TECHNOLOGY NEEDS ASSESSMENT OF THE SANTA CLARA COUNTY SUPPORTIVE HOUSING SYSTEM

PREPARED BY HOMEBASE AND VIZTRIC

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EXECUTIVE SUMMARY

On behalf of Destination: Home, HomeBase, a national technical assistance provider on homelessness, and Viztric, a Seattle-based data strategy consultancy, conducted a technology needs assessment of Santa Clara County's supportive housing system to identify opportunities to leverage data and technology to strengthen the system of care.

To complete this assessment, HomeBase and Viztric interviewed key stakeholders, including County of Santa Clara staff and social service and homeless service provider staff, and conducted focus groups with people experiencing homelessness and homeless service provider staff, to understand existing system gaps and challenges. HomeBase and Viztric also performed a nation-wide environmental scan, researching emerging practices and interviewing communities across the country who have successfully leveraged technology in innovative ways to address homelessness. Based on this community feedback and research, HomeBase and Viztric identified several key areas of need in the current supportive housing system and made recommendations for potential solutions.

IDENTIFIED NEEDS AND CHALLENGES

- **Client Engagement and Access to Technology:** Service providers and consumers of homeless services indicated a need for better communication between provider staff and their clients, as well as the need for systems that empower consumers to access services and maintain access to their own information. Consumers' lack of access to computers, internet, and phone charging stations was also cited as a related challenge, keeping them from effectively searching for housing and employment.

- **Provider Capacity and Infrastructure**: Many providers indicated that limited staffing, high turnover, and heavy workload were key challenges to effectively using data systems and providing the best services possible to clients. Lack of IT support and training for new and existing staff also limited their ability to utilize data and technology systems. Specifically, providers noted a need for increased staff capacity around data entry and data analysis, newer computers, more reliable phone and internet access especially when working in the field, and other equipment and software that would allow providers to maximize their effectiveness and accurately record client data.

- **Data Collection and Integration in HMIS:** Providers identified challenges with collecting data through multiple data systems and a need for further integration with the County's Homeless Management Information System (HMIS), Clarity, to reduce duplicative data entry, the burden it places on agency staff, and its negative impact on data quality.

- **Reporting, Analytics, and Data Sharing:** Providers identified the need for easier access to program- and system-level data, citing challenges with reporting and analytic functionalities through Clarity, as well as a lack of staff capacity and technical knowledge to meet reporting needs. Broader integration of data across systems – including County health, mental health, and criminal justice – was also wanted, in order to improve coordination across systems and provide a holistic view of the experience and outcomes of people experiencing homelessness across the county.

PROPOSED SOLUTIONS

After identifying technology and data-related challenges, HomeBase and Viztric developed a range of actionable recommendations responsive to each of the needs identified. Based on key stakeholder feedback, these recommendations were prioritized into the following current priorities that meet immediate and foundational needs across the system, and longer-term solutions that, while essential to improving the system, would be more effectively sequenced after other recommendations have been implemented.

CLIENT ENGAGEMENT AND ACCESS TO TECHNOLOGY

Providing people experiencing homelessness access to the technology necessary to communicate with providers, search for housing and employment, and maintain personal documentation is a high priority for the community. Implementing key recommendations below will empower consumers, increase access to services, and improve communication between providers and consumers.

Current Priorities

- **Increase consumer access to internet, computers, and charged cell phones:** Facilitate access to key services by installing wireless internet in shelters, funding equipment for computer labs in existing facilities, and installing lockable cellphone charging stations in various locations.
- **Develop a Client-Facing Portal:** Create a portal with secure access to allow for e-signatures, appointment management, client access to documentation, and messaging capabilities.

PROVIDER CAPACITY AND INFRASTRUCTURE

Developing provider capacity and infrastructure is essential to implementing sustainable technological improvements to the supportive housing system. Increased staff capacity around data entry and analysis, updated computers, and other hardware and software that allow providers to maximize their effectiveness and accurately record data will improve the quality of data collected.

Current Priorities

- **Support investments in provider technology infrastructure:** Offer funding to providers to invest in updated hardware and software to lay the foundation for more significant system-level change.
- **Provide centralized IT support**: Provide a centralized resource for provider agencies to access IT support to maximize technological investments across the community and among providers.
- **Implement a change management approach to systems change**: Adopt a change management approach to provide the support, training, and coordination necessary to ensure successful and sustainable integration of new initiatives and use of available technology.

DATA COLLECTION AND INTEGRATION IN HMIS

Collecting high-quality data is the first step to effectively utilizing data to drive system improvements. With a multitude of systems in place across provider agencies and local government entities, it is critical that processes are optimized through system improvements and training, and integrated to the extent possible to eliminate manual data entry and improve data quality.

Current Priorities

- **Reduce duplicative data entry through system enhancement and integration options:** Because each provider utilizes a different system for data management outside of HMIS, there is no one-size-fits-all solution to this challenge. Addressing HMIS data collection and integration challenges should be approached by considering options that can be tailored based on each agency's current system, needs, and IT capacity:
    - Option 1: Enhance use of the County's Clarity system as the primary system, including agency capacity building through training, and potentially developing additional capabilities to meet provider needs.
    - Option 2: Support system integration by promoting and providing support for implementation of the currently available option to export client data from Clarity into provider systems.
    - Option 3: Explore the option of allowing providers to import data from provider systems into Clarity, and if feasible, develop applicable data quality controls providers must meet and provide technical support for implementation.

Longer-Term Priorities

- **Enable texting capabilities between consumers and service providers in Clarity:** Develop a texting service through, or integrated with, Clarity to facilitate better communication with clients in their preferred mode of communication and ensure contacts are recorded.

REPORTING, ANALYTICS AND DATA SHARING

Ensuring homelessness is rare, brief and non-recurring means the entire system needs to become more data driven and reporting tools are an essential component of this process. However, a number of the challenges cited above are foundational to ensuring high quality data is entering the system and to supporting providers to effectively serve their clients. To this end, stakeholders have prioritized solutions in this report to address those foundational system and process challenges before taking the next steps to build out more robust reporting capabilities and cross-system data sharing. The longer-term solutions below can provide a roadmap for future efforts.

Longer-Term Priorities

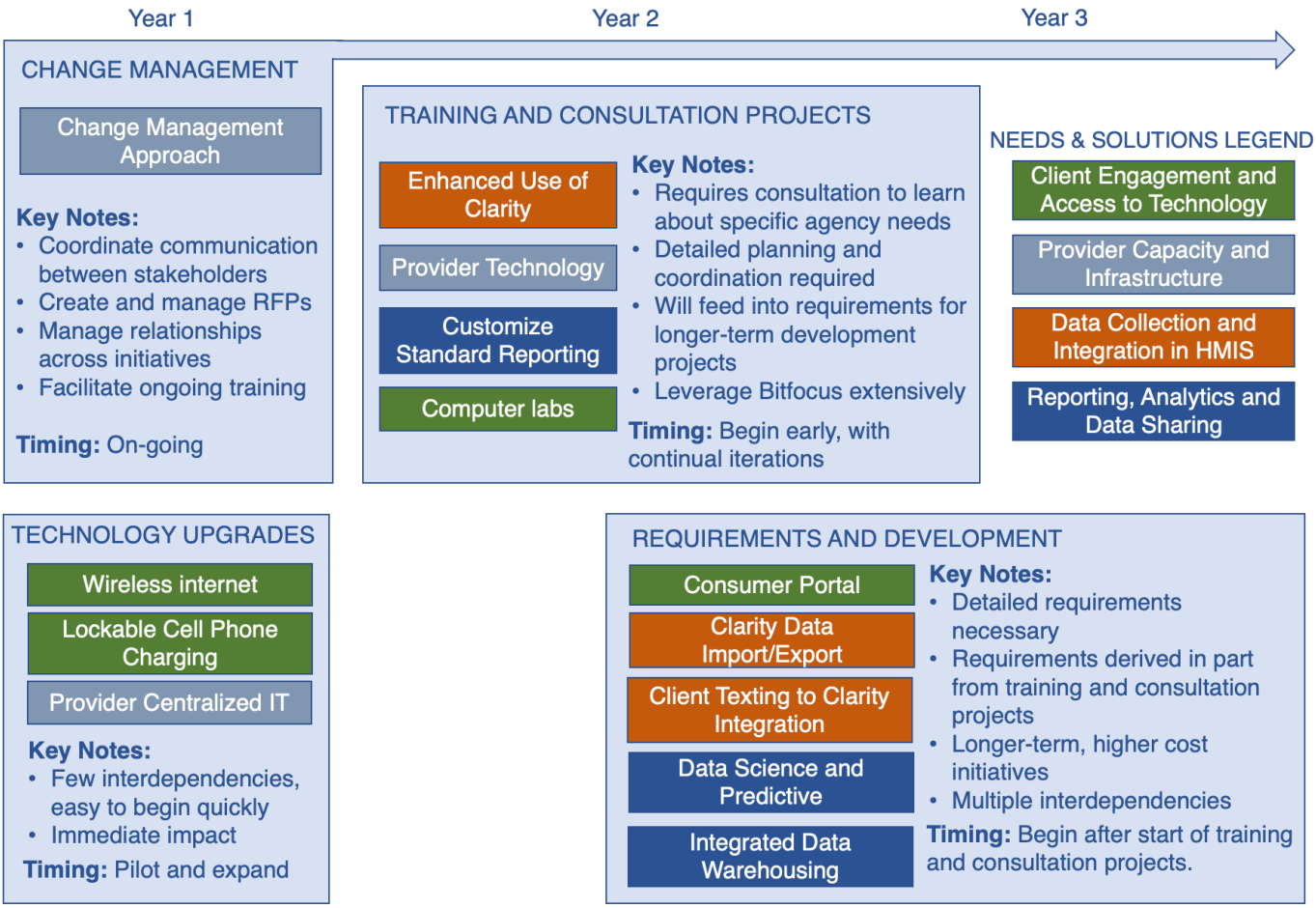
- **Customize standard reporting**: Create automated reports within Clarity's Looker tool and provide training to build staff capacity to reduce the manual report production burden faced by providers.
- **Explore additional possibilities for data science and predictive analytics:** Cultivate opportunities to build off of current County efforts around data science to automate processes, understand why something happened, and potentially prevent negative outcomes.
- **Integrate data and explore opportunities for cross-system data warehousing**: Build on current County data sharing efforts to consolidate data from non-HMIS systems, such as criminal justice, healthcare, employment, and other human services data sets, which requires a system-wide data warehouse, to enable robust reporting, coordination of care, and a client portal.

