



CORNERSTONES UNIFIED DATABASE IMPLEMENTATION PROJECT

(CUDIP)

Spring 2015

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Executive Summary

Cornerstones is a non-profit charitable organization chartered to provide community services to needy residents in Fairfax County. Cornerstones provides food, shelter, and other services to households primarily in the Reston and Herndon areas. Cornerstones present record-keeping consisted of paper forms and large, complicated spreadsheets spread among various programs and projects. Extensive labor was required to locate information and compile both internal and external reports. Cornerstones required a unified database to collect, record, and report information to fulfill County reporting requirements as well as requirements of donors and other stakeholders.

In the fall of 2014, a team of GMU students analyzed Cornerstones' requirements. They successfully designed a relational database but it lacked any practical means of input or output. Our team was tasked with the follow-on effort to fully meet the customer's requirements.

The spring GMU team designed, developed, tested, and implemented a fully operational web application. The team applied sound systems engineering principles and conducted extensive usability testing to be able to accomplish this enormous task in less than three months. The application provides an intuitive and user-friendly interface for entering, updating, and retrieving information on households, clients, services, and other information. Additionally, the application generates computationally complex reports with a single click. The application can feed a variety of analytic and visualization software packages. The spring GMU team provided Cornerstones with a demonstration of advanced data visualization using the database.

The web application can be used on any computer or device with a web browser. Cornerstones staff can remotely use the application from any of Cornerstones' seven locations and offices. The application has been successfully installed and tested on the customer's target server. Training with staff was conducted, and the system is fully implemented. Based on customer estimates, the application will save over a half man-year of labor, plus it will revolutionize Cornerstone's ability to track and analyze its performance.

1. Background

This section will introduce Cornerstones as an organization, presents a brief overview of the current operating mechanisms used at Cornerstones, the issues with the current operating mechanisms in use and finally the proposed solution to fix the issues in the current operating mechanism.

1.1. The Client (Cornerstones)

Cornerstones is a nonprofit organization that promotes self-sufficiency by providing support and advocacy for those in need of food, shelter, affordable housing, quality childcare, and other human services. To complete this mission, Cornerstones provides various services that address these needs. To make the services readily available to their customers, Cornerstones has organized these services into various program groups. Of the various program groups within the Cornerstones organization, the focus of this project will be on the Neighborhood Resources program. The Neighborhood Resources program focuses largely on providing food and community-based initiatives to the local area of Reston.

Within the Neighborhood Resources program, there are two main focus areas: (1) Assistance Services and Pantry Program (ASAPP) and (2) Community Based Initiative (CBI). ASAPP operates as a local food pantry and provides packaged food products to those in need. It operates out of one facility located near Lake Anne in Reston. On the other hand, CBI provides services through local community resource centers. The focus of the CBI program is to address specific needs of the community such as building leadership, self-sufficiency, skills development, child development, and meeting urgent needs. CBI operates from five different locations in Reston namely Cedar Ridge Community Center, Crescent Community Center, Stonegate Village Community Center, Southgate Community Center, and Westglade Club House.

1.2. The Legacy System

A major mechanism for managing the current business operations at Cornerstones is by use of manual methods to track client data. Cornerstones manually enters client information, demographics, history of services received, and household information into a paper in order to record client information. The main objective of recording client information is to help assess the

performance of the services rendered by Cornerstones to their clients. The assessment is based on the performance indicators listed as below by Cornerstones.

How much services did they provide to the client?

How well did they serve their clients?

Have any of these services improved the overall well-being of their clients?

It is important to capture this information so that Cornerstones can understand the impact of the work that they do and report it to their financial sponsors as well as to local and federal governing bodies. Also, by accurately determining their effectiveness in improving the community and its residents, Cornerstones is able to generate more funding, staff appropriately, and optimize their business functions.

In the existing system, Cornerstones relies on two main methods for tracking client data. The first method is pen & paper record keeping. Physical applications, or “intake forms”, are used at each of the program locations to collect client data. These are either filled out by the clients or completed with the assistance of a Cornerstones staff member. Depending on the program location, the type of service received or community event held, different subsets of data may be collected. This can range from a simple name and address sign-up sheet to an in-depth application including personal, household, and employment history. The pen & paper records are stored in filing systems at the program location or at central offices. The information on these forms can also be transferred to an electronic record.

The method of tracking client data is through electronic spreadsheets. Much of the data in these spreadsheets comes directly from the paper forms. The level of completeness of these records vary greatly given that each location, program, service, or event collects different subsets of the client data.

From the individual spreadsheets for each program office, a master spreadsheet is generated and maintained by Cornerstones staff at the central Cornerstones office. This master spreadsheet is used to derive all of the performance, demographic, and statistical analysis that Cornerstones requires for

their reporting processes. The master spreadsheet is used to calculate specific figures required in their reports to sponsors and governing agencies.

This overview of the existing system can be summarized in the diagram below.

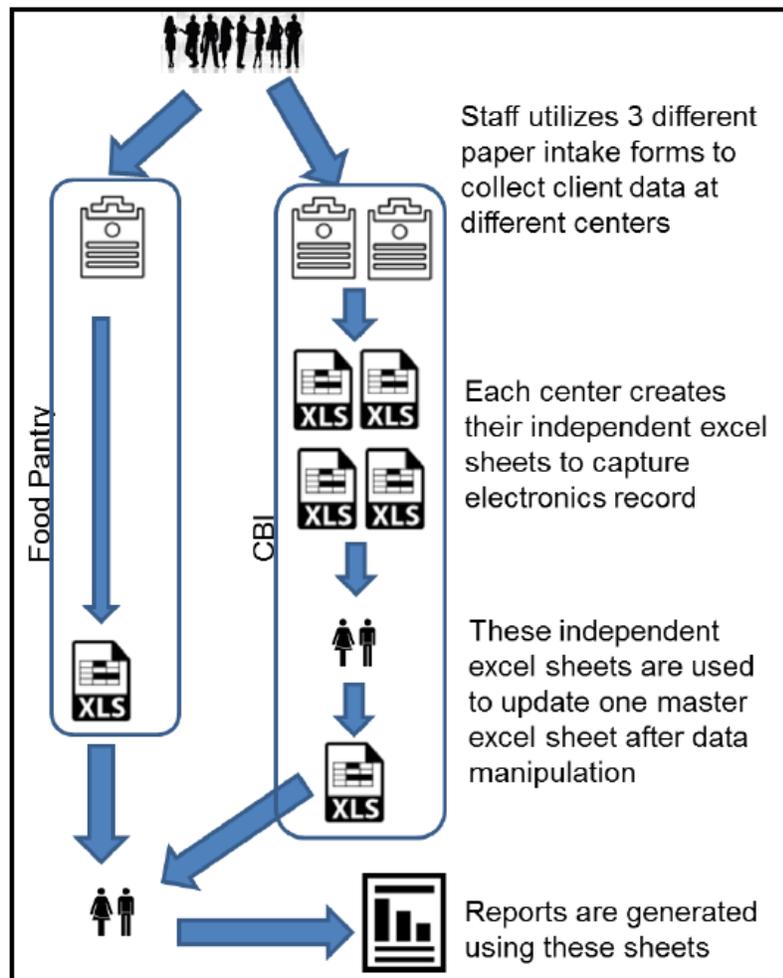


Figure 1 : Existing System

1.3. Problem Statement

The services offered by Cornerstones are packaged into multiple program groups which are located in five different areas in and around Reston. This geographical distribution of an organization in multiple areas led into varying levels of data collection and use of multiple independent spreadsheets. This increased the difficulty in their client tracking process. The existing system allows for significant tracking issues. For example, when a client visits multiple community centers to

receive different kinds of service, Cornerstones may not be able to track reliably that the same individual is using multiple services. Reasons for discrepancies in tracking include: (a) there may be variations in the way the staff member spelled the clients name, (b) the client may have changed addresses since their last visit, or (c) the client's household structure may have changed. When the records cannot determine the uniqueness of individuals, the accuracy of the reports may be compromised (i.e. one individual may be counted as many, or different individuals might be thought to be the same person). Currently, Cornerstones relies heavily on the ability of staff members to recognize the clients who are frequent visitors and also on the investigative abilities of their back-office staff to correct issues as listed above.

In addition, it is difficult to track a client's service history. Cornerstones is interested in knowing how much service is being rendered to a single individual or family in order to gauge their level of need. With better tracking, it is believed that Cornerstone would be able to identify clients who are in greater need of service and pro-actively provide that service. For example, a client who has increased their need for food pantry services may also need job-finding services or additional child care assistance. Also, being aware of this history could prompt Cornerstones staff to recommend nutritional seminars and counseling to the client. With the current system, this level of monitoring and response is difficult.

Lastly, the distribution, inconsistency, and insufficiency of client tracking in the current system prevents Cornerstones from being able to realize many additional reporting and analysis capabilities that could greatly improve their ability to monitor their performance. With a unified, central database of client records, Cornerstones would be able to generate many types of reports about their clients, services rendered, and trends over time.

1.4. Proposed Solution

The GMU Fall Team (CUDDP) proposed the following solution in order to fix the issues in the current operating mechanism explained in the Problem Statement.

The objective of the solution is to develop a robust data strategy and a unified database design for the Neighborhood Resources division that can help track client records across various programs in

this division. This will help generate more effective and accurate reports. The envisioned final system is a unified database that can be accessed by all Cornerstones staff from all locations to support their daily operations. This system will also support automation of the standard reports that Cornerstones generates on a periodic basis, and allow the customization of reports for trend and performance analysis. The unified database will also decrease the amount of human intervention required to accurately determine client uniqueness. Instead, each client will be assigned a unique identifier developed by this team which is a combination of their personal data. The team has determined that collecting three additional bits of information like the client's birth date, the client's city of birth and the client's gender coupled with the information already asked on the forms (name, address, number of household members, etc.) can be used to uniquely identify each client.

In an effort to solve the issues in the current operating mechanisms used by Cornerstones, GMU fall team (CUDDP) delivered the design of a working template (Envisioned System) of the solution. This working template once implemented will provide a strong foundation of tracking client data through automation rather doing manually and increase the scope of increasing the effectiveness and efficiency of operations performed by Cornerstones.

In this semester the GMU Spring team (CUDIP) will use the working template and complete implementation of the unified database so to support full functionality of Cornerstones requirements within the Neighborhood Resources division programs. The figure below displays the transition from the existing system to the system delivered system by GMU fall team (CUDDP) and then the future work of the envisioned system that is implemented in this semester by GMU Spring team (CUDIP).

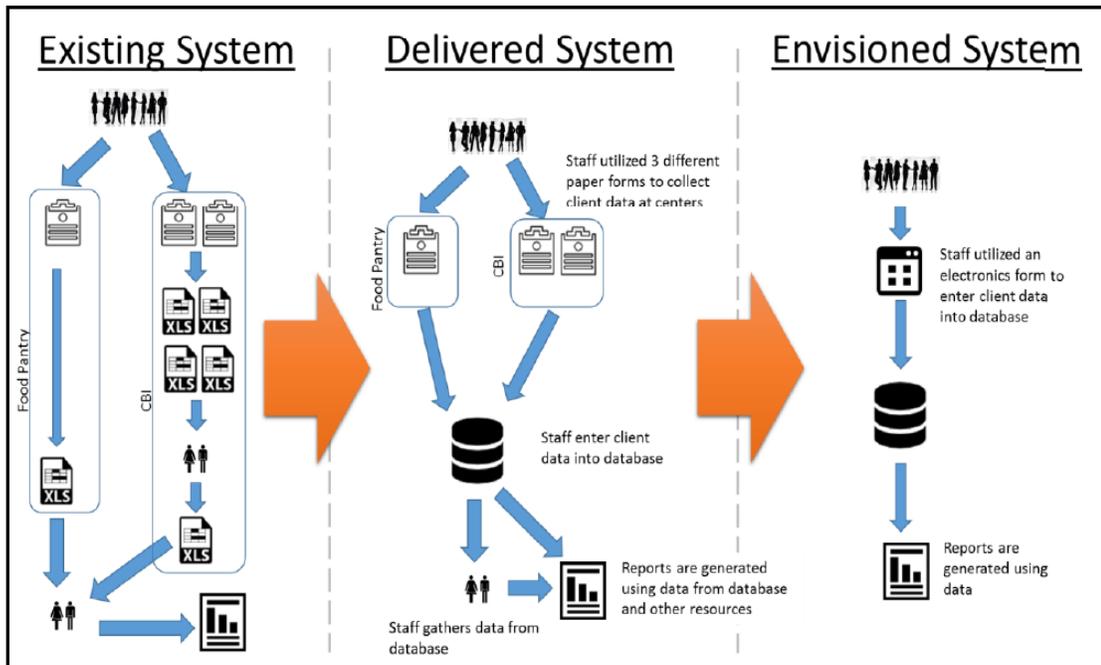


Figure 2 : Proposed Solution

2. Systems Engineering Life Cycle

GMU Spring team (CUDIP) followed systems engineering lifecycle phases of Planning, Analysis, Design, Development, Test and Implementation to complete the Cornerstones Unified Database Implementation Project (CUDIP) on-time, considering the user satisfaction as the main goal.

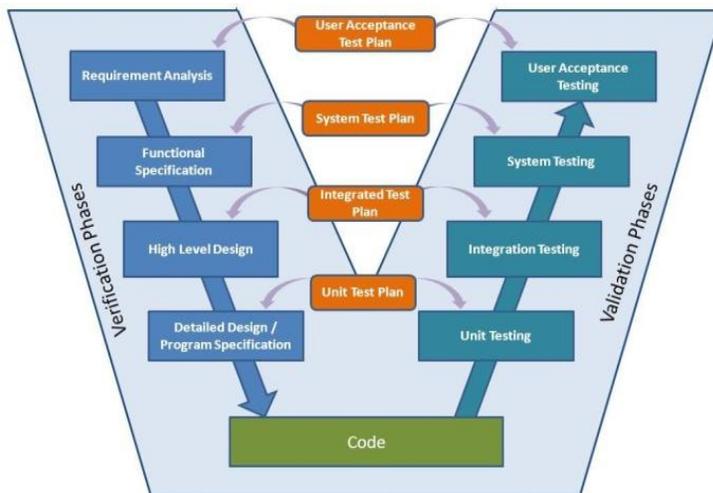


Figure 3 : V - Model

2.1. Planning and Analysis

Activities in this phase include developing Integrated Master Schedule (IMS), Identifying potential Risks and developing Risk mitigation strategies, tracking milestones, review of the documents provided by the previous team (CUDDP), gathering additional requirements from the customer (Cornerstones), analysis of the existing hardware and data currently in use by Cornerstones.

