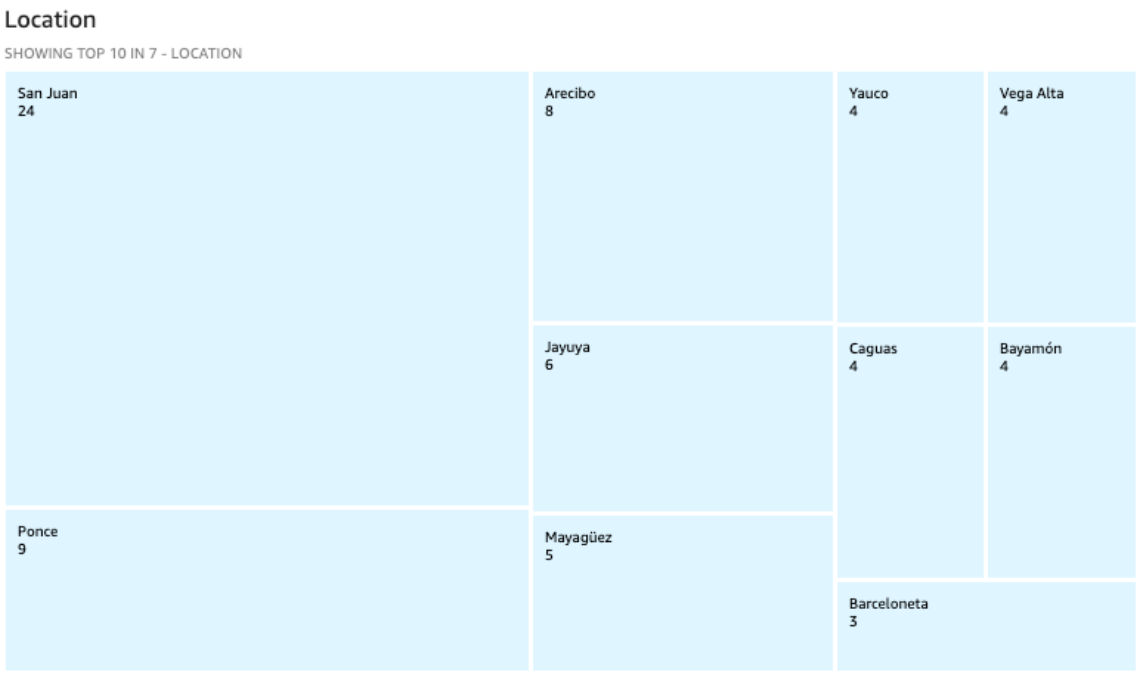
Figure 102 – Administrator Survey Question 6



SECTION 2: Electronic Health Record (EHR) Adoption and Usage

Question 7

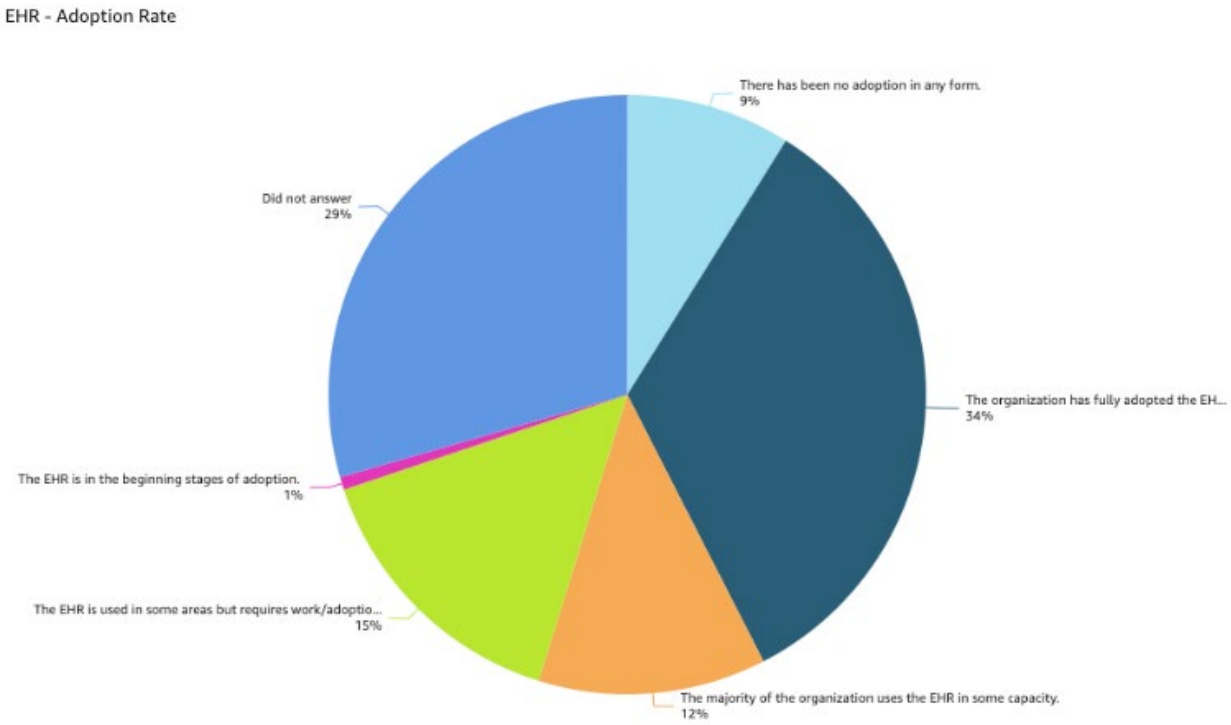
In this section of 14 questions, there was a noticeable proportion of respondents who declined to answer, ranging from 29.5% to 56.2% of respondents not answering questions on EHR adoption and usage. Over a third (33.6% of respondents) described the overall adoption rate of EHR in their organization as being fully adopted in all areas of clinical care and operations and at the other end of the spectrum, 8.9% had no adoption of any form (**Table *78*** and **Figure *103***).

Table 78 – Administrator Survey Question 7

Q7. How would you describe the overall adoption rate of your EHR within your primary healthcare organization?	EHR Adoption Rate (% of all Respondents)	% of Responses (Total = 103)
The EHR is in the beginning stages of adoption.	0.7%	1.0%
The EHR is used in some areas but requires work/adoption in other places.	15.1%	21.4%
The majority of the organization uses the EHR in some capacity.	12.3%	17.5%
The organization has fully adopted the EHR in all areas of clinical care and operations.	33.6%	47.6%

Q7. How would you describe the overall adoption rate of your EHR within your primary healthcare organization?	EHR Adoption Rate (% of all Respondents)	% of Responses (Total = 103)
There has been no adoption in any form.	8.9%	12.6%
Did not answer	29.5%	
Grand Total	**100.0%**	**103**

Figure 103 – Administrator Survey Question 7



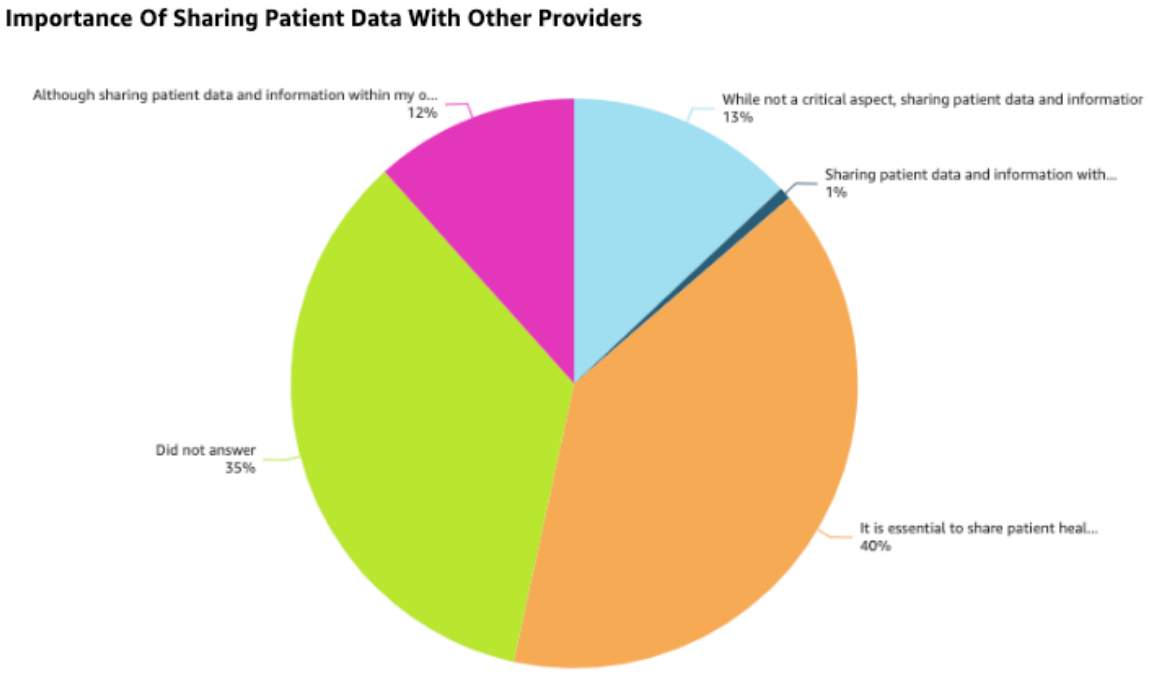
Question 8

On the importance of sharing patient's health data and information with other healthcare providers within their primary healthcare organization, the majority of respondents (39.7%) indicated that it is essential to do so, 13.0% believe it is somewhat important but not critical, and 11.6% understand its significance in providing quality healthcare even though they do not prioritize it. More than a third of respondents (34.9%) declined answering (**Table *79*** and **Figure *104***).

Table 79 – Administrator Survey Question 8

Q8. How important is it for you to be able to share your patient's health data and information with other healthcare providers within your primary healthcare organization?	Importance of sharing patient data with other providers (% of all Respondents	% of Responses (Total = 95)
Although sharing patient data and information within my organization is not my top priority, I understand its significance in providing quality healthcare	11.6%	17.9%
It is essential to share patient health data and information within my organization.	39.7%	61.1%
Sharing patient data and information within my organization is not important at all.	0.7%	1.1%
While not a critical aspect, sharing patient data and information within my organizations is still somewhat important.	13.0%	20.0%
Did not answer	34.9%	
Grand Total	**100.0%**	**95**

Figure 104 – Administrator Survey Question 8



Question 9

When asked how important real-time communication and coordination between healthcare providers is when treating a patient, 43.8% of respondents indicated that it is crucial for ensuring the best possible care is provided (**Table *80*** and **Figure *105***).

Table 80 – Administrator Survey Question 9

Q9. How important do you think real-time communication and coordination between healthcare providers are when treating a patient?	Importance of real-time communication (% of all Respondents)	% of Responses (Total = 89)
Real-time communication and coordination between healthcare providers is an important aspect of providing high-quality care.	8.9%	14.6%
Real-time communication and coordination between healthcare providers is crucial for ensuring that patients receive the best possible care.	43.8%	71.9%
Real-time communication and coordination between healthcare providers may not be crucial in all cases.	0.7%	1.1%
The importance of real-time communication and coordination between healthcare providers may vary depending on the situation.	7.5%	12.4%
Did not answer	39.0%	
(blank)	0.0%	
Grand Total	**100.0%**	**89**

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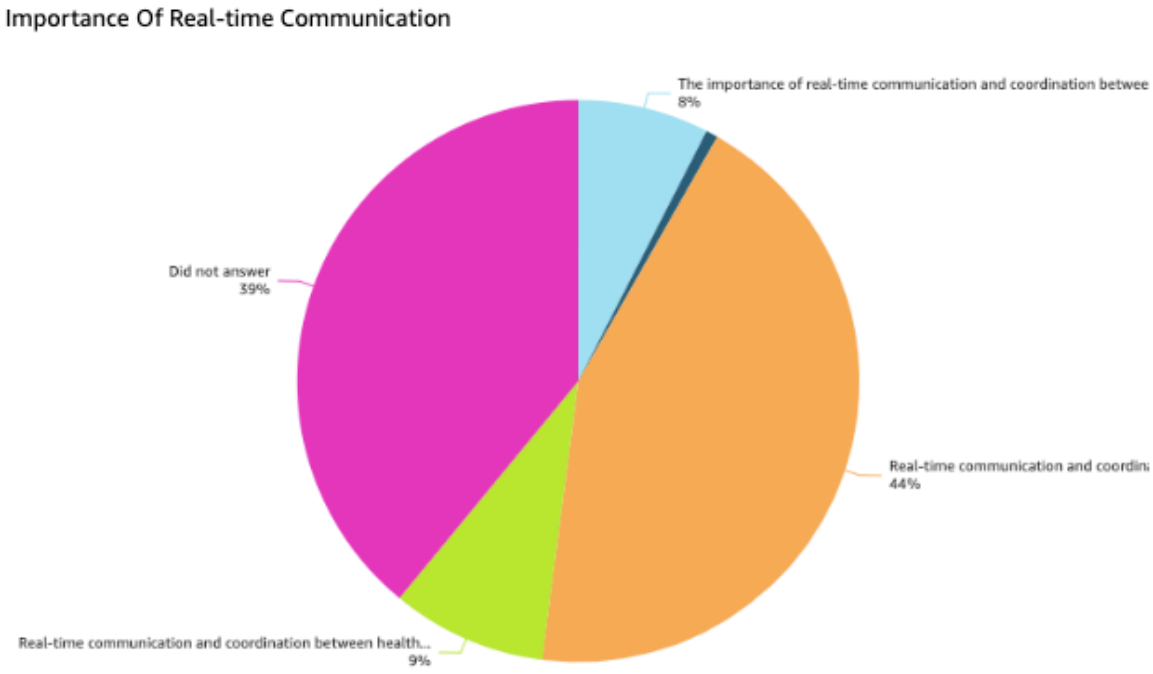
Figure 105 – Administrator Survey Question 9



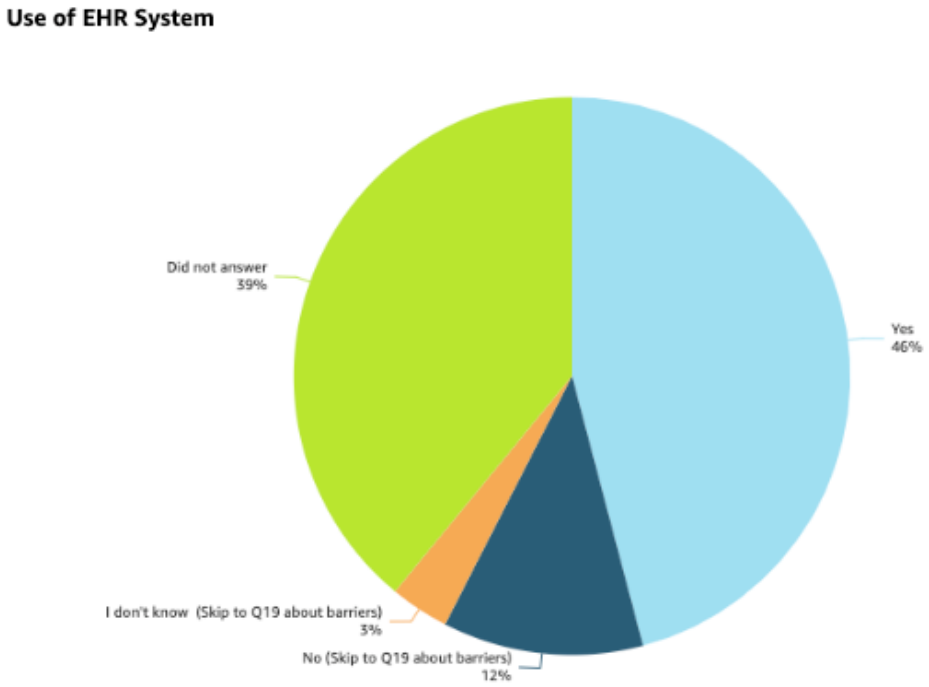
Question 10

Only 61.0% of all respondents answered the question on whether their organization currently uses an EHR system. Less than half of all respondents (45.9%) answered yes, while 11.6% answered no and 3.4% did not know (**Table *81*** and **Figure *106***).

Table 81 – Administrator Survey Question 10

Q10. Does your primary healthcare organization currently use an Electronic Health Record (EHR) system?	Does your organization use an EHR System (% of all Respondents)	% of Responses (Total = 89)
I don't know (Skip to Q19 about barriers)	3.4%	5.6%
No (Skip to Q19 about barriers)	11.6%	19.1%
Yes	45.9%	75.3%
Did not answer	39.0%	
Grand Total	**100.0%**	**89**

Figure 106 – Administrator Survey Question 10



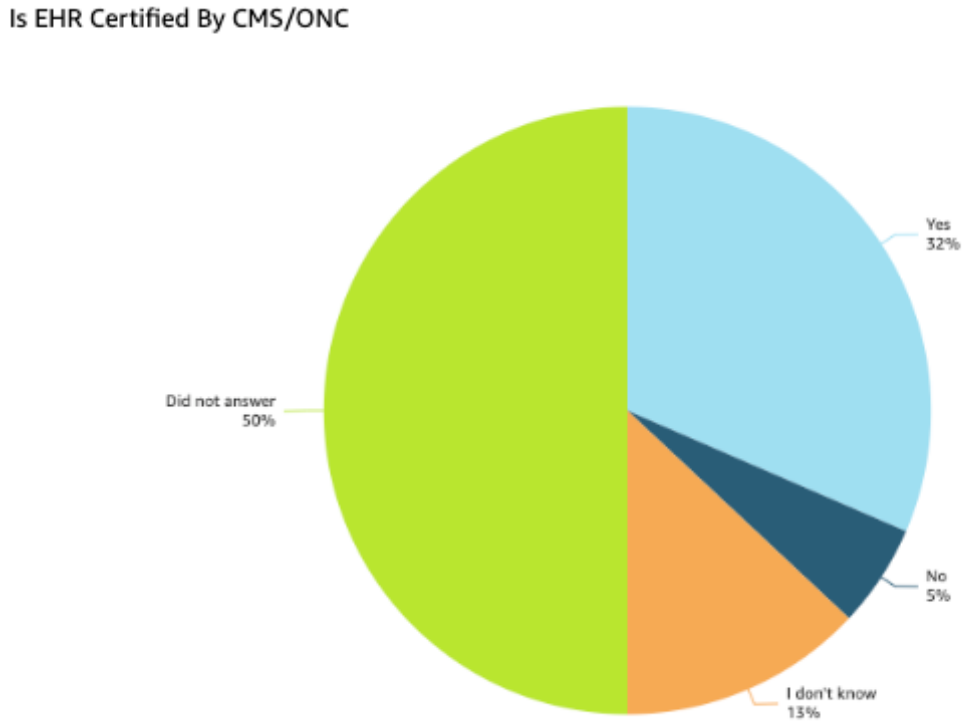
Question 11

On a related question, half of all respondents (50.0%) declined to answer whether the EHR used by their organization is certified by CMS/ONC, which could be partially explained by those who answered no or did not know if their organization used an EHR system. Less than a third of all respondents (31.5%) reported that their systems were CMS/ONC-certified (**Table *82*** and **Figure *107***).

Table 82 – Administrator Survey Question 11

Q11. Is the EHR currently used by your primary healthcare organization certified by CMS/ONC?	Is EHR Certified by CMS/ONC (% of all Respondents)	% of Responses (Total = 73)
I don't know	13.0%	26.0%
No	5.5%	11.0%
Yes	31.5%	63.0%
Did not answer	50.0%	
Grand Total	**100.0%**	**73**

Figure 107 – Administrator Survey Question 11



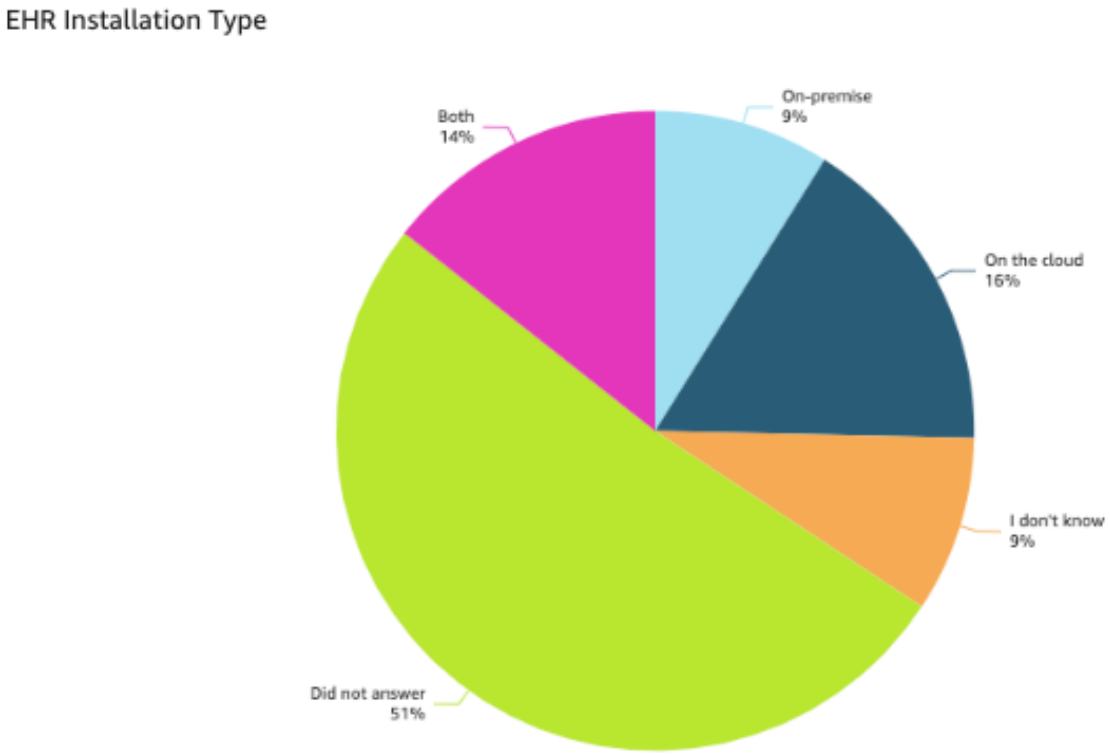
Question 12

Another question with half (51.4%) of all respondents declining to answer was on whether the EHR at their center was on the cloud or on-premises. About 16.4% of all respondents answered that their EHR was on the cloud, 14.4% was on both, and 8.9% was on-premises (**Table *83*** and **Figure *108***).

Table 83 – Administrator Survey Question 12

Q12. Is the EHR at your primary health center on the cloud or on-premises?	EHR Installation Type (% of all Respondents)	% of Responses (Total = 71)
Both	14.4%	29.6%
I don't know	8.9%	18.3%
On the cloud	16.4%	33.8%
On-premises	8.9%	18.3%
Did not answer	51.4%	
Grand Total	**100.0%**	**71**

Figure 108 – Administrator Survey Question 12



Question 13

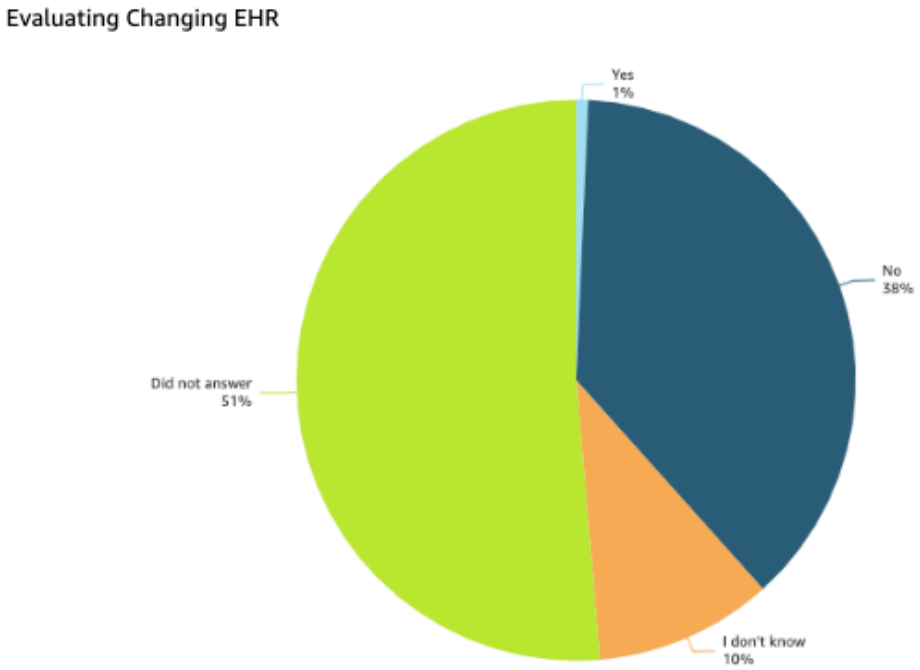
Asked if they were evaluating a change to a different EHR, more than half of all respondents (51.4%) did not answer, while 37.7% responded negatively, and 10.3% did not know (**Table *84*** and **Figure *109***).

Table 84 – Administrator Survey Question 13

Q13. Are you evaluating changing to a different EHR?	Evaluating changing EHR (% of all Respondents)	% of Responses (Total = 71)
I don't know	10.3%	21.1%
No	37.7%	77.5%
Other	0.7%	1.4%
Did not answer	51.4%	
Grand Total	**100.0%**	**71**

Other: MUMMS (1)

Figure 109 – Administrator Survey Question 13



Question 14

On whether their organization participates in an EHR Incentive Program, 52.1% did not answer, 24.0% answered no, while 11.0% did not know (**Table *85*** and **Figure *110***).

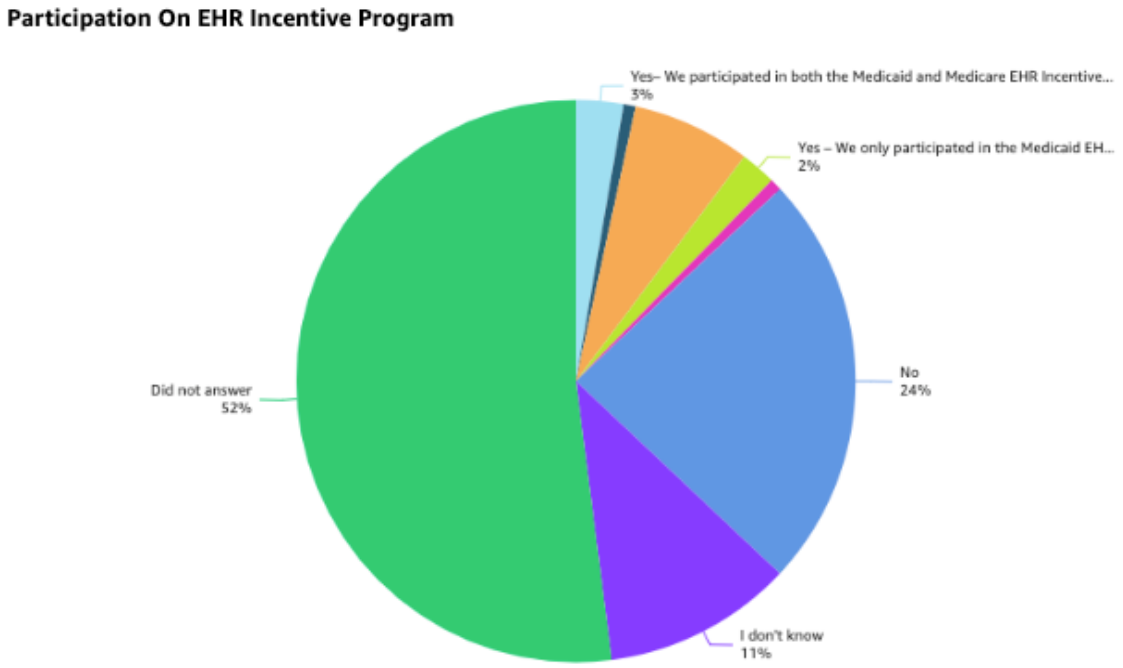
Table 85 – Administrator Survey Question 12

Q14. Did your primary healthcare organization participate in an EHR Incentive Program?	Participation in EHR Incentive Program (% of all Respondents)	% of Responses (Total = 70)
I don't know	11.0%	22.9%
No	24.0%	50.0%
Yes – We only participated in the Medicaid EHR Incentive Program	2.1%	4.3%
Yes – We only participated in the Medicare EHR Incentive Program	6.8%	14.3%
Yes– We participated but I don't know in which program.	0.7%	1.4%
Yes– We participated in both the Medicaid and Medicare EHR Incentive Programs	2.7%	5.7%

Q14. Did your primary healthcare organization participate in an EHR Incentive Program?	Participation in EHR Incentive Program (% of all Respondents)	% of Responses (Total = 70)
Other	0.7%	1.4%
Did not answer	52.1%	
Grand Total	**100.0%**	**70**

Other: Need additional information about the Incentive Program (1)

Figure 110 – Administrator Survey Question 14



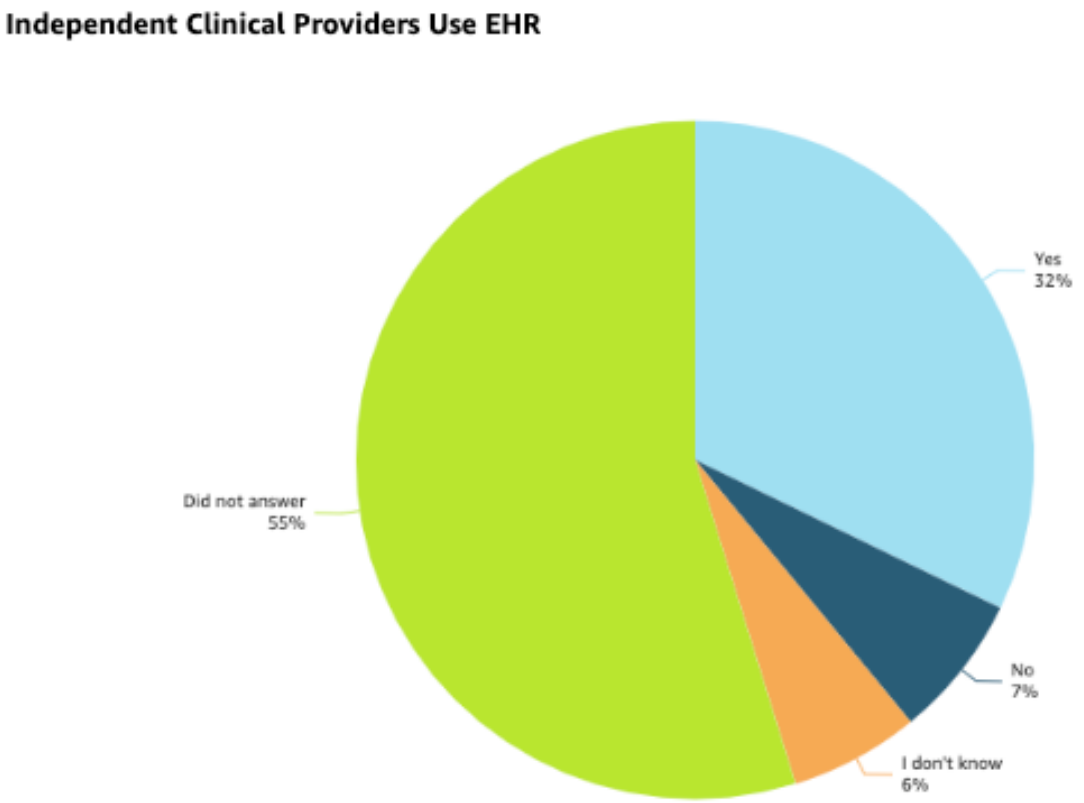
Question 15

To the question on regular use of EHR systems by independent clinical providers in their organizations, more than half (54.8%) did not respond while 32.2% replied yes and 6.8% replied no (**Table *86*** and **Figure *111***).

