



Health Information Exchange in the State of Texas



eHEALTH INITIATIVE

Real Solutions. Better Health.

eHealth Initiative • 818 Connecticut Ave NW, Suite 500 • Washington, DC 20006
www.ehidc.org

INTRODUCTION

Recognizing the importance of a statewide health information technology (HIT) infrastructure to high quality, efficient, and safe healthcare, the Texas Legislature established the Texas Health Services Authority (THSA) in 2007. The THSA was charged with coordinating and promoting HIT activities throughout the state. Then, in 2009, Congress passed the Health Information Technology for Economic and Clinical Health (HITECH) Act to further support the development HIT capabilities nationally.

Included in the HITECH act was a provision for the allocation of funds to "support regional or sub-national efforts toward health information exchange."¹ Ultimately, the Office of the National Coordinator for Health Information Technology (ONC) awarded a total of \$547,703,438 to 56 U.S. states and territories through the State Health Information Exchange (HIE) Cooperative Agreement Program to foster the development of HIE across the country. While states were given wide latitude in how they chose to develop HIE, they were required to submit strategic and operational plans describing their approach.

The Texas Health and Human Services Commission received \$28,810,208 in funds through the program and contracted with the THSA to coordinate the development and implementation of the initial State HIE Strategic and Operational Plan. Approved in 2010, Texas's initial plan outlined general state-level operations, including a transparent governance structure, policies and guidelines for HIE in Texas, and statewide services. The plan also created the Local HIE Grant Program to fund development of regional exchange networks and outlined strategies for providing connectivity in regions lacking local networks. Rather than establish a singular statewide entity responsible for all HIE in the state, the THSA and state of Texas chose to leverage existing exchange efforts, distributing funding to 16 local HIE organizations. Some of these HIEs chose not to move forward following the planning phase of the grant, while others merged with existing HIEs. Today, ten of the grantees continue to operate in Texas.

In 2014, with the expiration of the State HIE Cooperative Agreement Program, the THSA developed a new strategic plan to continue guiding the growth of HIE in Texas. The 2014 plan enshrined the THSA's commitment to the principle of being patient-centric and to facilitate a market-based approach drawing on existing resources and focused on regional solutions. To measure progress to date and establish a baseline going forward, the THSA also contracted with eHealth Initiative (eHI), a non-profit organization based in Washington, DC to conduct a survey of Texas's HIE organizations. This report summarizes findings from the 2014 survey.

BACKGROUND & METHODOLOGY

eHealth Initiative is a nationally recognized leader in HIE. For the last eleven years, eHI has surveyed the U.S. HIE landscape to better understand the maturity of and governance, sustainability, and technical models used by HIEs across the country. eHI's 2014 survey consisted of 62 questions assessing various aspects of data exchange. In collaboration with the THSA, eHI refined the survey instrument, removing some questions and adding others specific to Texas. The final survey tool consisted of 74 questions, and was sent to participants in November 2014. Prior to fielding the survey, the THSA contacted known HIE organizations in the state to gauge interest in completing the survey and provided eHI with a list of 23

¹ http://www.healthit.gov/sites/default/files/hitech_act_excerpt_from_arra_with_index.pdf

organizations to send the survey. Of these, six organizations had previously completed eHI’s annual survey. Each was contacted to obtain permission to use their results from the national survey for the purposes of this study, and were provided with the additional set of questions to complete. Participants were contacted by phone and email multiple times over the course of one month to obtain responses. In all, 20 of the organizations identified by the THSA completed a response.

KEY FINDINGS

All ten of the existing organizations funded through the Texas Local HIE Grant Program responded to the survey. Most of these organizations (7) identified as community HIEs (other three responses: Healthcare delivery organization, state sponsored health information exchange, and regional health collaborative). Of the remaining ten respondents, five identified as healthcare delivery organizations (also known as private HIEs) and three identified as community HIEs. Based on Texas statutory definitions of HIE, most respondents (15) regarded themselves as an “organization assisting in the transmission or receipt of health-related information among organizations transmitting or receiving the information according to nationally recognized standards and under an express written agreement.”

Although organized HIE efforts in Texas date back to 1996, most respondents were relatively young. Fifteen had only begun operations in 2012 or later. Still, most indicated that they had attained fairly advanced stages of maturity. eHI has developed a developmental scale for HIEs, where one corresponds to a nascent effort that has decided to form an HIE, four corresponds with an organization that has begun pilot testing data transmission, and seven corresponds with an HIE that is fully mature and sustainable. All respondents to the survey identified as stage four or higher. Fifteen were fully operational (stage 5 and higher). Three responded as the most advanced stage of maturity.