2.2. Design and Development

Activities in this phase include designing the electronic forms (Front End), developing the software queries (Back End) in accordance to the envisioned solution and also integrating the frontend electronic forms and backend software queries.

2.3. Testing

This phase consists of testing the web application and ensuring that the web application met all the design requirements. This phase is divided into three main phases namely Unit Testing, Integration Testing and System Testing.

2.3.1. **Unit Testing**: It is performed following the completion of the design of each of the electronic forms. This is to ensure the functionality of each of the electronic form is as per the customer requirements and are fit for use.

2.3.2. **Integration Testing**: It is performed after integrating the frontend form and backend software code to ensure that the web application is delivering the customer desired output. Integration testing enables that all the requirements per each web application are met.

2.3.3. **System Testing**: System Testing is performed at the end of the cycle to ensure that the system met all the requirements we developed.

2.4. Implementation and Handout

These phases mainly consist of deploying the envisioned system (Unified Database) and providing the documents and training to the end users.

3. Planning

In order to complete the Cornerstones Unified Database Implementation Project on time, the GMU Spring Team (CUDIP) developed project plan which details Integrated Master Schedule (IMS), potential risks associated to the project, risk mitigation strategies, Project Milestones, Meetings and Status Reporting and Roles and Responsibilities. The details of the planning phase are presented in the sub-sections below.

3.1. Integrated Master Schedule (IMS)

The Integrated Master Schedule (IMS) was created and used by the team as a project management tool. It provided the GMU spring team (CUDIP) with a high-level schedule to follow for the semester. In addition, a Work Breakdown Structure (WBS) was developed to identify all of the work items to be completed within each phase of the project. These tools allowed us to assign a team member as the lead for each activity. We also used this tool during our weekly team meetings to gauge the status of our progress against our schedule. A view of these items is presented below.

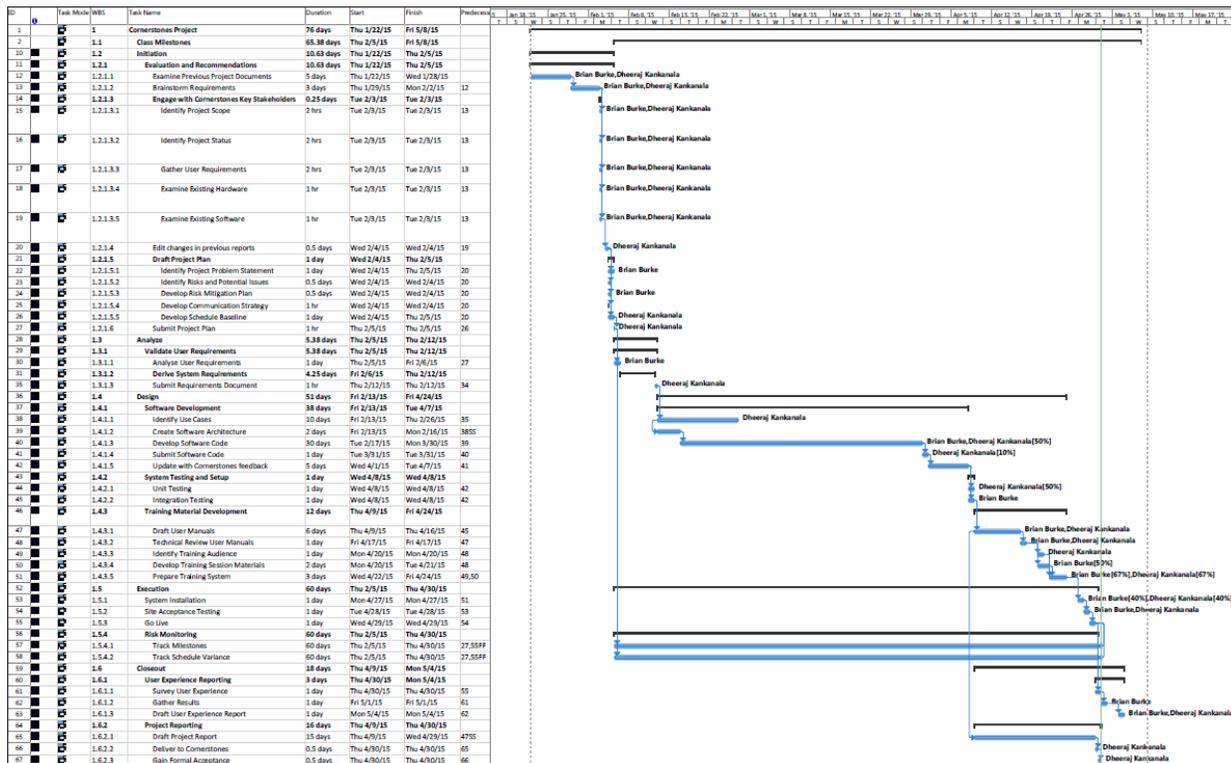


Figure 4: Work Breakdown Structure

3.2. Milestones

The GMU spring team (CUDIP) developed two sets of milestones for this project. The first set of

milestones were class deliverables such as presentations, documents, status reports, meetings with the professor, and the final project presentation. The second set of milestones were directly related to the development of the final product for Cornerstones. These milestones included major deliverables to our customer, such as a project plan, requirements document, design document, integration and test goals, etc. These milestones closely followed our major phases of the systems engineering process. The milestones are listed in the Project Plan Document.

3.3. Meeting and Status Reporting

Throughout the semester, the GMU spring team (CUDIP) utilized four types of scheduled meetings to communicate with each other, our customer, and the professor.

Communication Type	Description	Frequency	Format	Participants
Team Meeting	Meeting to review action register and status	Weekly (Monday), As needed	In Person Email/Phone	GMU Team
Project Review	Present metrics and status to sponsor	Bi-weekly (Tuesday) As Needed	In Person Email/ Phone	GMU Team & Stakeholders
Project Gate Review	Present closeout of project phases and kick off next phase	As Needed	In Person/ Tele conference	GMU Team, Professor & Stakeholders
Technical Design Review	Review of any technical designs or work associated with project	As Needed	In person Tele conference	GMU Team & Professor

3.4. Roles and Responsibilities

The roles and responsibilities of the GMU spring Team members (CUDIP) are captured in the Project Plan. In addition, the Integrated Master Plan (IMS) and Work Breakdown Structure (WBS) show the assigned team member for each task.

4. Analysis

In this phase, the GMU Spring Team (CUDIP) reviewed all the documents (Requirements, Use Cases, Architecture, Proposed Design and etc.) provided by the previous project team (GMU Fall Team (CUDDP)) and analyzed the existing software and hardware on site.

4.1. Requirement Analysis

The GMU Spring team (CUDIP) analyzed all the requirements provided by the previous project team. The GMU spring team (CUDIP) met Cornerstones (Project sponsor) to ensure that all the requirements of the project are still valid and include any additional requirements that have not been captured by the previous team.

The following are the requirements which are added/ dropped after meeting Cornerstones (project sponsor).

ID	Requirement	Action	Req. Type
CUD-007	The database shall store the "Email Address" of the Client.	Dropped	Data
CUD-101	The database shall allow Cornerstones administrator to add staff to the database	Added	Data
CUD-102	The database shall allow Cornerstones administrator to delete staff from the database	Added	Data
CUD-103	The database shall generate WebR Fiscal year report.	Added	Reporting
CUD-104	The database shall generate Cornerstones Output Report.	Added	Reporting
CUD-104	The database shall generate client data between the time periods requested for.	Added	Reporting
CUD-105	The database shall allow Cornerstones staff to record service provided to the client.	Added	User Interface
CUD-106	The database shall allow Cornerstones staff to refer client to other services provided by Cornerstones.	Added	User Interface
CUD-107	The database shall allow Cornerstones staff to delete	Added	User

4.2. Use Case

After analyzing the user requirements, the GMU Spring team (CUDIP) developed a generic use case diagram to capture all the major activities performed between the proposed system (CUDIP App) and end user. The following diagram represents the users of the CUDIP application and the main functions that will be executed by the end users.

The end users of the CUDIP application are the Cornerstones Staff, Administrator and Maintenance personnel.

Cornerstones Staff will be able to add new client details into the database, update existing client details in the database, delete client details from the database, record services provided to the client and refer client to other programs.

Cornerstones administrator will be able to perform all activities as the staff and also will be able to add staff to the database, delete staff from the database, generate WebR report (County specific & Cornerstones specific)

Cornerstones Maintenance personnel will be able to fix the bugs.

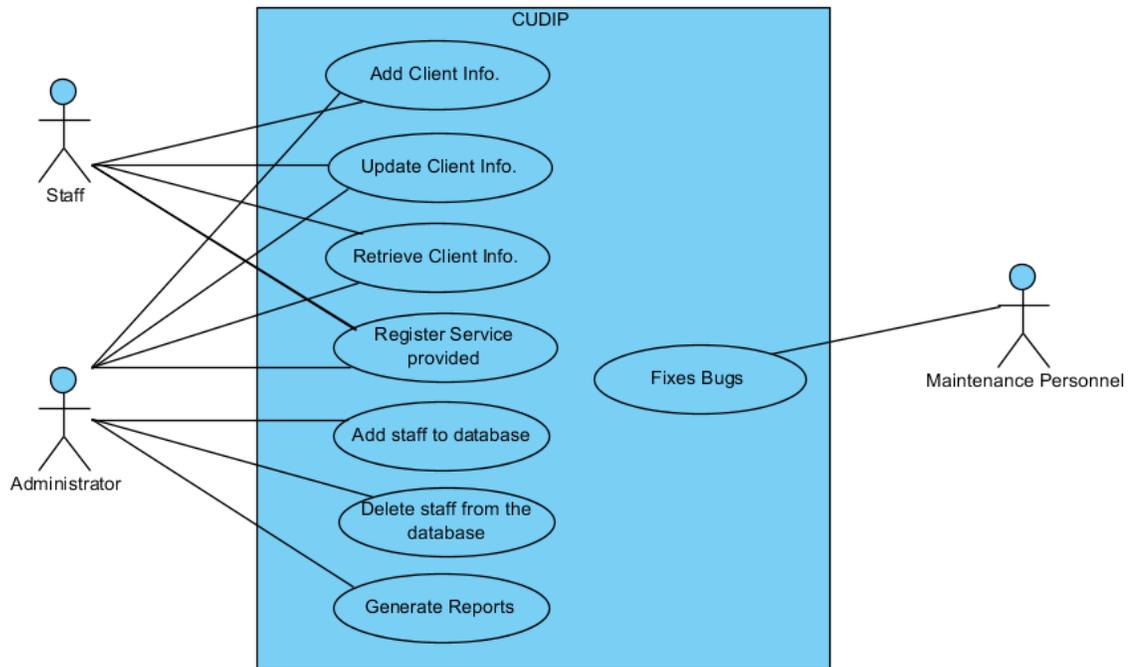


Figure 5: Use Case Diagram

5. **Design**

The GMU spring team (CUDIP) analyzed the system architecture, Use Cases and developed Sequence diagrams. This will help capture the system requirements and develop detailed design of the entry forms.

5.1. **Sequence Diagrams**

The following are the Sequence diagrams which represents the Operational Phase Scenarios that helps to design the front end electronic forms.

5.1.1. **Entering data for new applicant into database (Add New Household)**

The following Sequence diagram represents the events that occur in entering new client's information into the database. attends the service provided by Cornerstones at one of the service locations, Cornerstones staff attends the client and requests the size of the Household, generic household questions like address, total household income, language etc., and head of household personal information like First Name, Last Name, Gender, Race and etc. Staff enters all the

information provided by the client and submits the form. CUDIP application generates client ID and saves the information in the server. It then displays 'Add Household Member' page which triggers Staff to enter additional household information and to submit the form. CUDIP application saves the information and provides feedback to the staff and allows staff to choose to add another new household or return to main menu.

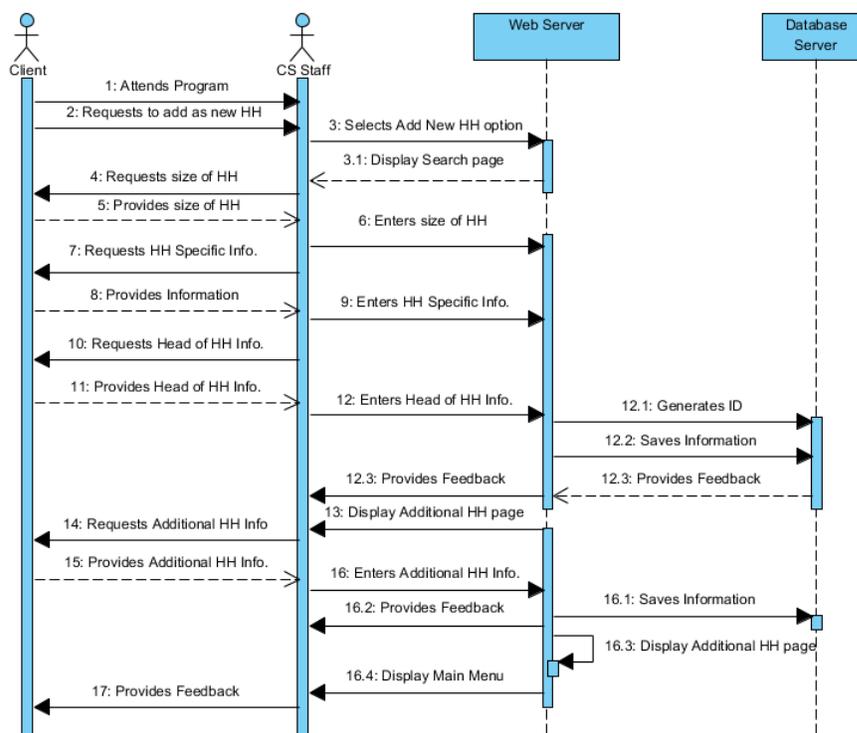


Figure 6: Add New Household (Sequence Diagram)

5.1.2. Staff providing Food Pantry Service to existing client

The following sequence diagram represents the events that occur in recording the food pantry service provided to the client by Cornerstones staff into the database.

Client attends the service provided by Cornerstones at food pantry location (ASAPP), Cornerstones staff attends the client and requests the last name of head of Household or date of birth of the head of Household in order to narrow down the search list of client's record. Cornerstones staff enters the name and submits the form. Server provides the list of records which matches the information provided by the staff. Staff identifies the appropriate client's record, confirms with the client and selects the record. CUDIP application displays the 'Add Service Record' page.