Table 86 – Administrator Survey Question 15

15. Do all of the independent clinical providers at your primary healthcare organization regularly use EHR systems?	Independent Clinical Providers use EHR (% of all Respondents)	% of Responses (Total = 66)
I don't know	6.2%	13.6%
No	6.8%	15.2%
Yes	32.2%	71.2%
Did not answer	54.8%	
Grand Total	**100.0%**	**66**

Figure 111 – Administrator Survey Question 15



Question 16

To better understand how patient consent is tracked, respondents were asked how their organizations track patient consent electronically. More than half (55.5%) declined to answer, while a quarter (25.3%) indicated that their organizations use electronic signatures in their EHR or registration systems (**Table *87*** and **Figure *112***).

Table 87 – Administrator Survey Question 16

Q16. How does your primary healthcare organization track patients' consent to share their health information electronically? (Select all that apply)	Tracking of Patient's Consent to share information (% of all Respondents)	% of Responses (Total = 65)
Electronic signature in EHR or registration system	25.3%	56.9%
Paper that is scanned into the EHR or other IT system	6.8%	15.4%
Stored in physical files (paper)	6.8%	15.4%
Verbal consent from patient to registration staff, that enters choice into the EHR	2.7%	6.2%
We do not track patient consent	1.4%	3.1%
Other	1.4%	3.1%
Did not answer	55.5%	
Grand Total	**100.0%**	**65**

Others include: Signed consent from patient and provider requesting information is requested (1), N/A (1)

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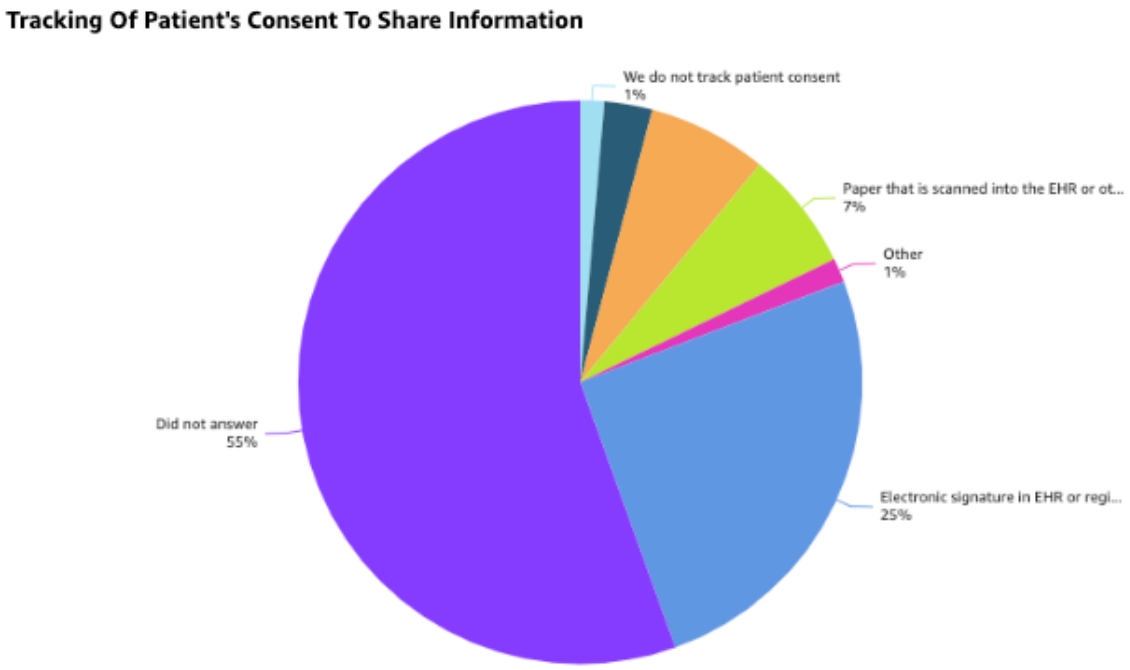
Figure 112 – Administrator Survey Question 16



Question 17

With regard EHR care functions, 55.5% of respondents declined to answer and the top three care functions were telemedicine (13.7%), lab and imaging results (11.0%), and tied for third place at 2.7% each were automatic reminders and SMS messaging for appointments, electronic prescribing, and patient scheduling (**Table *88*** and **Figure *113***).

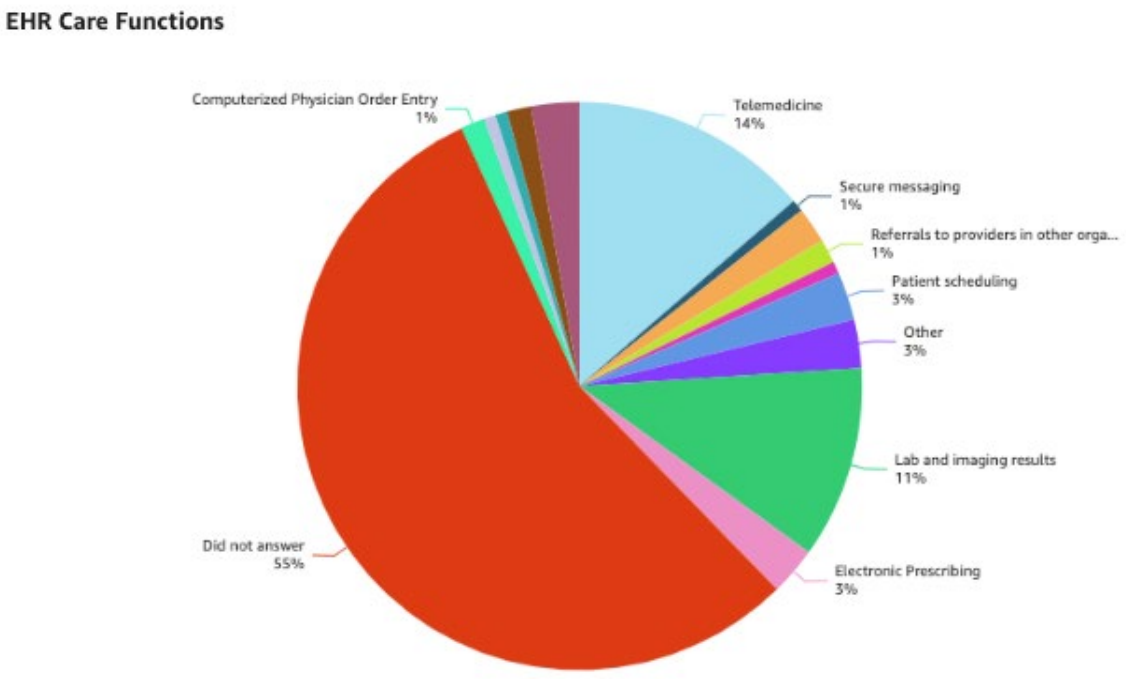
Table 88 – Administrator Survey Question 17

Q17. Which of the following care functions does the EHR system at your primary healthcare organization include? (Select all that apply)	EHR Care Functions (% of all Respondents)	% of Responses (Total = 65)
Automatic reminders and SMS messaging for appointments	2.7%	6.2%
Billing and coding	1.4%	3.1%
Care Management	0.7%	1.5%
Clinical Documentation	0.7%	1.5%
Computerized Physician Order Entry	1.4%	3.1%
Electronic Prescribing	2.7%	6.2%

Q17. Which of the following care functions does the EHR system at your primary healthcare organization include? (Select all that apply)	EHR Care Functions (% of all Respondents)	% of Responses (Total = 65)
Lab and imaging results	11.0%	24.6%
Patient scheduling	2.7%	6.2%
Population health management	0.7%	1.5%
Referrals to providers in other organizations	1.4%	3.1%
Referrals to providers within our organization	2.1%	4.6%
Secure messaging	0.7%	1.5%
Telemedicine	13.7%	30.8%
Other	2.7%	6.2%
Did not answer	55.5%	
Grand Total	**100.0%**	**65**

Others include: Electronic Signature (1), System not available (1), N/A (1)

Figure 113 – Administrator Survey Question 17



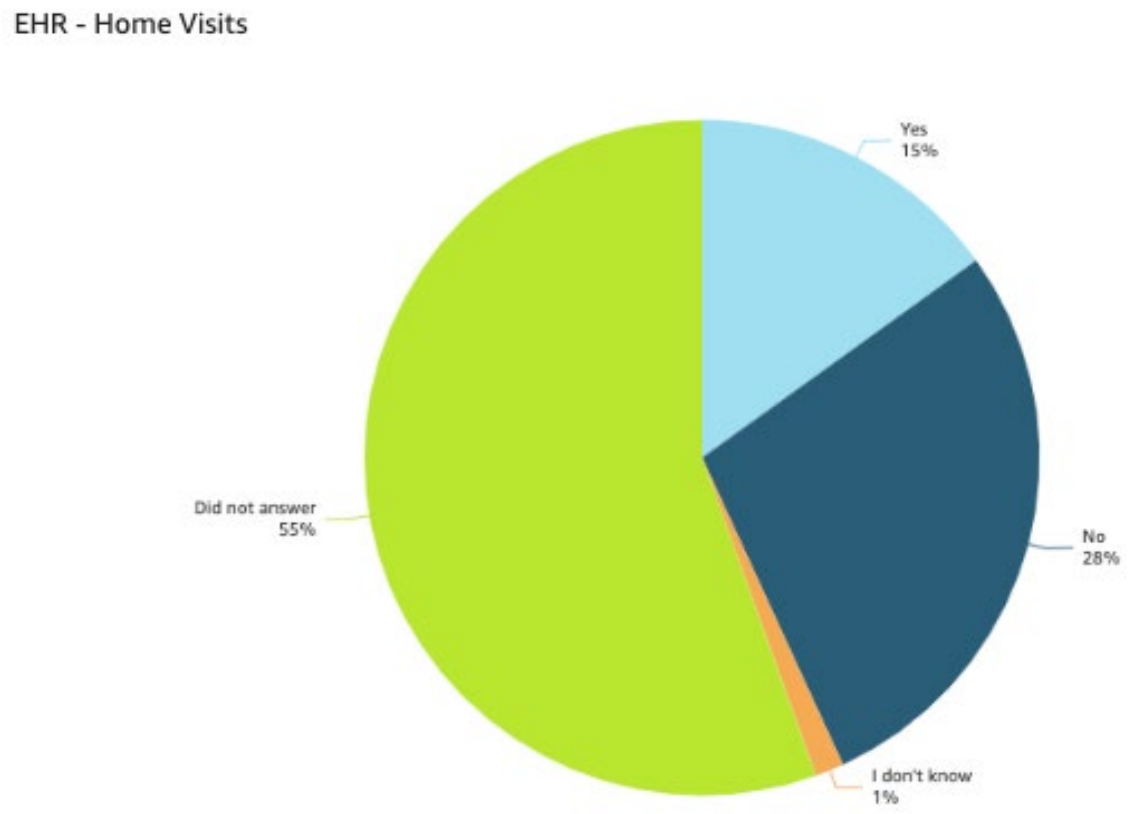
Question 18

More than a quarter (28.1%) of respondents indicated that their organizations do not use EHRs to support home visits and 15.1% indicated that they do, while 55.5% did not answer the question (**Table *89*** and **Figure *114***).

Table 89 – Administrator Survey Question 18

Q18. Does your primary healthcare organization use EHRs to support home visits?	EHR - Home visits (% of all Respondents)	% of Responses (Total = 65)
I don't know	1.4%	3.1%
No	28.1%	63.1%
Yes	15.1%	33.8%
Did not answer	55.5%	
Grand Total	**100.0%**	**65**

Figure 114 – Administrator Survey Question 18



Question 19

Asked to identify the primary barriers to adopting or fully utilizing an EHR system in their organization, more than half (54.8%) declined to answer, 16.4% indicated that there are no barriers in their organizations, 8.2% reported transition of paper records to EHR, and 6.8% reported that cost is a primary barrier (**Table *90*** and **Figure *115***).

Table 90 – Administrator Survey Question 19

Q19. What are the primary barriers to adopting or fully utilizing an EHR system at your primary healthcare organization? (Select all that apply).	EHR Barriers on adoption/use (% of all Respondents)	% of Responses (Total = 66)
Concerns about data privacy/security	2.1%	4.5%
Cost	6.8%	15.2%
Insufficient training	0.7%	1.5%
Lack of broadband internet connection	2.1%	4.5%
Lack of technical support	0.7%	1.5%
Resistance from staff	5.5%	12.1%
There are no barriers to adoption in our organization.	16.4%	36.4%
Transition of paper records to EHR	8.2%	18.2%
Other	2.7%	6.1%
Did not answer	54.8%	
Grand Total	**100.0%**	**66**

Others include: Management priorities are different (1), Requires a lot of time (1), Power service problems (1), Time required to perform the tasks (1)

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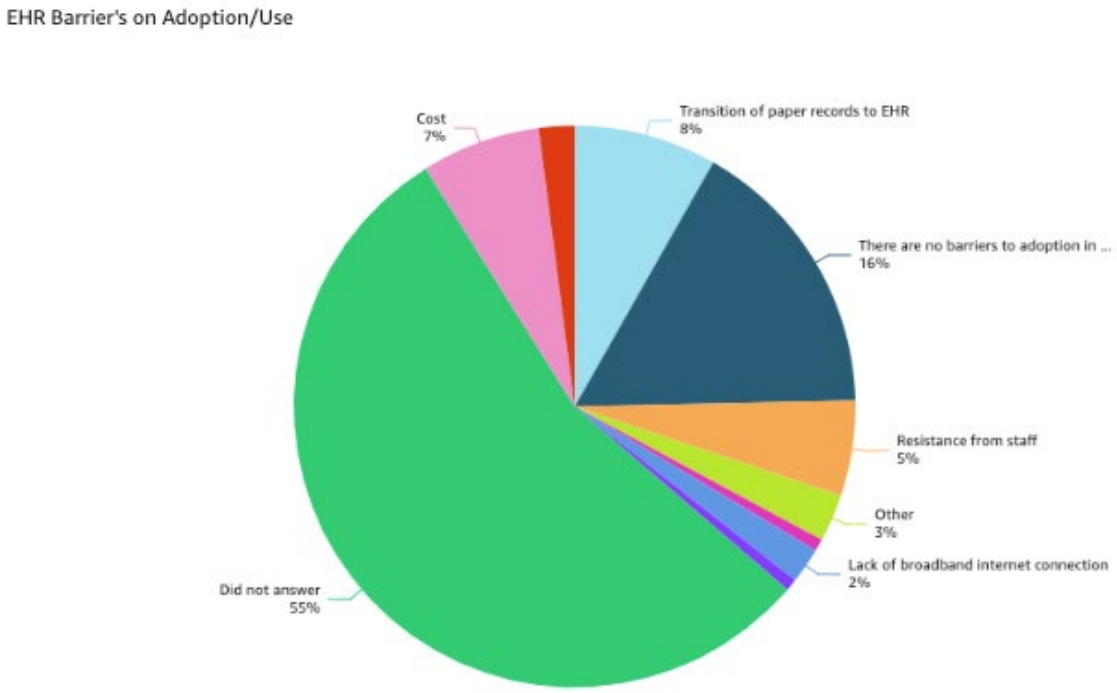
Figure 115 – Administrator Survey Question 19



Question 20

Finally, participants were asked what steps their organization takes to address the barriers. Keeping in mind that 16.4% responded that they had no barriers to adoption, 56.2% declined to answer this question, 11.0% reported staff training and education programs on EHR usage as a measure used, and 10.3% reported that no steps were taken and their barriers have not been addressed (**Table *91*** and **Figure *116***).

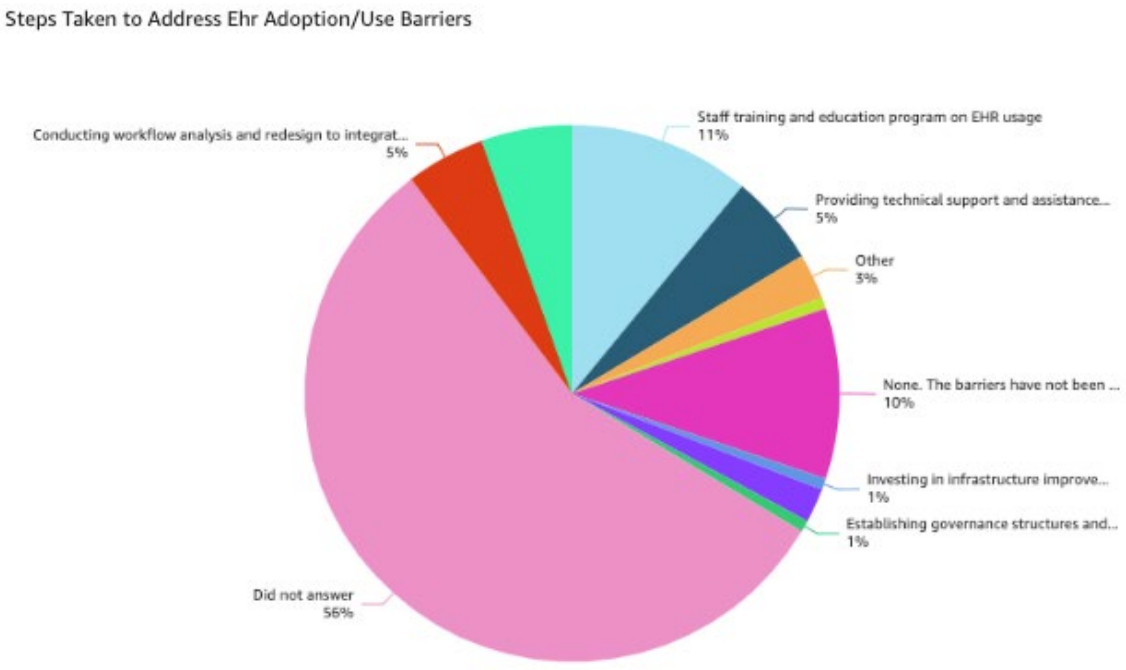
Table 91 – Administrator Survey Question 20

Q20. What steps has your primary healthcare organization taken to address barriers to EHR adoption and usage? (Select all that apply)	Steps taken to address EHR adoption/use barriers (% of all Respondents)	% of Responses (Total = 64)
Conducting regular assessments and feedback mechanisms to address user concerns.	5.5%	12.5%
Conducting workflow analysis and redesign to integrate EHR into clinical processes.	4.8%	10.9%
Establishing governance structures and leadership support for EHR initiatives.	0.7%	1.6%
Implementing user-friendly EHR systems.	2.1%	4.7%

Q20. What steps has your primary healthcare organization taken to address barriers to EHR adoption and usage? (Select all that apply)	Steps taken to address EHR adoption/use barriers (% of all Respondents)	% of Responses (Total = 64)
Investing in infrastructure improvements to support EHR implementation.	0.7%	1.6%
None. The barriers have not been addressed.	10.3%	23.4%
Offering incentives or rewards for EHR adoption and meaningful use.	0.7%	1.6%
Providing technical support and assistance to healthcare providers	5.5%	12.5%
Staff training and education program on EHR usage	11.0%	25.0%
Other	2.7%	6.3%
Did not answer	56.2%	
Grand Total	**100.0%**	**64**

Others include: Power system (1), Close to retiring (1), N/A (1), and None. It is being used. (1)

Figure 116 – Administrator Survey Question 20



SECTION 3: Health Information Exchange (HIE) Adoption and Usage

Question 21

This section sought insights on the sharing of patient's health data and information. On the importance of health information exchange with healthcare providers in other practices and health organizations, 57.5% declined to answer, 21.2% asserted that it is critical, while 11.6% indicated that it is somewhat important (**Table *92*** and **Figure *117***).

Table 92 – Administrator Survey Question 21

Q21. How important is it for you to be able to share your patient's health data and information with healthcare providers in other practices and health organizations?	HIE Importance of sharing data with providers (% of all Respondents)	% of Responses (Total = 62)
Although sharing patient data and information with other healthcare providers in other practices and health organizations is not my top priority, I understand its significance.	8.9%	21.0%
It is critical to share patient health data and information with other healthcare providers in other practices or organizations	21.2%	50.0%
Sharing patient data and information with other healthcare providers in other practices and health organizations is not essential and does not seem relevant to the healthcare process.	0.7%	1.6%
While it may not be the most critical aspect, sharing patient data and information with other healthcare providers is still somewhat important.	11.6%	27.4%
Did not answer	57.5%	
Grand Total	**100.0%**	**62**

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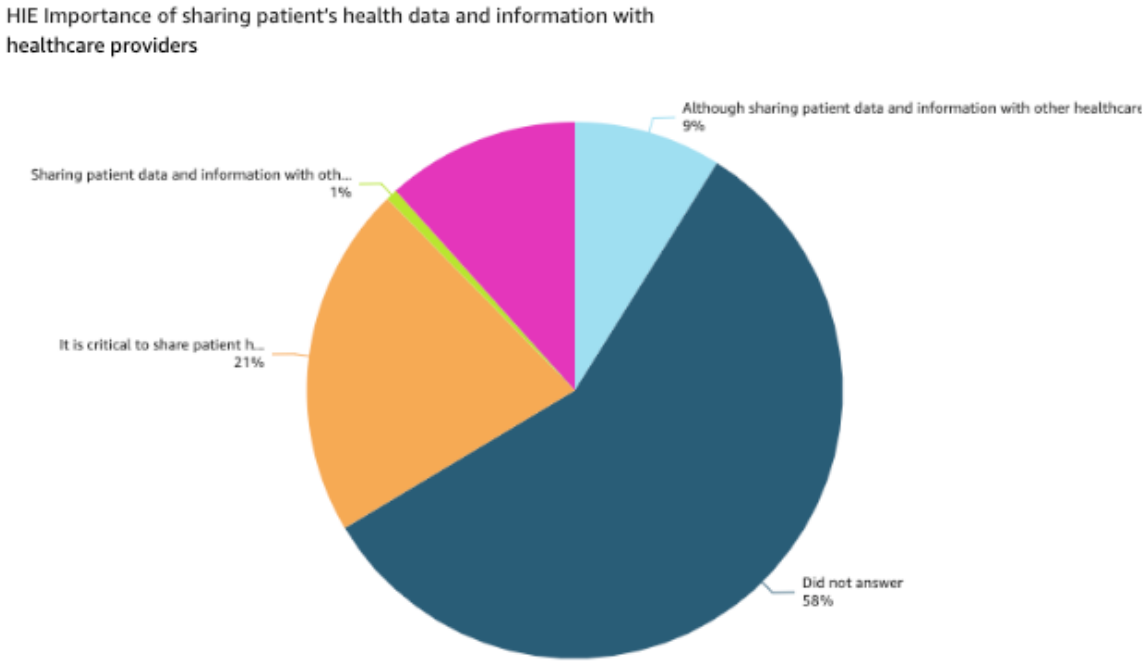
Figure 117 – Administrator Survey Question 21



Question 22

Almost one tenth (9.6%) of all respondents reported that limited operability between different health information systems is a primary obstacle or challenge faced by healthcare providers in their organization when accessing and utilizing patient data effectively within HIE systems, while 8.2% indicated resistance to change or reluctance among healthcare professionals to adopt new technologies as the primary obstacle. Only 41.1% of all respondents answered this question (**Table *93*** and **Figure *118***).

Table 93 – Administrator Survey Question 22

Q22. What are the primary obstacles or challenges healthcare providers in your primary healthcare organization face in accessing and utilizing patient data effectively within HIE systems? (Select all that apply)	**HIE Obstacles for using it (% of all Respondents)**	**% of Responses (Total = 60)**
Challenge in obtaining consent from patients for data sharing across healthcare entities.	0.7%	1.7%
Concerns regarding patient data privacy and security.	3.4%	8.3%
Financial constraints or inadequate funding for implementing HIE systems.	3.4%	8.3%

Q22. What are the primary obstacles or challenges healthcare providers in your primary healthcare organization face in accessing and utilizing patient data effectively within HIE systems? (Select all that apply)	HIE Obstacles for using it (% of all Respondents)	% of Responses (Total = 60)
Insufficient training and education for healthcare staff on how to effectively use HIE System.	0.7%	1.7%
Lack of standardized data formats and terminology across healthcare organizations.	1.4%	3.3%
Limited interoperability between different health information systems	9.6%	23.3%
Regulatory compliance and legal barriers affecting data exchange practices.	0.7%	1.7%
Resistance to change or reluctance among healthcare professionals to adopt new technologies	8.2%	20.0%
Technical difficulties in integrating HIE systems with existing electronic health record (EHR) systems	5.5%	13.3%
There are no barriers to adoption in our organization.	6.2%	15.0%
Other	1.4%	3.3%
Did not answer	58.9%	
Grand Total	**100.0%**	**60**

Others include: There is no HIE available (1), Management priorities are different (1).

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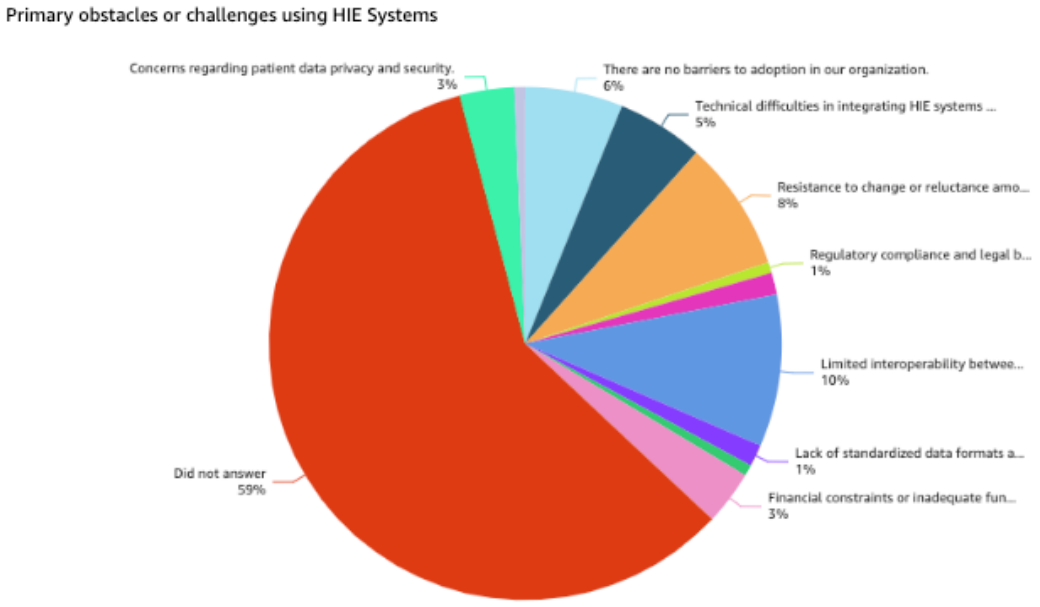
Figure 118 – Administrator Survey Question 22



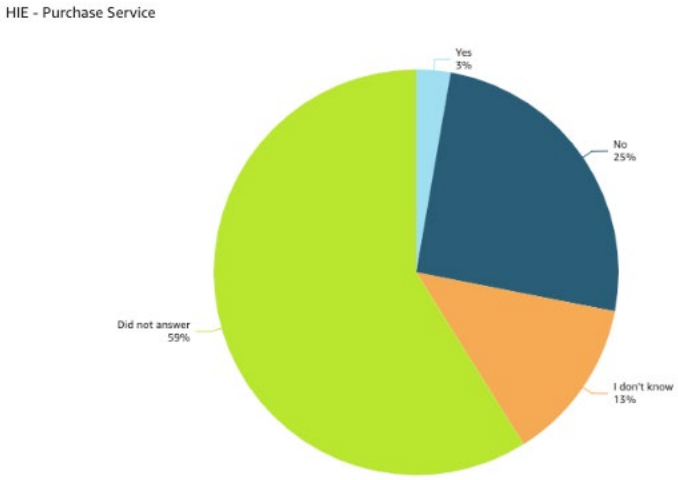
Question 23

To the question on whether their organization is in the process of purchasing HIE services, 58.9% did not respond, 25.3% replied no, 13.0% did not know, and 2.7% said yes (**Table *94*** and **Figure *119***).

