

Human Services Center Corporation

Executive Summary

Student Consultant, Wei Xiao
Community Partner, Dave Coplan and Ruth Smith

I. Background Information

HSCC is a non-profit 501c3 organization located at 519 Penn Ave., Turtle Creek, Pennsylvania. Created in 1982 under an initiative of the Allegheny County Commissioners, HSCC has received a lot of honors. Working Group on Health is a group of social service providers and community groups that examines the health needs of the region and promote viable responses.

The mission of HSCC Health Working Group is to improve communication between agencies and between agencies and residents, regarding health related issues; to educate the community about health concerns, risks, and problems in order to improve health and healthful behaviors; to identify health concerns of residents in the region; to collectively define a continuum of health services to meet identified needs.

II. Consulting Tasks

The scope of the major consulting task involved the following phases:

1. Survey Form Redesign and Optical Mark Recognition Software & Hardware Selection
The task consisted on building a framework based on which data from survey forms can be inputted into computer. It demands choosing a new set of software and hardware (if possible) which can read bubble questions, as well as designing a new survey form which can clearly and effectively measure the health status within the local communities.
2. Database Design
The task consisted on designing and implementing a database with which health data from survey forms can be stored and retrieved.
3. Analysis Application Design for Personal health reports and Aggregate Data
The task consisted on designing and implementing an application which can automatically generate feedbacks to participants according to their health reports, as well as providing aggregate data of a combination of selected surveys. This application should also has the function to track the health change of a selected participant.

III. Outcomes Analysis and Recommendations

The outcomes for the major consulting task include:

1. The organization now has a redesigned survey form with an excellent layout that makes information better organized and thus would not cause any confusion. Answers for each bubble question on the survey form can be scanned into computer with an ordinary scanner.
 - It is possible that they will forget how to operate some steps without some “practice” even they have written all of them down.
 - Lacking a policy to adapt the system may cause insufficient utilization or even failure.

2. A Microsoft Access database is designed, which can store and retrieve the values of the scanned answers. Both usability and data integrity are ensured after iterative tests.
 - Lacking concrete backup policy and failing to follow the policy may cause data loss beyond redemption.
3. An application is implemented to automatically generate personal health reports aggregate data reports in Microsoft Word format and print it out. The personal health reports cover medical suggestions, as well as useful tips in daily life to help individuals live a healthier life; the aggregate data report not only illustrates constituents of major health concerns and their proportions, but also indicates the trends. The application also can display a matrix of health indicators to track health improvements the participant has made over a time period.
 - If the application is collapsed someday, the CPs would have to follow the instructions recorded in the technology manual to recover the application.

Based on the outcomes of the previous consulting tasks, there comes a new understanding of how technology can further aid the organization to fulfill its missions.

1. Identify appropriate hardware, migrate the applications developed for Windows XP platform to portable devices, recompile applications if necessary to make application portable and thus deliver quick feedbacks to participants.
The implementation of this plan requires IT professionals if the CPs want to use Personal Digital Assistant or smartphone to run these applications.
2. Record video tutorials to remind the CPs the whole process, to train other staff members and volunteers with high turnover rate, as well as to make knowledge to be passed on easier and more efficient both within and outside the organization.
Available freeware on the Internet makes the implementation easy and fast.
3. Research backup and encryption tools, revise the backup plan, as well as suggest archiving emails even considered unimportant instead of deleting them to ensure data safety and the capacity of quick recovery after disasters.
The CPs can get available tools easily from the Internet, but they should stick to the revised backup plan in order to keep the plan rolling.
4. Migrate the database with donors' information to Windows XP platform and set up an internal information sharing path to avoid possible data loss, ensure business continuity, and maximize the use of information resources.
The implementation of this plan needs external IT support.

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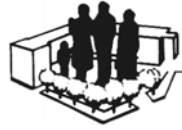
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Human Services Center Corporation

Final Consulting Report



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Community Partner, Dave Coplan & Ruth Smith

I. About the Organization

Organization

“Human Services Center Corporation” is a non-profit 501c3 organization located at 519 Penn Ave., Turtle Creek, Pennsylvania. It has received a lot of honors and is very welcome in the local community. The Human Services Center was created in 1982 under an initiative of the Allegheny County Commissioners.

As a non-profit organization with such a long history, it has experienced the change of technology. From the age of paper-based file management to the age of computer-based document management, it has understood the importance of the technology. The technology the organization adopted primarily focuses on document management by using Microsoft Word, Excel and Access. The organization also uses technology to maintain its website, share files and keep information of staff turnover. All of these ensure the business continuity.

Working Group on Health is a group of social service providers and community groups that examines the health needs of the region and promote viable responses.

The mission of HSCC Health Working Group is to improve communication between agencies and between agencies and residents, regarding health related issues; to educate the community about health concerns, risks, and problems in order to improve health and healthful behaviors; to identify health concerns of residents in the region; to collectively define a continuum of health services to meet identified needs.

Facilities

Human Services Center Corporation is located in the left wing of the second floor of the Westinghouse building. There are evening security, security cameras, etc. Two laptops are taken off site by Dave and Alicia, and the third one is currently locked up as well. They are used offsite to do the work, keep email communications and, moreover, keep confidential files from security theft and fire. Twelve brand-new computers and two LaserJet printers are located in a computer lab.

Programs

HSCC runs the following programs via the efforts of Health Working Group:

- Annual health fairs

The annual Super Expo is held on a Saturday in April to combine all aspects of the MVPC. Participants can come and choose different services HSCC's working groups offer. The screenings mentioned below are also provided in the health fairs.

- Free vision acuity screenings
The Mon Valley Vision Screening Project was launched in September 2001. It offered more than 1,000 local residents free screenings throughout the Mon Valley. The Working Group on Health purchased its own vision screening machine in June of 2002 and is continuing community screenings. MVPC member agencies are being trained to provide the screenings and the Working Group has launched a Vision Free Care Fund to assist people with free eye exams and glasses. 2,959 residents took the screenings between July, 2002 and December, 2005.
- Free osteoporosis screenings
Osteoporosis screenings have started thanks to a grant from the FISA Foundation. 2,859 residents took the screenings between January 10 and December 31, 2005. 605 residents took the screenings between January 1 and September 28, 2006.

Free vision acuity and osteoporosis screenings are carried out both on site and in the communities. In partnership with Highmark Caring Foundation, the organization was providing personal health profiles for individuals. Working group members collected data from paper forms filled by health fair participants and people who came for screenings (group members helped some participants to fill the forms because a large proportion of them are illiterate or seniors). After collecting the forms, HSCC sent them to Highmark. Highmark outsourced them to a third-party company for analysis, and returned generated personal health reports as well as aggregate statistical data to HSCC. It delivered personal health reports to help participants to improve their health status.

At present, HSCC wants to provide health data analysis and personal health report generating service initially carried out by Highmark.

Many survey forms collected from health fairs generate large data sets. Basing on formulas developed by health professionals, the organization would like to have a data analysis application to give health advice. The organization also desires to obtain aggregate data to identify the major concerns of the communities. Because of copyright issues, the organization needs to develop its own health survey form used to be provided by Highmark.

Staff

There are two employees in the Working Group on Health. One is Dave Coplan, the Executive Director of HSCC, and another is Ruth Smith, the Program Associate. Alicia Andrews is the Associate Director of HSCC, but she does not belong to the Health Group on Health.

Dave holds two master's degrees from University of Pittsburgh. He started at the site as an intern and has worked full time for 16 years in this organization. Dave is described as a "computer-literate" person by Ruth. He is familiar and comfortable with most popular office software.

Ruth is retired from her previous job, and she work part time as the program associate. Ruth regularly and yet feels more and more comfortable with computer technology.

Dave and Ruth basically share equal power in directing Health Working Group. When they cooperated with Highmark on the health assessment project, Dave was more involved in coordination and external interaction with Highmark, while Ruth was responsible for collecting

original forms and delivering the generated health reports to individuals in the communities by mails.

There are also two co-chairs. One is Nancy Osterhus from Allegheny County Health Department, and another is Jim Spindler from UPMC Braddock. Jim can provide Health Working Group with detailed individual health information under authorization of that individual. Health professionals from 75 membership agencies serve the organization. Co-chairs provide leadership, set direction and agenda for the organization. They also help identify the gaps and find ways to fill them.

Technical Environment

Dave always carries a laptop computer with him, so that he can get in contact with donors, employees and anyone who interested in the organization through email.

Ruth has a new DELL desktop computer bought three months ago in her office. It has Pentium 4 3.0GHz CPU (533 FSB) with 1MB cache, 512 MB DDR (PC3200) memory, 80GB SATA300 7200RPM hard disk drive. Most computers in the lab and Ruth's are just purchased new in June. She also has a low-configuration computer in her home, and she uses it to work on some easy tasks such as replying emails about working issues.

The computer with donors' information in it is a very old one with Pentium 150Hz CPU.

All the computers, except for the Pentium PC, have either fixed DSL or wireless connection to the Internet. There is a fax machine on the reception desk. Inkjet and LaserJet printers are available in the office and the computer lab.

Software and packages used include Microsoft DOS, Windows XP, Office Suite 2000 (Access, Excel, Outlook, Word, FrontPage, PowerPoint and Publisher), Adobe Writer, etc. CPPLUS/Data Perfect is a DOS database application only run on the Pentium PC to store donors' information.

Technical Management

Dave and Alicia manage all technical problems and then they have an outside firm that deals with any problems they cannot handle. A typical example is that they come to technical professionals if there is an IP conflict in the network not caused by the ISP server. If something slows down the system, they will also refer to technical professionals. Dave considers it a time issue, and therefore is more willing to have technical problems fixed by technical professionals.

A group of student consultants have worked on some projects for HSCC before, one of which is the organization website. Staff members were trained to maintain the website. Alicia and Dave are responsible for the ongoing maintenance and update.

The organization composes a tech manual annually, because staffs feel that technology brings the organization better performance. With 10,000 USD annual technology budgets, the organization requires more technology management. Through this way, HSCC finds the technology management more and more important, and is looking forward to make better use of technology by more sophisticated technology planning.

Technology Planning

HSCC has a technology manual for the agency that Alicia and Dave keep current, including a version only for their eyes with confidential passwords.

The contents of the technology manual include: computer components, HSCC computer hardware inventory, HSCC computer software inventory for core office use, anti-virus software and repair procedures, ad-aware, system passwords and system lock, windows updates, network map for HSCC, to install wireless adapters, to set up a computer on the network, setting up a computer to use the SAVIN 4027SP printer / copier, shared files and printers, outlook settings for emails, email troubleshooting, naming computers, setting up user accounts in Windows XP, hard drive installation, basic troubleshooting steps, ZIP disk uses, back-up plan and procedures, portable document format – Acrobat Distiller, MVPC letterhead, computer lab, scanner, digital camera, laptop computer and projector for presentations, confidential passwords, NETtrak, location of software packages, expedient at center and Verizon at collaborative offices, Verio domain registration, consistent computer bargains / offices suite registration, fundraising software, Frontpage for website and remote access.

The document is distributed in two different versions. The ordinary version is for non-technology related staff members. Another version includes a portion for technology coordinators only. The document is both stored on secured computer and printed on paper. If a copy of the ordinary version is lost, Alicia and Dave can simply print a new copy; if a copy of the latter version is lost, they have to change all the passwords, modify the document and then print it.

Dave is responsible for planning and budgeting for the technical environment annually. Ruth may make some recommendations, which often come from other professionals like contracted individuals. Contracted individuals are also responsible for training staffs to use the recommended technology. After then, Dave would take consideration and finally make decision on that technology plan. Dave tries not to make budget a problem as long as the plan is worthwhile.

Because of the time constraint, their current technology plan was just formed in response of the new health evaluation project.

Internal and External Communication

Files are internally shared on peer to peer wireless network. File sharing was always done by CD-R before inception of wireless.

Customers are required to fill the forms with some private information, such as body weight. Under authorization, the Health Working Group can also get each participant's medical data from UPMC. Therefore, data security is an important issue.

All the staff members have internet email accounts. The organization not only has the capacity to access the web, but also has a website supporting its mission. The website is updated when it requires a change, but not on a regular basis except for the "News and Events" section. Dave and Alicia update this section.

Information Management

The donors' information and participants' health information are the most critical part. For example, the organization uses the donor database to trace times and amounts of donations, and uses the information from that database to make donation requests. The donors' information is managed by a DOS application CPPLUS/Data Perfect run on a Pentium PC with 150MHz. The organization also purchased an employer database based on Access to manage staff and volunteers.

Staff members back up all important documents to USB thumb drives that are taken off-site. Alternative options are CD-RW and file sharing.

Business Systems

Since Working Group on Health is a part of HSCC, its financial statement is part of the one of the organization, and accounting processes are collectively managed. The organization uses Quickbooks to manage its accounting information. Funds for the Health Working Group are divided into two types: one is called guided funds, funds reserved for specified purpose, and another is called unguided funds. HSCC established special accounts and items to trace detailed information of guided funds.

II. Scope of Work

The consulting task for HSCC involves three phases which are listed below.

Phase 1: Survey Form Redesign and Optical Mark Recognition Software & Hardware Selection

Problems

- The layout of the form is poorly designed so that participants may mismatch the answers to the questions.
- While it may take a lot of time to input manually and verify information, the data integrity and correctness still cannot be completely ensured.

Opportunities

- Let health professionals decide the formulas to generate feedbacks for the participants.
- Redesign the layout of the form to avoid possible mistakes by making the form more clear and the questions more organized.
- Use scanner to input information on the new paper form in order to save time and manpower, as well as improve efficiency and correctness.

Approach / Solution

- Attend meeting of Health Working Group to address my concerns from technology perspective
For example, tell health professionals the answers should be in the form of multiple choices.
- Do market research on functions and prices of OMR* software and hardware
For example, look for software with the most suitable functions while can be purchased with lower price for non-profit organizations (because non-profit organizations are entitled to buy some software at a discounted or tax-free software from some vendors.) Also look into if there is existing hardware we can make use of, instead of buying a new one.
- Recommend CPs to purchase necessary OMR software and hardware
Purchasing OMR software and then training the staff members how to develop their own survey reports, rather than outsourcing it to the third-party IT company, can make the technology sustainable and reusable.
- Use the software to design the survey form recognizable by the OMR equipments
The redesigned form is based on questions and choices health professionals identified on the meeting.

* Optical Mark Recognition is the process of capturing data by contrasting reflectivity at predetermined positions on a page. By shining a beam of light onto the document the scanner is able to detect a marked area because it is more reflective than an unmarked surface. Some OMR devices use forms which are preprinted onto "Transoptic" paper and measure the amount of light which passes through the paper, thus a mark on either side of the paper will reduce the amount of light passing through the paper.

Source: http://en.wikipedia.org/wiki/Optical_Mark_Recognition

- Provide training in using the software to design OMR forms and how to use OMR equipments to read the forms
- Keep detailed documentation

Expected Outcomes

- The organization has a redesigned form of which the answers can be automatically scanned into computer.
- The CPs have the capacity to design and read the survey form using OMR equipments.
- Indicators such as accuracy of the form scanned and the average speed of scanning a form will be used to measure the outcome. Besides, the outcomes can be also measured by the difference of the current amount of time it takes to input the forms and the time consumed with the new solution.

Phase 2: Database Design

Problems

- A new version of health risk assessment survey form needs to be designed, so that the previous database cannot work anymore. Moreover, the organization does not have the previous database which was kept and managed by Gordian Health Solutions, Inc., an outsourcing company of Highmark.
- Use SSN to be identifier could result in disclosure of privacy or loss of participants.
- Address information is stored in image format and reprinted when the generated health assessments report is ready for delivery. However, images cannot be saved in ordinary relational database.