NEXT STEPS

Although each proposed solution has distinct costs, benefits, and considerations, there are several key next steps that cut across many of the solutions to move from this assessment to an actionable plan:

- **Finalize prioritization of challenges and proposed solutions:** The many challenges—and subsequent solutions—presented in this document should be further prioritized, based on community needs and resource availability, by key stakeholders and providers.
- **Due diligence on solution options:** While the solutions described in this document can meet the challenges outlined, many of the challenges are complex problems that can be solved in countless different ways. Options will need to be validated in more depth and detailed requests for proposals from vendors may be needed to understand actual capabilities and costs required for some solutions.
- **Start small and pilot:** Some proposed solutions involve large-scale projects that impact stakeholders across the system. However, many of the proposed solutions lend well to a pilot approach that can be expanded over time. A pilot approach can reduce the risk of trying new solutions by enabling organizations to adjust to existing conditions and is recommended for many of the proposed solutions.

Through the assessment process, a number of broad reaching solutions have been identified but not all of these proposed solutions can be implemented all at once and must be thoughtfully sequenced to maximize impact and effectiveness. The chart below presents a high-level roadmap to consider for bringing these recommendations to reality:



INTRODUCTION

HomeBase, a national technical assistance provider on homelessness, and Viztric, a Seattle-based consultancy with expertise in data strategy, warehousing, and visualization, prepared this Technology Needs Assessment of Santa Clara County's Supportive Housing System on behalf of Destination: Home. The Santa Clara County supportive housing system operates as a collaboration between the County of Santa Clara Office of Supportive Housing, as the lead agency, Destination: Home, as a key partner and incubator for innovative strategies, and a multitude of non-profit organizations and local government entities providing funding and services for people experiencing homelessness—all working toward the common goal of making homelessness rare, brief and non-recurring for residents of Santa Clara County. This analysis is intended to assess the current system's use of technology and data, identify existing gaps, and evaluate opportunities to leverage technology to strengthen the system of care and end homelessness.

Ending homelessness is a complex problem with innumerable interdependencies and Santa Clara County is no exception. Key to improving the system and achieving the community's vision of creating a data-driven, state-of-the-art homeless system of care is ensuring service providers have the tools they need to maximize current systems, including equipment and skills. Improving and integrating data and information systems can increase the flow of information to service providers, relieve overburdened staff utilizing multiple systems, and enhance agencies' ability to analyze performance measures and outcomes. Access to more robust, accurate data can help decision makers understand where the community should invest resources to maximize impact and identify bottlenecks or inefficiencies in the system. Increased access to information for the public and consumers of homeless services can serve goals of empowering consumers and ensuring equity across the system.

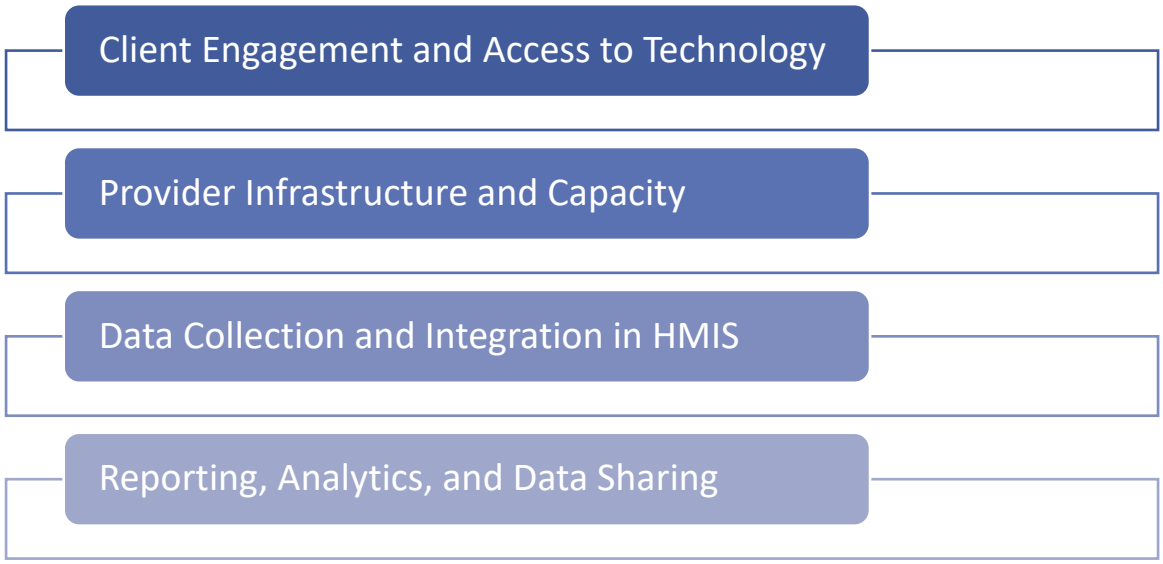
The first section of this report summarizes the results of an extensive information gathering process that incorporated community and stakeholder feedback from various parts of the system. The process included interviews with staff from a range of social service and homeless service providers, including emergency shelters, drop-in centers, housing programs, programs working with survivors of domestic violence, homelessness prevention, and other community-based organizations, as well as city and county staff, and system administrators. HomeBase and Viztric also conducted several focus groups with direct service staff and people experiencing homelessness in the county, and gathered feedback from various working groups and advisory boards, to develop a deep understanding of the system's limitations around technology and data. Through analyzing extensive feedback from these stakeholders, HomeBase and Viztric identified several key challenges that contribute to gaps in the current system.

The second section of this report provides an analysis of proposed solutions to address the challenges identified, that will allow the system to maximize the use of technology and data and remove barriers to reaching the community's goal of making homelessness rare, brief and non-recurring. These solutions were developed by HomeBase and Viztric, with input from key community stakeholders to further refine and prioritize based on community need. The following section provides recommended sequencing for implementation to maximize impact. Together, these sections serve as a roadmap for creating a state-of-the-art, data-driven homeless system of care in Santa Clara County.

IDENTIFIED NEEDS AND CHALLENGES

In interviews and focus groups, social service and homeless service provider staff discussed a range of challenges to ending homelessness in Santa Clara County. Many providers saw data and technology as a barrier to providing effective services, instead of a tool for ending homelessness. System limitations, limited staff capacity, lack of technical expertise, and outdated equipment were common themes that emerged that impeded agencies from providing clients with the best services possible. Among people experiencing homelessness, a lack of access to technology limited their ability to engage with service providers and play an active role in ending their homelessness.

These challenges, discussed in more detail below, can be categorized under the following themes:



CLIENT ENGAGEMENT AND ACCESS TO TECHNOLOGY

Access to internet and technology are critical tools for people experiencing homelessness to engage with service providers and search for housing opportunities. While most people experiencing homelessness in Santa Clara County have federally-funded smart phones, issues with charging phones in a secure location, limited phone data, and lack of wireless internet access or computer labs, created barriers to accessing services and searching for housing. Similarly, service providers also reported significant challenges with locating and communicating with clients about housing opportunities due to lack of reliable access to phones and internet.

Consumers and providers reported that lack of client access to phones, computers and the internet caused several interrelated challenges, including:

- ***Communicating with clients about housing opportunities:*** When a client rises to the top of the community queue and receives a referral to a housing program, service providers must then locate the client in order to let them know about the housing opportunity. If the client does not have reliable access to a phone, computer, or internet, the process of locating the client can be time-consuming for provider staff and results in missed opportunities when clients cannot be located.

- ***Maintaining housing documentation:*** Consumers reported that they often keep numerous pieces of documentation in hardcopy and that this documentation is frequently lost, stolen, or destroyed due to encampment sweeps or other challenges of homelessness. Providers and consumers agreed that having access to this information in a secure, digital format would help clients preserve this information more effectively and ensure that the documentation is available when needed.

- ***Accessing housing and other services:*** Consumers reported that limited access to technology impedes their ability to research and access available services and resolve their housing crisis. Consumers at both focus groups reported that the primary way they find out about available services and housing opportunities is by word of mouth from peers, not through internet research or communication with service providers, in part because their capacity to do so is limited by a lack of access to technology.

SMART PHONE USAGE AND CHALLENGES

Providers and consumers reported that most people experiencing homelessness in Santa Clara County have a smart phone with telephone and texting capabilities and a limited amount of data through the federal Lifeline program, often referred to as "Obama phones."[1] Consumers reported using their phones to communicate with service providers, conduct housing and employment searches, check email, and text message. Consumers also noted that the easiest way for providers to stay in touch with them was through text messaging, citing that they check and receive texts much more frequently than email. However, several barriers discussed below, significantly limit consumers' use of phones:

- ***Limited facilities to charge phone batteries:*** Consumers and providers reported that when individuals are living on the street or in a shelter it is difficult to keep their phones charged. Consumers also reported that those with vehicles are able to charge their phones in their vehicle, however the number of individuals with access to a vehicle is limited. Consumers without a vehicle must leave phones charging at shelters and day centers where they are often stolen. One provider noted that, "one big dream is to have an outdoor charging station" for consumers to use in order to keep clients' cell phones charged and facilitate communication with service providers.

- ***Frequently changing phone numbers:*** Consumers reported that, due to the lack of secure charging stations and storage spaces for their belongings, phones are frequently lost or stolen. One focus group participant noted that he recently had his phone stolen three times in one month. When a consumer's phone is stolen, this typically results in having to change their phone number,

[1] Households who are at or below 135 percent of the federal poverty line or participate in certain government assistance programs including food stamps, Medicaid, or SSI/SSDI, are able to receive discounts on a landline or wireless services.

impeding contact with providers who do not have their updated contact information or because consumers also lose providers' contact information stored in their phones.

- ***Limited data:*** Consumers reported that Lifeline phone plans include very limited data. Once this data runs out, they have to pay for additional data, which is often unaffordable, or utilize wireless internet, which is not easily accessible.

LIMITED WIRELESS INTERNET ACCESS

Despite widespread access to smart phones, consumers reported that it was difficult for them to access wireless internet at shelters and on the streets due to the following challenges:

- ***No or weak wireless internet at shelters and social services offices*:** While some shelters have wireless capability, often the signals are not strong enough to support the level of internet functionality needed to perform job or housing searches and check and respond to email. Providers cited challenges with limiting video and music streaming as barriers to providing wireless internet for client use.

- ***Poor device connectivity*:** Adding to this challenge, consumers indicated that the Lifeline phones do not have strong wireless internet receptors built in, making it difficult to pick up the weak signal.