Cornerstones staff selects the service type, location of the service provided, staff name and submits the form. CUDIP application saves the record in server and displays the feedback to the Cornerstones staff. Cornerstones staff provides service to the client. CUDIP application displays 'Add another service record' option and 'Back to main menu' option and allows Cornerstones staff to choose one from the option. CUDIP application displays the appropriate page.

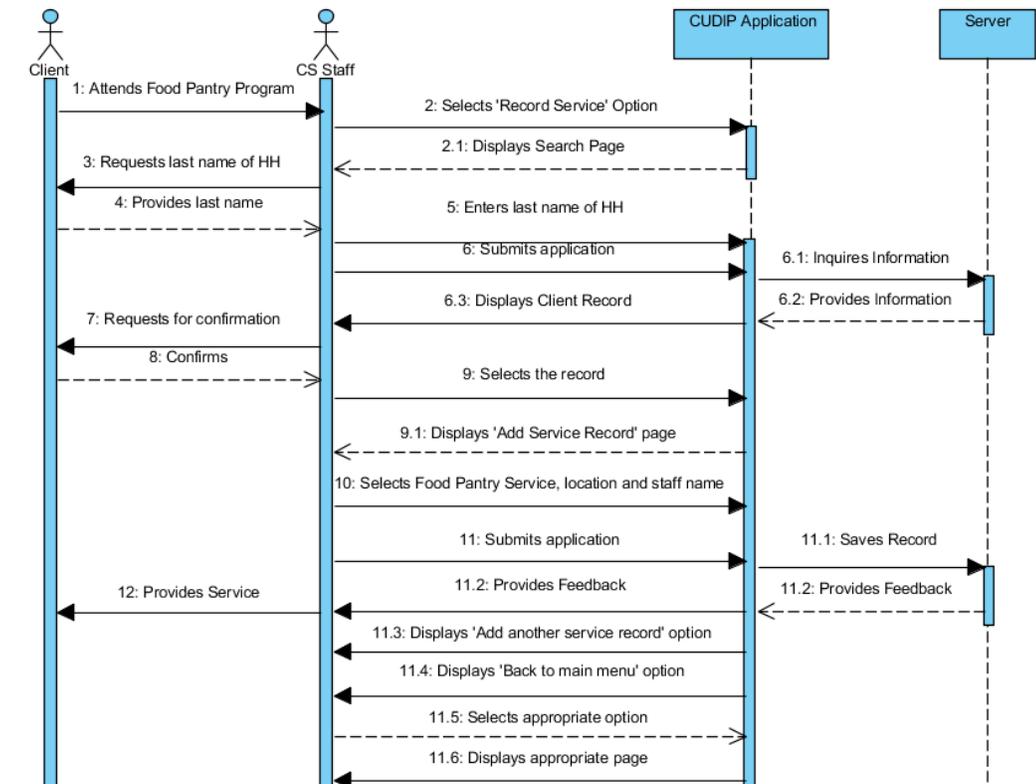


Figure 7: Food Pantry Service to Client (Sequence Diagram)

5.1.3. Client attends service

The following Sequence diagram represents the events that occur in recording the service provided to the client by Cornerstones staff into the database.

Client attends the service provided by Cornerstones at one of the Cornerstones location, Cornerstones staff attends the client and requests the last name of head of Household or date of birth of the head of Household in order to narrow down the search list of client's record. Cornerstones staff enters the last name and submits the form. Application provides the list of records which matches the information provided by the staff. Staff identifies the appropriate client's record, confirms with the client and selects the record. CUDIP application displays the 'Add

Service Record' page. Cornerstone's staff inquires the service needed by the client and selects the service type, location of the service provided, staff name and submits the form. CUDIP application saves the record in server and displays the feedback to the Cornerstones staff. Cornerstones staff provides service to the client. CUDIP application displays 'Add another service record' option and 'Back to main menu' option and allows Cornerstones staff to choose one from the option. CUDIP application displays the appropriate page.

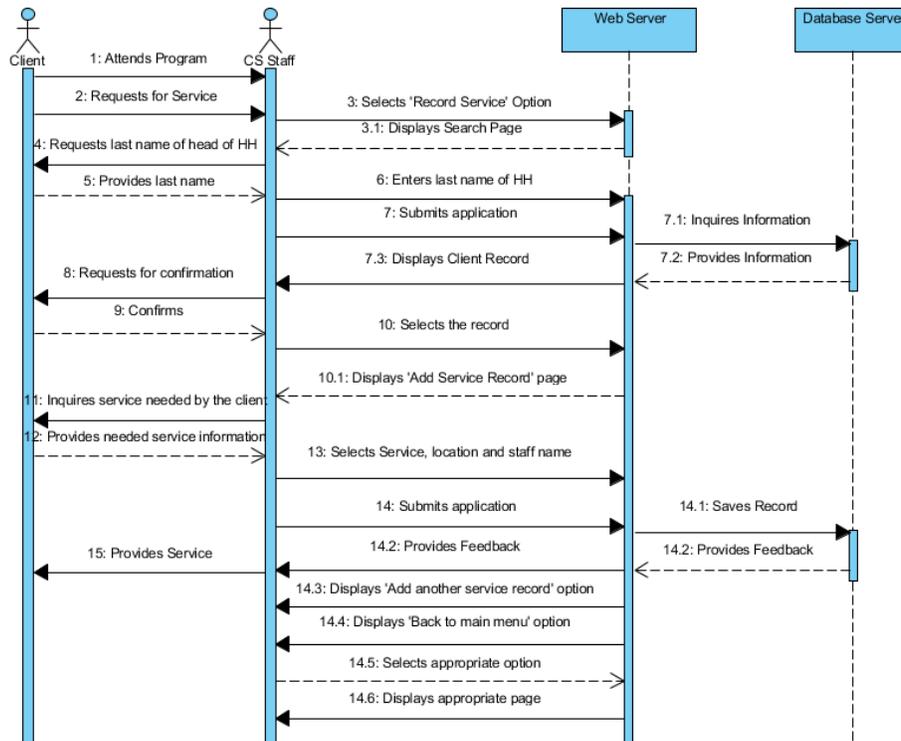


Figure 8: Client Attends Service (Sequence Diagram)

5.1.4. Household member moves to another Household

The following Sequence diagram represents the events that occur when moving a household member to a different household.

Client attends the service provided by Cornerstones at one of the Cornerstones location and requests to move one of the household members to a different household. Cornerstones staff selects the "Household Report" option and requests the last name of head of Household or date of birth of the head of household in order to narrow down the search list of client's record. Cornerstones staff enters the last name and submits the form. Web server provides the list of

records which matches the information provided by the staff. Staff identifies the appropriate client's record, confirms with the client and selects the record. CUDIP application displays the Household Report and allows Cornerstones staff to choose one of the Household members to be moved. Cornerstones staff requests the client to name the household member who has to be moved to a different household. Client provides that information. Staff then selects the name of the household member to be moved to different household. CUDIP application displays search page and allows staff to enter last name of the head of the new household (destination household) to whom the household is to be moved.

Staff enters the last name and submits the electronic form. CUDIP application provides the list of records which matches the information provided by the staff. Staff identifies the appropriate client's record, confirms with the client and selects the record. CUDIP application moves the household member, provides feedback to the staff and allows Staff to choose "Return to Original Report", "Go to New Household Report" or "Return to Main Menu" option. Cornerstones Staff provides feedback to the client and selects appropriate option. CUDIP application displays appropriate page.

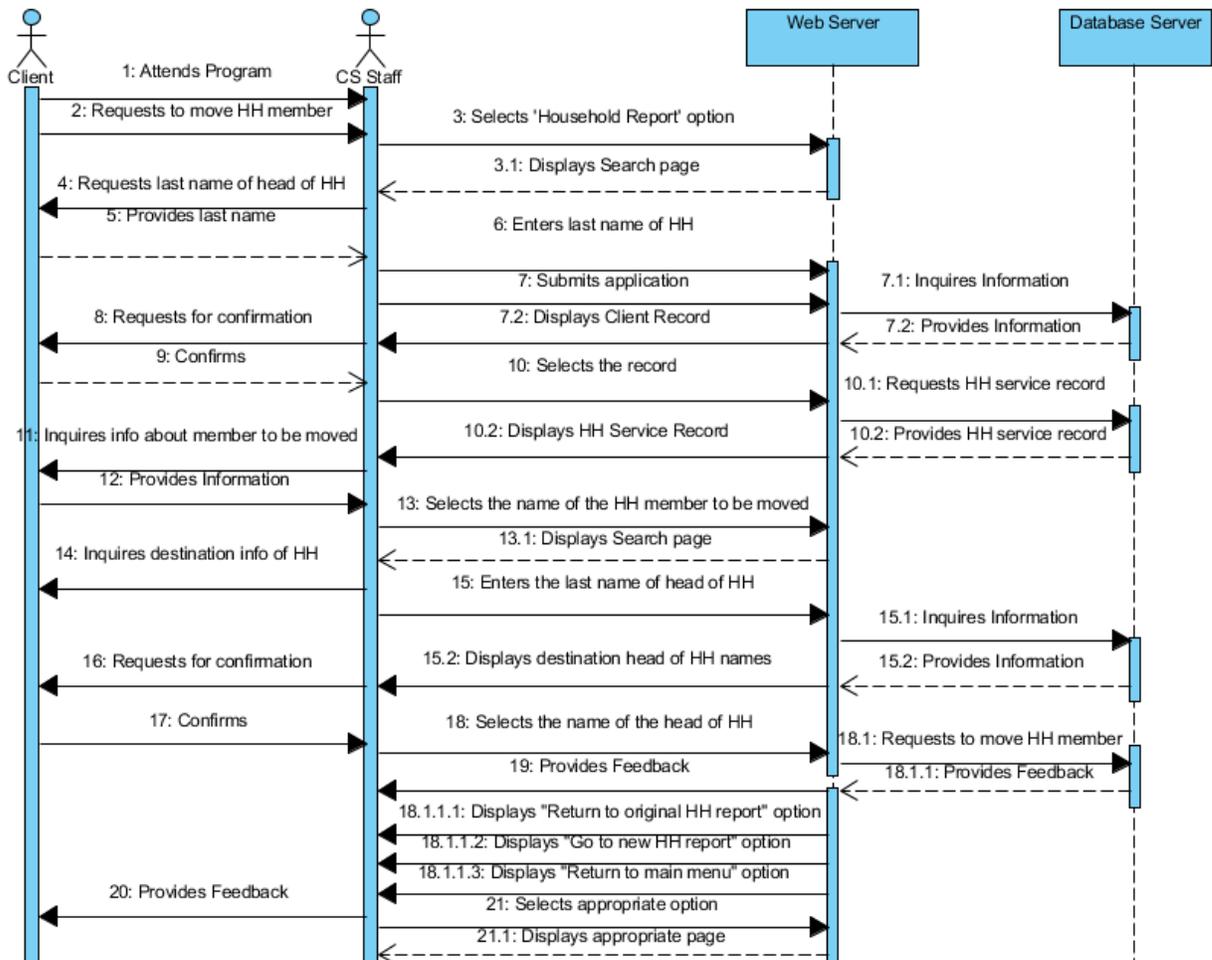


Figure 9: Household member moves to another Household (Sequence Diagram)

5.1.5. Client moves from member of a household to his/her own household as a head

The following Sequence diagram represents the events that occur when moving member of a Household to a new head of Household.

Client attends the service provided by Cornerstones at one of the Cornerstones location and requests to move one of the Household member to his/her own household (New head of Household). Cornerstones staff selects the "Household Report" option and requests the last name of head of Household or date of birth of the head of Household in order to narrow down the search list of client's record. Client provides the information. Cornerstones staff enters the last name and submits the form. CUDIP application provides the list of records which matches the information provided by the staff. Staff identifies the appropriate client's record, confirms with the client and selects the record. CUDIP application displays the Household Report and allows

Cornerstones staff to choose one of the Household members to be moved. Cornerstones staff requests the client to name the Household member who has to be moved as a New Head of Household. Client provides the information. Staff selects the name of the household member. CUDIP application displays "Add New Household" page and allows Cornerstones staff to enter Household specific information such as address, annual income and etc. Cornerstones staff inquires the client about the household specific information. Client provides the information. Cornerstones Staff enters information and submits the electronic form. CUDIP application saves the information and provides feedback to the staff and allows Staff to choose "Return to Original Report", "Go to New Household Report" or "Return to Main Menu" option. Cornerstones Staff provides feedback to the client and selects appropriate option. CUDIP application displays appropriate page.