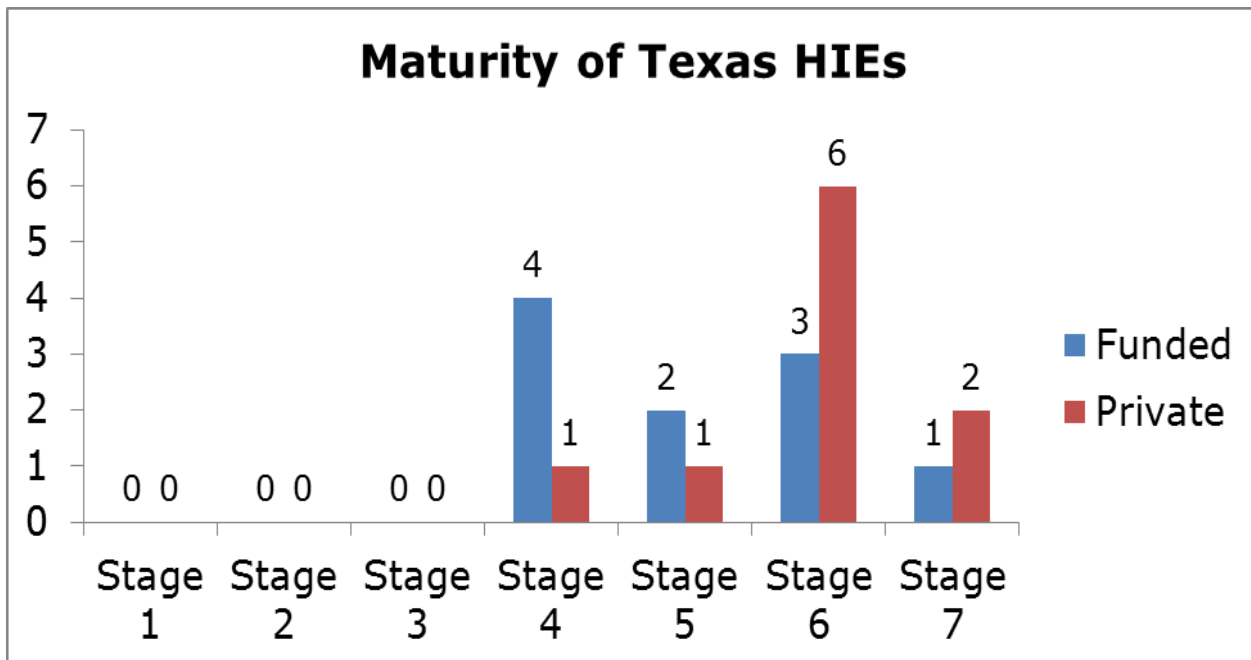


Figure 1: Maturity of Texas HIEs

GOVERNANCE

A governance structure is one of the first priorities when creating an exchange, as a transparent and inclusive system is essential to creating an environment of trust between stakeholders who might otherwise be in direct competition. At the state level, the THSA has established an open and transparent collaborative process to support input from stakeholders into the strategy and policy for HIE deployment. Through the process, the THSA has developed interoperability guidance, privacy and security guidance, a state-level trust agreement, and a model business associate agreement (BAA) that may be used by the state's local and/or private HIEs.

Survey results demonstrate that many of Texas's local and private HIEs are committed to strong governance. Sixteen have formed a multi-stakeholder board of directors to govern operations, and thirteen have codified governance through a formal charter or bylaws. Three of the respondents without a board of directors identified as healthcare delivery organizations, which frequently have different processes for governance than a community based HIE (e.g. HIE operations may fall under the purview of an IT department). A majority of respondents also have strategic and operational plans and processes for obtaining stakeholder consensus to influence policies (15).

Additionally, a number of Texas organizations participate in larger collaboratives around governance and operations. Three are participants in the nationwide eHealth Exchange, three are members of DirectTrust, and three are part of other state-level governance collaborations.

SUSTAINABILITY

Sustainability quickly emerged as the number one issue for data exchange over the last ten years. HIE organizations have struggled with defining value to stakeholders, who may not understand the value of sharing information with potential competitors. However, the emergence of coordinated value-based care models such as the accountable care organization have likely helped in this regard, as has the overall proliferation of electronic health records. Sustainability is especially important in 2014, as the federal government is no longer funding HIEs through the State HIE Cooperative Agreement Program.