- ***Unreliable access to public wireless internet:*** Consumers reported that they typically use the free wireless internet at Starbucks, Target, Home Depot or McDonalds but it is hard for people without vehicles to access those locations and employees are often not welcoming to people experiencing homelessness.

LACK OF COMPUTER ACCESS

Consumers also reported having limited access to computers or other larger mobile devices, such as tablets, due to:

- ***Few publicly available computer labs*:** At the location of the second focus group, a drop-in center in the south part of the county, there was no computer lab or wireless internet. Clients reported using computers at the public library and at the General Assistance office, however, access to computers at the General Assistance office was reserved only for participants in a particular program.

- ***Time limits on use*:** At one focus group at an emergency shelter, participants reported that there was a computer lab available for clients to use at the shelter, however, there was a time limit of approximately 10 minutes if others were waiting. Similarly, consumers noted that public library computers have similar time constraints. This time limit made it challenging to use the computers for time-intensive activities like housing and job searches.

- ***Lack of privacy*:** Consumers reported that using a computer in public spaces compromises privacy, as often other people would be waiting nearby to use the computer.

- ***Issues charging personal devices*:** During both focus groups, consumers reported that some individuals did have laptop computers, but, similar to smart phones, it was an ongoing challenge to keep them charged and secure.

PROVIDER CAPACITY AND INFRASTRUCTURE

Providers discussed a variety of technology infrastructure challenges related to outdated technology systems and equipment and a lack of IT support to address technology issues encountered by staff. Limited staff capacity due to the demands of providing direct client services, as well as high turnover among staff were cited as common barriers to learning new systems and adapting to changes. These staffing-related issues combined with challenges with finding time to provide appropriate training for staff also impacted providers abilities to deliver the best services possible for clients.

SYSTEMS AND EQUIPMENT CHALLENGES

Providers identified a lack of access to up-to-date hardware and software as a barrier to effectively delivering services and collecting high-quality data. Several providers explained that when non-profits seek funding for programs, in order to keep overall cost and overhead expenses down, they often do not factor in the cost of new devices, software, and other pieces of technology into their budget.

Specifically, office equipment, hardware, and software needs were identified in the following areas:

- ***Not enough or out-of-date computers:*** Some providers reported that they did not have enough computers for all staff or that their computers were out of date, or both. Equipment was often donated and limited the choice of operating system and software providers could use.
- ***Lack of access in the field:*** The County's Homeless Management Information System (HMIS), Clarity, and other case management software utilized by provider agencies allows for access from a mobile device for certain functionalities. However, providers reported challenges to accessing the full capabilities due to a lack of wireless internet or data subscriptions. Some providers reported that because functionality was limited in the field, they used paper forms and entered the information received into HMIS at a later time. County HMIS client consent forms require a hard copy signature, so this further segmented the process of using portable devices in the field.
- ***Need for tablets:*** Despite these limitations, providers stressed that it would be helpful to have access to mobile tablets, instead of laptops, which are harder to use in the field. Providers reported that using a laptop for outreach interactions was more challenging and many felt like it created a barrier between them and the client. Tablets were preferred for outreach interactions because they created a more relaxed social dynamic and were easier to use.
- ***Poor office internet connectivity:*** Several providers reported ongoing issues with internet connectivity in their offices and a lack of IT support to address these ongoing issues.

- ***Phone system issues:*** Multiple providers reported issues with their current office phone systems. One provider reported that the phones are "barely working" and noted that their equipment is out of date. Only one of the organizations interviewed provided mobile phones to staff. As a result, many providers reported that staff use their personal phones to communicate with clients and collect client information in the field.

- ***Out-of-date software:*** Many providers reported that the basic computer software they use, such as Microsoft Office, is out of date and systems often are not updated in a timely manner or consistently across all computers/equipment.

- ***Lack of ability to plan for upgrades:*** Software and other pieces of technology are often incorporated over time in response to acute needs, as opposed to being developed as part of a holistic and interconnected process. This creates ongoing issues with updating and streamlining software systems within organizations.

- ***Scanning Equipment:*** While Clarity and other systems providers use have the capability to upload scanned documents, several agencies reported challenges due to scanning equipment limitations. For example, one provider was unable to upload into Clarity because the agency's scanner created a PDF file that was far too large.

- ***Security concerns*:** Staff often used their personal laptops and phones for work purposes, because their organization's computers are out of date and more limited in functionality, creating potential privacy issues for clients. To meet the need for scanning functionality in the field, providers reported that staff frequently used their personal or employer-provided cell phones to take pictures of documents, send them to their computers via email, and then convert the picture to a PDF file, a multi-step process which many providers found time consuming, and posed privacy concerns for client information.

LIMITED STAFF CAPACITY

Nearly every provider interviewed discussed being overextended and struggled to set aside time for data entry, learning new technology and software, and deepening knowledge of existing systems. Several factors contributed to this:

- ***High staff turnover:*** Many providers and other stakeholders reported high provider staff turnover as a barrier to successful implementation of new technology systems and equipment. Even organizations not currently experiencing high turnover noted that it is often cyclical and may recur in the future.

- ***Skepticism of technology*:** Providers reported that some staff were skeptical about new technology over concerns it will add more to their workload, and noted that there is limited time for staff meetings and training to effectively implement new systems.

- ***Lack of IT support*:** Most providers reported that they do not have a dedicated IT staff person on site due to budgetary constraints. Instead, some organizations had limited IT staff time (e.g. 4-6 hours, once per week), used remote and/or volunteer IT support, or relied on staff or family

members with some technology expertise. Several providers indicated that they often utilized support for Clarity-related issues from Bitfocus but that it would be incredibly helpful to have a full-time person on staff who could also assist with other software programs or other issues with internet, servers, or hardware.

TRAINING-RELATED ISSUES

Nearly all providers interviewed said that it was a constant challenge for busy staff to prioritize client services and develop the technical skills required for their work. The following issues were noted:

- ***Scheduling challenges*:** Providers reported that scheduling was a barrier to effective training. For example, one agency explained that it is difficult to have all staff gathered together at the same time to provide training, as this would require their office to close to clients.
- ***Lack of funding for overtime for off-hours training*:** Training on off-hours was also a challenge as hourly staff would need to be paid for the additional time and some organizations could not authorize overtime pay for training purposes.
- ***Fast-paced nature of the work*:** Providers noted that the nature of the work for most service providers makes scheduling trainings difficult because staff are often pulled into emergent client issues that need immediate attention.
- ***Reliance on volunteers*:** Providers who relied heavily on volunteers reported that it is especially difficult to coordinate training for a large number of people with limited availability.

Providers noted several suggestions and strategies to improve current and future staff training opportunities:

- ***Targeted training for specific staff:*** One provider reported that it would be helpful to delegate sophisticated systems training to certain staff members, while providing less technical trainings for volunteers or staff that may not use all of Clarity's functionalities. Another provider echoed this, noting that having senior staff undergo thorough training on applicable software and data systems is essential so that these staff members have the capacity to teach other staff members.
- ***Increased frequency of trainings:*** Providers appreciated the regular trainings on the Clarity system but wanted more frequent trainings to get new staff trained and up to speed as quickly as possible.
- ***Flexible, on-demand training:*** Generally, providers preferred hands on, in-person training to help staff master and retain technical knowledge but also recognized that webinars were convenient for a variety of reasons. One provider noted that staff already have to commute to work, so having staff drive to San Jose for trainings was a barrier to attendance. Another provider reported that her staff only have about "30-40 minutes per day when they don't have a client in front of them" so if a training is longer it would be helpful for it to be broken up into modules.

DATA COLLECTION AND INTEGRATION IN HMIS

One the primary challenges providers identified was with collecting client data through multiple data systems. In particular, nearly all providers interviewed discussed a need for further integration with the County's HMIS, Clarity, to reduce duplicative data entry and the burden it places on agency staff, as well as the resulting impact on data quality. Broader integration of data across systems, including County health, mental health, criminal justice, and other departments, was also needed to improve coordination across systems and provide a holistic view of the experience and outcomes of people experiencing homelessness across the county.

SANTA CLARA COUNTY'S CLARITY SYSTEM

The County's Clarity system, developed and administered by Bitfocus, is the primary means of gathering information on programs that serve people experiencing homelessness across the community (see text box for additional information on HMIS). Overall, providers were satisfied with the Clarity system and agreed it improved significantly upon the previous HMIS. Among other benefits, providers appreciated the ability to generate standard reports to analyze client outcomes and to satisfy funder reporting requirements. Providers also appreciated the support available from Bitfocus staff and reported that the recent "Data Literacy Institutes" provided by Bitfocus, which take a deeper dive into reporting functionalities for both agency staff and managers, were helpful to gain skills for maximizing the functionality of the system.

However, nearly all providers also reported some frustration with certain functionalities of the Clarity system, and acknowledged that most staff were not able to take full advantage of the all of the system's capabilities due to a lack of technical expertise. Some providers were not aware of all functionalities or customization options that are currently available. In addition to reporting gaps discussed in the next section, providers cited specific areas for improvement, including:

- Additional case management functionalities.
- Capturing additional information, such as tracking historical changes in client income.
- Building out the location tab to allow for descriptions of other locations where clients may be found (e.g. where they pick up medication or where they access certain services).
- More accurate GPS location tabbing functionality, as currently it is not effectively pinning a location.
- Capability to track and manage landlord relationships or potential roommates for shared housing.
- Texting capabilities to contact clients in their preferred mode of communication.
- Streamlined reporting functionality (see *Reporting & Analytics* below for more detail).
- More prominent notifications when a client has been referred to housing.

HMIS: An Overview

All providers who receive funding through the U.S. Department of Housing and Urban Development (HUD) Continuum of Care (CoC) and Emergency Solutions Grant (ESG) Programs are required by federal mandate to provide client data through HMIS. As part of their contracts, the County of Santa Clara and City of San Jose both require county- and city-funded projects to enter data into HMIS as well. In total, 68 agencies currently have access to the Clarity system, which is administered by Bitfocus. This includes housing providers, outreach programs, emergency shelters, and other programs working directly with people experiencing homelessness, as well as community-based organizations, employment programs, and other County departments. Notably, victim service providers (VSPs) serving survivors of domestic violence are prohibited by the federal Violence Against Women Act (VAWA) from entering data into HMIS, however, these organizations must utilize a comparable relational database that can create all HUD-mandated reports.