Table 94 – Administrator Survey Question 23

Q23. Is your primary healthcare organization currently in the process of purchasing HIE services?	HIE – Purchase services (% of all Respondents)	% of Responses (Total = 60)
I don't know	13.0%	31.7%
No	25.3%	61.7%
Yes	2.7%	6.7%
Did not answer	58.9%	
Grand Total	**100.0%**	**60**

Figure 119 – Administrator Survey Question 23



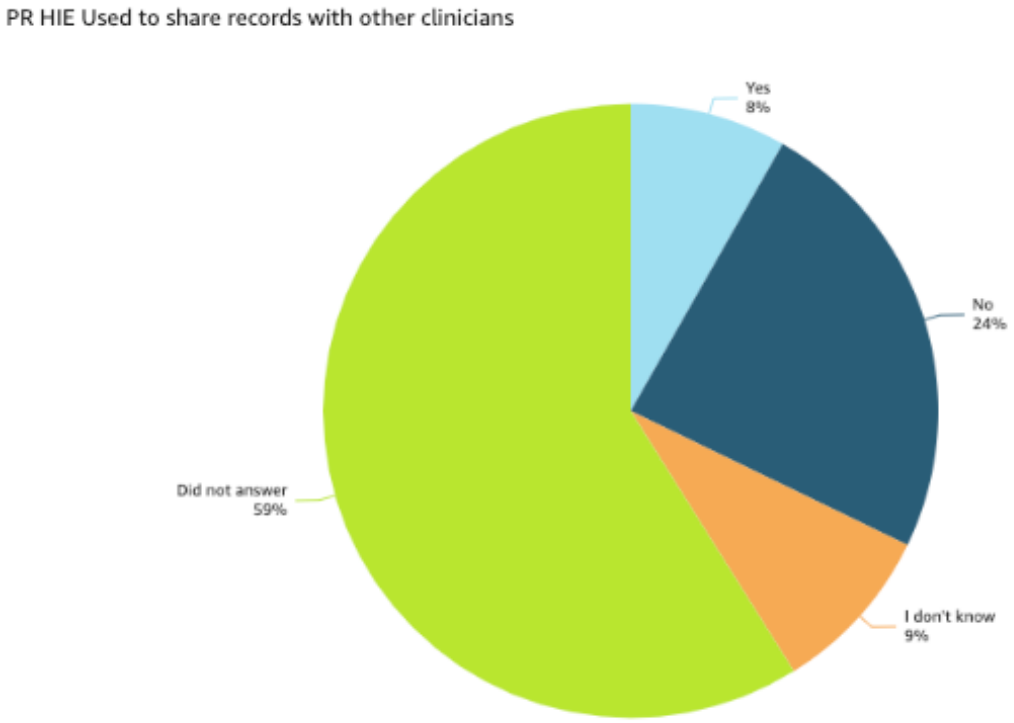
Question 24

Survey participants were also asked if their organization uses Puerto Rico's HIE to share records with other treating clinicians. The majority (58.9%) declined to answer, 24.0% said no they do not, while 8.9% did not know (**Table *95*** and **Figure *120***).

Table 95 – Administrator Survey Question 24

Q24. Does your primary healthcare organization use Puerto Rico's HIE to share health records with other treating clinicians?	PR HIE used to share records with other clinicians (% of all Respondents)	% of Responses (Total = 60)
I don't know	8.9%	21.7%
No	24.0%	58.3%
Yes	8.2%	20.0%
Did not answer	58.9%	
Grand Total	**100.0%**	**60**

Figure 120 – Administrator Survey Question 24



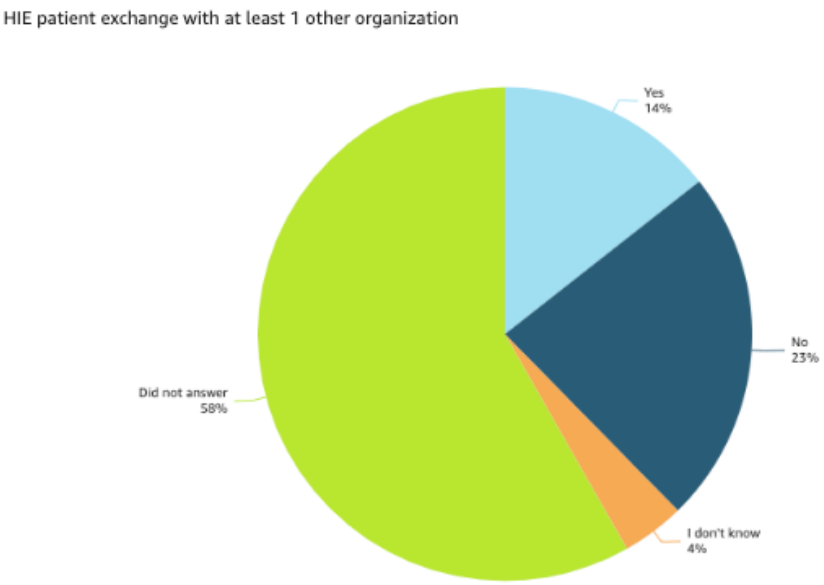
Question 25

Whether their organization currently exchanges patient health information electronically with at least one other healthcare organization, about one quarter (23.3%) replied no and 14.4% yes, however, most respondents (58.2%) did not answer the question (**Table *96*** and **Figure *121***).

Table 96 – Administrator Survey Question 25

Q25. Does your primary healthcare organization currently exchange patient health information electronically with at least one other healthcare organization?	HIE patient exchanges with at least 1 other org. (% of all Respondents)	% of Responses (Total = 61)
I don't know	4.1%	9.8%
No	23.3%	55.7%
Yes	14.4%	34.4%
Did not answer	58.2%	
Grand Total	**100.0%**	**61**

Figure 121 – Administrator Survey Question 25



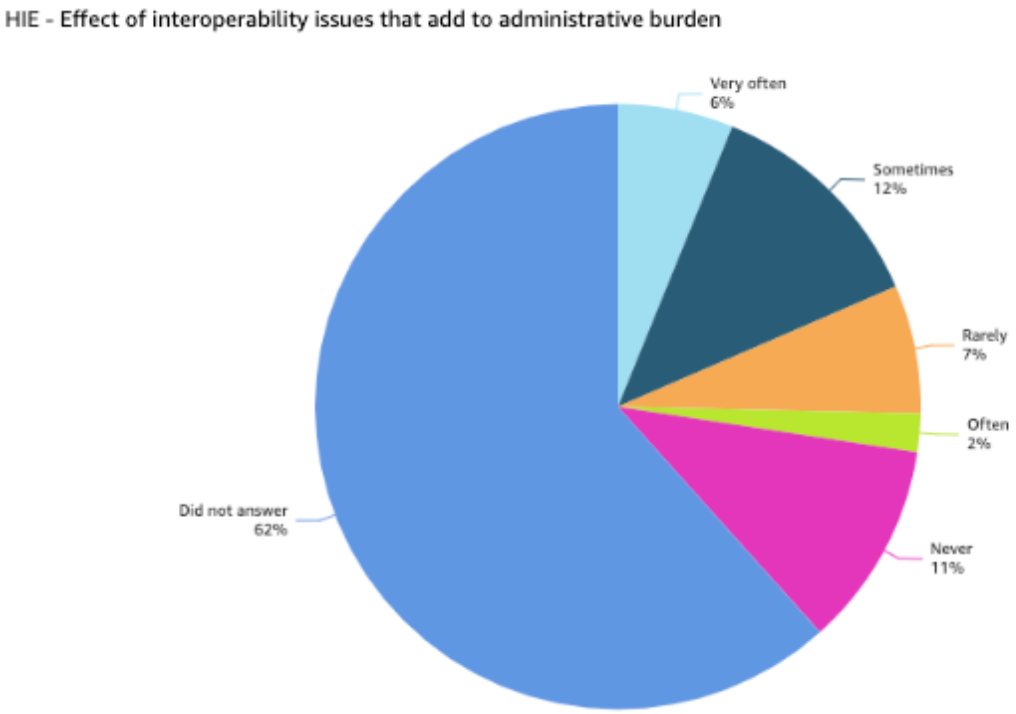
Question 26

On the effect of interoperability issues that add to administrative burden, 61.6% of respondents offered no response, 17.8% indicated that it is rarely or has never been an issue, 12.3% indicated that it sometimes is an issue, and 8.3% indicated that it is often or very often an issue (**Table *97*** and **Figure *122***).

Table 97 – Administrator Survey Question 26

Q26. How often do you encounter issues with interoperability that contribute to increased administrative burden? **Note: Interoperability is the ability of different health information systems to exchange health records electronically.**	**HIE - interoperability issues / admin burden (% of all Respondents)**	**% of Responses (Total = 56)**
Never	11.0%	28.6%
Rarely	6.8%	17.9%
Sometimes	12.3%	32.1%
Often	2.1%	5.4%
Very often	6.2%	16.1%
Did not answer	61.6%	
Grand Total	**100.0%**	**56**

Figure 122 – Administrator Survey Question 26



Question 27

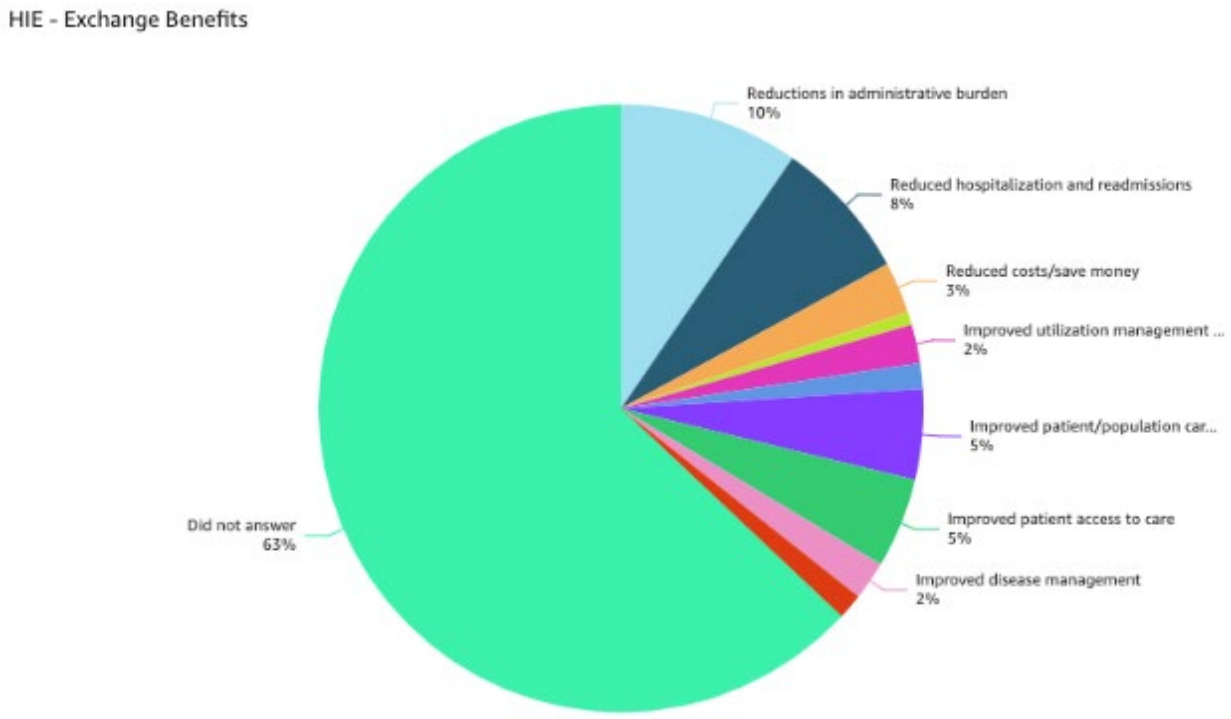
Asked what they believe are the potential benefits of an electronic exchange of health information to patients and providers in Puerto Rico, 63.0% declined to answer, 9.6% indicated reduced administrative burden, and 7.5% reduced hospitalizations and readmissions (**Table *98*** and **Figure *123***).

Table 98 – Administrator Survey Question 27

Q27. What do you believe are the potential benefits of an electronic exchange of health information to patients and providers in Puerto Rico? (Select all that apply)	HIE Exchange benefits (% of all Respondents)	% of Responses (Total = 54)
Improved care management/planning	1.4%	3.7%
Improved disease management	2.1%	5.6%
Improved patient access to care	4.8%	13.0%
Improved patient/population care outcomes	4.8%	13.0%
Improved transitions of care	1.4%	3.7%
Improved utilization management and review	2.1%	5.6%
Increased efficiency	0.7%	1.9%

Q27. What do you believe are the potential benefits of an electronic exchange of health information to patients and providers in Puerto Rico? (Select all that apply)	HIE Exchange benefits (% of all Respondents)	% of Responses (Total = 54)
Reduced costs/save money	2.7%	7.4%
Reduced hospitalization and readmissions	7.5%	20.4%
Reductions in administrative burden	9.6%	25.9%
Did not answer	63.0%	
Grand Total	**100.0%**	**54**

Figure 123 – Administrator Survey Question 27



Question 28

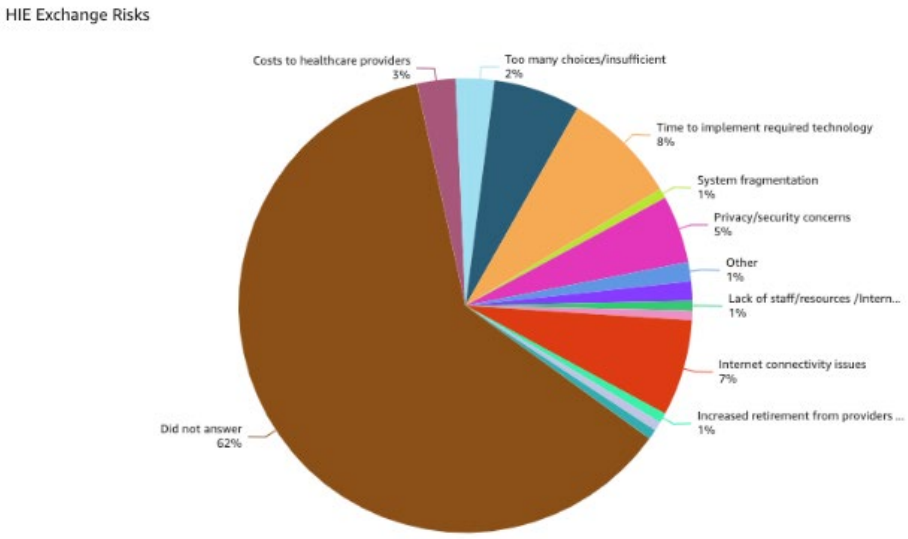
On the potential risks or barriers to an electronic exchange of health information to patients and providers in Puerto Rico, 61.6% declined to answer, 8.2% highlight the time needed to implement the required technology, and 6.8% suggested internet connectivity issues (**Table *99*** and **Figure *124***).

Table 99 – Administrator Survey Question 28

Q28. What do you believe are the potential risks or barriers to an electronic exchange of health information to patients and providers in Puerto Rico? (Select all that apply)	HIE Exchange Risks (% of all Respondents)	% of Responses (Total = 56)
Costs to healthcare providers	2.7%	7.1%
Costs to Puerto Rico Health Information Exchange/Puerto Rico Health Information Network	0.7%	1.8%
Difficult to import/add old records and data.	0.7%	1.8%
Does not integrate with current systems.	0.7%	1.8%
Increased retirement from providers that are resistant to change.	0.7%	1.8%
Internet connectivity issues	6.8%	17.9%
Lack of public policy	0.7%	1.8%
Lack of staff/resources /Internal practice/organizational	0.7%	1.8%
Negative impact on patient care	1.4%	3.6%
Privacy/security concerns	4.8%	12.5%
System fragmentation	0.7%	1.8%
Time to implement required technology	8.2%	21.4%
Time to use the required technology	6.2%	16.1%
Too many choices/insufficient	2.1%	5.4%
Other	1.4%	3.6%
Did not answer	61.6%	
Grand Total	**100.0%**	**56**

Others include: Problems with PRHEI (1) and I don't use it (1)

Figure 124 – Administrator Survey Question 28



Question 29

The steps that organizations have taken to address barriers to health information exchange adoption and usage include staff training and education programs on HIE systems and data-sharing protocols (7.5%), providing technical support and assistance to healthcare providers (2.7%), and conducting regular assessments and feedback mechanisms to address user concerns and data quality issues (2.7%). Well over half of respondents (64.4%) did not answer this question and 11.0% replied that no steps were taken, and the barriers have not been addressed (**Table *100*** and **Figure *125***).

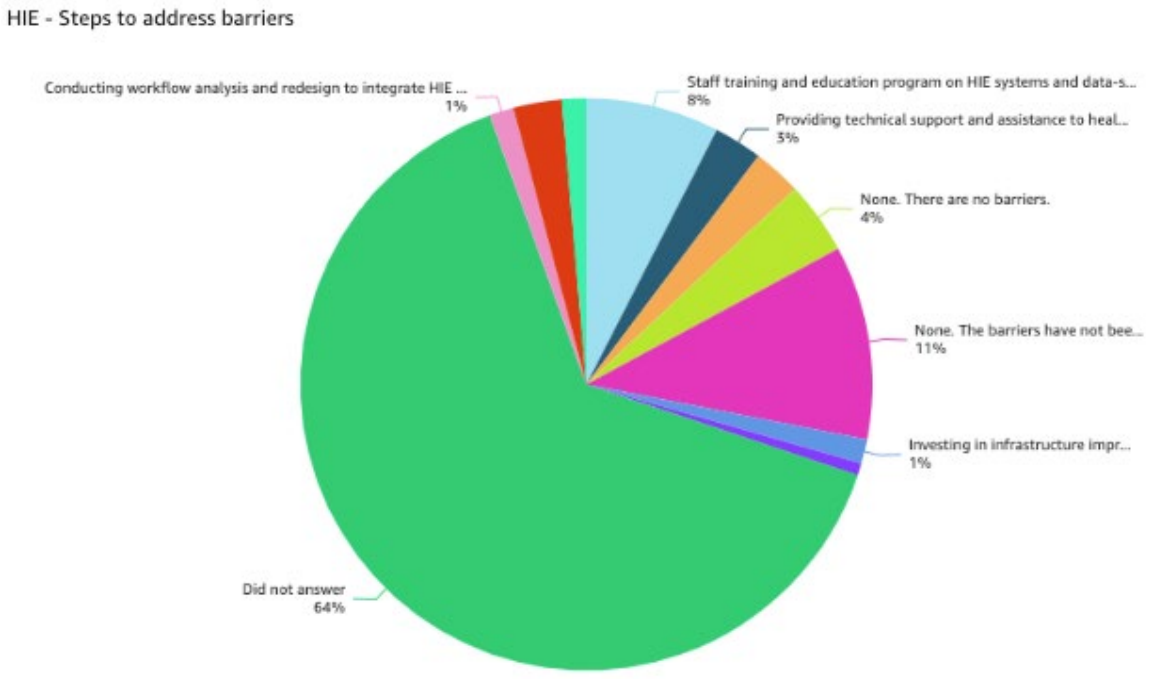
Table 100 – Administrator Survey Question 29

Q29. What steps has your primary healthcare organization taken to address barriers to HIE adoption and usage? (Select all that apply)	HIE Steps to address barriers (% of all Respondents)	% of Responses (Total = 52)
Collaborating with external organizations and stakeholders to establish data-sharing agreements and standards	1.4%	3.8%
Conducting regular assessments and feedback mechanisms to address user concerns and data quality issues	2.7%	7.7%
Conducting workflow analysis and redesign to integrate HIE into clinical processes	1.4%	3.8%
Implementing user-friendly HIE interfaces and tools	0.7%	1.9%

Q29. What steps has your primary healthcare organization taken to address barriers to HIE adoption and usage? (Select all that apply)	HIE Steps to address barriers (% of all Respondents)	% of Responses (Total = 52)
Investing in infrastructure improvements to support HIE implementation and data exchange	1.4%	3.8%
None. The barriers have not been addressed.	11.0%	30.8%
None. There are no barriers.	4.1%	11.5%
Providing technical support and assistance to healthcare providers	2.7%	7.7%
Staff training and education program on HIE systems and data-sharing protocols	7.5%	21.2%
Other	2.7%	7.7%
Did not answer	64.4%	
Grand Total	**100.0%**	**52**

Others include: I don't know if there is a HIE available (1), N/A (1), I don't know (1) and Waiting for improvement (1)

Figure 125 – Administrator Survey Question 29



Question 30

Last question in this section, participants were asked which areas they believe have the greatest need for HIE technology. While most declined to answer (64.4%), 12.3% indicated telehealth, 4.8% indicated patient records, and another 4.8% indicated referrals (**Table *101*** and **Figure *126***).

Table 101 – Administrator Survey Question 30

Q 30. Which area(s) of healthcare do you believe have the greatest need for HIE technology? (Select all that apply)	HIE areas with greatest needs (% of all Respondents)	% of Responses (Total = 52)
Behavioral health	2.7%	7.7%
Care coordination	0.7%	1.9%
Clinical decision support	1.4%	3.8%
Diagnostic imaging	1.4%	3.8%
Emergency care	0.7%	1.9%
Labs	0.7%	1.9%
Long-term and post-acute care	1.4%	3.8%
Medications	4.1%	11.5%
Patient records	4.8%	13.5%
Public health reporting	0.7%	1.9%
Referrals	4.8%	13.5%
Telehealth	12.3%	34.6%
Did not answer	64.4%	
Grand Total	**100.0%**	**52**

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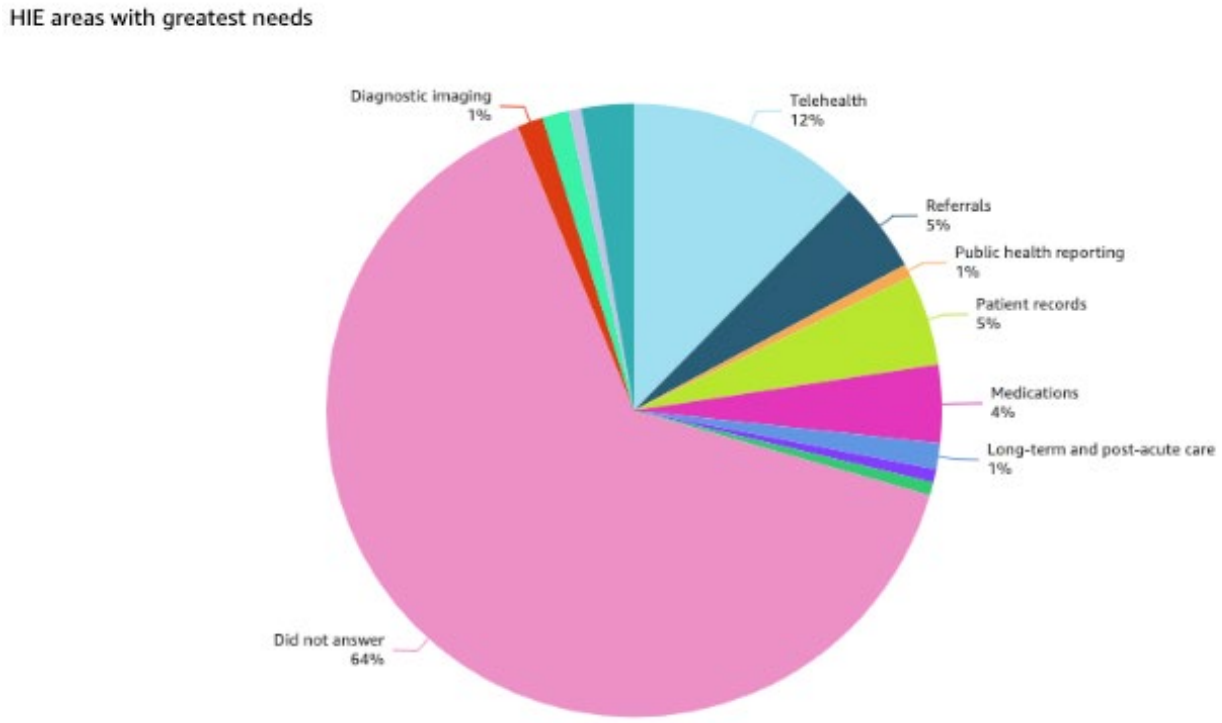
Figure 126 – Administrator Survey Question 30



SECTION 4: Telehealth & Digital Health Adoption and Usage

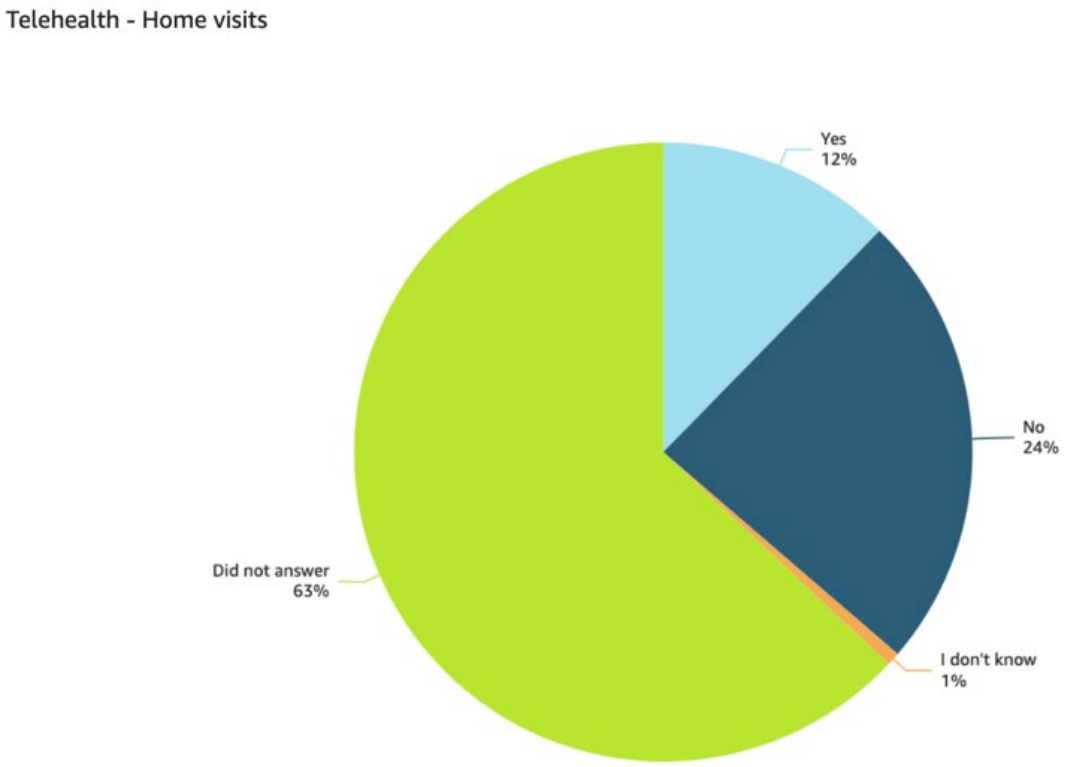
Question 31

On home visits, 24.0% of respondents reported that their organization does not provide them, 12.3% do, however, 63.0% declined to respond (**Table *102*** and **Figure *127***).