Opportunities

- Use the combination of date and name as identifier instead of SSN.
- Take the advantage of Access database they already have.
- Store image addresses instead of images themselves in the database.

Approach / Solution

- Analyze characteristics of the data
- Design columns and choose corresponding data types to build a prototype
- Iteratively modify the prototype
- Provide training on how to create / delete / modify the Access table according to a health survey form
- Keep detailed documentation and explain to CPs the reasons for building such a data structure

Expected Outcomes

- The organization has a designed database which can store and retrieve the values of the scanned answers.

- The outcome will be measured by indicators such as usability and reusability of the database, the data integrity, and to what extent the attributes and data types can reflect.

Phase 3: Analysis Application Design for Personal health reports and Aggregate Data

Problems

- Highmark discontinued providing the data analysis to focus on new initiatives, and HSCC wishes to carry out the analysis job whenever it wants to.
- The organization has to do data analysis job previously outsourced to Highmark, but it has no relevant technology.

Approach / Solution

- Draw the flow chart
- Define queries according to searching requirements
- Define macros and modules according to weight for each question and formulas
- Test the usability of the whole system and iteratively make changes according to feedbacks
- Provide training on how to modify
- Keep detailed documentation

Expected Outcomes

- The organization has an analysis application which can generate personal health reports and aggregate data.
- Check the accuracy of the personal health reports and aggregate data for the measurement of the outcomes, and also ensure the application runs correctly all the time. See whether the CPs have the capacity to understand the part in the technology manual describing how to use and change parameters of the application. Let the CPs try to modify the parameters.
- The organization has a rule builder application which can change the rules to generate personal health reports and aggregate data.

The consulting task for HSCC has impact not only on the missions of the organization, but also brings both positive and negative impacts on other issues within the organization.

Impacts on the Mission of the Organization

- Once the survey form is redesigned and input automatically, it will continue to provide agencies residents' overall health status in an efficient way. It can help fulfill the mission of "improving communication between agencies and between agencies and residents, regarding health related issues."
- When the database is designed, scanned information can be stored electronically. In this case, it provides raw data to support the next step – data analysis. It is the technology groundwork to fulfill the three missions stated in the next consulting task.

- With the generated personal health reports, the organization can show participants their health status and offer some recommendations for health improvements. Therefore, it can help the organization to achieve two missions: “to educate the community about health concerns, risks, and problems in order to improve health and healthful behaviors” and “to identify health concerns of residents in the region.”

Other Positive / Negative Impacts

Organization

The task gives the organization the capacity to develop its own survey forms in the future, a paradigm of database for health information storage, and a better solution to analyze and trace individual health information, expanding its competence in healthcare investigation.

Staff

It reduces the time to process the survey forms, and gives the staff the capacity of search and classification, in an integrated interface to manage the health information.

Technology Management

Because of new software introduced, the organization will face more technology management issues. On the other hand, this technology is more sophisticated than website, and thus more difficult to deal with.

Technology Planning

The task forces organization to update the current technology planning and makes the organization consider the sustainability of the technology implementation. It also makes the organization realize the importance of technology planning, especially when the organization confronts a new project.

Internal & External Communications

The task requires enhancing internal communication among health professionals from different agencies, and it also requires enhancing external communications between the organization and its donors, as well as participant residents.

Information Management

The task provides a new information source, and suddenly brings the organization large datasets with private information, which is a challenge to the information management.

Business Systems

The task brings the organization the capacity to collect more health information, and thus provides the organization more funding opportunity, which will make good use of the business systems.

III. Outcomes and Recommendations

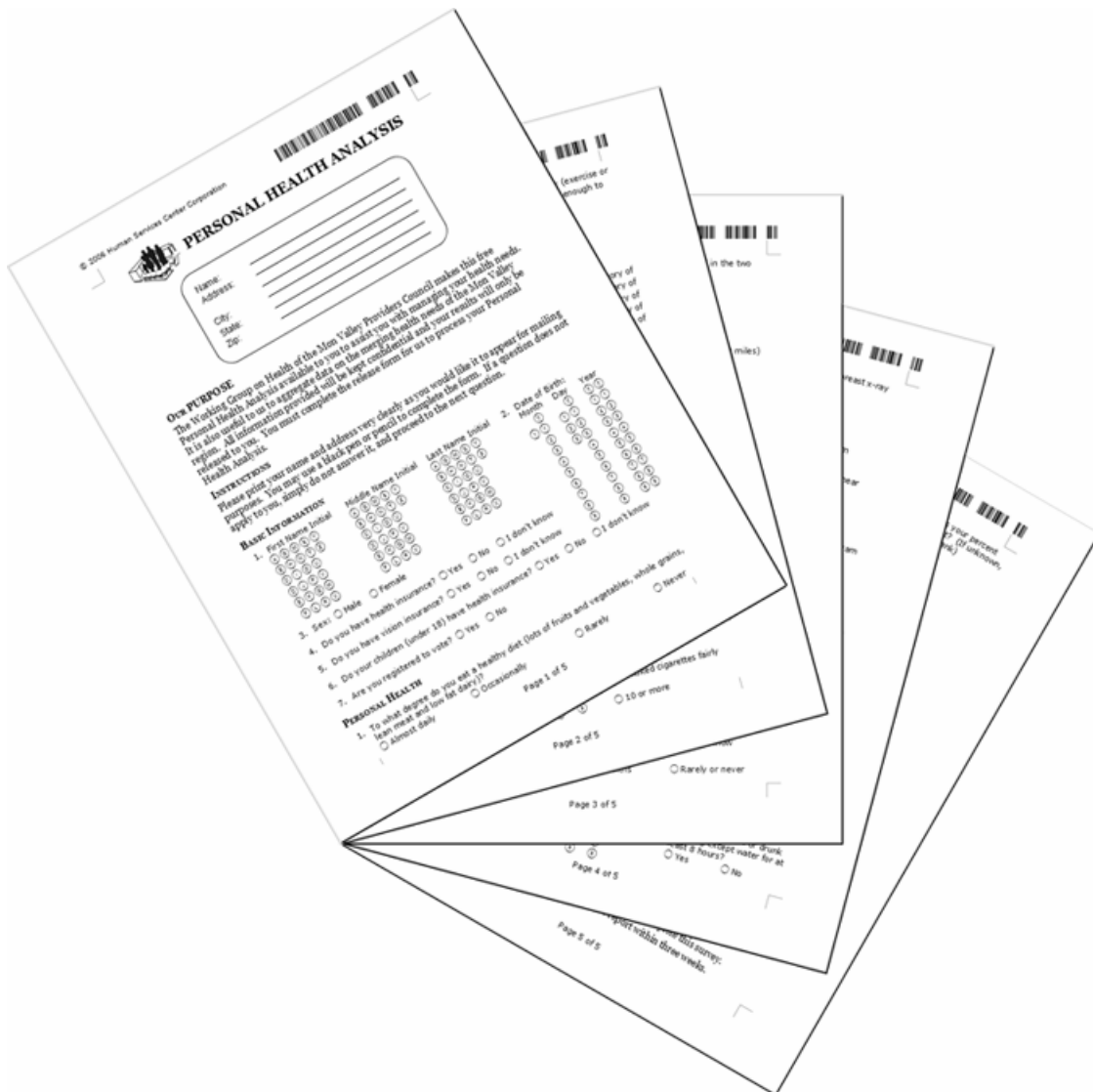
Outcomes

Based on each phase, the outcomes for the major consulting task include:

Phase 1: Survey Form Redesign and Optical Mark Recognition Software & Hardware Selection

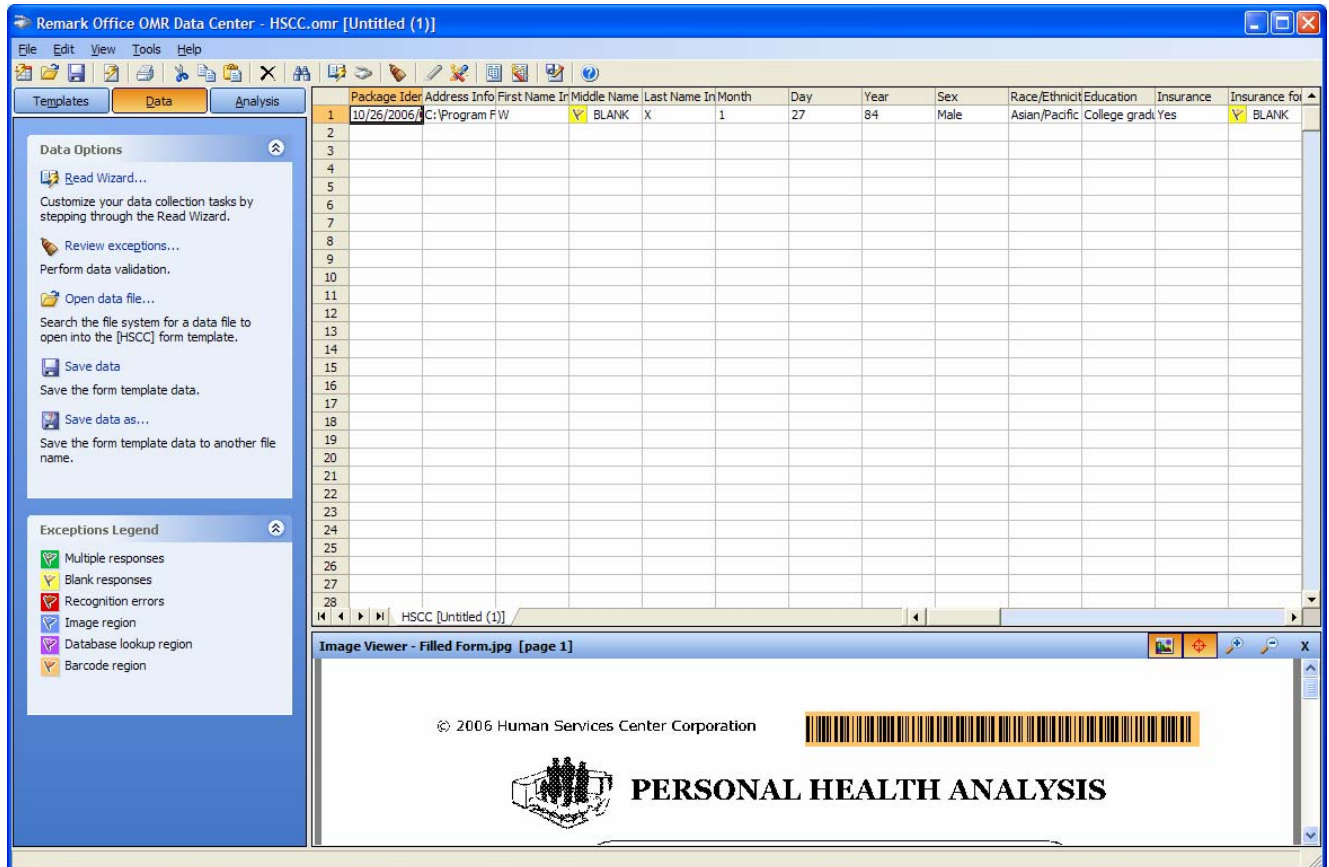
Outcome indicator

- The organization now has a redesigned survey form with a brand new layout that makes information better organized and thus would reduce the probability of confusion. It received positive responses from internal tests conducted by several staff members including Dave, Ruth, Alicia and Lynn, and they all applaud the change.



A screenshot of the newly designed survey form

- Each question on the survey form can be automatically scanned into computer using any ordinary scanner. This process successfully makes good use of existing printers and scanners with an auto-feeding function in the organization, and thus no additional hardware has to be purchased.
- The accuracy of Optical Mark Recognition has been 100 percent so far. Because the average speed of scanning varies on different scanners, the average time ranges between 2 seconds per page and 2.5 seconds per page. The average time for the computer to recognize answers on each page is negligible.



A screenshot of the OMR software

Contrast

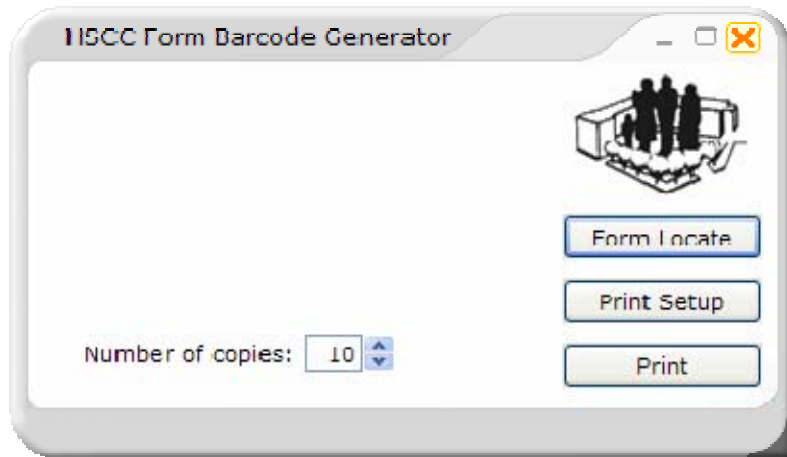
- Before the consulting partnership began, this job was outsourced to Highmark and HSCC did not know how these data was analyzed. However, if this time-intensive job is to be done manually, it will take more than half a minute for each page with more errors.
- The outcomes provide the agency residents’ overall health status in an efficient and reliable way. They help fulfill the objectives of “improving communication between agencies and between agencies and residents, regarding health related issues” and “to identify health concerns of residents in the region.”

Sustainability evidence

- The CPs were involved in the form design process, through which they have learned how to modify the current survey form, how to add new questions or delete existing questions on the form, and how to arrange the layout of the form.
- Rather than starting from scratch, the CPs have a template which will make it much easier to design a new form.
- The CPs recorded each step, in their own words, in the HSCC technology manual to use OMR software to mark each question and make the answers recognizable by the computer.
- They have practiced the various processes from designing the form and using OMR software to mark the form, to scanning a filled form and using OMR software to do automatic data entry job many times.

Increased capacity

- Participants are required to fill their birthdays, as well as their initials of their first names, middle names and last names. The combination of these elements makes unique identifiers with which the developed applications can track individual health status over time. With this technique, the organization expands its capacity to target at personalized health consultation, as well as identify individual health improvements.
- The HSCC Form Barcode Generator is an application developed with Microsoft Visual Basic 6.0. It can setup a printer, and print any form designed using the template mentioned above. By using it, a set of forms can be printed out with a barcode containing information of date and page order. In this case, HSCC can choose to have a specific set of people such as seniors or divorced mothers complete the survey at a same day and then track them as a group. Thanks to the barcode, the forms can be read into the computer even they are disordered.



A screenshot of the HSCC Form Barcode Generator

- Restricted by Highmark, the health assessment program used to be carried out once every year, but now HSCC can perform health assessment whenever it wants to. The CPs plan to carry out the program during every health fair and free screening event from the end of January 2007.

Risk

- Since Microsoft Vista was just released and is not available in the organization right now, the developed applications have not been tested on the new platform. There is a risk that the applications could not be fully compatible with the new Windows platform. The risk is out there in face of future software releases.
- It is possible that the CPs will forget how to operate some steps without some “practice” even have written all of them down.
- Lacking a policy in place to adapt the developed system may cause insufficient utilization or even project failure.