In addition, providers cited some privacy-related concerns regarding collecting client data in Clarity. Providers explained that privacy concerns around immigration do routinely arise, and that clients may be fearful of accessing public benefits and programs they need because they are wary of having their information captured by government entities. Providers also noted that they did not feel confident that client information entered into Clarity would not be shared with other government entities that may use information in ways that are harmful to their clients. Additionally, providers reported issues with options available in Clarity to maintain client privacy. Clients concerned about privacy may be entered into Clarity anonymously, however, providers noted challenges with clients entered anonymously having multiple disconnected HMIS records from different service providers, making it difficult to identify what services their agency or other agencies have provided to the client and resulting in reduced data quality.

INTEGRATING CLIENT DATA IN HMIS WITH DATA COLLECTED OUTSIDE OF HMIS

Clarity has the ability to capture specific client data that can be customized and some providers use Clarity to track services provided, however, nearly all providers reported concurrently using at least one other data system to capture key information for their work.

Common reasons cited for utilizing a separate data system included:

- Clarity did not serve all of their case management and reporting needs.
- Agencies that worked across multiple counties and were required to enter client data into multiple HMISs utilized a separate common system across their agency in order to aggregate agency-wide data for reporting and planning needs.
- Agencies had invested significant resources to build, customize, and implement their own systems prior to Clarity, and were not inclined to forgo that investment.

- Some providers that were part of larger state-wide or national organizations were required to use agency-wide programs and it would not be feasible for them to rely solely on Clarity.
- Victim service providers serving survivors of domestic violence are prohibited by federal law from inputting client data into HMIS, and therefore must use a comparable database to collect client information. (See text box for more information on comparable databases.)
- For certain County-funded grants, some providers were required to utilize an electronic health record system to track client data and supportive services, in addition to collecting data in Clarity.

Most providers were not automating the process of transferring data across these systems at all, instead manually entering data into each system separately. As a result, one of the most common issues cited as a barrier to effective service delivery was the incompatibility of these systems which often require duplicative data entry and significant staff time diverted from providing core services to clients.

Providers and other stakeholders cited the following concerns regarding the use of multiple data systems to capture client data:

- ***Lack of system compatibility with Clarity***: Providers were concerned that these disconnected systems were overburdening staff and efforts to integrate systems were beyond their technical expertise or budget. A majority of providers reported that it was not feasible to export information from Clarity into their other software systems, either due to limited technical knowledge or system functionality. One provider was able to transfer data across systems by exporting information from Clarity into a Microsoft Excel file and uploading it into their agency's system on a weekly basis. However, the same provider reported challenges with ensuring data quality and significant staff time to manipulate the data and format it properly to upload into their agency's system. Several providers noted that County policy does not currently allow providers to import information from their other systems directly into Clarity.
- ***Reduced data quality:*** Providers also raised concerns that duplicative data entry and increased demand for different types of data from public and private funders negatively effected data quality and reduced provider confidence in the data overall. Some providers explained that having to re-enter data into multiple systems increased the risk of data entry errors. One provider reported that clients are sometimes inadvertently entered into their internal system but not into Clarity or vice versa.
- ***Potential security risks:*** Bitfocus raised concerns that other systems that providers utilize might be more flexible but not as secure as Clarity for maintaining client data.

For more information on other data management systems utilized by providers, see Appendix B.

Victim Service Providers (VSPs) and Data Privacy

One area of interest among VSPs and County staff was exploring ways to integrate VSP data to provide a more complete picture of survivors experiencing homelessness and accessing services across the system. Options, however, are limited due to strict federal restrictions on sharing client data for survivors of domestic violence. VSPs and certain recipients of federal funding available through the Family Violence Prevention and Services Act, the Office for Victims of Crime, and the Office on Violence Against Women may not input personally identifying information about their clients into HMIS and, instead, must use a separate "comparable database" and provide aggregate data to the Continuum of Care (CoC).

In addition to meeting all privacy, security, and reporting requirements for an HMIS, a comparable database must meet certain additional requirements including:

- An agency must have their own exclusive database stored on a local (non-cloud-based) server. No other organization, not even the database vendor may have access to the comparable database.
- The agency must have control over who can access and view client information and should only grant access to the comparable database to staff who need to see the information in order to do their jobs.
- Several VSPs may not share one database, nor may a VSP share an HMIS with the CoC, even if the HMIS is set up to prohibit sharing of client information among participating organizations.

HUD has indicated that they are working with the Department of Justice's Office of Violence Against Women and other partners from the Domestic Violence and Housing Technical Assistance Consortium to provide additional guidance regarding outstanding questions related to comparable databases.

USE OF PAPER RECORDS

Providers also commonly used paper files in addition to or to supplement Clarity and/or their other systems, either for certain types of records or due to specific limitations, including:

- ***Financial documents:*** Providers emphasized the importance of paper files for financial documentation, such as the variety of forms, checks, invoices, and other documentation required for providing rental assistance, citing that it was often easier to keep this information in a paper file rather than scanning it into Clarity or another case management system.
- ***Tracking high-volume services:*** Other providers reported using paper records because entering client information directly into Clarity was not feasible with their service model. For example, staff at the Gilroy Compassion Center, a drop-in center that provides food, clothing and other basic needs, discussed challenges with the high volume of clients served each day. Locating each client's record in Clarity to then track which service was provided would create significant delays in providing services. Instead, staff keep a paper list of the services provided to be manually entered into Clarity at a later time.

- ***Equipment barriers:*** One provider reported that they would like to transition to electronic files but are not able to scan documents when clients are in the office because the placement of the scanner/copier is disruptive to client conversations and cannot be moved due to space limitations.

- ***Release of Information (ROI) Forms:*** Clients must sign paper copies of ROI forms to consent to have their information added to HMIS. Current County policy does not allow ROIs to be signed electronically, which creates additional burden for providers to keep paper documentation on file and to take the extra step of scanning documents and then uploading them into Clarity. County Counsel staff indicated that it was common practice in the County hospital system to use electronic signatures and that it could be implemented for HMIS consent forms as well, if desired. Office of Supportive Housing staff indicated that in previous discussions, County Counsel staff explained that a portal providing client access to their records would be required to implement e-signatures for HMIS consent forms.

REPORTING, ANALYTICS, AND DATA SHARING

Providers consistently expressed that they would like to better utilize data for agency and program-level decision-making but have been hampered by a lack of technical expertise and staff capacity. Generally, reporting is viewed as a time-consuming activity that must be completed to meet funder and regulatory requirements, not as an organizational tool to drive change.

Providers and other stakeholders reported several reporting-related challenges including:

- ***Numerous funding sources and requests for data*:** Many of the agencies interviewed received funding from a variety of public and private sources. Each funder has different requirements with regard to reporting and compliance, often requiring a specific reporting template or tracking of specific outcomes that may not align with data being collected through Clarity. Excel, or sharable spreadsheets such as Google drive, were the most frequently used tools for retaining information required for funder reporting. Providers will frequently pool data from a number of different systems and generate reports in Excel to use internally or send to funders.

- ***Limited staff capacity:*** The bulk of staff time is spent managing the process of entering data, not analyzing the data to understand trends and drive program improvements. Staff interviewed reported that it would be helpful to better understand what the data they are entering is being used for and how it contributes to the overall system.

- ***Lack of technical expertise*:** Most providers reported that they do not have dedicated data analysts responsible for managing data quality and analysis—the same people providing case management are often also responsible for reporting. Reporting tools, such as Clarity's Looker tool, require a level of technical expertise many do not possess and providing technical training to staff is difficult since many do not have time available to attend trainings.

- ***Lack of publicly available data:*** Office of Supportive Housing staff reported producing regular reports for the County Board of Supervisors, the San José City Council, and others upon request,

however their ability to produce such reports was limited by the capacity of staff with technical expertise to produce them. Bitfocus and Office of Supportive Housing staff also discussed future plans to make system-level data publicly accessible through data dashboards that will be updated frequently to reflect current system capacity and outcomes. While these data dashboards are not currently available as of January 2019, Office of Supportive Housing staff and Bitfocus anticipated making them publicly available in the near future.

CLARITY REPORTING CAPABILITIES

Providers reported that improved capabilities in Clarity for generating user-friendly reports would be helpful for their work and increase their ability to make data-driven decisions about programs and services. Provider suggestions include:

- ***Reducing data deduplication and manual manipulation:*** Providers reported that they often are not able to get the information they need from Clarity in a timely manner because it would require pulling multiple reports and then deduplicating data across the multiple reports, which requires significant staff time and expertise to manipulate the data.
- ***Improved tracking of client income and benefit information:*** Providers noted that it is difficult to track and subsequently report on changes in client income and benefits. Each benefit and income entry has a different line item in Clarity, which makes it difficult to run a report and does not allow providers to see historical income data.
- ***More user-friendly custom reporting templates:*** Providers explained that it would be helpful if Clarity could export information into the custom Excel templates required by various funders as well as into other Excel-compatible spreadsheet tools like Google Drive.
- ***Data analysis tools:*** Providers reported that it would be helpful to have data easily exportable into charts and graphics, so that providers do not have to create those from the raw data to share with staff in a meaningful format. Agencies do not have access to robust dashboarding or visualization tools and there are additional constraints on who can access Clarity's reporting tool, Looker.

CROSS-SYSTEM DATA SHARING

Need for additional data sharing across systems was also cited by both providers and consumers. Several providers expressed interest in having access to information regarding other services clients were receiving to better coordinate care across providers. Consumers at the focus groups welcomed the idea as well, citing that they often had to repeat information to different providers to obtain services.

Stakeholders discussed several current efforts around data sharing at the county-level, including:

- Data integration across the County Health and Hospital System through implementation of an electronic health record system.
- The creation of a data warehouse that integrates healthcare data with homelessness data through a nightly import from Clarity.

- Compiling the most comprehensive study to date on the public costs of homelessness.
- Development of the Silicon Valley Triage Tool, which utilizes cross-departmental data to identify high utilizers of County services.
- Project Welcome Home (discussed below).

These initiatives have laid the groundwork for future data sharing efforts to assist providers with coordinating care and providing the robust data necessary to inform data-driven decision making. In this regard, Santa Clara County is among the leaders in the field, however, providers and stakeholders reported several significant technological and policy-related challenges to these efforts:

- ***Matching data across systems:*** With data coming from multiple systems, it was difficult to always accurately match client records or to use a common identifier across systems, which reduced data quality overall.
- ***Lack of access for service providers and other departments:*** Much of this data is only currently accessible to "experts" or researchers within the Health and Hospital System, and not providers, which does not allow for staff working directly with clients to see the complete picture of services a client is receiving across systems. Aggregate data is made available for decision makers from departments across the County, but other departments do not have access to the client-level data.
- ***Legal barriers to cross-system data sharing:*** County Counsel staff reported that there are significant limitations on the way criminal justice data can be used and shared due to state and federal restrictions. County Counsel staff explained that privacy restrictions on the use of state criminal justice data from the California Law Enforcement Telecommunications Systems (CLETS), was a complex area of law, and emphasized that use of the data depends on what specific data is needed and how the system is structured. Therefore, determining what data can be used for which purposes requires an individualized and system-specific analysis, and County Counsel staff would need to be consulted early on in the process. They also noted that there are Santa Clara County-specific political complexities around the use of this data and that the research component of *Project Welcome Home* has helped to facilitate use of criminal justice data in that instance, as opposed to broader implementation of the triage tool described above.