Table 102 – Administrator Survey Question 31

Q31. Does your primary healthcare organization provide home visits?	Telehealth - home visits (% of all Respondents)	% of Responses (Total = 54)
I don't know	0.7%	1.9%
No	24.0%	64.8%
Yes	12.3%	33.3%
Did not answer	63.0%	
Grand Total	**100.0%**	**54**

Figure 127 – Administrator Survey Question 31



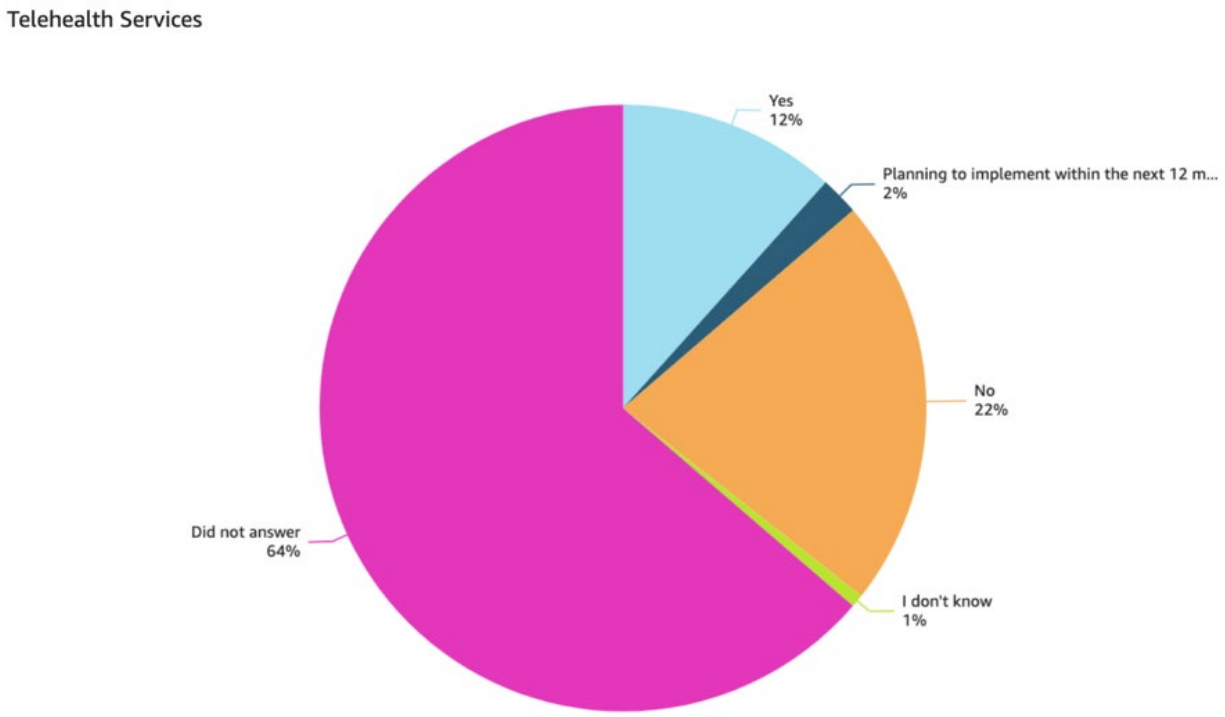
Question 32

Similarly, 21.9% reported that their organization does not offer telehealth services, 11.6% do, while 63.7% declined to respond (**Table *103*** and **Figure *128***).

Table 103 – Administrator Survey Question 32

Q32. Does your primary healthcare organization currently offer telehealth services?	Telehealth services (% of all Respondents)	% of Responses (Total = 53)
I don't know	0.7%	1.9%
No	21.9%	60.4%
Planning to implement within the next 12 months	2.1%	5.7%
Yes	11.6%	32.1%
Did not answer	63.7%	
Grand Total	**100.0%**	**53**

Figure 128 – Administrator Survey Question 32



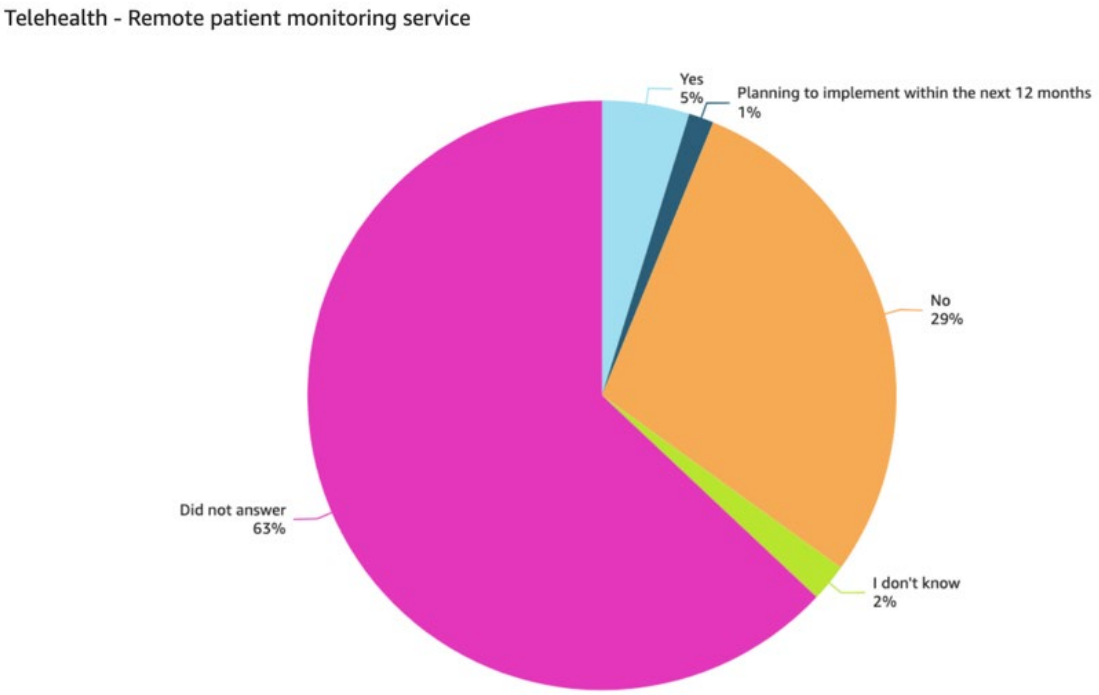
Question 33

Whether remote patient monitoring services are offered by their organizations, 28.8% responded no, 4.8% responded yes, and 63.0% declined to answer (**Table *104*** and **Figure *129***).

Table 104 – Administrator Survey Question 33

Q33. Does your primary healthcare organization currently offer remote patient monitoring services?	Telehealth - remote patient monitoring (% of all Respondents)	% of Responses (Total = 54)
I don't know	2.1%	5.6%
No	28.8%	77.8%
Planning to implement within the next 12 months	1.4%	3.7%
Yes	4.8%	13.0%
Did not answer	63.0%	
Grand Total	**100.0%**	**54**

Figure 129 – Administrator Survey Question 33



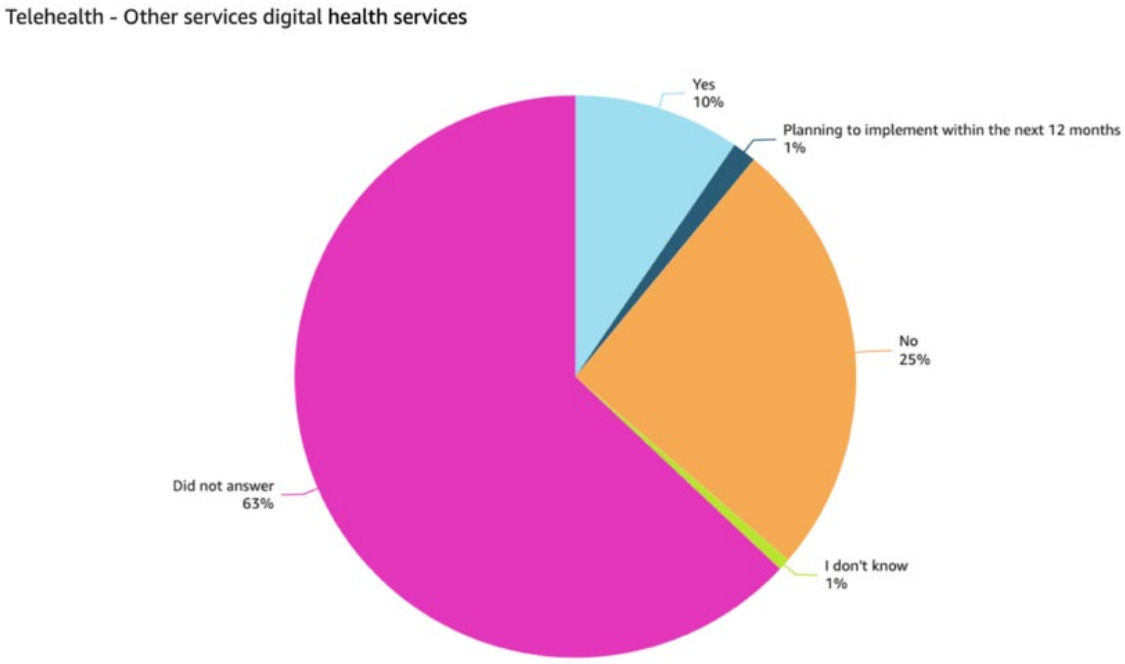
Question 34

Just over a quarter (25.3%) of respondents indicated that their organizations do not offer digital health services and 9.6% do offer such services. As with previous questions on services offered, the majority (63.0%) did not answer this question (**Table *105*** and **Figure *130***).

Table 105 – Administrator Survey Question 34

Q34. Does your primary healthcare organization currently offer other digital health services?	Telehealth - other services digital health (% of all Respondents)	% of Responses (Total = 54)
I don't know	0.7%	1.9%
No	25.3%	68.5%
Planning to implement within the next 12 months	1.4%	3.7%
Yes	9.6%	25.9%
Did not answer	63.0%	
Grand Total	**100.0%**	**54**

Figure 130 – Administrator Survey Question 34



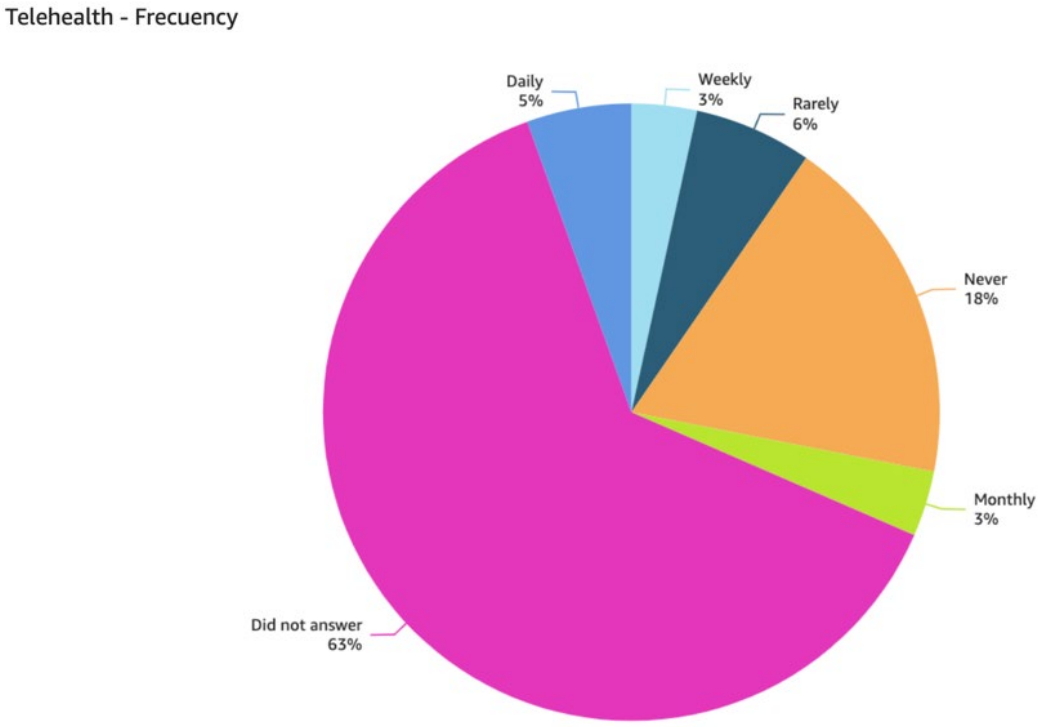
Question 35

On the frequency of use of telehealth services by their organizations, 5.5% replied that they use it daily, 3.4% weekly, 3.4% monthly, 6.2% rarely use it, and 18.5% never use it. Most participants (63.0%) declined to respond (**Table *106*** and **Figure *131***).

Table 106 – Administrator Survey Question 35

Q35. How frequently does your primary healthcare organization use telehealth services for patient care?	Telehealth frequency (% of all Respondents)	% of Responses (Total = 54)
Daily	5.5%	14.8%
Weekly	3.4%	9.3%
Monthly	3.4%	9.3%
Rarely	6.2%	16.7%
Never	18.5%	50.0%
Did not answer	63.0%	
Grand Total	**100.0%**	**54**

Figure 131 – Administrator Survey Question 35



Question 36

Clinical areas which most frequently use telehealth/digital health include mental health (5.5% of respondents), primary care (4.1%), and tied for third spot at 2.7% each are chronic disease management, post-surgical follow-up, and remote patient therapeutics. Among the highest rates of non-response, 67.8% of respondents did not answer this question (**Table *107*** and **Figure *132***).

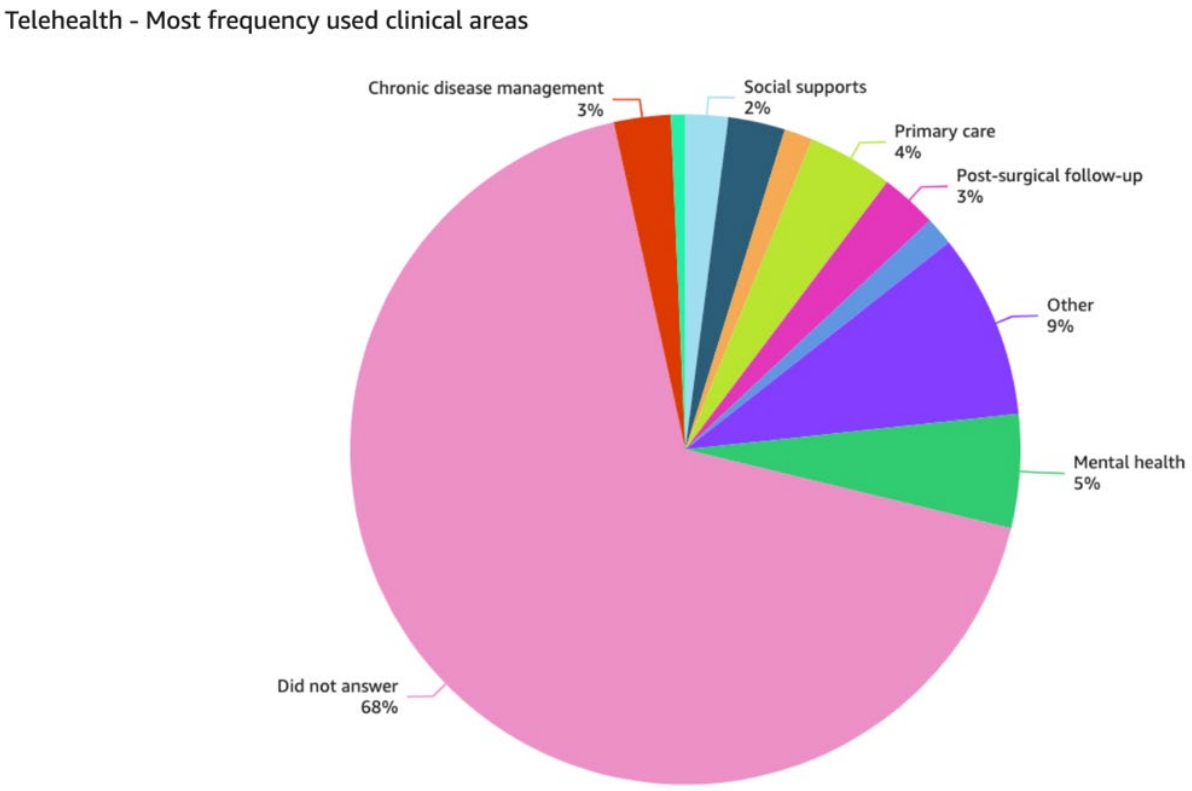
Table 107 – Administrator Survey Question 36

Q36. In what clinical areas are telehealth/digital health most frequently utilized at your primary healthcare organization? (Select all that apply)	Telehealth – most frequently used clinical areas (% of all Respondents)	% of Responses (Total = 47)
Care management	0.7%	2.1%
Chronic disease management	2.7%	8.5%
Mental health	5.5%	17.0%
Pediatrics	1.4%	4.3%
Post-surgical follow-up	2.7%	8.5%

Q36. In what clinical areas are telehealth/digital health most frequently utilized at your primary healthcare organization? (Select all that apply)	Telehealth – most frequently used clinical areas (% of all Respondents)	% of Responses (Total = 47)
Primary care	4.1%	12.8%
Remote patient monitoring	1.4%	4.3%
Remote patient therapeutic	2.7%	8.5%
Social supports	2.1%	6.4%
Other	8.9%	27.7%
Did not answer	67.8%	
Grand Total	**100.0%**	**47**

Others include: N/A (3), None (6), Serviced not provided (2), Diagnostic imaging (1), Not used (1),

Figure 132 – Administrator Survey Question 36



Question 37

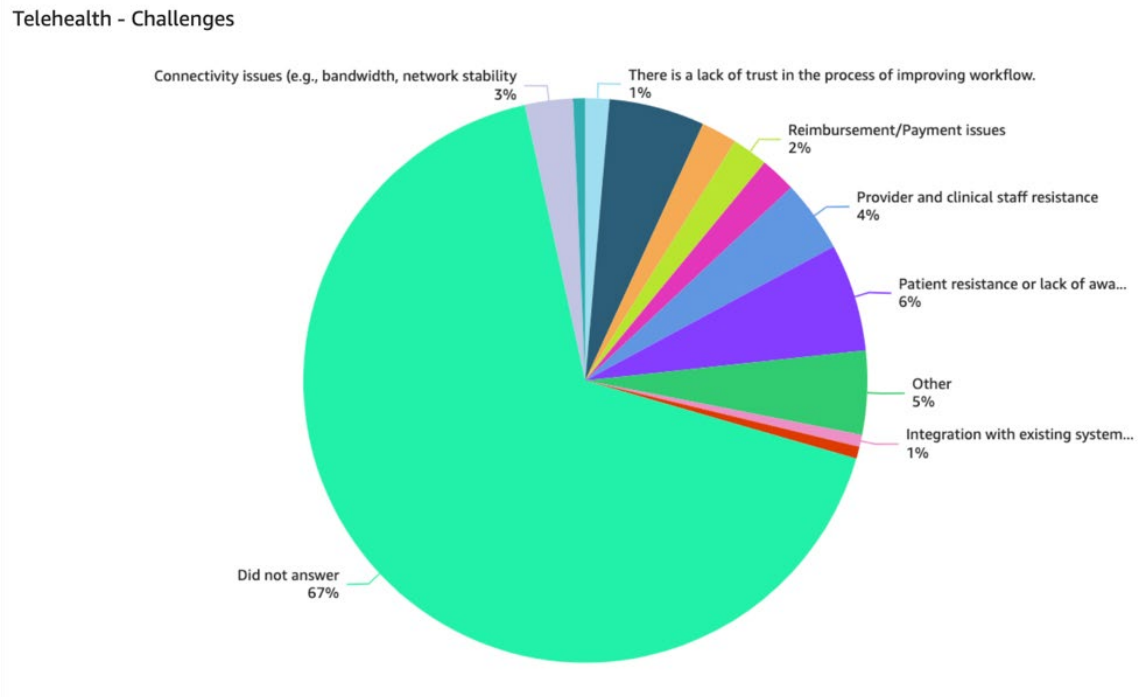
Challenges while implementing telehealth services in organizations include patient resistance or lack of awareness (6.2% of respondents) and provider and clinical staff resistance (4.1%), while 5.5% indicated that their organization faces no challenges to adoption. Of note, 67.1% of participants declined to answer this question (**Table *108*** and **Figure *133***).

Table 108 – Administrator Survey Question 37

Q37. What challenges has your primary healthcare organization encountered while implementing telehealth services? (Select all that apply)	Telehealth – challenges (% of all Respondents)	% of Responses (Total = 48)
Additional burden on staff	0.7%	2.1%
Connectivity issues (e.g., bandwidth, network stability	2.7%	8.3%
Insufficient computer skills/literacy/experience of staff	0.7%	2.1%
Integration with existing systems (e.g., EHRs)	0.7%	2.1%
Patient resistance or lack of awareness	6.2%	18.8%
Provider and clinical staff resistance	4.1%	12.5%
Regulatory/compliance hurdles	2.1%	6.3%
Reimbursement/Payment issues	2.1%	6.3%
Technology infrastructure problems	2.1%	6.3%
There are no challenges to adoption in our organization.	5.5%	16.7%
There is a lack of trust in the process of improving workflow.	1.4%	4.2%
Other	4.8%	14.6%
Did not answer	67.1%	
Grand Total	**100.0%**	**48**

Others include: Not applicable for dental treatment (1), App does not provide functionality (2), Management point of view (1), N/A (3)

Figure 133 – Administrator Survey Question 37



Question 38

The key barriers preventing further adoption of telehealth/digital health in their organizations include security and privacy concerns (8.2%), cost of technology implementation (4.1%), patient engagement or digital literacy (3.4%), and limited staff training/resources (3.4%). Most survey participants (67.8%) did not answer this question (**Table *109*** and **Figure *134***).

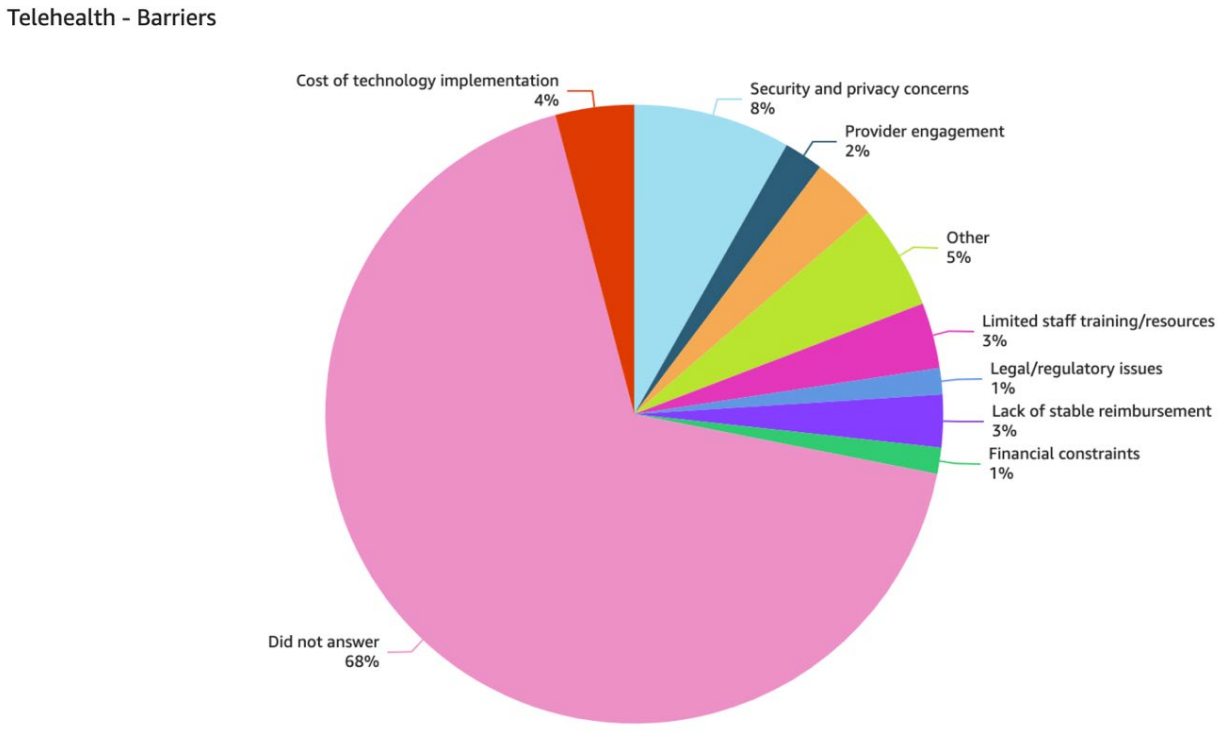
Table 109 – Administrator Survey Question 38

Q38. What are the key barriers preventing further adoption of telehealth/digital health at your primary healthcare organization? (Select all that apply)	Telehealth barriers (% of all Respondents)	% of Responses (Total = 47)
Cost of technology implementation	4.1%	12.8%
Financial constraints	1.4%	4.3%
Lack of stable reimbursement	2.7%	8.5%
Legal/regulatory issues	1.4%	4.3%
Limited staff training/resources	3.4%	10.6%
Patient engagement or digital literacy	3.4%	10.6%
Provider engagement	2.1%	6.4%

Q38. What are the key barriers preventing further adoption of telehealth/digital health at your primary healthcare organization? (Select all that apply)	Telehealth barriers (% of all Respondents)	% of Responses (Total = 47)
Security and privacy concerns	8.2%	25.5%
Other	5.5%	17.0%
Did not answer	67.8%	
Grand Total	**100.0%**	**47**

Others include: Not applicable for dental treatment (1), Functionality (1), None (1), Management point of view (1), N/A (3), Service is not available (1)

Figure 134 – Administrator Survey Question 38



Question 39

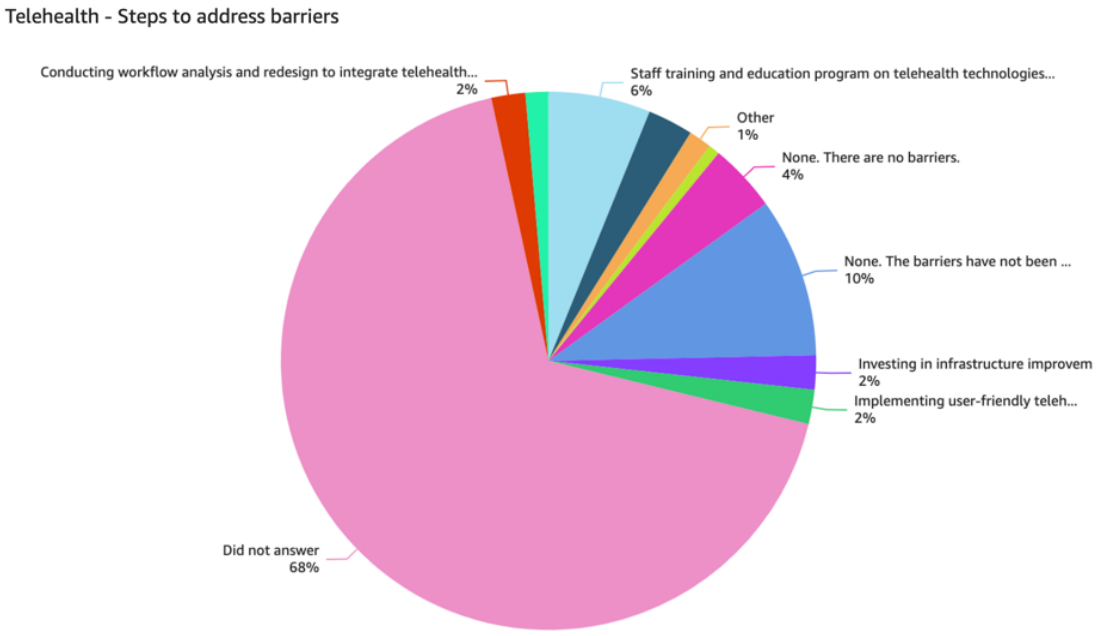
To address barriers to telehealth adoption and usage, organizations have provided staff training and education program on telehealth technologies and best practices (6.2%), provided technical support and assistance to healthcare providers (2.7%), while 9.6% report that no steps have been taken and as such, barriers have not been addressed in those organizations. As with other questions in this section, most participants (67.8%) declined to answer (**Table *110*** and **Figure *135***).

Table 110 – Administrator Survey Question 39

Q39. What steps has your primary healthcare organization taken to address barriers to telehealth adoption and usage? (Select all that apply)	Telehealth steps to address barriers (% of all Respondents)	% of Responses (Total = 47)
Conducting regular assessments and feedback mechanisms to address user and patient concerns	1.4%	4.3%
Conducting workflow analysis and redesign to integrate telehealth into clinical processes	2.1%	6.4%
Implementing user-friendly telehealth platforms and tools	2.1%	6.4%
Investing in infrastructure improvements (e.g., broadband connectivity, video conferencing systems) to support telehealth implementation	2.1%	6.4%
None. The barriers have not been addressed.	9.6%	29.8%
None. There are no barriers.	4.1%	12.8%
Offering incentives or rewards for telehealth adoption and utilization	0.7%	2.1%
Providing technical support and assistance to healthcare providers	2.7%	8.5%
Staff training and education program on telehealth technologies and best practices	6.2%	19.1%
Other	1.4%	4.3%
Did not answer	67.8%	
Grand Total	**100.0%**	**47**

Others include: N/A (1) and Waiting for improvements (1).

Figure 135 – Administrator Survey Question 39



Question 40

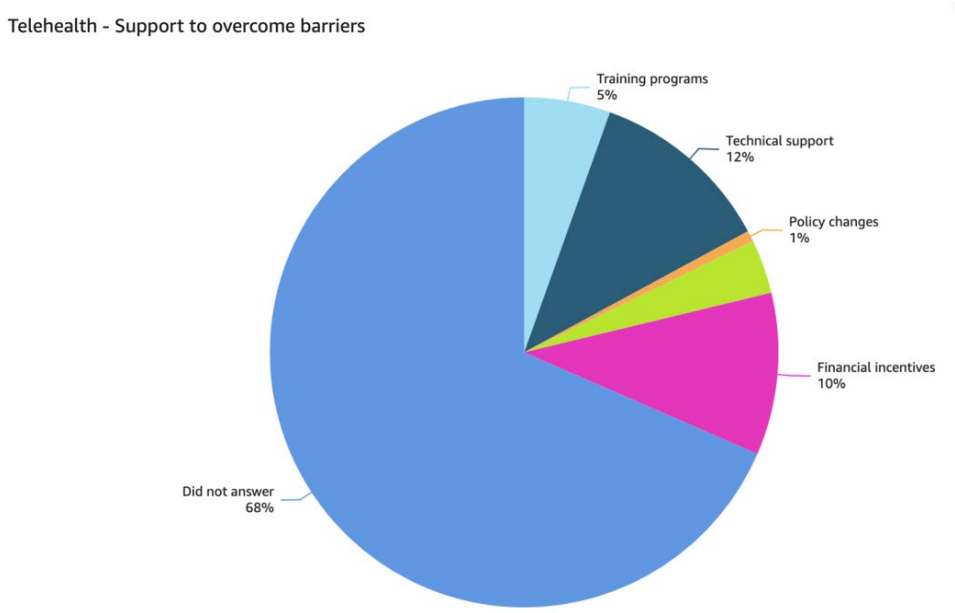
Finally, the types of support that would most help organizations overcome the aforementioned barriers include technical support (11.6%), financial incentives (10.3%), and training programs (5.5%). The highest proportion of non-response in this section, 68.5% declined to answer Question 40 (**Table *111*** and **Figure *136***).