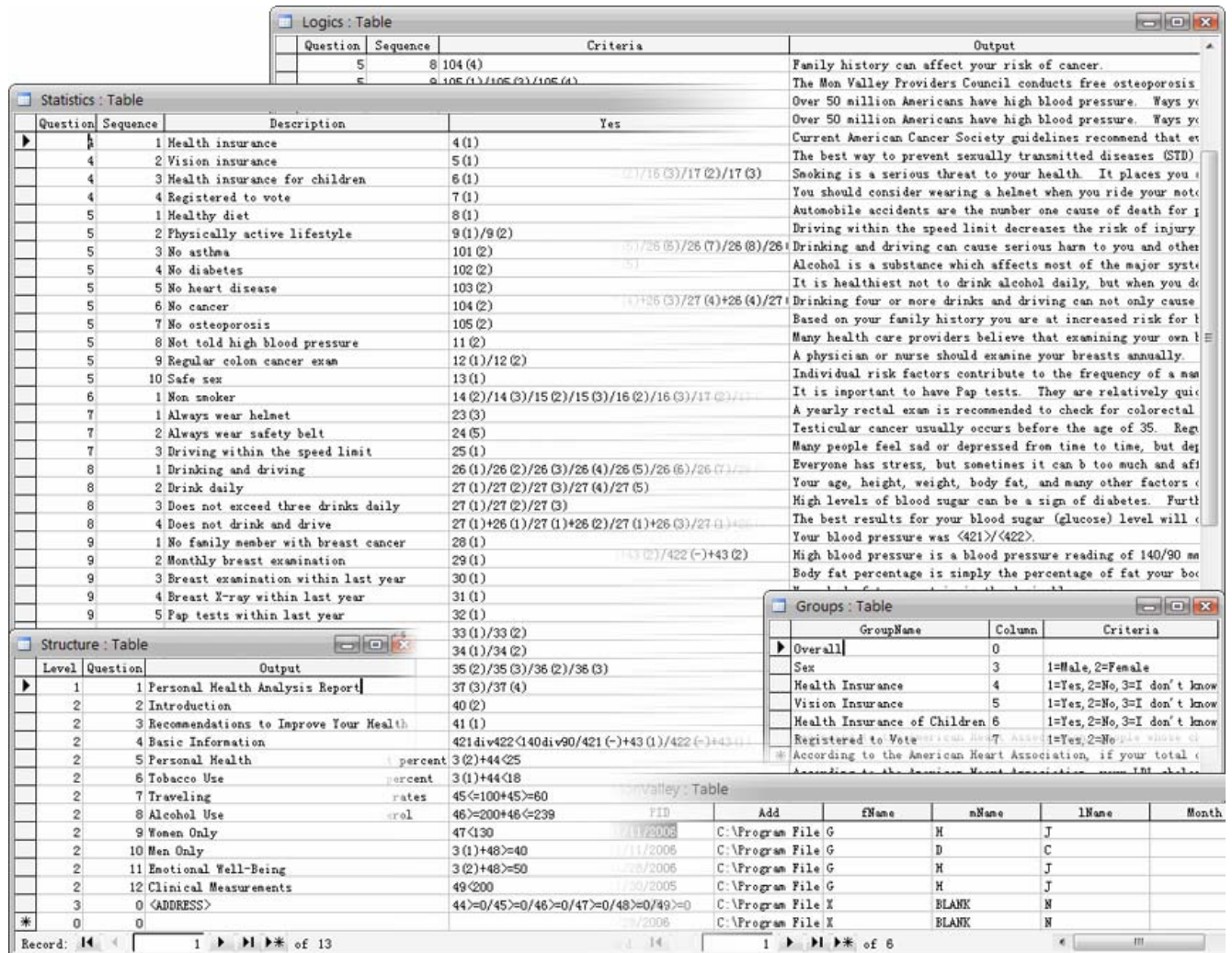
New vision

- As Dave mentioned, the organization can use this technology to develop other survey forms and even use it in other HSCC programs, such as delivering some tests to the participants of their after-school youth program.
- HSCC can help other non-profit organization to carry out similar programs with the technology.

Phase 2: Database Design

Outcome indicator

- A Microsoft Access database was designed, which stores and retrieves the values of the scanned answers. Microsoft Access is much faster than Microsoft Excel, especially when datasets get larger and larger in the future.
- The attributes were derived from the form design task and thus perfectly reflect the answer to each question.
- The appropriate data types are defined to make sure the range of each answer is covered.
- Not only the scanned results, but also logical rules are stored in the database. The Report Generator and Data Analyzer generate reports search the database for corresponding rules and generate reports according to these stored rules.
- Usability and data integrity are ensured. During the design process, properties such as data type and length are considered and several combinations of datasets were tested. For example, the output based on each rule was initially set to the type of text with a maximum field length of 255, but later on it is discovered that some outputs exceeded 255 characters. Therefore the attribute “Output” was reset to the type of memo. While the volume of datasets will geometrically grow but access time is the most important factor to consider, some of the databases tables were first normalized and then denormalized. For example, the attribute “Columns” in the table “Statistics” has been kept for performance reason even though it is redundant. Besides, indexes were created on attributes containing the rules to accelerate the access speed.
- Thanks to the OMR software, all surveys can be continually added to a same database table. It provides the CPs with less work and makes the database easy to maintain.



A screenshot of the Microsoft Access tables

Contrast

- Before the partnership began, there was no database in the organization to keep health information from any health survey HSCC has conducted. The existing database for health surveys was kept and managed by Gordian Health Solutions, Inc., to which Highmark outsourced the data analysis job. HSCC has no access to this database.
- The outcome helps the organization store health information over time. Because individual health information is recognizable through the unique individual identifier, it makes personal health status traceable. In this case, HSCC can provide continuous education to the residents “about health concerns, risks, and problems in order to improve health and healthful behaviors.”

Sustainability evidence

- The CPs received the training session to add, delete and modify attributes in the Microsoft Access table. Through repeating those operations several times a week for practice, the CPs have gained the capacity.

- The CPs put the operation processes in their own words and added them into the technology manual. Also through these iterative processes, they found they had new understanding and went back to the technology manual to revise the written processes.
- Rules to generate personal health report and aggregate data report are stored in the database. It makes rules changeable in the future and thus ensures the sustainability.

Increased capacity

- With all the health information stored, the organization has the basic resource for further data mining applications. HSCC may want to build a data warehouse based on the database after several years, and decision support system and association rule mining application can also be built on the database to help the organization better interpret the large datasets.

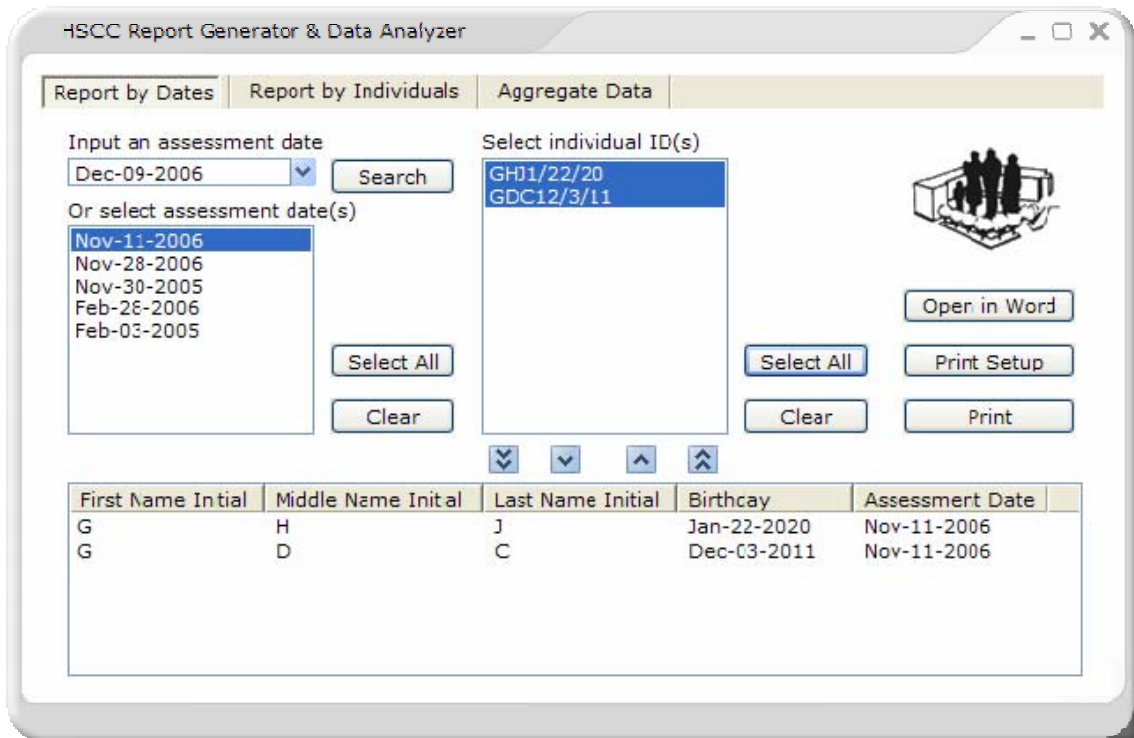
Risk

- Lacking concrete backup policy and failing to follow the policy may cause data loss beyond redemption.
- Although CPs can change all the rules stored in the database to customize the Report Generator and Data Analyzer, the attribute “PID”, “Add”, “fName”, “mName”, “lName”, “Month”, “Day” and “Year” must be remained in the database table “MonValley”. Because the first one serves as a form identifier, the second one is used to locate physical address of images, and the rest of these attributes are combined as an individual identifier. If the CPs want to change the form template structure, it may change the names and properties of these attribute and thus cause malfunction of the applications. In this case, the CPs may want to refer to external IT support.
- Too many records may slightly slow down the access speed of the database. However, it will not be a problem thanks to the CPU and disk speed nowadays.

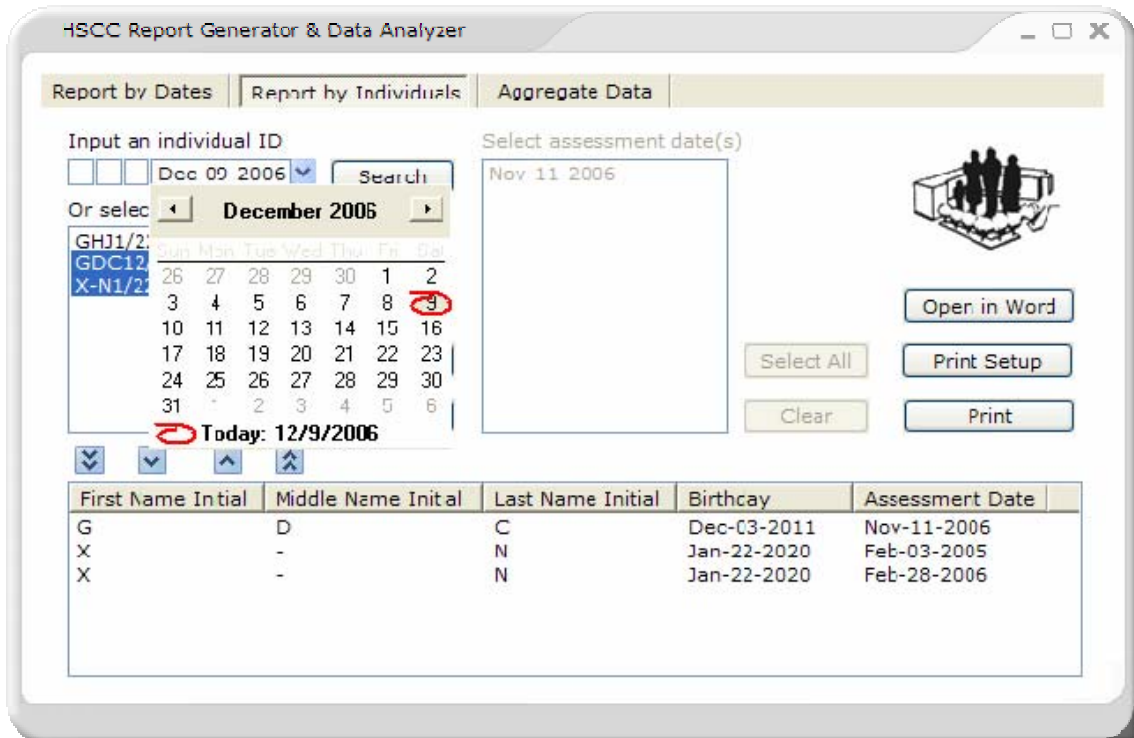
Phase 3: Analysis Application Design for Personal health reports and Aggregate Data

Outcome indicator

- A new application called HSCC Report Generator is developed with Microsoft Visual Basic 6.0. With health data stored in the Microsoft Access database and internal logics decided by the health professionals, the application automatically generates personal health reports in Microsoft Word format and prints it out. The reports cover medical suggestions, as well as useful tips in daily life to help individuals live a healthier life. The accuracy of the report has been and is expected to continue to be one hundred percent.

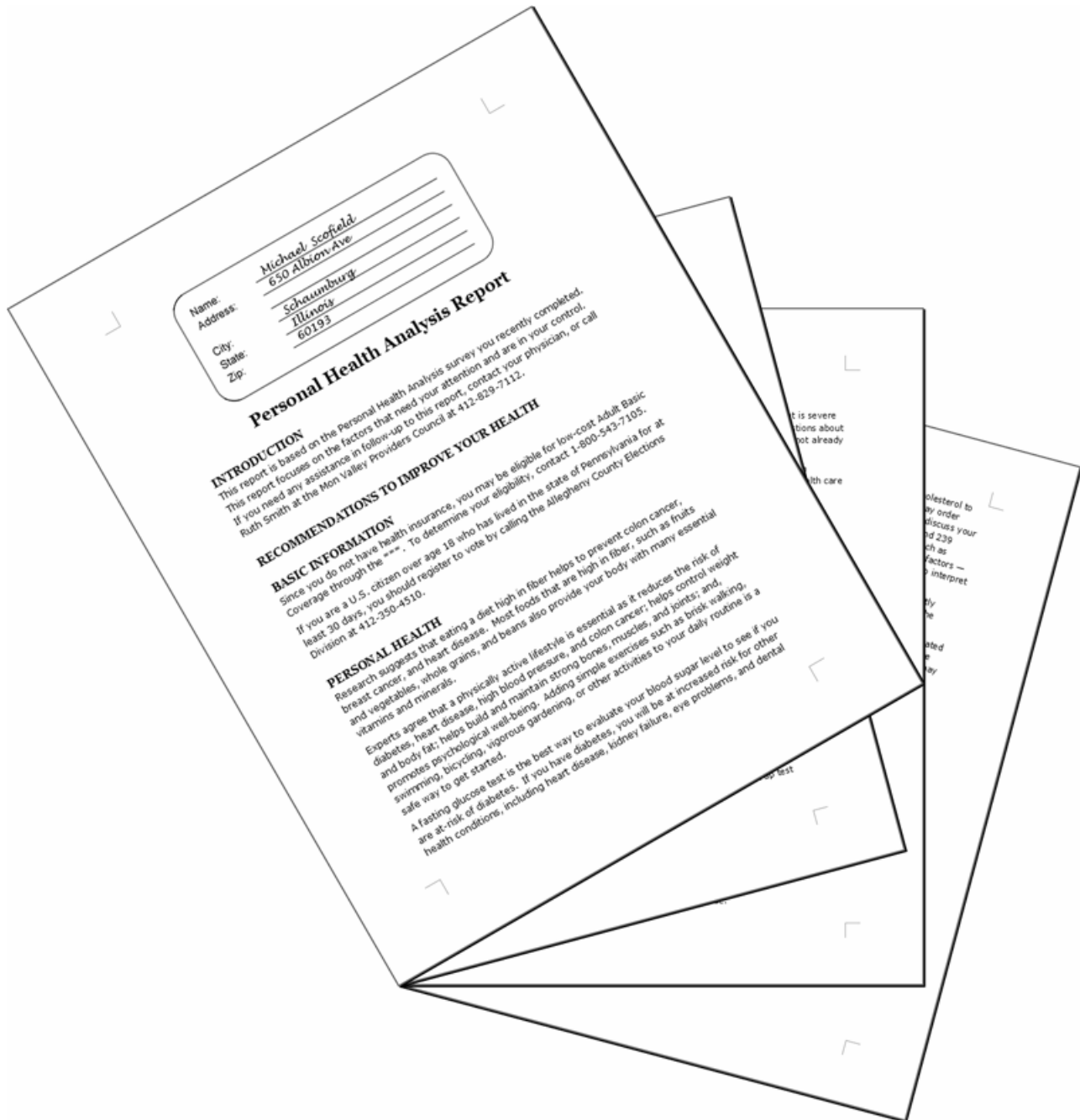


*A screenshot of the HSCC Report Generator
(reports are first grouped by assessment dates and then individual identifiers)*