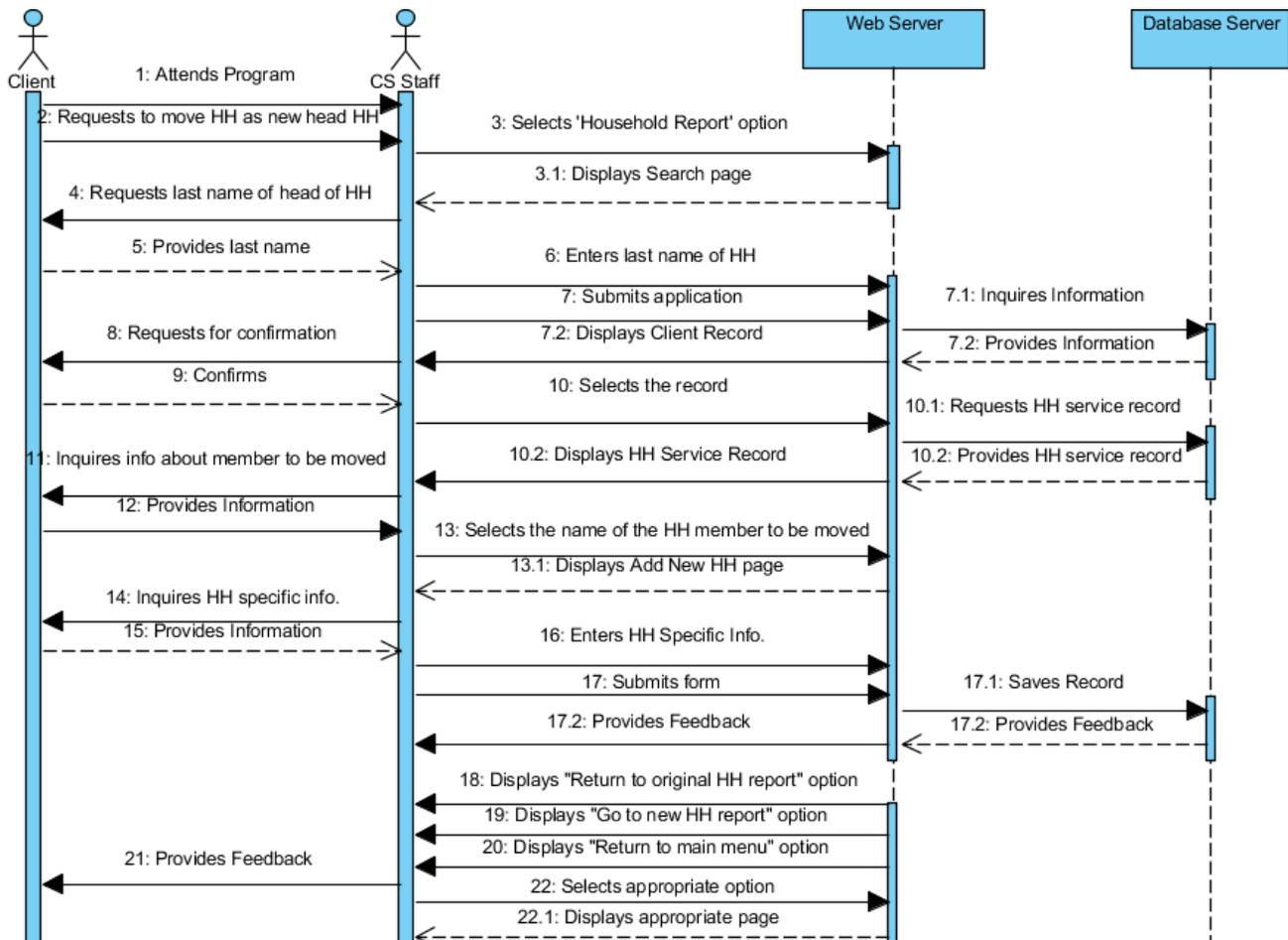


Figure 10: Household member moves as head of Household (Sequence Diagram)

5.1.6. **Update (Edit) existing client information**

The following Sequence diagram represents the events that occur when Cornerstones staff updating the existing client record by editing the previously entered information.

Client attends the service provided by Cornerstones at one of the Cornerstones location and requests to update personal information, Cornerstones staff attends the client and requests the last name of head of Household or date of birth of the head of Household in order to narrow down the search list of client's record. Cornerstones staff enters the last name and submits the form. Server provides the list of records which matches the information provided by the staff. Staff identifies the appropriate client's record, confirms with the client and selects the record. CUDIP application displays the 'Update Household Information' page. Cornerstones staff inquires the details to be updated (Household specific information such as Income, Address, etc. and Household member specific information such as Marital status, Last Name etc.), enters the provided information and submits the electronic form. CUDIP application saves the record in server and displays the feedback to the Cornerstones staff. Cornerstones staff provides feedback to the client. CUDIP application displays 'Update another Household record' option and 'Back to main menu' option and allows Cornerstones staff to choose one from the option. CUDIP application displays the appropriate page.

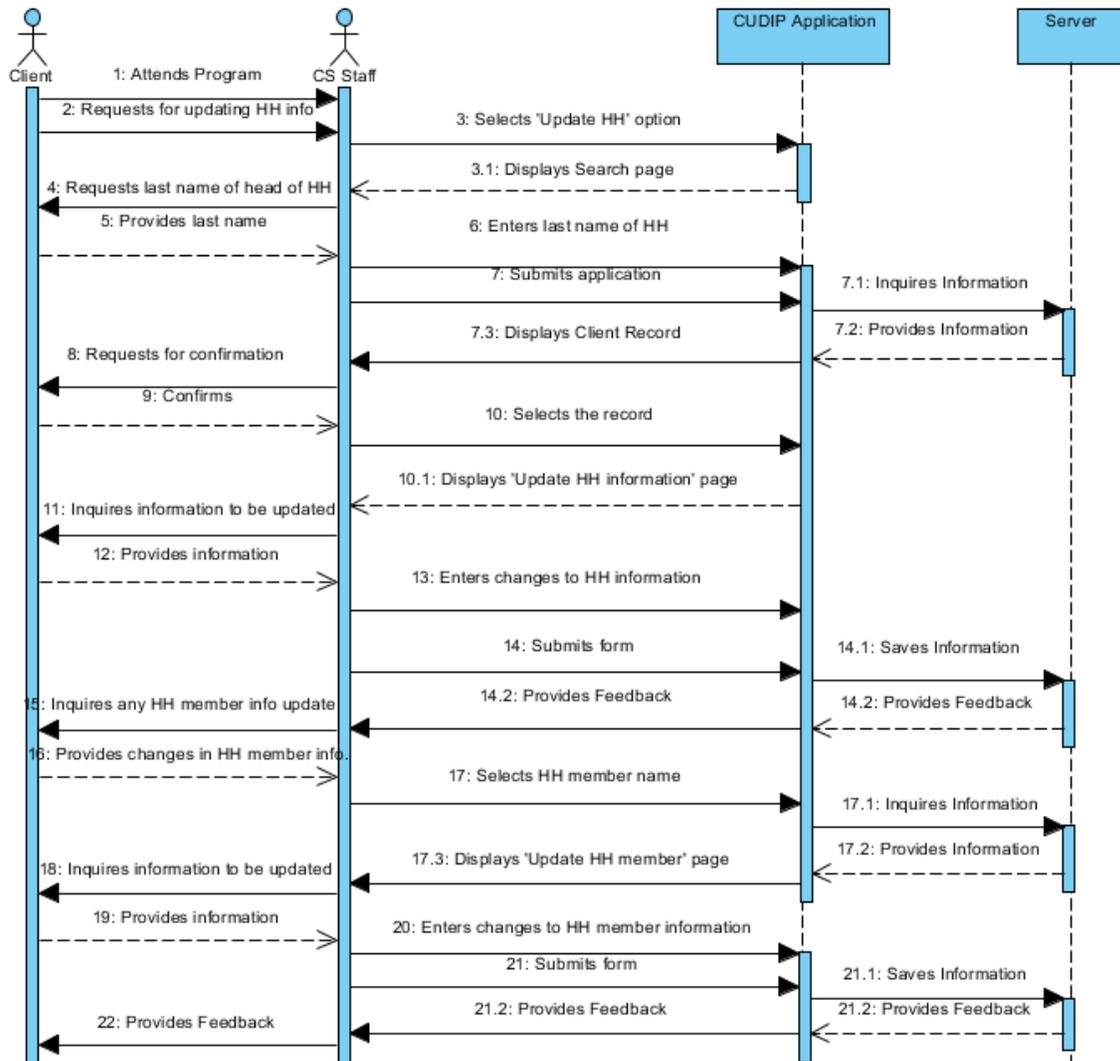


Figure 11: Update Household Information (Sequence Diagram)

5.1.7. Add additional Household member to the existing client information

The following Sequence diagram represents the events that occur when Cornerstones staff adds an additional Household to the existing client record.

Client attends to one of the Cornerstones location and requests to add an additional household member (New member), Cornerstones staff requests the last name of head of Household or date of birth of the head of Household in order to narrow down the search list of client's record. Cornerstones staff enters the last name and submits the form. Server provides the list of records which matches the information provided by the staff. Staff identifies the appropriate client's

record, confirms with the client and selects the record. CUDIP application displays the 'Update Household Information' page. Cornerstones staff inquires the Household member specific information such as Last Name, Marital status, etc.), enters the information and submits the electronic form. CUDIP application saves the record in the server and displays the feedback to the Cornerstones staff. Cornerstones staff provides feedback to the client. CUDIP application displays 'Add another Household Information' option and 'Back to main menu' option and allows Cornerstones staff to choose one from the option. CUDIP application displays the appropriate page selected by the Cornerstones staff.

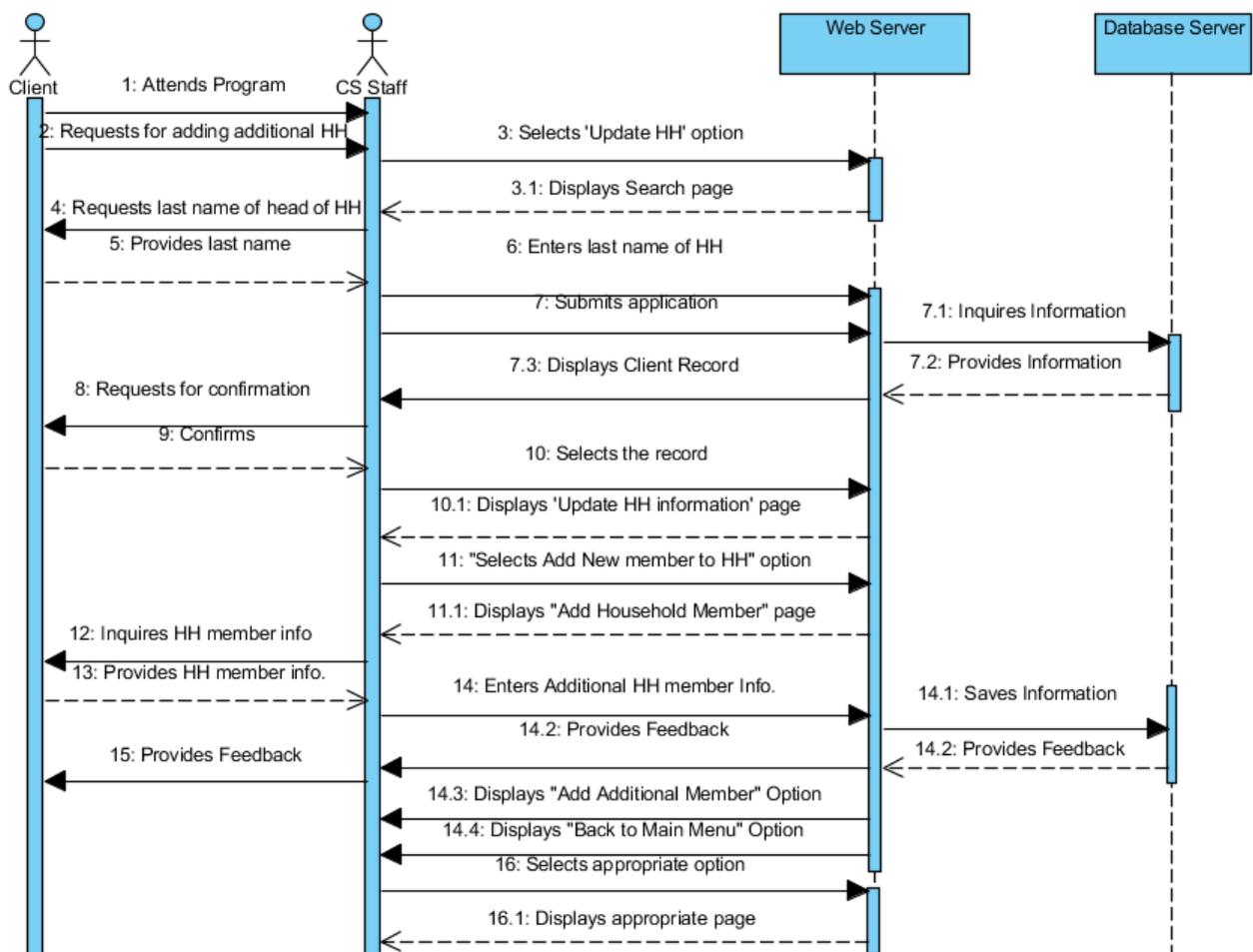


Figure 12: Add additional Household member to existing Household

5.1.8. Retrieve Household service history (Household Report)

The following Sequence diagram represents the events that occur in retrieving the information about services provided to the Household by Cornerstones previously.

Client attends the service provided by Cornerstones at one of the Cornerstones location. Cornerstones staff attends the client and requests the last name of head of Household or date of birth of the head of Household in order to narrow down the search list of client's record. Cornerstones staff enters the last name and submits the form. Web server provides the list of records which matches the information provided by the staff. Staff identifies the appropriate client's record, confirms with the client and selects the record. CUDIP application displays the Household Report and allows Cornerstones staff to choose "Return to Main Menu" or "Get report on a different household" option. CUDIP application displays the appropriate page selected by the client.

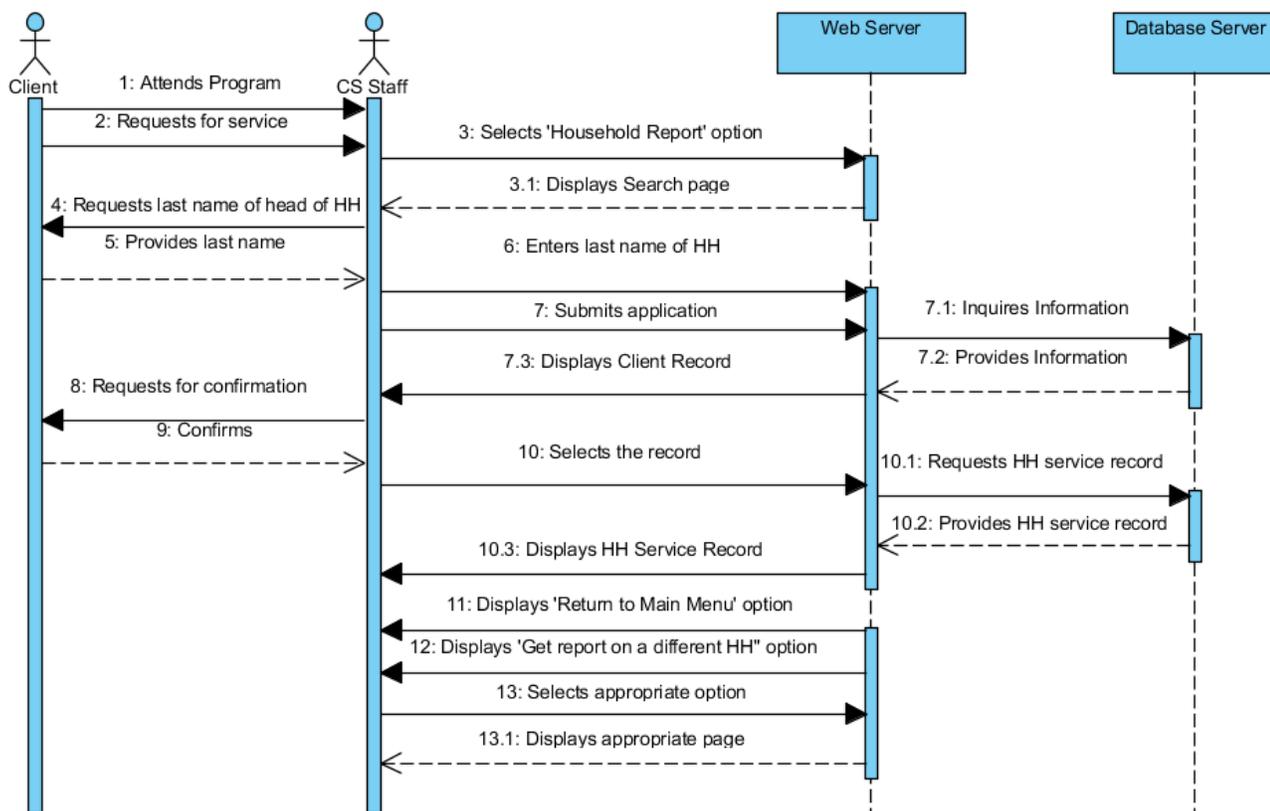


Figure 13: Retrieve Household service history (Sequence Diagram)

5.2. System Architecture

The GMU Spring Team used the same architecture proposed by the GMU Fall Team which consists of XAMPP Package that deals with the Web Server, Database Server and Database.