Project Welcome Home

Project Welcome Home is a permanent supportive housing program designed to serve high utilizers of County services with the goal of stably housing clients, improving their quality of life by providing housing and intensive supportive services, and reducing utilization of safety net services. The program uses a data warehouse created by Palantir, which gathers information from the criminal justice system about frequency of incarcerations, County Health and Hospital system data, and emergency psychiatric services data. This data is used to identify clients with long-term homelessness and high rates of County service utilization to target for housing. Then, once a client is enrolled, the system gathers more granular information to allow case managers to track client needs and coordinate care.

PROPOSED SOLUTIONS

Many of the challenges identified through this needs assessment are foundational to creating an effective and efficient homeless system of care. First and foremost, providers need the equipment necessary to serve clients, and support to develop the systems, processes, and technical skills to do their jobs more efficiently. In addition to addressing immediate technological barriers, developing a world-class, data-driven culture to end homelessness requires organizations across the supportive housing system to utilize data daily to make decisions. As organizations rely on data to make decisions, they will better understand the need to accurately capture information, integrate with other systems, and create efficient means of coordinating to eliminate duplicative work. Fortunately, Santa Clara County is well on its way to achieving this goal and has piloted and pioneered models for sharing data and breaking down silos across various systems to improve outcomes for some of the county's most vulnerable residents.

Addressing the many challenges discussed in the previous section will require broad system thinking to bring all of the pieces together to achieve the community's goal of making homelessness rare, brief, and non-recurring. As a first step in this process, HomeBase and Viztric researched available solutions across the homeless services field and beyond and interviewed various organizations and communities implementing innovative models to compile a preliminary list of proposed solutions. In consultation with key stakeholders including Destination: Home, the County of Santa Clara Office of Supportive Housing, Cisco, and Bitfocus, this list was further refined to reflect the community's priorities.

The following sections discuss proposed solutions for each area of need, and are categorized as current priorities or longer-term priorities based on stakeholder input. Discussion of each proposed solution contains a summary of the proposed solution, including potential challenges and considerations.

CLIENT ENGAGEMENT AND ACCESS TO TECHNOLOGY

Lack of consumer access to various forms of technology was a common challenge cited by people experiencing homelessness, as well as providers attempting to communicate with clients, and was identified as a high priority area for the community. The following proposed solutions focus on empowering people experiencing homelessness through increasing access to internet, technology, and their own records.

CURRENT PRIORITY: INCREASE CONSUMER ACCESS TO WIRELESS INTERNET, COMPUTERS, AND CHARGED PHONES

Providers and consumers reported that a lack of consumer access to internet and technology such as computers and charged phones, severely limited consumers' ability to access services, as well as search for employment opportunities and available housing. Key recommendations for increasing consumer access to technology include:

INSTALL WIRELESS INTERNET IN SHELTERS OR OTHER FACILITIES ACCESSIBLE TO PEOPLE EXPERIENCING HOMELESSNESS.

People experiencing homelessness discussed several challenges accessing wireless internet, often going to private business to utilize their networks or using up costly cell phone data. Offering wireless internet in facilities accessible to people experiencing homelessness would allow for more consistent access to facilitate communication with service providers when housing opportunities arise, and to search for housing and employment. Similar efforts to increase access to wireless internet for people experiencing homelessness have been successfully implemented in other communities, including San Francisco (see text box). Concerns raised during the needs assessment process regarding bandwidth and streaming of content, such as movies and music, can be managed through filtering controls in place to limit streaming services or other content, either internally by the provider agency or through a managed system through the internet service provider.

PROVIDE COMPUTERS FOR COMPUTER LABS IN EXISTING FACILITIES THAT CAN SUPPORT A COMPUTER LAB

While most people experiencing homelessness in Santa Clara County have access to smart phones, often a computer is required to research housing and employment options from sites that are not optimized for cell phone use only or to fill out forms or applications. To address the need for increased access to computers for people experiencing homelessness to check email, search for employment and housing, and communicate with service providers, communities have implemented programs to provide additional computer lab facilities for consumers in service provider facilities or other locations. To streamline implementation and limit costs for installation, funding could be provided to purchase computers for agencies with existing facilities that can support a computer lab and can provide the staffing to sustainably maintain it. This funding could be coupled strategically with funding to provide wireless internet access to allow people experiencing homelessness to access the internet on their own devices, as well as with funding for additional IT support for providers, discussed in the following section, to ensure sustainability.

INSTALL LOCKABLE CELLPHONE CHARGING STATIONS IN SHELTERS AND OTHER SERVICE CENTERS

Providing lockable, secure charging stations in shelters and other community spaces accessible to people experiencing homelessness would allow consumers to more reliably charge their phones, without fear of losing their phone or having it stolen, and reduce several of the communication barriers cited by both consumers and providers. Secure and reliable lockable charging stations are relatively inexpensive and do not entail extensive installation, typically requiring minimal space and an electrical outlet. Funding can be provided to shelters, drop-in centers, social services offices, or other service provider facilities that are accessible to people experiencing homelessness to purchase and install lockable charging stations to allow for secure charging of client devices.

Shelter Tech: Bringing Wireless Internet to People Experiencing Homelessness

In San Francisco, ShelterTech has installed and provided free wireless internet in various shelter facilities, drop-in centers, and transitional housing facilities, through their Shelter Connect program. Shelter Tech staff discussed opportunities to partner with internet service providers to receive installation services at cost, and to receive donated equipment to reduce costs. ShelterTech staff estimated that it cost on average $5,000 to $10,000 per facility to install and costs varied depending on the complexity, size of the building, and materials the building was made out of. This was because each facility requires approximately 8 to 12 access points, which cost between $200 to $300 each. Larger buildings with numerous rooms and concrete walls required more access points and other equipment, and would fall on the higher end of that range, whereas a space with one room or few dividing walls would be less expensive. Once the network is installed, it can be managed in-house by the agency or by the internet service provider, and ongoing service costs an estimated $50 per month per 100 people.

Implemented in tandem, these recommendations to improve access to technology for people experiencing homelessness would complement each other by creating a baseline in the community to ensure that consumers have the tools they need to resolve their housing crisis. While each proposed solution addressed individual measurable outcomes or outputs, taken together, these interventions would have greater overall impact across the system. Likely results of increased access to internet, and reliable phones could include more consistently kept appointments or clients completing necessary online searches for housing or employment, as measured by client and provider surveys, or decreased system-wide time from first entering the system to stably housed for agencies benefiting from these interventions.

CURRENT PRIORITY: DEVELOP A CLIENT-FACING PORTAL

Developing and implementing a client portal could help to address a number of challenges identified in this assessment, including streamlining communication with service providers, empowering consumers to maintain necessary records safely and securely, and increasing accessibility to homeless services and housing for people experiencing homelessness. Providing access to a client portal would also facilitate the implementation of e-signatures for release of information forms clients must sign to consent to have their information entered into Clarity, reducing the burden on providers to maintain paper documentation especially when working with clients in the field.

Examples of client portals in the homeless services field are limited (see text box below), however they have been implemented widely by healthcare providers and have been shown to increase patient engagement and facilitate better patient outcomes. Other health programs serving people experiencing homelessness, including New York's Care for the Homeless, have adopted patient portals to allow clients

to communicate with healthcare providers, manage appointments, and access medical records and other personal information.[2]

Elements that could be incorporated into such a portal could include:

- Personal documentation storage, including documentation on income, employment, or housing.
- Communication with service providers, including referral notifications, providing updated contact information, tracking appointments, or messaging with service providers.
- Links to community resources, including information or referrals to services such as shelters, employment programs, food banks, and other resources.

Allegheny County Client Portal

In Pennsylvania, the Allegheny County Department of Human Services recently created a client portal where consumers can view their own information from the variety of social service data sets contained in the county's wide-reaching data warehouse (described in the *Reporting, Analytics, and Data Sharing* section). Core to the county's extensive data sharing efforts is the principle that clients should have access to their records, as well as service providers and other county staff. County staff emphasized that the portal was an integral part of their system that was designed to provide transparency and access to information to providers, clients, and the public. Allegheny County staff noted some challenges in the implementation processes, in particular, difficulty around putting in place security measures to ensure that only clients had access to their own records and not other members of their household, as well as a need to further promote the new portal among clients.

PROVIDER INFRASTRUCTURE AND CAPACITY

In order for providers to effectively serve clients and collect data necessary for tracking and reporting client outcomes, provider capacity building and infrastructure development is essential. Implementing a data-driven system across all provider agencies will require increased investment in hardware and systems and additional IT support and training to ensure that technological infrastructure is not a barrier for providers.

[2] Healthcare Informatics, "Housing is Healthcare: How a PCMH is Caring for NYC's Homeless Population." (May 2018). Available at: https://www.healthcare-informatics.com/article/housing-healthcare-how-pcmh-caring-nyc-s-homeless-population

CURRENT PRIORITY: SUPPORT INVESTMENTS IN PROVIDER TECHNOLOGY INFRASTRUCTURE

Ensuring that providers' technological infrastructure is up to date and functioning is foundational to the effective and efficient operation of the homeless system of care, however, interviews and focus groups revealed a significant need for updated equipment among provider agencies. Providing funding to agencies to invest in updated hardware and software systems will lay the groundwork for more significant system-level change in the future by facilitating more efficient and effective service provision if providers are not impaired by out of date technology.

Specific technological needs providers identified include:

- Computers, laptops, and tablets
- Phone systems
- Scanners to support digital document storage
- Up-to-date software programs, including Microsoft Office

CURRENT PRIORITY: PROVIDE CENTRALIZED IT SUPPORT

Providers indicated a need for increased IT support, however, few agencies reported having the resources to invest in a full or part-time staff person, often relying on other staff or volunteers to resolve issues with technology. Providing a centralized resource for provider agencies to access IT support, when needed, would maximize technological investment across the community and among providers with limited resources. Organizations could reach out to a single source for their IT needs, eliminating the difficulties created by ad hoc or volunteer-based IT support.