*A screenshot of the HSCC Report Generator
(reports are first grouped by individual identifiers and then assessment dates)*

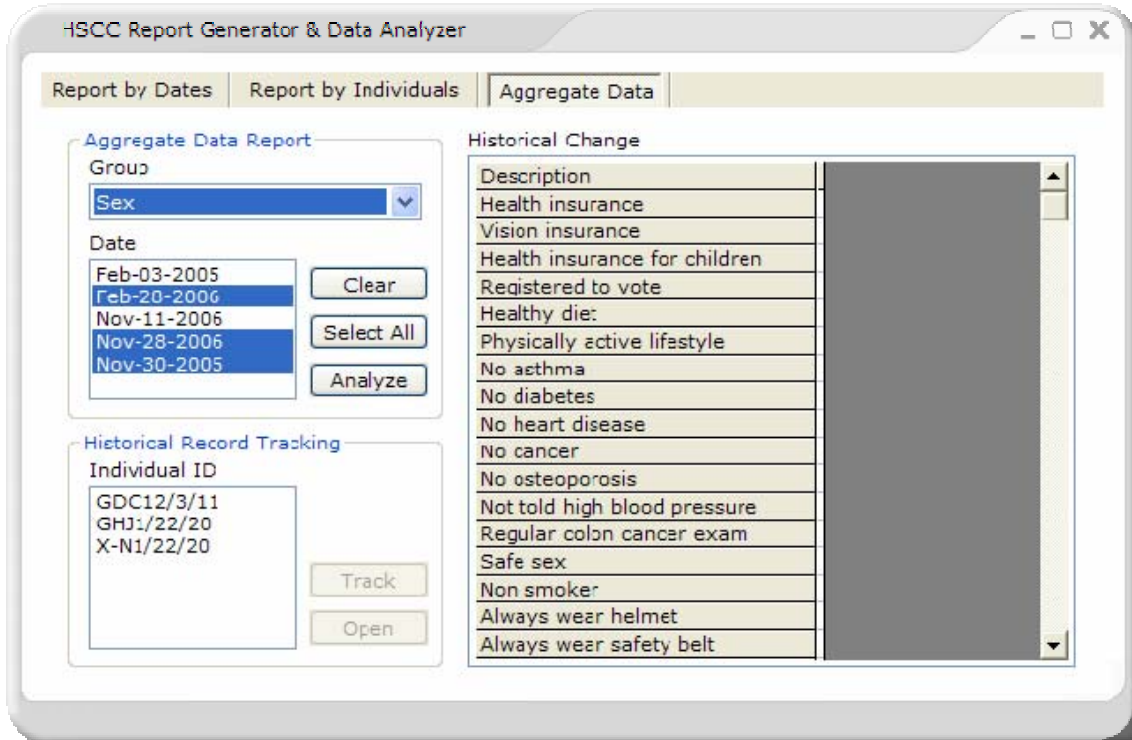
- The mailing addresses of participants are shown on the personal health analysis report sheets, allowing the CPs to fold and put them in envelopes with small windows. It saves a lot of time to write down the addresses manually or print the addresses out separately and then paste them onto the envelopes.



A screenshot of the Personal Health Analysis Report

- After the CPs select survey dates across which to aggregate data, the newly developed Data Analyzer automatically generates a report in Microsoft Word format. The aggregate data report covers number of percentage of participants in different categories, such as residents with high blood pressure, residents who have healthy diet habit, and residents suffering from depression. It

also shows basic statistic information of how many participants are in the particular survey, how many of them are male or female, and how many of them have health insurance or not.



A screenshot of the HSCC Data Analyzer

- The aggregate data report not only illustrates constituents of major health concerns and their proportions, but also indicates the trends by comparing the same samples in consecutive periods. Based on surveys conducted for the seniors in the Oakland area, for example, percentage corresponding to “desirable range of total cholesterols” increases in three consecutive years. It is a good indicator of how cholesterols for the group of people are going to change in the near future.

AGGREGATE DATA ANALYSIS REPORT

Description	# Positive	% Positive	# Negative	% Negative
Sex=Male				
Description	2	100.0	0	0.0
Basic Information	-	-	2	100.0
Health insurance	0	0.0	2	100.0
Vision insurance	0	0.0	2	100.0
Health insurance for children	0	0.0	2	100.0
Registered to vote	0	50.0	0	0.0
Personal Health	1	100.0	0	100.0
Healthy diet	2	0.0	2	-
Physically active lifestyle	0	-	1	50.0
No asthma	0	50.0	0	0.0
No diabetes	1	100.0	0	0.0
No heart disease	2	100.0	2	100.0
No cancer	2	0.0	0	0.0
No osteoporosis	0	100.0	0	100.0
Not told high blood pressure	2	0.0	2	100.0
Regular colon cancer exam	0	0.0	2	0.0
Safe sex	0	100.0	0	0.0
Tobacco Use	0	0.0	0	0.0
Non smoker	2	100.0	2	100.0
Traveling	2	100.0	0	0.0
Always wear helmet	2	100.0	2	100.0
Always wear safety belt	2	0.0	2	100.0
Driving within the speed limit	2	100.0	2	-
Alcohol Use	0	-	2	100.0
Drinking and driving	2	0.0	2	100.0
Drink daily	0	-	2	100.0
Does not exceed three drinks daily	-	0.0	2	100.0
Does not drink and drive	0	0.0	2	100.0
Women Only	0	0.0	2	100.0
No family member with breast cancer	0	0.0	-	-
Monthly breast examination	0	0.0	-	-
Monthly breast examination within last year	0	0.0	-	-
Breast examination within last year	0	-	0	0.0
Breast X-ray within last year	-	100.0	2	100.0
Pap tests within last year	2	0.0	2	100.0
Men Only	0	0.0	2	100.0
Rectal exam within one or two years	0	0.0	2	100.0
Rectal exam within few months	0	0.0	2	100.0
Testicular exam	0	0.0	0	0.0
Emotional Well-Being	0	100.0	2	100.0
No depression	0	0.0	2	100.0
Clinical Measurements	0	0.0	2	100.0
Normal levels of blood sugar	2	0.0	2	100.0
Effective measure of blood sugar	0	0.0	2	100.0
No high blood pressure	0	0.0	2	100.0
Desirable range of women body fat percent	0	0.0	2	100.0
Desirable range of men body fat percent	0	100.0	0	-
Desirable range of resting heart rates	2	100.0	-	-
Desirable range of total cholesterol	2	0.0	2	100.0
Desirable range of LDL cholesterol	0	0.0	2	100.0
Normal LDL score	0	0.0	0	-
Normal men HDL cholesterol	0	100.0	-	-
Normal women HDL cholesterol	0	100.0	-	-
Normal triglyceride level	0	0.0	2	100.0
No blood work record	0	0.0	2	100.0

A screenshot of the Aggregate Data Analysis Report

- After the CPs select a specific individual identifier, the application automatically open a word document which contains a matrix of health indicators, showing improvements the participant has made over a time period.

HISTORICAL CHANGE REPORT

Description	11/11/2006	11/28/2006	11/30/2005
Health insurance	Positive	Positive	Positive
Vision insurance	N/A	N/A	N/A
Health insurance for children	Negative	Negative	Negative
Registered to vote	Negative	Negative	Negative
Healthy diet	Negative	Negative	Negative
Physically active lifestyle	Negative	Positive	Negative
No asthma	N/A	Negative	Positive
No diabetes	Negative	Positive	Positive
No heart disease	Negative	Negative	Negative
No cancer	Negative	N/A	N/A
No osteoporosis	Positive	Positive	Negative
Not told high blood pressure	Positive	Positive	Positive
Regular colon cancer exam	Positive	Positive	Positive
Safe sex	Negative	Negative	Negative
Non smoker	Positive	Positive	Positive
Always wear helmet	Negative	Negative	Negative
Always wear safety belt	Negative	Negative	Negative
Driving within the speed limit	Positive	Positive	Positive
Drinking and driving	Positive	Positive	Positive
Drink daily	Positive	Positive	Positive
Does not exceed three drinks daily	Negative	Negative	Negative
Does not drink and drive	Positive	Positive	Positive
No family member with breast cancer	Negative	Negative	Negative
Monthly breast examination	N/A	N/A	N/A
Breast examination within last year	Negative	Negative	Negative
Breast X-ray within last year	Negative	Negative	Negative
Pap tests within last year	Negative	Negative	Negative
Rectal exam within one or two years	Negative	Negative	Negative
Testicular exam within few months	N/A	N/A	N/A
No depression	Positive	Positive	Positive
No stress	Negative	Negative	Negative
Normal levels of blood sugar	Negative	Negative	Negative
Effective measure of blood sugar	Negative	Negative	Negative
No high blood pressure	Positive	Positive	Positive
Desirable range of women body fat percent	Negative	Negative	Negative
Desirable range of men body fat percent	Negative	Negative	Negative
Desirable range of resting heart rates	Negative	Negative	Negative
Desirable range of total cholesterol	Negative	Negative	Negative
Normal LDL score	Positive	Positive	Positive
Normal men HDL cholesterol	Positive	N/A	Positive
Normal women HDL cholesterol	N/A	Positive	N/A
Normal triglyceride level	Negative	Negative	Negative
No blood work record	Negative	Negative	Negative

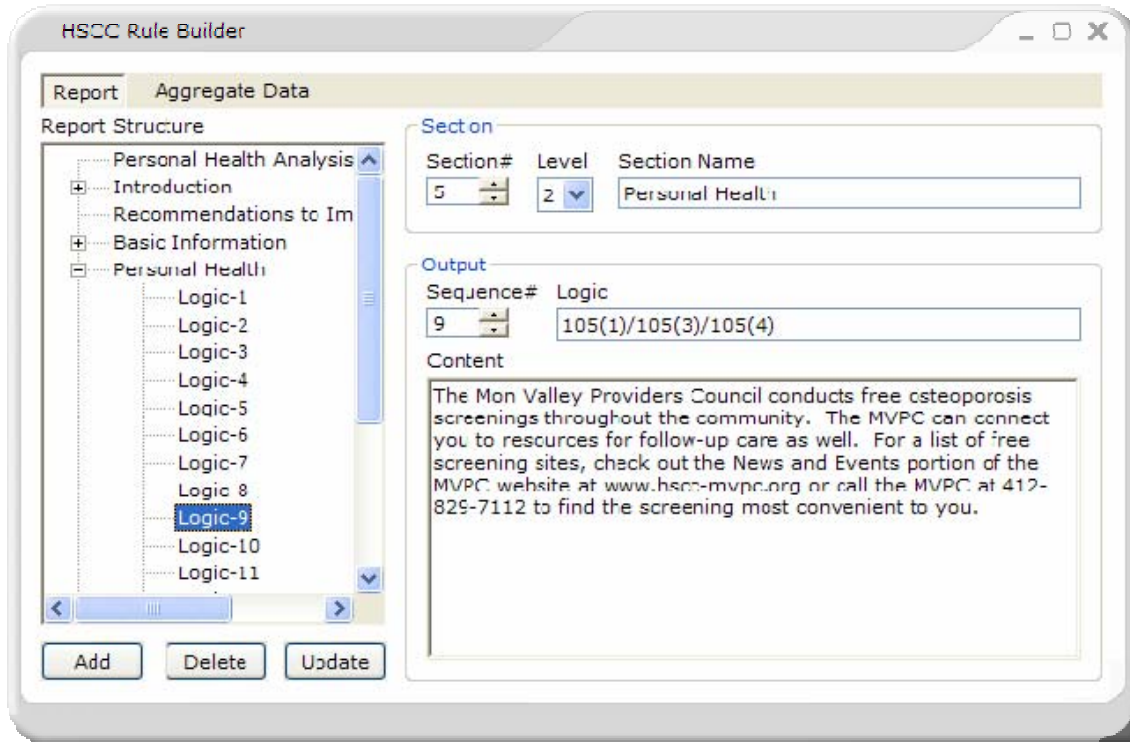
A screenshot of the Historical Change Report

Contrast

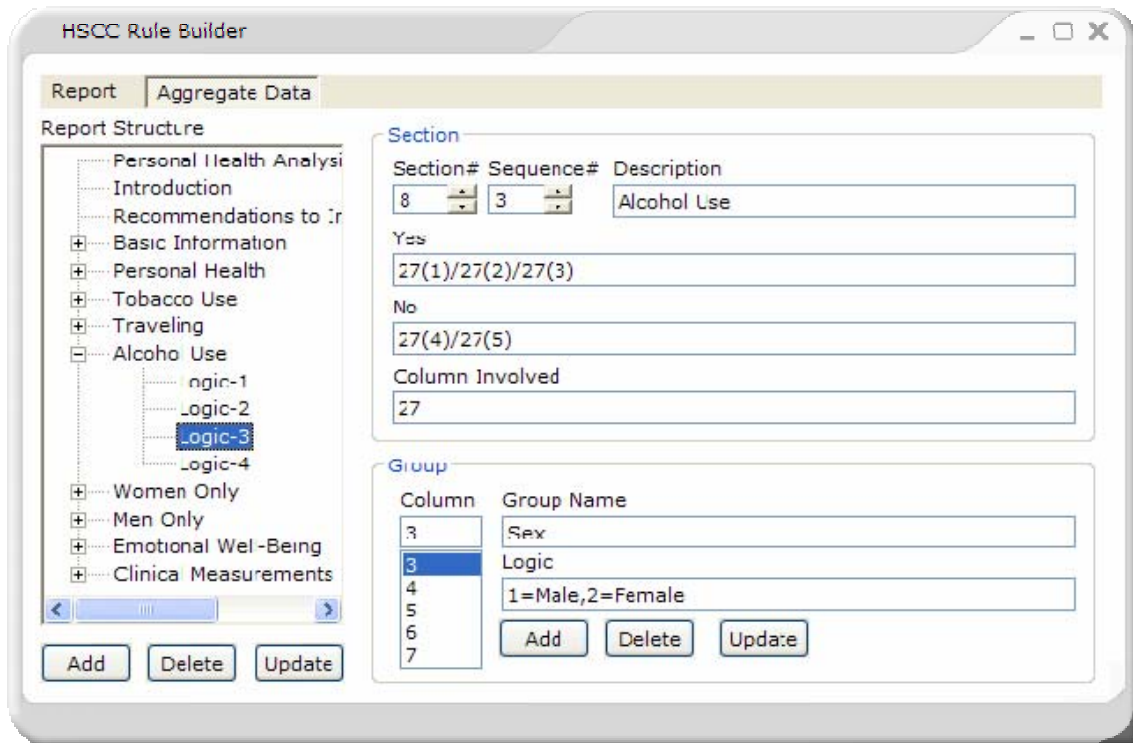
- Before the partnership began, Gordian Health Solutions, Inc. carried out analysis for HSCC. It just gave HSCC the generated reports, and therefore HSCC does not know any logic about the process.
- However, due to the efforts of HSCC health professionals, a whole logic system is figured out to deliver health analysis results. The outcome of personal health report has increased the organization's capacity "to educate the community about health concerns, risks, and problems." With the help of aggregate data, the organization has the capacity "to collectively define a continuum of health services to meet identified needs."