The end user (Cornerstones Staff/ Administrator) interacts with the system through Web Browser,

which connects to the Web Server through Cornerstones VPN Network. The Web Server in turn interacts with the Database Server to save/ retrieve the information.

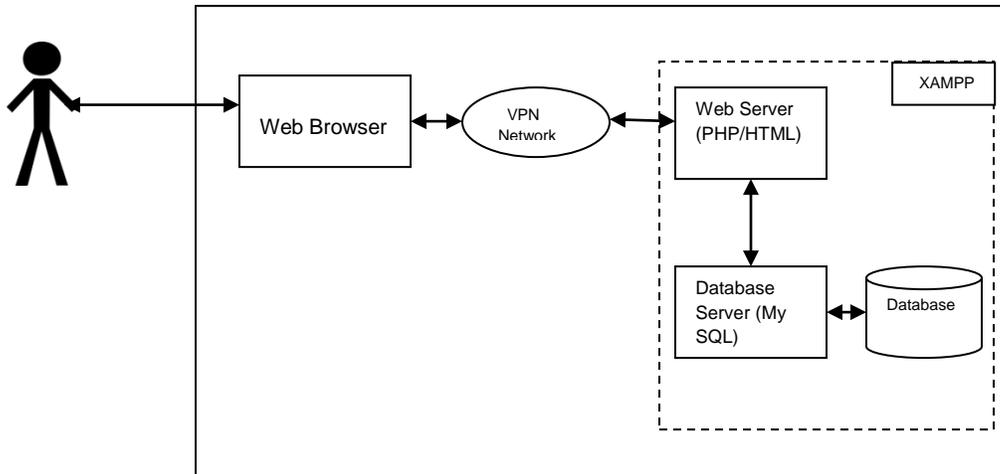


Figure 14 : System Architecture

6. Development

The GMU spring team created the scripts for the database interface. Over 5,000 lines of code and 42 separate files of code were required to fully build both the front-end, user-facing web pages and the back-end database interface. The development efforts comprised an extremely time-consuming set of tasks, but the effort our team put into the design paid off, as very little re-work was required.

Due to the overwhelming amount of effort required to create the application, our team optimized the code for simplicity and reliability. Throughout the development phase, we followed the write-once-use-many philosophy, which sought to reuse code and avoid duplication wherever possible. This achieved two objectives: reducing the amount of original code written, and reducing complexity so that changes and bug fixes could be isolated to the minimum amount of code.

6.1. Front End Development

The front end of the site was built using a combination of HyperText Transfer Protocol (HTTP), PHP scripts, and JavaScript code. The HTTP formed the basic framework of the user interface, such as menu items, links to follow-on pages, the input fields and their labels.

PHP is a server-side scripting language that allows dynamic, adaptive page generation. The PHP allows the user-interface to be adaptive. For example, it allows the menu selection for “Marital Status” to change without re-coding the application. The users only need to modify the list of possible options for marital status, and the application will automatically include the revised list of options. This case actually occurred toward the end of the development phase when the customer changed their requested list of marital status options. Instead of ‘married’ and ‘not married,’ the customer required additional options, such as ‘widowed,’ ‘divorced,’ etc. Instead of needing to be re-coded in several places in the application, the change only required modification to a single list of options and the update cascaded to the rest of the application. The same adaptive behavior was built for all similar data fields, such as race, ethnicity, language, and staff members. Without this essential element of design, we would not have had time to re-engineer and test the code with the changed requirements.

JavaScript was used on the client-side of the application for data integrity. The spring GMU team created scripts to prevent users from entering spurious or incorrect data into the database. For example, blank entries were prohibited for all data fields except optional fields such as middle name. Further, rules were enforced for items like zip codes that must conform to a certain pattern like a five-digit number with no letters or other characters. Household income fields work similarly. If entries were entered incorrectly, the database would either reject the entry with an error, or perhaps worse, the database would accept the spurious entry and corrupt the data.

Errors detected by our script created an “alert” for the user which indicated which field caused the error and gave a gentle reminder about the correct format. Any form with existing errors is prevented from being submitted until all errors are corrected.

6.2. Back End Development

The back end of the application was developed in parallel with the front end for testing and verification purposes. This allowed us to ‘test as we go’ and detect potential problems much earlier in the development phase.

PHP script combined with MySQL queries comprises the back end of the application. PHP has a built-in interface to MySQL databases and allows for direct queries. “Queries” is somewhat of a misnomer—any instruction sent to a database is known as a query. This includes reading data, inserting data, deleting data, and any other operation on the database.

Once the front-end web forms are submitted, they trigger an associated back-end script. That script accepts the information sent and makes changes to the database as appropriate. Alternatively, if the application is generating a report, the back-end script will apply the appropriate filters, retrieve the appropriate information, combine it as needed, and then generate the HTML output for the user’s browser.

A significant degree of complex math and logic was required in the back-end code to create the customized reports needed by Cornerstones for monthly reports to the County. For example, the “WEBR” reports required knowledge of how many new clients were served each month. That is, how many clients were served in each month who were not served in a previous month of the same fiscal year. For thousands of clients and many thousands of services provided, this proved to be a laborious and slow task even for a fast computer. We optimized the code in a clever way to complete the calculations very quickly. We found the count of distinct clients served that fiscal year through month m and through month $m-1$. The difference between those two values is the count of *new* clients served in month m .

6.3. Tools Used

Our choice of application architecture HTML/PHP/MySQL allowed wide flexibility. All of the code and scripts developed for this application are human readable, open plain text files. Any text editor would suffice for development.

We chose the Eclipse Integrated Development Environment (IDE) for development. The Eclipse IDE allows advanced features such as automatic error detection and color-coding of script components, along with other useful features. The Eclipse IDE is not required for follow-on development of the code.

The spring GMU team created a test server for the development phase. This server used the same architecture of the customer's target server: Apache web server, PHP, and MySQL database on a Windows 7 personal computer. To fully test the system, we imported a year's worth (Fiscal Year 2015) of actual Cornerstones data, stripped of personally identifiable information, into the database. This allowed us to test the more complex calculations required for their county reporting requirements.

6.4. Work Products

The work products of this effort include the 42 script files. When added to Cornerstones' file server folder, they comprise the application's entirety.

A fully operational test version of the application is available to demonstrate its capabilities. It is accessible at the time of this report at http://73.132.69.21/cornerstones/main_menu.html.

Screenshots detailing the front end of the CUDIP application activities, consisting of the web pages are included in appendix to this report.

7. Testing

This phase consists of testing the web application and ensuring that the web application met all the design requirements. This phase is divided into three sub phases namely Unit Testing, Integration Testing and System Testing.

7.1. Unit Testing

Unit testing is performed following the completion of the design of each of the electronic forms. This is to ensure the functionality of each of the electronic forms is as per the customer requirements and are fit for use. Unit testing verifies that the electronic forms allow data to properly flow into and out of the database and that the underlying data structures are proper and sound for storing their intended data.

Testing of the Electronic Forms: The electronic forms should allow the end user to submit it only after filling all the mandatory entry fields. Also, the electronic form should not allow the end user to

submit the form if there is inappropriate entries in the fields listed on the page like entering alphabets in Zip code and special characters in the country of origin. The GMU Spring Team performed simple checking of all the entry fields in each of the electronic forms to ensure that the electronic form is working as per design. The following are the step wise details of the tests.

7.1.1. Add New Household

Test Steps	Result
Submit Form	FAIL: Invalid input for First Name
Enter First Name	FAIL: Invalid input for Last Name
Enter Last Name	FAIL: Invalid input for Date of Birth
Enter Date of Birth	FAIL: Invalid input for Country of Origin
Enter Country of Origin	FAIL: Invalid input for Street Address 1
Enter Street Address 1	FAIL: Invalid input for City
Enter Zip Code	FAIL: Invalid input for Household Income
Enter Household Income & enter special characters (' , @, \$ etc.) in First Name field.	Fail: Invalid input for First Name
Remove special characters in First Name and enter special characters in Last Name	Fail: Invalid input for Last Name
Remove special characters in Last Name & Replace Date of Birth with alphabets.	Fail: Invalid input for Date of Birth
Enter correct Date of Birth and fill alphabets in zip code	Fail: Invalid input for Zip Code
Delete alphabets in zip code and enter 4 numbers.	Fail: Invalid input for Zip Code
Enter 5 numbers in zip code and replace alphabets in Household Income.	Fail: Invalid input for Household Income

Replace numerical characters in Household Income	SUCCESS
--	---------

7.1.2. Record Service

Test Steps	Result
Submit Form	FAIL: Invalid input for CS Location
Enter CS Location & remove the Date of Service generated by the system	FAIL: Invalid input for Date of Service
Enter alphabets in Date of Service	FAIL: Invalid input for Date of Service
Replace alphabets in Date of Service with special characters.	FAIL: Invalid input for Date of Service
Replace special characters in Date of Service with wrong date format i.e. DD/MM/YYYY instead of YYYY/MM/DD	FAIL: Invalid input for Date of Service
Enter correct date format in Date of Service field & Submit	SUCCESS

7.1.3. Update (Edit) Household Information

Test Steps	Result
Remove Street Address 1 & Submit Form	FAIL: Invalid input for Street Number 1
Enter Street Address 1 and Remove City	FAIL: Invalid input for City
Enter City & remove zip code	FAIL: Invalid input for Zip Code
Enter alphabets in zip code	FAIL: Invalid input for Zip Code
Replace alphabets with special characters in Zip Code	FAIL: Invalid input for Zip Code

Enter correct zip code & remove Household income	FAIL: Invalid input for Household Income
Enter alphabets in Household Income.	FAIL: Invalid input for Household Income
Replace alphabets with special characters in Household Income.	FAIL: Invalid input for Household Income
Enter numerical characters in Household Income & Submit Form	SUCCESS

7.1.4. Update (Edit) Household Member Information

Test Steps	Result
Remove First Name & Submit Form	FAIL: Invalid input for First Name
Enter First Name & Remove Last Name	FAIL: Invalid input for Last Name
Enter Last Name & Remove Date of Birth	FAIL: Invalid input for Date of Birth
Enter Date of Birth & Remove Country of Origin	FAIL: Invalid input for Country of Origin
Enter Country of Origin & enter special characters (' , @ , \$ etc.) in First Name field.	FAIL: Invalid input for First Name
Remove special characters in First Name and enter special characters in Last Name	FAIL: Invalid input for Last Name
Remove special characters in Last Name & Replace Date of Birth with alphabets.	FAIL: Invalid input for Date of Birth

Replace alphabets with special characters in Date of Birth field	FAIL: Invalid input for Date of Birth
Replace special characters in Date of Birth with wrong date format i.e. DD/MM/YYYY instead of YYYY/MM/DD	FAIL: Invalid input for Date of Birth
Enter correct date format in Date of Birth field & replace alphabets with special characters in country of origin.	FAIL: Invalid input for Country of Origin
Replace alphanumeric characters in Country of Origin & Submit	SUCCESS

7.2. Integration Testing

Integration testing is done by combining and testing multiple electronic forms together. It is a systematic approach to build the complete software structure specified in the design from unit tested modules. It assures that the electronic forms are operating properly when they are combined together. The aim of integration testing is to discover errors in the interface between the electronic forms. The interface errors and the communication between different electronic forms are also unearthed in this testing.

7.3. System Testing

System testing is most often the final test to verify that the system to be delivered meets the specification and its purpose. In this phase, the behavior of whole system is tested as defined by the scope of the project. It includes tests based on use cases where each operational phase scenario is executed and the accuracy of each of the phases is verified against the user inputs. If the user entries match with the final result of the operational phase scenario execution, then the system testing is said to be successful.

7.4. Usability Test

The GMU Spring Team conducted an on-site usability test at Cornerstones Headquarters. The goal of the usability test is to better understand how end users interact with the application and to improve the application based on the results. The primary purpose of a usability test is to improve the application design being delivered to them.

7.4.1. **Participants**

There were total of seven participants who were part of the usability test. All of the seven participants were employees of Cornerstones and the primary users of the application.

Of the 7 employees, there were three female and four were male participants and all of them have computer experience.

7.4.2. **Tasks**

All the participants attempted completion of the following tasks. (Refer to appendix for stepwise details of the following tasks).

7.4.2.1. Add New Household information with a total of 3 family members (Includes head of household).

7.4.2.1.1. Add household specific information and head of household specific information.

7.4.2.1.2. Add first household member information (First family member).

7.4.2.1.3. Add second household member information (Second family member).

7.4.2.2. Add additional household member to the existing household (Third family member).

7.4.2.3. Update existing household information.

7.4.2.4. Record Service provided to the client.

7.4.2.5. Retrieve household service Report.

7.4.3. **Results**

All participants successfully completed all the 5 tasks. Below are the descriptions of each task and time taken to complete the same; errors committed and finally the feedbacks received for each task.

7.4.3.1. **Add New Household (Task 1):**

This task required participants to add a new household with a total household size of 3 members (clients) into the database and return back to main menu. The overall mean time to complete

the task was **458** seconds. It ranged from 332 seconds to 670 seconds with most times less than 400 seconds. The independent timings of staff entering Head of Household information into the system, adding additional family member information and adding the second member information can be seen in the table below.