Many companies offer remote help desk support, and local onsite support if needed, on a contract basis, either hourly or for a set number of requests.[3] Funding could be provided to support contracting with an IT support company for a set number of agencies or resources from providers could be pooled to potentially achieve economies of scale by combining resources from smaller agencies.

CURRENT PRIORITY: IMPLEMENT A CHANGE MANAGEMENT APPROACH TO SYSTEMS CHANGE

Implementing broad technological changes across multiple agencies will require shifts across every aspect of the system, which can cause temporary disruption and confusion. A change management approach, including the following components, should be adopted to provide the support, training, and communication necessary to ensure a successful and sustainable transition:

[3] HomeBase and Viztric identified several IT support companies including Tech Soup/Bask and Tech Impact, that offer packages for remote and onsite IT support for nonprofits and other small businesses.

- ***Engaging Providers in Planning for System Changes:*** Provider agencies and individuals should be kept informed and included in all aspects of a system redesign process. Their pains and challenges need to be heard and included in the design of solutions to build buy-in and support. Simply having new tools thrust upon them could lead to holding on to old solutions out of fear of the unknown.

- ***Process Redesign:*** With new tools and capabilities, some jobs and processes will need to be redesigned. Many provider agencies do not have the bandwidth or experience to incorporate new system changes and will need assistance as they learn new systems and eliminate unnecessary processes. Reducing duplicative data entry between provider systems and Clarity, as well as streamlining reporting capabilities discussed in the following sections, could significantly change how staff in provider agencies spend their limited time. Redesigning these processes will require significant technical expertise to provide unique solutions for each agency and provider buy-in to ensure success.

- ***Ongoing Training:*** Due to high turnover and scheduling limitations among provider staff, training is not a one-time effort and consistent training will be required. Interviews with providers have shown the many different ways staff learn and prefer to take in new material. Comprehensive training will require a variety of mediums – in person, interactive webinars, videos, and documentation, among others—and will take time and resources to execute.

There are several options for implementing a change management approach depending on the amount of resources available and the complexity of the solutions that the community decides to pursue. These options range from utilizing existing staff with minimal additional resources to hiring consultants or full-time staff to build out a structured program tailored to the community's needs.

DATA COLLECTION AND INTEGRATION IN HMIS

Providers were generally satisfied with Clarity as the County HMIS, however, few were using Clarity as their primary system for client management and data collection. Many acknowledged that they were not using all of Clarity's functionalities due to a lack of technical knowledge and training. Duplicative data entry into both Clarity and other provider systems was a common concern across providers, resulting in inefficient workflows and reduced data quality. Building on the foundational elements, discussed in the previous section, to ensure that providers have up to date equipment that does not create barriers to serving clients, there are several opportunities to build provider capacity to maximize use of HMIS and other systems in order to free up staff time for client-centered work and ensure high-quality data is flowing into the system.

CURRENT PRIORITY: REDUCE DUPLICATIVE DATA ENTRY THROUGH SYSTEM ENHANCEMENT AND INTEGRATION OPTIONS

One of the primary challenges faced by provider agencies is the manual entry of data into their internal data systems as well as into Clarity. Replacing time-intensive and mistake-prone efforts to re-enter data

from provider systems into Clarity will improve overall data quality, decrease staff time spent on data entry, and allow staff to focus on client-facing activities. However, because each provider utilizes a different system there is no one-size-fits-all solution to this challenge.

Instead, addressing data collection and integration challenges should be approached by considering options that can be tailored based on each agency's current system, needs, and IT capacity. The simplest solution for some provider agencies may be to continue or shift to using Clarity as their primary client management system. This will require significant investment in training for staff to fully utilize all of Clarity's currently available functionalities, and may require development of additional capabilities. Some provider agencies, however, may still wish to utilize their independent systems as their primary client management systems, in which case, options to streamline or automate data transfers across systems should be supported and explored further.

OPTION 1: ENHANCE USE OF THE COUNTY'S CLARITY SYSTEM AS THE PRIMARY SYSTEM

The Clarity system is the standard across the county and is widely respected as a strong HMIS system with excellent capabilities and adoption. There are no accreditation services that evaluate HMIS solutions relative to one another, however, in 2017 the Durham Continuum of Care in North Carolina published their assessment of all HMIS solutions based on system user surveys, and ranked Clarity at the top of all of the solutions evaluated.[4] In particular, users ranked Clarity particularly high in simplicity of use, ability to learn the system quickly, and confidence utilizing the system, as compared with the five other HMIS options assessed. Given the high rating and general satisfaction expressed for Clarity by providers, some agencies may be able to transition to using Clarity as their primary client management system, eliminating the need for duplicative data entry into two separate systems.

However, many providers acknowledged a need for a better understanding of functionalities currently available in Clarity and for additional training to maximize its usage. Providing tailored training on existing functionality in Clarity would likely allow more agencies to utilize the system for all client data collection needs. Examples of potential areas for further training include:

- ***Scanning and Document Management:*** A number of scanning and document management features are currently available through Clarity, however, many providers may not have had training or the technical knowledge to maximize their use. Bitfocus could provide support to enhance usage of these functionalities through strategic consultation with each agency to review needs and requirements around scanning and document management and provide training, documentation, and support materials to help meet those needs within the current functionality.
- ***Reporting:*** Significant provider capacity building and training on current Clarity reporting functionalities, discussed in the next section, would also contribute to an increased likelihood that providers could utilize Clarity as their primary client management system.

In addition to training needs, several providers noted some specific areas for improvements in functionality that do not currently exist and Bitfocus has expressed an openness to improving their Clarity toolset to

[4] More details about all of the systems evaluated can be found in an interactive visualization here: https://public.tableau.com/profile/mattschnars#!/vizhome/HMISSystemUsabilitySurvey/Home

better address local needs. Once providers are effectively utilizing existing capabilities, if additional needs exist, Bitfocus could be engaged to explore and develop additional tools based on needs identified in consultation with provider agencies that could potentially eliminate the need for a separate system. Examples of possible additional functionality could include:

- ***Building out case management functionalities*** so that providers would not feel that they needed to utilize another system.
- ***Enabling capture of scanned images directly from phones or tablets*** into Clarity while staff are working in the field.

OPTIONS 2 AND 3: MAINTAIN PROVIDER SYSTEMS AS THEIR PRIMARY SYSTEM AND SUPPORT IMPLEMENTATION OF OPTIONS TO STREAMLINE TRANSFER OF DATA BETWEEN PROVIDER SYSTEMS AND CLARITY

Some providers, for a variety of reasons discussed in the needs section, may determine that they are unable to use Clarity as their primary client management system, and may need to look to other options to streamline their data entry process. Technical capabilities exist to automate the flow of data either into Clarity from a provider system (import) or from Clarity into their provider system (export). Current County policy, however, only allows for providers to export data from Clarity and into their system. These exports could take the form of more basic manual transfers where reports are extracted from the system on regular intervals or much more complex automated exports that are transferred to provider systems through an automated interface. Some providers were not aware of the option to export data from Clarity into their own systems or had attempted to implement such a process with limited success. As a result, there is likely opportunity to increase the number of providers utilizing the exporting process to reduce duplicative data entry through first, promoting the option more widely to providers, and second, providing additional technical support to ensure successful and sustainable implementation.

Office of Supportive Housing staff have indicated a willingness to revisit the policy to allow importing from provider systems into Clarity under certain conditions. However, this option will require high technological capacity for interested agencies, substantial investment and planning to determine the potential costs and benefits, and should be considered a viable option for only a small number of agencies. County policy would need to be changed to accommodate this option and requirements would need to be developed to ensure data quality standards are met and that appropriate protections are in place to ensure that clients have consented to have their data shared in HMIS. These efforts would require a significant commitment of time from Office of Supportive Housing and Bitfocus staff to develop this technical framework and to then assess the capacity of agencies to meet these requirements. Before embarking on the process to update County policies, agencies potentially interested setting up an import process should be engaged to more fully understand the staff time, resource commitment, and IT capacity necessary for successful implementation and sustainability going forward, to determine if any agencies would wish to pursue this option.

Use of either approach would be highly dependent on the capacity and circumstances of each individual agency and the requirements for integrating with their current system. The details of these different processes are very similar, though there are pros and cons to each approach. Regardless of the approach taken, detailed analysis and planning are required and there are several prerequisites for each:

- ***Demonstrated Agency Technical Capacity:*** A system cannot be automated without deep technical capacity of the provider agency to ensure high data quality is shared across systems. These capacities must include robust security and change management processes to address system change requirements, as well as skilled software development staff.

- ***Compliance with County Policy:*** County policy on data integration in Clarity currently allows providers to export data from Clarity to provider systems, however the policy does not currently allow data to be imported into Clarity. If a provider agency would like to import data to Clarity, the policy will need to change and providers would need to develop processes to ensure compliance with data quality standards.

- ***Data Quality Risk Management:*** there are several risks in both automated and manual data transfer approaches.

    - *Export risks –* Data must be managed and secured after leaving Clarity and moving to other systems. Since the data within Clarity already meets HUD-mandated data quality standards and consent requirements, exporting data presents a much lower risk in terms of data quality than importing data and is the recommended approach.

    - *Import risks –* Data must be properly formatted and structured in order to feed into the County's Clarity system and all records must have signed consent forms in order to be included. This will require updates to processes whenever there are any changes to HUD data standards and will need to be managed when importing new data. Importing data into Clarity from source systems is the most complex and highest-risk activity and should only be considered when all risks are vetted and appropriately managed.

    - *Manual process risks –* There are also risks to manually moving data between systems through the use of spreadsheets and reports. While this is the most common approach currently, having manual data exports also represents risks for security and privacy when large amounts of client data are extracted from the system and maintained in spreadsheet-form that must be weighed against the relative risks of export and import processes.