Sustainability evidence

- As the logic of the analysis application is stored as rules in the Microsoft Access database, the CPs can modify the rules stored in the database through a front-end application. With the newly developed application HSCC Rule Builder, the CPs can easily add new rules, delete old rules, and modify the rules stored in the database tables.



A screenshot of the HSCC Rule Builder for Personal Health Analysis Report



A screenshot of the HSCC Rule Builder for Aggregate Data Report

- Instructions are recorded in the technology manual in the CPs' own words.
- The CPs have been familiarized with the applications through training sessions, and they will repeatedly use these applications for health survey conducted at every health fair and free screening event.
- The CPs expressed comfort with this solution and make good use of the tools.

Increased capacity

- As sometimes HSCC conducts surveys for specific group such as seniors or divorced mothers, the CPs have the expanded capacity to analyze health status for each group by simply choosing date parameter in the application.

Risk

- The analysis application is well designed and developed with highly mature programming language Visual Basic, and it is robust enough so that it runs smoothly all the time. If the application is corrupted someday, all the CPs would have to do is follow the instructions recorded in the technology manual to recover the application. It takes only a few steps and, thanks to separation of database and application, the collapse will not destroy the previous data stored in the database.
- Modifying the code requires special programming experience. When they feel necessary to change a part of the application such as interface, they may have to refer to some external resources.

New vision

- As the organization plans to design new forms in the future, it would set new rules to analyze the collected data. For example, if the organization wants to design some test papers to deliver tests to the participants of their after-school youth program, it will set new rules for the test papers.

Recommendations

Vision

The vision of technology for HSCC is to acquire health information in a timely manner, provide quick feedbacks to residents while protecting their privacy, perform safe data storage, make available information resources used at its full potential, and keep the health assessment program a continuous effort. Currently, however, HSCC faces the following problems:

- It does not have necessary equipments and solutions to provide real-time feedback.
- Existing risks with backup methods and mechanism threaten data safety.
- There are also barriers hindering optimization of information resources sharing.
- Knowledge transfer process is not smooth as well.

Goals

Based on the outcomes of the previous consulting tasks, there comes a new understanding of how technology can further aid the organization to fulfill its missions. With this new understanding, the recommended goals are as the following:

- Provide mobile application and immediate feedbacks to participants by identifying appropriate hardware, migrating the applications developed for Windows XP platform to portable devices, and recompiling applications if necessary.
- Record video tutorials to remind the CPs the whole process, to train other staff members and volunteers with high turnover rate, as well as to make knowledge to be passed on easier and more efficient both within and outside the organization.
- Research backup and encryption tools, as well as revise the backup plan to ensure data safety and the capacity of quick recovery after disasters.
- Migrate the database with donors' information to Windows XP platform and build a internal information sharing system to avoid possible data loss, ensure business continuity, and maximize the use of information resources.

Although the technology budget is made year to year, the second and the fourth goals are not subject to the budget constraint and one-time implementations. The first goal, however, needs to be considered under the budget constraint. The third goal becomes a repeating task according to the newly revised backup plan.

Recommendation 1: Make applications portable

Description of Task

This recommendation aims to build a framework to make the current applications portable. The recommendation offers a thorough understanding of choosing different pieces of hardware and operation systems, as well as some advices and steps to take under different choices. The results for blood work, the last part of the survey, will not be immediately available at health fairs and free screening events, decreasing the feasibility of this task. However, this task can be carried out as soon as the organization gets equipments to give finger pricking tests and get the blood work.

Reasoning behind Task

HSCC uses and promotes the applications at local health fairs and free screening events, and it would be great if it can provide feedback or personalized health reports on the spot. Quick feedback can win the health assessment program more participants and, moreover, HSCC staff members can go over the results and explain them to participants immediately. It also prevents the report from being delivered to a wrong address and thus protects participants' privacy. Even though there is an upfront investment, it saves the organization money on mail delivery and envelopes all the time.

Approaches

To carry out this plan, the CPs need a portable scanner, a portable printer and a Personal Digital Assistant. Either a smartphone or a laptop computer can substitute for a PDA. A smartphone or PDA provides better portability than a laptop does, while a laptop can process much faster and store much more information than a smartphone or PDA does. A laptop would not require further development on the applications, whereas a smartphone or PDA does. Secondly, the operator would have to learn new processes for managing on the PDA versus the laptop. Considering these indicators, a laptop could be the best alternative, whereas a smartphone or PDA serves as another long-term alternative.

If in the future a smartphone or PDA with Windows CE or Windows Mobile platform is selected, all the applications should be upgraded onto .Net platform and use plug-in to recompile since both of the platforms use different cores from Windows XP. Although Microsoft Visual Studio.Net provides upgrade wizard, it is strongly recommended to outsource this task if the CPs decide to use either of the two platforms. This is because at most of time there are some exceptions during the upgrade process. The external IT support the organization can refer to is listed in the following section.

Resources

To upgrade the applications to .Net platform, HSCC may need IT professionals outside the organization with those qualifications:

- Have clear concept of Visual Basic for Application
- Familiarize with Visual Basic language and Visual Basic script used in Microsoft Word
- Master the development tool Microsoft Visual Basic 6, and possession of Visual Basic.NET skill is preferred
- Have solid knowledge in Access database
- Know how to embed SQL language into Visual Basic application to manipulate Access database
- Relevant project experience would be a plus

The external IT support can be found using the following URLs.

- Pittsburgh Technology Council
Pittsburgh Technology Council is the principal point of connection for the technology industry. Council membership currently includes nearly 1,400 companies in the 13-county southwestern Pennsylvania region. HSCC may want to consult some members with Microsoft Access and Visual Basic problems.
<http://www.pghtech.org/Networks/InformationSystems/>

- Visual Basic Meetup Pittsburgh
Meetup provides free information to signed-up users when a new Visual Basic meetup starts near Pittsburgh. HSCC would have the chance to meet local Visual Basic developers and seek for help from them.
<http://vb.meetup.com/cities/us/pa/pittsburgh/>
- Tech-Engine
Tech-Engine is developed as a free, discreet service to help organizations connect with qualified IT professionals. Visual Basic user groups can be easily found at this website.
http://itcareer.insurancetech.com/candidates/resourcepages_usergroupsskills/page02.asp
- Tech Soup
Tech Soup provides TechFinder specially designed for the nonprofit sector: a searchable, online directory of individuals and organizations that provide technology products and services to the nonprofits. Another service called TechSoup Stock connects nonprofits with donated and over 240 discounted technology products from 25 providers including Cisco and Microsoft.
<http://www.techsoup.org>
- Pittsburgh Craigslist > Volunteers
Craigslist contains local classifieds and forums with more than 5 billion page views per month. HSCC may want to find volunteers who have the knowledge of Microsoft Access or Visual Basic.
<http://pittsburgh.craigslist.org/vol/>
- Volunteer Match
As the largest online network of participating nonprofits, VolunteerMatch attracts thousands of volunteers every day. HSCC can post the description of the work to find technology volunteers.
<http://www.volunteermatch.org/bymsa/m6280/c/opp1.html>

Budgets

The budgets for this task come from four parts.

- One is inevitably for the purchase of smartphone, PDA or laptop computer. Dave already expressed that the organization has a budget for a new laptop computer, therefore making the task feasible.
- Another part is from the purchase of a portable scanner and a portable printer.
- Since many participants could wait in the queue to get the result, it requires a second staff to run the application on the portable device, adding extra pay to HSCC.
- The last part is used for potential external IT support and, if free resources are well utilized, can be avoided.

Expected Outcomes

- After implementation, the organization can expect an increased participant satisfaction which would be measured by a new survey using the same OMR technology.
- The upfront investment would be almost offset by the amount of money saved on envelopes and mail delivery after processing two thousand individual health assessments.

- According to the trend residents participate in health fair and free screening event, the organization could expect at least ten percent increase in the number of health assessment program participants.

Recommendation 2: Use video tutorials to train staff and volunteers

Description of Task

This recommendation involves recording a set of video tutorials to help CPs, as well as potential users familiarize themselves with the process of form design, OMR input, report generation, aggregate analysis and rule setup. Dave can also record what he learns from the free OMR training session to video clips and then transfer the knowledge in the organization.

Reasoning behind Task

Although the process will be documented in the technology manual, it is still possible that the CPs forget how to operate even with the manual in the future. The longer they have not used the program, the more possible they forget how to use these tools. However, frequent boring practice is not a realistic solution due to time and even enthusiasm issue.

The CPs only need to create video tutorials once during one instance of the process they create new forms, use OMR software, and use report generating and analysis applications. With little investment on time, the organization receives great benefits.

At first, the video tutorials will be highly beneficial to users who want to review the process or learn to use this technology. Due to high turnover rate of volunteers, the video tutorials would be frequently used. With the effort of these video tutorials, potential users can be trained at the comfort of their own computers at any time and locations. It provides a lot of flexibility and convenience to both trainers and trainees.

More importantly, the idea that HSCC expands its capacity by utilizing this technology to design other forms can be achieved and sustained with the help of the video tutorials.

As the Health Working Group has 75 membership agencies, the use of video tutorials is a very efficient way for knowledge transfer. HSCC can also post the video clips on the official website to show other non-profit organizations how technology helps their work. If other non-profit organizations are interested, the knowledge can be easily passed on to them by using the video tutorials.

Approaches

The best way to make this happen is to use screen recorder software to record the whole process in AVI or Flash files which can be played back. Verbal explanations can also be added to the video clips to make the audience better understand the content. Afterwards, the CPs can either record it in CDs or just put it on the website accessible to everyone.

Resources

There are many resources available on the Internet. Here is a list showing a few URLs for some popular screen recording freeware:

- AviScreen Classic 1.4
<http://www.tucows.com/preview/406558>

- WindowShoot V1.0
<http://www.softcodez.com/software.html>
- Auto Screen Recorder 2.0
<http://www.wisdom-soft.com/downloads/setupautoscreenrecorderfree.exe>

Among these pieces of freeware, AviScreen Classic is the most powerful, WindowShoot is a versatile alternative which even can add text to the video, but Auto Screen Recorder has the simplest interface, and it is the fastest and easiest to use. In this case, the last freeware becomes the top choice for the CPs.

A tutorial has been made to demonstrate how to use Auto Screen Recorder to record a video tutorial, using AviScreen Classic. It is attached with the three pieces of software in the consulting project outcome CD.

Budgets

All the software listed above is freeware, and thus there is no monetary cost for the task.

Expected Outcomes

- The CPs open the video tutorials when they forget how to use the OMR software, report generating or analysis application. Through this “self-study” activity, they would recall details of the process and smoothly complete all the jobs.
- Rather than offering centralized training, the CPs distribute the video tutorials to anyone who is newly involved to the health assessment programs, greatly saving their time and being able to share it with other organizations.
- The volunteers and other staff members involved in the health assessment program later on have a thorough understanding of the OMR software and other applications after watching the video tutorials.
- More and more membership agencies and other non-profit organization showing great interests in the technology master the knowledge through the video tutorials.

Recommendation 3: Backups and encryption

Description of Task

This goal involves providing a set of backup solutions for substituting backup based on USB thumb, as well as giving a revised backup plan indicating who will backup, when to backup, and what to backup. To ensure information integrity, the task suggests archiving emails instead of deleting them.

Reasoning behind Task

Backup files in USB thumb drives can easily be erased or lost. A corrupted important file on the computer happens to be the one stored in the USB thumb drive which is lost because of high voltage. The probability of this issue is pretty small yet still exists.

Offsite data without privacy protecting measures may cause privacy disclosure. Suppose one of the backup discs is lost and it happens to store the accounting information. Anyone who has the disc can easily open any confidential files and get access to sensitive accounting information about the

organization. Similarly, phone numbers of donors, weights of participants, as well as corporate financial figures are at risk.

Approaches

One reason why staff members prefer USB thumb drive is that compared with CD-R discs, it is more convenient to modify stored data in a USB drive. For the same purpose in this aspect, CD-RW would be a good substitute of CD-R which is originally used in the organization.

Most of the computers onsite are installed with CD burners, and CD-RW discs become very cheap these days. Windows XP has integrated CD burning functionality with itself, and therefore it is also very convenient for the staff members to burn backup discs at most of the computers.

Additionally, a revised backup plan needs to be strictly followed. The business manager will back up all of her documents daily to a CD-RW. Once half a month, the staff in charge of technology will make a master set. Both the executive director and the staff in charge of technology will backup other critical files of the agency, such as donors' information and emails, every two weeks. When any staff members have invested a great deal of time in a piece of work which would bring a hardship if damaged or lost, they should backup the files. All backups should be took offsite to the executive director's house on the same day the backups are made.

Dave often deletes unimportant emails to keep his inbox of Microsoft Outlook clear. As sometimes people may need to go back and find some "trivial" information in the previous emails, it is better to archive some older items regularly or enable "AutoArchive" function. To archive emails or enable "AutoArchive", go to "File->Archive..."; to change "AutoArchive" settings, go to "Tools->Options..." , choose "Other" tab and then click "AutoArchive...".

Files need to be encrypted before they are backed up. It requires another temporary copy on the hard drive so that staff members can encrypt this copy instead of the original copy. Afterwards, staff members will move this encrypted copy onto a CD. To encrypt the files, every computer should be installed with the same encryption software and use a universal password.

Resources

For those computers with earlier version of Windows platforms, here are some free tools for CD burning:

- BurnAtOnce 0.99.5
BurnAtOnce is designed to write CDs quickly and with minimum fuss. The interface is simple, fast to use, yet powerful and is not cluttered with any wizards or cuddly animated characters.
<http://www.burnatonce.net/downloads/>
- CommandBurner
CommandBurner can be executed from the command line, or through any method that passes command line arguments. Simple options allow users to burn, erase, load and eject CDs and DVDs.
<http://www.commandburner.com/>
- CDBurnerXP Pro 3.0.116
CDBurnerXP Pro can burn any data on CD-R/CD-RW/DVD+R/DVD-R/DVD+RW/DVD-RW. It verifies written Data automatically after burning process. Users can use either the internal browser to add files or the intuitive Drop-Box to drag and drop files directly from any Windows

Explorer window.

