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Michelle Earles 7/01/2019

Field Manual to conduct a Community Health Survey for the Portsmouth Health Department (PHD) in Portsmouth, VA

By

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Degree to be awarded: MPH

Prevention Science

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Abstract

Field Manual to conduct a Community Health Survey for the Portsmouth Health Department (PHD) in Portsmouth, VA

Increasingly, public health is relying on data to make informed decisions to drive resource allocation, evaluate program goals and objectives, and measure community health. In many cases, the public health department will need to collect and analyze its own data to have relevant, community-level data. Collecting community data, however, can be expensive and time consuming. The Centers for Disease Control and Prevention (CDC) created assessment tools, such as the Community Assessment for Public Health Emergency Response (CASPER), that can address this need and that are low-cost and standardized. Using the CDC's CASPER methodology, the Portsmouth health department used just 24 staff members and 10 volunteers over 72 hours to collect enough surveys so that data is available at, not only the city level, but also the neighborhood level. While the survey was a success, the process for how to plan, implement, and analyze the data for the community health survey needs to be formalized in a Field Manual so that it can be replicated not only within the Portsmouth Health Department, but also shared with other health departments. The CDC's CASPER Toolkit Version 2.0 provides general instruction on how to conduct the survey, but significantly more detail needed to be captured in a Field Manual to provide a step-by-step process for future surveys. By using lessons learned from the previous Portsmouth surveys and from other communities who have used the CASPER methodology, the Field Manual formalizes best practices into a comprehensive Community Health Assessment Field Manual using the CASPER methodology.

Field Manual to conduct a Community Health Survey for the Portsmouth Health Department (PHD) in Portsmouth, VA

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Chapter I: Introduction

Introduction and Rationale

Public health is facing a data related crisis. The amount of data available may be overwhelming, it may be many years old, it may be inaccessible, or it may not be specific to the city, county or town the health department serves (IOM, 1988). Increasingly, public health is relying on data to make informed decisions to drive resource allocation, evaluate program goals and objectives, and measure community health. In many cases, the public health department will need to collect and analyze its own data to have relevant, community-level data. Collecting community data, however, can be expensive and time consuming. The Centers for Disease Control and Prevention (CDC) created assessment tools, such as the Community Assessment for Public Health Emergency Response (CASPER), that can address this need and that are low-cost and standardized (CDC, 2012).

One community that has faced challenges with city-level data is Portsmouth, VA. Portsmouth is an independent city located in the southeastern portion of Virginia near the Chesapeake Bay with an estimated 95,535 residents. Due to the small size of Portsmouth, city-level data through traditional surveys like the Behavioral Risk Factor Surveillance System (BRFSS) are sparse (VDH, 2018). An advocate for data-driven decisions, the Portsmouth Health Department (PHD) has prioritized gathering local data to complement secondary data already available for its Community Health Assessment. With a limited budget and a staff of 60, PHD needed a method to collect data with the minimum number of staff possible. Using the CDC's CASPER methodology, the health department used just 24 staff members and 10 volunteers over 72 hours to collect enough surveys so that

data is available at, not only the city level, but also the neighborhood level. While the survey was a success, the process for how to plan, implement, and analyze the data for the community health survey needs to be formalized in a Field Manual so that it can be replicated not only within the Portsmouth Health Department, but also shared with other health departments. The CDC's CASPER Toolkit Version 2.0 provides general instruction on how to conduct the survey, but significantly more detail needed to be captured in a Field Manual to provide a step-by-step process for future surveys. By using lessons learned from the previous Portsmouth surveys and from other communities who have used the CASPER methodology, the Field Manual formalizes best practices into a comprehensive Community Health Assessment Field Manual using the CASPER methodology.

Problem Statement

As an accredited health department, the Portsmouth Health Department needs to conduct ongoing community health assessments that include primary data collection, but local data on health behaviors and health status is limited via traditional surveillance systems in Portsmouth, VA. Recognizing that health departments should use data to drive policy, processes, programs, and interventions, the Public Health Accreditation Board (PHAB) requires health departments to complete a comprehensive Community Health Assessment (CHA) using primary and secondary data (Board, 2013). These assessments inform the Community Health Improvement Plan (CHIP), which will drive a community's resources for the next five years toward a healthier community. Timely, accurate, and relevant data are essential to this process. When those data are lacking via traditional surveillance methods, health departments are responsible for collecting their

own data. Without a formalized, systematic process for data collection, health departments may use convenience samples that may not be representative of the population.

Theoretical Framework

The Diffusion of Innovations Theory (DIT) guided the development of the Field Manual. DIT defines the characteristics necessary for an innovation to be adopted: perceived advantages of participation, compatibility of the program, complexity, trialability, and observability (Dearing, 2018). In this model, a person or organization must perceive that there are advantages such as cost savings, speed, ease of use, and ability to try the innovation without risks. All of these considerations factor into a population's adoption of an innovation.

Purpose Statement

The purpose of this project was to develop a Field Manual on how to conduct a Community Health Survey using the CASPER methodology that will provide accurate and timely data on health behaviors and health status in Portsmouth, VA. The Field Manual provides specific guidance based on the CDC's CASPER manual, a literature review of other CASPERs, and local lessons learned in Portsmouth, VA.

Significance Statement

The development of a Field Manual using the CASPER methodology will make primary data collection accessible to local health departments. The data collected will be representative of the population served and of value during accreditation, community

health assessments, improvement planning, program evaluation, and emergency preparedness planning.

Definition of Terms

CASPER – Community Assessment for Public Health Emergency Response: an epidemiological tool designed to provide to decision-makers household-based information about an affected community's needs quickly and in a simple format (CDC Toolkit, 2012)

CHA – Community Health Assessment: a health assessment that identified key health needs and issues through systematic, comprehensive data collection and analysis (PHAB 2013)

CHIP – Community Health Improvement Plan: a long-term (usually three to five years), systematic effort to address public health problems based on the results of the community health assessment (PHAB 2013).

ESRI – Environmental Systems Research Institute: a company that supplied geographic information software

PHAB – Public Health Accreditation Board

Chapter II: Literature Review

Introduction

When looking for a solution to a problem, such as limited local data, public health officials want evidence-based practices as they lead to more successful programs and policies (HP 2020, 2010). With limited resources, leaders look for programs that are proven and cost-effective. This chapter is dedicated to a literature review examining the evidence of the effectiveness of a CASPER, providing a rationale for choosing to use a CASPER for a Community Health Assessment, and identifying best practices from previous CASPERs.

Literature Review Strategy

To identify information on the effectiveness, justification of use, and best practices of a CASPER, three main sources were reviewed: the Human Studies Branch (HSB) database, peer reviewed articles from PubMed, ProQuest, and Google Scholar, and a Google search for unpublished reports of CASPERs. With the exception of one study from the World Health Organization on the origins of the study methodology, all literature reviewed is from 2011 to 2019. When searching for information, the following searches were used: CASPER; community assessment for public health emergency response; Public Health Accreditation Board and CASPER; Community assessment for public health emergency response and After Action Review; and Community assessment for public health emergency response and CHA.

Review of Literature Related to the Evidence of the Effectiveness of a CASPER

The CASPER methodology is a two-stage cluster sampling design so that 30 clusters are selected from a defined area and then seven (7) households within those clusters are randomly interviewed. First adopted by local health departments in the 1960s as an assessment of vaccination coverage, the World Health Organization adapted the methodology to assess immunization coverage in developing countries, and most recently, the CDC modified the methodology for use after a disaster to assess a community's needs (Conley et al., 2014). Using this survey design, the surveyed population is considered representative of the entire population. The analyses are estimated to be accurate within 10% of the true value (Conley et al., 2014).

When conducting a survey that samples the population, it is important that the survey methodology reliability reflects the entire community; a non-representative

sample could produce skewed results. One way to estimate the representativeness of the sample is to examine the demographics of population sampled verses the entire population. Researchers have concluded that analysis of different CASPER reports show that the population sampled was similar to the 5-year ACS demographic profile for that geographic region (Conley et al., 2014). In a comparison study with Random Digit Dialing, CASPER participants were more similar in gender, race/ethnicity, and education attainment to the ACS 5-year estimates (Stone et al., 2018). When using convenience samples at libraries or health fairs, PHD has found that respondents are more likely to be female, have a higher educational attainment, and have a higher household income than the ACS estimates of the study population (PHD, 2014). In 2014, one health needs survey conducted at the Portsmouth main library and distributed online via e-mail list servs and social media found survey respondents were 72% female and 55% had a bachelor's degree or higher (PHD, 2014). A comparison of those data with the ACS 5-year estimates for Portsmouth which are 52% female and 23% have a bachelor's degree or higher, highlights the limitations of convenience sampling via online or random location surveys (Census, 2018). If the purpose of the survey is to access a population's need or chronic disease prevalence, a non-representative sample could give skewed results. A systematic survey methodology is needed to more reliability reflect the population sampled.

Review of Literature Related to the Rationale for using a CASPER for a Community Health Assessment

Since the national accrediting body, PHAB, was launched in 2011, 240 health departments have been recognized as an accredited health department (Board, 2019). The requirements to meet the initial accreditation are detailed in the PHAB Standards and

Measures, Version 1.5 (Board, 2013). As one of its standards, PHAB requires health departments to conduct a community health assessment to include both primary and secondary data (Board, 2013, p. 26). Primary data "can be local surveys, focus groups, or other data that the health department collects to better understand contributing factors or elements of secondary data analysis" (Board, 2013, p. 26). Additionally, the health department must provide evidence of "neighborhood/community specific data in order to understand health inequities and the factors that create them."

When the Portsmouth Health Department applied for accreditation in 2016, the primary data collection tool and subsequent analysis were used as documentation for eleven (11) measures throughout the application detailed in Table 1. In addition to these measures, presentations and fact sheets from survey data were used in other measures throughout the application. The methodology the health department used was the CDC CASPER toolkit (CDC, 2012). The benefits of the tool are that it is a low-cost, standardized, and quick way for the health department to gather local data that would not typically be available at that geographic level. PHD is not the only health department to use CASPER toolkit for their CHA; Nashua, New Hampshire and Davidson County, North Carolina both reported using CASPER in the CHA process (Conley, Vagi, & Horney, 2014). While the department has not enumerated the actual costs of the survey, no additional equipment purchases were necessary to conduct the survey and costs were mostly confined to staff time. An article comparing a CASPER survey to Random Digit Dialing (RDD) found the costs of the CASPER survey to total $13,500 vs $100,000 for the RDD (Stone, Sierocki, Shah, Ylitalo, & Horney, 2018). Local leaders may find

CASPER an attractive option with significant cost savings to achieve a more representative sample.

Table 1: PHAB Measures where CASPER Survey was used by Portsmouth Health Department for documentation

Measure	Required Documentation
1.1.2L A local community health assessment	Data and information from various sources contributed to the community health assessment and how the data were obtained; Demographics of the population; Description of health issues and specific descriptions of population groups with particular health issues and inequities; Description of factors that contribute to specific populations' health challenges; Description of existing Tribal or community or assets or resources to address health issues
1.1.2L Req Doc 3: Onging monitoring, refreshing, and adding of data and data analysis	The health department must document the gathering of information, collection of data, conduct of community dialogues, and/or identification of community assets specific to populations and/or geographic areas in the community where health inequities and poorer health indicators were identified in the community health assessment. Additional data analysis is expected to be neighborhood/community specific in order to understand health inequities and the factors that create them. Geographic information analysis of socioeconomic conditions would be appropriate information to include in an annual update or supplement.
1.2.3A To assess the health department's capacity to collect primary data concerning health; health inequities; contributing factors or causes of health challenges; or potential policy, public health and/ or community solutions. This measure addresses data other than surveillance data.	Collection of primary quantitative health data. The health department must provide the results of the collection quantitative primary data from the population (in addition to its surveillance data.) Data can be obtained through surveys of target groups. Documentation can be reports, presentation made, minutes of briefings given, or other communications of the data results and conclusions.

1.2.3A Req Doc 3: The health department must provide standardized data collection instruments that they have used.	Standardized instruments include those that are recognized as national, state-wide, or local data collection tools. They may also be standardized from the standpoint that the same tool was used with all respondents, for example, a local survey developed and distributed to a representative sample of potential respondents. The tool may collect quantitative or qualitative data.
1.3.1A To Assess the health department's capacity to analyze and utilize data to identify trends over time, identify clusters, understand health problems, assess behavioral risk factors, detect environmental public health hazards, and recognize social and economic conditions that affect the public's health.	Analysis of data and conclusions drawn with the following characteristics: The inclusion of defined timelines A description of the analytic process used to analyze the data or a citation of another's analysis The inclusion of the comparison of data to other agencies and/or the state or nation, and/or other Tribes, and/or similar data over time to provide trend analysis
1.3.1A4.1 Aggregated primary and secondary data and the sources of each	The health department must document the aggregation of primary and secondary data. Data must be compiled, analyzed, and conclusions drawn. The sources of the data used must also be provided. Documentation could be reports, memos, GIS maps, or other written documents.
3.2.1A2.2 Relationship with the media to ensure their understanding of public health and to ensure that they cover important public health issues	The health department must document communication with the media. In this case, a story about the Community Health Survey. The media include print media, radio, television, bloggers, web reporters, and diverse media outlets (for example, urban radio stations; free community newspapers; migrant worker newspapers; immigrant, ethnically targeted, and non-English language newspapers or radio stations, etc.)
7.1.2A Identification of populations who experience barriers to health care services identified	Data from the Community Health Survey were used to identify populations who lack access to health care. Information could be obtained from an assessment survey and/or surveys of particular population groups. Other information sources include: analysis of secondary data and/or health care data, such as emergency department admissions or population insurance status data

7.1.3A Identification of gaps in access to health care services and barriers to the receipt of health care services identified	The health department must document the process used to identify gaps in health care services and barriers to care. The documentation must identify who was involved in the identification process. Processes may include sector maps, analysis of hospital admissions or emergency department data, analysis of health insurance data, or other tools.
10.1.1A Applicable evidence-based and/or promising practices identified and used when implementing new or revised processes, programs, and/or interventions	The use of evidence-based or promising practices, including: Documentation of the source of the evidence-based or promising practice Documentation of how the evidence-based or promising practice was incorporated into the design of a new or revised process, program, or intervention. Provided information about how the CASPER survey was used in the Community Health Assessment Process
10.2.1A Protection of human subjects when the health department is involved in or supports research activities	An adopted human subjects research protection policy. The health department submitted the state IRB policy and IRB application for CASPER as an example that the department has used the policy

Finally, while PHD has used the CASPER methodology primarily as a tool to assess community health, the CDC's use of the tool focuses on assessing a community's need post disaster (CDC, 2012). After a hurricane, tornado, earthquake, etc, public health officials need to know what the community needs and the best way to do that is to ask them. The CASPER toolkit gives officials the ability to quickly assess their community post-disaster. By practicing a CASPER pre-disaster the staff gains the experience needed to quickly deploy teams and to identify resources needed for an actual event (Kurkjian, 2013). Health Departments can use the Homeland Security Exercise and Evaluation Program (HSEEP) to document an after actual report and improvement plan for the CASPER and submit as an example of the exercise for preparedness grants (Schnall, 2017).

Review of Literature Related to Best Practices when Conducting a CASPER

The literature review on best practices when conducting a CASPER is best divided into four categories: planning logistics, data collection and analysis, field teams, and communication.

Planning logistics

Two important areas in planning logistics were noted in the review of best practices from previous CASPERS: timing of the survey and Incident Command Structure of the teams. Planners stress that the survey times should be when residents are home. Times may vary in different communities, but general guidance was weekdays from 3-7pm and during weekends after 9:30am (Zane, 2016). Some reports noted, "Many people were not home on Saturday" and that a combination of weekdays and weekends and varying mornings and afternoons may be best practice (Sidney, 2016). Communities recommend avoiding scheduling non-disaster CASPERS during competing community activities such as festivals or school vacations or during extreme weather months. In Oregon, one CASPER took place during record high temperatures and staff concluded that the excessive heat likely contributed to 30% of volunteers failing to show for the exercise (Repp, 2018).

In addition to carefully considering the timing of the survey, defining the organizational structure and staff roles is critical to preparing for a CASPER. The Texas Department of State Health Services, whose health departments rank second in the nation in number of CASPERs conducted, published their Organization Charts and Job Action Sheets for CASPER team members (Texas DSHS, 2009). Using an Incident Command

Structure or any formalized organizational structure clearly defines roles and ensures efficient use of staff resources (Repp, 2018).

Data Collection and Analysis

Choosing an appropriate sampling design and carefully constructing the survey tool are two best practices in data collection and analysis from previous CASPERS.

Sampling Design

The traditional CASPER sample size is derived from the WHO model of 30 cluster areas traditionally defined by census blocks and 7 households within each cluster. For a CASPER to be considered representative of the sampled population, an 80 percent completion rate is necessary (CDC, 2012). In order to meet this goal, an organization may need to modify the sample design in some circumstances. In a rural community, for example, the population in a census block may not have 7 households. In that case, census blocks can be combined prior to the random cluster sampling and treated as one unit (Repp, 2018). The field teams would still sample 7 households within that newly defined cluster. Another example of a sample modification is to choose more than 30 clusters to survey. If a cluster or many clusters are inaccessible due to gated communities, apartment complexes that do not allow soliciting, or some other reason, the CDC recommends sampling more clusters to increase the sample size (CDC, 2012). All clusters must be attempted; a cluster cannot replace another cluster or the team risks introducing bias. Common examples of oversampling include a 35x7 or 40x7 design.

Survey Tool

The literature recommends that the survey tool use questions that have previously been tested in surveys and use appropriate level language (Texas DSHS, 2015). Surveys

can be tested through mock interviews to judge survey length and flow (Sidney, 2016). Also, to gain the most community benefit, the health department or organization conducting the survey should identify stakeholders to provide input into the survey tool (Conley, 2014). Local health coalitions, city leaders, school boards, university/colleges, or military installations may need data about a particular topic. By engaging partners, organizations can avoid duplicate efforts in surveying the community, pull resources, and provide community service hours or internship/practicum time to students.

Field Teams

Two important areas in preparing field teams were noted in the review of best practices from previous CASPERS: recruitment and ground truthing.

Recruitment

As soon as the dates for the CASPER are set, recruitment of volunteers should begin. One option for recruitment of field teams is designating team leaders who then recruit one individual for their team (UNC, 2019). Another option is to gather volunteers from partner agencies, the local Medical Reserve Corps, local universities, or Community Emergency Response Teams (Zane, 2016). Volunteer recruitment and retention are listed as a major challenge in many CASPER After Action Reviews so overrecruiting volunteers and having backups is recommended (Repp 2018).

Ground Truthing

Ground Truthing is defined by the Oxford English Dictionary as "to confirm or validate directly by direct observation on the ground, rather by interpretation of remotely obtained data" (OED, 2019). Prior to field teams deploying, CASPER staff conduct ground truthing by driving to each clusters to ensure they are accessible, safe, and contain

at least seven housing units (Zane, 2016). Staff look for gated communities, apartment complexes, no trespassing signs, presence of stay animals, or neighborhoods that may be under construction (Repp, 2018). Some homes may be inaccessible and field teams will not be able to knock on the door. A housing unit that has a no trespassing sign is considered inaccessible; however, a no soliciting time is not. Field teams are not solicitors so they may access these housing units. The literature revealed an important note about a purple fence post; in states like Texas, Illinois, Missouri, and North Carolina, a purple fence post indicates a no trespassing sign (Williamson County and Cities, 2019). Safety of field teams is the number one priority during a CASPER so ground truthing is an integral part of the planning process.

In summary, this literature review indicates that the CASPER methodology is suitable for conducting a Community Health Assessment. When health departments have limited resources the methodology is a proven, cost-effective solution. Implementing best practices described in the literature review will ensure higher completion rates and better quality data. Widespread adoption of the CASPER methodology for Community Health Assessments is a promising practice in areas where local population health data is not available.

Chapter III: Methodology

Introduction

This chapter presents a description of the process used to design the Field Manual on how to conduct a Community Health Survey using the CASPER methodology. The components of this chapter include the population and sample, research design, procedures, instruments, and data analysis methodology.

Population and Sample

The research for the Field Manual gathered information from primary and secondary sources. The primary sources were surveys administered to previous CASPER participants: both planners and field staff. The participants were from CASPERs conducted in Portsmouth, VA in 2013, 2014, and 2017. The secondary sources included after action reports and a literature view of best practices from previous CASPERs throughout the United States from 2011 to 2019. Using information from both primary and secondary sources provided robust data to compile a comprehensive Field Manual. Finally, five public health professionals who had participated in CASPERs in Virginia, Texas, and North Carolina provided feedback and comments on a draft of the Field Manual. Texas and North Carolina have the two highest numbers of CASPERs conducted in their states and are considered experts in the methodology (Texas DSHS, 2009).

Research Design

A mixed methods research design was used in soliciting feedback from CASPER participants, synthesizing best practices from a literature review, and incorporating feedback on the draft of the Field Manual. CASPER participants answered a survey that included questions with a Likert scale, as well as open-ended questions. After action reports and a review of the literature were identified through three sources: the Human Studies Branch (HSB) database, peer reviewed articles from PubMed, ProQuest, and Google Scholar, and a Google search for unpublished reports of CASPERs. Qualitative data was collected from the feedback on the draft Field Manual.

Procedures

The procedures to develop the Field Manual can be broken down into six steps. The first was to identify best practices for conducting a CASPER using a literature review approach. The second step was to identify essential components of a field manual by surveying local health department staff who have participated in a CASPER. The next step was to use the information gained in the literature review and surveys to create a list of best practices and criteria needed in a Field Manual for a Community Health Assessment. The fourth step was to write a Field Manual that would include the essential components and best practices identified above. Then, the Field Manual was piloted by soliciting feedback from five public health professionals. Lastly, the Field Manual was edited to incorporate the feedback received.

Instruments

The interview tool used to survey pervious CASPER participants included the Likert questions described below:

1) On a scale of 1 to 5, with 1 being not at all useful and 5 being very useful, To what extent do you think this assessment will be useful to your community in creating an accurate picture of health in the community?
2) On a scale of 1 to 5, with 1 being not at all prepared and 5 being very prepared, how well do you think you were prepared for your assignment?
    a. Training
    b. Food
    c. Safety
    d. Communications
    e. Supplies
3) Would you want to participate on a team in the future?

The participants were then asked to provide open-ended questions to the following:

1) In your opinion, what went well? What did not go well?
2) If we were to do this assessment again, what improvements can be made?

3) Did you learn anything from this experience?
4) Were there specific situations that you encountered that you want to tell us about relating to:
    a. Orientation of field teams?
    b. Assessment methods?
    c. Questionnaire?
    d. Supplies and equipment?
    e. Food?
    f. Safety?
    g. Communications?
    h. Transportation?

The feedback requested from the public health professionals on the Field Manual draft included assessing its content, visual appeal, usability, and readability.

Data Analysis Methodology

The data were divided into quantitative and qualitative data. The qualitative data made up the majority of the research. The data from the Likert scale questions were analyzed using descriptive statistics of mean, median, and mode. The data from the qualitative data were manually organized into similar themes. Each response was entered into a database and then color coded into themes. Then, themes were sub-divided.

Chapter IV: Results

Introduction

The final result of this research was the Field Manual for a Community Health Assessment using the CASPER methodology. Based on the information compiled in the research, the Field Manual includes the following sections:

1) Planning for a CASPER
2) Questionnaire Development
3) Determining Sample Size and Cluster Selection
4) Data Collection

5) Field Personnel and Just in Time Training
6) Communications Plan
7) Data Analysis
8) Reporting Results

Key Findings

Participants in local CASPERs were one hundred percent willing to participate in future CASPERs. They recommended that the survey tool, tracking form, food, communications, and supplies be improved for future surveys. Planning should focus on the clusters and identify potential problems prior to field team deployment. Also, training should include time to practice with the questionnaire, tracking forms, and any electronic or communication devices that will be used. Finally, communicating with the community prior to, during, and after the survey was identified as a common area for improvement.

Feedback from reviews of the draft Field Manual stated that the content was useful, but that the visual appeal could use enhancement. Reviewers commented that the use of screenshots and specific step-by-step directions would be helpful in future CASPERs. Another benefit noted were the examples and promising practices included in each chapter from other CASPERs.

The Final Version of the Field Manual for conducting a Community Health Assessment using the CASPER methodology

Chapter 1: Getting Started with a CASPER

A CASPER involves six main steps.

1. Define the geographic area where the survey will take place (city, county, neighborhood, etc).
2. Determine the sampling method; the traditional choice is 30 clusters and 7 households within those clusters.
3. Develop the instrument or questionnaire.
4. Train the field personnel
5. Conduct the assessment.

6. Analyze the data and write the report.

Putting together the Community Health Survey team

For a CASPER to be successful, a comprehensive team must come together to plan. The team consist of members from different departments whose roles complement one another. A CASPER team should be flexible and scalable. For example, in the event of a CASPER post-disaster the planning and questionnaire development teams will look very different from a CASPER done as part of a Community Health Survey. Team members meet regularly throughout the planning process to ensure that all activities are on schedule.

The initial team needs to consider the purpose of the survey, the roles needed on the CASPER team, the resources needed, and the stakeholders to invite to participate. The members can be selected from within or outside the health department, As noted by the Texas DSHS, team members and ICS roles do not have to be filled by health department staff alone; local hospitals, colleges, health coalitions, and other city agencies may have resources to dedicate to the team (DSHS, 2011). For example, health departments who do not have a staff member who is trained in GIS, may wish to reach out to their city's GIS department, a local college GIS department, or contact a member of their state health department. To help identify the roles needed for a CASPER, the Texas DSHS has developed a detailed Incident Command System (ICS) for teams and job action sheets (DSHS, 2011). In some instances, one person may have multiple roles. Below are the major roles in a CASPER and their job functions.

Incident Commander – Project Manager

- Determine the survey objectives and goals
- Set timeline for planning and the event
- Establish ICP

Public Information Officer

- Develop a communication plan to share and release information to media and other agencies
- Answer public questions
- Lead all media communications
- Manage social media accounts
- Take and collect photos and video throughout the project

Safety Officer

- Develop and recommend safety measures
- Anticipate hazards and develop mitigation strategies
- Give safety briefing at the beginning of every survey day

Planning Section Chief

- Coordinate content for Just in Time Field Team training
- Lead check in and out process for teams
- Document events in the Incident Action Plan (IAP)
- Take notes during debriefs and hot wash
- Field calls about directions and emergency situations

GIS Specialist

- Produce maps for all clusters and operational areas
- Identify potential hazards/gated communities
- Support with GIS software used during survey development and data analysis

Operations Section Chief

- Recruit interview teams
- Match volunteers onto interview teams to maximize field experience

Liaison Officer

- Coordinate with Police Department and City officials regarding team deployments

Admin/Finance Section Chief

- Manage all financial aspects of the event
- Assist with purchases as needed

Logistics Section Chief

- Procure and distribute all resources and supplies, for example, pens, clipboards, radios, backpacks, etc.
- Provide snacks/water as available
- Plan transportation to and from headquarters to survey areas

Epidemiologist Team Leader

- Coordinate development of the survey tool
- Develop electronic and/or paper questionnaire
- Enter Data
- Analysis Data

Survey Times

In researching CASPERs around the United States, teams have chosen different times of the year/day/week to conduct the survey. PHD has had the most success choosing a time when the day is longer, the weather mild, and in the evening hours when more people are at home. April/May timeframe in Virginia has been an ideal time as the evening temperatures are still comfortable for field teams and weather is not as severe during this time. Teams who deploy earlier in the day have found more retirees at home and that families tend to arrive post 4pm to most neighborhoods. To capture all age groups, it is important to have survey teams out during the afternoon and evening hours. During springtime, field teams can be out until 7pm before the sun sets and safety becomes a concern. In previous surveys, teams reported that the 6-7pm hour has been very successful for interview completion (PHD 2014, PHD 2017). The department has not attempted a weekend survey due to volunteer and staffing concerns.

Fatigue can also be a significant issue for quality assessment. Teams reported tiring after 4 hours in the field (PHD 2013). To reduce stress on teams, more survey days and shorter hours have been successful. PHD sends out 10-12 teams of two for 4 hours for 3-4 days in a row. Teams often visit each cluster at least twice during the four day timeframe. Other CASPERs, such as in Montana have found that many people are not home on Saturday and they have also recommended different times during the day or having the survey on multiple days (Valley CARE, 2017, p. 18). In Nashua, New Hampshire, thirty teams completed the surveys on two different Saturdays and teams

were deployed from 10am-4pm. One noted complication of this timeline is the need to feed the field teams which requires additional staff and resources (Nashua, 2011). PHD provides each team with a snack and water prior to the 4 hour deployment, but a meal is not provided. Both personnel considerations and ideal timing are important to ensure quality data.

Resources

Besides human resources, field teams will need items to identify themselves as public health professionals in the field, to record responses on, and to communicate back to headquarters. All teams where blue vests with their nametag in the upper pocket and the words "Public Health" on the back. One critical decision that should be made early in the process, is if teams will use an electronic device to capture surveys. PHD has used different technology over the years. During the first CASPER in 2013, PHD had access to Nomad Trimble Units. The teams collected responses on these using ArcPad, but while successful, field teams had difficulty with the older devices and smaller screens. In 2014, the department switched to Collector for ArcGIS and used a combination of agency tablets and cell phones. In 2017, PHD had monies allocated to purchase dedicated Ipads for the survey that resolved many of the issues field teams encountered with the technology. If electronic data collection is a consideration, many options are available.

Other technology that may need to be considered is access to a wide format printer for printing large maps. Most city GIS departments should have access to one of these printers. In addition to technology needs, space for training and deployment of teams should be identified early. Table 2 references the activity template that PHD has used to structure its CASPER preparations.

Table 2: Activity Template for CASPER with Due Dates and Roles Assigned

Activity	Due Date	Person/Role Assigned
Time tracking (use Time Tracking Form)		
SAMPLING METHODS/MAPS		
Determine clusters		
Develop Maps (individual cluster and large maps)		
Printing cluster maps for field teams and large map		
SAMPLING TOOLS		
Develop / Finalize survey		
Final review of survey		
Develop and test Survey123 questionnaire based on survey		
Develop Table Shells		
Develop Report Template		
Develop other forms (see CASPER toolkit) • Tracking form (1 per cluster) • Consent Form • Team Evaluation Form • Training Sign-in Sheet • Check-in/Check-out form • Health Education Materials • Door Knockers with web survey/call back info • Field Instructions • Debriefing agenda		
LOGISTICS		
Resource tracking		
Staff recruitment		
Institute ICS including Org Chart with contact info		
Coordination center/Operations Room		
Organize Teams/ICS positions • Identify ICS positions • 2-person field teams • Assign staff to report development and dissemination (prelim report within 72 hours)		
Assign interview teams to clusters		
Transportation for field teams		
Materials for field		
• Electronic (Ipads)		
• Assessment documents – hard copies of survey, tracking forms, health education materials, consent forms, cluster maps, survey instructions		

• Go-kits: Paper/pens; clipboards; backpacks		
• Vehicles		
• Directions/maps to get to clusters		
• Team clothing/identification		
• Equipment (GPS, cell phone, camera, data collection units)		
• Food/water		
• PPE as needed (e.g., bug spray, sunscreen)		
• Random starting point on cluster maps		
Materials for HQ		
• Training area with ppt capability		
• Cluster maps (copies) + large reference map		
• Area for Check-in/Check-out with forms		
• Tables, chairs		
• Communication devices: Phones		
• Computers with internet access; extension cords		
• Printer and photocopier		
• General office supplies		
TRAINING		
Just in time training • Review agenda • Identify speakers • Develop ppts for training/safety • Set date/time/location for just-in-time training • Recording of training for volunteers who cannot attend the just in time training		
Deployment day meeting – final survey instructions, allocate equipment, group photo		
COMMUNICATION		
Determine how teams will communicate while in field and frequency		
Develop and approve pre-CASPER media messages; arrange for release • For community • For police awareness • Media inquiries (for HQ and field)		
Debrief Agenda		
After Action Report		
Final Report		
Communication of Final Report		

Planning

How far in advance should a community start planning a CASPER? PHD has found that 6 months is a good timeline. Clusters need to be selected, barriers need to be identified, the interview tool needs to be developed in conjunction with community partners, and recruitment for interview teams needs to start. It cannot be underestimated the amount of time developing a questionnaire with community partners will take. Start the questionnaire development as soon as possible. Delaying this portion of the planning process will cascade into planning delays for other aspects of the survey.

IRB Process

A CASPER is generally recognized as "not research" by the IRB, but depending on the organization an official Request for Exemption from Institutional Review Board (IRB) should be submitted. In Virginia, if the project research meets one of three criteria, it is considered not research (IRB, 2016).

1. Does the project surveillance involve only the usual data collection systems for public health? *While this is not the usual way VDH collects surveillance data, it has become a CDC standard methods and is used by other states and could be considered standard public health practice.*
2. Is the project an evaluation to assess the success of a specific ongoing health program? *Yes, the data used in project will be used to assess the Community Health Improvement Plan*
3. Is the project an investigation both to determine the case and/or extent of a community health problem and to develop a control plan? *Yes, the data collected during this project will be used in the Community Health Assessment and Community Health Improvement Plan*

Another option is to take the approach that, yes the CASPER is research because a CASPER is a "systematic investigation designed to develop or contribute to generalizable knowledge" based on the IRB definition of research (HHS, 2016). While this project does involve household interviews of human subjects, it could be approved for exemption

because individual-level data will not be collected and all household-level data will be de-identified. Households will be selected based on census blocks and the data collected will not be linked to a specific household. All those interviewed will be above 18 years of age. To ensure full compliance with all IRB requirements, apply for an IRB exemption using the organization's policy.

Chapter 2: Questionnaire Development

Finalizing the questionnaire earlier in the planning process is crucial to ensuring that the rest of the planning is given adequate time. The questionnaire needs to be tested, entered into an electronic format, if applicable, and training materials need to be developed. Delays in finalizing the survey tool result in interruptions to the electronic deployment and development of training materials.

Stakeholders

To gain the most community benefit, the health department or organization conducting the survey should identify stakeholders to provide input into the survey tool. A local health coalition, city leaders, school board, university/colleges, or military installations may need data about a particular topic. By engaging partners, organizations can avoid duplicate efforts in surveying the community, pull resources, and provide community service hours or internship/practicum time to students. PHD engaged members of Healthy Portsmouth, the medical community, local hospital, city officials, and a local medical school. The health director identified key persons to reach out to in each organization and through a combination of one-on-one engagement or asking to be placed on the agenda for the next group meeting, PHD solicited ideas for questions, asked for feedback on questions already suggested, and asked if the organizations had any

resources to share. Depending on the partner, some of this was done informally through conversations and e-mails, others were solicited through a formal process.

Process for proposing and vetting questions

PHD chose to adopt the BRFSS call-for-questions form that the state agency uses. The form included the following questions:

1. Name and contact information.
2. What is/are the proposed question(s)?
3. Please describe how your question(s) pertains to an important public health issue or a Healthy People 2020 objective.
4. Is this a new question or has this question been asked before on a standardized survey? Please provide the survey source (ex. BRFSS, ACS, PRAMS, NHANES).
5. Please describe the plan for the data. How will the data be used?
6. Does your organization have the ability to provide any resources to the Community Health Survey? Resources could be staff/student time to help with the survey, funds or donations for field team supplies, or donations of snacks/water bottles for field teams.

The questionnaire team then considered all requested questions with preference given to previously tested questions, a plan to use the data to address a public health issue, and fitness of the question for the survey. One of PHD's goals was to gather baseline data for the Portsmouth Community Health Improvement Plan to measure progress in strategies identified by Healthy Portsmouth. These strategies included healthy eating, physical activity, tobacco use, and mental health literacy so questions that supported these subject areas were prioritized in 2014 and 2017. A standardized scoring sheet can help the team if they are struggling with decisions about what questions to include.

Finalizing and testing the Questionnaire

After the team compiles all the questions, the survey needs to be tested for overall length. Staff who are not involved in the survey creation verbally give the mock questionnaire to another staff member and time how long it takes to complete. This

process will identify average time, awkward questions, or general flow issues. Sometimes the questionnaire team may need to add an additional response option based on feedback. Generally twenty mock surveys is enough to determine the average interview length. Times vary from survey to survey due to the skip logic. In the 2017 questionnaire, some survey respondents may have had 12 fewer questions if they did not smoke and did not have any children. It should also be noted, that as the interviewer gets comfortable with the survey tool, the time to complete the survey shortens. The goal is to keep the survey to less than 20 minutes, with 15 minutes being ideal. PHD elected to have the survey tool fit onto one page, front and back. The fewer papers field teams have to flip through the better. Using Excel, the survey team can be creative in formatting the tool, increasing the number of questions that can fit onto one page and increasing the overall neatness of the survey (Figure 1 and 2). The survey tools from PHD's 2013, 2014, and 2017 CASPERs are included in Appendix A as examples.

Q1. Date (MM/DD/YY):	**Q3.** Cluster Number:	**Q5.**Team Number:
Q2. County Name:	**Q4.** Survey Number:	**Q6:** Interview Initials:
Q7. Type of structure □ Single family □ Multiple unit □ Mobile home □ Other _____		

Q8. How many people live in your household? _____

Q9. How many people living in your household are (list number)
Less than 2 years old? _#_ 2-17 years old? _#_
18-40 years old? _#_ 41-64 years old? _#_
≥65 years? _#_ □ DK □ Ref

Q10. What is the highest level of education completed by anyone in your household?
□Did not complete high school or equivalent
□High school graduate or equivalent
□Some college (associates degree, tech/trade school, or no degree) □Bachelor's degree (BA, BS, AB, etc)
□Graduate or Advanced degree (MD, MS, PhD, JD, etc)
□ DK □ Ref

Q11. Is English the primary language spoken in the household?
□ Yes □ No □ DK □ Ref
Q11a. If no, what is the primary language?_____

Q12. Do you own or rent your home? □ Own □ Rent □ DK □ Ref

Q16. What is your household's main transportation?: (Pick one)
□Personal Vehicle □Public Transportation □Family/friend
□Walking □Biking □Other_____

Q17. In an emergency or disaster would your household have access to a vehicle for transportation? □ Yes □ No □ DK □ Ref

Q18. During a non-emergency situation, how does your household receive information? (check all that apply)
□TV □Newspaper □Radio □Phone (land-line)
□Texting/cell phone □Internet (news websites, etc)
□Social media (Twitter, Facebook, etc)
□Word of mouth/talking to people
□Other_____

Q19. During an emergency, which of these is your primary source of information? (choose one)
□TV □Newspaper □Radio □Phone (land-line)
□Texting/cell phone □Internet (news websites, etc)
□Social media (Twitter, Facebook, etc)
□Word of mouth/talking to people
□Other_____

Figure 1: Formatting the 2013 Questionnaire in Word

	A	B	C	D
1	**Q1**. Interview Date (MM/DD/YY):		**Q3.** Cluster Number:	**Q5.**Team Number:
2	**Q2**. County Name:		**Q4.** Survey Number:	**Q6:** Interview Initials:
3	**Q7**. Type of structure □ Single family □ Multiple unit □ Mobile home □ Other _____			
4	**Q8.** How many people live in your household? _____	**Q8b.** How many are in each age category? < 2 yrs old __ 2-17 yrs old __ 18-40 yrs old __ 41-64 yrs old __ ≥65 yrs old __ □ DK □ Ref		
5	**Q10.** What is the highest level of education completed by anyone in your household?	□Did not complete high school or equivalent □High school graduate or equivalent □Some college (associates degree, tech/trade school, or no degree) □Bachelor's degree (BA, BS, AB) □Graduate or Advanced degree (MD, MS, PhD, JD, etc) □ DK □ Ref		
6	**Q11**. Is English the primary language spoken in the household? □ Yes □ No □ DK □ Ref		**IF NO →Q11a**. What is the primary language?_____	
7	**Q12**. Do you own or rent your home? □ Own □ Rent □ DK □ Ref			
8	***Disaster Preparedness Questions: Now I am going to ask you some questions about disaster or emergency situations.***			
9	**Q13**. If you had to leave your home because of an emergency or disaster (such as a flood, fire, hurricane, evacuation): Do you have a plan for where everyone in your household would go? □ Yes □ No □ DK □ Ref			

Figure 2: Formatting the 2013 Questionnaire in Excel

Limitations of CASPER model for Questionnaire design

While using the CASPER methodology for surveys improves generalizability compared to convenience samples or focus groups, it does have limitations. The CASPER sampling is based on households and not individuals, so the results will indicate how many households have *x* condition or *y* access to health care. There is a way to calculate an additional weighted analysis based on the number of people living at the household that can mitigate this limitation (Buttke et al., 2012). That analysis will be explained in greater detail in the analysis section. The household sampling also limits the ability to stratify the answers by race, age, and gender. Questions can be phrased as "has anyone in your household ever had" instead of "have you ever had." Because most access to care, health behaviors, or preparedness responses are similar for all members of the household, the analysis still has value to public health planning (Conley et al., 2014). Additionally, because of the sampling method, results are accurate within 10% of the true value (Lemeshow & Robinson, 1985).