7.4.3.1.1. **Errors:**

All the seven participants completed the task without making any critical errors. However,

1. Two out of seven participants committed non-critical error by entering wrong date format in the Date of Birth field. Instead of entering YYYY-MM-DD, they entered MM-DD-YYYY.
2. Three out of seven participants entered wrong format in the Household Income field. Instead of entering only numbers in the field, they entered comma (,) in between numbers. (Ex: 10,000 instead of 10000).

7.4.3.1.2. **Feedback from the Participant:**

1. All the seven participants requested to change the "Date of Birth" field format (YYYY-MM-DD) to universal formats (MM-DD-YYYY) or specify the format adjacent to Field name (i.e. Date of Birth (YYYY-MM-DD)) instead of placing it in the entry field itself, where they have to delete the default instruction in the entry field and enter the correct date format with numbers.
2. Two out of seven participants requested to add "Relationship" field (i.e. Wife, child, parent, grandparent and etc.) to capture the relationship between the Head of Household and Household member.

7.4.3.2. **Add an additional member to the Existing Household (Task 2)**

This task required participants to add additional family member (Client) to the existing head of household data and return back to main menu. The mean time to complete the task was **103** seconds. It ranged from 62 seconds to 180 seconds with most times less than 100 seconds.

7.4.3.2.1. **Errors**

All the seven participants completed the task without committing any errors.

7.4.3.2.2. **Feedback from the Participant**

No feedbacks received.

7.4.3.3. **Update Existing Household Information (Task 3)**

This task required participants to update (edit) existing household personal information and return back to main menu. The mean time to complete the task was **61** seconds. It ranged from 30 to 162 seconds with most times less than 50 seconds.

7.4.3.3.1. **Errors**

All the seven participants completed the task without committing any errors.

7.4.3.3.2. **Feedback from the Participant**

No feedbacks received.

7.4.3.4. **Record Service provided to the client (Task 4)**

This task required participants to record service provided to the client and return to main menu. The mean time to complete the task was 96 seconds. It ranged from 42 seconds to 157 seconds with most times less than 100 seconds.

7.4.3.4.1. **Errors**

All the seven participants completed the task without committing any critical errors. However, one out seven participants committed a non critical error by trying to edit the "ID No." field which is an non-editable field generated by the system.

7.4.3.4.2. **Feedback from the Participant**

No feedbacks received.

7.4.3.5. **Retrieve Household Service Report (Task 5)**

This task required participants to retrieve household service history and return to main menu. The mean time to complete the task was 25 seconds. It ranged from 17 seconds to 47 seconds.

7.4.3.5.1. **Errors**

All the seven participants completed the task without committing any errors.

7.4.3.5.2. **Feedback from the Participant**

One out of seven participants requested to add printer friendly report format to get a print out of the whole history of the services provided to the household.

7.4.3.6. **Time taken to complete the tasks**

Tasks/ Time (sec) per participant	S1	S2	S3	S4	S5	S6	S7	Average time (sec)
Task 1.1	300	234	182	355	153	240	208	238.86
Task 1.2	156	184	102	213	122	124	118	145.57
Task 1.3	52	93	48	102	85	56	77	73.29
Overall Task 1	508	511	332	670	360	420	403	457.71
Task 2	63	94	62	147	64	180	112	103.14
Task 3	40	30	45	162	57	47	46	61.00
Task 4	121	145	101	157	42	59	47	96.00
Task 5	17	27	25	47	10	22	23	24.43

Table 1 : Time on Task

7.4.4. Results of Usability Test Questionnaire

- 7.4.4.1. Five out of seven participants agreed that it is easy to navigate through the application.
- 7.4.4.2. Six out of seven participants agreed that the application is easy to use.
- 7.4.4.3. Five out of seven participants disagreed that they need external support to use the application.
- 7.4.4.4. Four out of seven participants agreed that the various tasks in the application were well integrated and the rest of them were neutral. The participants average agreement rating was 3.86 since three participants rated neutral.
- 7.4.4.5. Four out of seven participants agreed that most people would learn to use the application quickly. The participants average agreement rating was 3.86 since three participants rated neutral.
- 7.4.4.6. Five out of seven participants disagreed that the application is cumbersome to use.
- 7.4.4.7. Six out of seven participants strongly disagreed that the application is unnecessarily complex.
- 7.4.4.8. Five out of seven participants strongly agreed that the application is reliable.
- 7.4.4.9. Six out of seven participants strongly disagreed that they need to learn a lot of things before using the application.
- 7.4.4.10. Three out of seven participants agreed that it made easy for them to enter data than manually. The participants average agreement rating was 3.71 since four participants rated neutral.

	Staff 1	Staff 2	Staff 3	Staff 4	Staff 5	Staff 6	Staff 7	Avg
Response to Q1	4	3	5	4	5	3	5	4.14
Response to Q2	4	4	5	5	5	3	5	4.43
Response to Q3	4	3	5	5	5	3	4	4.14
Response to Q4	4	3	5	4	3	3	5	3.86
Response to Q5	4	3	3	5	4	3	5	3.86
Response to Q6	5	4	5	5	3	3	5	4.29
Response to Q7	5	5	5	5	5	3	5	4.71
Response to Q8	3	4	5	5	5	3	5	4.29
Response to Q9	5	3	5	5	5	4	4	4.43
Response to Q10	3	4	5	3	3	3	5	3.71

7.4.5. **Conclusion**

Most of the participants found the application is well organized, clean, reliable, very useful, easy to learn and easy to use. Having a centralized database to enter and retrieve information is key to all of the participants.

8. **Implementation**

The spring GMU team successfully installed all working files on the Cornerstones server on 28 April 2015. We tested the system and found several inconsistencies between the test server configuration and the target server configuration. The spring GMU team modified the target server configuration files to accommodate the improvements made to the database over the course of development.

An additional round of testing was completed, and discrepancies were recorded. All discrepancies were corrected and a fresh version of the files was installed on 30 April 2015.

Training for all Cornerstones staff took place on 30 April 2015. The spring GMU team conducted two hours of hands on training with the operational system directly with the staff members who will be using the system.

8.1. **Handover/ Operations**

The following tables provides the detailed instructions about the independent fields in each of the electronic form.

8.1.1. Add New Household

The following table represents each of the fields in the "Add New Household" electronic form. This electronic form allows user to enter the Household specific information such as Total No. in Household, Address, Annual Income etc and Household member specific information such as Name, Date of Birth, Gender etc.

Field	Requirement	Type
Total No. in Household	Only Numeric Characters	Mandatory
Street Address 1	Alphanumeric Characters	Mandatory
Street Address 2	Alphanumeric Characters	Optional
City	Alphanumeric Characters	Mandatory
State	2 Letter String, Defaults to VA	Mandatory
Zip Code	5 Digit Number	Mandatory
Household Income ^{*1}	Only Numeric Characters	Mandatory
Language	Dropdown Menu, Choose One	Mandatory
Household in TANF	Radio Buttons, Choose One	Mandatory
Cornerstones Location ^{*2}	Dropdown Menu, Choose One	Mandatory
Household Notes	Alphanumeric Characters	Optional
Staff Member	Dropdown Menu, Choose One	Mandatory
First Name ^{*3}	Alphanumeric Characters	Mandatory
Middle Name	Alphanumeric Characters	Optional
Last Name ^{*4}	Alphanumeric Characters	Mandatory
Date of Birth ^{*5}	Numeric Characters	Mandatory
Country of Origin	Only Alphabets	Mandatory
Gender	Radio Buttons, Choose One	Mandatory
Marital Status	Dropdown Menu, Choose One	Mandatory
Race	Dropdown Menu, Choose One	Mandatory
Ethnicity	Dropdown Menu, Choose One	Mandatory
Disabled	Radio Buttons, Choose One	Mandatory
Employed	Radio Buttons, Choose One	Mandatory

***1** Enter annual income of the client and only enter numeric characters in this field. Please do not enter comma (,) in between numbers. Ex: Enter 10000 instead of 10,000.

***2** Enter the location where the form is filled.

***3** Enter only alphanumeric characters. Please do not enter special characters such as apostrophe ('), @, \$ etc.

***4** Enter only alphanumeric characters. Please do not enter special characters such as apostrophe ('), @, \$ etc.

***5** Enter YYYY-MM-DD format. Please do not enter alphabets, MM-DD-YYYY format or future date.

8.1.2. **Add Household Member**

This electronic form allows user to enter the Household member (Additional family member) specific information such as Name, Date of Birth, Gender etc.

Field	Requirement	Type
First Name ^{*1}	Alphanumeric Characters	Mandatory
Middle Name	Alphanumeric Characters	Optional
Last Name ^{*2}	Alphanumeric Characters	Mandatory
Date of Birth ^{*3}	Numeric Characters	Mandatory
Country of Origin	Only Alphabets	Mandatory
Gender	Radio Buttons, Choose One	Mandatory
Marital Status	Dropdown Menu, Choose One	Mandatory
Race	Dropdown Menu, Choose One	Mandatory
Ethnicity	Dropdown Menu, Choose One	Mandatory
Disabled	Radio Buttons, Choose One	Mandatory
Employed	Radio Buttons, Choose One	Mandatory

***1** Enter only alphanumeric characters. Please do not enter special characters such as apostrophe ('), @, \$ etc.

***2** Enter only alphanumeric characters. Please do not enter special characters such as apostrophe ('), @, \$ etc.

***3** Enter YYYY-MM-DD format. Please do not enter alphabets, MM-DD-YYYY format or future date.

8.1.3. Update Household Information form

This electronic form allows user to update (edit) the previously entered household specific information such as Address, Annual Income, Language etc.

Field	Requirement	Type
Street Address 1	Alphanumeric Characters	Mandatory
Street Address 2	Alphanumeric Characters	Optional
City	Alphanumeric Characters	Mandatory
State	2 Letter String, Defaults to VA	Mandatory
Zip Code	5 Digit Number	Mandatory
Household Income ^{*1}	Only Numeric Characters	Mandatory
Language	Dropdown Menu, Choose One	Mandatory
Household in TANF	Radio Buttons, Choose One	Mandatory
Cornerstones Location ^{*2}	Dropdown Menu, Choose One	Mandatory
Staff Member	Dropdown Menu, Choose One	Mandatory
Household Notes	Alphanumeric Characters	Optional

***1** Enter annual income of the client and only enter numeric characters in this field. Please do not enter comma (,) in between numbers. Ex: Enter 10000 instead of 10,000.

***2** Enter the location where the form is filled (entry is made).

8.1.4. Update Household Member Information

This electronic form allows user to update (edit) the previously entered household member specific information such as Name, Date of Birth, Gender etc.

Field	Requirement	Type
First Name * ¹	Alphanumeric Characters	Mandatory
Middle Name	Alphanumeric Characters	Optional
Last Name * ²	Alphanumeric Characters	Mandatory
Date of Birth * ³	Numeric Characters	Mandatory
Country of Origin	Only Alphabets	Mandatory
Gender	Radio Buttons, Choose One	Mandatory
Marital Status	Dropdown Menu, Choose One	Mandatory
Race	Dropdown Menu, Choose One	Mandatory
Ethnicity	Dropdown Menu, Choose One	Mandatory
Disabled	Radio Buttons, Choose One	Mandatory
Employed	Radio Buttons, Choose One	Mandatory

***1** Enter only alphanumeric characters. Please do not enter special characters such as apostrophe ('), @, \$ etc.

***2** Enter only alphanumeric characters. Please do not enter special characters such as apostrophe ('), @, \$ etc.

***3** Enter YYYY-MM-DD format. Please do not enter alphabets, MM-DD-YYYY format or future date.

8.1.5. **Record Service**

This electronic form allows user to enter information about the service provided to the client. This option first takes user to the search page where it allows the user to enter the last name or Date of Birth of the head of household in order to narrow down the search list of client records. After User enters the last name of the client, CUDIP application provides a list of client records which matches the information provided by the user. After user selects the client name, CUDIP application displays the "Add Service Page" and allows user to enter the service type, location, staff name and miscellaneous notes.

Field	Requirement	Type
ID No.	Generated by system	Non-editable

First Name	Generated by system	Non-editable
Last Name	Generated by system	Non-editable
Date of Service * ¹	Numeric Characters	Mandatory
Service Type	Dropdown Menu, Choose One	Mandatory
Cornerstones Location * ²	Dropdown Menu, Choose One	Mandatory
Staff Name	Dropdown Menu, Choose One	Mandatory
Service Notes	Radio Buttons, Choose One	Optional

***1** By default CUDIP application displays the current date. If change is needed , enter the date of service in YYYY-MM-DD format. Please do not enter alphabets, MM-DD-YYYY format or future date.

***2** Enter the location where the form is filled (entry is made).

9. Customer Impact

The spring GMU team presented the final operational version of the application to Cornerstones headquarters staff and counselors on 30 May for a one-hour training session. The reception was exceptionally positive.

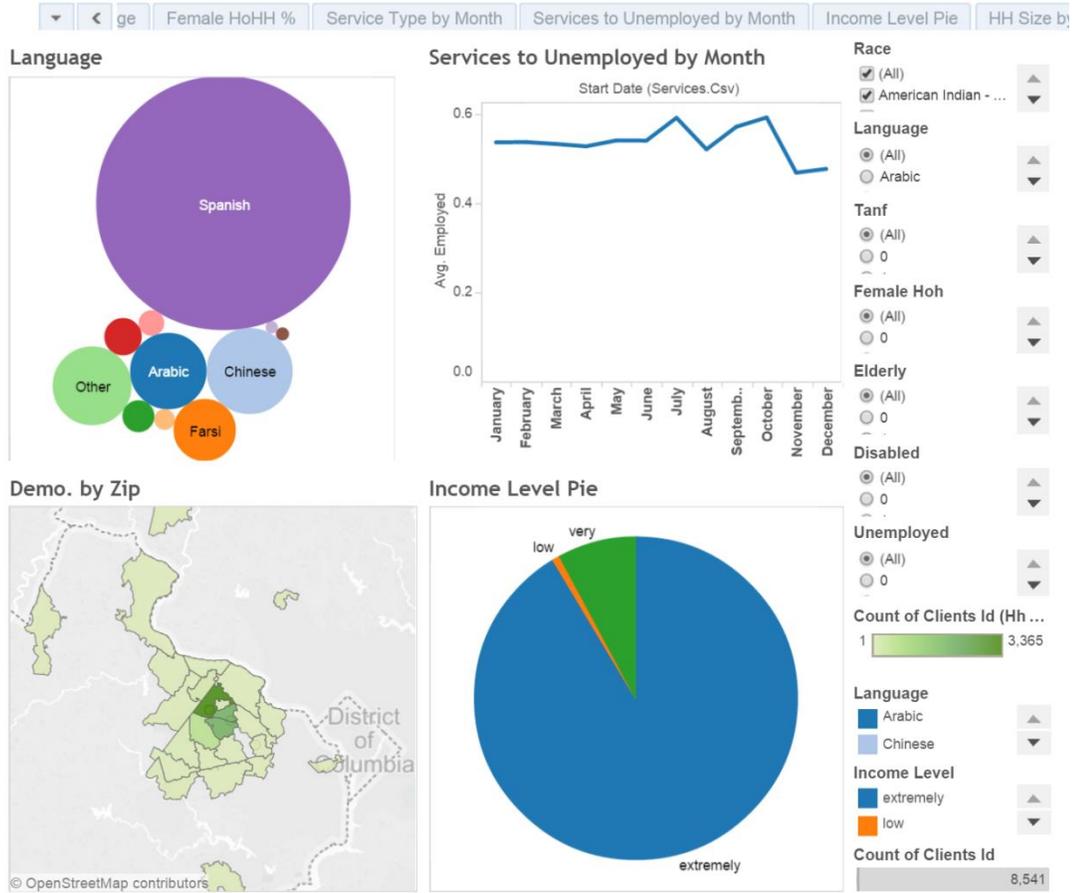
Based on Cornerstones staff time estimates along with our own testing, we calculate that the unified database will save over ½ man-year of labor each year.