Without federal funds to support expensive technological outlays, HIEs have had to diversify their revenue streams to find other sources of income. Most community HIEs, including those in Texas, use a revenue model based on dues or fees from stakeholders who participate in the exchange (private HIEs more frequently rely on budget allocations from their parent organization to sustain operations). Eight of the HIEs that received funding through the Local HIE Grant Program use a dues/fees-based revenue model, and two of these indicated that they receive sufficient revenue from due/fees to cover all operational expenses. Private funds and other sources of public funding typically cover remaining operational expenses. Revenues for the grant-funded HIEs are shown in Figure 2.

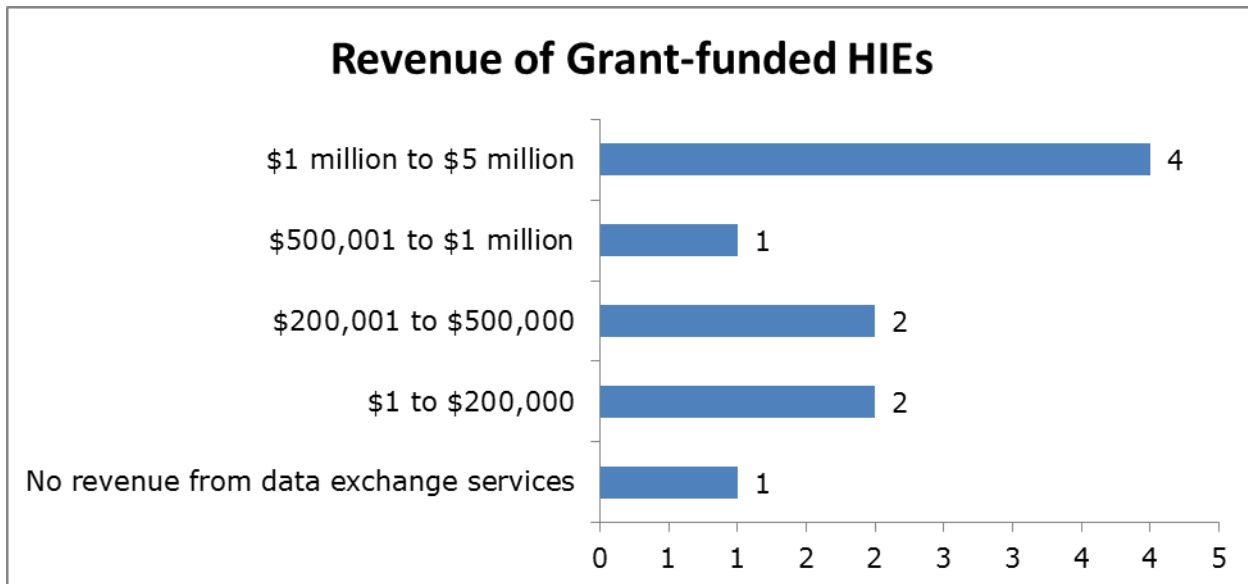


Figure 2: Revenue from HIE Services of Grant Funded HIEs

INTEROPERABILITY

After sustainability, interoperability may be the most pressing challenge faced by HIEs today. Providers, hospitals, and health systems have adopted a dizzying array of different health IT and EHR solutions without an existing national framework for technical standards and specifications governing how those systems handle data. As a result, proprietary solutions all too frequently require custom interfaces to enable them to communicate with other systems.

Nationally, this interoperability challenge is extremely complex given the sheer number of different products and versions in the field. In Texas, survey data suggest that the issue is not as widespread. While Texas HIEs must still contend with developing interfaces between systems to share data, many entities use nationally recognized vendors such as Medicity (5), Mirth (4), Epic (3), Orion (3), and Cerner (3) to provide HIE services. Nationally, 37 percent of HIEs responding to eHI’s survey reported constructing between 11 and 25 interfaces with disparate EHR systems. By comparison, only two Texas HIEs have interfaced with more than 10. The vast majority (15) have only had to construct between 2 and 10 interfaces, despite similar levels of stakeholder participation in Texas as those seen nationally.

The interoperability ecosystem in Texas has favored growth in intrastate exchange. Half of the HIE organizations share data with at least one other HIE entity. Five connect with a regional or community HIE, and eight connect with a private HIE.

OPERATIONS

Data exchange comes in many forms and flavors, ranging from simpler secure messaging to more complex query-based services. Services and functionality are a key component of the value proposition for data exchange. Although HIEs nationally offer many of the same services, the need to address local circumstances ensures that no single HIE model is best.