Rare diseases or diseases which have a low prevalence should not be estimated using the CASPER methodology (Conley et al., 2014). Instead, chronic conditions that can be grouped together such as COPD, Emphysema, and Chronic Bronchitis should be asked as a single question. Questions about cancer could be grouped together as, "Has anyone in your household ever been diagnosed with cancer," but more specific questions about "when was your last skin cancer screening" or "when was your last mammogram or breast exam" could be asked individually. Burden of cancer incidence and mortality can be determined by cancer registry data, but the health behavior data of getting regular screenings may not exist. Traditional surveillance data in this incidence will complement the CASPER data.

Common sources for Questionnaires

Below is a list of resources and banks of questionnaires from previous CASPERs:
CDC guidance on developing CASPER Questionnaires
https://www.cdc.gov/nceh/hsb/disaster/casper/docs/DevelopingQuestionnaires_20160224_508.pdf

CDC CASPER Toolkit
https://www.cdc.gov/nceh/hsb/disaster/casper/docs/CLEARED_CASPER_Toolkit.pdf#page=71

Interactive Map of CASPERs in the United States. Click on the state and access reports of previous CASPERs for questionnaires
https://www.cdc.gov/nceh/hsb/disaster/casper/casper_map.htm

Behavioral Risk Factor Surveillance Systems ask questions about risk behaviors, chronic health conditions, and use of preventive services.
https://www.cdc.gov/brfss/questionnaires/index.htm

National Health and Nutrition Examination Survey assesses the health and nutritional status of adults and children.
https://wwwn.cdc.gov/nchs/nhanes/Default.aspx

Pregnancy Risk Assessment Monitoring System asks questions about maternal health behaviors and experiences before, during, and shortly after pregnancy. https://www.cdc.gov/prams/questionnaire.htm

Chapter 3: Determining Sample Size and Cluster Selection

The Community Health Survey uses the CASPER model to approximate population health indicators for the city that are not available via traditional surveillance databases. The model uses household demographic information obtained via the US Census Bureau's 10-year census collection. The CDC's tool, which runs inside of ESRI's ArcGIS software, will generate a random sample of clusters based upon census blocks in a locality. The goal of the model is to produce 30 random cluster areas with a minimum of 7 sampled households in each area. The use of the minimum number of households located in clusters throughout the study area allows for the ability to determine health trends in the study area and cover a large study area without having to survey the majority of the population.

Determining Sample Size

The traditional CASPER sample size is derived from the WHO model of 30 cluster areas traditionally defined by census blocks and 7 households within each cluster. An organization may need to modify that design in some circumstances. In a rural community, for example, the population in a census block may not have 7 households. In that case, census blocks can be combined prior to the random cluster sampling and treated as one unit (Repp, Hawes, Vorderstrasse, & Mohnkern, 2018). The field teams would still sample 7 households within that newly defined cluster. Another example of a sample modification is to choose more than 30 clusters to survey. If a cluster or many clusters may be inaccessible due to gated communities, apartment complexes that do not

allow soliciting, or some other reason, the CDC recommends sampling more clusters to increase the sample size (CDC, 2012). All clusters must be attempted; a cluster cannot replace another cluster or the team risks introducing bias. If spatial analysis is going to be performed on the data, increasing the sample size and density of survey responses will improve data analysis. Common examples of oversampling include a 35x7 or 40x7 design. Because PHD has several census blocks that have fewer than 7 households in them, the team has chosen to oversample in past CASPERs.

Initial Software Requirements

In order to properly execute a CASPER model, the user will need to have access to ESRI ArcGIS Desktop 10.0 or newer and/or ArcGIS Pro 1.2 or newer. The CASPERToolbox will need to be obtained from the CDC (CDC, 2012). For the analysis of the data, licenses for Spatial Analysis and Geostatistical Analysis are highly preferred.

Preparation of Data for the CDC Cluster Model

This part of the manual will offer a guide on how to use the CASPER Toolbox to select the clusters. Details about what census data are needed and how to download them are also included. The CASPERToolbox will arrive on a CD/DVD. To use the toolkit, add it to the ArcToolbox. Open a new map (or project if using ArcGIS Pro) in ArcGIS, examples shown are using ArcMap 10.6.

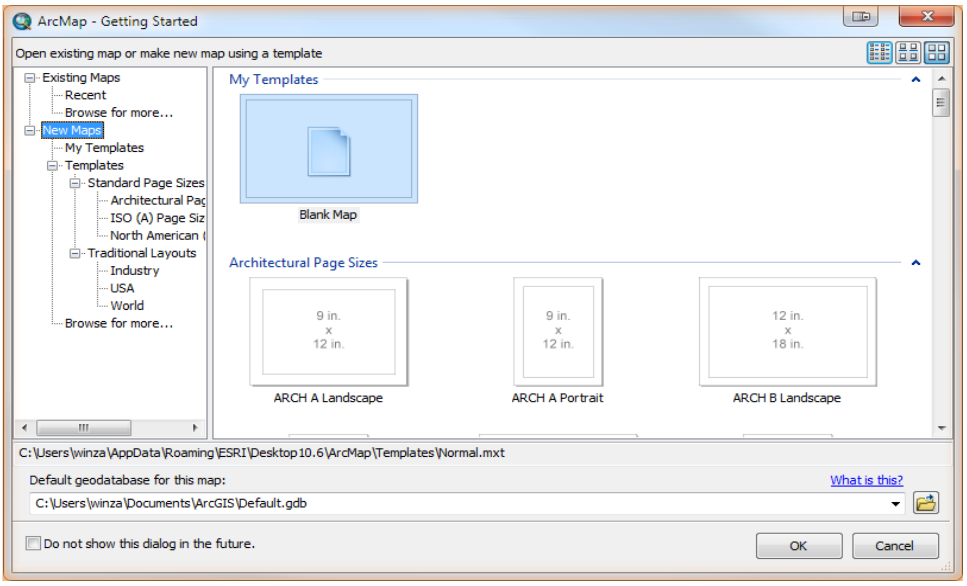


Figure 3: Opening a new map document in ArcMap 10.6

The next step is to create a home directory where data that is acquired from the Census as well as from the model will be deposited. On the right hand pane, extend the ArcCatlog tab. If the ArcCatalog tab is not visible, it can be selected by clicking on the Catalog Button located on the toolbar at the top of the map document. Expand he "Home" folder and create a new folder "CHS_<locality_date>", eg: CHS_Portsmouth_2019.

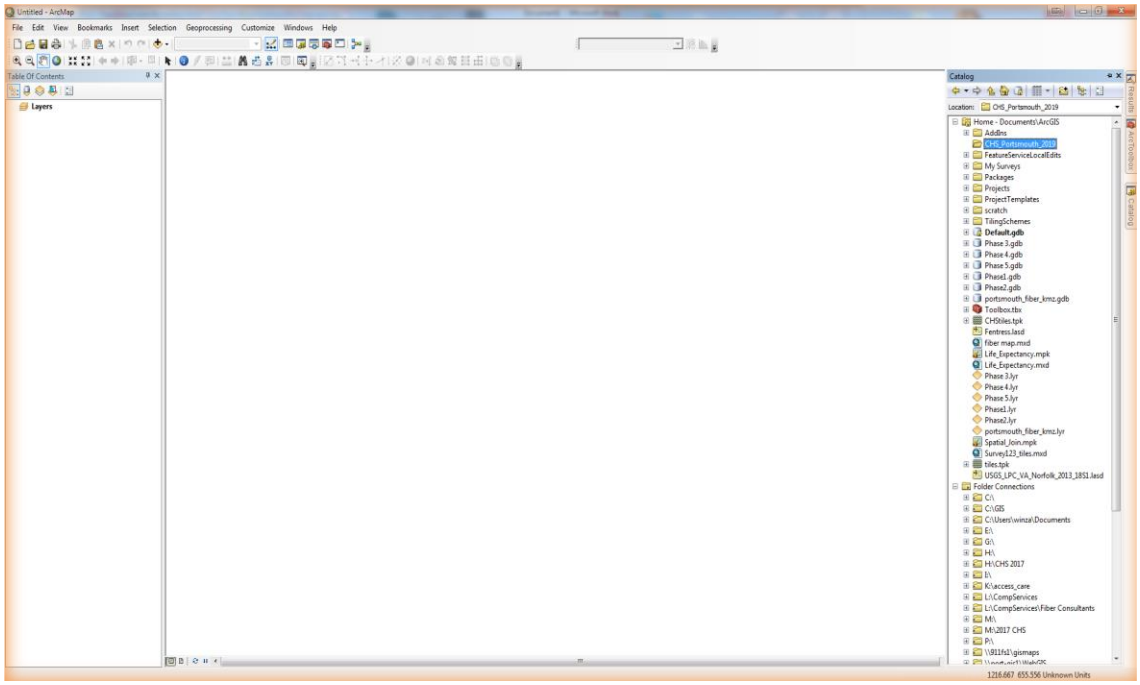


Figure 4: Creating a Home Folder and viewing ArcCatalog

In order to access the python scripts that compile the CASPER Toolbox., the CASPERTOOLKIT.tbx needs to be loaded into ArcToolbox. Expand the ArcToolBox pane. If it is not visible, click on the Toobox Button located on at the top of the map document. Right click on “ArcToolbox” and choose “Add Toolbox”.

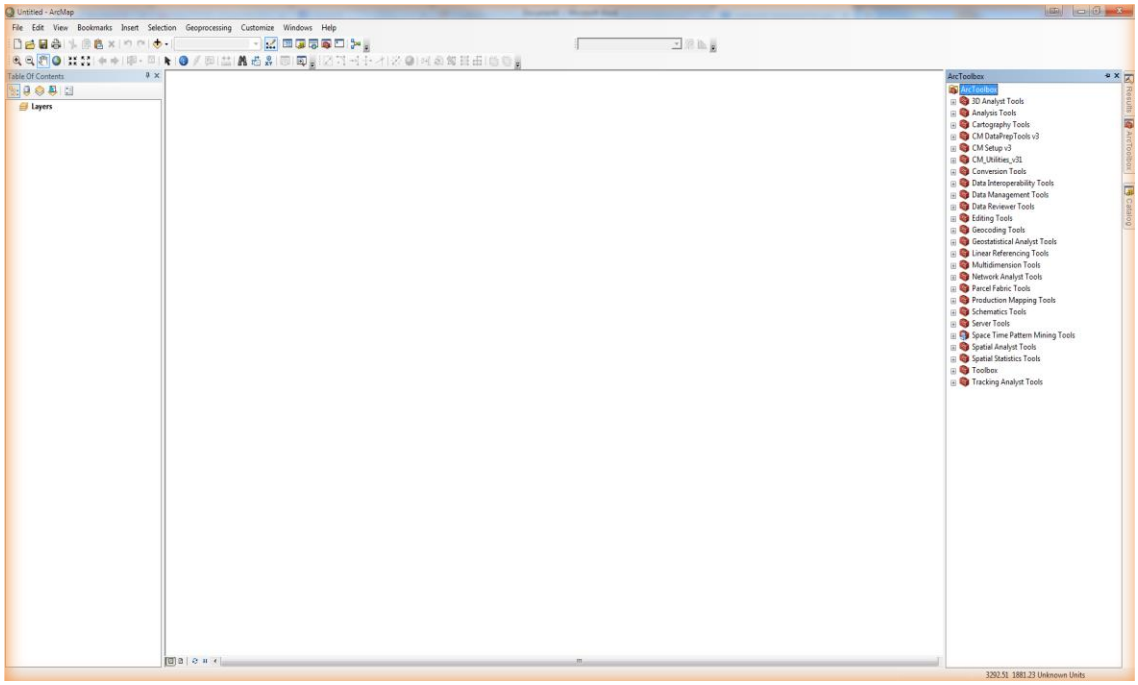


Figure 5: The ArcToolbox Pane

Navigate to where “CASPERTOOKIT.tbx” is located, select the tookbox and click “Open”. This will load the toolbox into the ArcToolbox pane.

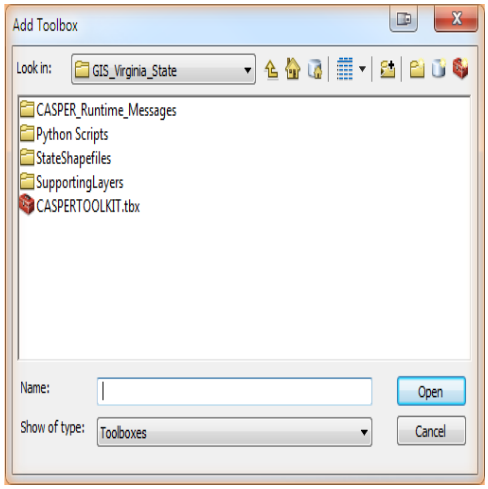


Figure 6: Selecting the CASPER Toolbox

Before the utility can be used, data needs to be loaded into the map document. Census Block data with population and household amounts can be located by visiting: https://www.census.gov/geo/maps-data/data/tiger-data.html. Expand “Population& Housing Unit Counts – locks” located under the 2010 Census section on the page.

Choose the state of interest. This will auto download a .zip files of all the census blocks in the state. Using a statewide file, as opposed to downloading single municipalities allows the ability to perform a CHS and CASPER on a region wide study area without having to merge datasets.

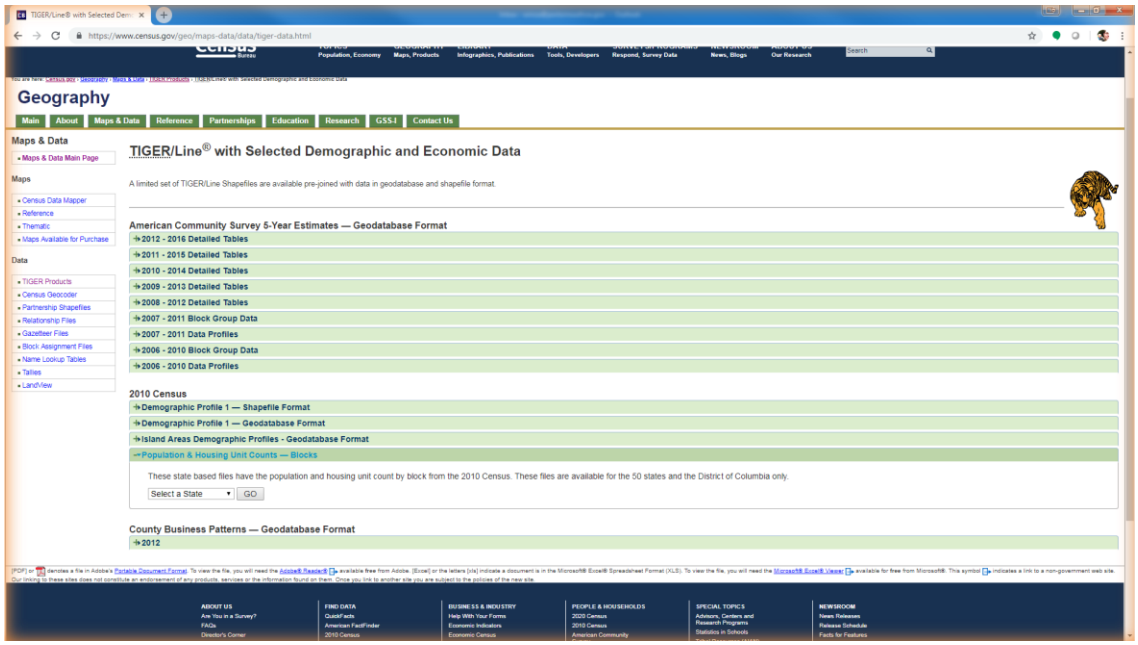


Figure 7: Downloading Census Block Data with Households

The .zip file that was downloaded consists of 5 separate files that form the shapefile used in ArcGIS. The entire folder should be extracted to the home folder for the map. Open the .zip folder in windows explorer and select “Extract all files” from the menu bar. Make sure that the home folder is the location for the extracted files.

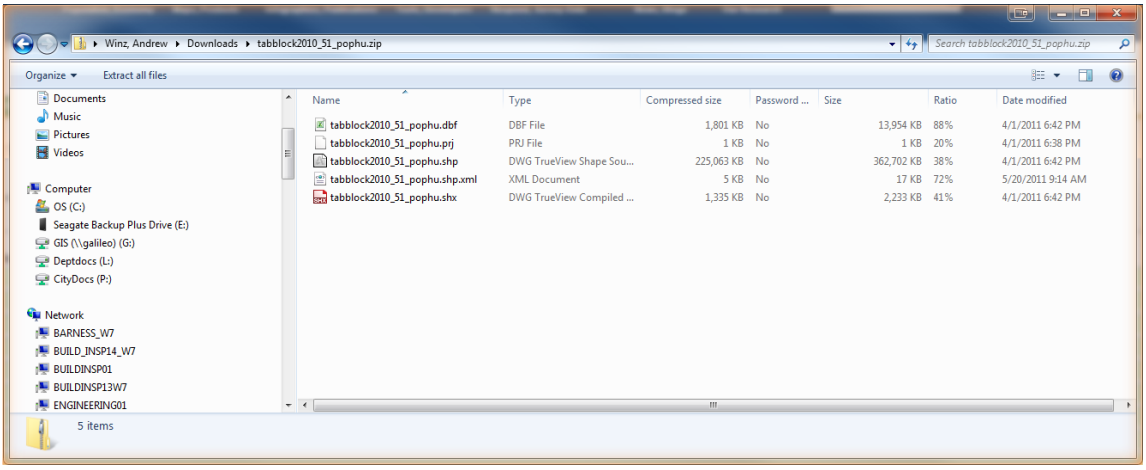


Figure 8: Extracting the .zip file

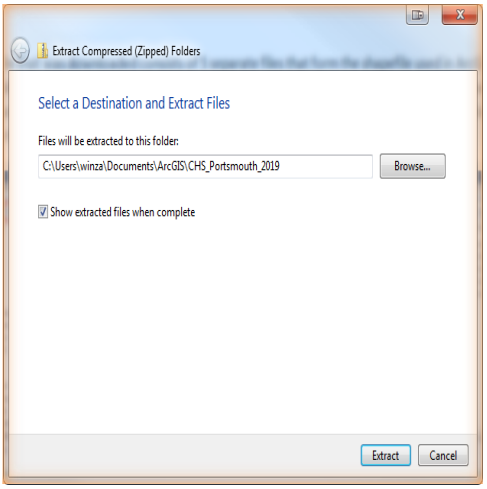


Figure 9: Home folder location

Once the shapefile is extracted into the home folder, it can be loaded into the map by navigating to the CHS folder in the Catalog pane, and dragging the shapefile into the map body. From here the Select by Attributes tool will be used to extract the municipality or counties of interest.

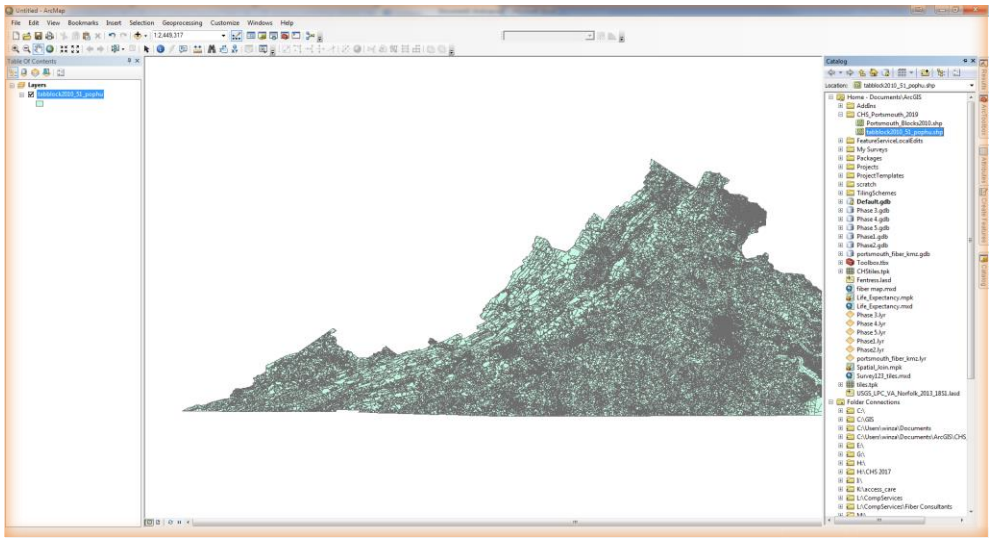


Figure 10: Census blocks loaded into the map.

To select the correct city, the FIPS code needs to be known. This can be found by visiting: http://www.toolsformonkeys.com/countycodes.html and inputting the state and county of choice.

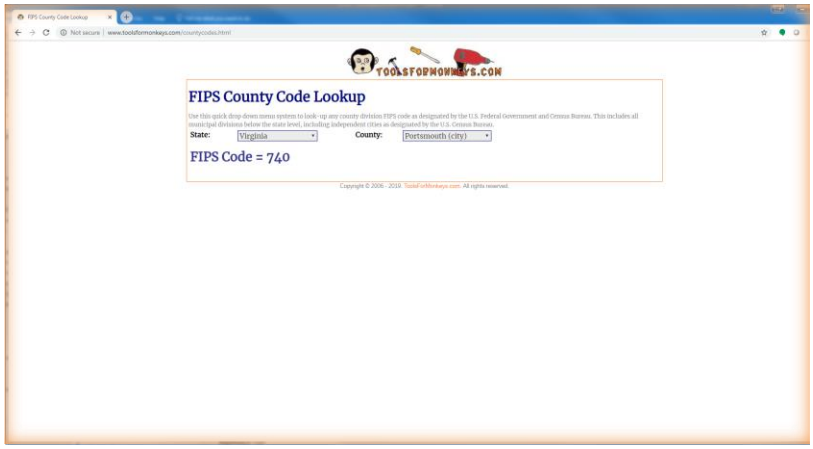


Figure 11: Identifying the FIPS code.

On the main toolbar, click the "Selection" tool to open a sub menu and choose "Select by Attributes." This brings up the Select by Attributes tool. Under "layer" the block shapefile should be shown. In the first window, a list of field table names appears. In this case, "COUNTYFP10" is the field of choice. Double click "COUNTYFP10" to load it into the expression window. Next click the "=" sign to load into the expression.

For Portsmouth the FIPS code is 740, in the expression window after "=" type in '740' as shown. Click "OK". This will select all census blocks in the City of Portsmouth.

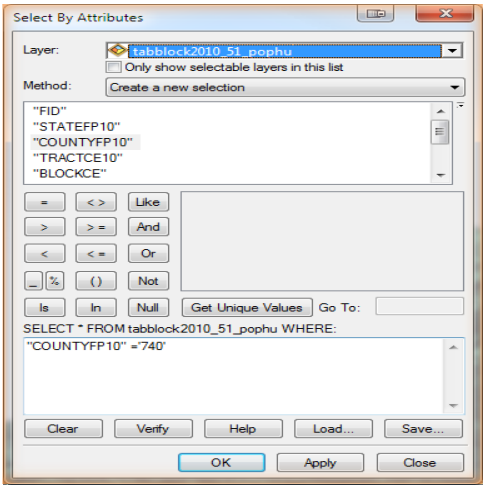


Figure 12: Selection a single county.

To select several counties for a regional study the syntax is as follows: "COUNTYFP10"='code' OR "COUNTYFP10"='code' and adding as many instances as needed.

Right click on the Census Block shapefile in the Table of Contents pane. Navigate to "Data" and "Extract Data" options. This will open the extract data tool which will create a new shapefile of only the selected census blocks. Make sure the new file "<county>_blocks2010" will be exported to the home folder and click OK. Choose "Yes" when asked to export the data into the map.

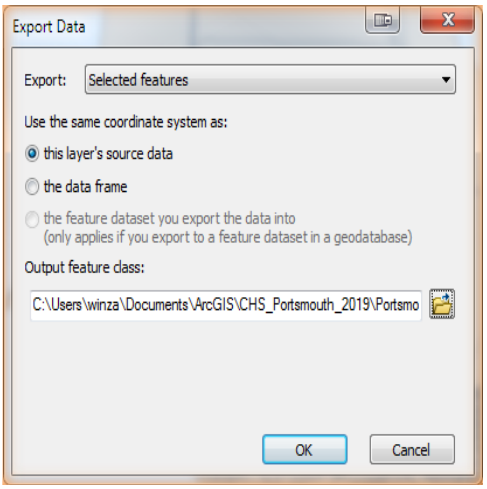


Figure 131: Exporting the selected county blocks.

Turn off the state wide census block layer and zoom to the new layer. The data are now ready to be loaded into the CASPER Toolbox.

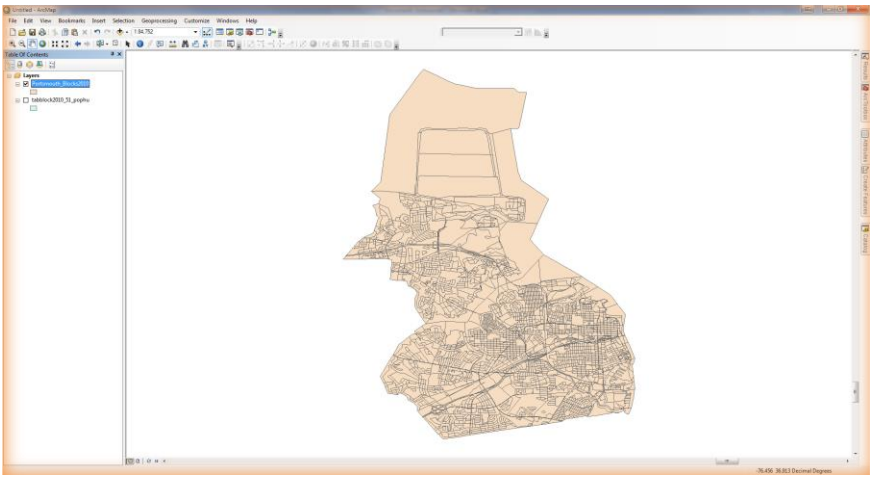


Figure 24: New layer of just the county of interest

Running the CDC Cluster Model

Expand the "CASPER-Toolkit" toolbox in the ArcToolbox pane. Double click on the "User-Select" tool. This opens the User Selection tool, which is used to identify random clusters for the study area.

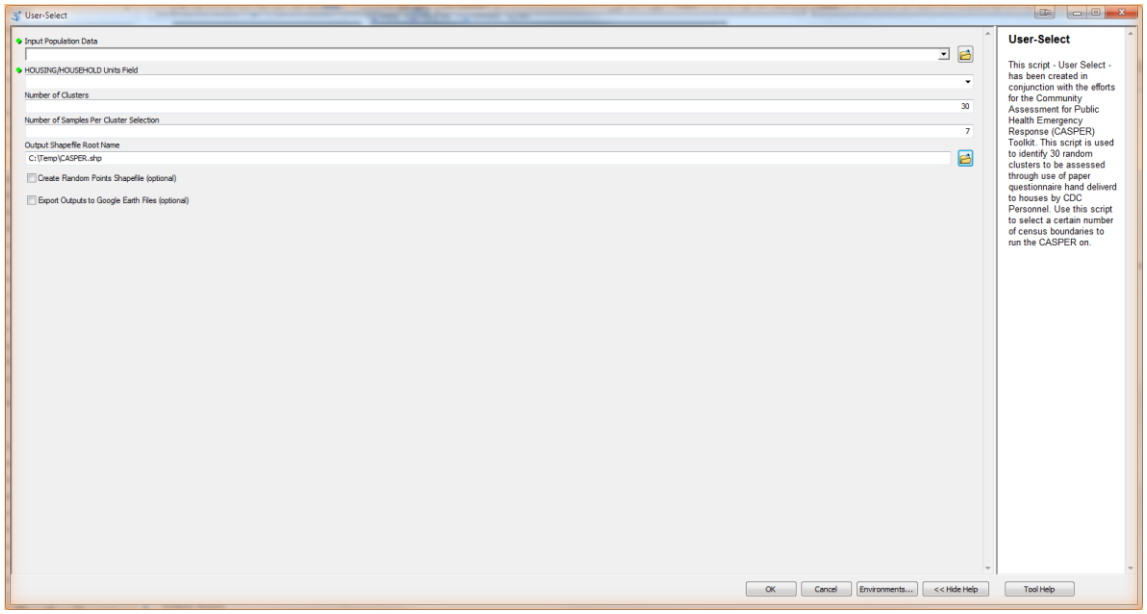


Figure 15: User Select tool in the CASPER Toolbox

Under "Input Population Data," choose the city census block layer. "Housing/Household Units Field" is populated by selecting the "HOUSING10" field option. The minimum number of clusters should be 30 and samples per cluster should be at least 7.

Navigate to the home folder and create a unique shapefile name "<city_casper<year>". The user may choose to create random points, which will create at least 7 random points in the cluster. These points may or may not line up with existing residential locations. Click OK to run the tool.

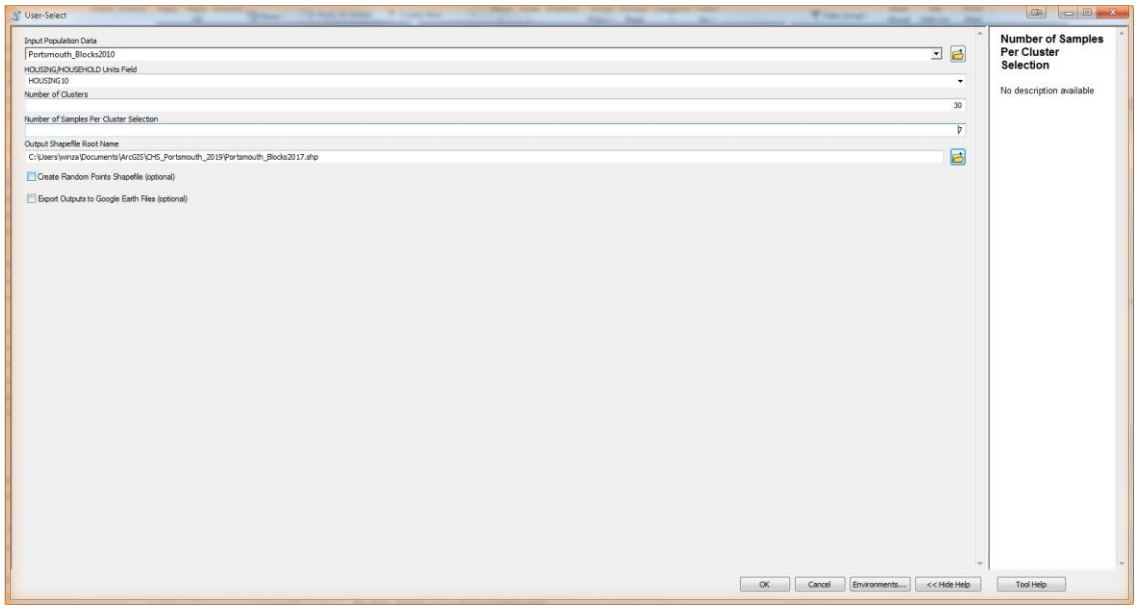


Figure 36: The User Select tool with populated fields.

The tool created the following layers: The clusters layer, a random point layer, a study area layer and a reference point layer. The reference point layer is the approximate centroid of a selected cluster.

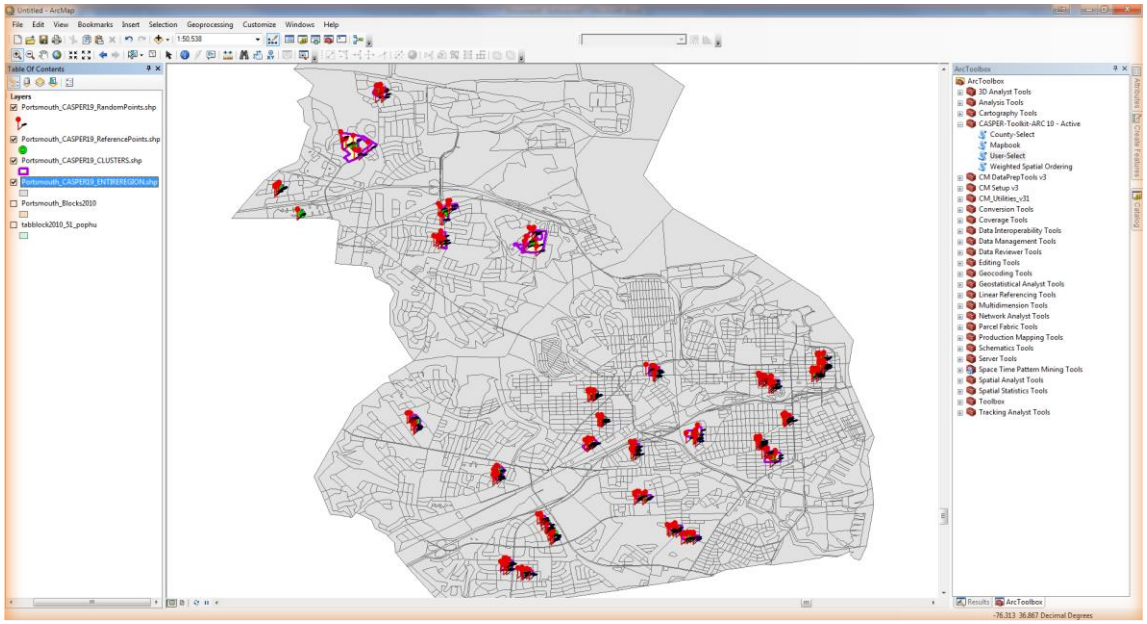
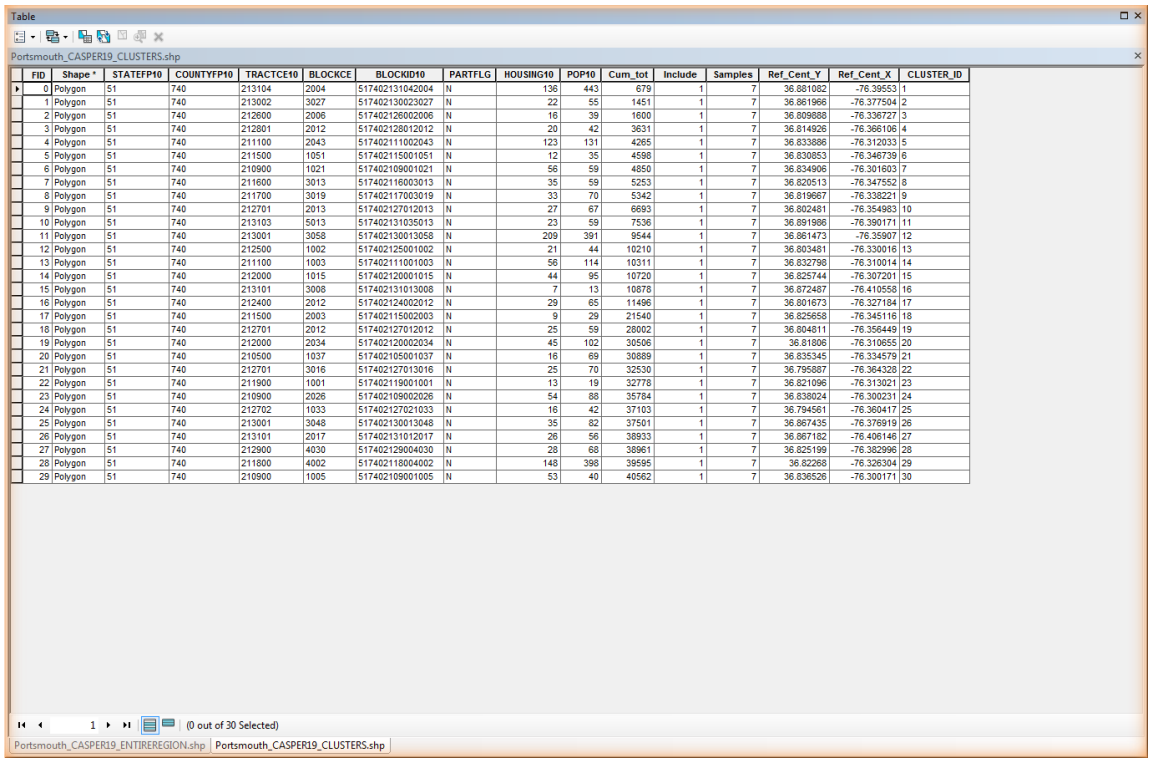


Figure 47: Results of the CASPER Tool.

At this point, it is necessary to determine the household sampling strategy for each cluster. Right click the clusters layer in the table of contents and choose "Open attributes table."



Table

Portsmouth_CASPER19_CLUSTERS.shp

FID	Shape *	STATEFP10	COUNTYFP10	TRACTCE10	BLOCKCE	BLOCKID10	PARTFLG	HOUSING10	POP10	Cum_tot	Include	Samples	Ref_Cent_Y	Ref_Cent_X	CLUSTER_ID
0	Polygon	51	740	213104	2004	517402131042004	N	136	443	679	1	7	36.881082	-76.39553	1
1	Polygon	51	740	213002	3027	517402130023027	N	22	55	1451	1	7	36.861966	-76.377504	2
2	Polygon	51	740	212600	2006	517402126002006	N	16	39	1600	1	7	36.809888	-76.336727	3
3	Polygon	51	740	212801	2012	517402128012012	N	20	42	3631	1	7	36.814926	-76.366106	4
4	Polygon	51	740	211100	2043	517402111002043	N	123	131	4265	1	7	36.833886	-76.312033	5
5	Polygon	51	740	211500	1051	517402115001051	N	12	35	4598	1	7	36.830853	-76.346739	6
6	Polygon	51	740	210900	1021	517402109001021	N	56	59	4850	1	7	36.834906	-76.301603	7
7	Polygon	51	740	211600	3013	517402116003013	N	35	59	5253	1	7	36.820513	-76.347552	8
8	Polygon	51	740	211700	3019	517402117003019	N	33	70	5342	1	7	36.819687	-76.338221	9
9	Polygon	51	740	212701	2013	517402127012013	N	27	67	6693	1	7	36.802481	-76.354983	10
10	Polygon	51	740	213103	5013	517402131035013	N	23	59	7536	1	7	36.891986	-76.390171	11
11	Polygon	51	740	213001	3058	517402130013058	N	209	391	9544	1	7	36.861473	-76.35907	12
12	Polygon	51	740	212500	1002	517402125001002	N	21	44	10210	1	7	36.803481	-76.330016	13
13	Polygon	51	740	211100	1003	517402111001003	N	56	114	10311	1	7	36.832798	-76.310014	14
14	Polygon	51	740	212000	1015	517402120001015	N	44	95	10720	1	7	36.825744	-76.307201	15
15	Polygon	51	740	213101	3008	517402131013008	N	7	13	10878	1	7	36.872487	-76.410558	16
16	Polygon	51	740	212400	2012	517402124002012	N	29	65	11496	1	7	36.801673	-76.327184	17
17	Polygon	51	740	211500	2003	517402115002003	N	9	29	21540	1	7	36.825658	-76.345116	18
18	Polygon	51	740	212701	2012	517402127012012	N	25	59	28002	1	7	36.804811	-76.356449	19
19	Polygon	51	740	212000	2034	517402120002034	N	45	102	30506	1	7	36.81806	-76.310655	20
20	Polygon	51	740	210500	1037	517402105001037	N	16	69	30889	1	7	36.835345	-76.334579	21
21	Polygon	51	740	212701	3016	517402127013016	N	25	70	32530	1	7	36.795887	-76.364328	22
22	Polygon	51	740	211900	1001	517402119001001	N	13	19	32778	1	7	36.821096	-76.313021	23
23	Polygon	51	740	210900	2026	517402109002026	N	54	88	35784	1	7	36.838024	-76.300231	24
24	Polygon	51	740	212702	1033	517402127021033	N	16	42	37103	1	7	36.794561	-76.360417	25
25	Polygon	51	740	213001	3048	517402130013048	N	35	82	37501	1	7	36.867435	-76.376919	26
26	Polygon	51	740	213101	2017	517402131012017	N	26	56	38933	1	7	36.867182	-76.406146	27
27	Polygon	51	740	212900	4030	517402129004030	N	28	68	38961	1	7	36.825199	-76.382996	28
28	Polygon	51	740	211800	4002	517402118004002	N	148	398	39595	1	7	36.82268	-76.326304	29
29	Polygon	51	740	210900	1005	517402109001005	N	53	40	40562	1	7	36.836526	-76.300171	30

1 (0 out of 30 Selected)

Portsmouth_CASPER19_ENTIREREGION.shp | Portsmouth_CASPER19_CLUSTERS.shp

Figure 58: The Clusters Attribute Table.