<http://www.cdburnerxp.se/>

Various kinds of file encryption freeware are available on the Internet to mitigate this risk:

- **FineCrypt 8.1**
FineCrypt is integrated with Windows shell and provides the drag-and-drop function with which it can work like WinZip. It provides 10 encryption algorithms and 4 encryption modes and, moreover, it can check the correctness of encryption.
<http://www.finecrypt.net/>
- **FileEncryptor 1.0.6.0**
FileEncryptor uses official encryption algorithm recently named by National Institute of Standards and Technology - AES. It supports different levels of security allowing to choose between different encryption key length. Simple and intuitive interface allows users to immediately start encrypting files.
<http://www.arxsoft.com/>
- **LockDisk 2.8**
LockDisk is a simple and easy encryption application that creates an encrypted virtual drive, provides password protection, and hides any file or folder ensuring file encryption. Once the virtual drive is loaded, users can copy, move, delete and drag and drop files as if it is another hard disk. The data gets encrypted once the virtual drive is unloaded.
<http://www.klonsoft.com/lockdisk/>

BurnAtOnce and FineCrypt are the strongest candidates as they are easiest to use and meet all the functions the CPs need.

Budget

The budget is only for ongoing cost of CD-RW discs, and all the software listed above is free of charge.

Expected Outcomes

- The organization is kept from possible data loss, and thus the continuity of fulfilling the missions is ensured.
- Through sticking to the revised backup plan, the organization has everything important backed up. It allows the organization has the capacity to get back on track after going through disasters such as a big fire within two days.
- The organization is away from privacy disclosure since they have every copy of backup encrypted.

Recommendation 4: Migrate and share database of donors' information

Description of Task

The purpose of this task is to avoid business interruption due to possible breakdown of the outdated system and improve the efficiency of job tasks related to donors' information. The recommendation gives two alternatives on database migration and three solutions to make donors' information shared in the whole organization. It also suggests a dynamic webpage to query the database.

Reasoning behind Task

There is no plan for the migration of donors' database in case of breakdown of the Pentium 150, considering the existing one is still in good condition and can meet the requirements: it can run specifically designed accumulative reports, track purpose of allocated money, track source of gift, as well as individual profiles. HSCC considers it unnecessary to import the data to a new system and have someone rewrite the codes for reports.

Once the old Pentium system fails and cannot be recovered, the donor's information will be unavailable until the information from the backup can be migrated to the new platform. The process may take a long time if the organization does not prepare in advance. This may halt every work related to the donors' information and threaten fundraising.

Besides, it is inconvenient to share donors' information between two OS platforms. Every time the staff members want to contact a donor, they have to go to the old computer and check the contact information such as email address or telephone number first. It obviously slows down the work process. On the other hand, sharing database on the intranet cannot be carried out on the DOS platform, and it makes data migration the prerequisite.

Approaches

The DOS based relational database system the organization is using is called DataPerfect, which is antiquated and not user friendly. There are two ways of the migration.

One is using an application called "Tame" on a Windows platform, an application preventing DOS programs from hogging the system, enhancing the application with access to Windows features and allowing use of both DOS and Windows add-ins. It provides users with maximized information sharing without migrating the data with the old format. This approach allows users to simply move DataPerfect and stored data to the new Windows platform. Moreover, users can directly retrieve a lot of old data backed up before.

The other way is to export data out as delimited ASCII text, and then use Access to handle it. The advantage of this solution is that it is more convenient for both third-party technology professionals and the organization staff members to maintain and backup the database. Besides, donors' information can be more easily retrieved and used in other applications such as Microsoft Word and Outlook. However, this approach requires migrating all the data currently existing in the DOS database to Microsoft Access.

After data migration, it is advisable to share donors' database on the intranet so that staff members would have donors' detailed information at hand as soon as they can. The possible solutions include building a Virtual Private Network, and using Microsoft Internet Information Service or Microsoft SharePoint. As the donors' information is expected to be shared in an organization-wide scope, it is better for the organization to have dynamic webpage which can query the database.

Among these solutions, Microsoft Internet Information Service is highly recommended as it is already available and support remote access based on B/S architecture, which means users can operate on the database directly through some web pages. IIS is integrated into Microsoft Windows XP Professional, the edition installed on most of HSCC computers. To enable this service, go to "Control Panel->Administrative Tools->Services" and then find the service with the name "IIS Admin" and start it. To configure IIS, go to "Control Panel->Administrative Tools->Internet Information Services."

Both migrating data and building sharing platform need external IT support. These resources, along with information of software mentioned previously, are provided in the next section.

Resources

To get data migration done, the organization needs someone who is familiar with DataPerfect, Microsoft DOS and Access database.

- Tame
<http://www.tamedos.com/>

Here is a link to the webpage providing introduction of VPN.

- Virtual Private Network
<http://compnetworking.about.com/cs/vpnsetup/>

To set up a Virtual Private Network, HSCC may need IT professionals outside the organization with those qualifications:

- Have previous experience on VPN setup
- Possess basic knowledge of telecommunications, TCP/IP protocol, Microsoft network client, and file sharing for Microsoft networks

Here is a link to the webpage providing some basic information about SharePoint.

- Microsoft SharePoint
<http://www.microsoft.com/sharepoint/default.msp>

To build a query webpage for the donors' database, HSCC may refer to external IT professionals with those qualifications:

- Familiarize with HTML language
- Possess dynamic webpage design skills such as ASP or JSP
- Master the development tool Microsoft FrontPage or Macromedia Dreamweaver
- Have solid knowledge in Access database
- Know how to embed SQL language into ASP or JSP to manipulate Access database
- Relevant project experience would be a plus

The resources of external IT support can be found in the resources part of the first recommendation.

Budgets

Microsoft Internet Information Service is a component of Microsoft Windows XP Professional, and so there is no charge for this part. Tame is a freeware. Microsoft SharePoint is retail software, while HSCC may get a free license for the non-profit organization. If the organization decides to build a VPN, some cost may be incurred for the external IT support.

Expected Outcomes

- Increased availability of the migrated database keeps the business uninterrupted.
- Staff members can open the database via VPN, or they can search for donors' information in Microsoft Internet Explorer. They do not have to run to the first-generation Pentium for donors'

information even all they need is an email address, improving work efficiency of the organization a lot.

About the Consultant

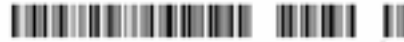
Wei Xiao is a first-year student in the Master of Information Systems Management program at Carnegie Mellon University.

Appendix A.

- Auto Screen Recorder 2.0
<http://www.wisdom-soft.com/downloads/setupautoscreenrecorderfree.exe>
- AviScreen Classic 1.4
<http://www.tucows.com/preview/406558>
- BurnAtOnce 0.99.5
<http://www.burnatonce.net/downloads/>
- CDBurnerXP Pro 3.0.116
<http://www.cdburnerxp.se/>
- CommandBurner
<http://www.commandburner.com/>
- FileEncryptor 1.0.6.0
<http://www.arxsoft.com/>
- FineCrypt 8.1
<http://www.finecrypt.net/>
- LockDisk 2.8
<http://www.klonsoft.com/lockdisk/>
- Microsoft SharePoint
<http://www.microsoft.com/sharepoint/default.aspx>
- Official website of Human Services Center Corporation
<http://www.hsc-mvpc.org/>
- Pittsburgh Craigslist > Volunteers
<http://pittsburgh.craigslist.org/vol/>
- Pittsburgh Technology Council
<http://www.pgtech.org/Networks/InformationSystems/>
- Remark Office OMR software
<http://www.gravic.com/remark/officeomr/index.html>
- Tame
<http://www.tamedos.com/>
- Tech-Engine
http://itcareer.insurancetech.com/candidates/resourcepages_usergroupsskills/page02.asp
- Tech Soup
<http://www.techsoup.org>
- Visual Basic Meetup
<http://vb.meetup.com/cities/us/pa/pittsburgh/>
- Virtual Private Network
<http://compnetworking.about.com/cs/vpnsetup/>
- Volunteer Match
<http://www.volunteermatch.org/bymsa/m6280/c/opp1.html>
- WindowShoot V1.0
<http://www.softcodez.com/software.html>

Appendix B.
 Personal Health Analysis Survey Form

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PERSONAL HEALTH ANALYSIS

Name: _____
 Address: _____

 City: _____
 State: _____
 Zip: _____

OUR PURPOSE

The Working Group on Health of the Mon Valley Providers Council makes this free Personal Health Analysis available to you to assist you with managing your health needs. It is also useful to us to aggregate data on the merging health needs of the Mon Valley region. All information provided will be kept confidential and your results will only be released to you. You must complete the release form for us to process your Personal Health Analysis.

INSTRUCTIONS

Please print your name and address very clearly as you would like it to appear for mailing purposes. You may use a black pen or pencil to complete the form. If a question does not apply to you, simply do not answer it, and proceed to the next question.

BASIC INFORMATION

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------|
| 1. First Name Initial | Middle Name Initial | Last Name Initial | 2. Date of Birth: |
| A B C D E Y | A B C D E Y | A B C D E Y | Month Day Year |
| F G H I J K L M N O P Q R S T U V W X | F G H I J K L M N O P Q R S T U V W X | F G H I J K L M N O P Q R S T U V W X | 1 2 3 4 5 6 7 8 9 0 |
| | | | 1 2 3 4 5 6 7 8 9 0 |
3. Sex: Male Female
4. Do you have health insurance? Yes No I don't know
5. Do you have vision insurance? Yes No I don't know
6. Do your children (under 18) have health insurance? Yes No I don't know
7. Are you registered to vote? Yes No

PERSONAL HEALTH

1. To what degree do you eat a healthy diet (lots of fruits and vegetables, whole grains, lean meat and low fat dairy)?
- Almost daily Occasionally Rarely Never



2. In an average week, How many times do you engage in physical activity (exercise or work which lasts at least 20 minutes without stopping and which is hard enough to make you breathe more heavily and your heart beat faster)?
- 5 times a day or more 5 or more times a week
 3 to 4 times a day 3 to 4 times a week
 2 times a day or less 1 to 2 times a week
 Less than 1 time a week
3. Have you ever had any of the following?
- Asthma Yes No I don't know Family History of
Diabetes Yes No I don't know Family History of
Heart disease Yes No I don't know Family History of
Cancer Yes No I don't know Family History of
Osteoporosis, Low Bone Mass Yes No I don't know Family History of
4. Have you ever been told that you have high blood pressure?
- Yes, and I am taking medication for it
 No
 Yes, but I am not taking any medication
5. Have you had a colon cancer screening/rectal exam?
- Within the past year More than 3 years ago
 1 to 2 years ago Never had a colon cancer screening
 2 to 3 years ago
6. Do you practice safe sex?
- Yes, always Most of the time Never

TOBACCO USE

1. How many cigars do you usually smoke per day?
- None 1 or less 2 or more
2. How many pipes of tobacco do you usually smoke per day?
- None 1 or less 2 or more
3. How many times per day do you usually use smokeless tobacco? (Chewing tobacco, snuff, pouches, etc)
- None 1 or less 2 or more
4. Do you smoke cigarettes? How would you describe your smoking habits?
- Never smoked Used to smoke Still smoke now
GO TO TRAVELING GO TO QUESTION 6, 7 GO TO QUESTION 5, 7
5. *Current smokers* How many cigarettes a day do you smoke? And GO TO QUESTION 7
- 1 2 3 4 5 6 7 8 9 10 or more
6. *Former smokers* How many years has it been since you smoked cigarettes fairly regularly?
- 1 2 3 4 5 6 7 8 9 10 or more



7. What was the average number of cigarettes per day that you smoked in the two years before you quit?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 or more

TRAVELING

1. What is your main mode of transportation?

- Car
- Motorcycle
- Bus

2. In the next 12 months, how many thousand of miles will you probably travel by each of the following? (Note: U.S. average for cars is 10,000 miles)

	Car (x1000 miles)	Motorcycle (x1000 miles)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- Car
- Motorcycle
- Bus

3. If you ride a motorcycle, how often do you wear a helmet? (GO TO QUESTION 5)

- Never
- Sometimes
- Always, or almost always

4. What percent of the time do you usually buckle your safety belt when driving or riding a car?

- Never, 0%
- Seldom, 1 to 39%
- Sometimes, 40 to 79%
- Usually, 80 to 99%
- Always, 100%

5. On the average, how close to the speed limit do you usually drive?

- Within 5 mph
- 6 to 10 mph over
- 11 to 15 mph over
- More than 15 mph over

ALCOHOL USE

1. How many times in the last month did you drive or ride when the driver had perhaps too much alcohol to drink?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 or more

2. On a day when you drink alcoholic beverages, how many drinks do you have in a day?

- 1
- 2
- 3
- 4
- More than 4

WOMEN ONLY

1. How many women in your natural family (mother and sisters only) have had breast cancer?

- None
- Only one
- 2 or more
- I don't know

2. How often do you examine your breast for lumps?

- Monthly
- Once every few months
- Rarely or never



3. When did you last have your breast examined by a physician or nurse?

- Within the past year
- 1 to 2 years ago
- 2 to 3 years ago
- More than 3 years ago
- Never had a breast exam

4. When did you have a breast x-ray (Mammogram)?

- Within the past year
- 1 to 2 years ago
- 2 to 3 years ago
- More than 3 years ago
- Never had a mammogram

5. When did you last have a Pap smear?

- Within the past year
- 1 to 2 years ago
- 2 to 3 years ago
- More than 3 years ago
- Never had a pap smear

MEN ONLY

1. When did you last have a prostate exam?

- Within the past year
- 1 to 2 years ago
- 2 to 3 years ago
- More than 3 years ago
- Never had a prostate exam

2. How often do you examine your testicles for lumps?

- Monthly
- Once every few months
- Rarely or never

EMOTIONAL WELL-BEING

1. In the past year, have you had two weeks or more during which you felt sad, blue or depressed; or when you lost all interest or pleasure in things that you usually care about or enjoyed?

- Yes
- No
- Not sure

2. Have you had 2 years or more in your life when you felt depressed or sad most of the days, even if you felt okay sometimes?

- Yes
- No
- Not sure

3. In the past year, how much effect has stress had on your life?

- A lot
- Some
- Barely any or none
- Not sure

CLINICAL MEASUREMENTS

1. What is your height?

Feet	Inches
	<input type="radio"/> 0
	<input type="radio"/> 1
	<input type="radio"/> 2
	<input type="radio"/> 3
<input type="radio"/> 4	<input type="radio"/> 4
<input type="radio"/> 5	<input type="radio"/> 5
<input type="radio"/> 6	<input type="radio"/> 6
<input type="radio"/> 7	<input type="radio"/> 7
	<input type="radio"/> 8
	<input type="radio"/> 9

2. What is your weight in pounds?

<input type="radio"/> 0	<input type="radio"/> 0
<input type="radio"/> 1	<input type="radio"/> 1
<input type="radio"/> 2	<input type="radio"/> 2
<input type="radio"/> 3	<input type="radio"/> 3
<input type="radio"/> 4	<input type="radio"/> 4
<input type="radio"/> 5	<input type="radio"/> 5
<input type="radio"/> 6	<input type="radio"/> 6
<input type="radio"/> 7	<input type="radio"/> 7
<input type="radio"/> 8	<input type="radio"/> 8
<input type="radio"/> 9	<input type="radio"/> 9

3. Do you know if your blood sugar (glucose) level is

- Normal
- High

4. If you reported a blood sugar (glucose) level, was it measured at a time when you had not eaten or drunk anything except water for at least 8 hours?

- Yes
- No



5. What is your blood pressure?

Systolic (High) Diastolic (Low)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. If you do not know the numbers, has a doctor or nurse told you that your blood pressure measure was:

- Low or normal
- High

7. What is your percent body fat? (If unknown, leave blank)

<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>

8. What is your resting pulse?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. What is your total cholesterol?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. What is your LDL cholesterol?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. What is your HDL cholesterol?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. What is your triglyceride level (based on blood test)?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Thank you for taking the time and care to complete this survey.
You will receive your personalized report within three weeks.