LONGER-TERM PRIORITY: ENABLE TEXTING CAPABILITIES BETWEEN CONSUMERS AND SERVICE PROVIDERS IN CLARITY

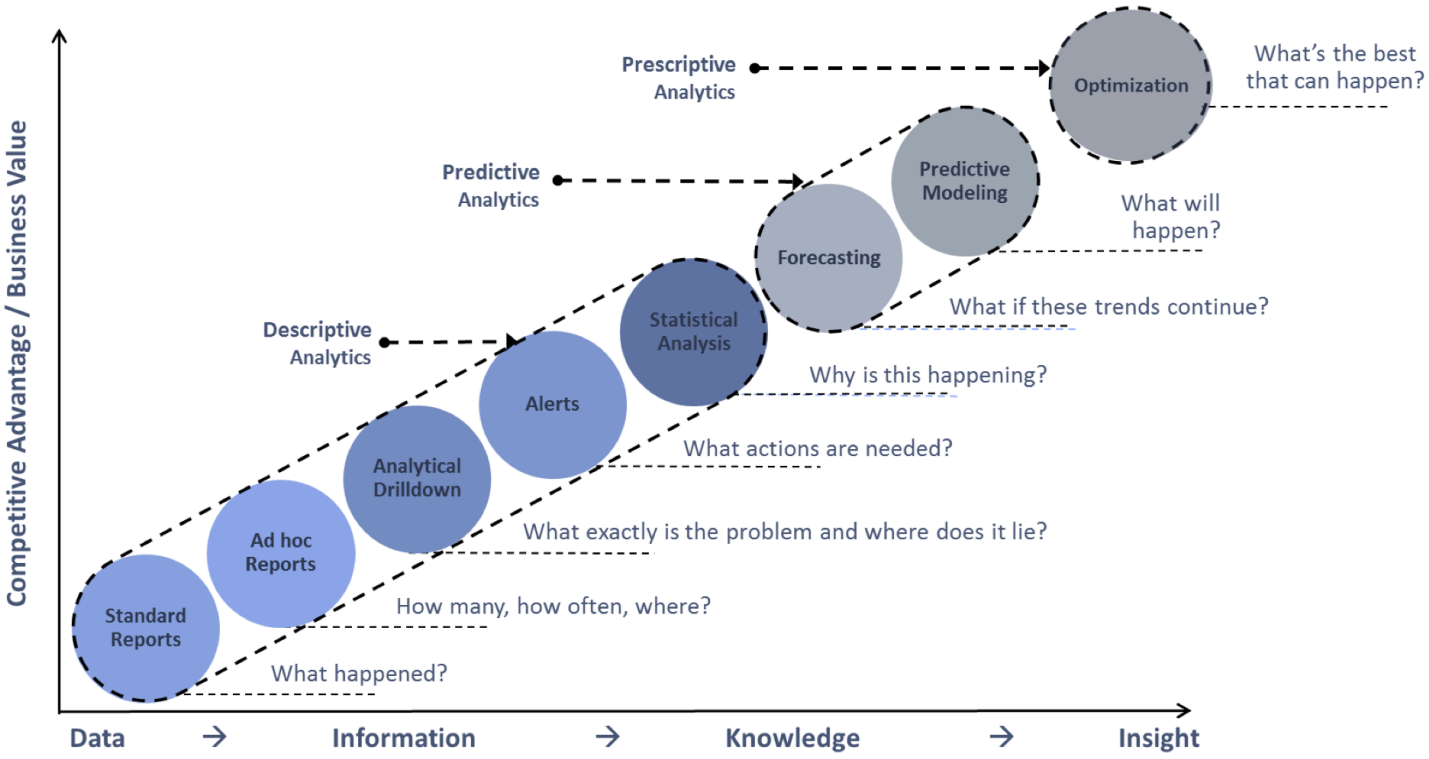
In focus groups with consumers, many stated a preference for communicating with service providers via text message, however, this is not a common practice among all providers. One provider was considering implementing texting capabilities available in their case management system to send text messages to clients, however, no providers currently had such capability built into their systems. Currently, when agencies communicate via text, it is generally through staff's personal cell phones and these messages are likely not tracked in the client's record. Developing a texting service through Clarity or other systems would help facilitate better communication with clients and ensure all contacts are recorded.

There is limited evidence of text messaging usage in homelessness programs, however there is building evidence of the success of text messaging in healthcare, similar to trends in client portals. These capabilities will require additional research to determine detailed requirements based on provider needs and how best to integrate with Clarity and implement.

REPORTING, ANALYTICS, AND DATA SHARING

Ensuring homelessness is rare, brief and non-recurring means the entire system needs to become more data driven and reporting tools are at the front-line enabling these capabilities. However, several challenges discussed in this report, namely duplicative data entry and the need for additional and upgraded equipment, currently impair providers' ability to effectively serve clients and efficiently perform the data entry functions of their roles. In response, stakeholders have prioritized solutions in this report to address those foundational system and process challenges before taking the next steps to build out more robust reporting capabilities. Based on these priorities, the discussion below provides a high-level roadmap for achieving longer-term goals for evolving reporting processes as the system grows.

There are many different forms of analysis and reporting that evolve as a system becomes more data driven. The chart below illustrates this evolution from standard reporting up through prescriptive analytics. Organizations are not required to follow this progression in any particular order, but it is important to understand what is possible.



LONGER-TERM PRIORITY: CUSTOMIZE STANDARD REPORTING

Standard operational reporting is the baseline of all systems, including HMIS. However, providers reported having a variety of funders, each with their own different reporting requirements. The slight variations of each funder require providers to uniquely pull data together in Microsoft Excel to compile monthly, quarterly and annual reports. Additionally, exploring deeper analytical questions often involves a multi-step

process where provider staff export data from Clarity's Looker tool to Excel, and then combine these exports with other exports to find the answer they are seeking.

To ease the burden on provider staff, automated reports can be leveraged from within Clarity's Looker tool. The reports may already exist, though staff may not be properly trained in their use. For other needs, new customized reports can help overcome process limitations and remove the manual processes line staff currently use. There are several models in place that users can utilize to customize reports in Clarity.[5] Most homeless service providers, however, do not have the technical skills or funds for data analysts to utilize these more advanced capabilities.

To add reporting capacity across the system, funds could be utilized for additional consulting hours from Bitfocus or to add additional capacity at the Office of Supportive Housing to support a more robust data analysis team. Offloading reporting into a centralized team of data analysts could relieve the burden on provider staff from performing manual data extraction and reporting efforts. With 68 agencies currently utilizing Clarity, and approximately 20 core service provider agencies, it is more economical to build a small team of technologists than to fund individual experts within each agency. Similar to providing centralized IT support to provider agencies, centralizing data analysis could help to achieve economies of scale compared with each agency's individual efforts. This small, specialized team would benefit from increased technical focus and expertise, proper management and compensation. As a result, turnover within these roles would likely be reduced, resulting in a stronger overall capability across the County.

LONGER-TERM PRIORITY: EXPLORE ADDITIONAL POSSIBILITIES FOR DATA SCIENCE AND PREDICTIVE ANALYTICS

As data volumes grow and standard operational reporting improves, data-driven systems can move further up the path from understanding "what happened?" through standard reports to "why it happened?" via statistical analysis and ultimately to "how do we ensure it won't happen again?" in prescriptive analytics. Data scientists are adept at finding data from a wide variety of data sources either through data warehouses or through publicly available data or source system extracts. Enabling data science does not necessarily require having a data warehouse in place first and can be considered at any time in the data lifecycle. While not a current priority focus area, these needs should be kept in mind for future advancements and to build off of current efforts already underway, including Project Welcome Home and the Silicon Valley Triage Tool, discussed in the *Identified Needs and Challenges* section.

LONGER-TERM PRIORITY: INTEGRATE DATA AND EXPLORE OPPORTUNITIES FOR CROSS-SYSTEM DATA WAREHOUSING

Developing a better understanding of the overall system will require integration with data beyond Clarity. Consolidating data from non-HMIS systems such as criminal justice, healthcare, employment, housing, and various other human services data sets will require a system-wide data warehouse to enable robust

[5] Bitfocus, Looker Data Models Overview; available at: https://get.clarityhs.help/hc/en-us/articles/115012217228-Looker-Data-Models-Overview

reporting. Combining disparate data enables richer analysis and better communication and coordination across the system.

Below are the key components to consider when building an integrated repository of data that address some of the challenges presented by providers:

Extract, Transform and Load (ETL)	ETL is the process by which data is extracted from a source system, transformed into a usable form and then loaded into a target system.
Cross-system Integration	The ability to combine data sets from multiple different systems in one database.
Data Modeling	The needs of reporting systems are different than source systems and typically source systems are structured for getting data into a system, but not necessarily getting it out. This differing structure often requires a transformation to facilitate reporting.
Security and Accessibility	Data in a warehouse can have a separate security model than a source system, allowing a broader set of users to access data that may not be available to source system users. If the data is aggregated or deidentified more users could potentially access the data than they could simply through a source system.
Refresh Frequency	Different source systems can be updated at different rates depending on how the data is refreshed at the source.
History	Data warehouses are designed to hold a historical record of data to enable long-term analysis. A data warehouse can live on even if source systems change.

These different components can be implemented in a variety of different warehouse options available to meet the needs for data warehousing and integration capabilities. The Allegheny County model, discussed below, provides one example for how Santa Clara County could build upon current data warehousing efforts. The County is currently utilizing data warehousing for the Pay for Success Program, *Project Welcome Home*, and through the Center for Population Health Initiative, discussed in the *Identified Needs and Challenges* section above.

Allegheny County Department of Human Services

Allegheny County**,** in Pennsylvania, has implemented an integrated human services model to coordinate care across county departments and utilizes a data warehouse to integrate social services data from more than 20 internal and external sources. Internal human services department data includes aging, child welfare, drug and alcohol services, homeless and housing supports, mental health, family support and early childhood services, while external sources include 21 local school districts, public benefits, juvenile probation, county jail, and court system data. Data is available to human services staff, service providers, and clients, with varying levels of access, and supports client service coordination, evaluation, quality improvement and decision-making related to policy, program planning and system design.