The attribute table lists all the fields and their attributes for each cluster. A field that is not in use can be hidden by right clicking the field name and choosing "hide field." To add a field, click the drop down arrow next to the Table Options icon and choose add field. Name this field "Sampling". There is a character limit of 10 characters for a field name. Choose short integer as the field type and click OK.

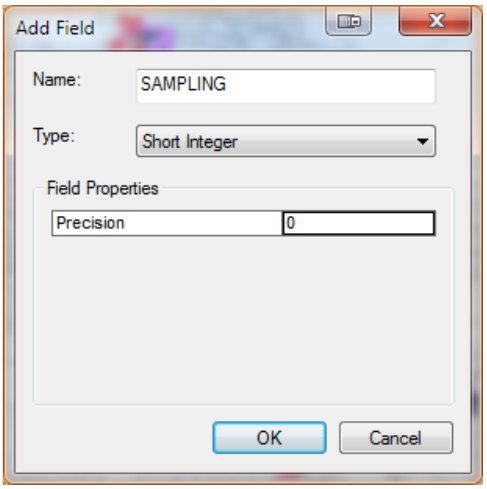


Figure 6: Adding a sampling field

To populate the new field right click the field name and choose "Field Calculator" which opens the field calculator window. To determine the sampling strategy, the number of households will be divided by 7. Double click "HOUSING10" which will populate the expression box. Click the "/" button then type in "7" without quotes. Click "OK" to populate the SAMPLING field with the values. The data are now ready to be used in maps for the survey.

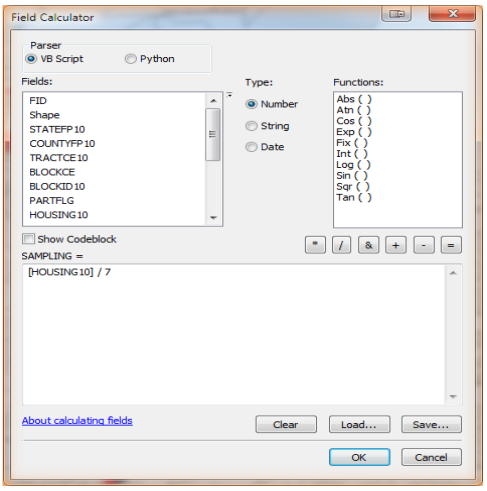


Figure 20: Calculating Sampling Values.

Creating Survey Maps for the Community Health Survey

The survey maps are the most important aspect of the Community Health Survey, outside of the survey itself. The maps help staff locate the survey cluster; explain where to start and how many houses to survey. Data required for this step includes aerial photography, streets, water features, property lines and optional building outlines. If the local Health Department does not have access to the necessary files, it can obtain them the municipality's GIS division or though State resources. In addition, ESRI has several base maps with information that can be used in the creation of the maps.

In the map document that was used to create the clusters, turn off all layers except the cluster layer. Activate the Layout View, by clicking the "Layout" button on the bottom of the map document. Most clusters will work best in a landscape format. Go to "File", select "Page and Print Setup". Choose the printer that will be used. Under Orientation, choose "Landscape" and under Size choose "Letter" or "8.5 x11". Choose "Scale Elements proportionally to changes in page size". Click "OK."

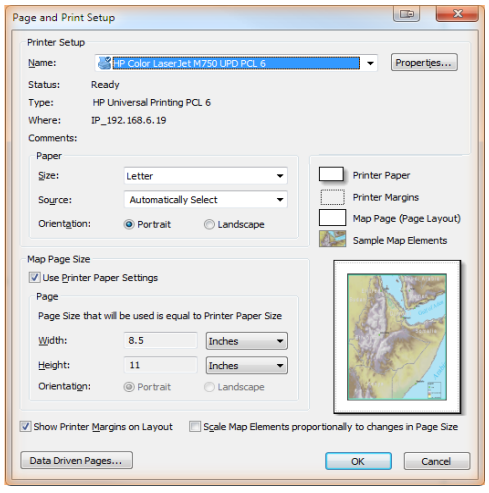


Figure 7: Printer Properties.

The data frame is now highlighted with a bounding box. Adjust the box to allow space for a title and legend. Holding the top center point, drag the upper boundary so it is

about an inch below the page border. Create a snapping guide by clicking on the vertical ruler. Drag the right side of the bounding box so that it is about 2 inches from the page border on the right. A vertical snapping guide can be created by clicking the horizontal ruler. Align the left and bottom lines so they are close to the respective side of the layout.

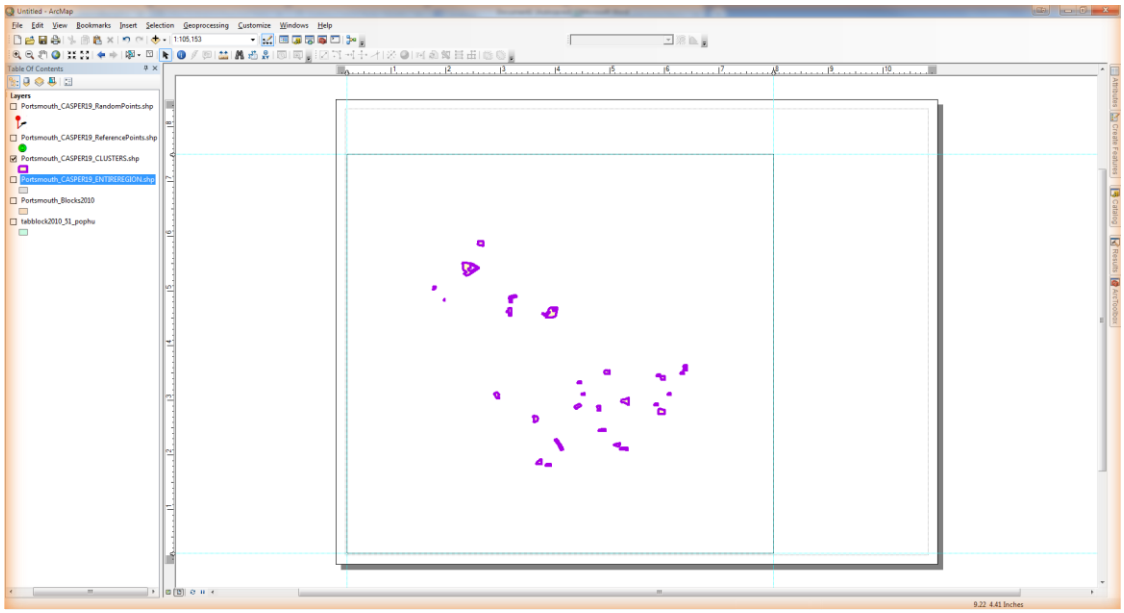


Figure 82: Layout of the data frame borders.

If the health department does not have access to a municipality's streets and aerial photography, a general base map can be loaded from ESRI. Click the drop down arrow next to the "Add Data" button in the upper toolbar. Choose "Add Basemap". A window opens with a selection of basemaps that can be used in lieu of local GIS data. "Imagery" and "Imagery with Labels" will be medium resolution aerial photographs, "Streets" will show street centerlines, names and buildings.

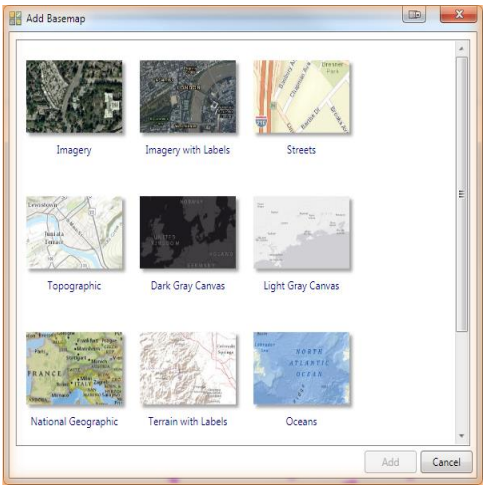


Figure 239: Basemap options

If the health department has access to local data, click on the "add data" button and navigate to the folder where the shapefiles or geodatabase is stored. By holding down the "ctrl" button, several files can be batch loaded. Streets, high resolution aerial mosaics, water features should all be added to the map.

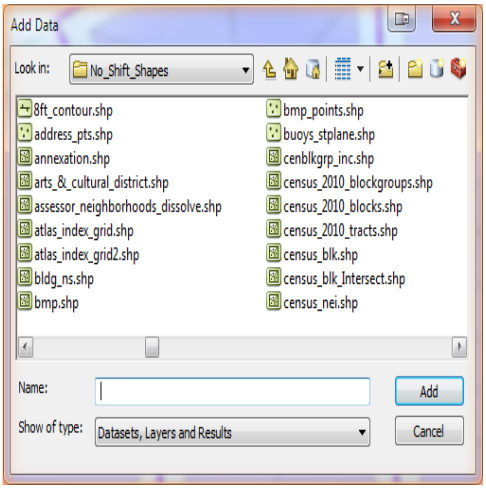


Figure 104: Selecting local data

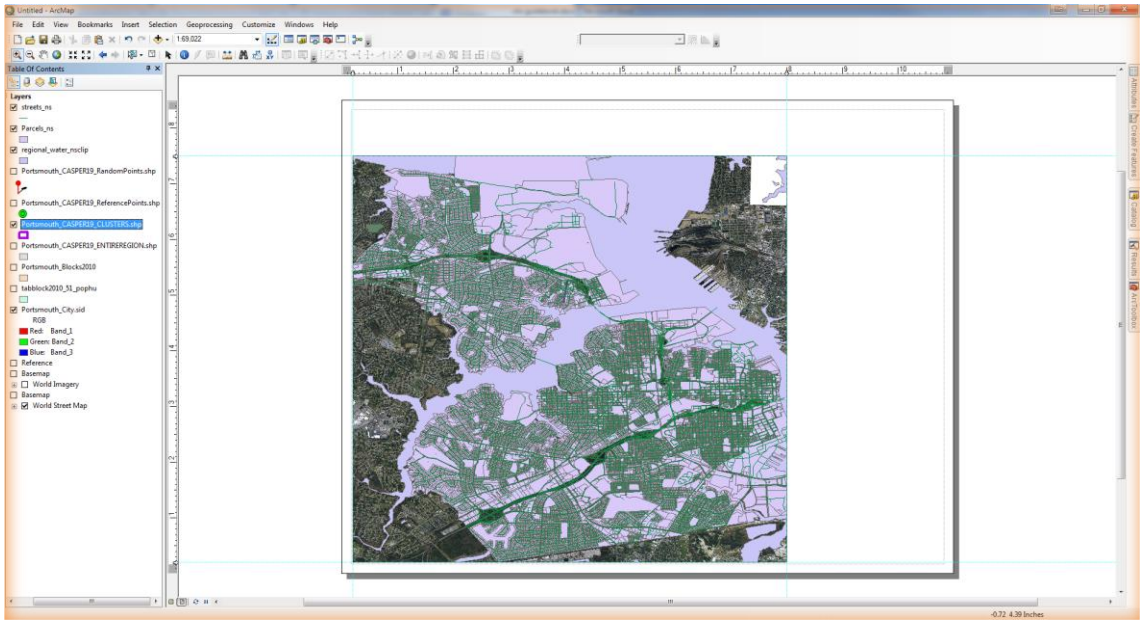


Figure 25: Data loaded into the map.

In order to make the map more appealing and informative, modify the symbology of the layers. For example, with aerials visible, street will just need a name visible, and having a cluster with a solid fill will block any information from layers below the cluster in the Table of Contents. Change the layer names to more meaningful ones. Double click on the clusters layer to open up “Layer Properties”. Click on the “Symbology” tab.

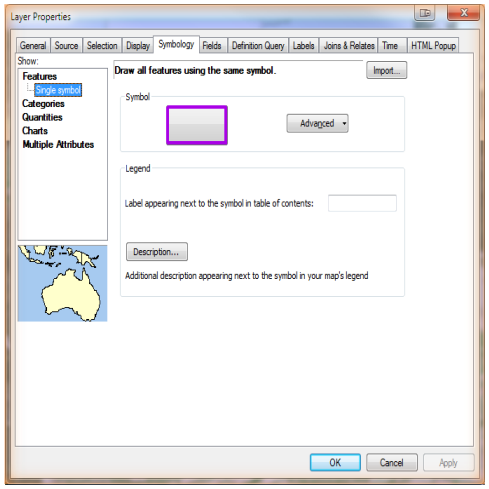


Figure 116: Layer Properties window.

Clicking on the symbol will open a window that will allow for the customization of the layers visual attributes. Select “No Color” for the fill. Change the outline width to 5 pixels and click on “Edit Symbol”

In the open window, click “Copy” then “Paste” buttons under the layers window, this will add a second layer to the symbols properties.

On the upper symbol, lower the outline width to 1 and change the color to white. On the lower symbol change the color to red and size to 4. This will create a two toned symbol that will be visible on both color and grayscale prints.

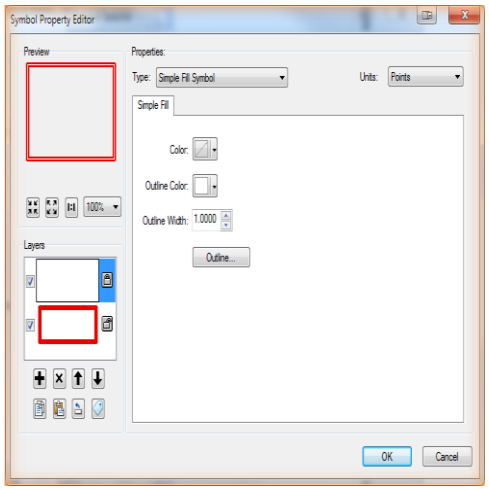


Figure 127: Creating a custom symbol

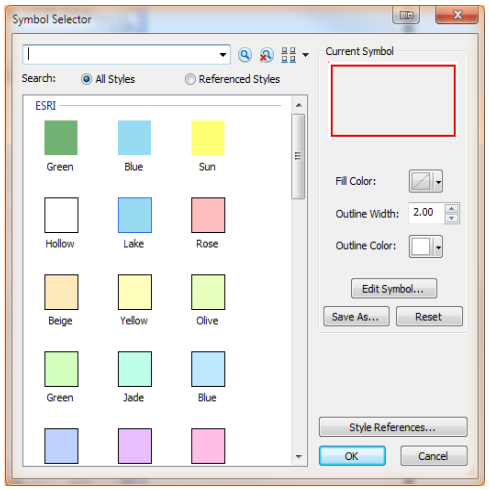


Figure 28: Symbol selector window.

To make street name visible but without showing the centerline, double click on the streets layer to open up “Layer Properties”. Navigate to the Symbol tab and open the “Symbol Selector” as described above. Change the color to “No Color” and outline to “0”. Click “OK.”

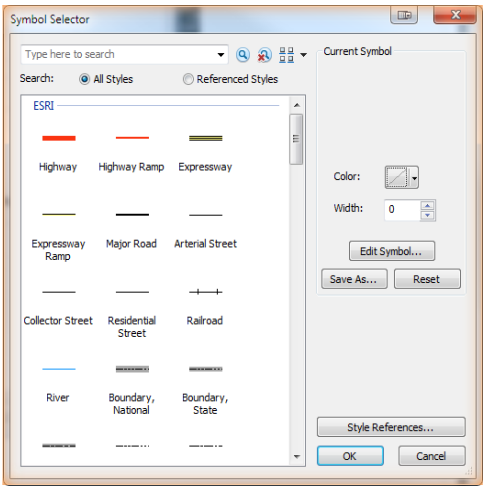


Figure 29: Removing visual lines from a symbol for labels.

Open the Label Toolbar by right clicking in an area on the main tool bar and select “Labeling”.

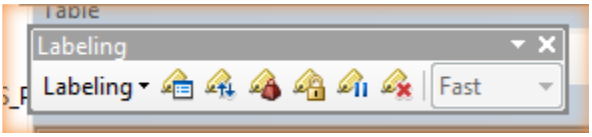


Figure 30: Label toolbar.

Under the dropdown arrow next to Labeling, choose “Use Mapplex Label Engine” then click the “Label Manager” button. Check the box next to the streets layer. Choose the appropriate name field for Label Field.

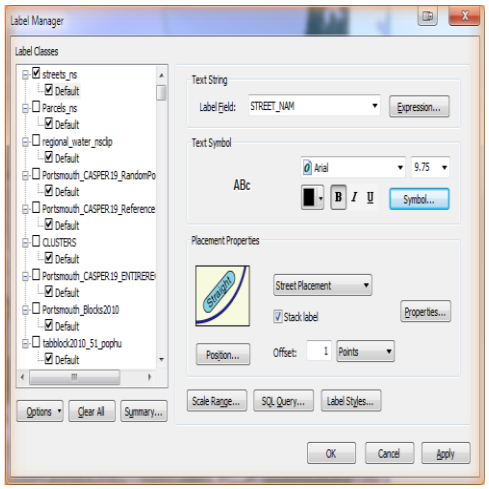


Figure 13: Label Manager

Add a halo to the text by clicking the symbol button then choosing Edit Symbol and adding a halo.

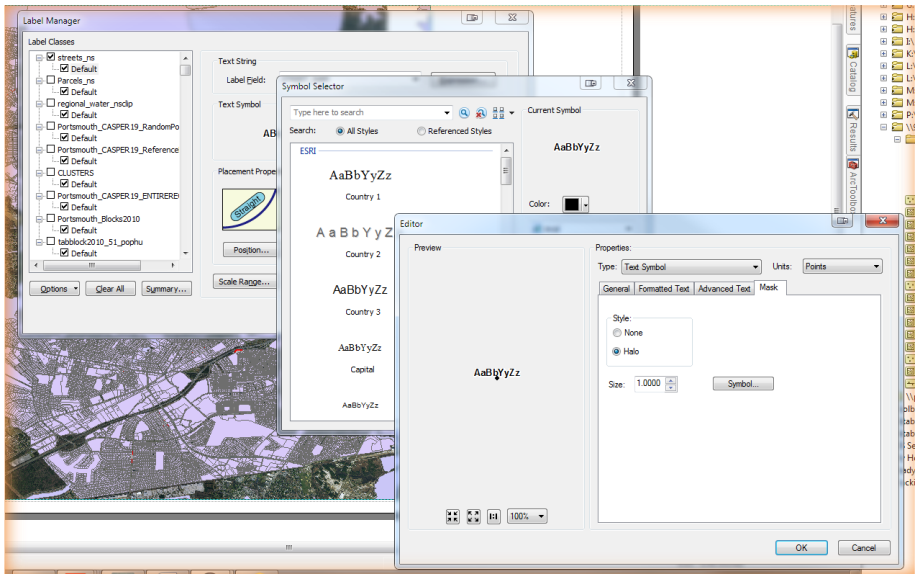


Figure 14: Adding a halo to text.

Under placement Properties choose “Street Placement” the click the Position button below the small graphic. Choose “Centered Curved” and click “OK.” This will label streets while hiding the centerline.

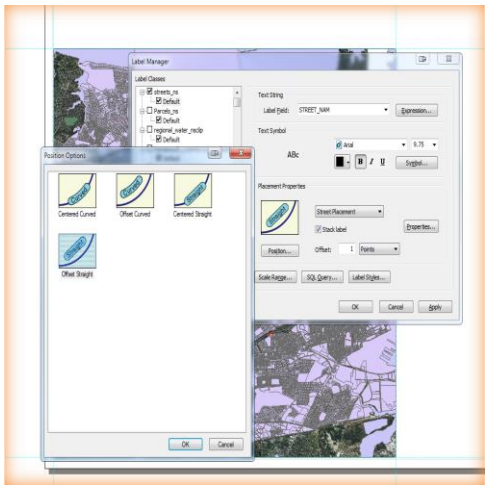


Figure 153: Setting street label placement.

Change the symbology of other layers to develop a clean looking map. Zoom into a single cluster to see how labels and symbology are balanced. Change any properties as necessary. If using an ESRI basemap, labeling changes are not needed as the streets are prelabeled.

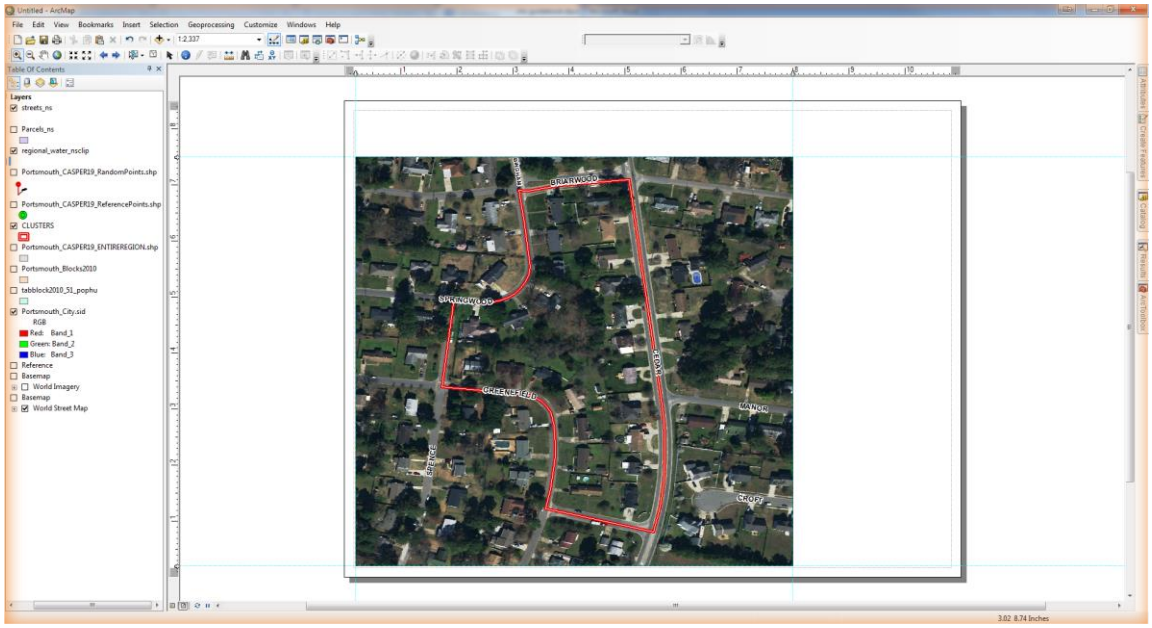


Figure 164: Custom symbology with local data.

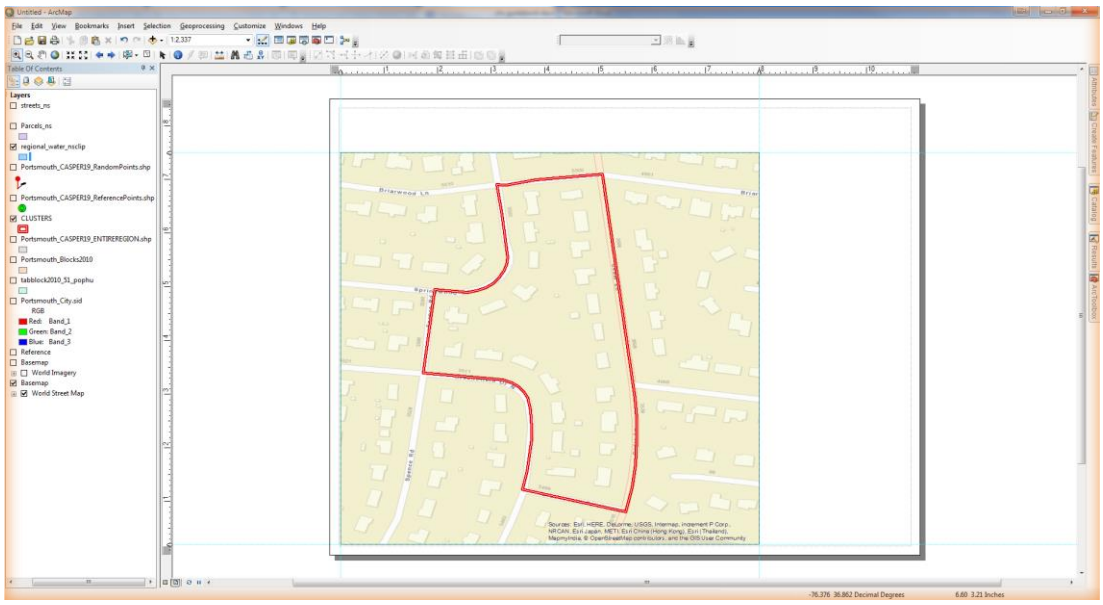


Figure 3517: Cluster using ESRI provided basemap.

Every map should have the following elements: Legend, Orientation, Scale, Title, Author, and Date. At the top of the map place the title and date, as well as graphics that represent the author and the local health department.

Create a custom rectangle graphic by choosing the "Rectangle" tool on the Drawing toolbar. Drag a rectangle along the entire width in the upper blank space on the map.

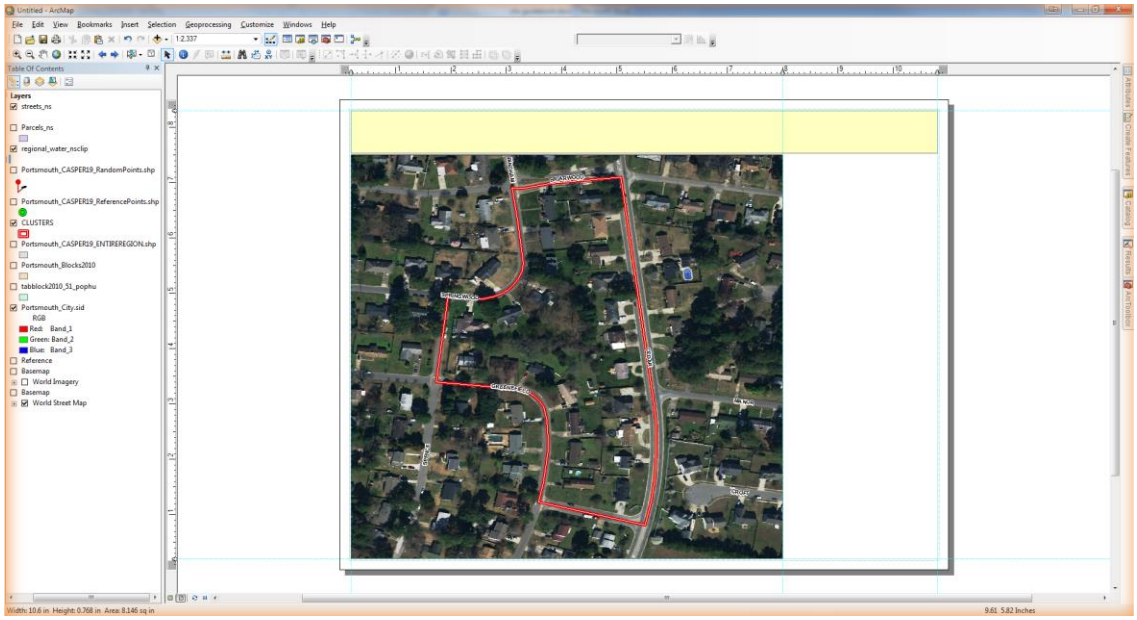


Figure 36: Creating a rectangle graphic.

Double click on this graphic to bring up the Properties window where the fill and outline can be changed just like a standard layer. Change the fill to either "White" or "No Color" and the outline to "1" and click "OK."

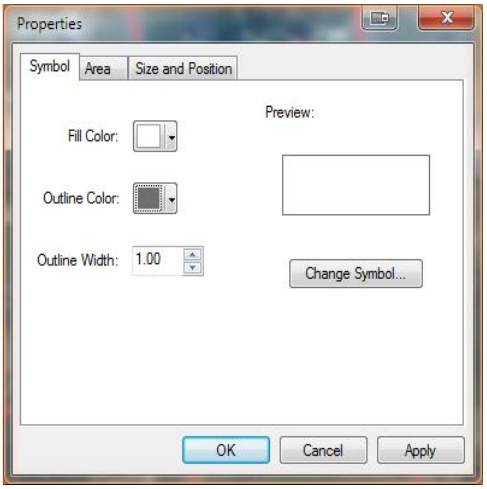


Figure 37: Graphic Properties dialog.

Next, on the drop down arrow adjacent to the rectangle on the Drawing toolbar, choose "Line." Draw a vertical line about 3 inches from both the left and right page boundaries. The right line should line up with the edge of the data frame.

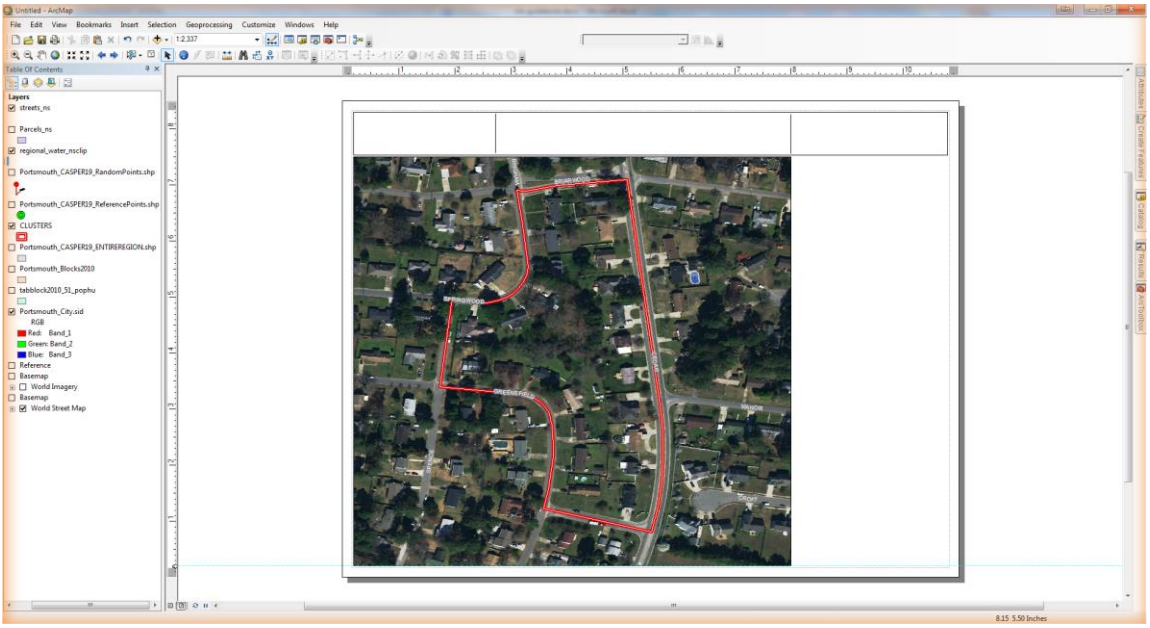


Figure 188: Adding vertical lines.

Choose Text on the Drawing toolbar. Click in the center division of the graphic and type in the study name, in this case “Community Health Survey 2018”. Double click the text to open up a properties window. Adjust the variables until the title looks balanced with the map. Follow the same steps to add “Date:” and the date of the survey to the right of the title bar.

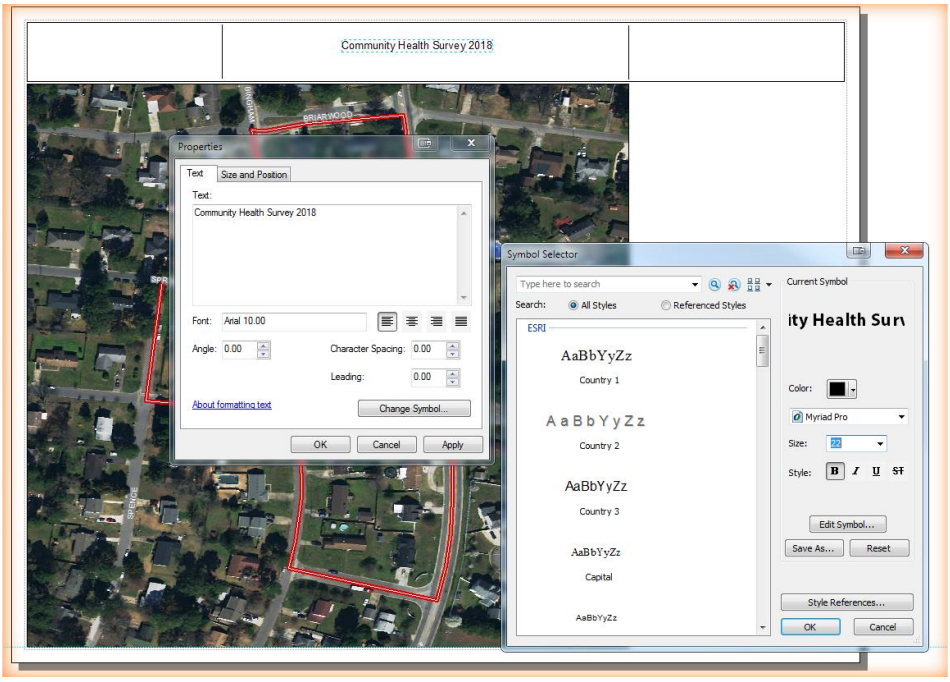


Figure 39: Text Properties dialog.

Next, add graphics that represent the Health Department and the study will be added to the map. Click “Inset on the main tool bar then choose “Picture.” Navigate to where the Health Department logo is stored and click “OK.” Adjust the size of the logo until it fits in the left hand side of the title bar. Repeat these steps for the survey logo, but place in the right side of the title bar.

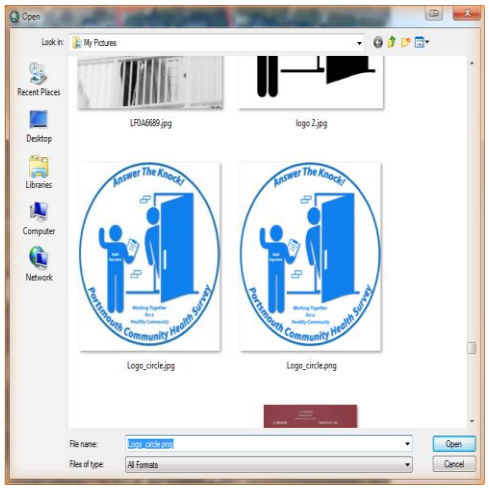


Figure 40: Selecting a picture graphic.

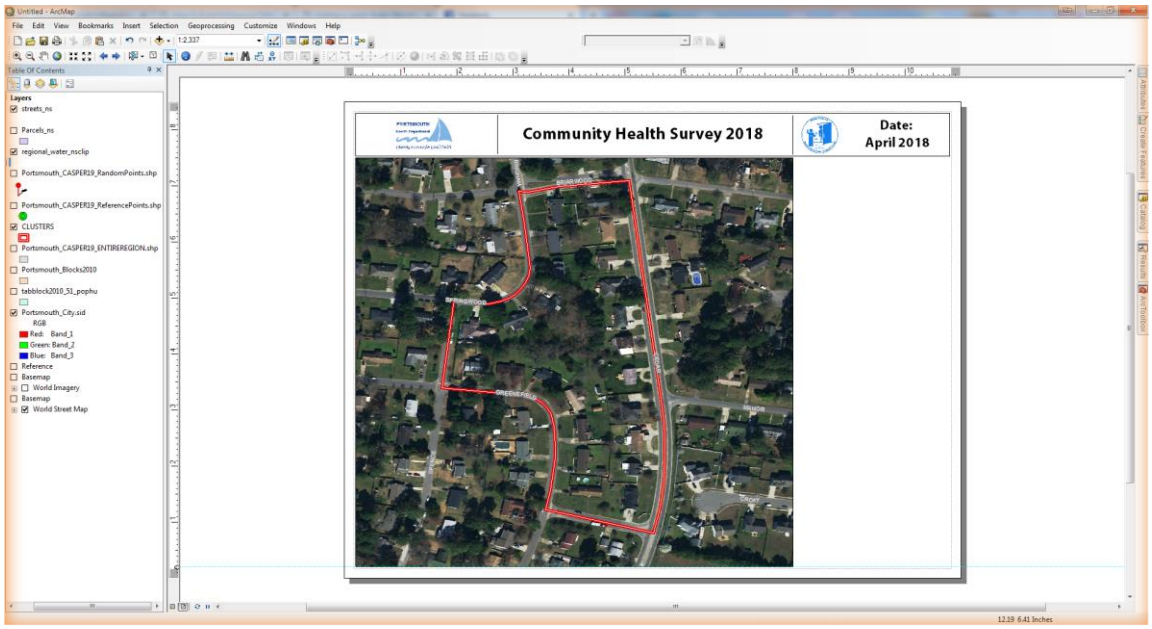


Figure 41: Completed title bar.

Follow the same steps above to populate the right side of the map with the information necessary information for the survey staff. This information includes: Interviewer or team name, Census information, sample size, and reference point location.

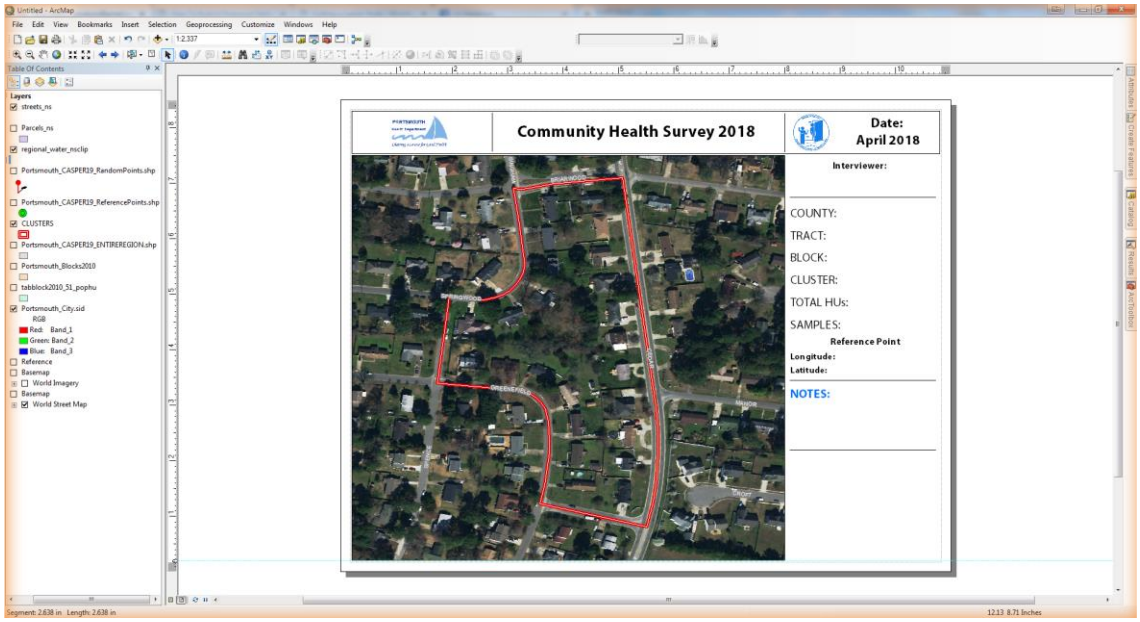


Figure 42: Survey information headings.