Personal Health Analysis Report (Sample)

Name: Michael Scofield

Address: 650 Albion Ave

City: Schaumburg

State: Illinois

Zip: 60193

Personal Health Analysis Report

INTRODUCTION

This report is based on the Personal Health Analysis survey you recently completed. This report focuses on the factors that need your attention and are in your control. If you need any assistance in follow-up to this report, contact your physician, or call Ruth Smith at the Mon Valley Providers Council at 412-829-7112.

RECOMMENDATIONS TO IMPROVE YOUR HEALTH

BASIC INFORMATION

Your uninsured children may be eligible for the Children's Health Insurance Program (CHIP). To determine your eligibility, contact 1-800-543-7105.

If you are a U.S. citizen over age 18 who has lived in the state of Pennsylvania for at least 30 days, you should register to vote by calling the Allegheny County Elections Division at 412-350-4510.

PERSONAL HEALTH

Research suggests that eating a diet high in fiber helps to prevent colon cancer, breast cancer, and heart disease. Most foods that are high in fiber, such as fruits and vegetables, whole grains, and beans also provide your body with many essential vitamins and minerals.

Experts agree that a physically active lifestyle is essential as it reduces the risk of diabetes, heart disease, high blood pressure, and colon cancer; helps control weight and body fat; helps build and maintain strong bones, muscles, and joints; and, promotes psychological well-being. Adding simple exercises such as brisk walking, swimming, bicycling, vigorous gardening, or other activities to your daily routine is a safe way to get started.

Family history can affect your risk of heart disease.

The best way to prevent sexually transmitted diseases (STD) and unwanted pregnancy is to consistently use a barrier method. For further information, or if you believe you are at-risk of an STD, you can go to the Allegheny County Health

Department's STD Clinic without an appointment at 3441 Forbes Avenue in Oakland, or by calling 412-578-8080.

TOBACCO USE

Smoking is a serious threat to your health. It places you at high risk for cancer, stroke, heart disease, and even sudden death. Smoking is an addictive habit, but one that can be broken. A wide variety of information, quitting tips, and programs are available to help you support your decision to quit smoking. Check with your health plan to learn more about your options for quitting.

TRAVELING

You should consider wearing a helmet when you ride your motorcycle as helmets are generally believed to greatly reduce injuries and fatalities in motorcycle accidents.

Automobile accidents are the number one cause of death for people under 40 years of age. Wearing your seat belt all of the time can significantly reduce your risk of many injuries, including death. Please buckle up even if you are going a short distance.

ALCOHOL USE

Drinking and driving can cause serious harm to you and others. You should never drive after you have been drinking alcohol.

Alcohol is a substance which affects most of the major systems of the body.

It is healthiest not to drink alcohol daily, but when you do drink, it is best not to exceed three drinks in a sitting.

Drinking four or more drinks and driving can not only cause you and others harm, you may be illegally driving under the influence. You should never drive after you have been drinking alcohol.

MEN ONLY

A yearly rectal exam is recommended to check for colorectal cancer and prostate cancer. You should schedule one with your doctor.

EMOTIONAL WELL-BEING

Everyone has stress, but sometimes it can be too much and affect your life in negative ways. If you feel overwhelmed, help is available. Contact your health care provider.

CLINICAL MEASUREMENTS

Your age, height, weight, body fat, and many other factors can be taken into consideration to determine if you are clinically obese. If you need to take action, a proper diet and exercise are easy ways to control your weight.

The best results for your blood sugar (glucose) level will only be attained if you had not eaten or drunk anything for eight hours prior to the test.

Your blood pressure was 123/131.

Body fat percentage is simply the percentage of fat your body contains. A certain amount of fat is essential to bodily functions. Your percent body fat helps to determine if you need to change your diet and/or exercise to keep your percent of body fat in an acceptable range. You indicated your body fat percent is 55.

According to the American Council on Exercise, the acceptable range for a man's body fat is 18% to 24%. A 25% and higher is considered obese.

Your resting pulse was 105.

Resting heart rates above recommended levels (100) may be due to activity, fever, stress, an overactive thyroid gland (hyperthyroidism), anemia, stimulants (caffeine, amphetamines, decongestants, asthma medications, diet pills, and cigarettes), and various forms of heart disease. If your heart rate is consistently high, consider seeing your health professional for a complete physical examination.

Your total cholesterol score is 333.

According to the American Heart Association, if your total cholesterol level is 240 or more, it's definitely high. Your risk of heart attack and stroke is greater. In general, people who have a total cholesterol level of 240 mg/dL have twice the risk of coronary heart disease as people whose cholesterol level is 200 mg/dL. You need more tests. Ask your doctor for advice. About 20 percent of the U.S. population has high blood cholesterol levels.

According to the American Heart Association, your LDL cholesterol level greatly affects your risk of heart attack and stroke. The lower your LDL cholesterol, the lower your risk. Your LDL score is 108.

Your HDL score is 206.

Your triglyceride level is 420.

According to the American Heart Association, your triglyceride level is high. Many people with high triglycerides have underlying diseases or genetic disorders. If this is true for you, the main therapy is to change your lifestyle. This includes controlling your weight, eating foods low in saturated fat, trans fat and cholesterol, exercising regularly, not smoking and, in some cases, drinking less alcohol. People with high triglycerides may also need to limit their intake of carbohydrates to no more than 45-50 percent of total calories. The reason for this is that carbohydrates raise triglycerides in some people and lower HDL cholesterol. Use products with monounsaturated and polyunsaturated fats. You should contact your doctor or nurse.

Aggregate Data Analysis Report (Sample)

AGGREGATE DATA ANALYSIS REPORT

Sex=Male				
Description	# Positive	% Positive	# Negative	% Negative
Basic Information				
Health insurance	2	100.0	0	0.0
Vision insurance	-	-	-	-
Health insurance for children	0	0.0	2	100.0
Registered to vote	0	0.0	2	100.0
Personal Health				
Healthy diet	0	0.0	2	100.0
Physically active lifestyle	0	0.0	2	100.0
No asthma	1	50.0	0	0.0
No diabetes	2	100.0	0	0.0
No heart disease	0	0.0	2	100.0
No cancer	-	-	-	-
No osteoporosis	1	50.0	1	50.0
Not told high blood pressure	2	100.0	0	0.0
Regular colon cancer exam	2	100.0	0	0.0
Safe sex	0	0.0	2	100.0
Tobacco Use				
Non smoker	2	100.0	0	0.0
Traveling				
Always wear helmet	0	0.0	2	100.0
Always wear safety belt	0	0.0	2	100.0
Driving within the speed limit	2	100.0	0	0.0
Alcohol Use				
Drinking and driving	2	100.0	0	0.0
Drink daily	2	100.0	0	0.0
Does not exceed three drinks daily	0	0.0	2	100.0
Does not drink and drive	2	100.0	2	100.0
Women Only				
No family member with breast cancer	0	0.0	2	100.0
Monthly breast examination	-	-	-	-
Breast examination within last year	0	0.0	2	100.0
Breast X-ray within last year	0	0.0	2	100.0
Pap tests within last year	0	0.0	2	100.0
Men Only				
Rectal exam within one or two years	0	0.0	2	100.0
Testicular exam within few months	-	-	-	-
Emotional Well-Being				
No depression	2	100.0	0	0.0
No stress	0	0.0	2	100.0
Clinical Measurements				
Normal levels of blood sugar	0	0.0	2	100.0
Effective measure of blood sugar	0	0.0	2	100.0
No high blood pressure	2	100.0	0	0.0
Desirable range of women body fat percent	0	0.0	2	100.0
Desirable range of men body fat percent	0	0.0	2	100.0
Desirable range of resting heart rates	0	0.0	2	100.0
Desirable range of total cholesterol	0	0.0	2	100.0
Normal LDL score	2	100.0	0	0.0
Normal men HDL cholesterol	2	100.0	0	0.0
Normal women HDL cholesterol	-	-	-	-
Normal triglyceride level	0	0.0	2	100.0
No blood work record	0	0.0	2	100.0

Sex=Female

Description	# Positive	% Positive	# Negative	% Negative
Basic Information				
Health insurance	1	100.0	0	0.0
Vision insurance	-	-	-	-
Health insurance for children	0	0.0	1	100.0
Registered to vote	0	0.0	1	100.0
Personal Health				
Healthy diet	0	0.0	1	100.0
Physically active lifestyle	1	100.0	0	0.0
No asthma	0	0.0	1	100.0
No diabetes	1	100.0	0	0.0
No heart disease	0	0.0	1	100.0
No cancer	-	-	-	-
No osteoporosis	1	100.0	0	0.0
Not told high blood pressure	1	100.0	0	0.0
Regular colon cancer exam	1	100.0	0	0.0
Safe sex	0	0.0	1	100.0
Tobacco Use				
Non smoker	1	100.0	0	0.0
Traveling				
Always wear helmet	0	0.0	1	100.0
Always wear safety belt	0	0.0	1	100.0
Driving within the speed limit	1	100.0	0	0.0
Alcohol Use				
Drinking and driving	1	100.0	0	0.0
Drink daily	1	100.0	0	0.0
Does not exceed three drinks daily	0	0.0	1	100.0
Does not drink and drive	1	100.0	1	100.0
Women Only				
No family member with breast cancer	0	0.0	1	100.0
Monthly breast examination	-	-	-	-
Breast examination within last year	0	0.0	1	100.0
Breast X-ray within last year	0	0.0	1	100.0
Pap tests within last year	0	0.0	1	100.0
Men Only				
Rectal exam within one or two years	0	0.0	1	100.0
Testicular exam within few months	-	-	-	-
Emotional Well-Being				
No depression	1	100.0	0	0.0
No stress	0	0.0	1	100.0
Clinical Measurements				
Normal levels of blood sugar	0	0.0	1	100.0
Effective measure of blood sugar	0	0.0	1	100.0
No high blood pressure	1	100.0	0	0.0
Desirable range of women body fat percent	0	0.0	1	100.0
Desirable range of men body fat percent	0	0.0	1	100.0
Desirable range of resting heart rates	0	0.0	1	100.0
Desirable range of total cholesterol	0	0.0	1	100.0
Normal LDL score	1	100.0	0	0.0
Normal men HDL cholesterol	-	-	-	-
Normal women HDL cholesterol	1	100.0	0	0.0
Normal triglyceride level	0	0.0	1	100.0
No blood work record	0	0.0	1	100.0

BASIC STATISTICAL INFORMATION

Sample population: 3
Individual Participants: 2
Sex=Male: 2
Sex=Female: 1
Health Insurance=Yes: 3
Health Insurance=No: 0
Health Insurance=I don't know: 0
Vision Insurance=Yes: 0
Vision Insurance=No: 0
Vision Insurance=I don't know: 0
Health Insurance of Children=Yes: 0
Health Insurance of Children=No: 3
Health Insurance of Children=I don't know: 0
Registered to Vote=Yes: 0
Registered to Vote=No: 3

Historical Change Report (Sample)

HISTORICAL CHANGE REPORT

Description	11/11/2006	11/28/2006	11/30/2005
Health insurance	Positive	Positive	Positive
Vision insurance	N/A	N/A	N/A
Health insurance for children	Negative	Negative	Negative
Registered to vote	Negative	Negative	Negative
Healthy diet	Negative	Negative	Negative
Physically active lifestyle	Negative	Positive	Negative
No asthma	N/A	Negative	Positive
No diabetes	Negative	Positive	Positive
No heart disease	Negative	Negative	Negative
No cancer	Negative	N/A	N/A
No osteoporosis	Positive	Positive	Negative
Not told high blood pressure	Positive	Positive	Positive
Regular colon cancer exam	Positive	Positive	Positive
Safe sex	Negative	Negative	Negative
Non smoker	Positive	Positive	Positive
Always wear helmet	Negative	Negative	Negative
Always wear safety belt	Negative	Negative	Negative
Driving within the speed limit	Positive	Positive	Positive
Drinking and driving	Positive	Positive	Positive
Drink daily	Positive	Positive	Positive
Does not exceed three drinks daily	Negative	Negative	Negative
Does not drink and drive	Positive	Positive	Positive
No family member with breast cancer	Negative	Negative	Negative
Monthly breast examination	N/A	N/A	N/A
Breast examination within last year	Negative	Negative	Negative
Breast X-ray within last year	Negative	Negative	Negative
Pap tests within last year	Negative	Negative	Negative
Rectal exam within one or two years	Negative	Negative	Negative
Testicular exam within few months	N/A	N/A	N/A
No depression	Positive	Positive	Positive
No stress	Negative	Negative	Negative
Normal levels of blood sugar	Negative	Negative	Negative
Effective measure of blood sugar	Negative	Negative	Negative
No high blood pressure	Positive	Positive	Positive
Desirable range of women body fat percent	Negative	Negative	Negative
Desirable range of men body fat percent	Negative	Negative	Negative
Desirable range of resting heart rates	Negative	Negative	Negative
Desirable range of total cholesterol	Negative	Negative	Negative
Normal LDL score	Positive	Positive	Positive
Normal men HDL cholesterol	Positive	N/A	Positive
Normal women HDL cholesterol	N/A	Positive	N/A
Normal triglyceride level	Negative	Negative	Negative
No blood work record	Negative	Negative	Negative

Appendix C.

Rules stored in the database to generate Personal Health Analysis Report

Question	Sequence	Criteria	Output
2	1	4(2)	Since you do not have health insurance, you may be eligible for low-cost Adult Basic Coverage...
4	1	6(2)	Your uninsured children may be eligible for the Children's Health Insurance Program (CHIP)...
4	3	5(2)	You can get a free vision acuity screening from the Mon Valley Providers Council...
4	2	7(2)	If you are a U.S. citizen over age 18 who has lived in the state of Pennsylvania...
4	4	3(*)	This report is based on the Personal Health Analysis survey you recently completed...
5	1	8(2)/8(3)/8(4)	Research suggests that eating a diet high in fiber helps to prevent colon cancer, breast cancer...
5	2	9(3)/9(4)/9(5)/9(6)/9(7)	Experts agree that a physically active lifestyle is essential as it reduces the risk of diabetes...
5	12	12(3)/12(4)/12(5)	Current American Cancer Society guidelines recommend that everyone begin screening...
5	3	14(2)/14(3)/15(2)/15(3)/16(2)/16(3)...	Smoking is a serious threat to your health. It places you at high risk for cancer, stroke...
5	4	24(1)/24(2)/24(3)/24(4)	Automobile accidents are the number one cause of death for people under 40 years of age...
5	6	25(2)/25(3)/25(4)	Driving within the speed limit decreases the risk of injury or disability to you and others...
5	8	26(1)/26(2)/26(3)/26(4)/26(5)/26(6)...	Drinking and driving can cause serious harm to you and others. You should never...
5	9	28(2)/28(3)/28(4)	Based on your family history you are at increased risk for breast cancer. We recommend...
5	10	33(3)/33(4)/33(5)	A yearly rectal exam is recommended to check for colorectal cancer and prostate cancer...
5	13	34(3)	Testicular cancer usually occurs before the age of 35. Regularly examining your testicles...
5	5	35(1)/35(3)/36(1)/36(3)	Many people feel sad or depressed from time to time, but depression that is severe or...
5	11	37(1)/37(2)	Everyone has stress, but sometimes it can be too much and affect your life in negative ways...
5	7	101(1)/101(4)	With the help of a doctor or nurse, you can prevent or control asthma. If you do not have...
6	1	102(1)/102(3)/102(4)	A fasting glucose test is the best way to evaluate your blood sugar level to see if you are...
7	2	103(4)	Family history can affect your risk of heart disease.
7	3	104(4)	Family history can affect your risk of cancer.
7	1	105(1)/105(3)/105(4)	The Mon Valley Providers Council conducts free osteoporosis screenings throughout the...
8	1	11(1)	Over 50 million Americans have high blood pressure. Ways you can control it include...
8	2	13(2)/13(3)	The best way to prevent sexually transmitted diseases (STD) and unwanted pregnancy...
8	3	23(1)/23(2)	You should consider wearing a helmet when you ride your motorcycle as helmets are...
8	4	27(1)/27(2)/27(3)/27(4)/27(5)	Alcohol is a substance which affects most of the major systems of the body.
9	1	27(4)/27(5)	It is healthiest not to drink alcohol daily, but when you do drink, it is best not to exceed...
9	2	27(4)+26(1)/27(4)+26(2)/27(4)...	Drinking four or more drinks and driving can not only cause you and others harm...
9	3	29(2)/29(3)	Many health care providers believe that examining your own breasts monthly is a good...