Table 111 – Administrator Survey Question 40

Q40. What support would most help your primary healthcare organization overcome these barriers? (Select all that apply).	Telehealth support to overcome barriers (% of all Respondents)	% of Responses (Total = 46)
Financial incentives	10.3%	32.6%
Policy changes	0.7%	2.2%
Technical support	11.6%	37.0%
Training programs	5.5%	17.4%
Other	3.4%	10.9%
Did not answer	68.5%	
Grand Total	**100.0%**	**46**

Others include: Not applicable for dental treatment (1), N/A (3), None (1)

Figure 136 – Administrator Survey Question 40



SECTION 5: Meaningful Use

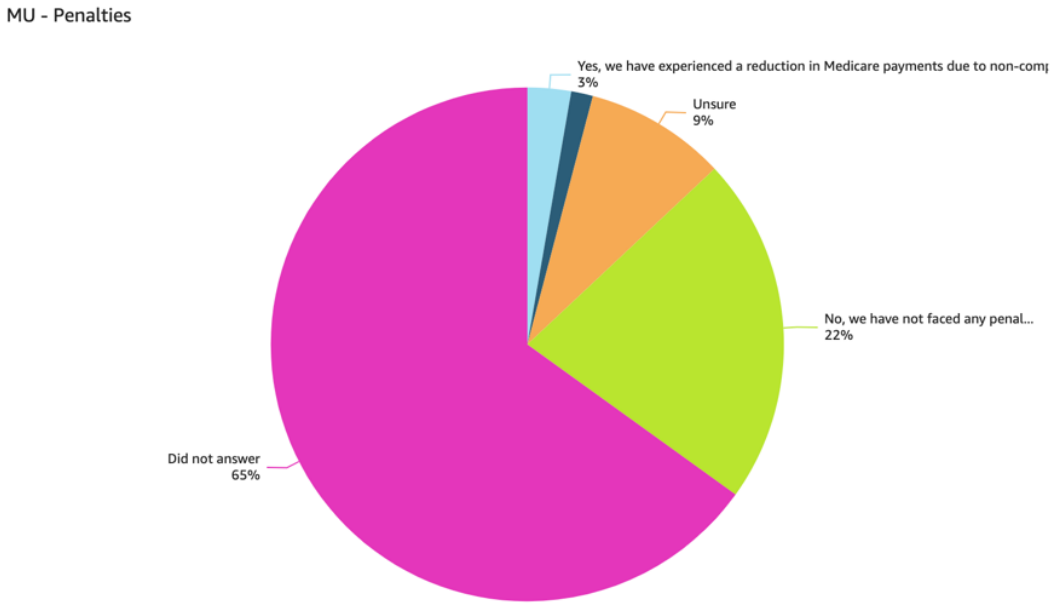
Question 41

On whether organizations have faced penalties related to the MU program, 65.1% of participants declined to answer, 21.9% indicated that they have not faced such penalties, while 8.9% were unsure (**Table *112*** and **Figure *137***).

Table 112 – Administrator Survey Question 41

Q41. Has your organization faced any penalties related to the Meaningful Use (MU) program?	MU – Penalties (% of all Respondents)	% of Responses (Total = 51)
No, we have not faced any penalties related to the Meaningful Use program.	21.9%	62.7%
Unsure	8.9%	25.5%
Yes, we have been notified of potential reductions in future Medicare payments due to non-compliance with MU requirements.	1.4%	3.9%
Yes, we have experienced a reduction in Medicare payments due to non-compliance with MU requirements.	2.7%	7.8%
Did not answer	65.1%	
Grand Total	**100.0%**	**51**

Figure 137 – Administrator Survey Question 41



Question 42

Respondents reported that their organizations have addressed quality assurance and assessments related to MU requirements by conducting internal audits and assessments to ensure compliance (7.5%), providing training and education to staff on MU requirements and best practices (2.7%), and implementing automated tools and processes to monitor and validate MU compliance (2.1%). Of the participants, 67.1% did not answer this question (**Table *113*** and **Figure *138***).

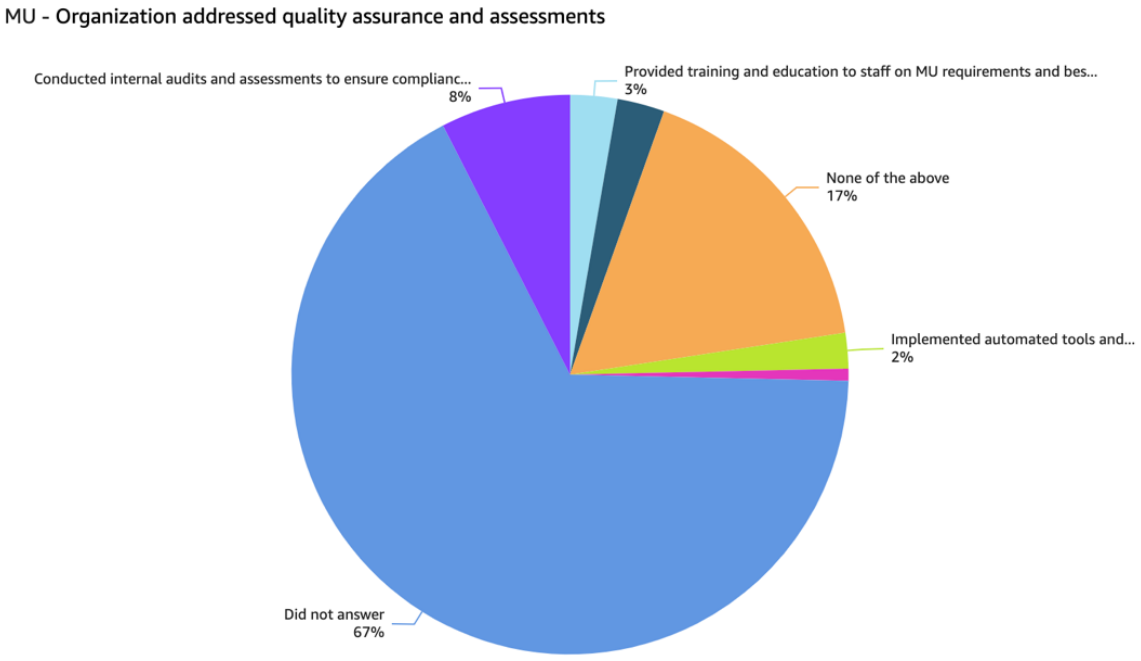
Table 113 – Administrator Survey Question 42

Q42. How has your organization addressed quality assurance and assessments related to Meaningful Use requirements? (Select all that apply)	**MU requirements QA and assessments (% of all Respondents)**	**% of Responses (Total = 48)**
Conducted internal audits and assessments to ensure compliance with MU requirements	7.5%	22.9%
Engaged external consultants or vendors to assist with MU quality assurance and assessments	0.7%	2.1%
Implemented automated tools and processes to monitor and validate MU compliance	2.1%	6.3%

Q42. How has your organization addressed quality assurance and assessments related to Meaningful Use requirements? (Select all that apply)	MU requirements QA and assessments (% of all Respondents)	% of Responses (Total = 48)
None of the above	17.1%	52.1%
Provided training and education to staff on MU requirements and best practices	2.7%	8.3%
Other	2.7%	8.3%
Did not answer	67.1%	
Grand Total	**100.0%**	**48**

Others include: N/A (3) and I don't know (1).

Figure 138 – Administrator Survey Question 42



Question 43

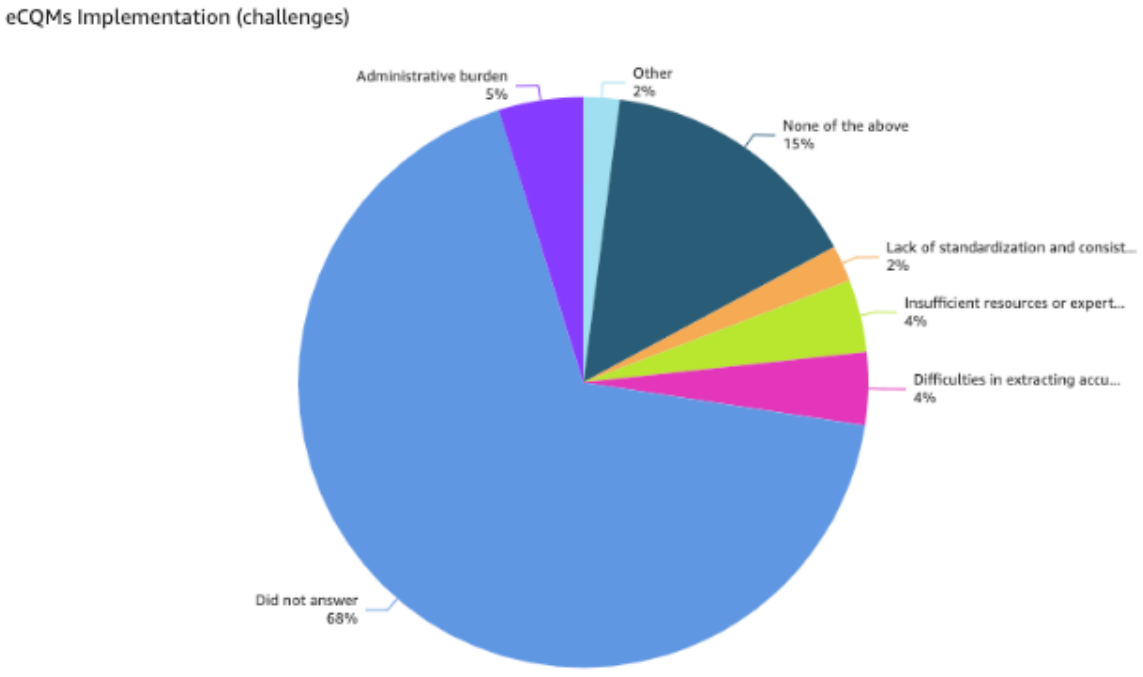
The top challenges organizations have faced in implementing and reporting electronic Clinical Quality Measures (eCQMs) include administrative burden (4.8%), difficulties in extracting accurate and complete data from EHR systems for eCQM reporting (4.1%), and insufficient resources or expertise to implement and maintain eCQM reporting processes (4.1%). Most participants (67.8%) did not answer (**Table *114*** and **Figure *139***).

Table 114 – Administrator Survey Question 43

Q 43. Which of the following challenges has your organization faced in implementing and reporting electronic Clinical Quality Measures (eCQMs)? (Select all that apply)	eCQMs implementation (challenges) (% of all Respondents)	% of Responses (Total = 47)
Administrative burden	4.8%	14.9%
Difficulties in extracting accurate and complete data from EHR systems for eCQM reporting	4.1%	12.8%
Insufficient resources or expertise to implement and maintain eCQM reporting processes	4.1%	12.8%
Lack of standardization and consistency in eCQM specifications and calculations	2.1%	6.4%
None of the above	15.1%	46.8%
Other	2.1%	6.4%
Did not answer	67.8%	
Grand Total	**100.0%**	**47**

Others include: I don't know (1) and N/A (2)

Figure 139 – Administrator Survey Question 43



Question 44

Specifically on the e-prescribing component of MU, the issues encountered by organizations include technical difficulties (5.5%) and challenges with ensuring data accuracy and completeness (3.4%), while 67.8% declined to answer (**Table *115*** and **Figure *140***).

Table 115 – Administrator Survey Question 44

Q44. Which of the following issues has your organization encountered with the e-Prescribing component of Meaningful Use? (Select all that apply)	MU ePrescribing issues (% of all Respondents)	% of Responses (Total = 47)
Challenges with ensuring data accuracy and completeness in e-Prescriptions	3.4%	10.6%
Difficulties in meeting e-Prescribing threshold requirements	1.4%	4.3%
None of the above	17.8%	55.3%
Resistance from prescribers to adopt e-Prescribing practices	1.4%	4.3%
Technical difficulties with e-Prescribing software or systems	5.5%	17.0%
Other	2.7%	8.5%
Did not answer	67.8%	
Grand Total	**100.0%**	**47**

Others include: Second signature required for Vital Health Insurance patients (1), N/A (2) and Too much time (1)

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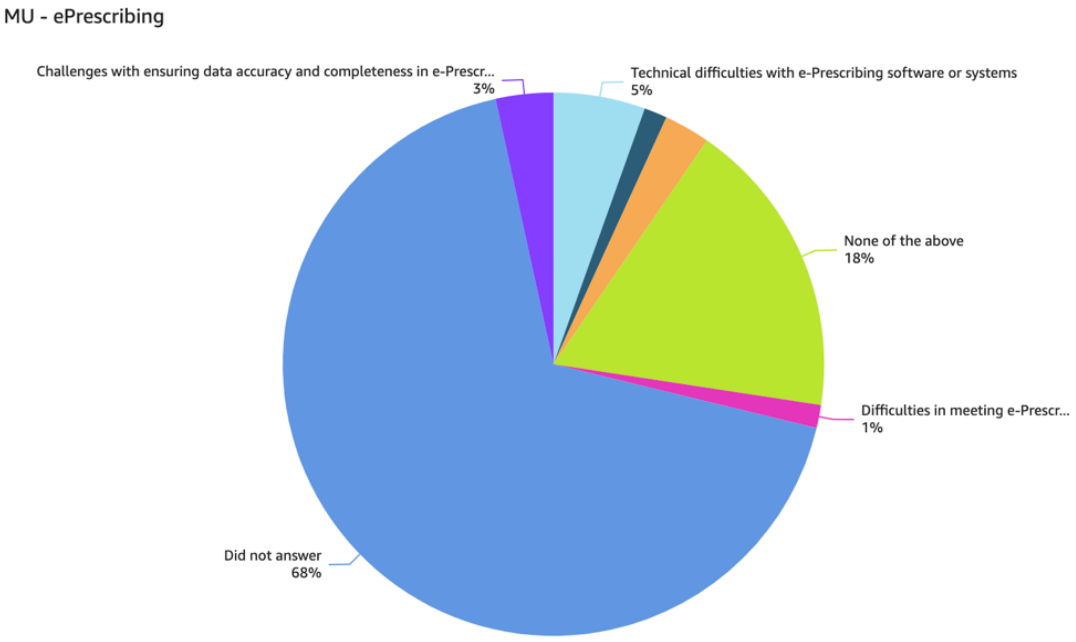
Figure 140 – Administrator Survey Question 44



Question 45(a)

On the level of compliance and difficulties encountered by their organizations when

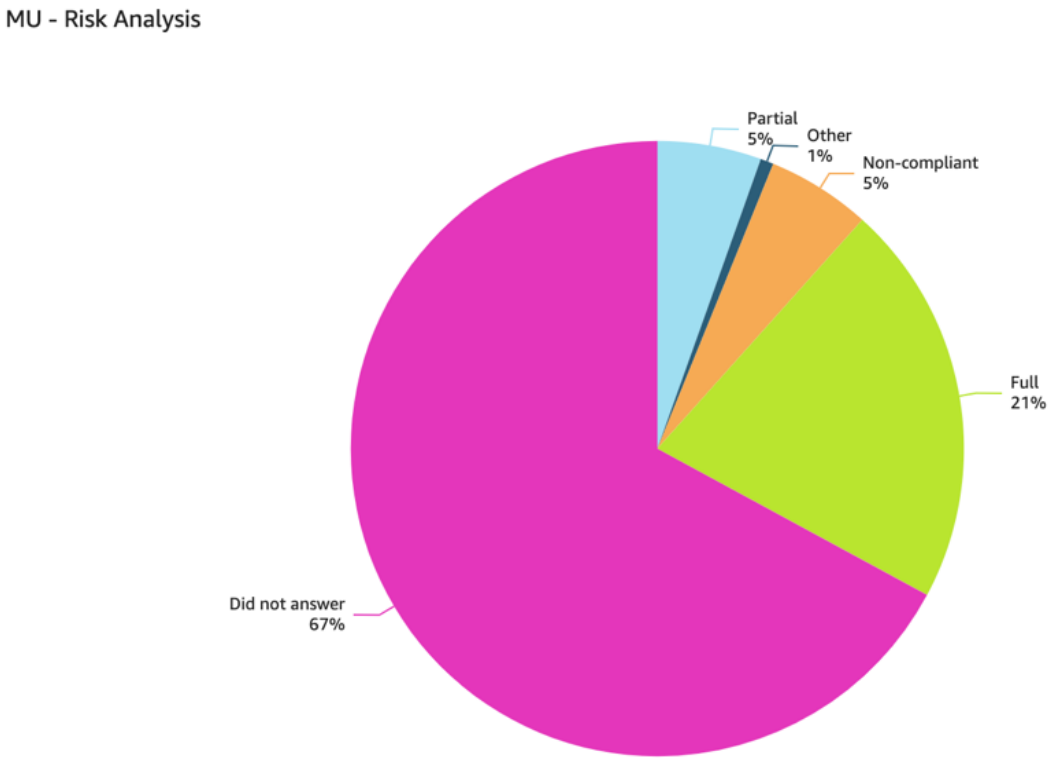
(a) conducting security risk analysis, 21.2% of participants indicated they were in full compliance, 5.5% partially compliant, and 5.5% non-compliant, while 67.1% declined to answer (**Table *116*** and **Figure *141***).

Table 116 – Administrator Survey Question 45(a)

Q45(a) Conducting security risk analysis	MU Risk Analysis (only asked in Spanish version) (% of all Respondents)	% of Responses (Total = 48)
Full	21.2%	64.6%
Partial	5.5%	16.7%
Non-compliant	5.5%	16.7%
Other	0.7%	2.1%
Did not answer	67.1%	
Grand Total	**100.0%**	**48**

Other: There are no experts (1)

Figure 141 – Administrator Survey Question 45(a)



Question 45(b)

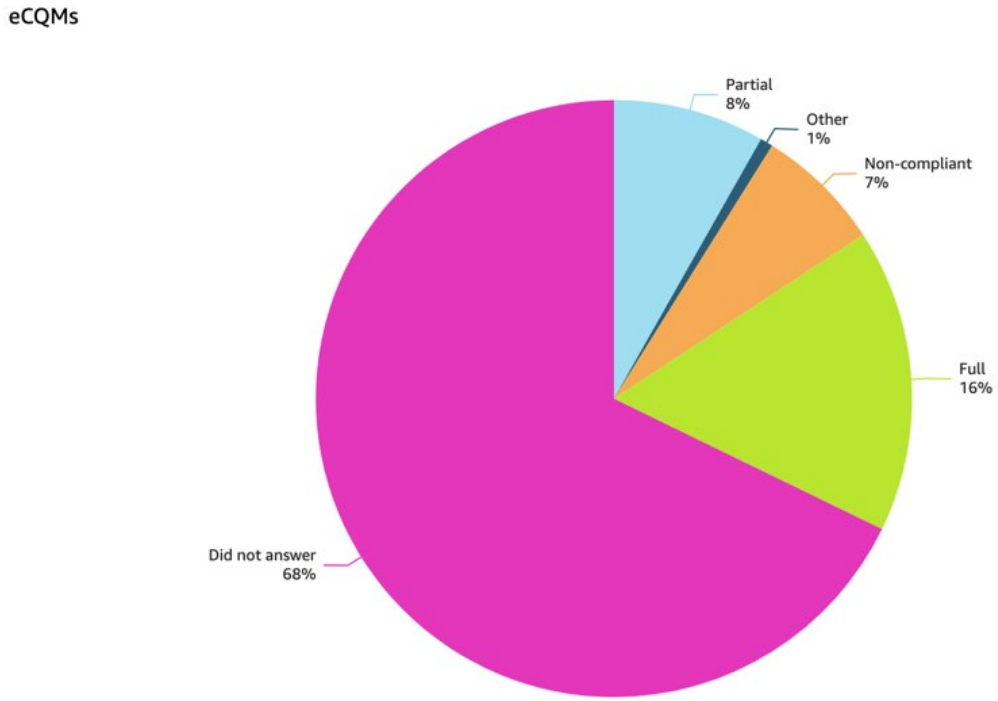
(b) reporting on three self-selected eCQMs, 16.4% indicated they were in full compliance, 8.2% partially compliant, and 6.8% non-compliant, while 67.8% declined to answer (**Table *117*** and **Figure *142***).

Table 117 – Administrator Survey Question 45(b)

Q45(b) Reporting on 3 self-selected eCQMs	3 eCQMs compliance level (% of all Respondents)	% of Responses (Total = 47)
Full	16.4%	51.1%
Partial	8.2%	25.5%
Non-compliant	6.8%	21.3%
Other	0.7%	2.1%
Did not answer	67.8%	
Grand Total	**100.0%**	**47**

Other: I don't know (1)

Figure 142 – Administrator Survey Question 45(b)



Question 45(c)

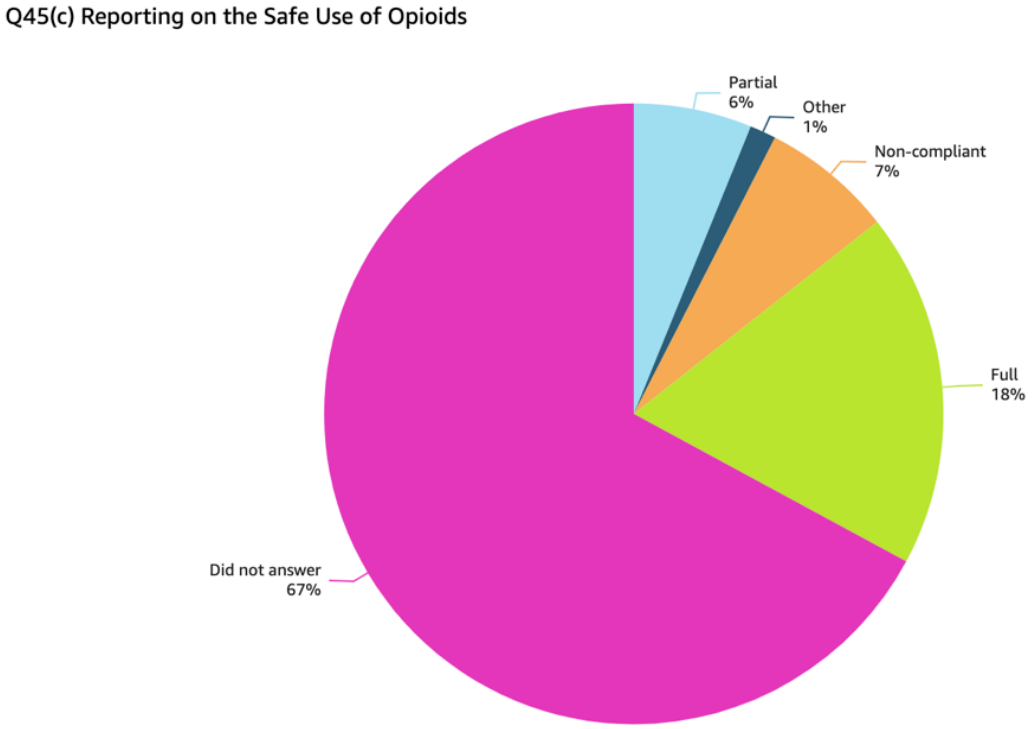
reporting on the safe use of opioids – concurrent prescribing measure, 18.5% indicated they were in full compliance, 6.2% partially compliant, and 6.8% non-compliant, while 67.1% declined to answer (**Table *118*** and **Figure *143***).

Table 118 – Administrator Survey Question 45(c)

Q45(c) Reporting on the Safe Use of Opioids – Concurrent Prescribing measure	Concurrent prescribing measure - compliance level (% of all Respondents)	% of Responses (Total = 48)
Full	18.5%	56.3%
Partial	6.2%	18.8%
Non-compliant	6.8%	20.8%
Other	1.4%	4.2%
Did not answer	67.1%	
Grand Total	**100.0%**	**48**

Others include: I don't know (1) and N/A (1)

Figure 143 – Administrator Survey Question 45(c)



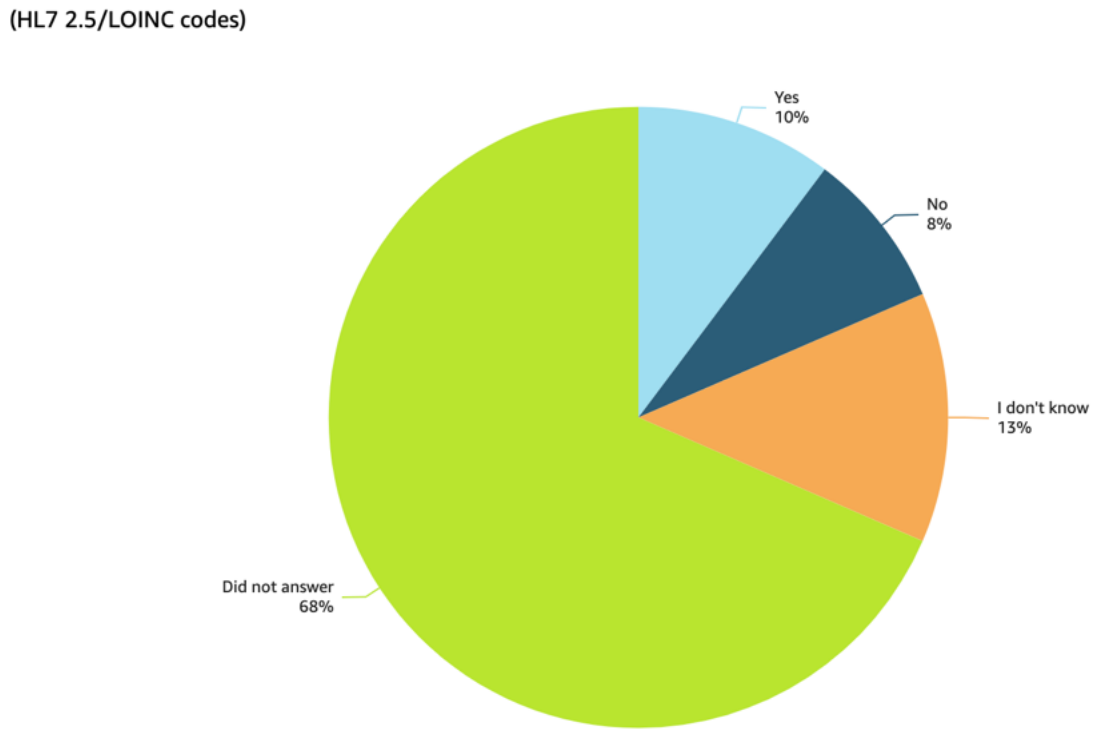
Question 46

When asked if their organizations are reporting Public Health data to the Puerto Rico Department of Health in accordance with their standards (HL7 2.5/LOINC codes), 10.3% reported yes, 8.2% no, and 13.0% did not know, while 68.5% did not answer at all (**Table *119*** and **Figure *144***).

Table 119 – Administrator Survey Question 46

Q46. Is your organization reporting Public Health data to the PRDoH in accordance with their standards (HL7 2.5/LOINC codes)?	Count of 52 - HL7 2.5/LOINC compliance level (% of all Respondents)	% of Responses (Total = 46)
I don't know	13.0%	41.3%
No	8.2%	26.1%
Yes	10.3%	32.6%
Did not answer	68.5%	
Grand Total	**100.0%**	**46**

Figure 144 – Administrator Survey Question 46



Question 47

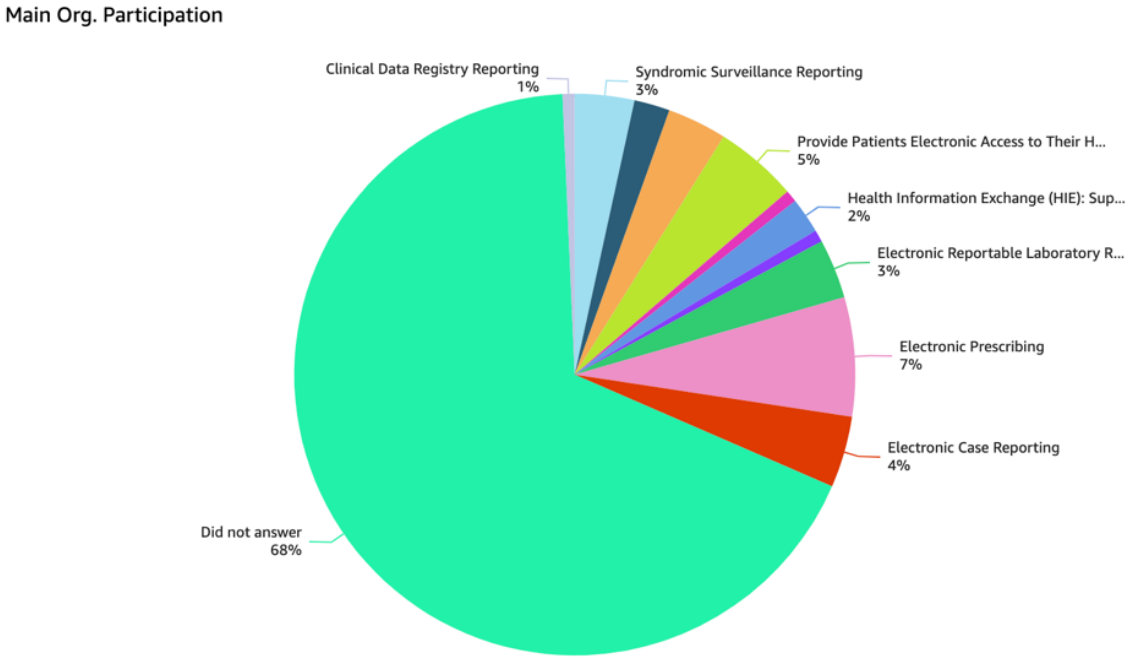
On the participation of their organizations in various reporting and information exchange activities, 6.8% indicated their participation in electronic prescribing, 4.8% in providing Patients Electronic Access to Their Health Information, and 4.1% in electronic case reporting, while 67.8% did not provide an answer (**Table *120*** and **Figure *145***).