Use data driven pages and dynamic text to populate the data needed for the survey as well as the creation of a mapbook, Right click on an open area in the main tool bar and select the Data Driven Pages toolbar.

Figure 193: Data Driven Pages toolbar.

Click the "Setup Data Driven Pages" button to open the setup dialog. Select the "Enable Data Driven Pages" box. Under Index Field populate the options with the name of the cluster layer and attribute fields showing the cluster ID. Click "OK."

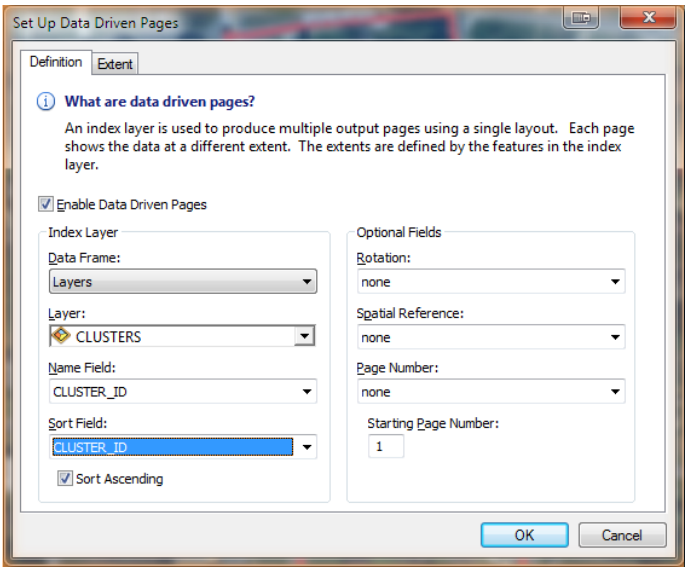


Figure 204: Enable data driven pages.

To add a dynamic text element, choose the drop down next to Page Text on the Data Driven Pages toolbar. Select the "Data Driven Page Attribute" option. For the Tract name, choose "TRACCE10" and click "OK." Drag the created text next to the Tract heading. Repeat for the other headings. For Longitude, use the field REF_CENT_X, for Latitude use REF_CENT_Y.

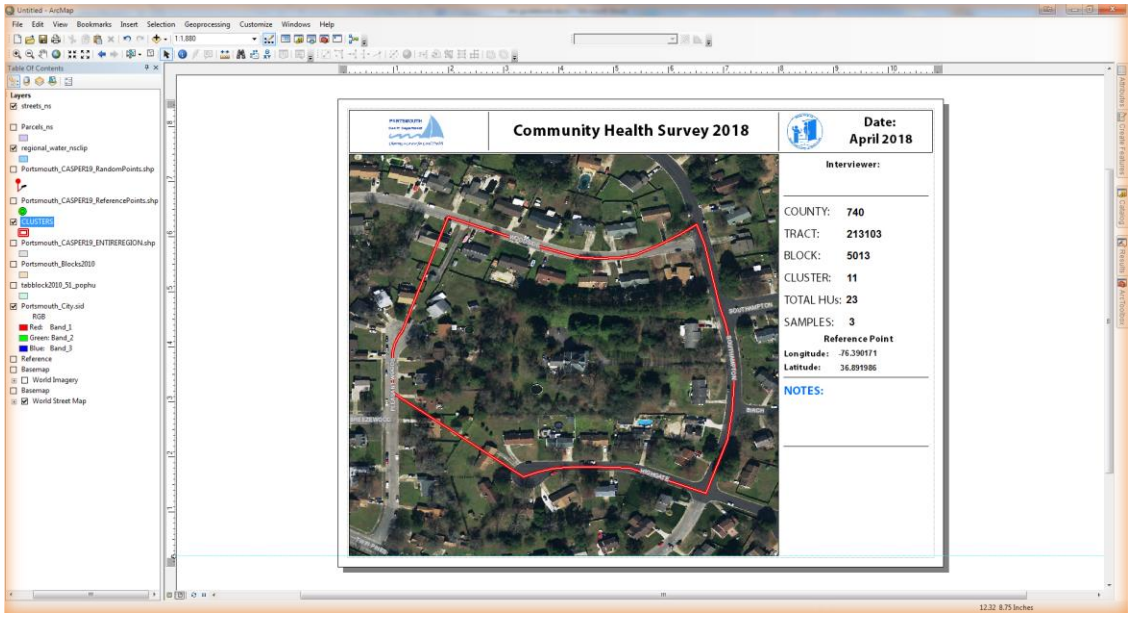


Figure 215: Completed Survey Information Section.

Finally, create the legend, scale car, and north arrow. To create a legend, choose "Legend" from the Insert menu on the main toolbar. This will open the "Legend Wizard" dialog.

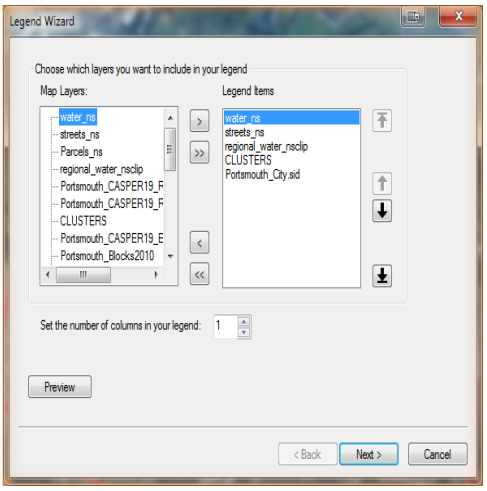


Figure 226: Legend Wizard

To add or remove a layer that will be visible in the legend, use the carrot (> , >>) buttons to move layers between the two windows. Layers shown should be Clusters and water feature layers. Click "Next" when complete.

The next window is the title page for the Legend. Here type "LEGEND" in all capitals. Choose the same font that has been used for text in other graphic elements to keep uniformity. These attributes can be adjusted later as well. Click "Next" to continue.

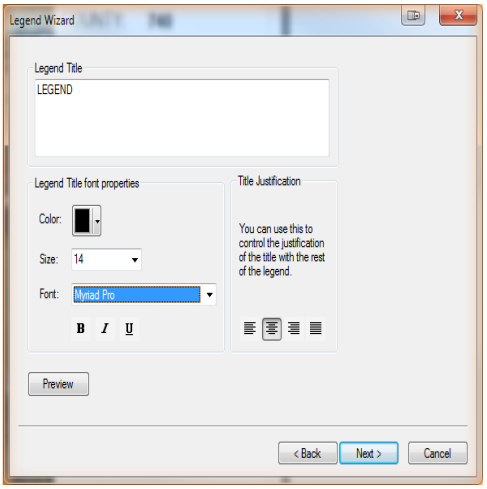


Figure 237: Legend Title

Graphic styling of the Legend is adjusted in the next window, for the survey maps, leave all options as blank and click "Next." These attributes can be adjusted later as well.

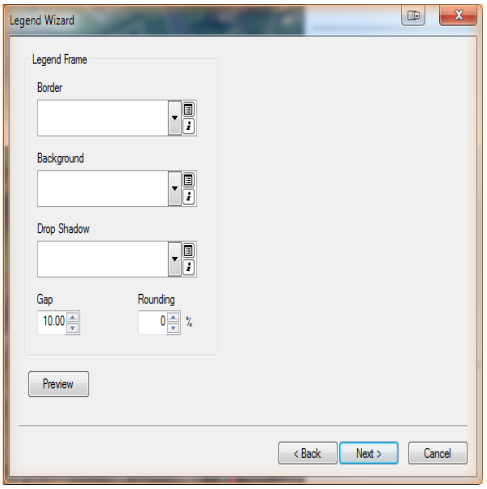


Figure 24: Legend Frame attributes

The next screen allows for custom shapes for line and polygon representation if desired. Leave the default values and click "Next."

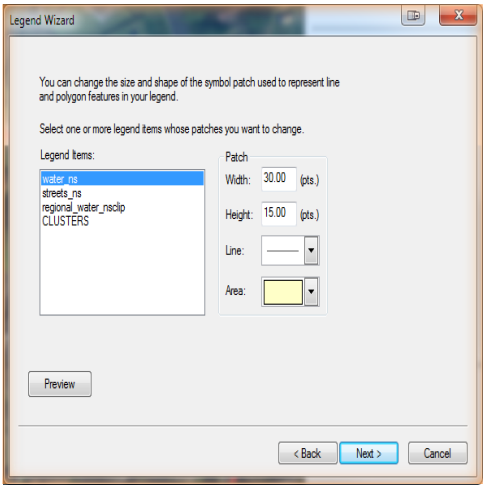


Figure 259: Symbology representation options.

The following window is where spacing between legend elements can be adjusted. This is useful for a legend with numerous items and a small amount of space.

In this case, default values will be acceptable. Click “Finish” to create the legend. Adjust the placement of the legend so that it fits into the lower part of the right hand section.

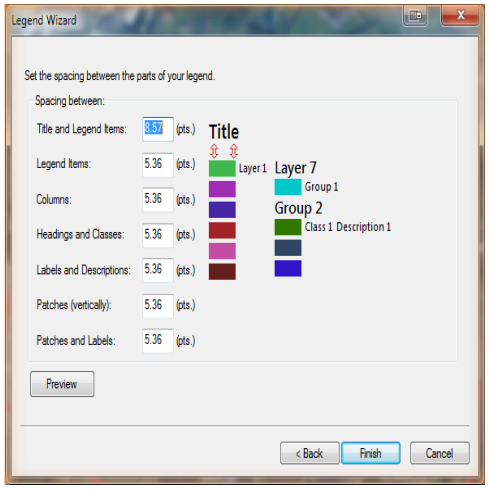


Figure 50: Item spacing attributes

In order to add a scale bar and north arrow, on the Insert menu choose “Scale Bar” and “North Arrow” options. Choose an appropriate graphic, click “OK” and move their placements to the bottom of the right hand side of the map.

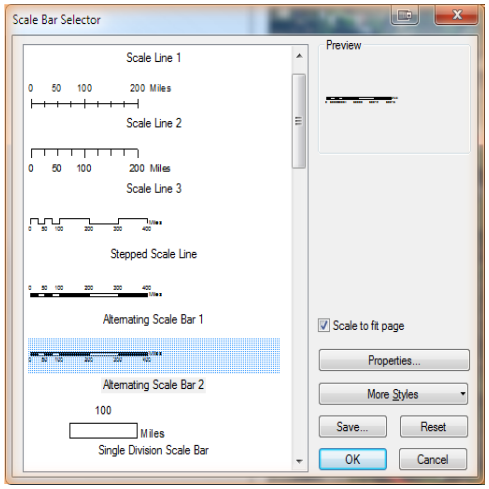


Figure 51: Scale Bar selection.

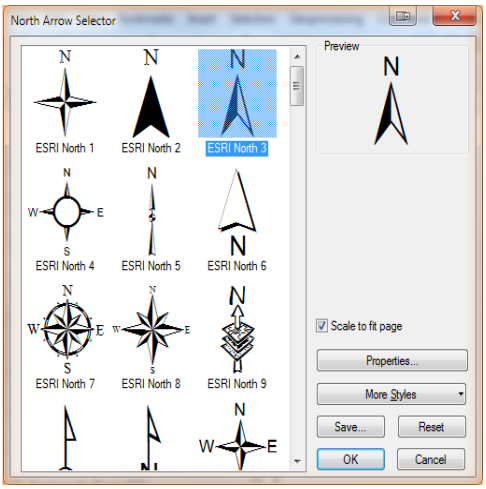


Figure 52: North Arrow selection

The map is now ready to be reviewed for printing as a mapbook.

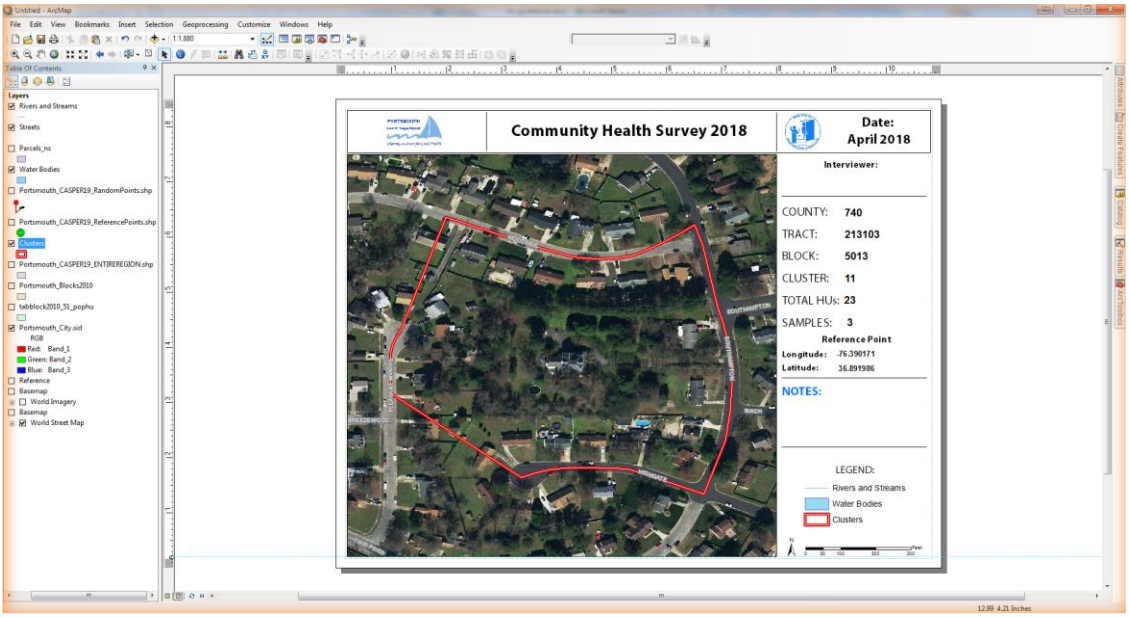


Figure 263: The finished layout of the map.

When the dynamic text elements were created, mapbook options were inputted into the properties dialog. On the Data Driven Pages toolbar use the Forward and Backwards buttons to navigate through the pages. The current page number is shown in the window between the buttons. Scroll through the pages and make note of any clusters that are too large to view residential units clearly. These cluster maps will need to be split into two or more pages.

Figure 274: Data Driven Page Toolbar page navigation

Cluster 1 is a large subdivision and would benefit from being split into multiple sections. Save the map document and open another instance of ArcGIS. Choose the Community Health Survey map document.

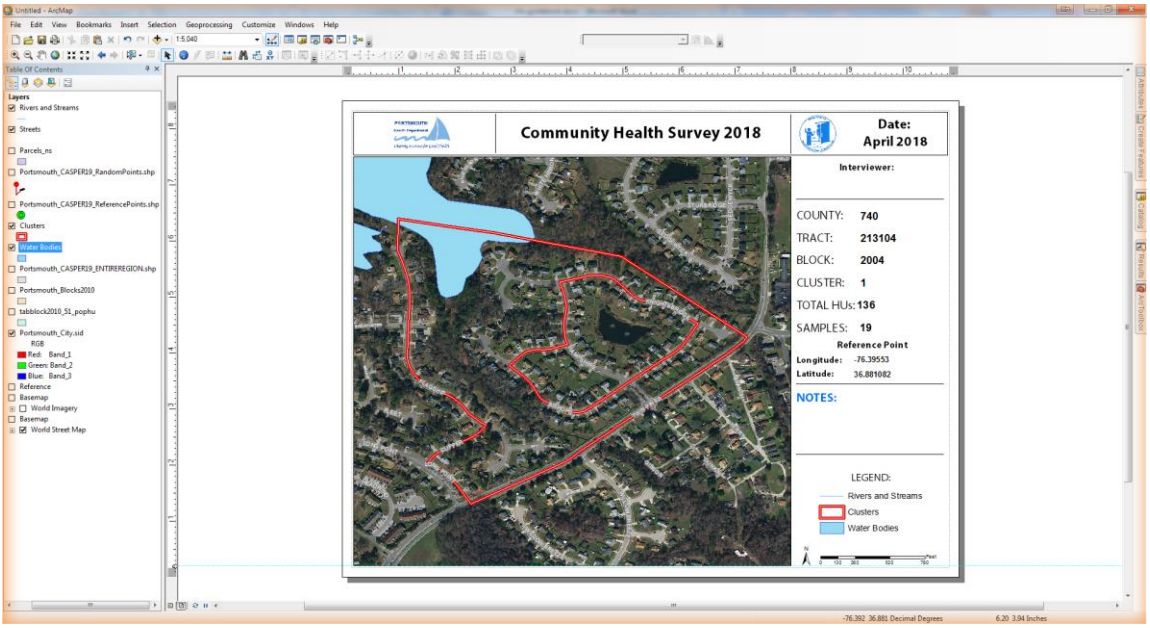


Figure 285: A large cluster that can be split.

Navigate using the Data Driven Page tool bar to Cluster 1. Use the "Zoom" button to focus in on the section of the cluster in this case, along a creek bed. Under the notes section, insert text stating that this cluster is split into several sections. Export the map as a .pdf by choosing "File," "Export Map." Choose .pdf and an acceptable location. Once the .pdf is created, drag the data frame to another section and repeat the process. Do this for any other large clusters. Do NOT save the map document or it will overwrite the previous master document.

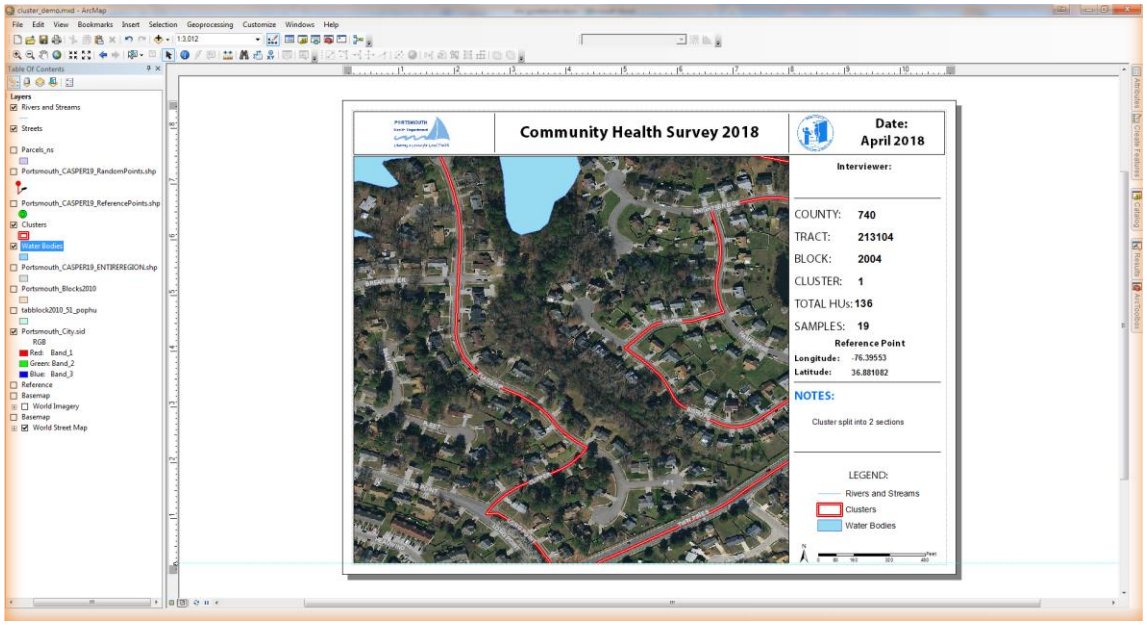


Figure 296: Split clusters.

The entire mapbook can be exported as a single pdf or as individual pages. Navigate to File, Export Map to open the export window again.

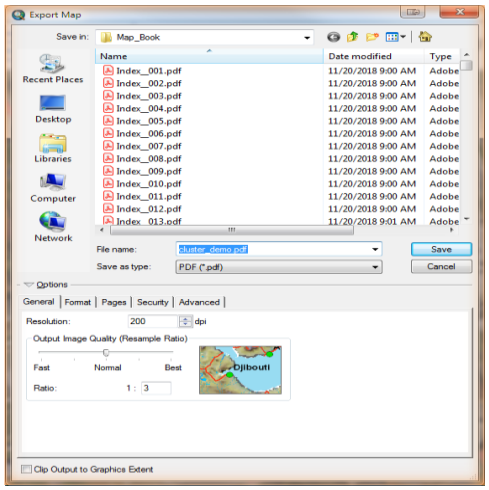


Figure 307: pdf export window

Click on the Pages tab, "Select All" and under the dropdown menu under Export Pages, select "Single PDF File" to create a single file will all pages or multiple files to create a separate pdf for each page. Any pages with split clusters will need to be appended to the mapbook using Adobe Acrobat Professional. Click "OK" to export the map.

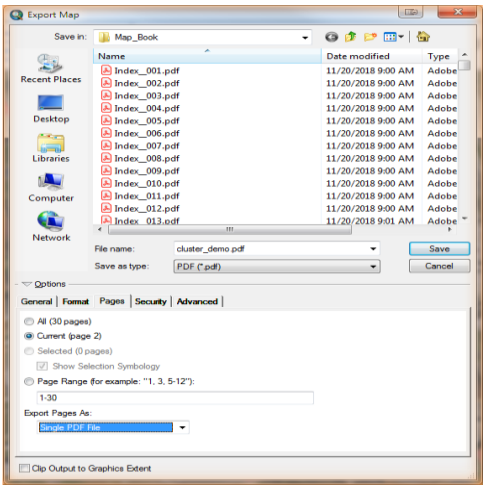


Figure 58: Export PDF mapbook.

Now, the mapbook is ready to share with the planning group. Due to the large file sizes, the group may want these maps saved on a shared drive.

Chapter 4: Data Collection

After the organization determines what data to collect, the next decision should be how to collect the data. CASPER surveys teams can collect the data via a paper survey, electronically, or both. Table 3 describes the advantages and disadvantages to both.

	Advantages	**Disadvantages**
Paper	• Requires less training of field staff • Requires less time to prepare for the survey • Inexpensive • Little to no technical knowledge needed • No data loss due to technological malfunction • Less suspicion from interviewee about what you are writing/doing. Better rapport	• Requires extensive data entry after the survey is complete • Surveys could become wet, misplaced, or somehow damaged • Data entry from paper to computer introduces potential data entry error
Electronic	• Time to complete data analysis is significantly shorter • Could include navigation to survey cluster to reduce teams getting lost • Skip Logic helps teams complete the questionnaire faster	• Requires more time to train field staff • Requires more time to prep for the survey • Costs could be higher if devices have to be purchased

	• Fewer papers to shuffle through in the field • Minimizes risk of paper getting lost or damaged	• Screen brightness in the field can be a concern on a sunny day • Battery life of the device • Data could be lost due to technological malfunction • Introduces need to secure data/device

Table 3: Collecting data via paper or an electronic method

PHD has elected to collect surveys by both paper and electronic means to capitalize on the benefits of both. The field team member with the paper copy will ask the questions as teams have found they have a better rapport with the interviewee (PHD, 2013). The other team member will record the answers electronically. If a team member failed to capture part of the answers, having a paper and electronic copy provides a backup for those answers. Training the staff on both electronic and paper methods of data collection has benefits when time is short prepping for the survey and data analysis is needed immediately during an emergency.

Creative methods of collecting surveys

To ensure that the data collected are reliable and generalizable to the whole community, an eighty (80%) percent completion rate is required. If the goal is 210 households, survey teams need to interview at least 168. There may be multiple barriers to reaching this goal, so organizations that have conducted CASPERs have developed some creative solutions.

In Sarasota County, FL, the health department collected surveys through the U.S. mail and in person. A call back flyer was also left when there was no answer at the home. The teams encountered a number of empty houses, potentially due to seasonal residents.

They also had a higher number of gated and restricted communities. The surveys were mailed using the same method as they would have used in the field (Health, 2015).

PHD used door knockers at all households where field teams knocked (Figure 59). The cluster number would be written on the door knocker so that the interview would be assigned to the correct cluster during analysis. In the future, shorter url codes and a phone number will be used. Also, the qr code was provided to take residents directly to the survey. On the back, PHD provided information about the diabetes prevention program.

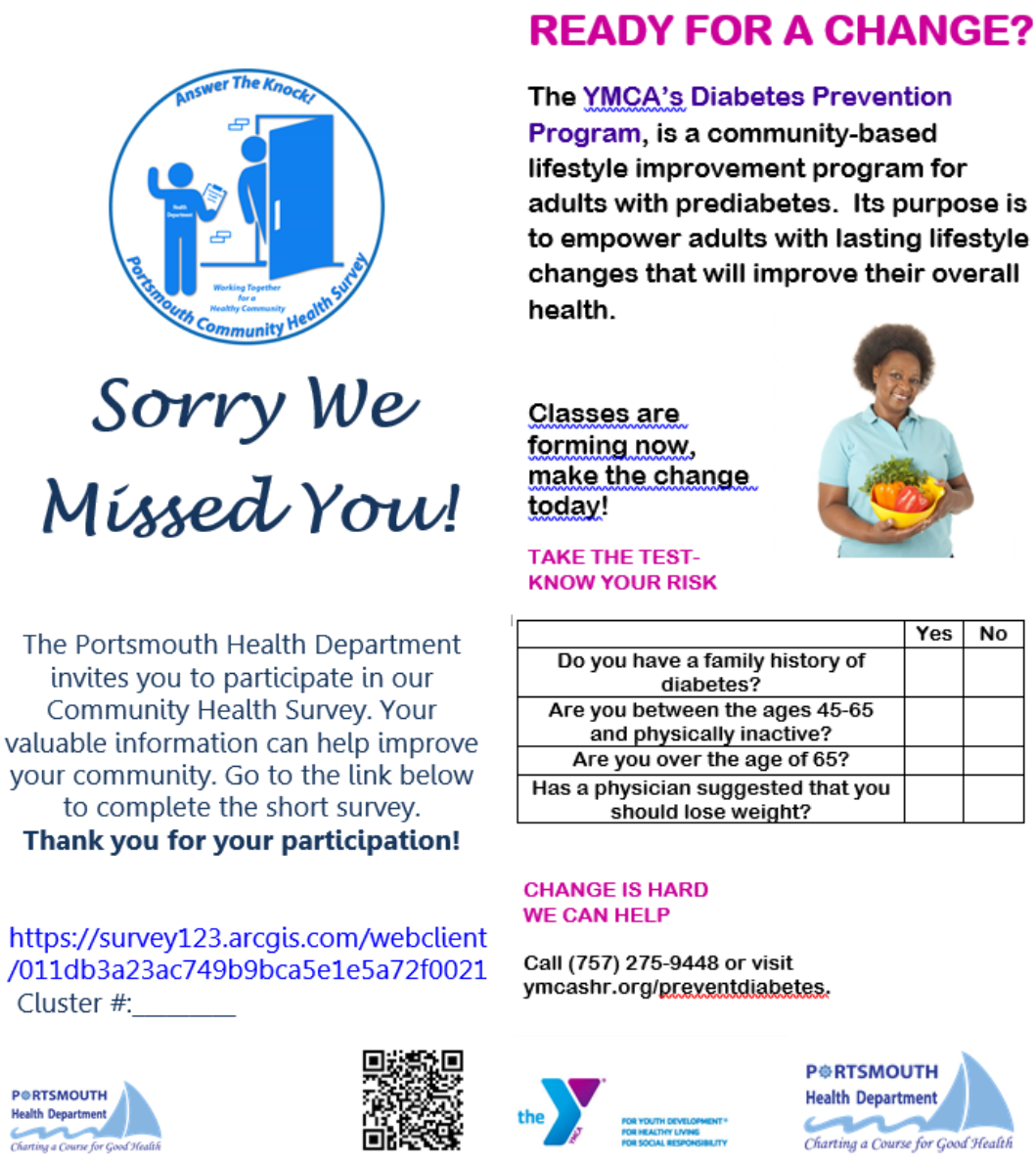


Figure 59: Door Knocker used in PHD's 2017 Community Health Survey

Using a combination of door knockers, online surveys, and mailers can increase response rates and allow the data to be more useful in future surveys. In past years, the survey respondents were slightly skewed to an older population. In 2017, the average age was less than in previous years. Increasing the options and methods of capturing survey responses, allows more diversity in age groups. In 2017, PHD also provided an open online survey for all Portsmouth residents to take. Information about the nearest

intersection to their residence was collected. While the results were not used in the official CASPER report, the data were analyzed and used within the health department for planning and programming. Twice the number of surveys collected in person were collected via the online survey. Feedback from residents showed they appreciated being able to be part of the survey even if their residence was not randomly selected (PHD, 2014).

If the organization decides that electronic data collection is preferred, there are many options available. For a free option, CDC provides an Epi Info App that can be used on Android and iOS devices. The capabilities on the iOS devices are limited compared to Android devices and ultimately may result in a less pleasing experience for the field and data analysis teams. Templates and Interview forms will need to be transferred onto and off the device via e-mail or a direct usb link to a windows computer. This introduces security concerns for PHD as these mobile devices may not be connected directly to a computer on the state secured network. Also, emailing potentially confidential information can be provide another risk. For these reasons, PHD has not chosen to use Epi Info for mobile data collection.

In 2013, PHD used Trimble nomad units running ArcPad (Figure 60). These units were already available at local health departments so no additional costs were incurred. Field teams, however, reported significant problems navigating the devices, filling out the surveys in a timely manner, and reading the text on the small screen. Several team members said that if the devices were used in the future, they would not volunteer again.

Figure 60: Trimble Nomad Unit Running ArcPad

In 2014, PHD used ESRIs Collector App on agency cell phones and tablets (Figure 61). Again, the cell phone and tablets were already in use so no additional costs were incurred. Leveraging technology with which teams were familiar made training and use easier and faster in the field. Using a combination of iOS and Android devices did provide some challenges during training as the apps looked and handled a little differently. Screen shots of both iOS and Android Apps were needed during the training and teams needed to practice on both. One day a team may have an android device and the next day they may have an iOS device. Although the planning team tried to minimize this, problems did occur. The ERSI collector app was easier to use than ArcPad. Teams still struggled with the map-based questionnaire, skip logic, and trying to edit a questionnaire when they went back to a house. Because all the devices were connected to a cellular network, the command center was able to monitor where teams were in the field and how many surveys they had attempted/completed.

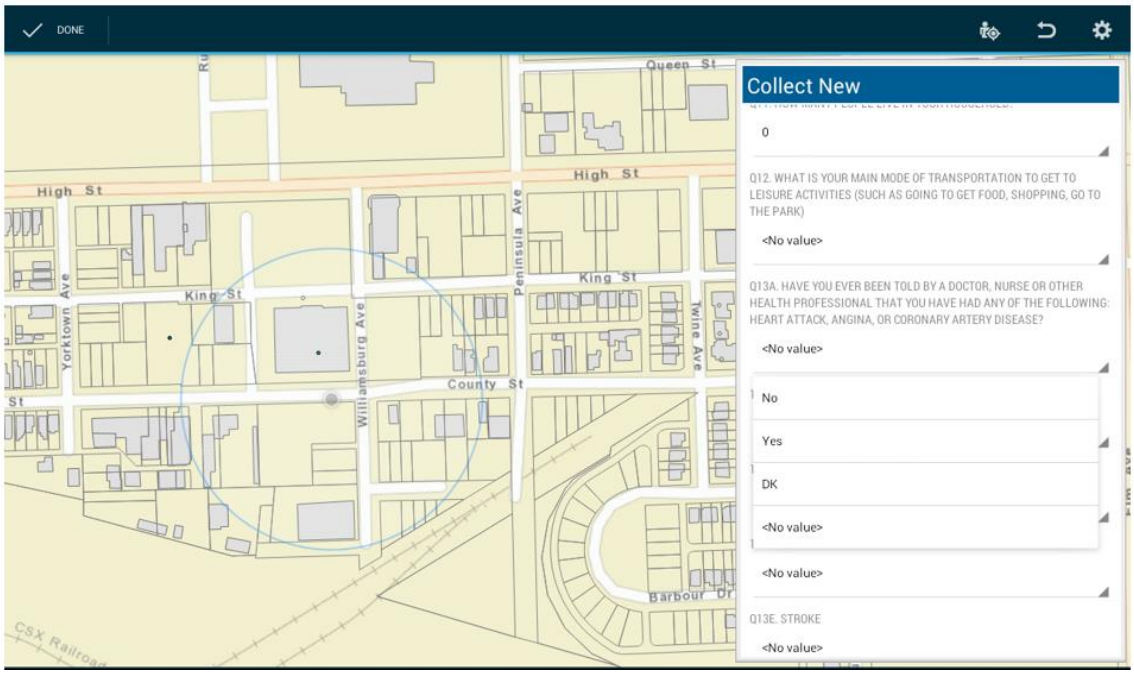


Figure 61: ESRI's Collector App

In 2017, PHD purchased mini iPad devices and used ESRI's newer Survey123 App (Figure 62). Because all the teams were using the same operating system, training was streamlined. Instead of being map-centric like the Collector App, the Survey123 App focuses on collecting surveys. Skip logic was introduced and teams did not have to scroll through un-answered questions. Someone who does not have a background in ArcGIS can create the survey easily online. They also do not have to have ArcGIS installed on their computer. Staff can create Links and QR codes to the survey as well. Since PHD did not opt to purchase cellular plans for the tablets, the command center could not track teams real-time in the field. The ongoing costs of a data plan outweighed the benefit of tracking field teams real-time. Instead, the iPads were connected via MiFi once teams returned.

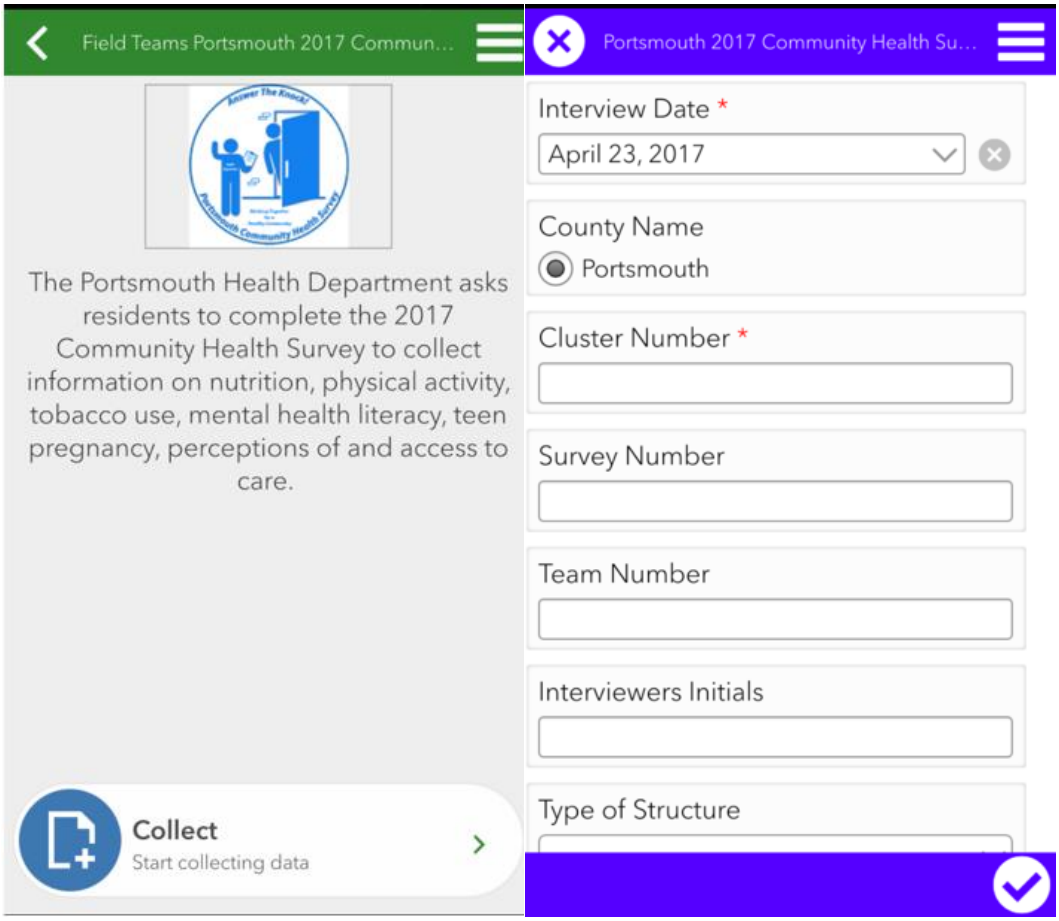


Figure 62: ESRI's Survey123

Field teams reported that this app was the easiest of the three to use and required very little training prior to use. In addition, the Ipad's brightness was enough to see the screen on a sunny day and the battery did not require recharging while in the field. To create a survey using ESRI's Survey123 the user must be a "creator" or "GIS professional" as defined by their licensing account (ESRI, 2018). If the organization does not have an ArcGIS online account via a user agreement, PHD recommends partnering with city/county GIS departments, state health departments, or a local university which would be willing to help. To complete a survey the user does not have to have an account or a username. Communities in Boone County, Il, Williamson County, TX and Allegheny

County, PA have also used Survey123 in their CASPERs (Department, 2017) (Williamson County and Cities, 2019) (County, 2018).

Another option that may be available to health departments is REDCap. In Virginia, all local health departments have access to RedCap. REDCap supports online and offline data collection and is HIPAA compliant (RedCap, 2019). This field manual will concentrate on examples from Survey123, but choosing question type and skip logic is similar in both.

Data Dictionary

Before the user creates the electronic survey, it is important to create a data dictionary, which will define variable names and explain what the coding means. The variable should be created with the data analysis team in mind. They will be using these variable names and coding in Epi Info to run data analysis. Since Survey123 gives the option of storing variables as numbers or words, the user has the choice to store the answer as yes or no or as yes=1, no=0, don't know=3, etc. Of note, variable names in Epi Info can be no more than 10 characters and must start with a letter. Questions that have similar themes should start with the same letters. For instance, access to care questions that ask about doctors and doctor's visits could start with MD, MD_one, MD_Many, MD_Cost, Care_Emerg, Care_Chronic. Mental Health questions could start with MH, MH_act. MH_know, MH_Resource, MD_Med.

	A	B	C	D
1	Question	Variable Name	Answer coding	
14	Is English the primary language spoken in the household?	Language	Choice0=Yes. Choice1_No	
15	How many people live in your household?	People_HH	Number	
16	What is your main mode of transportation?	Transport	Choice0=Walk, Choice1=Bike, Choice2=Bus, Choice3=Your Own Car, Choice4=A Friend's Car, choice5=Other public Transport	
17	Have you EVER been told by a doctor, nurse, or other health professional that you have had a Heart Attack, Angina, or Coronary Artery Disease?	Heart_Attack	Yes, No	
18	Have you EVER been told by a doctor, nurse, or other health professional that you have High Blood Pressure?	High_BP	Choice0=Yes, Choice1=No, Choice2=Don't Know	
19	Have you EVER been told by a doctor, nurse, or other health professional that you have High Cholesterol?	High_Cholesterol	Choice0=Yes, Choice1=No, Choice2=Don't Know	
20	Have you EVER been told by a doctor, nurse, or other health professional that you have Cancer?	Cancer	Choice0=Yes, Choice1=No, Choice2=Don't Know	
21	Have you EVER been told by a doctor, nurse, or other health professional that you have had a Stroke?	Stroke	Choice0=Yes, Choice1=No, Choice2=Don't Know	
22	Have you EVER been told by a doctor, nurse, or other health professional that you have Asthma?	Asthma	Choice0=Yes, Choice1=No, Choice2=Don't Know	
23	Have you EVER been told by a doctor, nurse, or other health professional that you have COPD, Emphysema, or Chronic Bronchitis?	COPD	Choice0=Yes, Choice1=No, Choice2=Don't Know	
24	Have you EVER been told by a doctor, nurse, or other health professional that you have Diabetes?	Diabetes	Choice0=Yes, Choice1=No, Choice2=Don't Know	
25	Is your diabetes under control	Diabetes_Control	Choice0=Yes, Choice1=No, Choice2=Don't Know	

Figure 63 Data Dictionary from 2017 Portsmouth CHS

A selection of questions from PHD's 2017 survey has been chosen as examples of how to enter the survey for mobile use in Survey123.