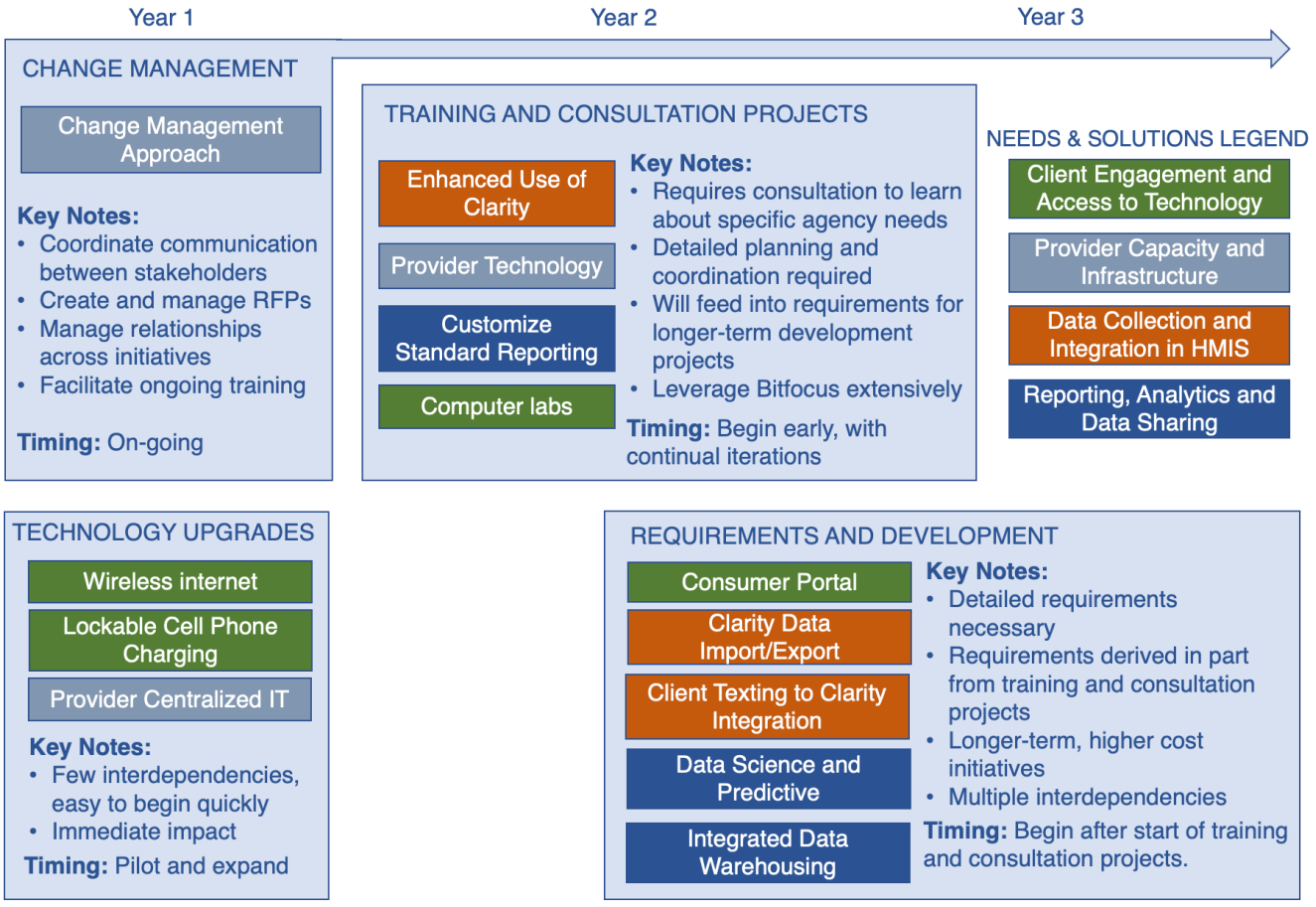
Allegheny County hosts a website that highlights many of their analytic capabilities, available at: https://www.alleghenycountyanalytics.us/ The Allegheny County solution is an excellent model to follow with rich governance, technical capability and user reporting access.

PROJECT SEQUENCING RECOMMENDATIONS

Through the assessment process, a number of broad reaching solutions have been identified, however, not all proposed solutions can be implemented at once and must be sequenced to maximize impact and effectiveness. The chart below presents a high-level roadmap for bringing these recommendations into reality. Developing a plan to build out the capabilities presented in this assessment requires bringing different initiatives together at different times over the next few years. The timeline in the roadmap below is intended for directional planning. Detailed delivery timelines will need to be determined for each initiative.

This roadmap categorizes the various initiatives into four key solution categories:

- **Change Management**: A centralized role to manage implementation of the various projects. All initiatives should follow the lead of the change management plan, which should begin first and be ongoing.
- **Technology Upgrades:** These have few interdependencies with other initiatives and can be started quickly and expanded over time.
- **Training and Consultation Initiatives:** These projects will require training and consultation to transform processes at each agency.
- **Requirements and Development:** Broader reaching initiatives requiring advanced development will need detailed functional and system requirements before developing or implementing solutions. Some requirements will be determined in the training and consultation phase.



APPENDIX A: METHODOLOGY

To compile this report, HomeBase and Viztric gathered information through interviews with key informants and stakeholders in the community, to assess current gaps and unmet needs, and technological and data capacity within the homeless system. HomeBase and Viztric interviewed staff from the following agencies that provide services to people experiencing or at-risk of homelessness in Santa Clara County:

- Abode Services
- Bill Wilson Center
- Family Supportive Housing
- Gilroy Compassion Center
- HomeFirst
- PATH
- Sacred Heart Community Service
- The Salvation Army Silicon Valley
- Sunnyvale Community Services
- YWCA of Silicon Valley

HomeBase and Viztric also interviewed other key informants from the following organizations and local government agencies:

- Bitfocus
- Cisco
- City of San José Department of Housing
- County of Santa Clara, Office of the County Counsel
- County of Santa Clara, Office of Supportive Housing
- Destination: Home
- Santa Clara Valley Health & Hospital System, Center for Population Health Improvement

In addition to stakeholder interviews, HomeBase and Viztric organized and facilitated three focus groups, including two with people experiencing homelessness in Santa Clara County and one with direct service staff from homeless service provider agencies. To ensure a diversity of experiences were represented in the focus groups, HomeBase and Viztric hosted one focus group with people experiencing homelessness in South County, at the Gilroy Compassion Center, and another in San Jose at HomeFirst's Boccardo Reception Center. HomeBase and Viztric are grateful to the staff of these organizations for their help with planning for the focus groups. HomeBase also gathered feedback through discussion with the Coordinated Assessment Working Group, made up of provider agency staff, and the Lived Experience Advisory Board.

Based on the information gathered, HomeBase and Viztric developed an outline of system needs and service gaps and completed a national environmental scan to identify additional potential solutions that met the capabilities needed, including costs and benefits to proposed solutions. HomeBase and Viztric met with key stakeholders to share initial findings and discuss priorities for investment in data and technology. Based on this stakeholder input, HomeBase and Viztric prioritized the solutions, analyzed the priority solutions, including gathering information on impacts, barriers, financial and other costs, and made recommendations on sequencing of implementation to best support local efforts to end homelessness.

APPENDIX B: PROVIDER SYSTEMS

Across the homeless system of care, providers were using a variety of systems in addition to the County HMIS, Clarity, to collect client information, refer clients to housing and other resources, track case management and services, measure outcomes across their agency, and report to funders.

Below is a summary of the types of data management and case management systems utilized by the providers interviewed for this assessment:

Case Management Systems: The most common case management software used by the providers interviewed was Salesforce, and other providers indicated that they were considering it for their agency. Feedback regarding Salesforce was overwhelmingly positive, and all providers that used it found it to be a helpful and user-friendly tool for case management, data analysis, and reporting. However, most providers who used Salesforce noted that they were required to manually enter data into both Clarity and Salesforce.

Custom Systems: Other providers use systems that were specifically designed to track the different types of services they provide. For example, the Salvation Army Silicon Valley, which provides emergency shelter, meals, homelessness prevention, and other services, uses Bridges and Others for internal reporting and client tracking. This system was customized specifically for their needs to track food services provided, client demographic data, and rental assistance provided to clients from month-to-month. The Salvation Army is part of Santa Clara County's Emergency Assistance Network, a network of agencies that provide services to prevent homelessness, utility disconnection and hunger. In addition, two of their four Salvation Army locations in Santa Clara County participate in Destination: Home's Homelessness Prevention Pilot and must use Clarity to enter client data for that project. Staff reported that they did not have an automated process for getting information from one system into the other and that currently staff must perform manual data entry into Clarity as well as the Bridges and Others system.

Comparable Databases: YWCA of Silicon Valley, a provider of housing and supportive services for survivors of domestic violence, sexual assault and human trafficking, reported utilizing Efforts to Outcomes as their "comparable database" to track housing program data, as well as all other client data across their agency. This system allows them to wall off data on domestic violence survivors from other data entry portals and is accessible only to certified staff. YWCA reported that Efforts to Outcomes is also highly customizable, allowing them to track outcomes and add data fields when funders request additional data points. YWCA reported recently undergoing a technology assessment with other VSPs in the community which revealed that organizations "were all over the map" in terms of data system utilization and funding for technology. According to the assessment, the most common data system used by other VSPs was Apricot. YWCA also discussed challenges with providing technical support to staff around using the Efforts to Outcomes system since they cannot use the County HMIS.

Electronic Health Records Systems: Some providers and stakeholders discussed using different systems to capture client health information, including the County's electronic health records (EHR) systems for the purposes of centralized billing and treatment coordination. Similar to an electronic medical record (EMR), an EHR contains medical and treatment history for a patient, but goes beyond that to provide a broader view of overall patient health and is designed to be shared with other healthcare providers to facilitate coordination of care. Several providers utilized EHR systems to track client data and supportive services in addition to Clarity or other case management tools. These providers reported similar

issues to those discussed in this report with integrating data across systems or importing data from or into Clarity to avoid duplicative data entry.

Specific EHR systems utilized and challenges reported by providers are discussed below:

- *Unicare:* The Office of Supportive Housing noted that the behavioral health contractors that they partner with all concurrently use Clarity and Behavioral Health Service's EHR system, Unicare. PATH, which provides outreach and housing services, reported that under their contract with the County they will be required to bill services to Medi-Cal, requiring the use of Unicare. PATH staff explained that they had received a capacity building grant from the County to pay for a system to integrate Clarity and Unicare. They chose to use Vertical Change, a cloud-based data and client management system, because it was highly customizable so they could communicate across systems and use it statewide across their agency. However, after investing resources to have it customized, they were unable to overcome barriers to having the systems communicate with each other because Santa Clara's Clarity system does not allow for data to be imported in bulk into the system. As a result, they are now using each database separately and entering data directly into both Unicare and Clarity. To limit duplicative data entry once they have started billing to Medi-Cal, PATH staff reported that the County has allowed them to not input detailed case notes into Clarity, and instead enter detailed notes just in Unicare. Only significant changes and main data points for reporting to HUD would go into Clarity.

- *Awards:* Bill Wilson Center, which provides housing, mental health, and other services for youth and young adults, reported utilizing Awards, a web-based EHR and case management system, as their primary system for managing client data, however, they also are required to enter data into both Clarity and Unicare. After investing significant resources into Awards, they anticipated having the capability to enter information into Awards and then upload data into Clarity, however, current County policy does not allow for importing data into Clarity. For data entry into Unicare, Bill Wilson Center staff reported pulling data out of Awards and hiring a billing company to assist with inputting the data into Unicare.