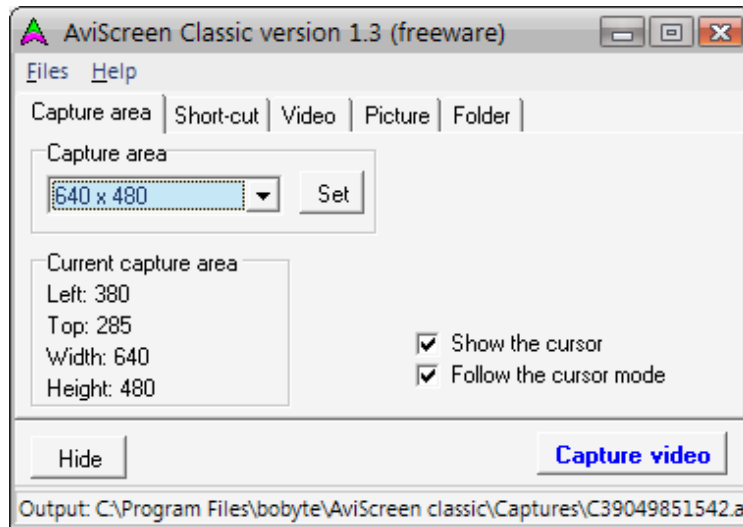
9	4	30(2)/30(3)/30(4)/30(5)	A physician or nurse should examine your breasts annually.
9	5	31(2)/31(3)/31(4)/31(5)	Individual risk factors contribute to the frequency of a mammogram. Consult your...
10	1	32(2)/32(3)/32(4)/32(5)	It is important to have Pap tests. They are relatively quick and easy. A Pap test can give...
10	2	381(*)/382(*)/39(*)	Your age, height, weight, body fat, and many other factors can be taken into consideration...
11	1	40(2)	High levels of blood sugar can be a sign of diabetes. Furthermore, if the person answered...
11	2	41(2)	The best results for your blood sugar (glucose) level will only be attained if you had not...
12	1	421(*)/422(*)	Your blood pressure was <421>/<422>.
12	2	421div422=>=140div90...	High blood pressure is a blood pressure reading of 140/90 mmHg or higher. Both numbers...
12	3	44(*)	Body fat percentage is simply the percentage of fat your body contains. A certain amount...
12	4	3(2)+44<25	Your body fat percent is in the desirable range.
12	5	3(2)+44=>=25	According to the American Council on Exercise, the acceptable range for a woman's body...
12	6	3(1)+44<18	Your body fat percent is in the desirable range.
12	7	3(1)+44=>=18	According to the American Council on Exercise, the acceptable range for a man's body...
12	8	45(*)	Your resting pulse was <45>.
12	9	45>100	Resting heart rates above recommended levels (100) may be due to activity, fever, stress...
12	10	45<60	Resting heart rates lower than the listed guidelines (60) may be due to an underactive...
12	11	46(*)	Your total cholesterol score is <46>.
12	12	46>=200+46<=239	According to the American Heart Association, people whose cholesterol level is from...
12	13	46>=240	According to the American Heart Association, if your total cholesterol level is 240 or...
12	14	47(*)	According to the American Heart Association, your LDL cholesterol level greatly affect...
12	15	47>=130	Your LDL score of <47> is high and your doctor may prescribe a diet low in saturated fat...
12	16	48(*)	Your HDL score is <48>.
12	17	3(1)+48<40	In the average man, HDL cholesterol levels range from 40 to 50 mg/dL. A male's HDL...
12	18	3(2)+48<50	In the average woman, cholesterol levels range from 50 to 60 mg/dL. A female's HDL...
12	19	49(*)	Your triglyceride level is <49>.
12	20	49>=200+49<=499	According to the American Heart Association, your triglyceride level is high. Many...
12	21	49>=500	According to the American Heart Association, your triglyceride level is very high. Many...
12	22	103(1)	If you have heart disease or have had heart disease, consult your doctor or nurse for...
12	23	44(-)+45(-)+46(-)+47(-)+48(-)+49(-)	Our records indicate you did not get your blood work done. We recommend you get...
12	24	11(3)	Over 50 million Americans have high blood pressure. Ways you can control it include...
12	25	104(1)	If you have cancer or have had cancer, consult your doctor or nurse for recommendations...

Rules stored in the database to generate Personal Health Analysis Report

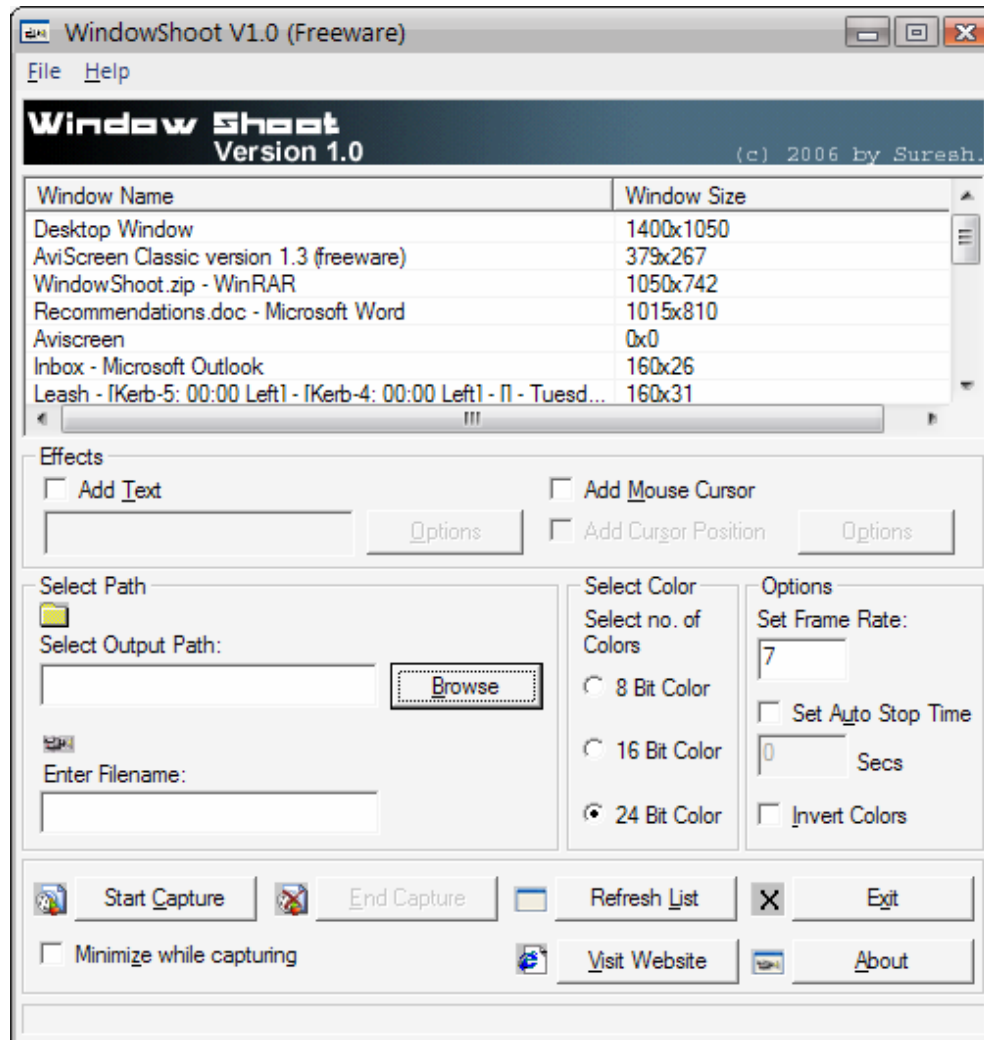
Question	Sequence	Description	Yes	No	Columns
4	1	Health insurance	4(1)	4(2)	4
4	2	Vision insurance	5(1)	5(2)	5
4	3	Health insurance for children	6(1)	6(2)	6
4	4	Registered to vote	7(1)	7(2)	7
5	1	Healthy diet	8(1)	8(2)/8(3)/8(4)	8
5	2	Physically active lifestyle	9(1)/9(2)	9(3)/9(4)/9(5)/9(6)/9(7)	9
5	3	No asthma	101(2)	101(1)/101(4)	101
5	4	No diabetes	102(2)	102(1)/102(4)	102
5	5	No heart disease	103(2)	103(1)/103(4)	103
5	6	No cancer	104(2)	104(1)/104(4)	104
5	7	No osteoporosis	105(2)	105(1)/105(4)	105
5	8	Not told high blood pressure	11(2)	11(1)/11(3)	11
5	9	Regular colon cancer exam	12(1)/12(2)	12(3)/12(4)/12(5)	12
5	10	Safe sex	13(1)	13(2)/13(3)	13
6	1	Non smoker	14(2)/14(3)/15(2)/15(3)/16(2)...	TOTAL-YES	14,15,16,17
7	1	Always wear helmet	23(3)	23(1)/23(2)	23
7	2	Always wear safety belt	24(5)	24(1)/24(2)/24(3)/24(4)	24
7	3	Driving within the speed limit	25(1)	25(2)/25(3)/25(4)	25
8	1	Drinking and driving	26(1)/26(2)/26(3)/26(4)/26(5)...	26(0)	26
8	2	Drink daily	27(1)/27(2)/27(3)/27(4)/27(5)	27(-)	27
8	3	Does not exceed three drinks daily	27(1)/27(2)/27(3)	27(4)/27(5)	27
8	4	Does not drink and drive	27(1)+26(1)/27(1)+26(2)/27(1) ...	27(4)+26(1)/27(4)+26(2)/27(4) ...	26,27
9	1	No family member with breast cancer	28(1)	28(2)/28(3)	28
9	2	Monthly breast examination	29(1)	29(2)/29(3)	29
9	3	Breast examination within last year	30(1)	30(2)/30(3)/30(4)/30(5)	30
9	4	Breast X-ray within last year	31(1)	31(2)/31(3)/31(4)/31(5)	31
9	5	Pap tests within last year	32(1)	32(2)/32(3)/32(4)/32(5)	32
10	1	Rectal exam within one or two years	33(1)/33(2)	33(3)/33(4)/33(5)	33
10	2	Testicular exam within few months	34(1)/34(2)	34(3)	34
11	1	No depression	35(2)/35(3)/36(2)/36(3)	TOTAL-YES	35,36
11	2	No stress	37(3)/37(4)	37(1)/37(2)	37

12	1	Normal levels of blood sugar	40(2)	40(1)	40
12	2	Effective measure of blood sugar	41(1)	41(2)	41
12	3	No high blood pressure	421div422<140div90/421()+43(1)...	TOTAL-YES	421,422,43
12	4	Desirable range of women body fat percent	3(2)+44<25	TOTAL-YES	3,44
12	5	Desirable range of men body fat percent	3(1)+44<18	TOTAL-YES	3,44
12	6	Desirable range of resting heart rates	45<=100+45>=60	TOTAL-YES	45
12	7	Desirable range of total cholesterol	46>=200+46<=239	TOTAL-YES	46
12	8	Normal LDL score	47<130	TOTAL-YES	47
12	9	Normal men HDL cholesterol	3(1)+48>=40	3(1)+48<40	3,48
12	10	Normal women HDL cholesterol	3(2)+48>=50	3(2)+48<50	3,48
12	11	Normal triglyceride level	49<200	TOTAL-YES	49
12	12	Blood work record	44>=0/45>=0/46>=0/47>=0...	44(-)+45(-)+46(-)+47(-)+48(-)+49(-)	44,45,46,47,48,49

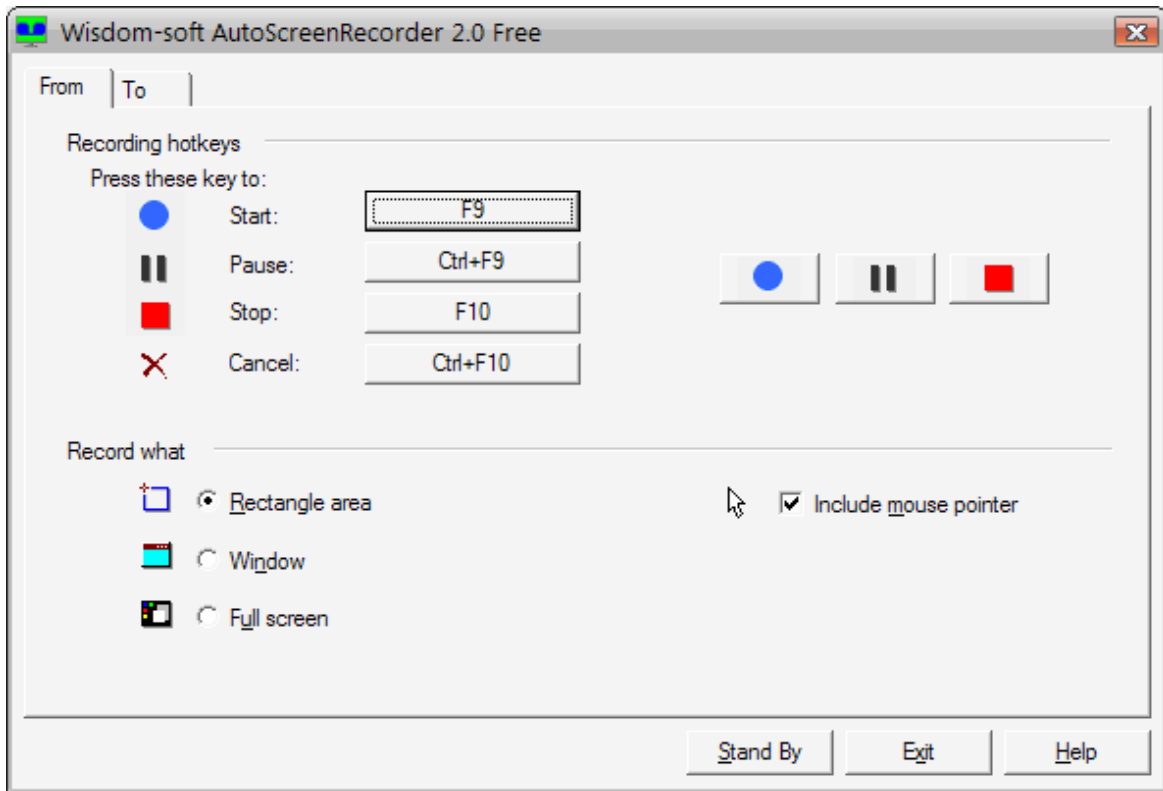
Appendix D.



A screenshot of AviScreen Classic 1.4



A screenshot of WindowShoot V1.0



A screenshot of Auto Screen Recorder 2.0