These are the questions that will be used:

<table>
<tr><td>Q1. Interview Date (MM/DD/YY):</td><td colspan="2">Q9. What is your age? _____</td></tr>
<tr><td colspan="2">Q11. How many people live in your household? _____</td><td></td></tr>
<tr><td colspan="3">Q8. Indicate sex of respondent. (Ask only if necessary.) □ Male □ Female</td></tr>
<tr><td>Q13. Have you EVER been told by a doctor, nurse or other health professional that you have had any of the following?</td><td>Diabetes</td><td>□ Yes □ No □ DK</td></tr>
<tr><td colspan="3">IF YES Q13. Is your diabetes under control? □ Yes □ No □ DK □ N/A</td></tr>
<tr><td colspan="3">Q36. (If female) When was your last mammagram or breast exam? □ With the last year □ 1-2 years □ > 2 years □ Not sure □ Never had an exam</td></tr>
<tr><td colspan="3">Q37. (If female) When was your last Pap test (vaginal exam)? □ With the last year □ 1-2 years □ > 2 years □ Not sure □ Never had an exam</td></tr>
<tr><td colspan="3">Q38. (If over 50) When was your last Colon cancer screening? □ With the last year □ 1-5 years □ 5-10 years □ + 10 years □ Never □ Not sure</td></tr>
<tr><td colspan="3">Q42. What prevents your household members from getting regular activity (check all that apply)? □ Safety □ No time □ Cannot afford a gym □ Do not have transportation to a gym □ No sidewalks/parks in the area □ Don't want to □ Don't know how to □ Health reasons □ N/A</td></tr>
</table>

<table>
<tr><td rowspan="2">Q43. Of the past <u>14</u> days, how many days …</td><td colspan="2">Q43. Did you get at least 30 minutes of physical activity (such as walking, running, basketball, fast bicycling, swimming, fast dancing, or other recreational sports)? _____</td></tr>
<tr><td colspan="2">Q45. Did you eat at a fast food restaurant (e.g., McDonald’s, Taco Bell, KFC)? For Breakfast _____ Q45b. For Lunch _____ Q45c. For Dinner____</td></tr>
<tr><td>Q52. On a scale of 1 to 5, with 1 being no knowledge and 5 being receiving professional training</td><td>Q52. How knowledgeable are you about mental health resources in Portsmouth?</td><td>□ 1 □ 2 □ 3 □ 4 □ 5</td></tr>
<tr><td colspan="3">Q61. In your lifetime, have you ever smoked a cigarette or e-cigarette? □Yes □No (If no, skip to Q69)</td></tr>
<tr><td rowspan="2">Q63. Do you NOW smoke ... every day, some days, or not at all?</td><td>Q64. Cigarettes</td><td>□ Every day □ Some days □ Not at all</td></tr>
<tr><td>Q65. Electronic cigarettes</td><td>□ Every day □ Some days □ Not at all</td></tr>
<tr><td colspan="3">Q76. How many children less than 18 years of age live in your household? _____ (If 0 skip to Q82)</td></tr>
<tr><td colspan="3">Q77. Do those children have health insurance of any kind? □Yes □No</td></tr>
<tr><td colspan="3">Q82. Which one or more of the following would you say is your race?
□White □Black or African American □American Indian or Alaska Native □Asian □Pacific Islander □ Other □ DK</td></tr>
<tr><td colspan="2">Q84. How tall are you? _____</td><td>Q85. How much do you weigh? _____</td></tr>
<tr><td>Q87. Do you strongly agree, Agree, disagree, or strongly disagree with the following statements?</td><td>Q87. The people running my community care about me</td><td>□ Strongly Agree □ Agree □ Disagree □ Strongly Disagree</td></tr>
</table>

To begin creating the survey in Survey123, first login by going to the website:

https://survey123.arcgis.com/

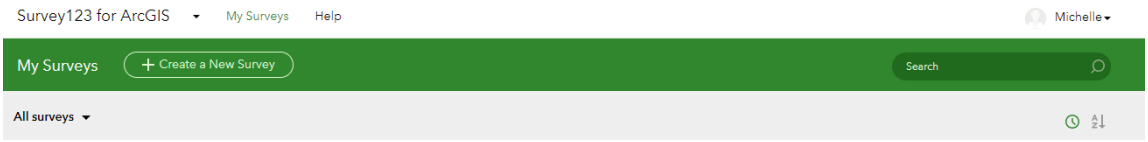


Figure 64 Creating a New Survey in Survey 123

Click "Create a New Survey." The user will then have the option to use web designer or Survey123 Connect. To use Connect, the user will need to download the software. This tutorial will start in the web designer and then transition to Connect to show additional options available.

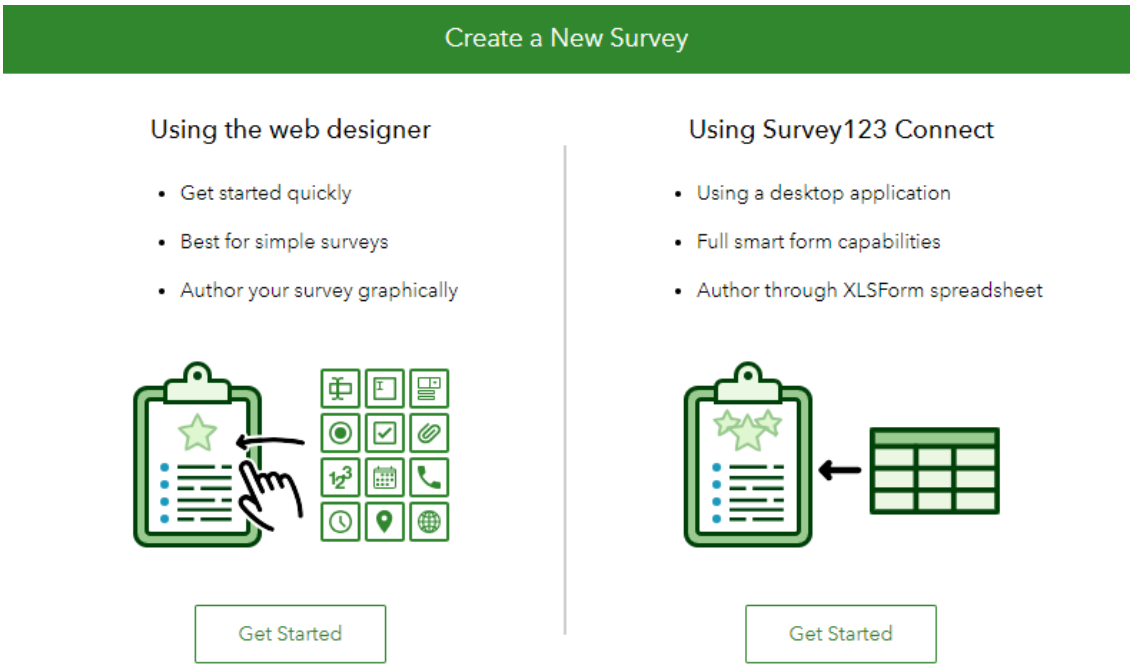


Figure 65: Using web designer vs connect in Survey123

Fill out the Name, Tags, and Summary for the New Survey. The user can also change the thumbnail by clicking and setting a picture. If the organization has a logo for the survey or the overall organization, this would be a good choice. Once the user is done, click "Create."

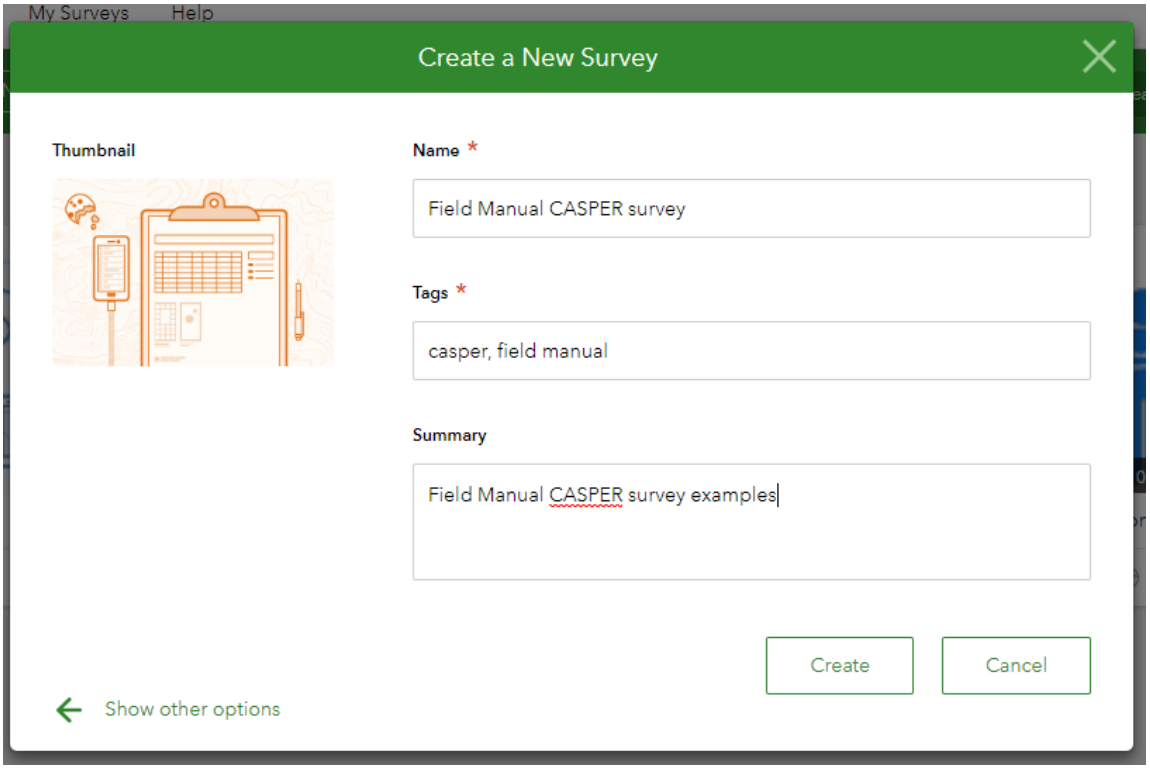


Figure 66: Create a new survey screen

The user will then see the Design screen for the survey.

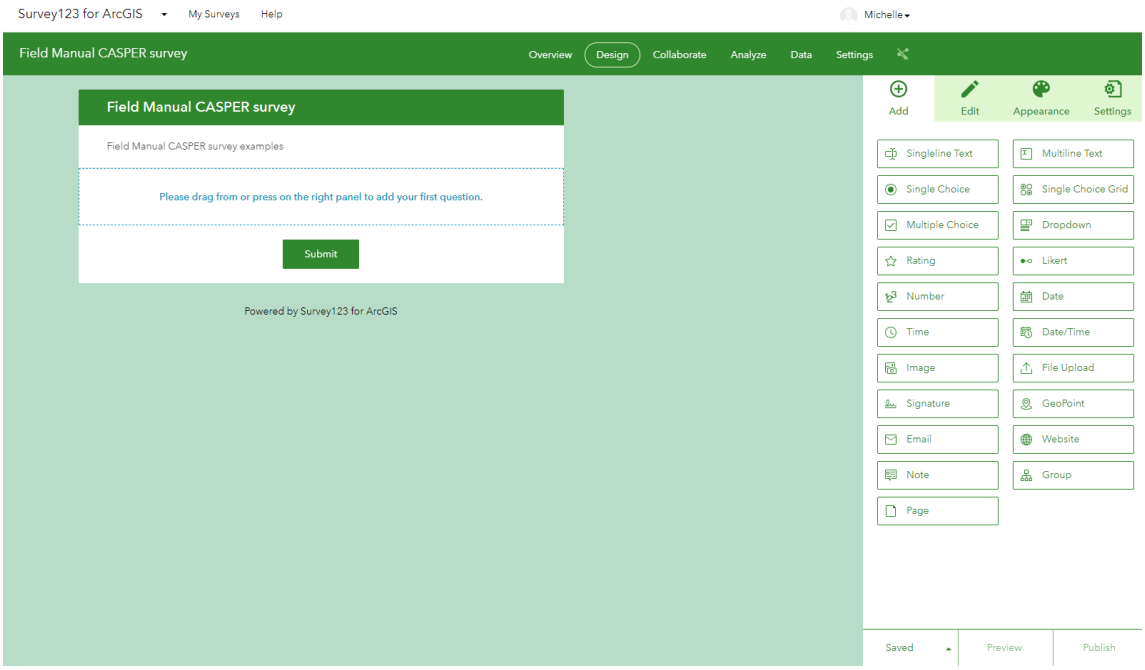


Figure 67: Design screen for Survey123

Under the Appearance option, the user can change the background color or add a custom theme to the survey. For a complete list of question types and what they mean please refer to the Survey123 reference guide:

https://doc.arcgis.com/en/survey123/desktop/createsurveys/quickreferencecreatesurveys.htm.

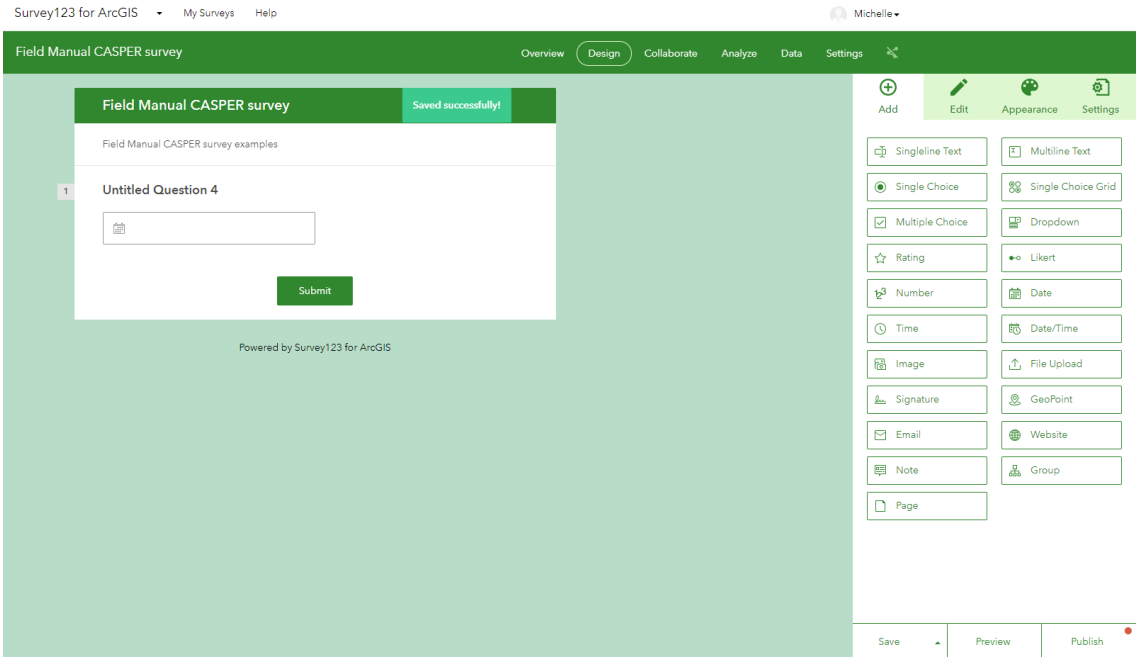


Figure 68: Question types in Survey123

The first question is Interview Date. The user can select the type of question as Date by clicking on Date in the right hand panel or dragging it from the left to right panel. Clicking on Date brings up the edit screen verses dragging Date will not automatically bring up the edit option. The user will have to click on the question to edit it.

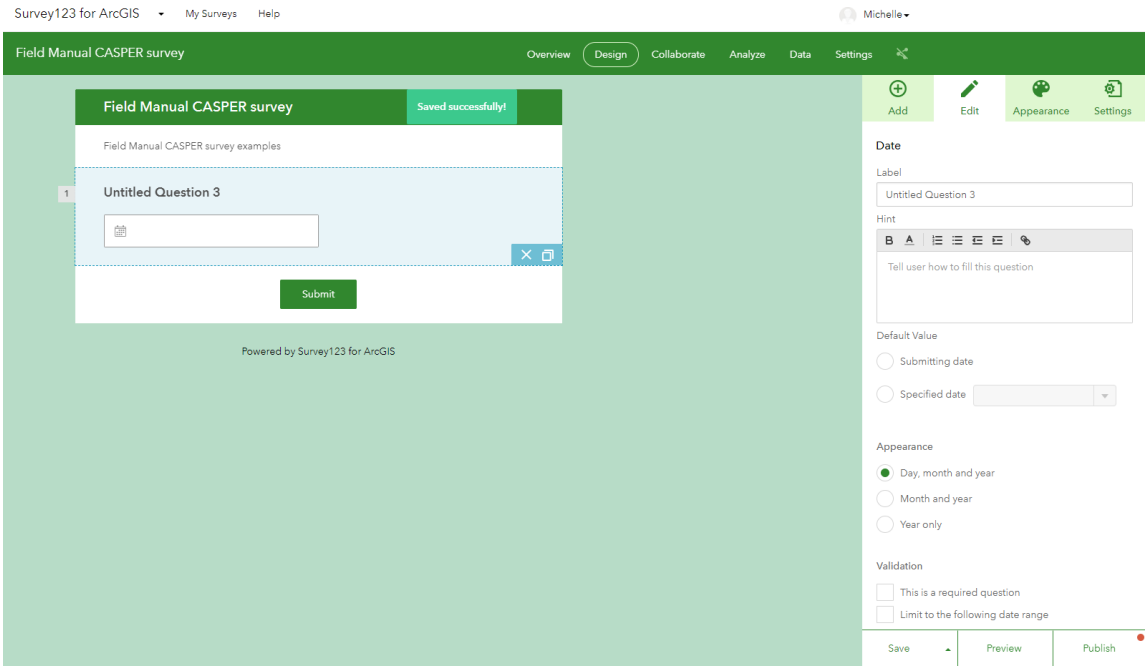


Figure 69: Adding a Date Field in Survey123

The user can then change the text in the Label field to the question title, and add a hint if necessary. Next, assign a default value: in this case the submitting date, and add limits. For a survey, the user may want to only allow dates in the known survey times. Some users may want the exact time as well. If that is the case, select Date/Time option.

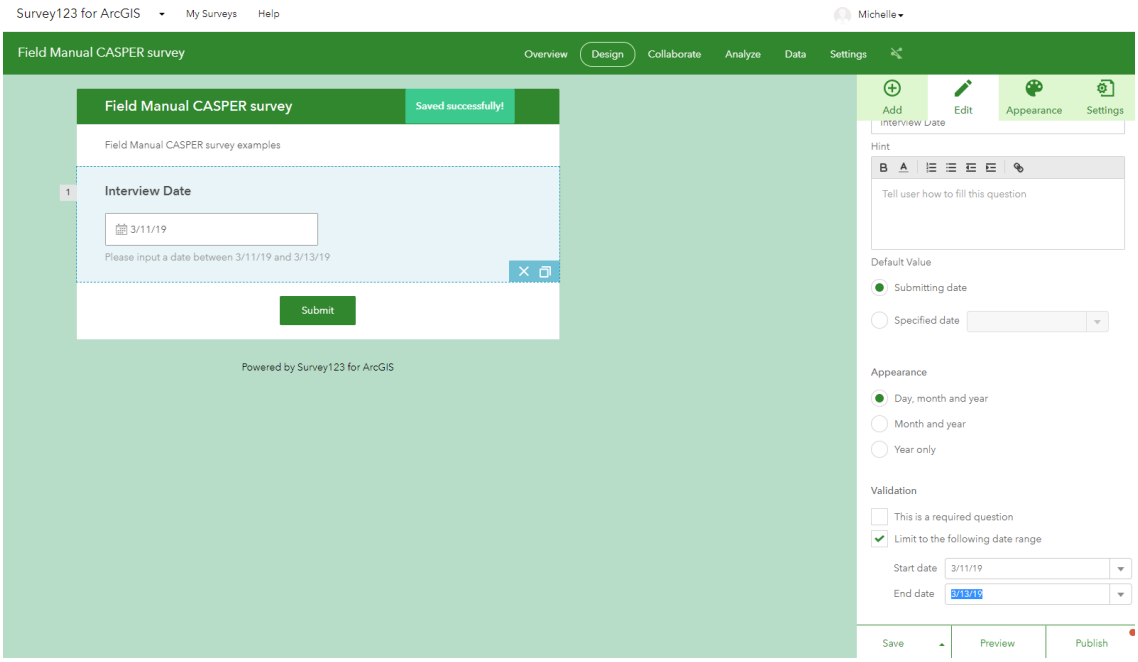


Figure 70: Interview Date Options

For the next question: What is your age? Choose number. Change the label and add a hint about not interviewing anyone under 18. Additional options are to require the question, allowing only integers, and setting a min and max value. In this case, between 18 and 120. Assigning default values can help typos.

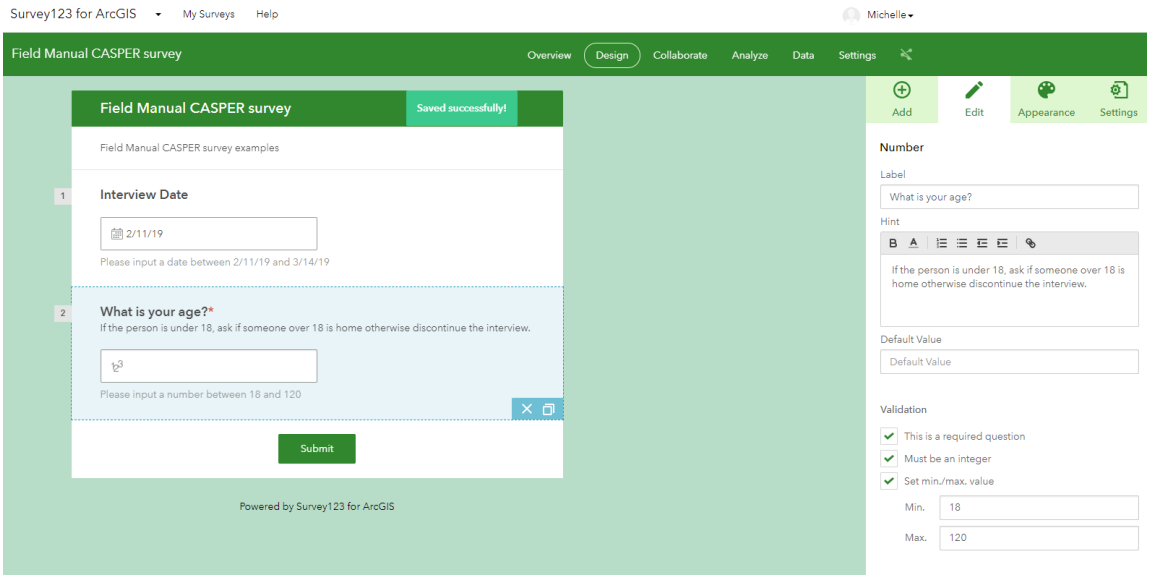


Figure 71: Age question in Survey123

Click "Save," and add the next question: Sex of the respondent. This question will dictate whether the person will answer mammogram and pap test questions. Some interview teams prefer to ask this question aloud only if the answer may not be obvious. A separate gender question should be added if that's the desired question. For Single Choice questions you can add additional choices by clicking the plus icon with the circle; options can be removed by click the negative icon. Changing the appearance to horizontal can limit the space the question takes up. The user can re-order the questions by clicking on the option in the right hand panel and moving it to the desired location.

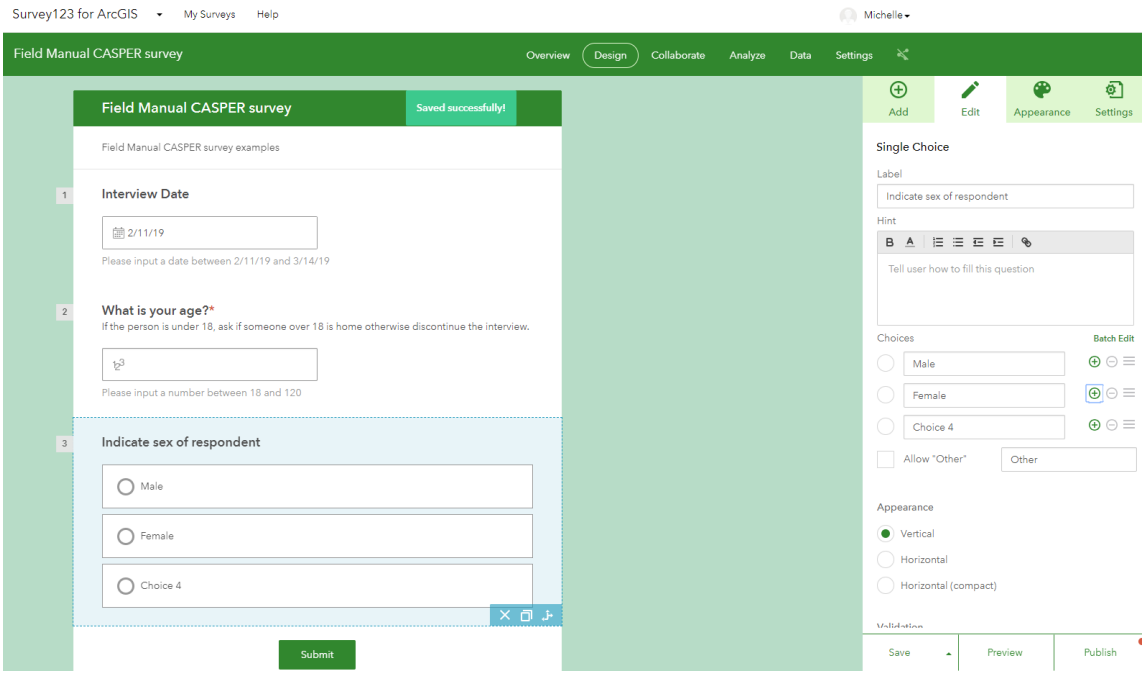


Figure 72: Single Choice question in Survey123

The next question: Have you EVER been told by a doctor, nurse, or other health professional that you have any of the following? Diabetes. Repeat the Steps above. The skip logic will be added after the next questions are entered. Clicking on "Batch Edit," allows the user to type in the answer. This is useful if the user has the list saved in excel or word document which can be copy/paste.

Skip logic in Survey123 is referred to as "set rule" or in Survey123 connect as "relevance." Click on the question and then click on the three arrows and set rule.

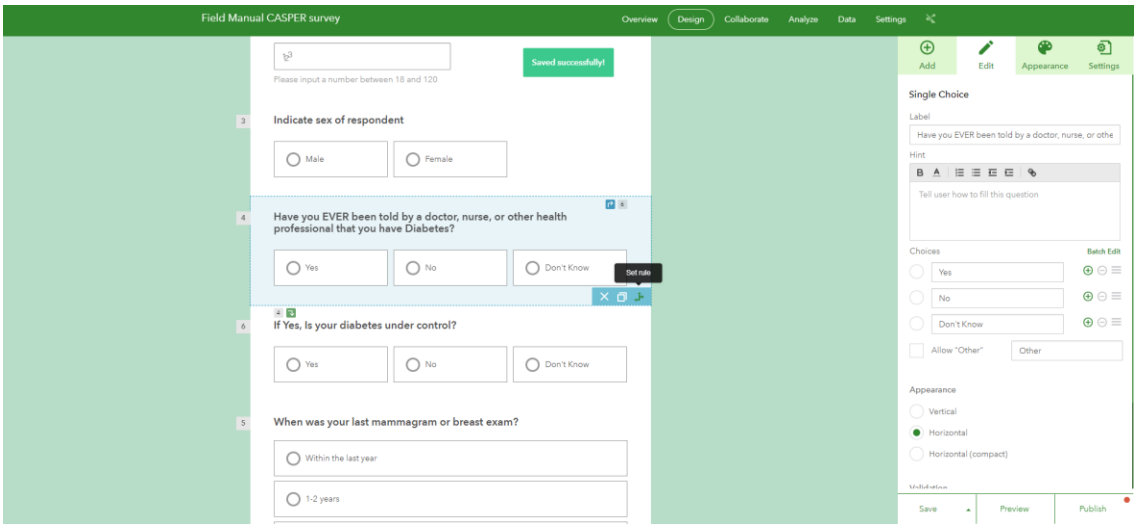


Figure 73: Set rule in Survey123

A screen will pop-up, with if, then statements. Select the appropriate one. In this case if yes, than ask Is your diabetes under control?

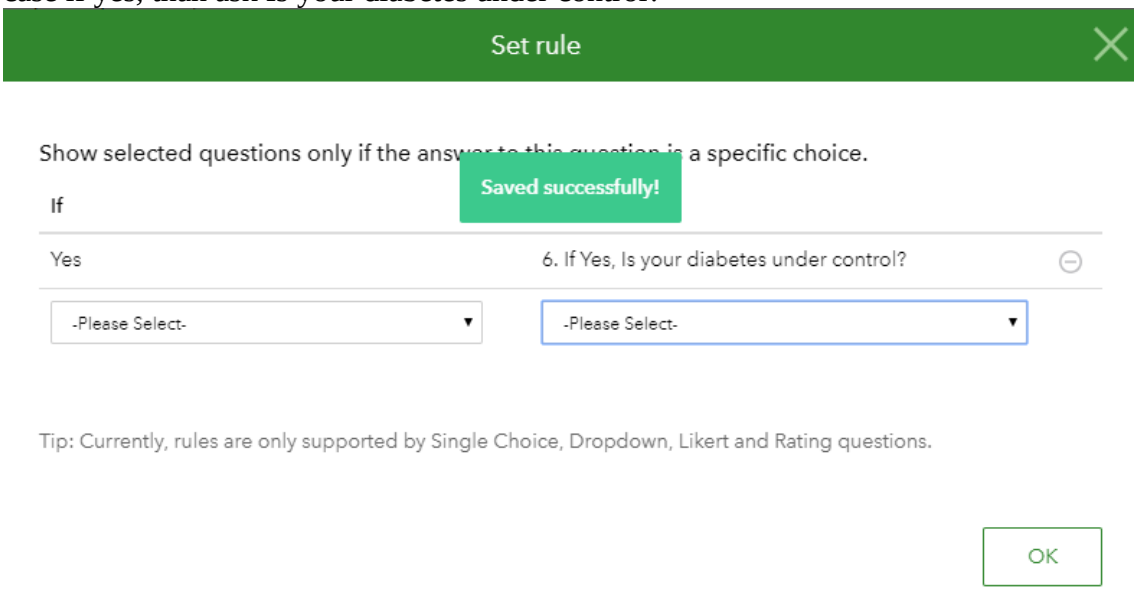


Figure 74: Pop-up for Set Rule in Survey123

Notice that rules are only supported by single choice, dropdown, Likert, and rating questions. For our next question about colon cancer screening, we only want to ask this question if the person is over 50. The user has two options. Go back and change the age question to a drop down box or edit this question in Survey123 Connect. For the purpose of this example, change the question to a dropdown menu. The user will notice

that the question type cannot be changed. Instead, the user must make a new question. Choose drop down, click batch edit, and either type the numbers 18-120 in the form or copy/paste from excel/word document. Autocomplete is an option where the respondent can begin typing and it will auto populate the field. Now click the set rule for age question, and the user will need to separately select 50, 51, 52, 53 etc… This is not user friendly and not the recommended way to use skip logic for this question. This rule will need to be created in Survey123 Connect.

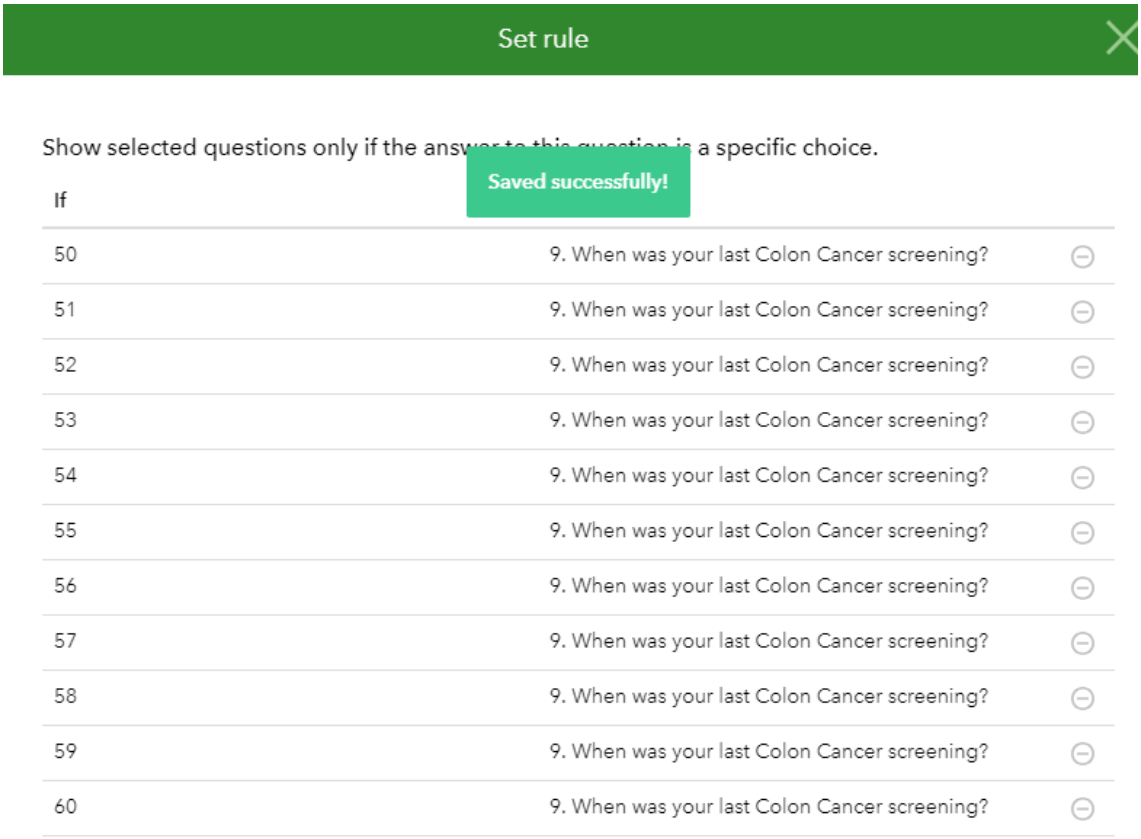


Figure 75: Set rule for Age>50 in Survey123

The next question, what prevents your household members from getting regular activity is a check all that apply format. Choose multiple choice option for this question. The batch edit option is convenient for entering the choices.

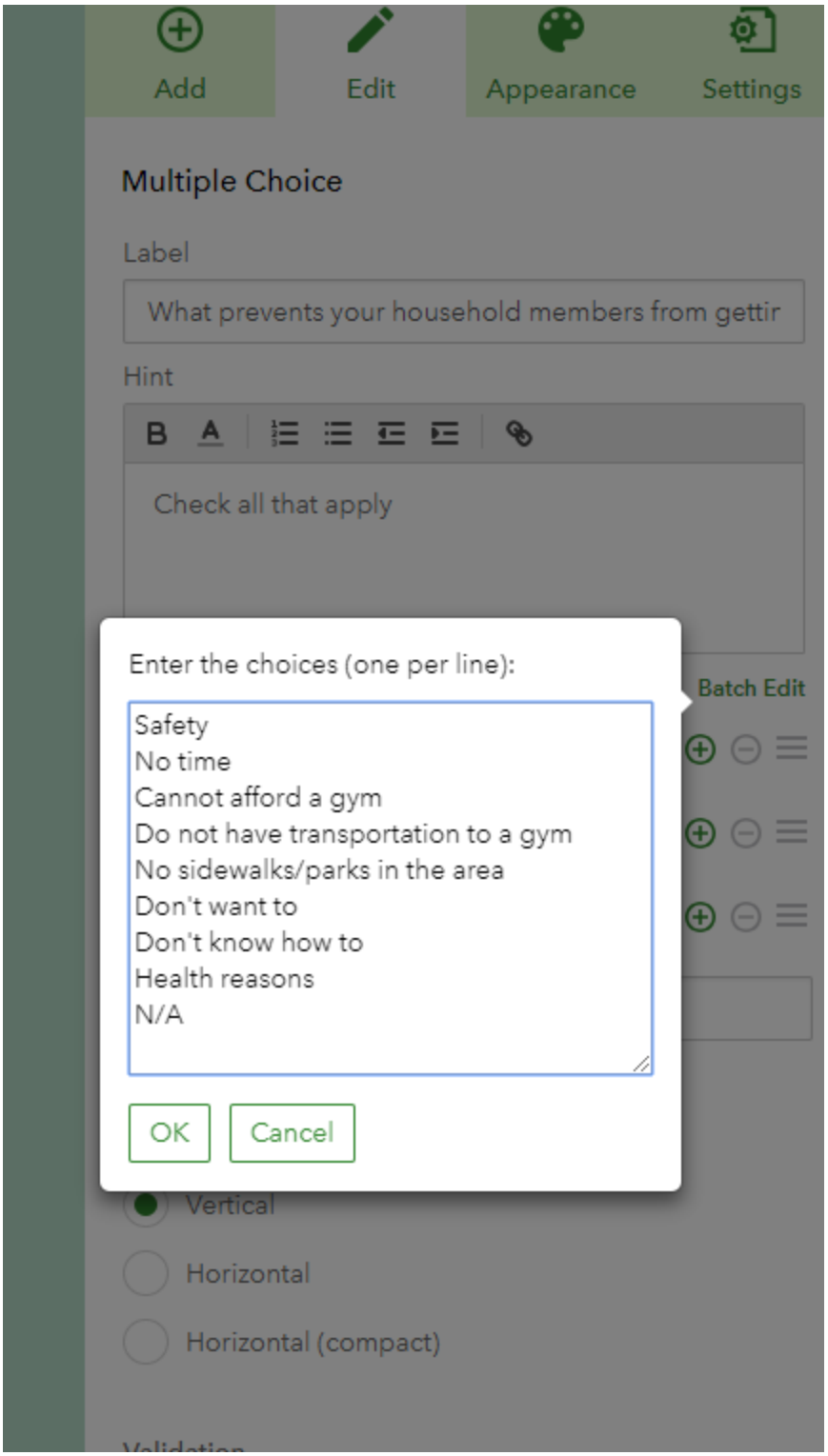


Figure 76: Multiple Choice option in Survey123

The next two questions are numeric questions from 0-14. Choose number. Set the integer and min/max value.

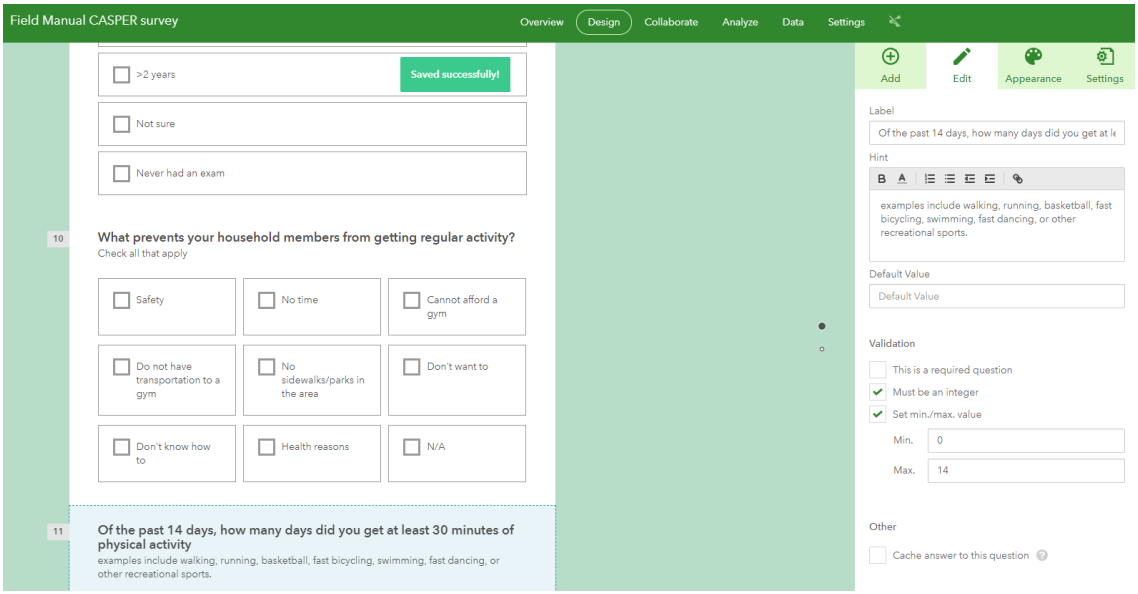


Figure 77: Number question in Survey123

The next three questions are variations of the same question. Create the first question about eating fast food for breakfast and then duplicate it two times by clicking on duplicate under the question. Then edit the labels for each, substituting dinner and lunch for breakfast and deleting the word "copy".