Texas HIEs generally appear to align with national trends. For example, stakeholders participate in Texas HIEs at similar rates as the national set of HIEs (see figures 3 & 4). Hospitals and health systems, ambulatory providers, community or public health clinics, and independent laboratories are among the top five stakeholders providing data to HIEs for both samples. Hospitals and health systems, ambulatory care providers, behavioral or mental health providers, community or public health clinics, and long-term or post-acute care providers comprise the top five stakeholders viewing or receiving data from the HIEs.

Figure 3: Top Five Stakeholders Providing Data

All Texas HIEs (20)	Grant Funded Texas HIEs (10)	Nation (135)
Hospitals/health systems (16, 80%)	Hospitals/health systems (8, 80%)	Hospitals/health systems (83%)
Ambulatory care providers (14, 70%)	Ambulatory care providers (6, 60%)	Ambulatory care providers (74%)
Community and/or public health clinics (6, 30%)	Behavioral or mental health providers (3, 30%)	Independent laboratories (41.5%)
Independent laboratories (6, 30%)	Community and/or public health clinics (3, 30%)	Community and/or public health clinics (38.5%)
Independent radiology/imaging centers (5, 25%)	Independent laboratories (3, 30%)	Independent radiology/imaging centers (30%)

Figure 4: Top Five Stakeholders Viewing Data

All Texas HIEs (20)	Grant Funded Texas HIEs (10)	Nation (135)
Ambulatory care providers (13, 65%)	Hospitals/health systems (8, 80%)	Ambulatory care providers (82%)
Hospitals/health systems (13, 65%)	Ambulatory care providers (7, 70%)	Hospitals/health systems (77%)
Community and/or public health clinics (9, 45%)	Behavioral or mental health providers (5, 50%)	Community and/or public health clinics (55%)
Behavioral or mental health providers (7, 35%)	Community and/or public health clinics (5, 50%)	Long-term/post-acute care providers (49%)
Long-term/post-acute care providers (6, 30%)	Independent laboratories; Long-term/post-acute care providers (tied – 3, 30%)	Behavioral or mental health providers (48%)

Likewise, the top services provided and types of data accessible through the exchange are also similar. The most common services include care summary exchange (16), hospital discharge summaries (14), event-based notifications and alerts (10), and results delivery (10). The most common data types include diagnostic lab/test results (15), allergy information (14), care summaries (14), medication data and prescriptions (14), and problem lists (14). Figures 5 and 6 detail the services and available types of data of HIEs.

Figure 5: 10 Most Frequently Offered Services

	Texas HIEs (20)	Nation (135)
Care summary exchange	80.0%	80.6%
Hospital discharge summaries	70.0%	67.9%
Event based clinical notifications/alerts (e.g. Admission, Discharge, Transfer (ADT))	50.0%	63.4%
Results delivery (labs or diagnostic study results)	50.0%	61.9%
Master patient index (MPI)	45.0%	68.7%
Direct address directory	30.0%	58.2%
Patient portal (tethered)	30.0%	23.9%
Data normalization for analytics	30.0%	23.9%
Image archiving/exchange	25.0%	23.9%
Quality measurement/improvement reporting	20.0%	26.9%
Record locator service (RLS)	20.0%	50.7%

Figure 6: 10 Most Frequently Accessible Data Types

	Texas HIEs (20)	Nation (135)
Diagnostic/lab test results	75.0%	76.9%
Allergy info	70.0%	64.9%
Care summaries	70.0%	76.1%
Medication data/prescriptions	70.0%	64.9%
Problem lists	70.0%	70.1%
Diagnoses	60.0%	69.4%
Radiology reports	60.0%	66.4%
Consent status	55.0%	44.0%
Immunization information	55.0%	56.7%
Patient histories	55.0%	66.4%

Data itself is accessible in a number of ways, depending on the organization. Most frequently, Texas HIEs offer a standalone dashboard or portal (14). Other types of access include secure messaging (9), a dashboard or portal which is viewable through the user's EHR system (8), data that is automatically integrated into an EHR (8), and EHR-based notifications/alerts (7). Texas HIEs maintain a centralized database to store data at a higher rate than national HIEs (55 percent of all Texas HIEs vs. 26% of national HIEs), though this may be explained by a larger proportion of healthcare delivery organizations responding to the Texas survey.