Table 120 – Administrator Survey Question 47

Q47. Please indicate if your primary healthcare organization's participation in the following (Select all that apply):	Main Org. Participation (% of all Respondents)	% of Responses (Total = 47)
Clinical Data Registry Reporting	0.7%	2.1%
Electronic Case Reporting	4.1%	12.8%
Electronic Prescribing	6.8%	21.3%
Electronic Reportable Laboratory Result Reporting	3.4%	10.6%

Q47. Please indicate if your primary healthcare organization's participation in the following (Select all that apply):	Main Org. Participation (% of all Respondents)	% of Responses (Total = 47)
Health Information Exchange (HIE): Support Electronic Referral Loops by Sending Health Information	2.1%	6.4%
HIE: Support Electronic Referral Loops by Receiving and Reconciling Health Information	0.7%	2.1%
Immunization Registry Reporting	0.7%	2.1%
Provide Patients Electronic Access to Their Health Information	4.8%	14.9%
Public Health Registry Reporting	3.4%	10.6%
Query of Prescription Drug Monitoring Program	2.1%	6.4%
Syndromic Surveillance Reporting	3.4%	10.6%
Did not answer	67.8%	
Grand Total	**100.0%**	**47**

Figure 145 – Administrator Survey Question 47



SECTION 6: Additional services

Question 48

On the provision of home and community-based services (HCBS) by their organizations, 5.5% provide health care services at home and 2.1% provide senior centers or adult daycare, while 19.9% indicated that they do not provide HCBS and 67.8% did not respond (**Table *121*** and **Figure *146***).

Table 121 – Administrator Survey Question 48

Q48. Does your organization provide any of the following home and community-based services (HCBS)? (Select all that apply)	HCBS Services (% of all Respondents)	% of Responses (Total = 47)
Direct service worker / Direct care workers	0.7%	2.1%
Family caregiver training	0.7%	2.1%
Health care services at home	5.5%	17.0%
Home safety evaluations and modifications	0.7%	2.1%
Home-delivered meal program	0.7%	2.1%
Hospice and palliative care	0.7%	2.1%
Non-emergency transportation services	0.7%	2.1%
None of the above. We do not provide HCBS.	19.9%	61.7%
Senior centers or Adult Daycares	2.1%	6.4%
Other	0.7%	2.1%
Did not answer	67.8%	
Grand Total	**100.0%**	**47**

Other: Laboratory (1)

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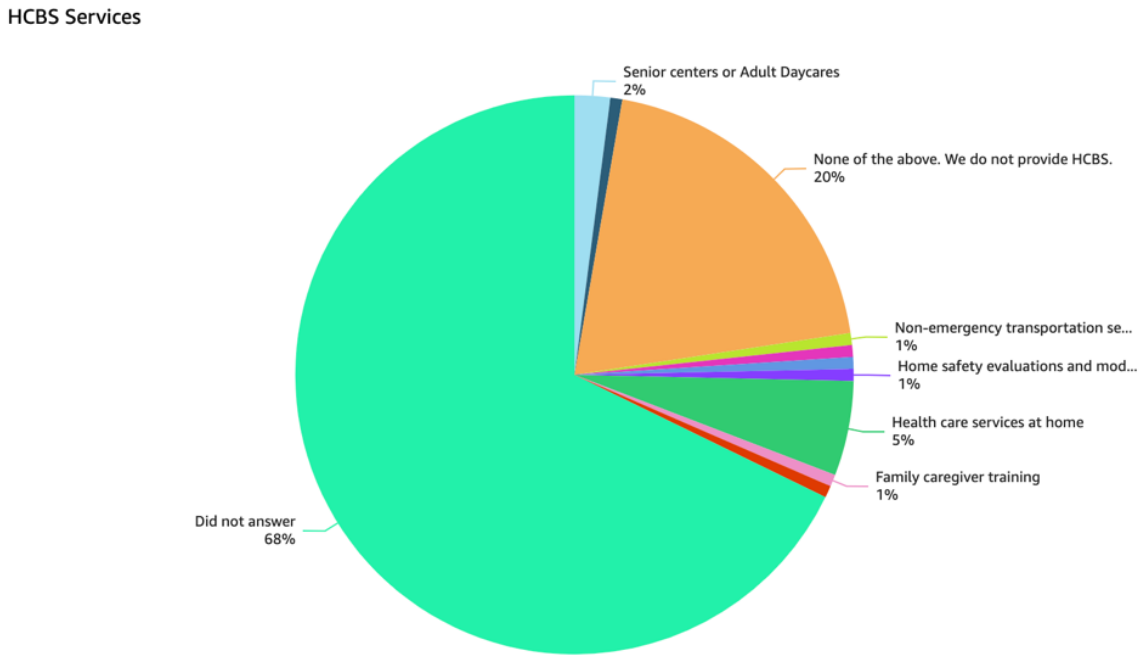
Figure 146 – Administrator Survey Question 48



SECTION 7: Future Direction

Question 49

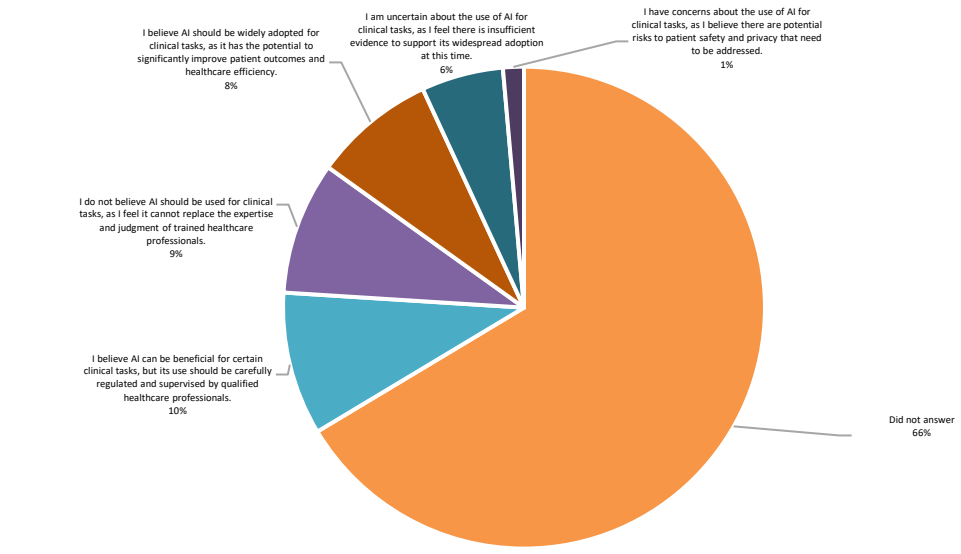
In this section, participants were asked about the application of AI in healthcare. On the use of AI for clinical tasks in healthcare, 9.6% believe AI can be beneficial for certain clinical tasks, but its use should be carefully regulated and supervised by qualified healthcare professionals. Conversely, 8.9% do not believe AI should be used for clinical tasks, as they feel it cannot replace the expertise and judgment of trained healthcare professionals (**Table *122*** and **Figure *147***).

Table 122 – Administrator Survey Question 49

Q49. How comfortable are you with the use of AI for clinical tasks in healthcare? (e.g., diagnosis, treatment planning, and patient monitoring)	AI use for clinical tasks in healthcare (% of all Respondents)	% of Responses (Total = 49)
I am uncertain about the use of AI for clinical tasks, as I feel there is insufficient evidence to support its widespread adoption at this time.	5.5%	16.3%
I believe AI can be beneficial for certain clinical tasks, but its use should be carefully regulated	9.6%	28.6%

Q49. How comfortable are you with the use of AI for clinical tasks in healthcare? (e.g., diagnosis, treatment planning, and patient monitoring)	AI use for clinical tasks in healthcare (% of all Respondents)	% of Responses (Total = 49)
and supervised by qualified healthcare professionals.		
I believe AI should be widely adopted for clinical tasks, as it has the potential to significantly improve patient outcomes and healthcare efficiency.	8.2%	24.5%
I do not believe AI should be used for clinical tasks, as I feel it cannot replace the expertise and judgment of trained healthcare professionals.	8.9%	26.5%
I have concerns about the use of AI for clinical tasks, as I believe there are potential risks to patient safety and privacy that need to be addressed.	1.4%	4.1%
Did not answer	66.4%	
Grand Total	**100.0%**	**49**

Figure 147 – Administrator Survey Question 49



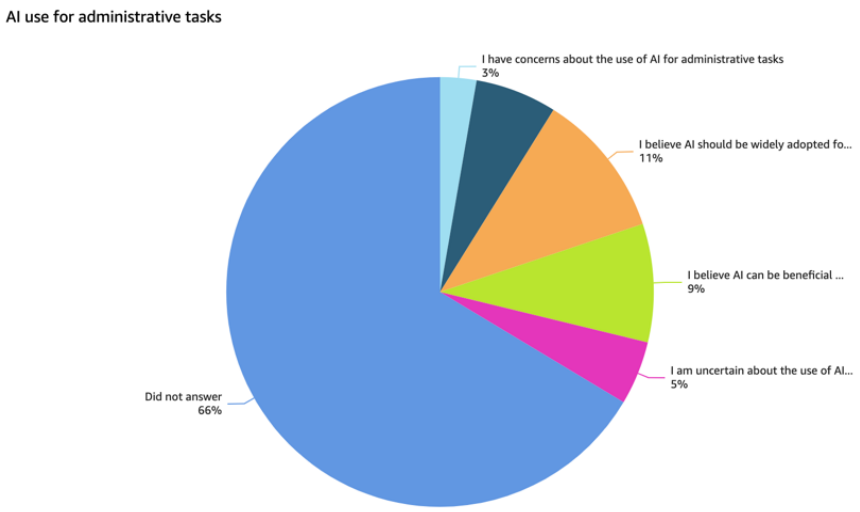
Question 50

On the use of AI for administrative tasks in healthcare, 11.0% believe AI should be widely adopted for administrative tasks and 8.9% believe AI can be beneficial for certain administrative tasks (**Table *123*** and **Figure *148***). For Questions 49 and 50, most participants (66.4%) did not answer the question.

Table 123 – Administrator Survey Question 50

Q50. How comfortable are you with the use of AI for administrative tasks in healthcare? (e.g., scheduling, documentation, and robotic process automation)	AI use for administrative tasks (% of all Respondents)	% of Responses (Total = 49)
I am uncertain about the use of AI for administrative tasks	4.8%	14.3%
I believe AI can be beneficial for certain administrative tasks	8.9%	26.5%
I believe AI should be widely adopted for administrative tasks	11.0%	32.7%
I do not believe AI should be used for administrative tasks	6.2%	18.4%
I have concerns about the use of AI for administrative tasks	2.7%	8.2%
Did not answer	66.4%	
Grand Total	**100.0%**	**49**

Figure 148 – Administrator Survey Question 50



Question 51

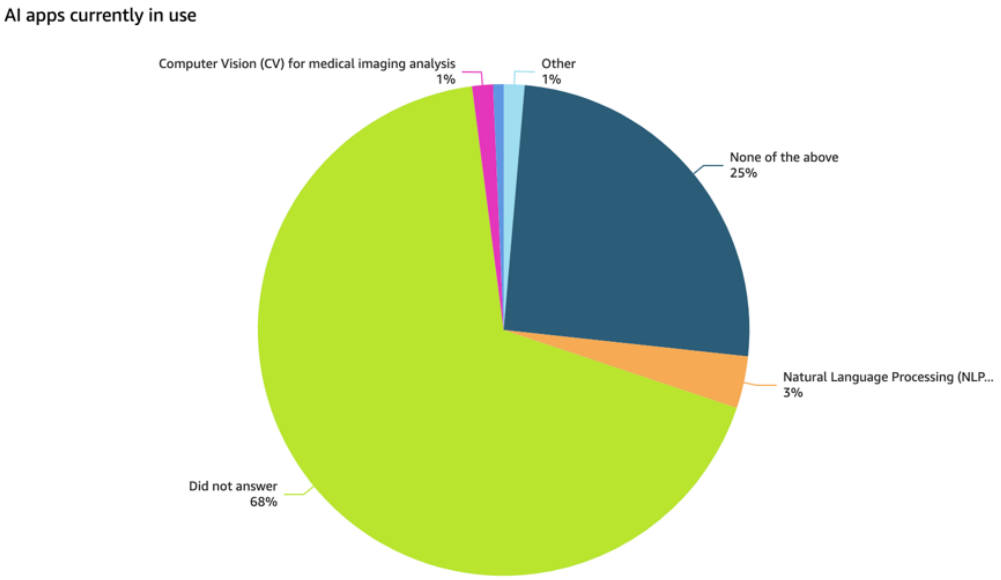
AI applications currently being used in respondents' organizations include Natural Language Processing (NLP) for clinical documentation (3.4%), Computer Vision (CV) for medical imaging analysis (1.4%), and chatbots for patient engagement and support (0.7%), while 67.8% declined to answer (**Table *124*** and **Figure *149***).

Table 124 – Administrator Survey Question 51

Q51. Which of the following AI applications are currently being used in your organization? (Select all that apply)	AI apps currently in use (% of all Respondents)	% of Responses (Total = 47)
Chatbots for patient engagement and support	0.7%	2.1%
Computer Vision (CV) for medical imaging analysis	1.4%	4.3%
Natural Language Processing (NLP) for clinical documentation	3.4%	10.6%
None of the above	25.3%	78.7%
Other	1.4%	4.3%
Did not answer	67.8%	
Grand Total	**100.0%**	**47**

Others include: Messages (1), Support for messaging (1)

Figure 149 – Administrator Survey Question 51



Question 52

Looking ahead, the likelihood of their organizations adopting or expanding the use of AI-enabled medical scribes for clinical documentation in the next 5 years is very unlikely (5.5% of respondents), somewhat unlikely (4.8%), neutral (11.6%), somewhat likely (8.9%), very likely (2.1%). Majority (67.1%) declined to answer (**Table *125*** and **Figure *150***).

Table 125 – Administrator Survey Question 52

Q52. How likely is your primary healthcare organization to adopt or expand the use of AI-enabled medical scribes for clinical documentation in the next 5 years?	AI medical scribes probability next - 5 years (% of all Respondents)	% of Responses (Total = 48)
Neutral, as there has been no consideration of using AI-enabled medical scribes and/or there is a need to evaluate their potential impact on our organization.	11.6%	35.4%
Somewhat likely, as there is an interest in exploring the potential benefits of AI-enabled medical scribes but need more evidence of their effectiveness.	8.9%	27.1%
Somewhat unlikely, as there are concerns about the accuracy and reliability of AI enabled medical scribes in capturing clinical information.	4.8%	14.6%
Very likely, as AI-enabled medical scribes can significantly reduce documentation burden and improve clinical efficiency.	2.1%	6.3%
Very unlikely, AI-enabled medical scribes are not a priority or fit for our organization's needs and goals	5.5%	16.7%
Did not answer	67.1%	
Grand Total	**100.0%**	**48**

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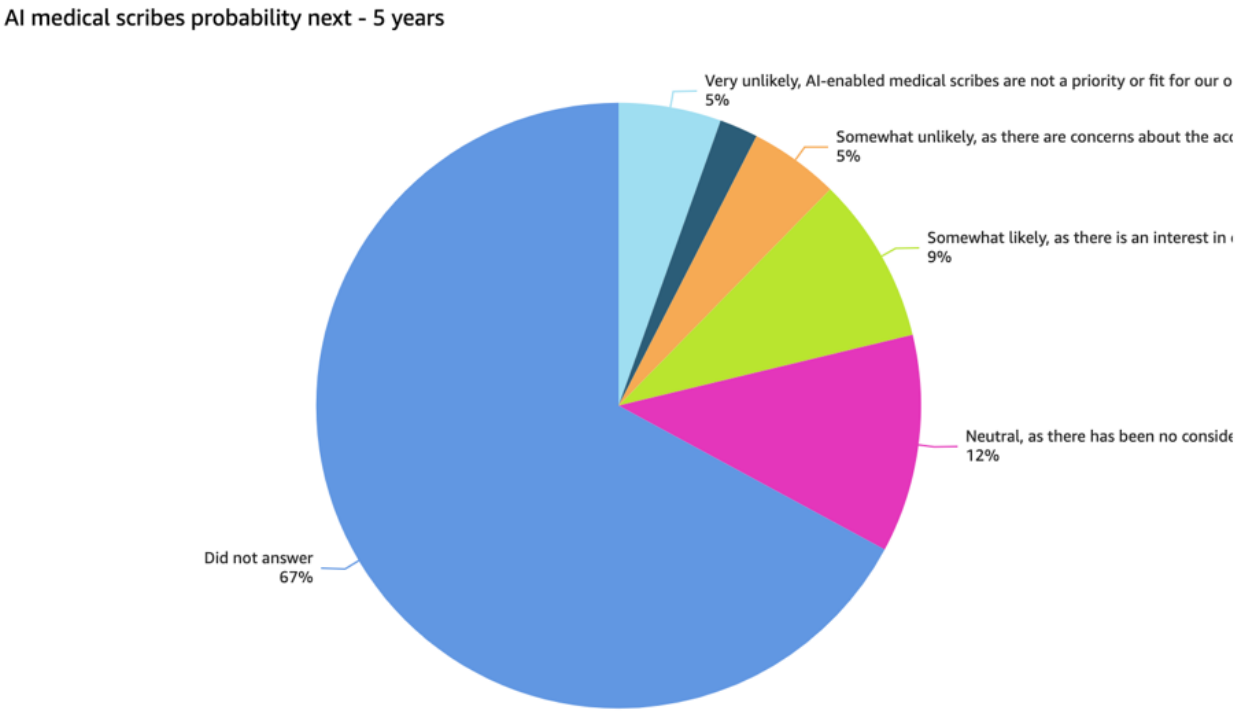
Figure 150 – Administrator Survey Question 52



Appendix B – Margin of Error Calculations

This Appendix provides additional information about the number of responses submitted by participants in the Healthcare Administrator and Healthcare Provider surveys and the associated margin of error for each question.

Healthcare Provider Survey

For Healthcare Provider survey (N=9,338), the calculated sample size was 370, and 868 surveys were submitted. Based on a 95% confidence interval[9], the resulting margin of error for the survey as a whole was 3.17%. However, a survey participant may not have submitted responses to all the questions in the survey. Therefore, in interpreting the results for each question, it is important to consider the margin of error that resulted from the total number of responses to each particular question. The margin of error for each question in the Healthcare Provider survey is presented in **Table *126***. The smallest margin of error was 3.23% (Question 1) and the largest one was 5.50% (Questions 45(b) and 45(c)).

Table 126 – Margin of Error for Individual Questions in the Healthcare Provider Survey

Question	Total Responses	Margin of Error
Q1	836	3.234%
Q2	789	3.338%
Q3	733	3.475%
Q4	719	3.511%
Q5	730	3.483%
Q6	734	3.472%
Q7	672	3.642%
Q8	624	3.790%
Q9	601	3.867%
Q10	609	3.840%
Q11	528	4.143%
Q12	519	4.181%
Q13	509	4.224%
Q14	517	4.189%

[9] A confidence interval is a range of values, bounded above and below the statistic's mean, that likely would contain an unknown population parameter. Confidence level refers to the percentage of probability, or certainty, that the confidence interval would contain the true population parameter when you draw a random sample many times.

Question	Total Responses	Margin of Error
Q15	518	4.185%
Q16	371	4.986%
Q17	474	4.386%
Q18	483	4.343%
Q19	493	4.296%
Q20	470	4.405%
Q21	470	4.405%
Q22	449	4.513%
Q23	450	4.507%
Q24	435	4.588%
Q25	433	4.599%
Q26	395	4.826%
Q27	407	4.751%
Q28	399	4.800%
Q29	380	4.924%
Q30	385	4.891%
Q31	395	4.826%
Q32	395	4.826%
Q33	395	4.826%
Q34	391	4.851%
Q35	392	4.845%
Q36	350	5.139%
Q37	362	5.050%
Q38	351	5.132%
Q39	358	5.079%
Q40	328	5.316%
Q41	365	5.029%
Q42	337	5.241%

Question	Total Responses	Margin of Error
Q43	342	5.202%
Q44	338	5.233%
Q45(a)	322	5.367%
Q45(b)	307	5.501%
Q45(c)	307	5.501%
Q46	338	5.233%
Q47	312	5.455%
Q48	326	5.332%
Q49	335	5.258%
Q50	335	5.258%
Q51	324	5.349%
Q52	335	5.258%
Q54	359	5.072%

Healthcare Administrator Survey

For Healthcare Administrator survey (N=483), the calculated sample size was 215, and 146 surveys were submitted. Based on a 95% confidence interval, the resulting margin of error for the survey as a whole was 6.78%. As discussed in the previous section, the margin of error for each individual question is different due to the variation in the number of responses submitted by survey participants. The margin of error for each question in the Healthcare Administrator survey is presented in **Table *127***. The smallest margin of error was 7.09% (Question 1) and the largest one was 13.76% (Questions 40 and 46).

Table 127 – Margin of Error for Individual Questions in the Healthcare Administrator Survey

Question	Total Responses	Margin of Error
Q1	137	7.094%
Q2	127	7.474%
Q3	122	7.678%
Q4	118	7.851%
Q5	118	7.851%
Q6	117	7.895%

Question	Total Responses	Margin of Error
Q7	103	8.574%
Q8	95	9.021%
Q9	89	9.392%
Q10	89	9.392%
Q11	73	10.579%
Q12	71	10.753%
Q13	71	10.753%
Q14	70	10.842%
Q15	66	11.220%
Q16	65	11.320%
Q17	65	11.320%
Q18	65	11.320%
Q19	66	11.220%
Q20	64	11.421%
Q21	62	11.632%
Q22	60	11.852%
Q23	60	11.852%
Q24	60	11.852%
Q25	61	11.741%
Q26	56	12.326%
Q27	54	12.582%
Q28	56	12.326%
Q29	52	12.851%
Q30	52	12.851%
Q31	54	12.582%
Q32	53	12.714%
Q33	54	12.582%
Q34	54	12.582%

Question	Total Responses	Margin of Error
Q35	54	12.582%
Q36	47	13.596%
Q37	48	13.438%
Q38	47	13.596%
Q39	47	13.596%
Q40	46	13.758%
Q41	51	12.992%
Q42	48	13.438%
Q43	47	13.596%
Q44	47	13.596%
Q45(a)	48	13.438%
Q45(b)	47	13.596%
Q45(c)	48	13.438%
Q46	46	13.758%
Q47	47	13.596%
Q48	47	13.596%
Q49	49	13.285%
Q50	49	13.285%
Q51	47	13.596%
Q52	48	13.438%

Appendix C – Electronic Scan Survey

In this Appendix, we include the Healthcare Administrator and Healthcare Provider surveys that were published in support of the Environmental Scan project. The Spanish version is included in this Appendix, as it was the language overwhelmingly selected by survey respondents.

PRDoH - Encuesta del Avalúo del Entorno de la Tecnología de Información de Salud (Para Administradores de Salud)

Introducción a la encuesta:

Le invitamos a participar en este importante estudio destinado a comprender el estado actual, los desafíos y las oportunidades para la adopción e integración de la Tecnología de Información de Salud (HIT) en Puerto Rico. El Departamento de Salud de Puerto Rico está llevando a cabo esta encuesta para entender el entorno de HIT para recopilar valiosos conocimientos de personas como usted e identificar maneras de mejorar la adopción y financiación de la HIT en la isla.

Su participación en esta encuesta es crucial ya que ayudará a dar forma a la dirección futura de HIT en Puerto Rico. Al compartir sus experiencias, perspectivas y opiniones, contribuirá a una comprensión integral del panorama de HIT en Puerto Rico.

Antes de proceder con la encuesta, le pedimos amablemente que revise y acepte nuestro consentimiento informado. Su participación es completamente voluntaria, y puede optar por retirarse en cualquier momento sin ninguna penalización.

Consentimiento:

Si acepta participar en este estudio, se le pedirá que complete una encuesta en línea o por teléfono. La encuesta tomará aproximadamente de 20 a 30 minutos para completarse y debe ser enviada antes del 23 de agosto de 2024. Las preguntas de la encuesta se centrarán en sus experiencias, desafíos y opiniones relacionadas con HIT en Puerto Rico.

Confidencialidad:

Sus respuestas se mantendrán estrictamente confidenciales y se utilizarán únicamente para el propósito de este estudio. No se recopilará ni se asociará ninguna información de identificación personal con sus respuestas. Los datos serán analizados y reportados en forma agregada, asegurando que los participantes individuales no puedan ser identificados.

Consentimiento:

No se anticipan riesgos asociados con la participación en este estudio. Aunque puede que no haya beneficios directos para usted, sus contribuciones ayudarán a informar y dar forma al futuro de la HIT en Puerto Rico.

Al proceder a la encuesta, usted reconoce que ha leído y entendido esta información y acepta participar en el estudio de manera voluntaria.