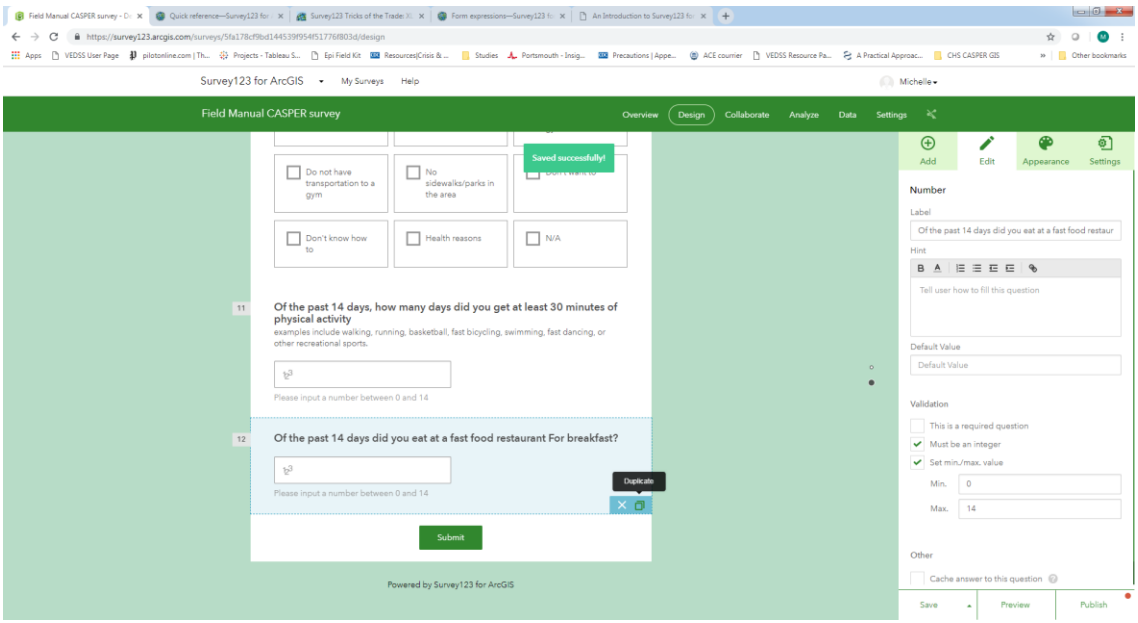


Figure 78: Duplicate option in Survey123

The next question is a Likert scale. On a scale of 1 to 5 with 1 being no knowledge and 5 being received professional training, how knowledgeable are you about mental health resources in Portsmouth?

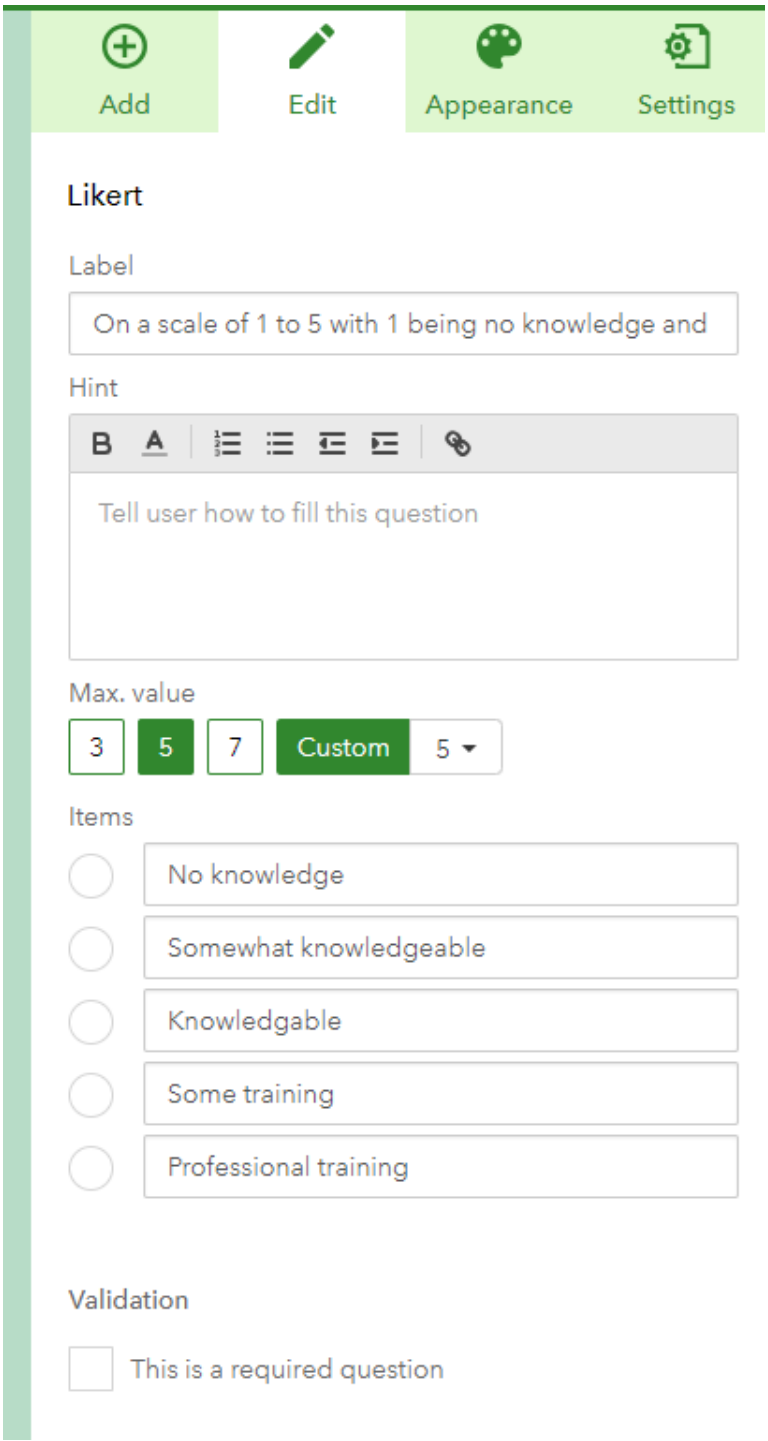


Figure 79: Likert scale options in Survey123

Finish the remaining questions. Remember to add skip logic to the smoking question.

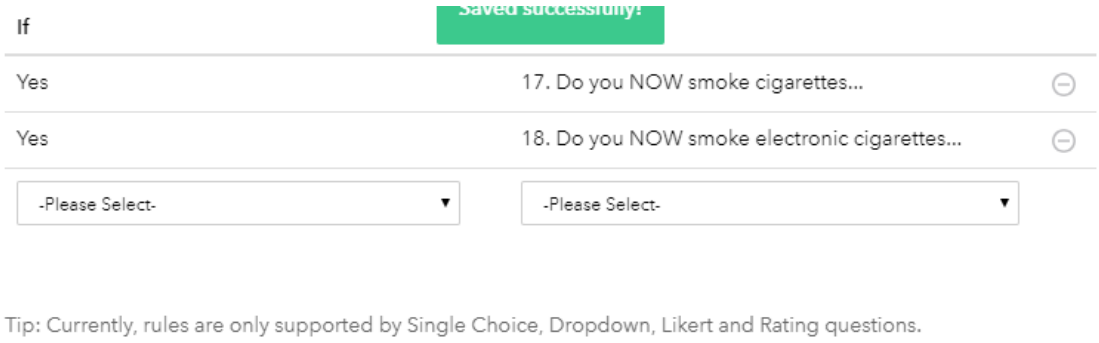


Figure 80: Set rule for smoking questions in Survey123

Finally, the user can preview the survey by clicking preview at the bottom right of the screen. Choose the phone or tablet icon to the right to visualize the display on those devices. Test the skip logic. Next, publish the survey by clicking "Publish" at the bottom right hand corner. The user will see a warning asking if you want to change the name for any of the fields. These names will be at the top of the column when data is extracted. Change them either before publishing the survey or by using Survey123 Connect. If the user waits to change the names in connect, the skip logic will need to be renamed in the XLS worksheet. When this step is completed, go to Survey123 connect on your desktop. If the user does not publish the survey, the survey will not show up in connect.

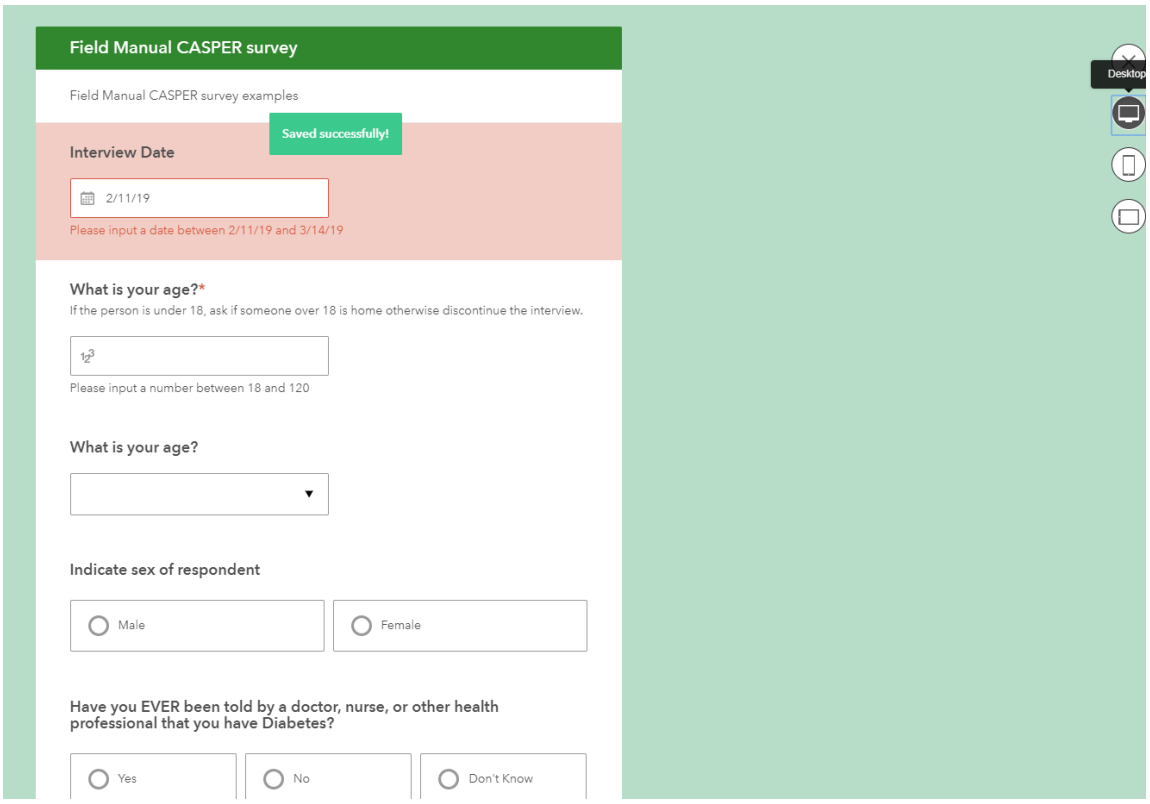


Figure 81: View as a computer, phone, or tablet in Survey123

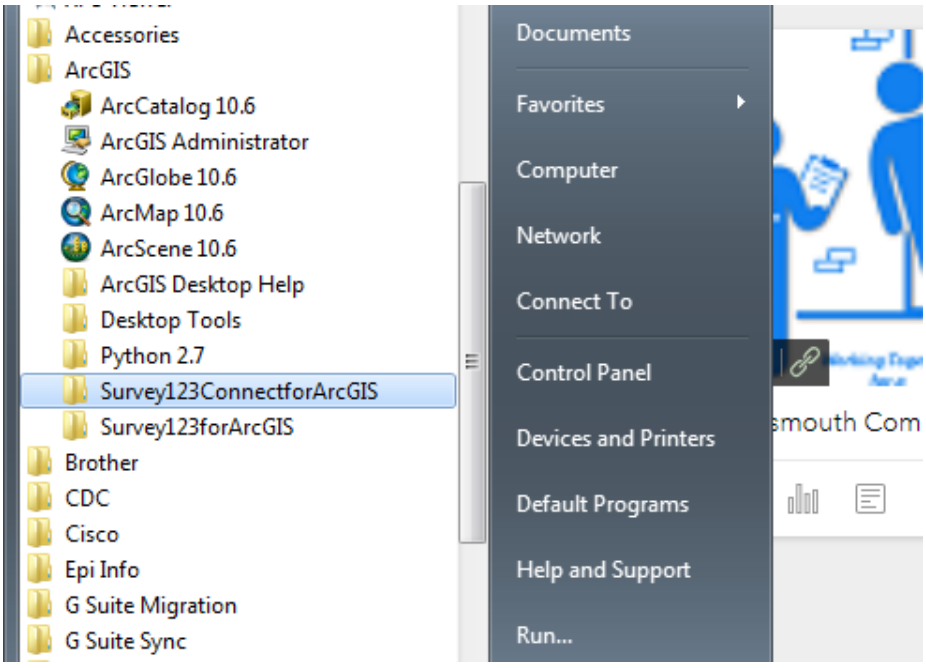


Figure 82: Opening Survey123 Connect for ArcGIS

Sign-in to edit surveys. Click on Field Manual Casper Survey, a pop menu will ask if the user wants to download the survey on your computer. Click “yes.”

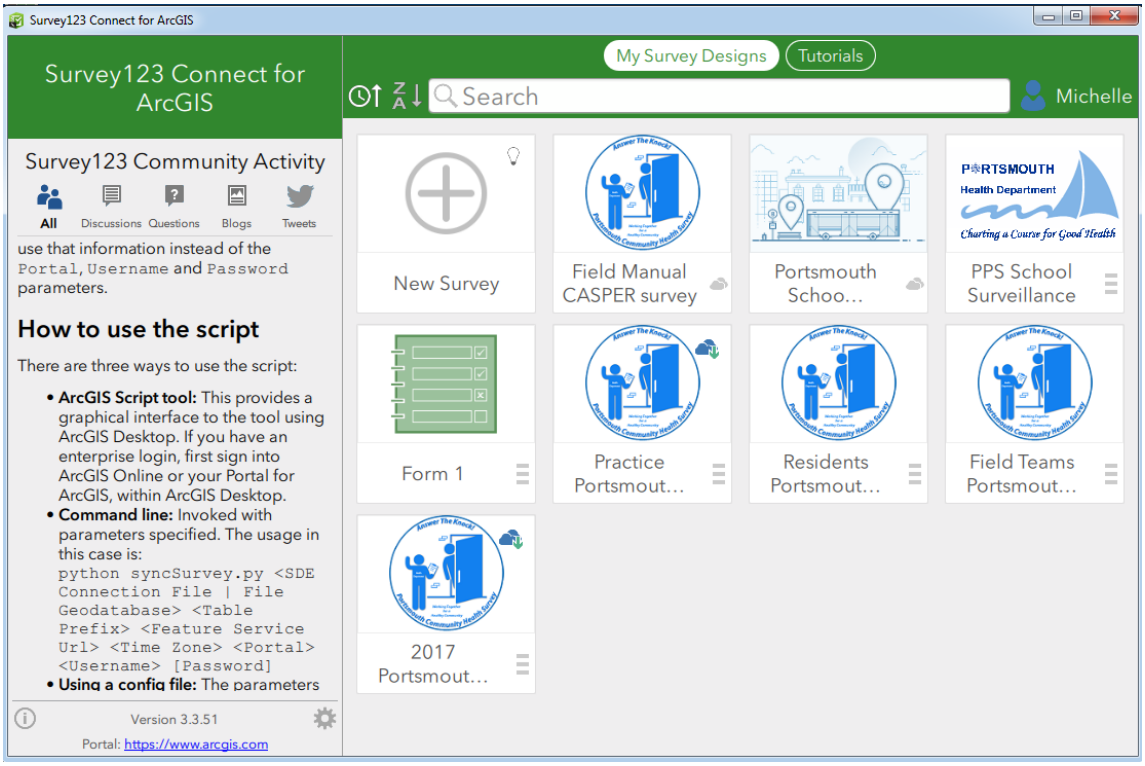


Figure 83: Welcome screen for Survey123 Connect

The top left icon will open the XLS spreadsheet.

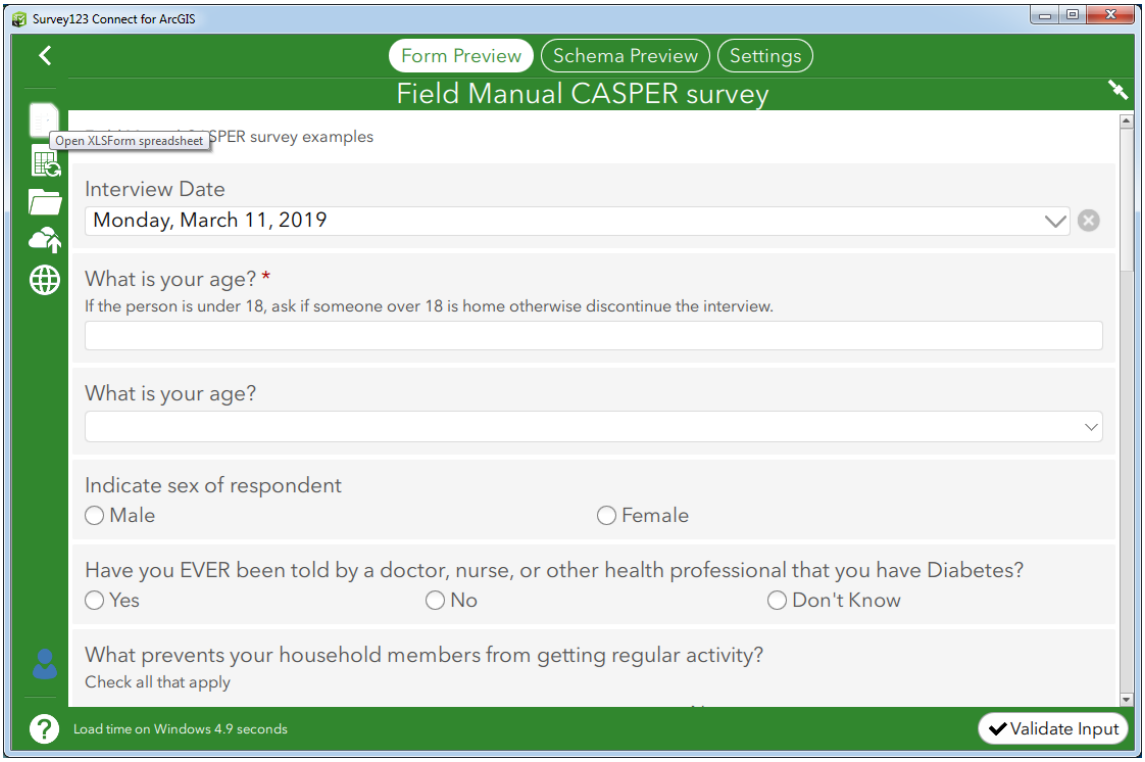
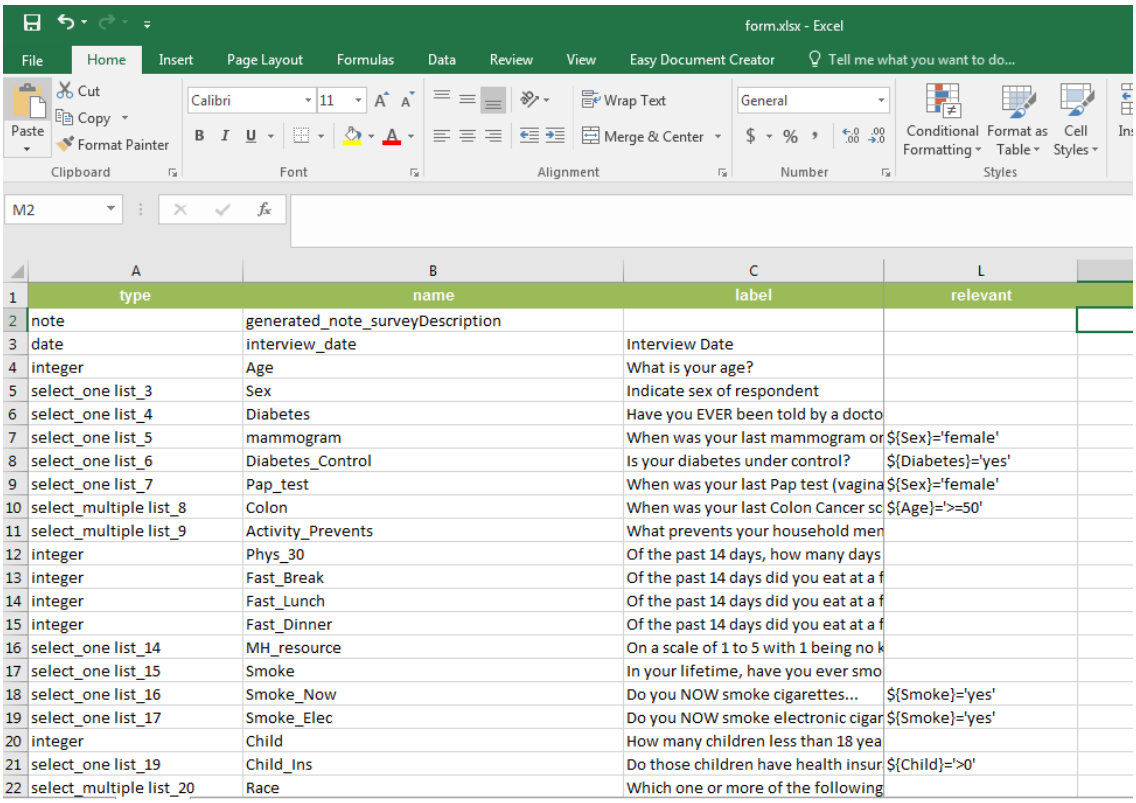


Figure 84: Opening the XLSForm Spreadsheet

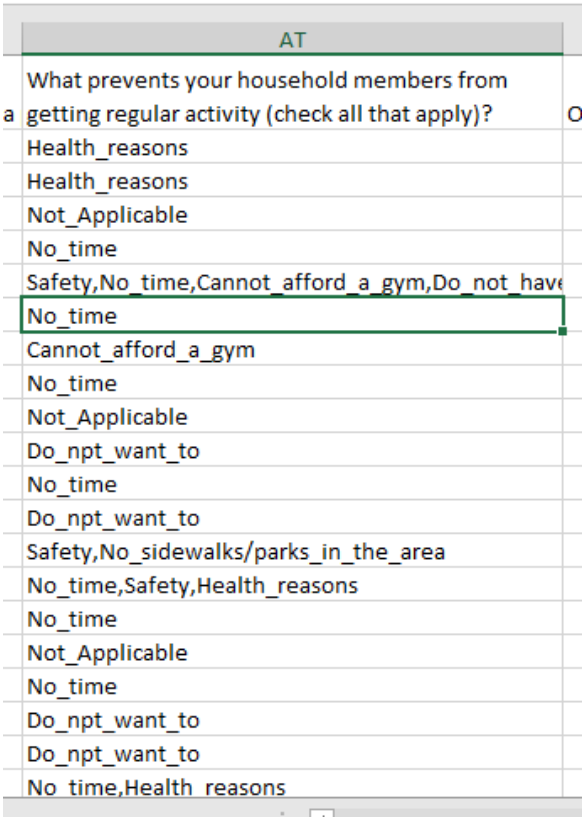
The XLS worksheet contains the survey, choices, settings, and type. To edit the two conditional responses for colon cancer and children who have health insurance, add to the relevant column under the survey tab ${Age}='>=50' for colon and ${Child}='>0' to Child_Ins.



	A	B	C	L
1	type	name	label	relevant
2	note	generated_note_surveyDescription		
3	date	interview_date	Interview Date	
4	integer	Age	What is your age?	
5	select_one list_3	Sex	Indicate sex of respondent	
6	select_one list_4	Diabetes	Have you EVER been told by a docto	
7	select_one list_5	mammogram	When was your last mammogram or	${Sex}='female'
8	select_one list_6	Diabetes_Control	Is your diabetes under control?	${Diabetes}='yes'
9	select_one list_7	Pap_test	When was your last Pap test (vagina	${Sex}='female'
10	select_multiple list_8	Colon	When was your last Colon Cancer sc	${Age}='>=50'
11	select_multiple list_9	Activity_Prevents	What prevents your household mer	
12	integer	Phys_30	Of the past 14 days, how many days	
13	integer	Fast_Break	Of the past 14 days did you eat at a f	
14	integer	Fast_Lunch	Of the past 14 days did you eat at a f	
15	integer	Fast_Dinner	Of the past 14 days did you eat at a f	
16	select_one list_14	MH_resource	On a scale of 1 to 5 with 1 being no k	
17	select_one list_15	Smoke	In your lifetime, have you ever smo	
18	select_one list_16	Smoke_Now	Do you NOW smoke cigarettes...	${Smoke}='yes'
19	select_one list_17	Smoke_Elec	Do you NOW smoke electronic cigar	${Smoke}='yes'
20	integer	Child	How many children less than 18 yea	
21	select_one list_19	Child_Ins	Do those children have health insur	${Child}='>0'
22	select_multiple list_20	Race	Which one or more of the following	

Figure 85: XLS Spreadsheet

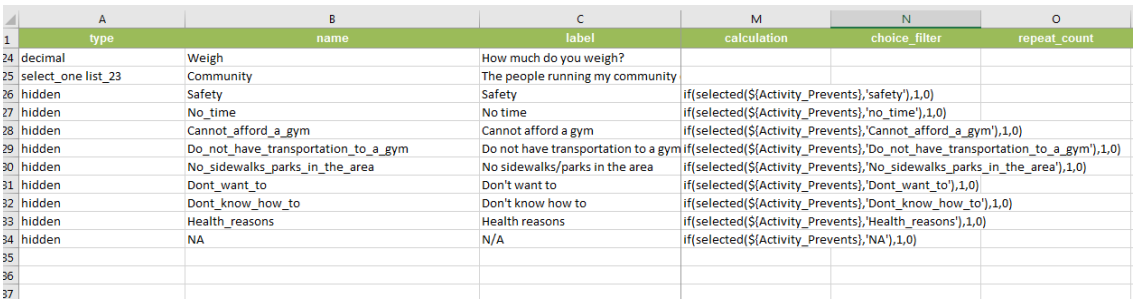
Next, the user will need to change the two questions that have “select as many as apply.” If the user does nothing, when the data are extracted into a .csv file, the answers would be stored in a single column as a column-separated list.



	AT	
a	What prevents your household members from getting regular activity (check all that apply)?	O
	Health_reasons	
	Health_reasons	
	Not_Applicable	
	No_time	
	Safety,No_time,Cannot_afford_a_gym,Do_not_have	
	No_time	
	Cannot_afford_a_gym	
	No_time	
	Not_Applicable	
	Do_npt_want_to	
	No_time	
	Do_npt_want_to	
	Safety,No_sidewalks/parks_in_the_area	
	No_time,Safety,Health_reasons	
	No_time	
	Not_Applicable	
	No_time	
	Do_npt_want_to	
	Do_npt_want_to	
	No_time,Health_reasons	

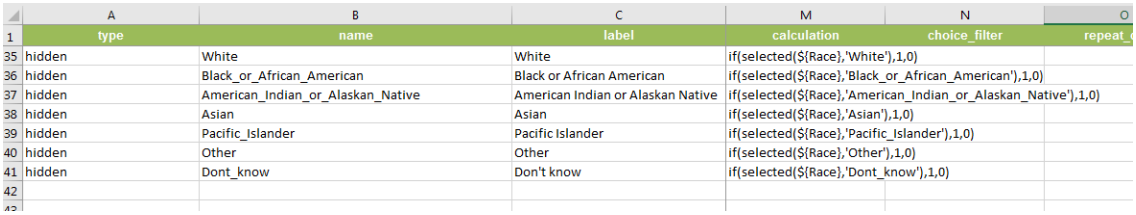
Figure 86: Excel view of Survey123 data export of a select all that apply question

This column of data creates a challenge to the data analyst of how to separate those text fields in a meaningful manner. To correct this, create hidden fields for each of the choices in the list, adding a binary value indicating if the choice was selected or not. To create a new field, click on “Column A,” in the next open Cell (in this example A26), choose “hidden” as the type of question. In variable name type “safety,” type “safety” again in the label column, and in calculation column if(selected(${Activity_Prevents},'safety'),1,0). This will create a new column titled “safety” that will have a “1” if selected and “0” if not. Repeat this process for each of the choices in the question. The user will need to do the same for the Race question.



	A	B	C	M	N	O
1	type	name	label	calculation	choice_filter	repeat_count
24	decimal	Weigh	How much do you weigh?			
25	select_one list_23	Community	The people running my community			
26	hidden	Safety	Safety	if(selected(${Activity_Prevents},'safety'),1,0)		
27	hidden	No_time	No time	if(selected(${Activity_Prevents},'no_time'),1,0)		
28	hidden	Cannot_afford_a_gym	Cannot afford a gym	if(selected(${Activity_Prevents},'Cannot_afford_a_gym'),1,0)		
29	hidden	Do_not_have_transportation_to_a_gym	Do not have transportation to a gym	if(selected(${Activity_Prevents},'Do_not_have_transportation_to_a_gym'),1,0)		
30	hidden	No_sidewalks_parks_in_the_area	No sidewalks/parks in the area	if(selected(${Activity_Prevents},'No_sidewalks_parks_in_the_area'),1,0)		
31	hidden	Dont_want_to	Don't want to	if(selected(${Activity_Prevents},'Dont_want_to'),1,0)		
32	hidden	Dont_know_how_to	Don't know how to	if(selected(${Activity_Prevents},'Dont_know_how_to'),1,0)		
33	hidden	Health_reasons	Health reasons	if(selected(${Activity_Prevents},'Health_reasons'),1,0)		
34	hidden	NA	N/A	if(selected(${Activity_Prevents},'NA'),1,0)		
35						
36						
37						

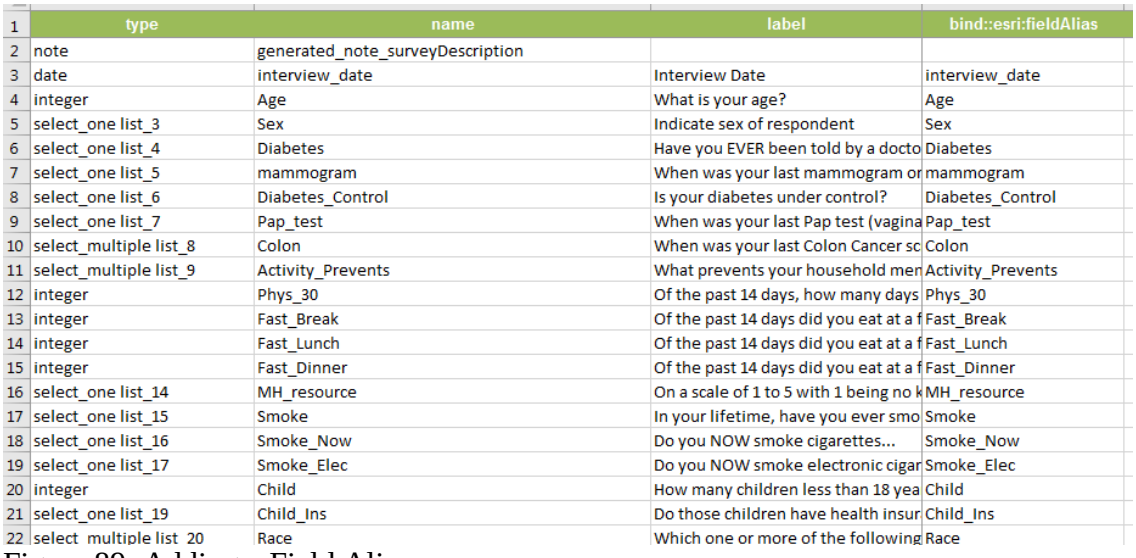
Figure 87: Formatting physical activity question



	A	B	C	M	N	O
1	type	name	label	calculation	choice_filter	repeat_
35	hidden	White	White	if(selected(${Race},'White'),1,0)		
36	hidden	Black_or_African_American	Black or African American	if(selected(${Race},'Black_or_African_American'),1,0)		
37	hidden	American_Indian_or_Alaskan_Native	American Indian or Alaskan Native	if(selected(${Race},'American_Indian_or_Alaskan_Native'),1,0)		
38	hidden	Asian	Asian	if(selected(${Race},'Asian'),1,0)		
39	hidden	Pacific_Islander	Pacific Islander	if(selected(${Race},'Pacific_Islander'),1,0)		
40	hidden	Other	Other	if(selected(${Race},'Other'),1,0)		
41	hidden	Dont_know	Don't know	if(selected(${Race},'Dont_know'),1,0)		
42						

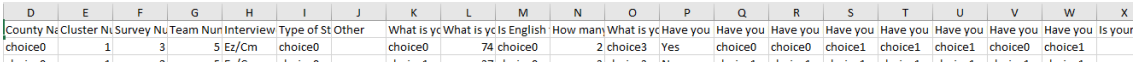
Figure 88: Formatting race question

Finally, if the user were to publish the survey now, when the data were extracted, the heading of each of the columns would be what was in the label column. To change the headings to the name column, "bind::esri:fieldAlias" copy and paste the "name" column.



1	type	name	label	bind::esri:fieldAlias
2	note	generated_note_surveyDescription		
3	date	interview_date	Interview Date	interview_date
4	integer	Age	What is your age?	Age
5	select_one list_3	Sex	Indicate sex of respondent	Sex
6	select_one list_4	Diabetes	Have you EVER been told by a docto	Diabetes
7	select_one list_5	mammogram	When was your last mammogram or	mammogram
8	select_one list_6	Diabetes_Control	Is your diabetes under control?	Diabetes_Control
9	select_one list_7	Pap_test	When was your last Pap test (vagina	Pap_test
10	select_multiple list_8	Colon	When was your last Colon Cancer sc	Colon
11	select_multiple list_9	Activity_Prevents	What prevents your household mem	Activity_Prevents
12	integer	Phys_30	Of the past 14 days, how many days	Phys_30
13	integer	Fast_Break	Of the past 14 days did you eat at a f	Fast_Break
14	integer	Fast_Lunch	Of the past 14 days did you eat at a f	Fast_Lunch
15	integer	Fast_Dinner	Of the past 14 days did you eat at a f	Fast_Dinner
16	select_one list_14	MH_resource	On a scale of 1 to 5 with 1 being no k	MH_resource
17	select_one list_15	Smoke	In your lifetime, have you ever smo	Smoke
18	select_one list_16	Smoke_Now	Do you NOW smoke cigarettes...	Smoke_Now
19	select_one list_17	Smoke_Elec	Do you NOW smoke electronic cigar	Smoke_Elec
20	integer	Child	How many children less than 18 yea	Child
21	select_one list_19	Child_Ins	Do those children have health insur	Child_Ins
22	select_multiple list_20	Race	Which one or more of the following	Race

Figure 89: Adding a Field Alias



	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
	County Na	Cluster Nu	Survey Nu	Team Nun	Interview	Type of St	Other	What is yc	What is yc	Is English	How many	What is yc	Have you	Have you	Have you	Have you	Have you	Have you	Have you	Have you	Is your
	choice0	1	3	5	Ez/Cm	choice0		choice0	74	choice0	2	choice3	Yes	choice0	choice0	choice1	choice1	choice1	choice0	choice1	

Figure 90: Excel export with no field alias identified

Remember to follow the data dictionary for determining how the user would like answers coded. In the 2017 survey, the answers were left as Figure 91 and the csv file looked like Figure 92. This may be suitable for some data analysts, but others may want more descriptive words or a standard yes=1, no=0.

list_name	name	label	ima
list_1	choice0	Portsmouth	
list_6	choice0	Single family	
list_6	choice1	Multiple Unit	
list_6	choice2	Mobile Home	
list_6	other	Other	
list_7	choice0	Male	
list_7	choice1	Female	
list_9	choice0	Yes	
list_9	choice1	No	
list_11	choice0	Walk	
list_11	choice1	Bike	
list_11	choice2	Bus	
list_11	choice3	Your Own Car	
list_11	choice4	A Friend's Car	
list_11	choice5	Other public trans	
list_11	choice6	Ride Share	
list_12	Yes	Yes	
list_12	No	No	
list_12	Do_not_Know	Don't Know	
list_13	choice0	Yes	
list_13	choice1	No	
list_13	choice2	Don't Know	
list_14	choice0	Yes	
list_14	choice1	No	
list_14	choice2	Don't Know	
list_15	choice0	Yes	
list_15	choice1	No	

Figure 91: XLS form left as Choice0, Choice1

M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
Is English	How many	What is yc	Have you	Have you	Have you	Have you	Have you	Have you	Have you	Have you	Is your dia	Has anyon	Have you	Did you ge	Have you
choice0	2	choice3	Yes	choice0	choice0	choice1	choice1	choice1	choice0	choice1		choice1	choice1		choice0
choice0	3	choice3	No	choice1	choice1	choice1	choice1	choice1	choice1	choice1		choice1	choice1		choice1
choice0	5	choice3	No	choice1	choice1	choice1	choice1	choice1	choice1	choice1		choice1	choice1		choice1
choice0	3	choice4	No	choice1	choice0	choice1	choice0	choice0	choice0	choice1		choice1	choice0	choice2	choice1
choice0	6	choice3	Yes,No	choice0	choice0	choice1	choice1	choice0	choice1	choice1		choice0	choice1		choice1
choice0	4	choice3	No	choice1	choice1	choice1	choice1	choice1	choice1	choice1		choice1	choice0	choice2	choice1
choice0	2	choice4	No	choice1	choice1	choice1	choice1	choice1	choice1	choice1		choice1	choice1		choice1
choice0	4	choice3	No	choice0	choice1	choice1	choice1	choice1	choice1	choice1		choice1	choice1		choice1
choice0	4	choice3	No	choice1	choice0	choice1	choice1	choice0	choice1	choice1		choice1	choice1		choice1
choice0	3	choice3	No	choice0	choice1	choice1	choice1	choice1	choice1	choice1		choice1	choice1		choice1
choice0	4	choice3	No	choice1	choice1	choice1	choice1	choice1	choice1	choice1		choice1	choice1		choice1
choice0	1	choice3	No	choice1	choice0	choice1	choice1	choice1	choice1	choice1		choice1	choice1		choice1
choice0	4	choice3	Yes	choice1	choice0	choice1	choice1	choice1	choice1	choice1		choice1	choice1		choice1
choice0	2	choice3	No	choice0	choice1	choice1	choice1	choice1	choice1	choice1		choice1	choice0	choice2	choice1
choice0	4	choice3	No	choice1	choice1	choice1	choice1	choice1	choice1	choice1		choice1	choice1		choice0
choice0	1	choice3	No	choice1	choice1	choice1	choice1	choice1	choice1	choice1		choice1	choice1		choice1
choice0	2	choice3	No	choice0	choice0	choice1	choice1	choice1	choice1	choice0	choice0	choice1	choice1		choice0
choice0	3	choice3	No	choice0	choice0	choice1	choice1	choice0	choice0	choice0	choice0	choice1	choice0	choice2	choice0
choice0	2	choice3	No	choice1	choice1	choice1	choice1	choice1	choice1	choice0	choice2	choice1	choice1		choice0
choice0	3	choice0	No	choice0	choice1	choice1	choice1	choice1	choice1	choice1		choice1	choice1		choice1
choice0	2	choice3	No	choice1	choice1	choice1	choice1	choice1	choice1	choice1		choice1	choice1		choice0
choice0	4	choice3	No	choice1	choice1	choice1	choice1	choice1	choice1	choice1		choice1	choice1		choice0

Figure 92: Excel export left as Choice0, Choice1

Save the XLS file and go back to Survey123 Connect. The user will need to publish the survey which is the cloud icon with an up arrow.