A majority of Texas HIEs (15) operate using a query model, enabling users to request specific data from the system. Queries are most often run on a centralized database (11), though six HIEs facilitate queries over a federated network. Thirteen HIEs also offer secure electronic messaging services. Secure messaging usually supplements other forms of exchange, but for three HIEs, secure messaging is the only model currently offered. Five HIEs are built to support end-to-end integration, in which data is automatically exchanged without user-initiated action.

As can be expected given the number of Texas HIEs offering secure messaging services, the Direct protocol is frequently used. Fifteen Texas HIEs use Direct, a rate comparable with the rest of the nation (76%). Interestingly, Texas HIEs may be using Direct for a greater number of use cases, including lab results exchange (50% of Texas HIEs vs. 25% of all HIEs) and administrative data exchange (45% of Texas HIEs vs. 27%). The top use case, as it is nationally, is to support transitions of care. Texas HIEs also largely use nationally recognized standards such as HL7 v.2.x (15), ADT (13), ORU (11), and XDS (11). Some Texas HIEs have adopted or are adopting more advanced standards including HL7 v.3.x (7), REST (4), FHIR (1), and Federated HPD (1).

PRIVACY, SECURITY & PATIENT ENGAGEMENT

Nationally, there is growing recognition of the need to keep patients involved in their own care within provider settings, in the community, and at home. One essential ingredient to patient engagement is access to healthcare data. To date, data exchange efforts have struggled with the patient engagement piece as they have focused first on establishing sustainability and governance and increasing clinical usage. Texas HIEs fit this trend.

From a governance perspective, Texas HIEs have taken measures to protect patient data. Eighteen have formal privacy and security policies in compliance with HIPAA. Some have even crafted policies more stringent than HIPAA: six have extra protections for sharing sensitive patient data. Fourteen HIEs provide training to their employees on complying with privacy and security regulations for governing protected health information. To date, no Texas HIEs have suffered a security breach. Providers are typically responsible for notifying patients that their data is accessible to others through an HIE (16).

Emphasis on privacy and security can contribute to a patient's level of trust in an exchange, but it does not necessarily translate into patient engagement. Only four HIEs currently offer patients the ability to access their data, which is in line with the national rate of 21 percent. Seven Texas HIEs plan to offer patient's access in the future, but eight have no such plans. Aside from access to data, some HIEs nationally also offer patient-oriented services, such as the ability to make new appointments or manage their prescriptions. Three Texas HIEs incorporate similar services.

CHALLENGES AND BARRIERS

Generally, survey data suggests that Texas HIEs reflect trends in the national landscape. Like other HIEs nationally, Texas HIEs have made tremendous progress in establishing viable networks for their participants. However, developing HIE capabilities is difficult. HIEs persistently face barriers in the form of managing the needs of their stakeholder populations, securing funding to build their infrastructure, and establishing a trusted environment for exchange.

In fact, many of the key challenges faced by HIEs nationally are similar to those in Texas. Both samples cited addressing technical barriers including technology procurement and developing architecture and functionality as a top overall challenge. This may be related to difficulties establishing interoperability. Though the landscape in Texas may appear slightly less complex than in the US as a whole in terms of number of different vendors used, both samples struggled with interface development.

Eleven HIEs noted the financial costs of interface development as one of their most pressing interoperability concerns. Eight of these respondents were HIEs funded through the Local HIE Grant Program, indicating concern with sustainability now that the State HIE Cooperative Agreement funds are no longer available. Twelve respondents reported that getting a consistent and timely response from EHR vendors for developing interfaces is another major barrier to interoperability.

Overall, the former grant program HIEs appear more concerned with sustainability than their counterparts. Half of these organizations cited developing a sustainable business model as a top challenge, and four noted a lack of funding. Only two of the non-grant funded HIEs highlighted these choices as a top challenge. Instead, these 10 other HIEs focused on addressing stakeholder concerns about privacy and confidentiality issues (6 of the 10) and accurately linking patients with their data (5 of the 10). Again, sustainability may be less of a concern for these particular HIEs because many had parent organizations supporting operations through an organizational budget rather than public funding or participation fees.

CONCLUSION

Based on the survey findings, Texas appears well situated in comparison to the nation as a whole. In only a few years, the state's regional patchwork of HIEs have successfully developed fairly comprehensive networks offering many of the core HIE services such as care summary exchange, results delivery, and clinical messaging that are typical of HIEs across the country. As has become the case nationally, many HIEs in Texas have moved out of early developmental stages and have brought their resources to bear on the difficult tasks of expanding networks, increasing clinical usage, and building out services. With time, Texas HIEs will undoubtedly develop further.