Task	Current Time	Expected Time
Collecting and recording personal information from a client	10	4
Record keeping and documentation for services	2	1
Entering data into Excel	4	0
Approximate number of households served per year: 3,500 Approximate number of services provided per year: 12,000 Approximate Time Saved for Cornerstones staff: 67,000 minutes > ½ Man-year		

Additionally, the Cornerstones staff has up-to-the-minute cognizance of its organization's performance. Client and service records are now at their fingertips. Counselors no longer have to search through a vast collection of hardcopy documents to see a client's service history, which saves time and allows for better, more personalized services.

Until now, each program within Cornerstones kept separate records. A client could appear at multiple Cornerstones programs for different services, and each program would be unaware of the client's usage of other programs. Now, with the unified database, information can be instantly shared across all Cornerstones activities.

The database also provides an unlimited opportunity for Cornerstones to exploit its data to gain insight into its client base and its own performance. The spring GMU team designed and developed a pilot analytics and visualization project and presented it to Cornerstones as a demonstration of what is possible in the next step of their program. This project is a web-based interactive visualization based on actual FY2015 data. A screenshot of one of the dashboard's for the visualization is shown below.



Appendix A - Usability Test Plan

Usability Test Plan: The main objectives of the Usability test are to determine the design inconsistencies and usability problem areas within the user interface and content areas. Potential sources of error may include:

Navigation errors - Few examples are failure to locate functions, excessive keystrokes to complete a function, failure to follow recommended screen flow.

Presentation errors – Few examples are failure to locate and properly act upon desired information in screens, selection errors due to labeling ambiguities.

Control usage problems – Few examples are improper toolbar or entry field usage.

Also, as part of the usability test process the exercising of the application under controlled test conditions with representative users is performed. Data will be used to assess whether usability goals regarding an effective, efficient, and well-received user interface have been achieved.

The user groups that the application (CUDIP) will be deployed to is a non-profit organization called "Cornerstones". The user group that will participate in the usability test will be the Cornerstones staff.

Methodology: The user group identified for the usability test is the Cornerstones staff. The setting of the usability test sessions will be held at "Cornerstones Head Office" located in Reston, Virginia. The tools used to facilitate the participant's interaction with the application is the web browser. The expected outcomes as part of testing the success of the web application is to assess the overall customer satisfaction and to gather suggestions for further enhancements.

Participants: The user group identified for the usability test is the Cornerstones staff. The participants responsibilities will include to attempt to complete a set of representative task scenarios presented to them in an efficient and timely manner. This also include providing feedback

in regards to the usability and acceptability of the user interface. The participants will be directed to provide open opinions regarding the usability of the application, and to participate in post-session subjective questionnaires and debriefing.

Procedure: A Laptop with the web application and supporting software for the usability test will be used in a typical office environment. The participant's interaction with the application will be monitored by the facilitator seated in the same office.

The facilitator will brief the participants on the Web application and instruct the participants to test the web application. The facilitator also explains that, he/she will be evaluating the efficiency of the web application and not the efficiency of the participant using the application. The first is to calculate the efficiency of the tool in providing the desired output with minimal inputs while the second is testing the capability of the participant in using the application.

Participants will sign an informed consent that acknowledges that the participation is voluntary, that participation can cease at any time and that their privacy of identification will be safeguarded.

As part of the usability test process, the facilitator acts as client and requests service to the participant in order to help simulate and depict the actual working environment of using the web application in real time after the web application goes live. After all task scenarios are attempted, the participant will complete the posttest satisfaction questionnaire.

Roles:

Facilitator provides overview of study to participants, defines usability and purpose of usability testing to participants, responds to participants request for assistance.

Facilitator also acts as a *client* who is will request the service from the participant, which enables participant to enter the client inputs into electronic forms and complete the usability test for the same.

Test Observer silently observes the test and serves as a note taker. The test observer also records the participants actions and comments.

Usability Tasks: The usability tasks were derived from test scenarios developed from use cases. Due to the range and extent of functionality provided in the web application and the short time for which each participant will be available, the tasks are the most common and relatively complex of available functions. The tasks are identical for all participants of a given user role in the study. The usability tasks are as listed below:

1. Staff entering New Household information to the database with a total of 3 family members:

This task required participants to add a new household with a total household size of 3 members (clients) into the database and return to main menu.

This task mainly consists of three sub tasks:

- 1.1. Add household specific information & head of household specific information.
- 1.2. Add first household member information (First family member).
- 1.3. Add second household member information (Second family member).

As part of the First sub task, participant has to select "Add new household" option in the main menu and add general household information such as Address, Annual Income etc. and head of household specific information such as Name, Date of Birth, Gender etc. provided by the client (Facilitator - One of the CUDIP team member) into the system..

As part of the second sub task, participant has to add additional (first) family member of the head of household information such as Name, Date of Birth, Gender etc. into the system.

As part of the third sub task, participant has to add additional (Second) family member of the head of household information such as Name, Date of Birth, Gender etc. into the system and return to main menu.

2. Staff adding additional household member to the existing household (Third family member):

This task required participants to add additional family member (Client) to the existing head of household data and return back to main menu. As part of this task, participant has to select "Update household information" option in the main menu, enter last name of the head of household (client) in the search page, select the correct household record, select "Add new member to the household" option, add appropriate client information and return to main menu.

3. Staff updating (Edit) existing household information:

This task required participants to update (edit) existing household personal information and return back to main menu.

As part of this task, participant has to select "Update household information" option in the main menu, enter last name of the head of household (client) in the search page, select appropriate household record, make the changes provided by the client (Facilitator - One of the CUDIP team member) and return to main menu.

4. Staff recording service provided to the client:

This task required participants to record service provided to the client and return to main menu.

As part of this task, participant has to select " Record Service" option in the main menu, enter last name of the head of household (client) in the search page, select appropriate household record, add service requested by the client (Facilitator - One of the CUDIP team member) and return to main menu.

5. Staff retrieving the information about services provided to the existing client:

This task required participants to retrieve household service history and return to main menu.

As part of this task, participant has to select " Household Report" option in the main menu, enter last name of the head of household (client) in the search page, select appropriate household record and return to main menu.

Usability Metrics: It refers to user performance measured against specific performance goals necessary to satisfy usability requirements. Scenario completion success rates, error rates, and subjective evaluations will be used. Time-to-completion of scenarios will also be collected.

Task Completion: Each task will require that the participant obtains or inputs specific data that would be used in course of a typical task. The task is completed when the participant indicates the task goal has been obtained (whether successfully or unsuccessfully) or the participant requests and receives sufficient guidance as to warrant scoring the task as a critical error.

Critical Errors: These are deviations at completion from the targets of the tasks. Independent

completion of the task is the universal goal; help obtained from the other usability test roles is cause to score the scenario a critical error. Critical errors can also be assigned when the participant initiates (or attempts to initiate) an action that will result in the goal state becoming unattainable. In general, critical errors are unresolved errors during the process of completing the task or errors that produce an incorrect outcome.

Non Critical Errors: These are errors that are recovered from the participant or, if not detected, do not result in processing problems or unexpected results. These errors may be procedural, in which the participant does not complete a scenario in the most optimal means (e.g., excessive steps and keystrokes). These errors may also be errors of confusion (ex., initially selecting the wrong function, using a user-interface control incorrectly such as attempting to edit an un-editable field). Noncritical errors can always be recovered from during the process of completing the scenario. Exploratory behavior, such as opening the wrong menu while searching for a function, be coded as a non-critical error.

Subjective Evaluation: Subjective evaluations regarding ease of use and satisfaction will be collected via questionnaires, and during debriefing at the conclusion of the session. The questionnaires will utilize free-form responses and rating scales.

Task Completion Time: The time to complete each scenario, not including subjective evaluation durations, will be recorded.

Usability Goals:

Completion Rate: It is the percentage of test participants who successfully complete the task without critical errors. A critical error is defined as an error that results in an incorrect or incomplete outcome. If a participant requires assistance in order to achieve a correct output then the task will be scored as a critical error.

Error-Free Rate: It is the percentage of test participants who complete the task without any errors (critical or non - critical errors). A non-critical error is an error that would not have an impact on the final output of the task but would result in the task being completed less efficiently.

Subjective Measures: Subjective opinions about specific tasks, time to perform each task, features, and functionality will be surveyed. At the end of the test, participants will rate their satisfaction with the overall system.

Appendix B - Consent Form

I agree to participate in the study conducted and recorded by the GMU SPRING TEAM.

I understand and consent to the use and release of the voice recording by GMU SPRING TEAM. I understand that the information and recording is for research purposes only and that my name and any other details collected will not be used for any other purpose. I relinquish any rights to the recording and understand the recording may be copied and used by GMU SPRING TEAM without further permission.

I understand that participation in this usability study is voluntary and I agree to immediately raise any concerns or areas of discomfort during the session with the study administrator.

Please sign below to indicate that you have read and you understand the information on this form and that any questions you might have about the session have been answered.

Date: _____

Please print your name:

Please sign your name:

Thank you!

We appreciate your participation.

Appendix C - Questionnaire

Name: _____

**Strongly
Disagree**

**Strongly
Agree**

Sl. No	Questionnaire	1	2	3	4	5
1	I think it is easy to navigate through the application.					
2	I think it is easy to use the application on my first visit.					
3	I think that I would need the support of a technical person to be able to use this application.					
4	I found the various tasks in this application were well integrated.					
5	I would imagine that most people would learn to use this application very quickly.					
6	I found the application very cumbersome to use.					
7	I found the application unnecessarily complex.					
8	Clicking on the links takes me to what I expect.					
9	I need to learn a lot of things before I could get going with this application.					
10	The application made it easier to enter the data.					

Comments:

Appendix D – APPLICATION SCREENSHOTS

D1 - Main Menu



Cornerstones Unified Database

Main Menu

[Add new household](#)

[Household report](#)

[Update household](#)

[Record service](#)

[Edit Outcomes](#)

[Services report](#)

[WebR report](#)

[WebR Outcomes report](#)

[CS Output for Charts](#)

[Add staffmember](#)

[Activate/deactivate staff](#)

D2 - Add New Household

Add New Household

Total No. in Household:	<input type="text"/>
Street Address 1:	<input type="text"/>
Street Address 2:	<input type="text"/>
City:	<input type="text"/>
State:	<input type="text" value="VA"/>
Zip Code:	<input type="text"/>
Household Income:	\$ <input type="text"/>
Language:	<input type="text"/>
Participating in Temp. Asst. for Needy Fams. (TANF):	<input type="radio"/> Yes <input checked="" type="radio"/> No
Cornerstones Location:	<input type="text"/>
Staffmember:	<input type="text"/>
Household notes:	<input type="text"/>

Enter Head of Household Information...

First Name:	<input type="text"/>
Middle Name:	<input type="text"/>
Last Name:	<input type="text"/>
Date of Birth:	<input type="text" value="YYYY-MM-DD"/>
Country of Origin:	<input type="text"/>
Gender:	<input type="radio"/> Male <input type="radio"/> Female <input type="radio"/> Not Reported
Marital Status:	<input type="text" value="Single"/>
Race:	<input type="text" value="Other - Not Reported"/>
Ethnicity:	<input type="text" value="Other - Not Reported"/>
Disabled:	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Reported
Employed:	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Reported

D3 - Add Household Member

Household entry success!