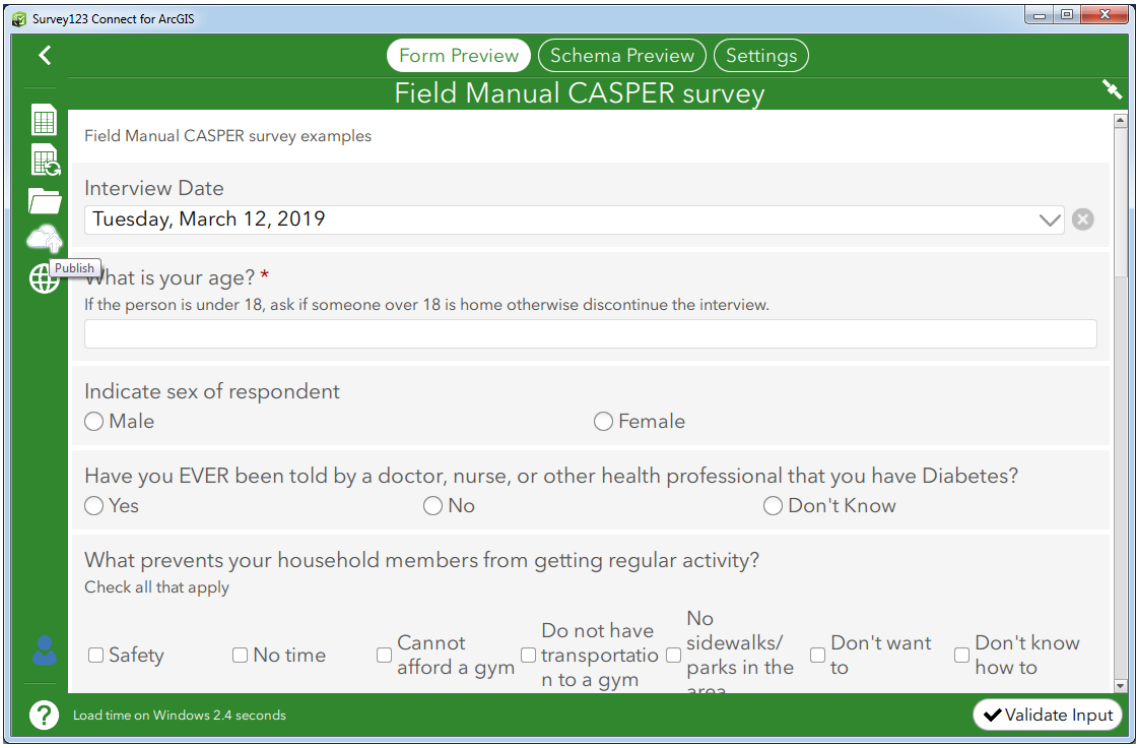


Figure 93: Publishing the survey

Continue back to the Survey123 webpage https://survey123.arcgis.com/surveys. Now, the user must share the survey. Underneath the Icon of the Field Manual Casper

Survey is the picture of a lock. Click the lock to “Collaborate.” There are different choices of who can submit data: Everyone (Public); Members of my organization; and Groups. If only field teams will be creating surveys, it would be best to choose either Groups or Members of my organization. If doorhangers are going to be left with a QR code or survey link, set the survey to Everyone. PHD opted to have 2 surveys: Oone for field teams which was shared only to the Community Health Survey Group and one that was available to the public. Using this method, the organization can carefully vet the quality of the data in the public group before combining it with the field team data.

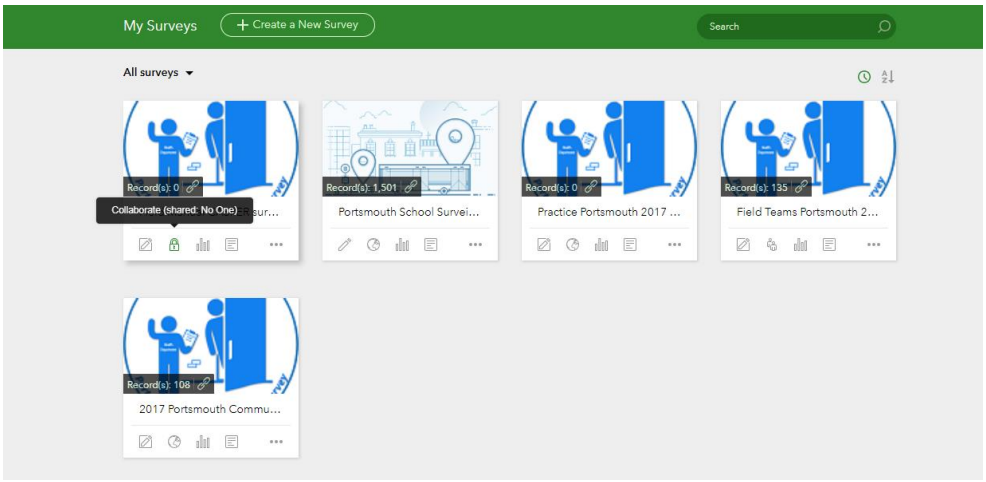


Figure 94: Edit Collaborate in Survey123

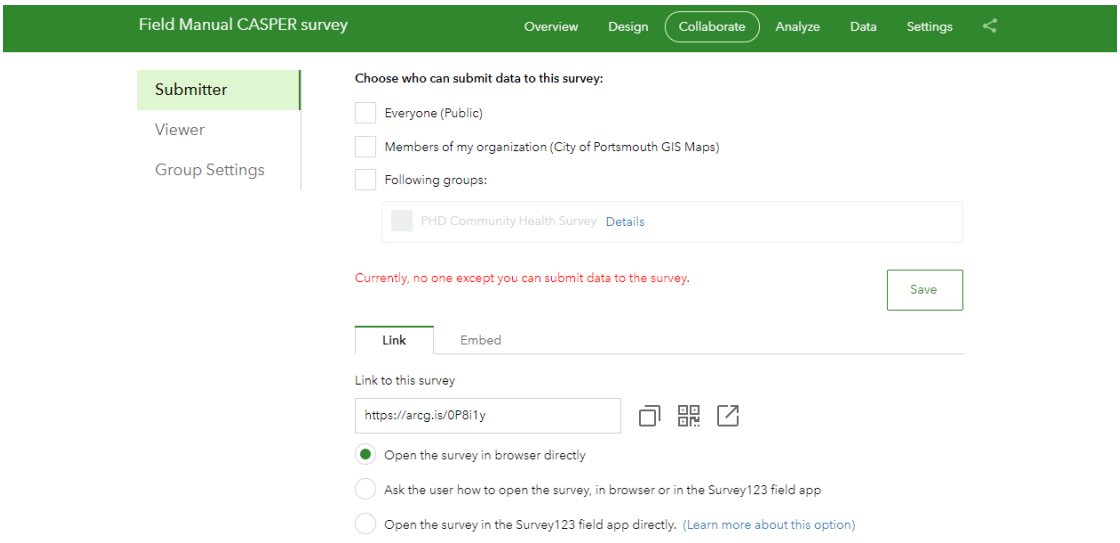


Figure 95: Editing who can submit data to the survey

Below, the link is displayed to share the data, as well as the qr code. The survey can be opened in a browser directly, the field app, or user's choice. Field teams used the field app and the public was set to open in browser directly. PHD thought if community members had to download an app to answer the survey, fewer responses would be collected. Click "Save." Under Viewer, make certain "View data" is set to either the field team group or none at all. Now the survey is ready to use!

Chapter 5: Field Personnel and Just in Time Training

Field personnel are essential to a CASPER. They are the face of the organization so it is vital that their appearance, demeanor, and actions in the field reflect positively on the organization. This chapter will provide guidance on recruiting volunteers, how to train field teams, and needed equipment and supplies.

Recruitment

As soon as the dates for the CASPER are set, recruitment of volunteers should begin. The number of days/hours field teams are going out will determine the total number of teams needed each day. Each team will have two members. In four hours, PHD teams have averaged 5-7 surveys. If the goal is 210 surveys divided by 5 surveys for each team, 42 teams would be needed for a single day or if spread out over 3-4 days, 10-12 teams would be needed. Aiming for 10-12 teams per day with a total of 24 volunteers has proven to be a successful model for PHD. More teams can mean increased cost of equipment/supplies, more staff needed at command to check-in with teams and provide support, and increased time to train and check in/out. Some people may volunteer for multiple days while others may only be available for one day. PHD uses its Medical

Reserve Corp (MRC) volunteer coordinator to recruit and schedule field teams. First internal staff are asked to staff teams and then MRC, other Virginia Department of Health employees, Portsmouth city staff, local hospitals, Health Coalitions, and university students. Students of nursing, medical, and public health programs can use this time toward a practicum or volunteer hours if required by their program. Areas that PHD has not explored are the faith based communities and other community agencies such as the American Red Cross or United Way. Staff who are experienced in interviewing or community engagement are paired with a person less experienced in field work. Another option for recruitment suggested by UNC was designating team leaders and have each team leader recruit one individual for their team (UNC, 2019). Since many volunteers will be needed to staff field teams, recruitment should begin as soon as the survey dates are set.

Just in Time training

Field teams should be trained on the morning of the first day of the survey or as close to that time as possible. If volunteers cannot make the training, provide a video recording of the training that can be shared via a link. The success of a CASPER can pivot on the quality of the Just in Time (JIT) training for the field teams. They need to learn how to sample residences in the field, how to read the maps, how to ask the survey questions, and how to communicate with command when problems arise.

A sample agenda for the JIT training would include:

1. Introductions and Welcome
2. Introduction to CASPER methodology
3. Safety Briefing
4. Steps in the Field
5. Tracking Form
6. Survey Tool

7. Interview Techniques
8. Practice with Interviewing
9. Survey 123 App
10. Practice with App
11. Data Analysis
12. Questions and Additional Logistics

Sample Timeline for the Survey Week:

Monday:

- 9am-12pm Just in Time Training
- 12-2pm Lunch break and preparation for team check-ins
- 2-3pm Team Check-Ins
- 3-7pm Household Survey
- 7-8pm Check-in and Debrief (includes survey of volunteers)

Tuesday-Thursday:

- 2-3pm Team Check-Ins
- 3-7pm Household Survey
- 7-8pm Check-in and Debrief (includes survey of volunteers)

Field Team Apparel

During the safety briefing instruct the teams about what they are to wear in the field. For PHD, this is a light blue vest with Health Department on the back and a nametag on the front (Figure 96). All teams should be readily identifiable to the public. Field team members should be instructed to wear business casual attire, comfortable shoes, and slacks. Clothing should have no holes or logos except that of the health department.

Figure 96: Picture of Field Teams during the 2013 PHD CASPER

Safety in the Field

Safety of field teams is the number one priority during the CASPER. Throughout the training, prioritizing team safety should be emphasized over survey completion. If a house does not look safe to approach, the team should make a note on the tracking form and move on. Teams should appear confident and professional while in the field, avoiding behaviors such as eating/chewing or inappropriate language. Teams should avoid carrying valuables in their cars and purses should be stored in the trunk prior to arrival at the cluster. The police department should have been notified pre-event of where teams will be deployed on which days. If during the planning process the planner noted areas of frequent crime or concern, additional efforts may need to taken to ensure the safety of those teams. In the past, PHD has asked a police car or fire personnel to follow teams in certain neighborhoods. This decision was not made lightly and was not a concern in most areas. Teams deployed to clusters with safety concerns were highly trained and experienced health department staff who were familiar with the community. Field teams should know how to contact headquarters if needed. A card with phone

numbers or handheld radios ensures that teams can contact someone quickly. For the safety of the teams, interviews should take place outside the residence.

Steps in the Field

Provide all teams with cluster maps showing how many houses are in a cluster and how many surveys are needed in that cluster. For example, if there are 21 houses and 7 interviews need to be completed, teams will visit every third house. There are several options to choose at which house to start. One method is to randomly pick a corner of the map and go to every third house from that point. Another method is to go to the center of the selected cluster and randomly choose a direction by spinning a bottle or pencil. When it stops, walk in the direction it is pointing and choose the house closest to where the team is standing. Then the team would go to each consecutive house until all interviews are completed. A third option, when all known addresses are available for a particular cluster, is to have GIS software randomly select 7 addresses from the cluster. Those addresses would then be given to the interview team. Providing a starting point or exact address to the field teams decreases time spent in the field not interviewing.

High-Rise or Multi-floor Apartment Complexes

If interviewing in a high-rise or multi-floor apartment complex, first randomly select 7 floors and then randomly select a unit on that floor. Repeat as needed. The planning team should have identified these areas ahead of time to provide specific instructions to the field team. If teams need to randomly sample in the field, they should contact headquarters for guidance.

When no one answers

While training the teams, emphasize the importance of completing interviews, but stress proper methodology for picking homes to interview. When no one answers the door at the first attempt, the team should try the residence to the left or right of the home. If no one is home, go to the next house on the list and come back to that area later in the day if time permits. Three attempts should be made for each home, but all three of these attempts do not need to be made before trying the residence to the right or left of the home. Revisiting previous homes decreases contact rates. For an apartment complex with multiple floors, if no one answers, go up one floor and interview the unit to the right of the stairs or elevator, continue to the right from there. If there is no floor above, go to the floor below and interview the unit to the right of the stairs or elevator. If the team has any questions, they should contact headquarters.

Inaccessible homes

Some homes may be inaccessible and field teams will not be able to knock on the door. Examples of homes that are deemed inaccessible are those that have a no trespassing sign, a dog that is outside and is in reach of the door, or a damaged home. A no soliciting sign is not a barrier to knocking on the door as field teams are not soliciting. In some states such as Texas, Illinois, Missouri, and North Carolina, a purple fence post indicates a no trespassing sign (Williamson County and Cities, 2019).

Language Barriers

A non English speaking household should not be a barrier during the CASPER survey. Choosing to only interview English speaking residents can add bias and make the sample less representative of the community. For the city of Portsmouth, less than 2

percent of the population speaks a language other than English so this is less of a concern. For areas with higher concentrations of non-English speaking residents, teams should be given language lines or multilingual team partners.

Tracking Form

The tracking form has been the most confusing form for teams to complete (Appendix B). Spend sufficient time reviewing this form and provide a sample completed form for instruction (Figure 98). The back page will have actual addresses so teams will know which house they visited (Figure 99). This is the only identifying information of the household surveyed and should be kept separate from the survey responses to increase confidentiality. Each number represents a house when the team knocked. If a survey is completed, the number is placed at the bottom. Comments on the back can include information such as an unsafe condition or someone was home but potential interviewee would like the team to return tomorrow at a specific time. Each cluster will have a separate tracking form and some clusters may have more than one tracking form.

Community Assessment for Public Health Emergency Response (CASPER): Tracking Form

City: Crook Cluster # (i.e., 1-30): 13 # of Houses in the Cluster 53 Team: dinosaur Date of Interview: 5/2/17

Instructions: Use one tracking form per cluster. Check where appropriate, but try to choose only one best option for each of the five categories. Go as far down the list as possible for each site you visit. Use neighbors to find information if no resident is available.

Sampled Households	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1) ACCESS																			
House is Accessible	X	☐	X	X	X	X	X	X	X	X	X	☐	☐	☐	☐	☐	☐	☐	☐
House is Inaccessible	☐	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2) TYPE OF DWELLING																			
No housing structure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Mobile Home	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Single Family Home	X	☐	X	X	X	X	X	X	X	X	X	☐	☐	☐	☐	☐	☐	☐	☐
Apartment or Condo	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3) ANSWER																			
Door was answered	X	☐	X	X	☐	☐	X	X	X	X	X	☐	☐	☐	☐	☐	☐	☐	☐
Appears home, but no answer	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Appears vacant	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Nobody home after… 1st visit	X	☐	☐	☐	X	X	X	☐	X	☐	X	☐	☐	☐	☐	☐	☐	☐	☐
Nobody home after… 2nd visit	X	☐	☐	☐	X	X	☐	☐	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Nobody home after… 3rd visit	☐	☐	☐	☐	☐	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4) INTERVIEW																			
Language Barrier	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Refused to Participate	☐	☐	☐	☐	X	☐	☐	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Interview begun, not finished	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
"Come back later"	X	☐	☐	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Interview Completed	X	☐	X	X	☐	☐	X	☐	X	X	X	☐	☐	☐	☐	☐	☐	☐	☐
Survey # (i.e., 1-7) from Completed Questionnaire:	6		1	4			3		7	2	5								

Figure 98 Example Tracking Form (front) from the CDC CASPER Template 2018 PPT (CDC, 2018)

Community Assessment for Public Health Emergency Response (CASPER): Notes
Instructions: Use this page to keep notes on which houses may need return visits
Sampled Households

1. 2-story with green roof and rock garden — Spanish, come back after 5:30pm
2. 3 big scary dogs w/no trespassing sign
3.
4. CALL TONIGHT 9:00pm - 123.555.4356
5. Red door, large gnome on the porch
6. McMansion on the corner
7. Dark brown with white awning
8.
9. Unique house w/columns in front & Christmas decorations still up
10.
11. 12 flag in window (go hawks!) bamboo garden on side
12.
13.
14.
15.
16.
17.
18.
19.

Figure 99 Example Tracking Form (back) from the CDC CASPER Template 2018 PPT (CDC, 2018)

Introduction and Consent Script

All teams have copies of an Introduction letter that can be left with the resident or simply read aloud (Appendix C). Field teams should practice the consent script and avoid looking down while speaking to the resident. Language should be plain and can be simplified to:

Hello, we are [name] and [name] with the Portsmouth Health Department. We are talking to residents in your neighborhood about what health is like in our community. Do you have some time to talk to us?

For the purposes of this survey, verbal consent is sufficient. If the resident initially refuses, have field teams emphasize how important their input is and that all answers will be confidential and anonymous. Also, state how long the survey will take (i.e. 10 to 15 minutes). If the resident continues to refuse, have the field teams thank them and note that they refused so no additional attempts will be made at that address.

Interviewing Tips

PHD has found it helpful to go over every question during the training so that field teams can ask questions. During the trainings, the presenter should stress the importance of asking the question the way it is written. If a question needs to be repeated, ensure that the interviewer is not providing a leading answer. For example, ask, "how many servings of vegetables do you eat in a day?" Do not ask, "you eat vegetables every day, right?" Have the trainer emphasize the need to remain nonjudgmental regarding the responses of interviewee. Field teams should not appear shocked or surprised when recording answers about sensitive subjects such as weight, education, sexual orientation, or misuse of prescription drugs. Pair volunteers into teams of two to practice interviewing. Each person should take a turn asking the questions.

Equipment for teams

Equipment for field teams should balance simplicity with necessity. The fewer items the team has to juggle while walking in a cluster, the easier it is for them to focus on interviewing.

- Backpack for field teams – the first year PHD tried a tote but teams reported these were cumbersome.
- Vests/ID Badges

- Water bottle/Snacks
- Clipboards – PHD uses a clipboard that opens up and can hold papers such as the completed surveys and cluster maps (site image)
- Phone numbers – PHD writes or prints the number for headquarters on the back of their name badge that is tucked in the front pocket of the vest.
- Writing utensils – pencils or pens
- Electronic device (if using) and protective cover – PHD used iPad minis with LifeProof NUUD cases. The case comes with a lanyard that the field team can hang from their necks to reduce the possibility of dropping the device.

Educational Materials

Some health departments have reported leaving educational materials with the interviewee such as a hurricane preparation guide, information about health department services, or mosquito prevention and control guidelines (Health, 2015). These materials may be geared toward topics in the survey itself. Before deciding to include handouts or other educational materials, consider the amount of paper and equipment field teams are carrying around. One well-designed flyer, magnet, or door hanger would be easier to carry than a bag full of materials. Also, consider that if the material is addressing a specific issue, field teams may be asked about issues like mosquito borne diseases or diabetes. The JIT training should guide field teams in how to answer these questions or take down their question, name, and phone number to refer to someone knowledgeable. This information should be kept separate from the questionnaire to maintain confidentiality. The CDC toolkit includes a Confidential Referral Form that could be used to capture questions or needs from residents (CDC, 2012 Appendix F).

Training on electronic survey collection

If the CASPER will include electronic data collection, it is vital to train field teams on how to use the device and the app or tool that will be used to collect the data. Take screenshots of each step of the process for the training and hand out devices to practice. For the Survey123 app, PHD created a sandbox app called "CHS practice" where fake interviews could be recorded during training. Each interviewer should practice using the device. Typically, 30 minutes is a good length of time to practice recording interviews.

Confidentiality

Due to the nature of the survey, confidentiality should be stressed throughout the training. If the agency responsible has a specific confidentiality policy, volunteers should review and sign the policy as part of the training.

Check Out

Before deploying field teams, make sure that field team clipboards have all the needed supplies:

- Tracking form (2 per cluster given)
- Maps of each cluster
- Directions on how to get to each cluster
- 15 copies of the questionnaire
- 10 copies of the Referral forms
- Electronic Device, charged and turned on. Consider using battery saving mode. Staff should tag equipment such as the iPads and maintain a record of which device was checked out to which team.

When deploying field teams, PHD has found it helpful to have teams meet one at a time in a separate room to go over their clusters, any concerns, and collect their equipment. Having 20 or more people in a room can make it noisy and hard for teams to hear important instructions that are specific to their cluster(s). The drawback to this process is that check out can take over an hour to go through 12 teams. Teams who check out first have longer in the field and teams who check out later have more time spent waiting at headquarters. Options for future surveys include having separate stations to check out equipment, clipboards, backpacks, and cluster assignments. If teams are deploying on a day that does not include the Just in Time training, check out should include a safety briefing with weather forecasts, any changes from the JIT training, and issues teams had on the previous day.

Check In

Teams should return all equipment and paper questionnaires/tracking forms at the end of each day. The tracking forms should be reviewed with each team to ensure the planning team has all the needed information if a team needs to revisit that cluster. Common errors to watch for include paper questionnaires that do not indicate the cluster number or tracking forms that do not include the cluster number or have missing information. The check in team should ensure that the number of boxes checked at the bottom of the tracking form matches the number of paper questionnaires the team is turning in. Sometimes questionnaires are misplaced with other papers such as with the consent forms or in the educational materials. This is easier to sort out during check in rather than the next day when staff must search through 12 clipboards and backpacks looking for a missing questionnaire.

Feedback from Field Teams

It is important for field teams to provide feedback on their experience. This survey can be done by paper during the check in process or via a link after the CASPER. Feedback is very important when writing the final report and reviewing how to improve the process for future CASPERs.

In-between Survey Days

- Recharge all devices
- Check that the number of electronic and paper surveys match
- Restock field team supplies
- Review clusters to determine team assignments/cluster selections. Some clusters may be finished/eliminated; others may need only 1 or 2 surveys completed. Prioritize clusters where a greater number of surveys are needed.

Sample of training materials

The CDC toolkit contains the tracking form, confidential referral form, handouts, and a sample introduction and consent script. The toolkit also includes suggestions for supplies, number of teams, training, and how to conduct the interviews (CDC, 2012). Appendix D contains a sample of the slides from the most recent 2017 PHD CASPER training.

Chapter 6: Communications Plan

The communications plan for the CASPER includes several critical elements: press releases, social media posts, outreach to the selected clusters, and how the results of the survey will be shared. The goal of the communications plan is to increase participation in the survey and increase awareness of the topic(s) covered in the survey.

Outreach to the clusters

Communication and outreach is a vital step in the CASPER process. A successful CASPER requires that the initial outreach to each cluster identifies what type of homes, apartments, or restricted access teams may encounter in a particular cluster. The Washington County Public Health Department named this step "ground-truthing," which "involved driving to each selected household to identify any sampling issues such as gated communities, apartment buildings, or unrestrained animals or livestock that would complicate surveying at the household" (Repp, Hawes, Rees, Vorderstrasse, & Mohnkern, 2018). Common community boards, space, or other methods to post flyers and information should be noted during this visit. PHD stored this information in an excel file sorted by cluster.

It is crucial that local communities know that people will be surveying in their neighborhood and why they are there. For multifamily housing, the Public Information Officer (PIO) should reach out to the facility management to let them know when and why teams need to have access to their complex. If gated or restricted access communities are identified, outbreach to management is essential to determine if access can be granted, or if there is another way to interview residents via meetings, mail, or online surveys. Often management has a way to notify residents of upcoming events or maintenance and this method should be utilized to disseminate information about the survey. PHD also has met with community civic leagues to gain support and posted in neighborhood newsletters.

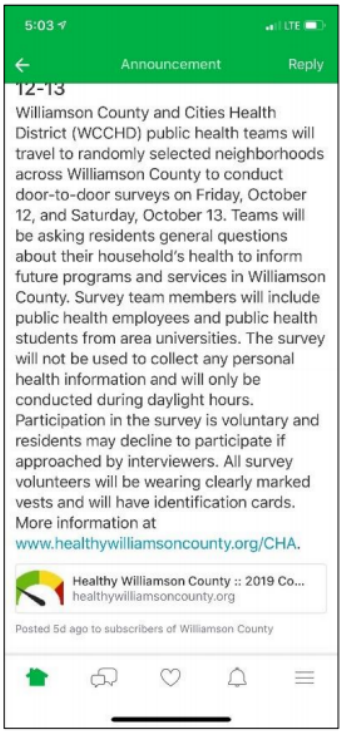
Media Campaign

Creating a brand allows for easy recognition and can promote trust in the community. Once PHD decided that the CASPER would be a regular event, a logo was developed to place on all materials related to the survey (Figure 100).

Figure 100: PHD Community Health Survey Logo

Print materials advertise the agencies involved, what days the survey will take place, times of the survey, what people will look like, and why the survey is being conducted. The PIO will develop formal press releases during the planning stages and distribute them to media outlets. Contacting local news stations may encourage them to interview field teams or capture field teams canvassing neighborhoods. Having the local news networks and newspapers run a story about the survey greatly increased cooperation on the following day. Residents reported having seen the story and wanted to participate. For social media (NextDoor, Facebook, Twitter, Instagram), PHD staff created images, videos, and blurbs to post on the days leading up to and during the survey. The videos

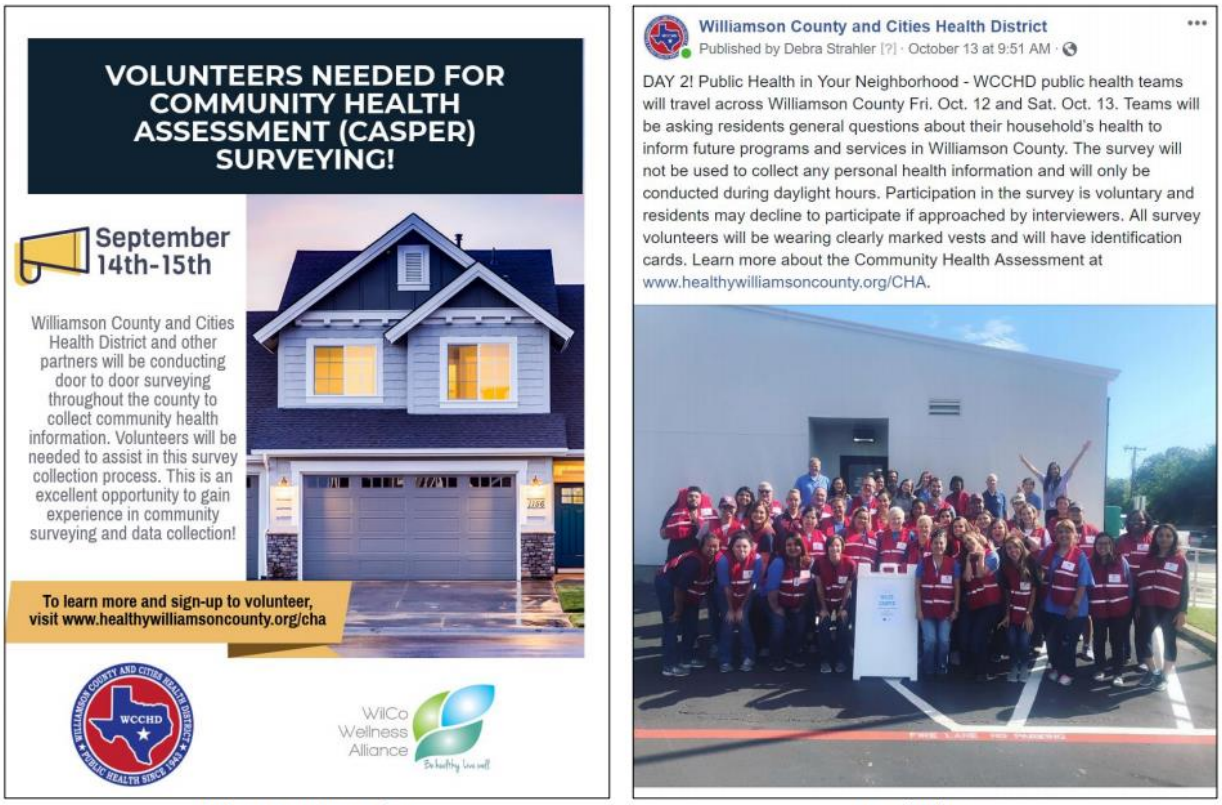
and pictures included people dressed as field team members and information about why the health department wanted to do the survey. Williamson County included snapshots in their CASPER report of their social media and press releases.



Next Door Post

Press Release

Figure 101: Next Door and Press Release from Williamson County CASPER



CASPER Recruitment Flyer | Facebook Post

Figure 102: CASPER Recruitment Flyer and Facebook Post from the Williamson County CASPER

striving to be more efficient, to and what you all are doing."

County seeks input on health services

By CHARLOTTE KOVALCHUK

Health surveys will give Williamson County residents the opportunity to provide input and shape the future of health-related services offered in the region.

Williamson County and Cities Health District public health teams will travel to randomly selected neighborhoods across Williamson County to conduct door-to-door surveys Friday, September 14, and Saturday, September 15. Teams will be asking residents general questions about their household's health.

These surveys mark the third phase of the Community Health Assessment, which engages community members and local health system partners to collect and analyze health-related data. The feedback will be used to inform decision making, prioritize health issues and assist in the development and implementation of the Community Health Improvement Plan.

Survey team members will consist of public health employees and public health students from area universities. The survey will not be used to collect any personal health information and will only be conducted during daylight hours. Participation in the survey is voluntary and residents may decline to participate if approached by interviewers. All survey volunteers will be wearing clearly marked vests and will have identification cards.

An additional examination survey will be conducted throughout Williamson County in January through March 2019 by the Centers for Disease Control and Prevention and the National Center for Health Statistics. This survey consists of an in-home interview and physical exam. More information can be found at www.cdc.gov/nhanes

For more information on the Williamson County and Cities Health District process, go to www.healthywilliamsoncounty.org/cha. To get involved in community health initiatives, join the WilCo Wellness Alliance Coalition at www.healthywilliamsoncounty.org/joinus.

The Williamson County and Cities Health District has provided public health services to Wilco since 1943. The district's public health centers and offices are located in Cedar Park, Georgetown, Round Rock and Taylor. Learn more at www.wcchd.org

Sun City Democrats meet

Get to know local and state candidates at two upcomi

POLITICAL

tel and Confer

Newspaper Clipping

Figure 103: Newspaper Clipping from the Williamson County CASPER

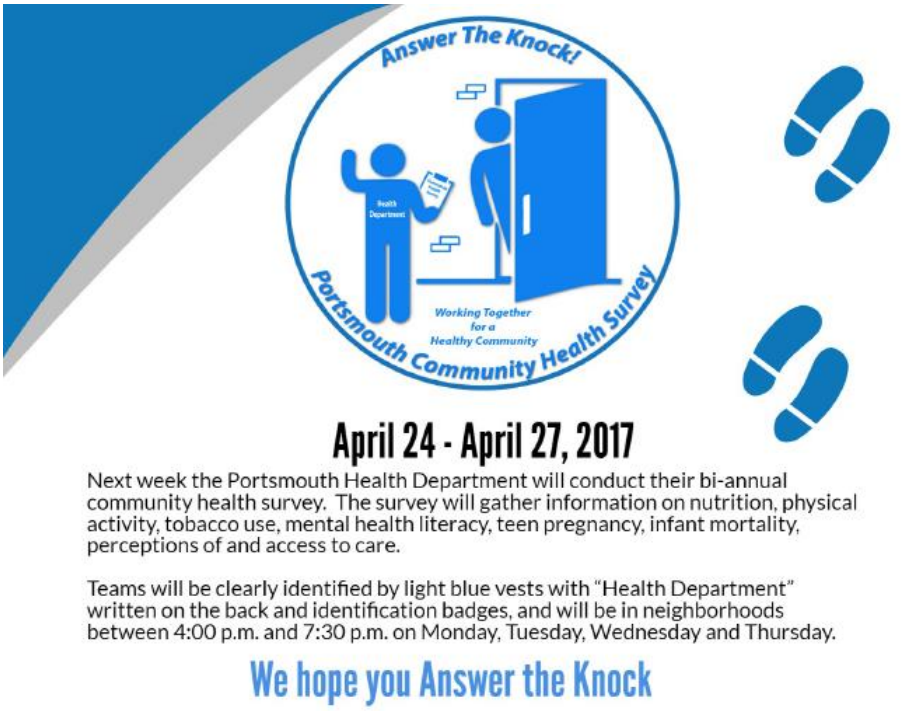


Figure 104: Facebook post from PHD 2017 CHS

FOR IMMEDIATE RELEASE
For more information contact
Jessica Mullen, Healthy Communities Coordinator/PIO
757-393-8585 ext. 8541
757-537-8687 (cell)

Portsmouth, Virginia, (April 19, 2017) – Portsmouth residents may get a knock on the door April 24th, 25th, 26th, 27th and be asked to participate in a city wide health survey. The Portsmouth Health Department will team up with the Portsmouth Medical Reserve Corp (MRC) to conduct the third bi-annual Community Health Survey (CHS). The survey will gather information on nutrition, physical activity, tobacco use, mental health literacy, teen pregnancy, infant mortality, perceptions of and access to care.

The CHS allows public health officials and other community organizations to collect valuable neighborhood level data that will help guide their decisions for programs that would best improve the health of Portsmouth citizens.

"The Portsmouth Health Department is committed to collecting quality data from our residents to better target interventions into our community." said David Chang, M.D., Director of the Portsmouth Health Department.

Teams will be clearly identified by light blue vests with "Health Department" written on the back and identification badges, and will be in neighborhoods between 4:00 p.m. and 7:30 p.m. on Monday, Tuesday, Wednesday and Thursday. Identification badges will be from the following organizations: Virginia Department of Health (VDH), Portsmouth Health Department (PHD), Eastern Virginia Medical School (EVMS) or the Portsmouth Medical Reserve Corp (MRC). Every ID will have a picture of the employee/student/volunteer. The 40 neighborhoods that will be surveyed were selected randomly using a standardized method that has been used the past two times surveys were conducted

Figure 105: Press release from PHD 2017 CHS

The final component of the Media Campaign is determining how to share the survey results. The final report can be released online via press releases and social media posts, but the audience will be limited to those willing to read a long document. The PIO may want to consider using an interactive data tool such as an ESRI story map or infographics for key results. Determine the audience before deciding how to share the data and develop a plan accordingly.

Chapter 7: Data Analysis

After the surveys have been collected, the next phase is analyzing the data from the tracking form and the questionnaire. The CDC toolkit covers how to calculate the response rates and weighted frequencies with 95% confidence intervals within Epi Info. In addition to these calculations, this chapter will explore data cleaning, common functions in Epi Info, and spatial analysis.

Response Rates

The CASPER model is based on the premise that the sampled population will be similar to the entire study population (CDC, 2012). The response rates are an indicator if that premise is true. Low response rates can be a warning that the sample population may not be representative. If this is the case, study results should be interpreted with caution. To calculate the study population, the CDC recommends combining data from the

tracking forms into an Excel file (Figure 106).

	A	B	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1		Cluster	19	20	21	22	23	24	25	26	27	28	29	30	TOTAL	Cluster
2	No Access	House Accessible	20	13	22	17	14	9	16	22	12	18	17	18	486	House Accessible
3		House Inaccessible	0	0	2	0	0	1	0	0	0	0	0	0	4	House Inaccessible
4																
5	Type of Dwelling	No Housing	0	0	0	0	0	0	0	0	0	0	0	0	0	No Housing
6		Mobile Home	0	0	0	1	0	0	0	0	0	0	0	0	2	Mobile Home
7		Single Family Home	0	13	0	0	6	10	16	22	12	18	17	18	345	Single Family Home
8		Apartment or Condo	20	0	24	16	8	0	0	0	0	0	0	0	143	Apartment or Condo
9		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	Other
10																
11																
12	No Answer	Door was answered	14	11	19	9	9	8	11	11	8	13	12	11	342	Door was answered
13		Home but no answer	0	0	0	0	0	0	0	2	0	0	1	0	5	
14		Appears Vacant	0	0	0	1	0	0	3	0	0	2	0	0	21	Appears Vacant
15		Nobody Home	6	2	3	7	5	1	2	9	4	3	4	7	132	Nobody Home after 3rd Visit
16																
17																
18	Interview	Language Barrier	0	1	0	0	0	0	0	0	0	1	0	2	10	Language Barrier
19		Refused to Participate	4	3	12	2	1	2	4	6	1	4	5	2	109	Refused to Participate
20		Non-resident	1	0	0	0	0	0	0	0	0	1	0	0	8	Non-resident, < 30 days
21		No adult over 18 yrs old	0	0	0	0	0	0	0	0	0	0	0	0	4	No adult over 18 yrs old
22		Interview begun, not finis	2	0	0	0	1	0	0	0	0	0	0	0	12	Interview begun, not finished
23		Interview Completed	7	7	7	7	7	6	7	5	7	7	7	7	199	Interview Completed
24																
25	Total HH Sampled/Attempted		20	13	24	17	14	10	16	22	12	18	17	18	490	
26																
27															40.6%	Contact Rate
28															94.8%	Completion Rate
29															58.2%	Cooperation Rate

Figure 106: Example Tracking Form Calculation from CDC CASPER Template 2018 PPT (CDC, 2018)

Each column represents a cluster and each row represents the row from the tracking form. Add a column named “Total” and then calculate the totals for each row. The three response rates are calculated by the equations in Figure X. Number of interviews completed is in the black box (for this example 199) and is the same numerator for each of the calculations. The number of interviews goal is the number of clusters times the number of household sampled in that cluster, e.g. 30x7=210. All HUs where contact was made is the total from door was answered (for this example 342). Number of HUs where contact was attempted is the total from House Accessible plus House Inaccessible (for this example 490). The completion rate target is 80% or higher (CDC, 2012). For the cooperation and contact rate, higher rates indicate a more representative sample, but no set target is provided (CDC, 2012).

Completion rate =	$\frac{\text{Number of completed Interviews}}{\text{Number of interviews goal (i.e., 280)}}$
Cooperation rate =	$\frac{\text{Number of completed interviews}}{\text{All HUs where contact was } \textit{made}}$ (including completed interviews, incomplete interviews, and refusals)
Contact rate =	$\frac{\text{Number of completed interviews}}{\text{Number of HUs where contact was } \textit{attempted}}$ (including completed interviews, incomplete interviews, refusals, and non-respondents)

Figure 107: Calculation of Response Rates (CDC, 2012)

Data Cleaning

From the Survey123 web portal, export the survey data to a csv file and open the data in Excel (Figures 108 and 109). Scroll through the data and look for missing data and outliers such as weights that are too high. Data entries that do not make sense could indicate a data entry error. The data analyst can compare the data to the paper survey for these cases. Match paper surveys and electronic surveys by using cluster number, survey number, and age fields. The data analysis team should make a plan for how to handle missing or erroneous data entries. The plan may include options to not count that survey, to accept the paper copy as the "gold standard," or exclude certain fields from the analysis while allowing other entries from that survey. Record the methodology for handling discrepant results and note that information in the methods section of the final report.