[ ] Acepto participar

[ ] No acepto participar

Sección 1: Información General

1. ¿Cuál es su grupo de edad?
    - Menor de 25 años
    - 25-34 años
    - 35-44 años
    - 45-54 años
    - 55-64 años
    - 65 años o más
2. ¿Cuáles de las siguientes opciones describen mejor la organización de servicios de salud principal en la que trabaja en Puerto Rico? (Seleccione todas las que correspondan).[1]

    Nota: *Para el propósito de esta encuesta, su organización de servicios de salud principal es donde trabaja la mayor proporción de horas.*

    - Centro Médico Académico
    - Hospital de Niños
    - Hospital General/de Cuidado Agudo
    - Hospital Especializado, incluyendo el tipo de especialidad: _____
    - Hospital de Acceso Crítico
    - Hospital u Organización de Salud Independiente
    - Hospital u Organización de Salud que forma parte de un Sistema de Salud
    - Hospital de la Administración de Veteranos
    - Clínica Comunitaria de la Administración de Veteranos (ambulatoria)
    - Centro de Salud Comunitario/Centro 330 (FQHC)
    - Proveedor de Servicios Primarios/IPA/Grupo Médico Primario/Asociación de Médicos Independientes (no-FQHC)
    - Consultorio Privado
    - Consultorio Dental
    - Proveedor de Cuidados en el Hogar/Home care (solo ambulatorio)
    - Servicios de Hospicio
    - Clínicas de Medicina Física y Rehabilitación
    - Skilled Nursing Facility
    - Hospital de Rehabilitación (inpatient)

- Clínicas de Salud de los Empleados
- Proveedor/Clínica de Salud Conductual (ambulatorio)
- Hospital Psiquiátrico (inpatient)
- Laboratorio
- Instalación de Imagen Diagnóstica
- Servicios Médicos de Emergencia
- Sala de Emergencias
- Clínica de Cuidado Urgente
- Proveedor de Telemedicina/Telesalud/Teleconsulta/Telehealth Independiente
- Proveedor/Clínica de Diálisis
- Otro (especifique)

3. ¿Cuál es el estatus de su organización de servicios de salud principal?
    - Organización Sin Fines de Lucro
    - Organización con Fines de Lucro
    - Organización Pública
4. Por favor indique su rol dentro de su organización primaria de servicios de salud. (Seleccione todas las que apliquen)
    - Administrador
    - Clínico
    - Profesional de Tecnología de la Información (IT)
    - Otro (no listado)
5. Tamaño de esa organización (número total de proveedores clínicos independientes equivalentes a tiempo completo que actualmente trabajan en su organización principal de servicios de salud)

    Nota: *Para este estudio, los proveedores clínicos independientes incluyen Generalistas (MD o DO de Práctica Primaria), Especialistas (MD o DO de Práctica Especializada), Doctor en Psiquiatría, Doctor en Podología, Doctor en Optometría, Doctor en Cirugía Dental, Doctor en Medicina Dental, Proveedores de Práctica Avanzada, Asistentes de Médico, Enfermeros Practicantes, Dentistas, Psicólogos, Trabajadores Sociales Clínicos, y Quiroprácticos.*

    - Practicante solitario
    - Grupo pequeño (2-10)
    - Grupo mediano (11-50)
    - Grupo grande (51+)
6. Ubicación(es) de su organización principal de atención médica (Municipio)

    Lista de los 78 municipios (Seleccione todos los que correspondan)

Sección 2: Adopción y Uso del Récord Médico Electrónico (EHR)

7. ¿Cómo describiría la tasa de adopción general de su EHR dentro de su organización principal de servicios de salud? Por favor, seleccione una de las siguientes opciones que mejor describa su opinión:
    - La organización ha adoptado completamente el EHR en todas las áreas de servicios de salud y operaciones.
    - La mayoría de la organización utiliza el EHR en alguna capacidad.
    - El EHR se utiliza en algunas áreas, pero requiere trabajo/adopción en otros lugares.
    - El EHR está en las etapas iniciales de adopción.
    - No ha habido adopción en ninguna forma.
8. ¿Qué tan importante es para usted poder compartir los datos e información de salud de sus pacientes con otros proveedores de atención médica **dentro** de su organización principal de servicios de salud? Por favor, seleccione una de las siguientes opciones que mejor describa su opinión:
    - Es esencial compartir los datos e información de salud de los pacientes dentro de mi organización.
    - Aunque compartir datos e información de los pacientes dentro de mi organización no es mi prioridad principal, entiendo su importancia en la provisión de servicios de salud de calidad.
    - Aunque no es un aspecto crítico, compartir datos e información de los pacientes dentro de mi organización sigue siendo algo importante.
    - Compartir datos e información de salud de los pacientes con otros en mi organización no es una prioridad.
    - Compartir datos e información de los pacientes dentro de mi organización no es importante en absoluto.
9. ¿Qué importancia cree que tiene la comunicación y coordinación en tiempo real entre los proveedores de servicios de salud al tratar a un paciente? Por favor, seleccione una de las siguientes opciones que mejor describa su opinión:
    - La comunicación y coordinación en tiempo real entre los proveedores de servicios de salud es crucial para asegurar que los pacientes reciban la mejor atención posible.
    - La comunicación y coordinación en tiempo real entre los proveedores de servicios de salud es un aspecto importante para proporcionar un cuidado de alta calidad.
    - La importancia de la comunicación y coordinación en tiempo real entre los proveedores de servicios de salud puede variar dependiendo de la situación.
    - La comunicación y coordinación en tiempo real entre los proveedores de servicios de salud puede no ser crucial en todos los casos.
    - La comunicación y coordinación en tiempo real entre los proveedores de servicios de salud no es necesaria.
10. ¿Su organización principal de servicios de salud actualmente utiliza un sistema de Récord Médico Electrónico (EHR)?[1]

- Sí → Sonda: Indique el proveedor/versión/año de la actualización más reciente (incluya información sobre todos los EHR que utiliza en su organización).
- No (Pase a la P19 sobre barreras)
- No sé (Pase a la P19 sobre barreras)

11. ¿El EHR utilizado actualmente por su organización principal de servicios de salud está certificado por CMS/ONC?[1]
    - Sí
    - No
    - No sé
12. ¿El EHR en su centro de salud primaria está en la nube o en las instalaciones (on-premise)?
    - En la nube
    - En las instalaciones (on-premise)
    - Ambos
    - No sé
    - Otro (Especifique)
13. ¿Está evaluando cambiar a un EHR diferente?
    - Sí (si es así, por favor nombre su proveedor actual)
    - No
    - No sé
14. ¿Su organización principal de servicios de salud participó en **un Programa de Incentivos para EHR**?[1]
    - Sí – Solo participamos en el Programa de Incentivos para EHR de Medicare
    - Sí – Solo participamos en el Programa de Incentivos para EHR de Medicaid
    - Sí – Participamos tanto en los Programas de Incentivos para EHR de Medicaid como de Medicare
    - No
    - No sé
    - Otro (Especifique)
15. ¿Todos los proveedores clínicos independientes en su organización principal de servicios de salud utilizan regularmente sus sistemas de EHR?
    - Sí
    - No
    - No sé
16. ¿Cómo consigue su organización principal de servicios de salud el consentimiento de los pacientes para compartir electrónicamente su información de salud? (Seleccione todas las que apliquen)
    - Firma electrónica en EHR o sistema de registro
    - Consentimiento verbal del paciente al personal de registro, quién introduce la opción en el EHR

- Almacenado en archivos físicos (papel)
- Papel que se escanea en el EHR u otro sistema de Tecnología de la Información (IT)
- No conseguimos el consentimiento del paciente
- Otro (Especifique)

17. ¿Cuáles de las siguientes funcionalidades para apoyar el cuidado del paciente incluye el sistema EHR en su organización principal de servicios de salud? (Seleccione todas las que apliquen)
    - Citas de pacientes
    - Documentación clínica
    - Orden de entrada computarizada por el médico (Computerized Physician Order Entry)
    - Prescripción electrónica
    - Resultados de laboratorio e imágenes
    - Facturación y codificación
    - Portal del paciente
    - Telemedicina
    - Referidos a proveedores dentro de nuestra organización
    - Referidos a proveedores en otras organizaciones
    - Recordatorios automáticos y mensajes SMS para citas
    - Mensajería segura
    - Coordinación del cuidado
    - Evaluación de determinantes sociales de la salud
    - Gerencia de la salud poblacional (Population Health Management)
    - Otro (Especifique)
18. ¿Su organización principal de servicios de salud utiliza EHRs para apoyar las visitas al hogar?
    - Sí
    - No
    - No sé
19. ¿Cuáles son **las principales barreras** para adoptar o utilizar completamente un sistema EHR en su organización principal de servicios de salud? (Seleccione todas las que apliquen).
    - Costo
    - Falta de apoyo técnico
    - Resistencia del personal
    - Carga administrativa
    - Preocupaciones sobre privacidad/seguridad de los datos
    - Capacitación insuficiente
    - Transición de registros en papel a EHR
    - Falta de conexión a internet de banda ancha
    - No hay barreras para la adopción en nuestra organización

- Otra (Especifique)

20. ¿Qué medidas ha tomado su organización principal de servicios de salud para **abordar las barreras** para la adopción y el uso de EHR? (Seleccione todas las que apliquen).
    - Programa de capacitación y educación del personal sobre el uso de EHR
    - Proporcionar apoyo técnico y asistencia a los proveedores de atención médica
    - Implementar sistemas EHR fáciles de usar
    - Realizar análisis de flujo de trabajo y rediseño para integrar EHR en procesos clínicos
    - Ofrecer incentivos o recompensas para la adopción y uso significativo de EHR
    - Establecer estructuras de gobernanza y apoyo de liderazgo para iniciativas de EHR
    - Colaborar con organizaciones externas para esfuerzos de interoperabilidad
    - Invertir en mejoras de infraestructura para apoyar la implementación de EHR
    - Realizar evaluaciones regulares y mecanismos de retroalimentación para abordar preocupaciones de los usuarios
    - Otra (Especifique)
    - Ninguna. Las barreras no han sido abordadas.

Sección 3: Adopción y Uso del Intercambio de Información de Salud (HIE)

21. ¿Qué tan importante es para usted poder compartir los datos e información de salud de sus pacientes con proveedores de salud **en otras** prácticas y organizaciones? Por favor, seleccione una de las siguientes opciones que mejor describa su opinión:
    - Es crítico compartir datos e información de salud de los pacientes con otros proveedores de salud en otras prácticas u organizaciones.
    - Aunque puede que no sea el aspecto más crítico, compartir datos e información de los pacientes con otros proveedores de salud sigue siendo algo importante.
    - Aunque compartir datos e información de los pacientes con otros proveedores de salud en otras prácticas y organizaciones no es mi prioridad principal, entiendo su importancia.
    - Compartir datos e información de salud de los pacientes con otros proveedores de salud en otras prácticas y organizaciones no es una prioridad, y no veo ninguna utilidad para ello.
    - Compartir datos e información de los pacientes con otros proveedores de salud en otras prácticas y organizaciones no es esencial y no parece relevante para el proceso de atención médica.
22. ¿Cuáles son los principales **obstáculos o desafíos** que enfrentan los proveedores de salud en su organización principal de servicios de salud para acceder y utilizar eficazmente los datos de los pacientes dentro de los sistemas de Intercambio de Información de Salud (HIE)? (Seleccione todos los que apliquen)
    - Interoperabilidad limitada entre diferentes sistemas de información de salud
    - Preocupaciones respecto a la privacidad y seguridad de los datos de los pacientes
    - Dificultades técnicas para integrar los sistemas HIE con los sistemas existentes de EHR
    - Falta de formatos de datos y terminología estandarizados en las organizaciones de salud

- Resistencia al cambio o reticencia entre los profesionales de salud para adoptar nuevas tecnologías
- Limitaciones financieras o financiamiento inadecuado para la implementación de sistemas HIE
- Datos de pacientes incompletos o inexactos dentro de las redes HIE
- Desafíos para obtener el consentimiento de los pacientes para compartir datos a través de entidades de salud
- Cumplimiento regulatorio y barreras legales que afectan las prácticas de intercambio de datos
- Capacitación y educación insuficientes para el personal de salud sobre cómo utilizar eficazmente los sistemas HIE
- No hay barreras para la adopción en nuestra organización
- Otro (Especifique)

23. ¿Su organización principal de servicios de salud está actualmente en proceso de adquirir servicios HIE?
    - Sí → Sonda: Por favor, especifique el/los nombre(s) del/los proveedor(es) que planifica utilizar.
    - No
    - No sé
24. ¿Su organización principal de servicios de salud utiliza el HIE de Puerto Rico para compartir los récords médicos con otros proveedores de salud?
    - Sí
    - No
    - No sé
25. ¿Su organización principal de servicios de salud actualmente intercambia información de salud de los pacientes electrónicamente con **al menos una otra organización de salud**?
    - Sí – Sonda: Si es así, ¿cuáles son los mayores desafíos relacionados con el acceso a datos de pacientes **utilizables** (pregunta abierta)?
    - No
    - No sé
26. ¿Con qué frecuencia encuentra problemas con la interoperabilidad que contribuyen a aumentar la carga administrativa?

    Nota: *La interoperabilidad es la capacidad de diferentes sistemas de información de salud para intercambiar récords médicos electrónicamente.*

    - Muy a menudo
    - A menudo
    - A veces
    - Raramente
    - Nunca

27. ¿Cuáles cree que son ***los beneficios potenciales*** del intercambio electrónico de información de salud para los pacientes y proveedores en Puerto Rico? (Seleccione todas las que apliquen)[1]
    - Mejora de la coordinación del cuidado
    - Mejora del acceso de los pacientes al cuidado
    - Mejora el compromiso de los pacientes
    - Mejora de la gestión/planificación del cuidado
    - Mejora en el manejo de enfermedades
    - Mejora de la seguridad del paciente/reducción de problemas médicos
    - Mejora de los resultados del cuidado del paciente/población
    - Mejora de las transiciones de cuidado
    - Reducción de hospitalizaciones y readmisiones
    - Mejora de la puntualidad en los pagos
    - Aumento de los pagos
    - Aumento de la eficiencia
    - Reducción de costos/ahorro de dinero
    - Mejora del acceso a y modificación del cuidado
    - Mejora de la gestión de la utilización y revisión
    - Mejora de la recolección y análisis de datos
    - Reducciones en la carga administrativa
    - Otro (Especifique)
28. ¿Cuáles cree que son **los riesgos o barreras potenciales** para el intercambio electrónico de información de salud para los pacientes y proveedores en Puerto Rico? (Seleccione todas las que apliquen)[1]
    - Aumento de la carga administrativa
    - Problemas de conectividad a Internet
    - Costos para los proveedores de salud
    - Costos para el Intercambio de Información de Salud de Puerto Rico / Red de Información de Salud de Puerto Rico
    - Tiempo para implementar la tecnología requerida
    - Tiempo para usar la tecnología requerida
    - Falta de personal/recursos
    - Práctica/organización interna
    - Falta de gobernanza
    - Falta de política pública
    - Impacto negativo en el cuidado del paciente
    - Preocupaciones de privacidad/seguridad
    - Prácticas actuales insuficientes para las necesidades
    - Fragmentación del sistema

- Aumento de la jubilación de proveedores que resisten al cambio
- Demasiadas opciones/insuficientes
- Habilidades informáticas/experiencia con tecnología insuficientes
- Los productos disponibles no satisfacen las necesidades.
- No se integra con los sistemas actuales.
- Difícil importar/agregar registros y datos antiguos
- Otro (Especifique)

29. ¿Qué pasos ha tomado su organización principal de servicios de salud para **abordar las barreras** para la adopción y uso de HIE? (Seleccione todas las que apliquen)
    - Programa de capacitación y educación del personal sobre sistemas HIE y protocolos de compartición de datos
    - Proporcionar apoyo técnico y asistencia a los proveedores de salud
    - Implementar interfaces y herramientas HIE fáciles de usar
    - Realizar análisis de flujo de trabajo y rediseño para integrar HIE en procesos clínicos
    - Ofrecer incentivos o recompensas para la adopción y uso significativo de HIE
    - Establecer estructuras de gobernanza y apoyo de liderazgo para iniciativas HIE
    - Colaborar con organizaciones externas y partes interesadas para establecer acuerdos y estándares de compartición de datos
    - Invertir en mejoras de infraestructura para apoyar la implementación de HIE y el intercambio de datos
    - Realizar evaluaciones regulares y mecanismos de retroalimentación para abordar preocupaciones de los usuarios y problemas de calidad de datos
    - Otro (Especifique)
    - Ninguno. Las barreras no han sido abordadas.
    - Ninguno. No hay barreras.
30. ¿En qué área(s) del cuidado de la salud cree que existe **la mayor necesidad** de tecnología HIE? (Seleccione todas las que apliquen)
    - Laboratorios
    - Medicamentos
    - Referencias
    - Registros de pacientes
    - Imágenes diagnósticas
    - Informes de salud pública
    - Apoyo a la decisión clínica
    - Coordinación de la atención
    - Atención de emergencia
    - Telemedicina
    - Atención a largo plazo y post-aguda

- Salud conductual/mental
- Otro (Especifique)

Sección 4: Adopción y Uso de la Telesalud y los Dispositivos de Salud Digital

31. ¿Su organización principal de servicios de salud ofrece visitas al hogar?
    - Sí
    - No
    - No sé
32. ¿Su organización principal de servicios de salud ofrece actualmente servicios de telesalud/telemedicina/teleconsulta?
    - Sí
    - No
    - Está planeando implementar en los próximos 12 meses
    - No sé
33. ¿Su organización principal de servicios de salud ofrece actualmente servicios de monitoreo remoto de pacientes?
    - Sí
    - No
    - Está planeando implementar en los próximos 12 meses
    - No sé
34. ¿Su organización principal de servicios de salud ofrece actualmente otros servicios de salud digital? (por ejemplo, consultas de telemedicina, etc.)
    - Sí
    - No
    - Está planeando implementar en los próximos 12 meses
    - No sé
35. ¿Con qué frecuencia utiliza su organización principal de servicios de salud los servicios de telesalud/telemedicina/teleconsulta para el cuidado de pacientes?
    - Diariamente
    - Semanalmente
    - Mensualmente
    - Raramente
    - Nunca
36. ¿En qué áreas clínicas se **utilizan más frecuentemente** la telesalud/telemedicina/teleconsulta/salud digital en su organización principal de servicios de salud? (Seleccione todas las que apliquen)
    - Cuidado primario y/o preventivo
    - Salud mental
    - Manejo de enfermedades crónicas

- Seguimiento postquirúrgico
- Pediatría
- Cuidado especializado/especialistas
- Monitoreo remoto de pacientes
- Terapia remota de pacientes
- Gerencia de cuidado
- Servicios sociales
- Otro (Especifique)

37. ¿Qué **desafíos** ha encontrado su organización principal de servicios de salud al implementar servicios de telesalud/telemedicina/teleconsulta? (Seleccione todas las que apliquen)
    - Problemas de reembolso/pago
    - Problemas de infraestructura tecnológica
    - Resistencia de proveedores y personal clínico
    - Resistencia de pacientes o falta de conciencia
    - Obstáculos regulatorios/de cumplimiento
    - Integración con sistemas existentes (p. ej., EHRs)
    - Problemas de conectividad (p. ej., ancho de banda, estabilidad de la red)
    - Habilidades informáticas/literacidad/experiencia insuficiente del personal
    - Habilidades informáticas/literacidad/experiencia insuficiente de los pacientes
    - Problemas relacionados con la fuerza laboral (p. ej., dificultad para reclutar personal, alta rotación)
    - Flujos de trabajo de telesalud/telemedicina/teleconsulta ineficientes
    - Carga adicional sobre el personal
    - Falta de confianza en el proceso de mejora del flujo de trabajo
    - No hay desafíos para la adopción en nuestra organización
    - Otro (Especifique)
38. ¿Cuáles son las principales barreras que **impiden** una mayor adopción de la telesalud/telemedicina/teleconsulta/salud digital en su organización principal de servicios de salud? (Seleccione todas las que apliquen)
    - Costo de la implementación de tecnología
    - Compromiso de los proveedores
    - Restricciones financieras
    - Falta de reembolso estable
    - Recursos/formación del personal limitados
    - Falta de modelos de cuidado y flujos de trabajo
    - Falta de guías clínicas/estandarización
    - Compromiso de los pacientes o alfabetización digital
    - Preocupaciones de seguridad y privacidad

- Problemas legales/regulatorios
- Otra (Especifique)

39. ¿Qué pasos ha tomado su organización principal de servicios de salud para **abordar las barreras** para la adopción y uso de la telesalud/telemedicina/teleconsulta? (Seleccione todas las que apliquen)
    - Programa de capacitación y educación del personal sobre tecnologías y mejores prácticas.
    - Proporcionar apoyo técnico y asistencia a los proveedores de salud.
    - Implementar plataformas y herramientas fáciles de utilizar.
    - Realizar análisis de flujo de trabajo y rediseño para integrar la telesalud/telemedicina/teleconsultas en los procesos clínicos.
    - Ofrecer incentivos o recompensas para la adopción y utilización.
    - Establecer estructuras de gobernanza y apoyo de liderazgo para iniciativas.
    - Colaborar con pagadores y otros interesados para expandir el reembolso y la cobertura.
    - Invertir en mejoras de infraestructura (p. ej., conectividad de banda ancha, sistemas de videoconferencia) para apoyar la implementación.
    - Realizar evaluaciones regulares y mecanismos de retroalimentación para abordar preocupaciones de usuarios y pacientes.
    - Otro (Especifique)
    - Ninguno. Las barreras no han sido abordadas.
    - Ninguno. No hay barreras.
40. ¿Qué apoyo ayudaría más a su organización principal de servicios de salud **a superar** estas barreras? (Seleccione todas las que apliquen)
    - Incentivos financieros
    - Programas de capacitación
    - Soporte técnico
    - Actualización tecnológica (HL7, FHIR)
    - Cambios en la política
    - Otro (Especifique)

Sección 5: Meaningful Use / Uso Significativo

41. ¿Ha enfrentado su organización alguna penalidad relacionada con el programa de Meaningful Use (MU)?
    - Sí, hemos experimentado una reducción en los pagos de Medicare debido al incumplimiento de los requisitos de MU.
    - Sí, se nos ha notificado sobre reducciones potenciales en futuros pagos de Medicare debido al incumplimiento de los requisitos de MU.
    - No, no hemos enfrentado ninguna penalidad relacionada con el programa de MU.
    - No estoy seguro
    - Otra (Por favor especifique)
42. ¿Cómo ha abordado su organización la garantía de la calidad y las evaluaciones relacionadas con

los requisitos de Meaningful Use (MU)? (Seleccione todas las que apliquen)

- Realizado auditorías y evaluaciones internas para asegurar el cumplimiento con los requisitos de MU
- Contratado consultores externos o proveedores para asistir con la garantía de la calidad y evaluaciones de MU
- Implementado herramientas y procesos automatizados para monitorear y validar el cumplimiento de MU
- Proporcionado capacitación y educación al personal sobre los requisitos de MU y las mejores prácticas
- Ninguna de las anteriores
- Otro (Por favor especifique)

43. ¿Cuáles de los siguientes desafíos ha enfrentado su organización en la implementación y reporte de Medidas Clínicas de Calidad Electrónicas (eCQMs)? (Seleccione todas las que apliquen)
    - Dificultades para extraer datos precisos y completos de los sistemas de EHR para el reporte de eCQMs
    - Falta de estandarización y consistencia en las especificaciones y cálculos de eCQMs
    - Recursos o experiencia insuficientes para implementar y mantener procesos de reporte de eCQMs
    - Desafíos para cumplir con los plazos o requisitos de reporte de eCQMs
    - Carga administrativa
    - Ninguna de las anteriores
    - Otro (Por favor especifique)
44. ¿Cuáles de los siguientes problemas ha encontrado su organización con el componente de Prescripción Electrónica del Meaningful Use? (Seleccione todas las que apliquen)
    - Dificultades técnicas con el software o sistemas de prescripción electrónica
    - Resistencia de los prescriptores para adoptar prácticas de prescripción electrónica
    - Desafíos para asegurar la precisión y completitud de los datos en las prescripciones electrónicas
    - Dificultades para cumplir con los requisitos del umbral de prescripción electrónica
    - Ninguna de las anteriores
    - Otro (Por favor especifique)
45. Indique el nivel de cumplimiento de su organización principal de servicios de salud y cualquier dificultad encontrada:
    - Realizando análisis de riesgo de seguridad
        - Cumplimiento: □ Completo □ Parcial □ No cumple Dificultades:____
    - Reportando en 3 eCQMs seleccionados
        - Cumplimiento: □ Completo □ Parcial □ No cumple Dificultades:____
    - Reportando sobre el Uso Seguro de Opioides – Medida de Prescripción Concurrente

- Cumplimiento: □ Completo □ Parcial □ No cumple Dificultades:____

46. ¿Está reportando su organización datos de Salud Pública al Departamento de Salud de Puerto Rico de acuerdo con sus estándares (códigos HL7 2.5 /LOINC)?
    - Sí
    - No
47. Indique si su organización principal de servicios de salud participa en lo siguiente: (Seleccione todas las que apliquen)
    - Prescripción Electrónica
    - Consulta del Programa de Monitoreo de Medicamentos Recetados (Prescription Drug Monitoring Program)
    - Intercambio de Información de Salud (HIE): Apoyo a contestar los referidos electrónicos enviando información de salud
    - HIE: Apoyo a contestar los referidos electrónicos recibiendo y reconciliando información de salud
    - HIE: Participación en intercambio bidireccional a través del Intercambio de Información de Salud
    - Proporcionar a los pacientes acceso electrónico a su información de salud
    - Reporte de Vigilancia Sindrómica
    - Reporte al Registro de Inmunizaciones
    - Reporte de Casos Electrónicos
    - Reporte de Resultados de Laboratorio Notificables Electrónicamente
    - Reporte a Registros de Salud Pública
    - Reporte a Registros de Datos Clínicos

Sección 6: Servicios adicionales

48. ¿Su organización ofrece alguno de los siguientes servicios basados en el hogar y la comunidad (HCBS)? Seleccione todos los que apliquen.
    - Centros para personas mayores o Centros diurnos para adultos
    - Trabajador de servicio directo / Trabajadores de cuidado directo
    - Programa de comidas entregadas a domicilio
    - Servicios de transportación a citas (no emergencias)
    - Evaluaciones y modificaciones para seguridad en el hogar
    - Cuidados paliativos y hospicio
    - Capacitación para cuidadores familiares
    - Servicios de atención médica en el hogar
    - Otro
    - Ninguno de los anteriores. No ofrecemos HCBS

Sección 7: Dirección Futura

49. ¿Qué tan cómodo se siente con el uso de la inteligencia artificial (IA) para tareas clínicas en el cuidado de la salud? (p. ej., diagnóstico, planificación del tratamiento y monitoreo de pacientes)
    - Creo que la IA debería adoptarse ampliamente para tareas clínicas, ya que tiene el potencial de mejorar significativamente los resultados de los pacientes y la eficiencia del cuidado de la salud.
    - Creo que la IA puede ser beneficiosa para ciertas tareas clínicas, pero su uso debería estar cuidadosamente regulado y supervisado por profesionales de la salud calificados.
    - Estoy incierto sobre el uso de la IA para tareas clínicas, ya que siento que hay evidencia insuficiente para apoyar su adopción generalizada en este momento.
    - Tengo preocupaciones sobre el uso de la IA para tareas clínicas, ya que creo que existen riesgos potenciales para la seguridad y privacidad del paciente que necesitan ser abordados.
    - No creo que la IA deba utilizarse para tareas clínicas, ya que siento que no puede reemplazar la experiencia y el juicio de los profesionales de la salud entrenados.
50. ¿Qué tan cómodo se siente con el uso de la IA para tareas administrativas en el cuidado de la salud? (p. ej., programación de citas, documentación y automatización de procesos robóticos)
    - Creo que la IA debería adoptarse ampliamente para tareas administrativas.
    - Creo que la IA puede ser beneficiosa para ciertas tareas administrativas.
    - Estoy incierto sobre el uso de la IA para tareas administrativas.
    - Tengo preocupaciones sobre el uso de la IA para tareas administrativas.
    - No creo que la IA deba utilizarse para tareas administrativas.
51. ¿Cuáles de las siguientes aplicaciones de IA están siendo utilizadas actualmente en su organización? (Seleccione todas las que apliquen)
    - Procesamiento de Lenguaje Natural (NLP) para documentación clínica
    - Aprendizaje Automático para análisis predictivo
    - Automatización de Procesos Robóticos
    - Visión por Computadora para análisis de imágenes médicas
    - Chatbots para compromiso y apoyo al paciente
    - Ninguna de las anteriores
    - Otra (Por favor especifique)
52. ¿Qué tan probable es que su organización principal de servicios de salud adopte o expanda el uso de escribas médicos habilitados por IA para la documentación clínica en los próximos 5 años?
    - Algo probable, ya que hay interés en explorar los beneficios potenciales de los escribientes médicos habilitados por IA, pero se necesita más evidencia de su efectividad.
    - Neutral, ya que no se ha considerado el uso de escribientes médicos habilitados por IA y/o es necesario evaluar su impacto potencial en nuestra organización.
    - Algo improbable, ya que hay preocupaciones sobre la precisión y fiabilidad de los escribientes médicos habilitados por IA en la captura de información clínica.

- Muy improbable, los escribientes médicos habilitados por IA no son una prioridad ni se ajustan a las necesidades y objetivos de nuestra organización.

53. ¿Algún comentario adicional o sugerencia para mejorar HIT en Puerto Rico? (Pregunta abierta)

Mensaje de Cierre

Agradecemos enormemente su tiempo y valiosas contribuciones a esta investigación. Su participación jugará un papel significativo en el avance de la comprensión y desarrollo de la tecnología de información de salud en Puerto Rico.

Para preguntas relacionadas con esta encuesta, por favor llame al **(939) 545-4047** o envíe un correo electrónico a **(hiesupport@salud.pr.gov)**.

PRDoH - Encuesta de Evaluación Ambiental de Tecnología de Información en Salud (Para Proveedor de Salud)

Introducción a la encuesta:

Le invitamos a participar en este importante estudio destinado a comprender el estado actual, los desafíos y las oportunidades para la adopción e integración de la Tecnología de Información de Salud (HIT) en Puerto Rico. El Departamento de Salud de Puerto Rico está llevando a cabo esta encuesta para entender el entorno de HIT para recopilar valiosos conocimientos de personas como usted e identificar maneras de mejorar la adopción y financiación de la HIT en la isla.

Su participación en esta encuesta es crucial ya que ayudará a dar forma a la dirección futura de HIT en Puerto Rico. Al compartir sus experiencias, perspectivas y opiniones, contribuirá a una comprensión integral del panorama de HIT en Puerto Rico.

Antes de proceder con la encuesta, le pedimos amablemente que revise y acepte nuestro consentimiento informado. Su participación es completamente voluntaria, y puede optar por retirarse en cualquier momento sin ninguna penalización.

Consentimiento:

Si acepta participar en este estudio, se le pedirá que complete una encuesta en línea o por teléfono. La encuesta tomará aproximadamente de 20 a 30 minutos para completarse y debe ser enviada antes del 23 de agosto de 2024. Las preguntas de la encuesta se centrarán en sus experiencias, desafíos y opiniones relacionadas con HIT en Puerto Rico.

Confidencialidad:

Sus respuestas se mantendrán estrictamente confidenciales y se utilizarán únicamente para el propósito de este estudio. No se recopilará ni se asociará ninguna información de identificación personal con sus respuestas. Los datos serán analizados y reportados en forma agregada, asegurando que los participantes individuales no puedan ser identificados.

Consentimiento:

No se anticipan riesgos asociados con la participación en este estudio. Aunque puede que no haya beneficios directos para usted, sus contribuciones ayudarán a informar y dar forma al futuro de la HIT en Puerto Rico.

Al proceder a la encuesta, usted reconoce que ha leído y entendido esta información y acepta participar en el estudio de manera voluntaria.