Household members left to enter: 1

Add Household Member

First Name:	<input type="text"/>
Middle Name:	<input type="text"/>
Last Name:	<input type="text"/>
Date of Birth:	<input type="text" value="YYYY-MM-DD"/>
Country of Origin:	<input type="text"/>
Gender:	<input type="radio"/> Male <input type="radio"/> Female <input type="radio"/> Not Reported
Marital Status:	<input type="text" value="Single"/>
Race:	<input type="text"/>
Ethnicity:	<input type="text" value="Other - Not Reported"/>
Disabled:	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Reported
Employed: (Select No only for adults 18 or older)	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Reported
<input type="button" value="Submit Form"/>	

D4 - Household Lookup (used in multiple instances)

Find household for report

Enter first few letters of head of household last name

Last Name:

Date of Birth (optional):

[Return to main menu](#)

D5 - Household Report

Household Report

Last450

Household Size: 9
 Street Address 1: Address450
 Street Address 2:
 City: City
 State: VA
 Zip Code: 20170
 Language: Spanish
 Annual Income: \$10,201
 Participating in Temp. Asst. for Needy Fams. (TANF): Yes
 Record Added Date: 2015-04-24
 Location Added: ASAPP
 Staff Added: Not Reported, Other
 Household Notes:

Members

First	Middle	Last	D.o.B.	Gender	Race	Ethnicity	Marital	Disabled	Employed	Cntry of Orig.
First450		Last450	0000-00-00	Male	Other - Not Reported	Hispanic	Single	No	No	usa
asdf		asdf	1980-11-11	Male	Other - Not Reported	Other - Not Reported	Single	No	No	a;lskdjf move
New	Guy	Same	1970-11-11	Male	Other - Not Reported	Other - Not Reported	Single	No	No	adsflkj move
aergerg	aegrerg	Test55	1970-11-11	Male	Other - Not Reported	Other - Not Reported	Single	No	No	gfsdgsdf move
aergerg	aegrerg	Test55	1970-11-11	Male	Other - Not Reported	Other - Not Reported	Single	No	No	gfsdgsdf move
new1		450	1980-11-11	Male	Other - Not Reported	Other - Not Reported	Single	No	No	United States move
new33		450	1980-11-11	Male	Native Hawaiian - Other Pacific Islander	Hispanic	Single	No	No	United States move
new45		450	1970-11-11	Male	Other - Not Reported	Other - Not Reported	Other - Not Reported	No	No	United States move
new05		450	1970-11-11	Female	Other - Not Reported	Other - Not Reported	Single	No	No	United States move

Service History

Date	Type	Location	Staff	Notes
2014-02-01	Food and Toiletries Bag	ASAPP	Not Reported, Other	
2014-05-01	Financial Assistance	ASAPP	Not Reported, Other	
2014-05-01	Food and Toiletries Bag	ASAPP	Not Reported, Other	
2015-04-21	Fresh Produce Bag	ASAPP	Jones, Bob	wafregergseG
2015-04-21	Food and Toiletries Bag	ASAPP	Jones, Bob	"test"

[Return to Main Menu](#)

[Get report on a different household](#)

[Update this household's information](#)

D6 - Update Household Information

Update Household Information

Street Address 1:

Address450

Street Address 2:

City:

City

State:

VA

Zip Code:

20170

Household Income:

\$10201

Language:

Spanish

Participating in Temp. Asst. for Needy Fams. (TANF):

Yes No

Comerstones Location:

ASAPP

Staffinmember:

Not Reported, Other

Household notes:

Or update household member information

[First450 Last450](#)

[asdf asdf](#)

[New Same](#)

[aergerg Test55](#)

[aergerg Test55](#)

[new1 450](#)

[new33 450](#)

[new45 450](#)

[new05 450](#)

- or -

[Add new member to household](#)

D7 - Update Household Member Information

Update Household Member

First Name:	<input type="text" value="First450"/>
Middle Name:	<input type="text"/>
Last Name:	<input type="text" value="Last450"/>
Date of Birth:	<input type="text" value="0000-00-00"/>
Country of Origin:	<input type="text" value="usa"/>
Gender:	<input checked="" type="radio"/> Male <input type="radio"/> Female <input type="radio"/> Not Reported
Marital Status:	<input type="text" value="Single"/>
Race:	<input type="text" value="Other - Not Reported"/>
Ethnicity:	<input type="text" value="Hispanic"/>
Disabled:	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Reported
Employed: (Select No only for adults 18 or older)	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Reported
<input type="button" value="Update"/>	

D8 - Add New Household Member

Add Household Member

First Name:	<input type="text"/>
Middle Name:	<input type="text"/>
Last Name:	<input type="text"/>
Date of Birth:	<input type="text" value="YYYY-MM-DD"/>
Country of Origin:	<input type="text"/>
Gender:	<input type="radio"/> Male <input type="radio"/> Female <input type="radio"/> Not Reported
Marital Status:	<input type="text" value="Single"/>
Race:	<input type="text" value="Other - Not Reported"/>
Ethnicity:	<input type="text" value="Other - Not Reported"/>
Disabled:	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Reported
Employed:	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Reported
<input type="button" value="Add Client"/>	

D9 - Record a Client Service

Add Service Record

ID No.:	<input type="text" value="2458"/>
First Name:	Brian
Last Name:	Burke
Date of Service:	<input type="text" value="2015-04-30"/>
Service Type:	<input type="text" value="Food and Toiletries Bag"/>
Cornerstones Location:	<input type="text"/>
Staff Name:	<input type="text" value="Jones, Bob"/>
Service notes:	<input type="text"/>
<input type="button" value="Submit Form"/>	

D10 - Assign Outcome Achieved - Select Services

Select Services

From Date (YYYY-MM-DD):

2014-04-30

To Date (YYYY-MM-DD):

2015-05-30

Cornerstones Location:

Any ▼

Staffinember:

Any ▼

Service Type:

ASAPP Food and Toiletries Bag ▼

WEBR Category:

Any ▼

CS Category:

Any ▼

D11 - Set Outcomes

Set Outcomes

[Return to outcome search](#) | [Return to main menu](#)

Date	Last Name	Address	Service Type	Location	Staff	WEBR Outcome	CS Outcome
2014-06-01	Last4	Address4	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last16	Address16	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last26	Address26	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last26	Address26	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last27	Address27	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last33	Address33	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last38	Address38	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last38	Address38	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last40	Address40	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last48	Address48	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last55	Address55	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last55	Address55	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last58	Address58	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last62	Address62	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last71	Address71	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last73	Address73	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last74	Address74	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last74	Address74	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last76	Address76	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last76	Address76	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last77	Address77	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last77	Address77	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last82	Address82	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last84	Address84	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last93	Address93	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last95	Address95	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last110	Address110	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last114	Address114	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-05-01	Last115	Address115	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last115	Address115	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
2014-06-01	Last110	Address110	Food and Toiletries Bag ASAPP	Other Not Reported		<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD

D12 - Services Report – Select Filter Criteria

Select Services

Select filter criteria

From Date (YYYY-MM-DD):

To Date (YYYY-MM-DD):

Cornerstones Location:

Staffmember:

Service Type:

Cornerstones Program:

WEBR Category:

CS Category:

Income Level:

Children in Household:

Female Head of Household:

Elderly Member of Household:

Disabled Member of Household:

Unemployed Member of Household:

Participating in TANF:

[Return to main menu](#)

D13 - Services Report – Output

Services Report

[Run another services report](#) | [Return to main menu](#)

Date	Service Type	Client	Location	Staff	WEBR Outcome	CS Outcome	Notes
2014-06-01	Financial Assistance	Last4	ASAPP	Not Reported, Other	Y	Y	
2014-06-01	Food and Toiletries Bag	Last4	ASAPP	Not Reported, Other	Y	Y	
2014-05-01	Financial Assistance	Last16	ASAPP	Not Reported, Other	Y	Y	
2014-05-01	Food and Toiletries Bag	Last16	ASAPP	Not Reported, Other	Y	Y	
2014-05-01	Financial Assistance	Last26	ASAPP	Not Reported, Other	Y	Y	
2014-05-01	Food and Toiletries Bag	Last26	ASAPP	Not Reported, Other	Y	Y	
2014-06-01	Food and Toiletries Bag	Last26	ASAPP	Not Reported, Other	Y	Y	
2014-05-01	Food and Toiletries Bag	Last27	ASAPP	Not Reported, Other	Y	Y	
2014-06-01	Financial Assistance	Last33	ASAPP	Not Reported, Other	Y	Y	
2014-06-01	Food and Toiletries Bag	Last33	ASAPP	Not Reported, Other	Y	Y	
2014-05-01	Food and Toiletries Bag	Last38	ASAPP	Not Reported, Other	Y	Y	
2014-06-01	Food and Toiletries Bag	Last38	ASAPP	Not Reported, Other	Y	Y	
2014-05-01	Food and Toiletries Bag	Last40	ASAPP	Not Reported, Other	Y	Y	
2014-05-01	Other Life Skills Offering	Last45	ASAPP	Not Reported, Other	TBD	TBD	
2014-05-01	Other Life Skills Offering	Last45	ASAPP	Not Reported, Other	Y	N	
2014-06-01	Other Life Skills Offering	Last45	ASAPP	Not Reported, Other	Y	N	
2014-06-01	Food and Toiletries Bag	Last48	ASAPP	Not Reported, Other	Y	Y	
2014-05-01	Food and Toiletries Bag	Last55	ASAPP	Not Reported, Other	Y	Y	
2014-06-01	Food and Toiletries Bag	Last55	ASAPP	Not Reported, Other	Y	Y	
2014-05-01	Food and Toiletries Bag	Last58	ASAPP	Not Reported, Other	Y	Y	
2014-05-01	Financial Assistance	Last62	ASAPP	Not Reported, Other	Y	Y	
2014-05-01	Food and Toiletries Bag	Last62	ASAPP	Not Reported, Other	Y	Y	
2014-05-01	Food and Toiletries Bag	Last71	ASAPP	Not Reported, Other	Y	Y	

D14 - WEBR Report – Select Options

Select Options for WEBR Report

Fiscal Year:

 ▼

Program:

 ▼

D15 - WEBR Report – Output

ASAPP WEBR Report for 2014

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Tot
HHs Served	407	438	444	515	1281	1082	475	442	431	495	478	459	
Clients Served	1035	1288	1199	1437	4272	3830	1218	1083	1154	1263	1238	1212	
New HHs Served	407	253	191	172	794	107	103	88	79	76	84	80	2434
New Clients Served	1035	879	586	562	2837	329	268	232	244	187	240	222	7621
New HHs w/ Extr. Low Income	365	231	172	160	732	98	97	81	72	73	76	77	2234
New HHs w/ Very Low Income	38	21	16	12	61	8	6	5	3	2	5	2	179
New HHs w/ Low Income	4	1	3	0	1	1	0	2	4	1	3	1	21
New HH by Race - Non-Hispanic													
Asian	46	13	11	9	42	3	3	5	6	5	2	7	152
Black - African American	75	61	31	32	162	22	17	13	16	13	22	7	471
Middle Eastern	0	0	0	0	0	0	0	0	0	0	0	0	0
White - Caucasian	69	33	24	25	79	16	9	13	10	10	15	14	317
Other - Not Reported	36	18	14	10	62	12	8	5	4	5	6	3	183
American Indian - Alaskan Native	0	0	0	1	0	0	0	0	0	0	0	1	2
Native Hawaiian - Other Pacific Islander	0	0	0	0	0	0	0	0	0	0	0	0	0
Multi-racial	0	0	0	0	0	0	0	0	0	0	0	0	0
New HH by Race - Hispanic													
Asian	0	0	0	0	0	0	0	0	0	0	0	0	0
Black - African American	0	0	0	0	0	0	0	0	0	0	0	0	0
Middle Eastern	0	0	0	0	0	0	0	0	0	0	0	0	0
White - Caucasian	0	0	0	0	0	0	0	0	0	0	0	0	0
Other - Not Reported	181	128	111	95	449	54	66	52	43	43	39	48	1309
American Indian - Alaskan Native	0	0	0	0	0	0	0	0	0	0	0	0	0
Native Hawaiian - Other Pacific Islander	0	0	0	0	0	0	0	0	0	0	0	0	0
Multi-racial	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Data for New Households													
Female Head Of HH	190	148	92	94	327	56	55	40	40	41	46	43	1172
Families w/ Children	202	190	121	126	615	74	53	55	50	46	53	46	1631
Disabled	112	64	30	32	61	21	6	10	9	6	20	11	382
Elderly	139	37	26	30	173	17	11	14	8	12	20	10	497
Unemployed	237	130	107	109	321	61	59	48	38	40	48	42	1240
TANF	12	21	7	5	38	5	2	2	0	0	2	1	95

[Run another WEBR report](#)

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D16 - WEBR Outcomes Report

ASAPP Quarterly Outcome Report

F&T/WS

	Q1	Q2	Q3	Q4
HHs Served	627	676	625	604
Clients Served	1738	1935	1702	1649
HHs Served YTD	627	1003	1261	1494
Clients Served YTD	1738	2910	3671	4339
HHs YTD Achieving Outcome	627	1003	1261	1494
Clients YTD Achieving Outcome	1738	2910	3671	4339

I&R/LS

	Q1	Q2	Q3	Q4
HHs Served	404	1367	351	548
Clients Served	1332	4654	1007	1642
HHs Served YTD	404	1523	1685	1867
Clients Served YTD	1332	5165	5606	6136
HHs YTD Achieving Outcome	404	1523	1685	1867
Clients YTD Achieving Outcome	1332	5165	5606	6136

[Run another quarterly outcome report](#)

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ASAPP Program Data for CS Graphs

Program Users By Income Limits

extremely income,2234
low income,21
very income,179

Program Users By Race

American Indian - Alaskan Native,2
Asian,152
Black - African American,471
Other - Not Reported,1492
White - Caucasian,317

Program Users By Income Limits

Male,1262
Female,1172

Program Users By Head of Household Gender

Average household size,3.13105998

Program Users - Households with Children

Households with Children Under 18,1631
Households with Adults Only,803

Program Users - Households with Elderly

Households with Persons 55 or older,497
Households without Persons 55 or older,1937

Program Users - Households with Unemployed

Households with an unemployed member,1240
Households without an unemployed member,1194

Program Users - Households Receiving TANF

Households receiving TANF,95
Households not receiving TANF,2339

Program Participation Rates by Outcome Area

F&T/WS,1494
I&R/LS,1867

Program Services Delivery by Quarter

Number of services received in Qtr 1,1517
Number of services received in Qtr 2,3450
Number of services received in Qtr 3,1660
Number of services received in Qtr 4,1914

Program Users by Ethnicity

Hispanic,1309
Other - Not Reported,1125

Program Users by Zip Code

20170,968

D18 - Add Staff member

Add Staffmember

First Name:

Last Name:

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D19 - Activate/Deactivate Staff member

Activate/Deactivate Staff

First Name	Last Name	Active?
Bob	Jones	Active? <input checked="" type="radio"/> Yes <input type="radio"/> No
Jennifer	Johnson	Active? <input checked="" type="radio"/> Yes <input type="radio"/> No
New	Staff-Test	Active? <input checked="" type="radio"/> Yes <input type="radio"/> No
John	Kash	Active? <input checked="" type="radio"/> Yes <input type="radio"/> No
Nicole	Trotta	Active? <input checked="" type="radio"/> Yes <input type="radio"/> No
Brian	Dillon	Active? <input checked="" type="radio"/> Yes <input type="radio"/> No
Terrance	Stroman III	Active? <input checked="" type="radio"/> Yes <input type="radio"/> No
Curtis	Whitlow	Active? <input checked="" type="radio"/> Yes <input type="radio"/> No
Minnie	Orozco	Active? <input checked="" type="radio"/> Yes <input type="radio"/> No
Lilia	Jimenez-Sinhengalu	Active? <input checked="" type="radio"/> Yes <input type="radio"/> No
Curtis	Whitlow	Active? <input checked="" type="radio"/> Yes <input type="radio"/> No
Test2	Test2Last	Active? <input checked="" type="radio"/> Yes <input type="radio"/> No
Test2	Test2Last	Active? <input checked="" type="radio"/> Yes <input type="radio"/> No