[ ] Acepto participar

[ ] No acepto participar

Section 1: Demographics and General Information

1. ¿Cuál es su grupo de edad?
    - Menor de 25 años
    - 25-34 años
    - 35-44 años
    - 45-54 años
    - 55-64 años
    - 65 años o más
2. ¿Cuáles de las siguientes opciones describen mejor la organización de servicios de salud principal en la que trabaja en Puerto Rico? (Seleccione todas las que correspondan).[1]

    Nota: *Para el propósito de esta encuesta, su organización de servicios de salud principal es donde trabaja la mayor proporción de horas.*

    - Centro Médico Académico
    - Hospital de Niños
    - Hospital General/de Cuidado Agudo
    - Hospital Especializado, incluyendo el tipo de especialidad: _____
    - Hospital de Acceso Crítico
    - Hospital u Organización de Salud Independiente
    - Hospital u Organización de Salud que forma parte de un Sistema de Salud
    - Hospital de la Administración de Veteranos
    - Clínica Comunitaria de la Administración de Veteranos (ambulatoria)
    - Centro de Salud Comunitario/Centro 330 (FQHC)
    - Proveedor de Servicios Primarios/IPA/Grupo Médico Primario/Asociación de Médicos Independientes (no-FQHC)
    - Consultorio Privado
    - Consultorio Dental
    - Proveedor de Cuidados en el Hogar/Home care (solo ambulatorio)
    - Servicios de Hospicio
    - Clínicas de Medicina Física y Rehabilitación

- Skilled Nursing Facility
- Hospital de Rehabilitación (inpatient)
- Clínicas de Salud de los Empleados
- Proveedor/Clínica de Salud Conductual (ambulatorio)
- Hospital Psiquiátrico (inpatient)
- Laboratorio
- Instalación de Imagen Diagnóstica
- Servicios Médicos de Emergencia
- Sala de Emergencias
- Clínica de Cuidado Urgente
- Proveedor de Telemedicina/Telesalud/Teleconsulta/Telehealth Independiente
- Proveedor/Clínica de Diálisis
- Otro (especifique)

3. ¿Cuál es el estatus de su organización de servicios de salud principal?
    - Organización Sin Fines de Lucro
    - Organización con Fines de Lucro
    - Organización Pública
4. Por favor indique su rol dentro de su organización primaria de servicios de salud. (Seleccione todas las que apliquen)
    - Administrador
    - Generalista (Práctica de Atención Primaria) - MD o DO
    - Especialistas (Práctica Especializada) - MD o DO (excluyendo Psiquiatría)
    - Doctor en Psiquiatría
    - Doctor en Podología
    - Doctor en Optometría
    - Doctor en Cirugía Dental
    - Doctor en Medicina Dental
    - Proveedor de Práctica Avanzada
    - Asistente de Médico
    - Enfermero Practicante
    - Dentista
    - Psicólogo
    - Trabajador Social Clínico
    - Quiropráctico
    - Profesional de TI
    - Otro (no listado):

5. Tamaño de esa organización (número total de proveedores clínicos independientes equivalentes a tiempo completo que actualmente trabajan en su organización principal de servicios de salud)

   Nota: *Para este estudio, los proveedores clínicos independientes incluyen Generalistas (MD o DO de Práctica Primaria), Especialistas (MD o DO de Práctica Especializada), Doctor en Psiquiatría, Doctor en Podología, Doctor en Optometría, Doctor en Cirugía Dental, Doctor en Medicina Dental, Proveedores de Práctica Avanzada, Asistentes de Médico, Enfermeros Practicantes, Dentistas, Psicólogos, Trabajadores Sociales Clínicos, y Quiroprácticos.*

   - Practicante solitario
   - Grupo pequeño (2-10)
   - Grupo mediano (11-50)
   - Grupo grande (51+)

6. Ubicación(es) de su organización principal de atención médica (Municipio)

   Lista de los 78 municipios (Seleccione todos los que apliquen)

Sección 2: Adopción y Uso del Récord Médico Electrónico (EHR)

7. ¿Cómo describiría la tasa de adopción general de su EHR dentro de su organización principal de servicios de salud? Por favor, seleccione una de las siguientes opciones que mejor describa su opinión:
   - La organización ha adoptado completamente el EHR en todas las áreas de servicios de salud y operaciones.
   - La mayoría de la organización tiene alguna forma de tecnología de información de salud.
   - Adoptado en algunas áreas, pero requiere trabajo/adopción en otros lugares.
   - Está en las etapas iniciales de adopción, independientemente del área de implementación.
   - No ha habido adopción en ninguna forma.
8. ¿Qué tan importante es para usted poder compartir los datos e información de salud de sus pacientes con otros proveedores de atención médica **dentro** de su organización principal de servicios de salud? Por favor, seleccione una de las siguientes opciones que mejor describa su opinión:
   - Es esencial compartir los datos e información de salud de los pacientes dentro de mi organización.
   - Aunque compartir datos e información de los pacientes dentro de mi organización no es mi prioridad principal, entiendo su importancia en la provisión de servicios de salud de calidad.
   - Aunque no es un aspecto crítico, compartir datos e información de los pacientes dentro de mi organización sigue siendo algo importante.
   - Compartir datos e información de salud de los pacientes con otros en mi organización no es una prioridad.
   - Compartir datos e información de los pacientes dentro de mi organización no es importante en absoluto.
9. ¿Qué importancia cree que tiene la comunicación y coordinación en tiempo real entre los proveedores de servicios de salud al tratar a un paciente? Por favor, seleccione una de las siguientes opciones que mejor describa su opinión:

- La comunicación y coordinación en tiempo real entre los proveedores de servicios de salud es crucial para asegurar que los pacientes reciban la mejor atención posible.
- La comunicación y coordinación en tiempo real entre los proveedores de servicios de salud es un aspecto importante para proporcionar un cuidado de alta calidad.
- La importancia de la comunicación y coordinación en tiempo real entre los proveedores de servicios de salud puede variar dependiendo de la situación.
- La comunicación y coordinación en tiempo real entre los proveedores de servicios de salud puede no ser crucial en todos los casos.
- La comunicación y coordinación en tiempo real entre los proveedores de servicios de salud no es necesaria.

10. ¿Su organización principal de servicios de salud actualmente utiliza un sistema de Récord Médico Electrónico (EHR)?[1]
    - Sí → Sonda: Por favor indique el proveedor/versión/año de la actualización más reciente (incluya información sobre todos los EHR que utiliza en su organización).
    - No (Pase a la P19 sobre barreras)
    - No sé (Pase a la P19 sobre barreras)

11. ¿El EHR utilizado actualmente por su organización principal de servicios de salud está certificado por CMS/ONC [1]
    - Sí
    - No
    - No sé
12. ¿El EHR en su centro de salud primaria está en la nube o en las instalaciones (on-premise)?
    - En la nube
    - En las instalaciones (on-premise)
    - Ambos
    - No sé
    - Otro (Por favor especifique)
13. ¿Está evaluando cambiar a un EHR diferente?
    - Sí (si es así, por favor nombre su proveedor actual)
    - No
    - No sé
14. ¿Su organización principal de servicios de salud participó en **un Programa de Incentivos para EHR**?[1]
    - Sí – Solo participamos en el Programa de Incentivos para EHR de Medicare
    - Sí – Solo participamos en el Programa de Incentivos para EHR de Medicaid
    - Sí – Participamos tanto en los Programas de Incentivos para EHR de Medicaid como de Medicare
    - No

- No sé
- Otro (Por favor especifique)

15. ¿Todos los proveedores clínicos independientes en su organización principal de servicios de salud utilizan regularmente sus sistemas de EHR?
    - Sí
    - No
    - No sé
16. ¿Cómo consigue su organización principal de servicios de salud el consentimiento de los pacientes para compartir electrónicamente su información de salud? (Seleccione todas las que apliquen)[1]
    - Firma electrónica en EHR o sistema de registro
    - Consentimiento verbal del paciente al personal de registro, quién introduce la opción en el EHR
    - Almacenado en archivos físicos (papel)
    - Papel que se escanea en el EHR u otro sistema de Tecnología de la Información (IT)
    - No conseguimos el consentimiento del paciente
    - Otro (Especifique)
17. ¿Cuáles de las siguientes funcionalidades para apoyar el cuidado del paciente incluye el sistema EHR en su organización principal de servicios de salud? (Seleccione todas las que apliquen)
    - Citas de pacientes
    - Documentación clínica
    - Orden de entrada computarizada por el médico (Computerized Physician Order Entry)
    - Prescripción electrónica
    - Resultados de laboratorio e imágenes
    - Facturación y codificación
    - Portal del paciente
    - Telemedicina
    - Referidos a proveedores dentro de nuestra organización
    - Referidos a proveedores en otras organizaciones
    - Recordatorios automáticos y mensajes SMS para citas
    - Mensajería segura
    - Coordinación del cuidado
    - Evaluación de determinantes sociales de la salud
    - Gerencia de la salud poblacional (Population Health Management)
    - Otro (Especifique)
18. ¿Su organización principal de servicios de salud utiliza EHRs para apoyar las visitas al hogar?
    - Sí

- No
- No sé

19. ¿Cuáles son **las principales barreras** para adoptar o utilizar completamente un sistema EHR en su organización principal de servicios de salud? (Seleccione todas las que apliquen).
    - Costo
    - Falta de apoyo técnico
    - Resistencia del personal
    - Carga administrativa
    - Preocupaciones sobre privacidad/seguridad de los datos
    - Capacitación insuficiente
    - Transición de registros en papel a EHR
    - Falta de conexión a internet de banda ancha
    - Otro (Por favor especifique)
20. ¿Qué medidas ha tomado su organización principal de servicios de salud para **abordar las barreras** para la adopción y el uso de EHR? (Seleccione todas las que apliquen).
    - Programa de capacitación y educación del personal sobre el uso de EHR
    - Proporcionar apoyo técnico y asistencia a los proveedores de atención médica
    - Implementar sistemas EHR fáciles de usar
    - Realizar análisis de flujo de trabajo y rediseño para integrar EHR en procesos clínicos
    - Ofrecer incentivos o recompensas para la adopción y uso significativo de EHR
    - Establecer estructuras de gobernanza y apoyo de liderazgo para iniciativas de EHR
    - Colaborar con organizaciones externas para esfuerzos de interoperabilidad
    - Invertir en mejoras de infraestructura para apoyar la implementación de EHR
    - Realizar evaluaciones regulares y mecanismos de retroalimentación para abordar preocupaciones de los usuarios
    - Otra (Especifique)
    - Ninguna. Las barreras no han sido abordadas

Sección 3: Adopción y Uso del Intercambio de Información de Salud (HIE)

21. ¿Qué tan importante es para usted poder compartir los datos e información de salud de sus pacientes con proveedores de salud **en otras** prácticas y organizaciones? Por favor, seleccione una de las siguientes opciones que mejor describa su opinión:
    - Es crítico compartir datos e información de salud de los pacientes con otros proveedores de salud en otras prácticas u organizaciones.
    - Aunque puede que no sea el aspecto más crítico, compartir datos e información de los pacientes con otros proveedores de salud sigue siendo algo importante.
    - Aunque compartir datos e información de los pacientes con otros proveedores de salud en otras prácticas y organizaciones no es mi prioridad principal, entiendo su importancia.

- Compartir datos e información de salud de los pacientes con otros proveedores de salud en otras prácticas y organizaciones no es una prioridad, y no veo ninguna utilidad para ello.
- Compartir datos e información de los pacientes con otros proveedores de salud en otras prácticas y organizaciones no es esencial y no parece relevante para el proceso de atención sanitaria.

22. ¿Cuáles son los principales **obstáculos o desafíos** que enfrentan los proveedores de salud en su organización principal de servicios de salud para acceder y utilizar eficazmente los datos de los pacientes dentro de los sistemas de Intercambio de Información de Salud (HIE)? (Seleccione todos los que apliquen)
    - Interoperabilidad limitada entre diferentes sistemas de información de salud.
    - Preocupaciones respecto a la privacidad y seguridad de los datos de los pacientes.
    - Dificultades técnicas para integrar los sistemas HIE con los sistemas existentes de EHR
    - Falta de formatos de datos y terminología estandarizados en las organizaciones de salud.
    - Resistencia al cambio o reticencia entre los profesionales de salud para adoptar nuevas tecnologías.
    - Limitaciones financieras o financiamiento inadecuado para la implementación de sistemas HIE.
    - Datos de pacientes incompletos o inexactos dentro de las redes HIE.
    - Desafíos para obtener el consentimiento de los pacientes para compartir datos a través de entidades de salud.
    - Cumplimiento regulatorio y barreras legales que afectan las prácticas de intercambio de datos.
    - Capacitación y educación insuficientes para el personal de salud sobre cómo utilizar eficazmente los sistemas HIE.
    - No hay barreras para la adopción en nuestra organización.
    - Otro (Por favor especifique)
23. ¿Su organización principal de servicios de salud está actualmente en proceso de adquirir servicios HIE?
    - Sí → Sonda: Por favor, especifique el/los nombre(s) del/los proveedor(es) que planea utilizar.
    - No
    - No sé
24. ¿Su organización principal de servicios de salud utiliza el HIE de Puerto Rico para compartir los récords médicos **con otros proveedores de salud?**
    - Sí
    - No
    - No sé
25. ¿Su organización principal de servicios de salud actualmente intercambia información de salud de los pacientes electrónicamente con **al menos una otra organización de salud**[1]

- Sí → Sonda: Si es así, ¿cuáles son los mayores desafíos relacionados con el acceso a datos de pacientes utilizables (pregunta abierta)?
- No
- No sé

26. ¿Con qué frecuencia encuentra problemas con la interoperabilidad que contribuyen a aumentar la carga administrativa?

    Nota: *La interoperabilidad es la capacidad de diferentes sistemas de información de salud para intercambiar récords médicos electrónicamente.*

    - Muy a menudo
    - A menudo
    - A veces
    - Raramente
    - Nunca

27. ¿Cuáles cree que son los **beneficios potenciales** del intercambio electrónico de información de salud para los pacientes y proveedores en Puerto Rico? (Seleccione todas las que apliquen)[1]

    - Mejora en la coordinación de la atención
    - Mejora en el acceso de los pacientes a la atención
    - Mejora el compromiso de los pacientes
    - Mejora en la gestión/planificación de la atención
    - Mejora en el manejo de enfermedades
    - Mejora en la seguridad del paciente/reducción de problemas médicos
    - Mejora en los resultados de la atención de pacientes/población
    - Mejora en las transiciones de cuidado
    - Reducción de hospitalizaciones y readmisiones
    - Mejora en la puntualidad de los pagos
    - Aumento de los pagos
    - Aumento en la eficiencia
    - Reducción de costos/ahorro de dinero
    - Mejora en el acceso y modificación de la atención
    - Mejora en la gestión y revisión de la utilización
    - Mejora en la recopilación y análisis de datos
    - Reducción de la carga administrativa
    - Otro (Por favor especifique)

28. ¿Cuáles cree que son **los riesgos o barreras potenciales** para el intercambio electrónico de información de salud para los pacientes y proveedores en Puerto Rico? (Seleccione todas las que apliquen)[1]

    - Aumento de la carga administrativa

- Problemas de conectividad a Internet
- Costos para los proveedores de salud
- Costos para el Intercambio de Información de Salud de Puerto Rico / Red de Información de Salud de Puerto Rico
- Tiempo para implementar la tecnología requerida
- Tiempo para usar la tecnología requerida
- Falta de personal/recursos
- Práctica/organización interna
- Falta de gobernanza
- Falta de política pública
- Impacto negativo en el cuidado del paciente
- Preocupaciones de privacidad/seguridad
- Prácticas actuales insuficientes para las necesidades
- Fragmentación del sistema
- Aumento de la jubilación de proveedores que resisten al cambio
- Demasiadas opciones/insuficientes
- Habilidades informáticas/experiencia con tecnología insuficientes
- Los productos disponibles no satisfacen las necesidades.
- No se integra con los sistemas actuales.
- Difícil importar/agregar registros y datos antiguos
- Otro (Especifique)

29. ¿Qué pasos ha tomado su organización principal de servicios de salud para **abordar las barreras** para la adopción y uso de HIE? (Seleccione todas las que apliquen)
    - Programa de capacitación y educación del personal sobre sistemas HIE y protocolos de compartición de datos
    - Proporcionar apoyo técnico y asistencia a los proveedores de salud
    - Implementar interfaces y herramientas HIE fáciles de usar
    - Realizar análisis de flujo de trabajo y rediseño para integrar HIE en procesos clínicos
    - Ofrecer incentivos o recompensas para la adopción y uso significativo de HIE
    - Establecer estructuras de gobernanza y apoyo de liderazgo para iniciativas HIE
    - Colaborar con organizaciones externas y partes interesadas para establecer acuerdos y estándares de compartición de datos
    - Invertir en mejoras de infraestructura para apoyar la implementación de HIE y el intercambio de datos
    - Realizar evaluaciones regulares y mecanismos de retroalimentación para abordar preocupaciones de los usuarios y problemas de calidad de datos
    - Otro (Especifique)

- Ninguno. Las barreras no han sido abordadas.
- Ninguno. No hay barreras.

30. ¿En qué área(s) de la atención médica cree que **hay mayor** necesidad de servicios HIE? (Seleccione todas las que apliquen)
    - Laboratorios
    - Medicamentos
    - Referencias
    - Registros de pacientes
    - Imágenes diagnósticas
    - Informes de salud pública
    - Apoyo a la decisión clínica
    - Coordinación de la atención
    - Atención de emergencia
    - Telemedicina
    - Atención a largo plazo y post-aguda
    - Salud conductual/mental
    - Otro (Por favor especifique)

Sección 4: Adopción y Uso de la Telesalud y los Dispositivos de Salud Digital

31. ¿Su organización principal de servicios de salud ofrece visitas al hogar?
    - Sí
    - No
    - No lo sé
32. ¿Su organización principal de servicios de salud ofrece actualmente servicios de telesalud/telemedicina/teleconsulta?
    - Sí
    - No
    - Está planeando implementar en los próximos 12 meses
    - No lo sé
33. ¿Su organización principal de servicios de salud ofrece actualmente servicios de monitoreo remoto de pacientes?
    - Sí
    - No
    - Está planeando implementar en los próximos 12 meses
    - No lo sé
34. ¿Su organización principal de servicios de salud ofrece actualmente otros servicios de salud digital? (por ejemplo, consultas de telemedicina, etc.)
    - Sí

- No
- Está planeando implementar en los próximos 12 meses
- No lo sé

35. ¿Con qué frecuencia utiliza su organización principal de servicios de salud los servicios de telesalud/telemedicina/teleconsulta para el cuidado de pacientes?
    - Diariamente
    - Semanalmente
    - Mensualmente
    - Raramente
    - Nunca
36. ¿En qué áreas clínicas se **utilizan más frecuentemente** la telesalud/telemedicina/teleconsulta/salud digital en su organización principal de servicios de salud? (Seleccione todas las que apliquen)
    - Cuidado primario y/o preventivo
    - Salud mental
    - Manejo de enfermedades crónicas
    - Seguimiento postquirúrgico
    - Pediatría
    - Cuidado especializado/especialistas
    - Monitoreo remoto de pacientes
    - Terapia remota de pacientes
    - Gerencia de cuidado
    - Servicios sociales
    - Otro (Especifique)
37. ¿Qué **desafíos** ha encontrado su organización principal de servicios de salud al implementar servicios de telesalud/telemedicina/teleconsulta? (Seleccione todas las que apliquen)
    - Problemas de reembolso/pago
    - Problemas de infraestructura tecnológica
    - Resistencia de los proveedores y el personal clínico
    - Resistencia o falta de conocimiento por parte de los pacientes
    - Obstáculos regulatorios/de cumplimiento
    - Integración con sistemas existentes (por ejemplo, EHRs)
    - Problemas de conectividad (por ejemplo, ancho de banda, estabilidad de la red)
    - Habilidades informáticas/alfabetización/experiencia insuficiente del personal
    - Habilidades informáticas/alfabetización/experiencia insuficiente de los pacientes
    - Problemas relacionados con la fuerza laboral (por ejemplo, dificultad para reclutar personal, alta rotación)

- Flujos de trabajo de telesalud/telemedicina/teleconsulta ineficientes
- Carga adicional para el personal
- Falta de confianza en el proceso de mejora del flujo de trabajo.
- No hay desafíos para la adopción en nuestra organización.
- Otros (Por favor especifique)

38. ¿Cuáles son las principales barreras que **impiden** una mayor adopción de la telesalud/telemedicina/teleconsulta/salud digital en su organización principal de servicios de salud? (Seleccione todas las que apliquen)
    - Costo de la implementación de la tecnología
    - Compromiso del proveedor
    - Restricciones financieras
    - Falta de reembolso estable
    - Capacitación/recursos limitados del personal
    - Falta de modelos de atención y flujos de trabajo
    - Falta de guías clínicas/estandarización
    - Compromiso del paciente o alfabetización digital
    - Preocupaciones de seguridad y privacidad
    - Problemas legales/regulatorios
    - Otro (Por favor especifique)
39. ¿Qué pasos ha tomado su organización principal de servicios de salud para **abordar las barreras** para la adopción y uso de la telesalud/telemedicina/teleconsulta? (Seleccione todas las que apliquen)
    - Programa de capacitación y educación del personal sobre tecnologías y mejores prácticas.
    - Proporcionar apoyo técnico y asistencia a los proveedores de salud.
    - Implementar plataformas y herramientas fáciles de utilizar.
    - Realizar análisis de flujo de trabajo y rediseño para integrar la telesalud/telemedicina/teleconsultas en los procesos clínicos.
    - Ofrecer incentivos o recompensas para la adopción y utilización.
    - Establecer estructuras de gobernanza y apoyo de liderazgo para iniciativas.
    - Colaborar con pagadores y otros interesados para expandir el reembolso y la cobertura.
    - Invertir en mejoras de infraestructura (p. ej., conectividad de banda ancha, sistemas de videoconferencia) para apoyar la implementación.
    - Realizar evaluaciones regulares y mecanismos de retroalimentación para abordar preocupaciones de usuarios y pacientes.
    - Otro (Especifique)
    - Ninguno. Las barreras no han sido abordadas.
    - Ninguno. No hay barreras.

40. ¿Qué apoyo ayudaría más a su organización principal de servicios de salud **a superar** estas barreras? (Seleccione todas las que apliquen).
    - Incentivos financieros
    - Programas de capacitación
    - Soporte técnico
    - Actualizaciones tecnológicas
    - Cambios en la política
    - Otro (Por favor especifique)

Sección 5: Meaningful Use / Uso Significativo

41. ¿Ha enfrentado su organización alguna penalidad relacionada con el programa de Meaningful Use (MU)?
    - Sí, hemos experimentado una reducción en los pagos de Medicare debido al incumplimiento de los requisitos de MU.
    - Sí, hemos sido notificados de posibles reducciones en los pagos futuros de Medicare debido al incumplimiento de los requisitos de MU.
    - No, no hemos enfrentado ninguna penalidad relacionada con el programa de MU.
    - No estoy seguro
    - Otra (Por favor especifique)
42. ¿Cómo ha abordado su organización la garantía de la calidad y las evaluaciones relacionadas con los requisitos de Meaningful Use (MU)? (Seleccione todas las que apliquen)
    - Realizamos auditorías y evaluaciones internas para asegurar el cumplimiento con los requisitos de MU
    - Contratado consultores externos o proveedores para asistir con la garantía de la calidad y evaluaciones de MU
    - Implementamos herramientas y procesos automatizados para monitorear y validar el cumplimiento de MU
    - Proporcionamos capacitación y educación al personal sobre los requisitos de MU y las mejores prácticas
    - Ninguna de las anteriores
    - Otro (Por favor especifique)
43. ¿Cuáles de los siguientes desafíos ha enfrentado su organización en la implementación y el reporte de Medidas de Calidad Clínica Electrónica (eCQMs)? (Seleccione todas las que apliquen)
    - Dificultades para extraer datos precisos y completos de los sistemas de EHR para el reporte de eCQM
    - Falta de estandarización y consistencia en las especificaciones y cálculos de eCQM
    - Recursos o experiencia insuficientes para implementar y mantener los procesos de reporte de eCQM
    - Desafíos para cumplir con los plazos o requisitos de reporte de eCQM

- Carga administrativa
- Ninguna de las anteriores
- Otro (Por favor especifique)

44. ¿Cuáles de los siguientes problemas ha encontrado su organización con el componente de e-Prescripción del Meaningful Use? (Seleccione todas las que apliquen)
    - Dificultades técnicas con el software o los sistemas de e-Prescripción
    - Resistencia de los prescriptores para adoptar prácticas de e-Prescripción
    - Desafíos para asegurar la precisión y completitud de los datos en las e-Prescripciones
    - Dificultades para cumplir con los requisitos de umbral de e-Prescripción
    - Ninguna de las anteriores
    - Otro (Por favor especifique)
45. Indique el nivel de cumplimiento de su organización principal de servicios de salud y cualquier dificultad encontrada:
    - Realización de análisis de riesgos de seguridad
        - Cumplimiento: □ Completo □ Parcial □ No cumplido Dificultades:_
    - Reporte de 3 eCQMs seleccionados
        - Cumplimiento: □ Completo □ Parcial □ No cumplido Dificultades:_
    - Reporte sobre la medida de Uso Seguro de Opioides - Prescripción Concurrente
        - Cumplimiento: □ Completo □ Parcial □ No cumplido Dificultades:_
46. ¿Está reportando su organización datos de Salud Pública al Departamento de Salud de Puerto Rico de acuerdo con sus estándares (códigos HL7 2.5/LOINC)?
    - Sí
    - No
47. Indique si su organización principal de servicios de salud participa en lo siguiente: (Seleccione todas las que apliquen)
    - Prescripción Electrónica
    - Consulta del Programa de Monitoreo de Medicamentos Recetados (Prescription Drug Monitoring Program)
    - Intercambio de Información de Salud (HIE): Apoyo a contestar los referidos electrónicos enviando información de salud
    - HIE: Apoyo a contestar los referidos electrónicos recibiendo y reconciliando información de salud
    - Proveer a los Pacientes Acceso Electrónico a su Información de Salud
    - Reporte de Vigilancia Sindrómica
    - Reporte del Registro de Inmunización
    - Reporte Electrónico de Casos
    - Reporte Electrónico de Resultados de Laboratorio Reportables

- Reporte del Registro de Salud Pública
- Reporte del Registro de Datos Clínicos

Sección 6: Servicios adicionales

48. ¿Su organización ofrece alguno de los siguientes servicios basados en el hogar y la comunidad (HCBS)? Seleccione todas las que apliquen.
    - Centros para personas mayores o Centros diurnos para adultos
    - Trabajador de servicio directo / Trabajadores de cuidado directo
    - Programa de comidas entregadas a domicilio
    - Servicios de transportación a citas (no emergencias)
    - Evaluaciones y modificaciones para seguridad en el hogar
    - Cuidados paliativos y hospicio
    - Capacitación para cuidadores familiares
    - Servicios de atención médica en el hogar
    - Otro
    - Ninguno de los anteriores. No ofrecemos HCBS

Sección 7: Dirección Futura (Práctica/Organización Principal)

49. ¿Qué tan cómodo se siente con el uso de IA para tareas clínicas en la atención médica? (por ejemplo, diagnóstico, planificación de tratamientos y monitoreo de pacientes)
    - Creo que la IA debería ser ampliamente adoptada para tareas clínicas, ya que tiene el potencial de mejorar significativamente los resultados de los pacientes y la eficiencia de la atención médica.
    - Creo que la IA puede ser beneficiosa para ciertas tareas clínicas, pero su uso debe ser cuidadosamente regulado y supervisado por profesionales de salud calificados.
    - No estoy seguro sobre el uso de la IA para tareas clínicas, ya que siento que no hay suficiente evidencia para apoyar su adopción generalizada en este momento.
    - Tengo preocupaciones sobre el uso de la IA para tareas clínicas, ya que creo que existen riesgos potenciales para la seguridad y la privacidad de los pacientes que deben ser abordados.
    - No creo que la IA deba ser utilizada para tareas clínicas, ya que siento que no puede reemplazar la experiencia y el juicio de los profesionales de salud capacitados.
50. ¿Qué tan cómodo se siente con el uso de IA para tareas administrativas en la atención médica? (por ejemplo, programación de citas, documentación y automatización de procesos robóticos)
    - Creo que la IA debería ser ampliamente adoptada para tareas administrativas
    - Creo que la IA puede ser beneficiosa para ciertas tareas administrativas
    - No estoy seguro sobre el uso de la IA para tareas administrativas
    - Tengo preocupaciones sobre el uso de la IA para tareas administrativas
    - No creo que la IA deba ser utilizada para tareas administrativas
51. ¿Cuáles de las siguientes aplicaciones de IA se están utilizando actualmente en su organización?

(Seleccione todas las que apliquen)

- Procesamiento de Lenguaje Natural (NLP) (por ejemplo, escucha ambiental) para documentación clínica
- Aprendizaje Automático para análisis predictivo
- Automatización de Procesos Robóticos
- Visión por Computador para análisis de imágenes médicas
- Chatbots para la participación y el apoyo de los pacientes
- Ninguna de las anteriores
- Otro (Por favor especifique)

52. ¿Qué tan probable es que su organización principal de servicios de salud adopte o expanda el uso de escribas médicos habilitados por IA para la documentación clínica en los próximos 5 años?
    - Muy probable, ya que los escribas médicos habilitados por IA pueden reducir significativamente la carga de documentación y mejorar la eficiencia clínica.
    - Algo probable, ya que hay interés en explorar los beneficios potenciales de los escribas médicos habilitados por IA, pero se necesita más evidencia de su efectividad.
    - Neutral, ya que no se ha considerado el uso de escribas médicos habilitados por IA y/o se necesita evaluar su impacto potencial en nuestra organización.
    - Algo improbable, ya que hay preocupaciones sobre la precisión y la fiabilidad de los escribas médicos habilitados por IA para capturar información clínica.
    - Muy improbable, los escribas médicos habilitados por IA no son una prioridad ni encajan con las necesidades y objetivos de nuestra organización.
53. ¿Algún comentario adicional o sugerencia para mejorar HIT en Puerto Rico? (Pregunta abierta)

Otras organizaciones de salud

54. ¿Le gustaría enviar una encuesta para otra organización en la que trabaje?
    - Sí (Si es así, se le proporcionará un enlace para una versión de la encuesta que comienza en la sección 2, donde reemplazamos el término "organización primaria de atención médica" por "otra organización de salud")
    - No (Ir a la siguiente sección)

Mensaje de cierre

Agradecemos enormemente su tiempo y valiosas contribuciones a esta investigación. Su participación avanzará significativamente la comprensión y el desarrollo de la tecnología de la información en salud en Puerto Rico.

Para preguntas sobre esta encuesta, por favor llame al **(939) 545-4047** o envíe un correo electrónico a **(hiesupport@salud.pr.gov).**

Revision History

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