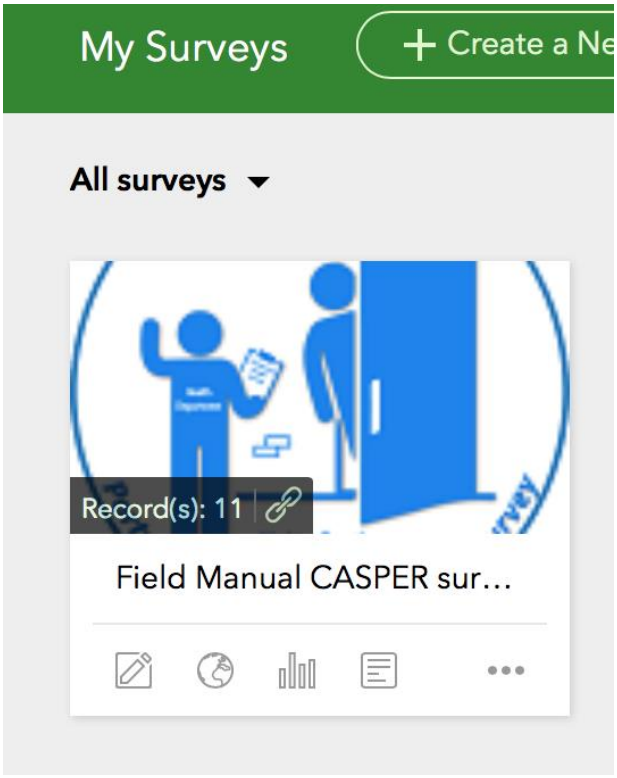


Figure 108: Extract Records from Survey123

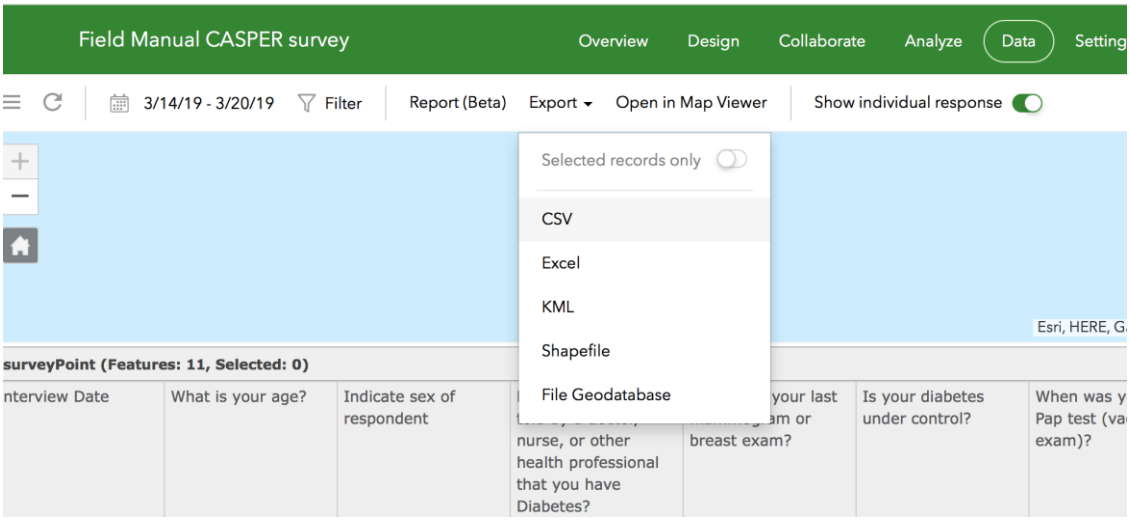
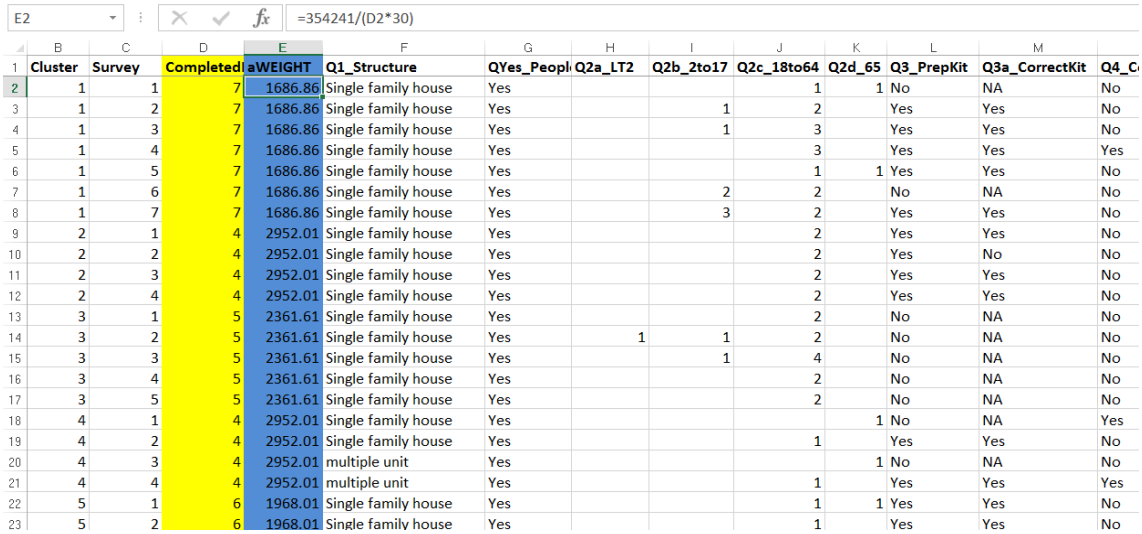


Figure 109: Export csv file of survey records

Weighted Analysis

The next step in the data analysis is to add a weighted calculation. The weight is calculated by taking the total number households in the sampling frame and dividing it by the number of completed interviews in the cluster times the total number of clusters

(CDC, 2012). In this example, 354,241 total households in the sampling frame and 30 clusters surveyed times 7 completed interviews.



E2 =354241/(D2*30)

	B	C	D	E	F	G	H	I	J	K	L	M	
1	Cluster	Survey	CompletedI	aWEIGHT	Q1_Structure	QYes_Peopl	Q2a_LT2	Q2b_2to17	Q2c_18to64	Q2d_65	Q3_PrepKit	Q3a_CorrectKit	Q4_C
2	1	1	7	1686.86	Single family house	Yes			1	1	No	NA	No
3	1	2	7	1686.86	Single family house	Yes		1	2		Yes	Yes	No
4	1	3	7	1686.86	Single family house	Yes		1	3		Yes	Yes	No
5	1	4	7	1686.86	Single family house	Yes			3		Yes	Yes	Yes
6	1	5	7	1686.86	Single family house	Yes			1	1	Yes	Yes	No
7	1	6	7	1686.86	Single family house	Yes		2	2		No	NA	No
8	1	7	7	1686.86	Single family house	Yes		3	2		Yes	Yes	No
9	2	1	4	2952.01	Single family house	Yes			2		Yes	Yes	No
10	2	2	4	2952.01	Single family house	Yes			2		Yes	No	No
11	2	3	4	2952.01	Single family house	Yes			2		Yes	Yes	No
12	2	4	4	2952.01	Single family house	Yes			2		Yes	Yes	No
13	3	1	5	2361.61	Single family house	Yes			2		No	NA	No
14	3	2	5	2361.61	Single family house	Yes	1	1	2		No	NA	No
15	3	3	5	2361.61	Single family house	Yes		1	4		No	NA	No
16	3	4	5	2361.61	Single family house	Yes			2		No	NA	No
17	3	5	5	2361.61	Single family house	Yes			2		No	NA	No
18	4	1	4	2952.01	Single family house	Yes				1	No	NA	Yes
19	4	2	4	2952.01	Single family house	Yes			1		Yes	Yes	No
20	4	3	4	2952.01	multiple unit	Yes				1	No	NA	No
21	4	4	4	2952.01	multiple unit	Yes			1		Yes	Yes	Yes
22	5	1	6	1968.01	Single family house	Yes			1	1	Yes	Yes	No
23	5	2	6	1968.01	Single family house	Yes			1		Yes	Yes	No

Figure 110: Weighted Analysis of the CASPER results

While the CDC recommends that the majority of questions be asked at the household level, individual questions can be added. For these variables add an additional weight (CDC, 2019). The weight will be calculated by ((Total number of HH in sampling frame)x(total number of adults))/((completed interviews in cluster) x (total number of clusters)). Save the data as a CSV file and close Excel.

Data Analysis in Epi Info

Now the data are ready for frequency analysis in Epi Info. To analyze the data, open Epi Info and choose Classic Data Analysis (Figure 111).

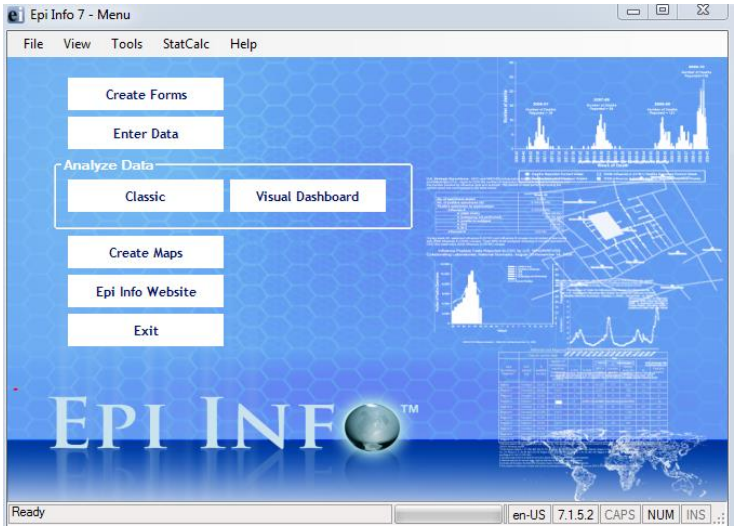


Figure 111: Opening screen in Epi Info

Next, choose Read in the top left hand corner under the Data options (Figure 112).

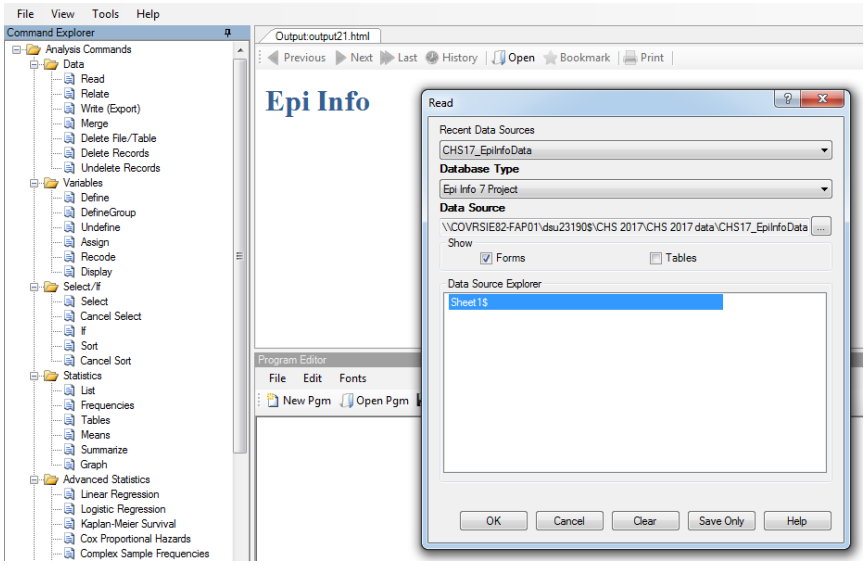


Figure 112: Read data in Epi Info

Click "OK," and in the top screen will appear the number of records which were read in.

(Figure 113). In this example 227 records were included.

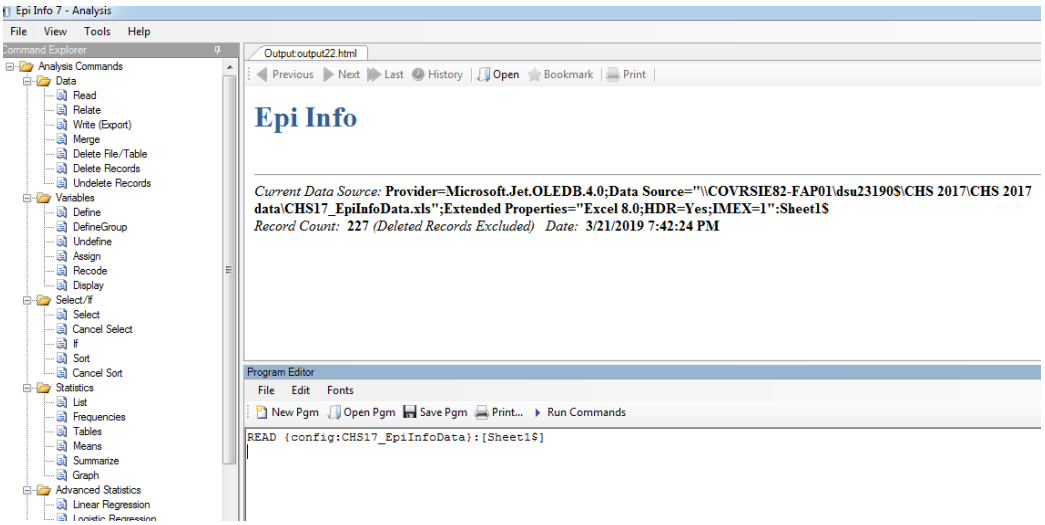


Figure 113: Number of records read into Epi Info session

For each variable calculate an unweighted frequency, a weighted frequency, and a weighted 95% confidence interval (Table 4).

Table 3. Health Status					
Characteristic	**Frequency (n=198)**	**% of households**	**Projected number of Households**	**Weighted %**	**Weighted 95% CI**
Heart Attack					
Yes	19	8	3357	8	5-12
No	205	92	37133	92	88-95
High Blood Pressure					
Yes	108	48	19157	47	39-55
No	118	52	21649	53	45-61

Table 4: Sample Table from the 2017 PHD CHS

Choose Frequencies under statistics, and the pop-up window will look like Figure 114. Under Frequency of Drop Down menu choose Heart_Attack and for the Weighted Frequency, select Weight under Weight (Figure 114). The data analyst will do this once without the weight and once with the weight.

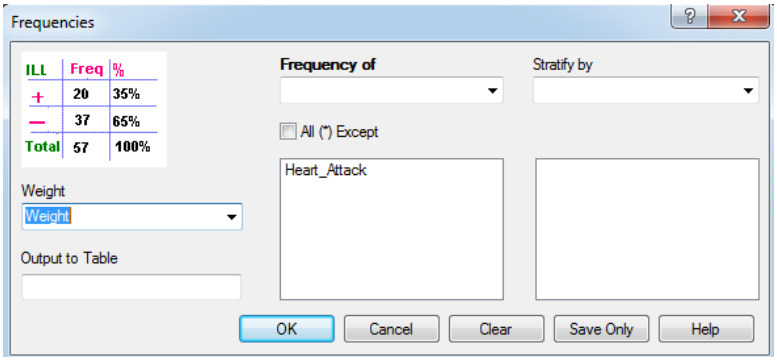


Figure 114: Frequency Analysis in Epi Info

The data analysis will then go into the table above (Table 4). Under Yes to Heart_Attack, enter 19 into the first column under frequency. This is the number of households where someone reported having a Heart Attack. The percentage 8% goes in the second column under % of households. Only record the results out to the tenths place. Next, look at the weighted analysis results. The frequency column represents the estimated number of households, which will go in Projected number of Households reported to nearest whole number. The percentage next to it will be recorded in the weighted percent column.

FREQ Heart_Attack

HEART_ATTACK	Frequency	Percent	Cum. Percent	
No	205	91.52%	91.52%	
Yes	19	8.48%	100.00%	
Total	224	100.00%	100.00%	

Exact 95% Conf Limits

No 87.07% 94.82%
Yes 5.18% 12.93%

FREQ Heart_Attack WEIGHTVAR = Weight

HEART_ATTACK	Frequency	Percent	Cum. Percent	
No	37133.4599999984	91.71%	91.71%	
Yes	3356.77928571425	8.29%	100.00%	
Total	40490.2392857126	100.00%	100.00%	

Figure 115: Frequency output for weighted and unweighted analysis.

Next, the 95% confidence interval should be calculated with the weighted estimates. The confidence intervals provide an estimation of the reliability of the

weighted estimate. Under Advance Statistics, choose Complex Sample Frequencies Command. In the box, select the variable Heart_Attack (Figure 116). The Weight is Weight and the Primary Sampling Unit is the Cluster Number (Cluster_Num).

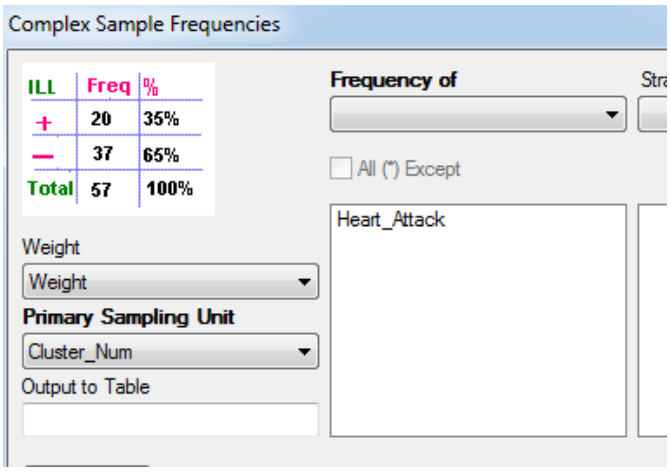


Figure 116: Complex sample frequencies

The data output will look like Figure 117. The Confidence Interval (Williamson County and Cities) will be from the LCL to the UCL. For Yes, the CI is 5-12% and for No, it is 88-95%.

FREQ Heart_Attack WEIGHTVAR = Weight PSUVAR = Cluster_Num

HEART_ATTACK	TOTAL
No	205
Row %	100.000
Col %	91.710
SE %	1.771
LCL %	88.127
UCL %	95.292
Yes	19
Row %	100.000
Col %	8.290
SE %	1.771
LCL %	4.708
UCL %	11.873
TOTAL	224
Design Effect	0.920

Figure 117: Data Output for 95% Confidence Intervals.

Rather than doing each variable one at time, select multiple variables. Instead of clicking OK, select another variable. The analyst can also select * and the frequency will run on all the variables in the data set at one time. Continuous variables such as age, however, cannot be calculated this way without some prep work. The ages of respondents will need to be grouped into meaningful subgroups (Table 5).

Table 2. Household characteristics					
Characteristic	**Frequency (n=198)**	**% of households**	**Projected number of Households**	**Weighted %**	**Weighted 95% CI**
Sex					
Female	144	63	40952	65	58-72
Male	83	37	14411	35	28-42
Age					
18-29	20	9	3699	9	5-14
30-39	49	19	8035	20	12-27
40-49	40	18	6964	17	12-22
50-59	50	22	8664	21	15-27
60-69	54	24	10209	35	18-32
70-79	14	6	2400	6	3-9

Table 5: Selected Demographics from 2017 PHD CHS

To do this in Epi Info, first create a new standard text variable AGEGRPING by using DEFINE under Variables (Figure 118).

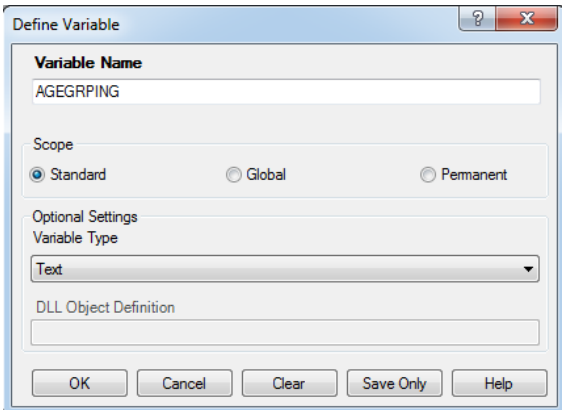


Figure 118: Defining new variable AGEGRPING

Next, RECODE Age to AGEGRPING using the value in Table 119.

Value	To Value	Recoded Value
LOVALUE	29	18-29
30	39	30-39
40	49	40-49
50	59	50-59
60	69	60-69
70	HIVALUE	70+

Table 119: Recoding AGE to AGEGRPING

In Epi Info it will look like Figure 120.

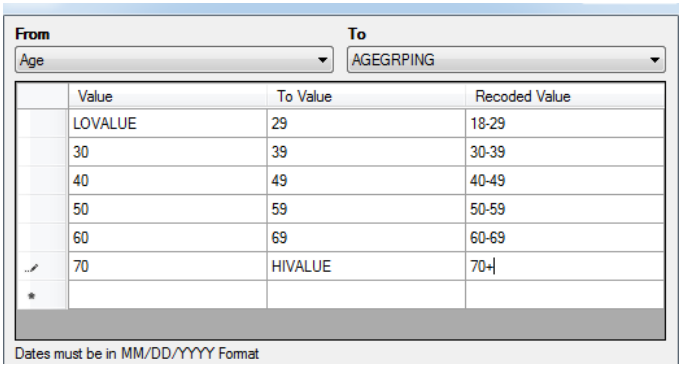


Figure 120: Recoding AGE to AGEGRPING in Epi Info

Now, run the Frequency on AGEGRPING and the output should look like Figure 121.

FREQ AGEGRPING

AGEGRPING	Frequency	Percent	Cum. Percent	
18-29	20	8.81%	8.81%	
30-39	43	18.94%	27.75%	
40-49	40	17.62%	45.37%	
50-59	50	22.03%	67.40%	
60-69	54	23.79%	91.19%	
70+	20	8.81%	100.00%	
Total	227	100.00%	100.00%	

Figure 121: Frequency calculation for AGEGRPING

Additional Data Analysis

The CDC recommends the unweighted and weighted frequency calculations with 95% confidence intervals for the CASPER report. Community partners may request

additional data analysis such as stratifying responses by race or sex. The FAQs website on the CASPER website states that, "Any other estimates (such as stratification) may be unstable and should be viewed with caution. Please consult with your local statistician familiar with sampling methodology or reach out to the CDC CASPER subject matter experts for technical assistance to discuss the feasibility of further analysis" (CDC, 2019).

If CASPERs are conducted in the same area using the same questions, a comparison of the data over time may be of interest. For example, following the Golf Coast Oil Spill in 2010, the health departments conducted a CASPER with mental health questions and then repeated them one year later to determine long-term mental health needs and changes (Buttke et al., 2012). Chi-square and t-tests can be used to compare results between CASPERs depending on whether the variable is categorical or continuous (CDC, 2019).

Spatial Analysis Using ESRI tools

PHD has found that although city or county level data is useful to community partners, organizations want sub-county level data at the smallest geographic unit possible. To estimate health indicators across census tracts based on sampled data, the data analyst can explore various methods of small area analysis. In 2016, the Washington Department of Health added a nearest intersection question to the state's BRFSS questionnaire (Song, Mercer, Wakefield, Laurent, & Solet, 2016). Using Bayesian models, the researchers calculated smoking prevalence at the census tract level. The Census Bureau uses similar techniques to calculate American Community Survey data at the census tract level (Bureau, 2018). Running these calculations is a lengthy process requiring mathematical experts which can be prohibitive for a local health department. In

2012, ESRI introduced the Emperical Baysian Kriging (EBK) tool to its Geostatistical Analyst software. The EBK tool is considered a reliable automatic statistical interpolation model that can speed the process of estimating data from sampled areas onto a continuous surface (ESRI, 2012).

The following directions provide a walkthrough for using the EBK tool and Zonal Statistics to estimate the prevalence of health indicators at the census tract level. Use this walkthrough with a subject matter expert who can examine the semivariogram and standard and prediction errors to determine if this tool is the best fit for the data.

Empirical Based Kriging using Geostastical analysis.

Add CHS points and census tracts to a new map document.

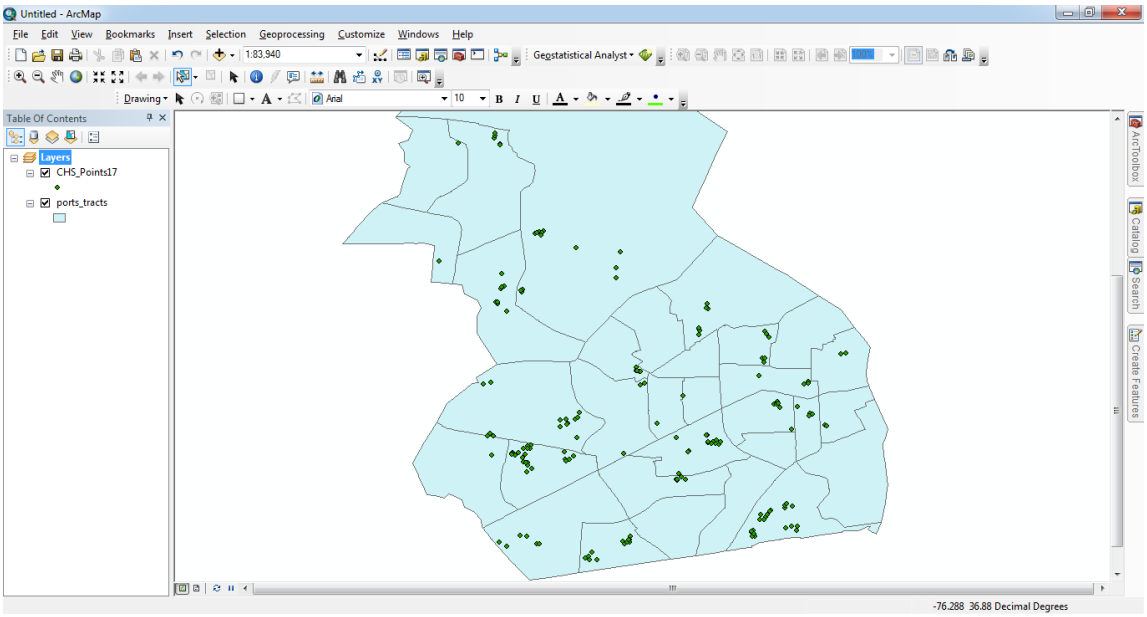


Figure 122: Points from PHD 2017 CHS in ArcMap

Under the customize menu, choose extensions and click check boxes next to Geostatistical Analysis and Spatial Analysis, click “Close” to close out the popup.

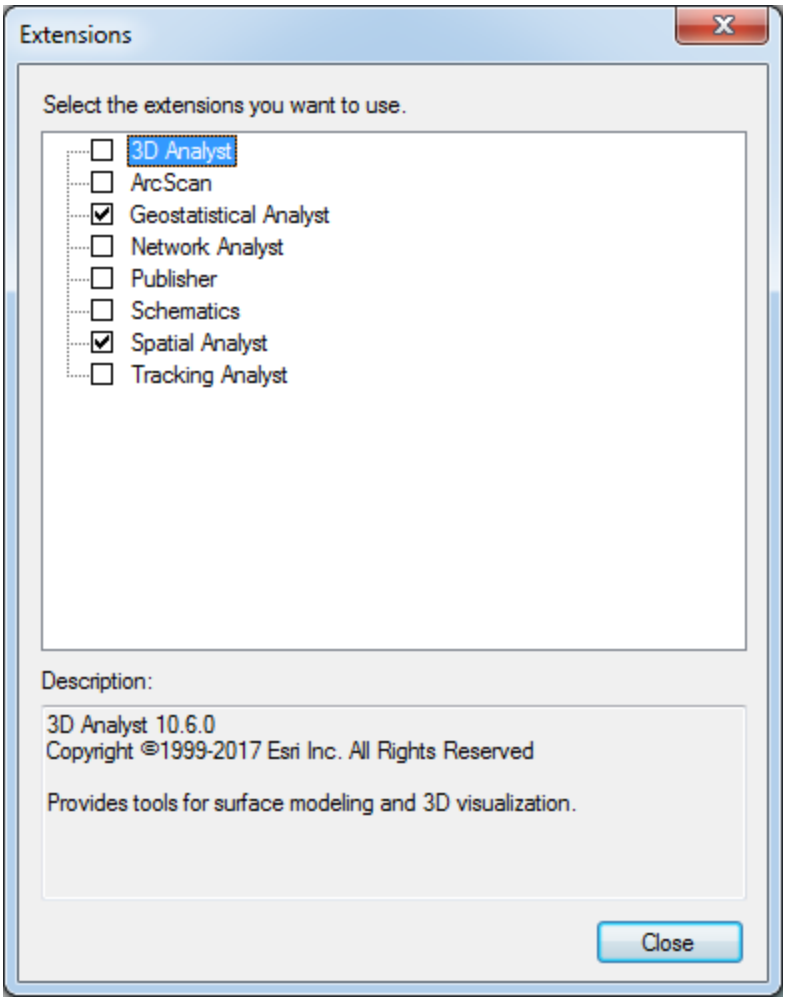


Figure 123: Extensions popup in ArcMap

Launch the Geostatistical Wizard from the Geostatistical Analysis toolbar

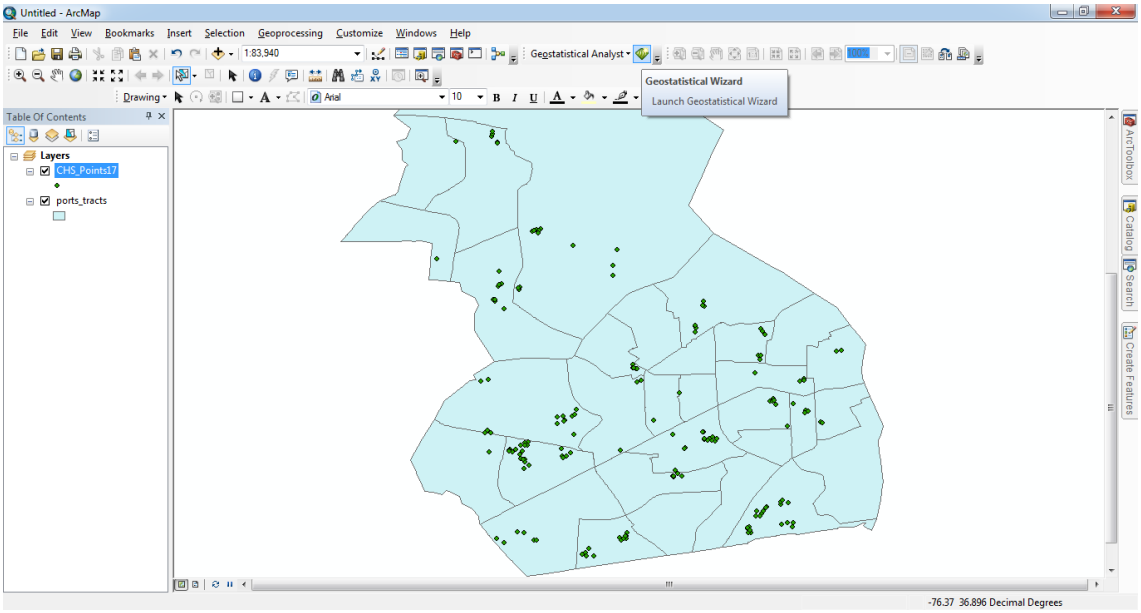


Figure 124: Geostatistical Wizard Launch

Choose "CHS_Points17" as the source file and "Diabetes" as the data field. In the left hand window, select "Empirical Bayesian Kriging." Click "Next."

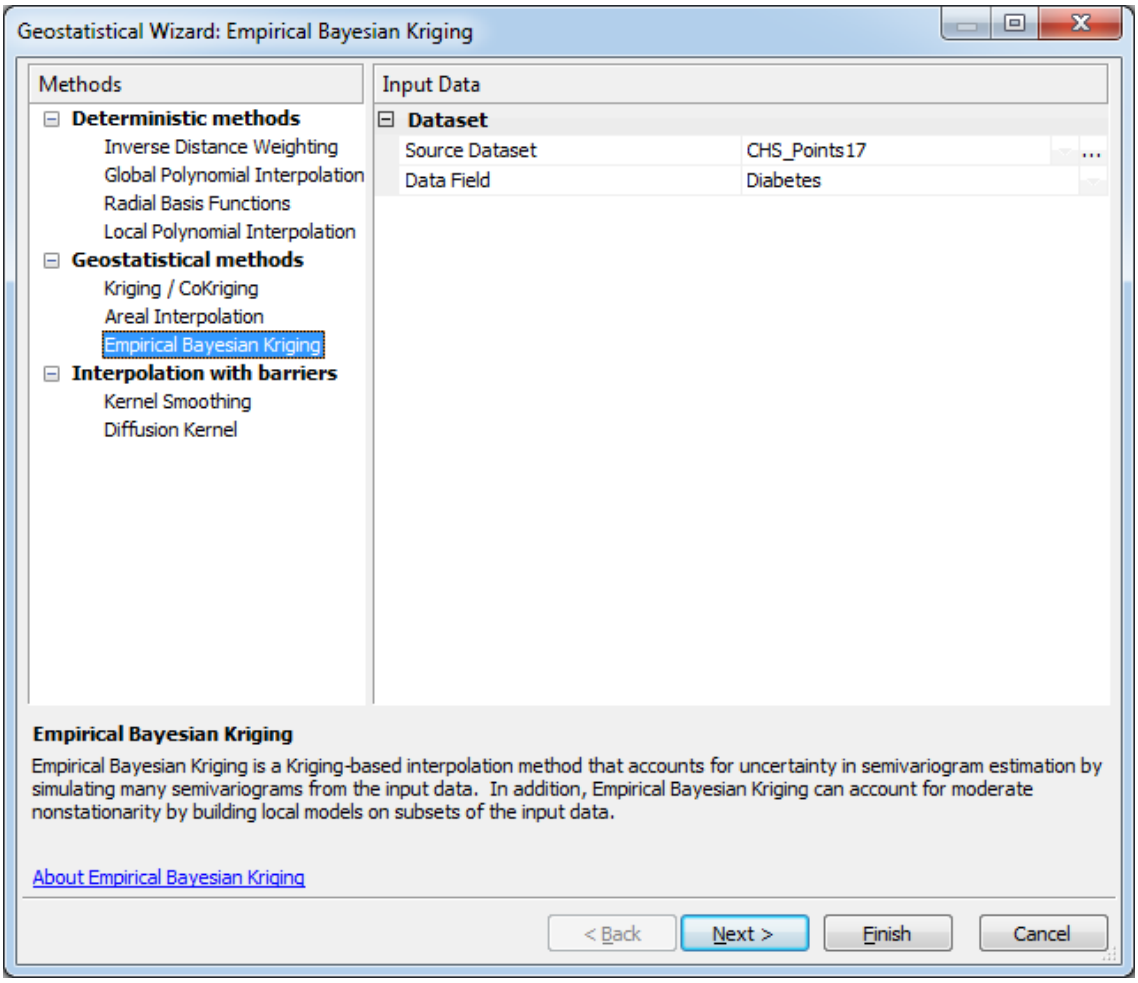


Figure 125: EBK window

If a window for "Handling Coincidental Samples" pops up, select "Choose All" and click "OK." This will happen if a house is surveyed twice or from online surveys.

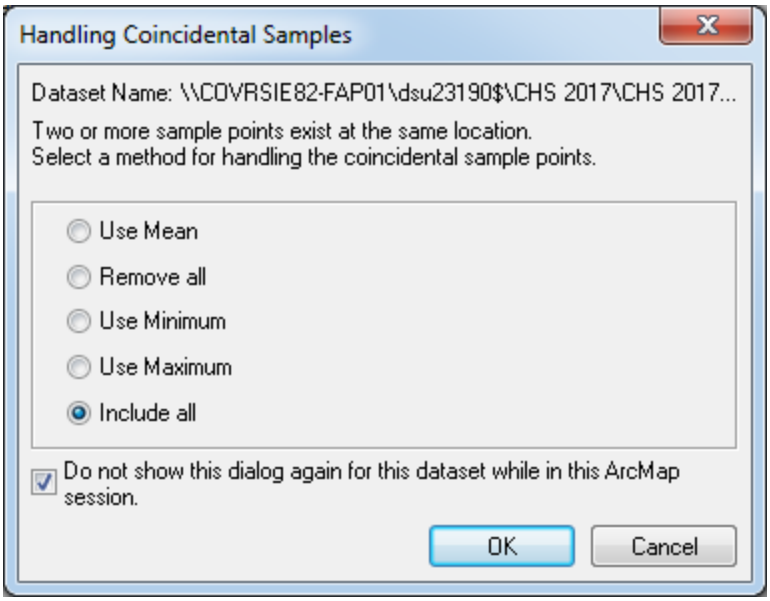


Figure 126: Handling Coincidental Samples dialogue box

The next window shows the Method Properties, and if anything looks out of place. Click "Next" to continue.

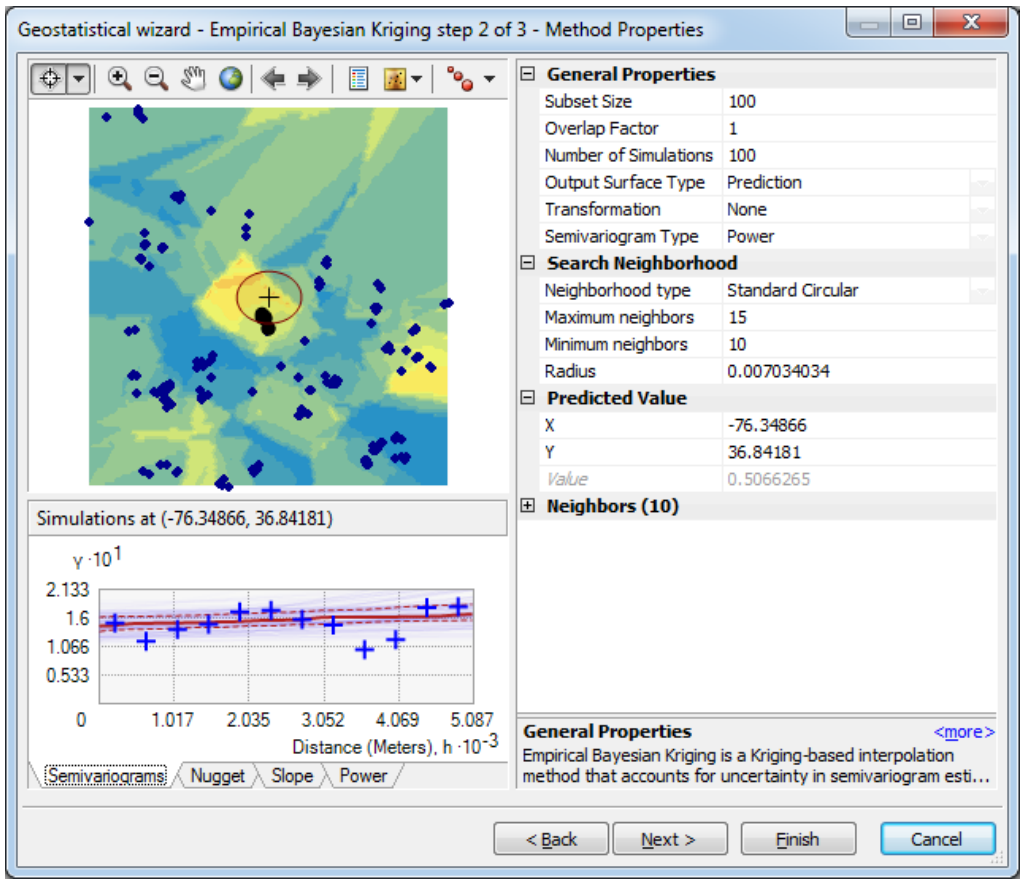


Figure 127: EBK Method Properties

The third screen shows cross validation of the sample points, click “Finish” to continue.

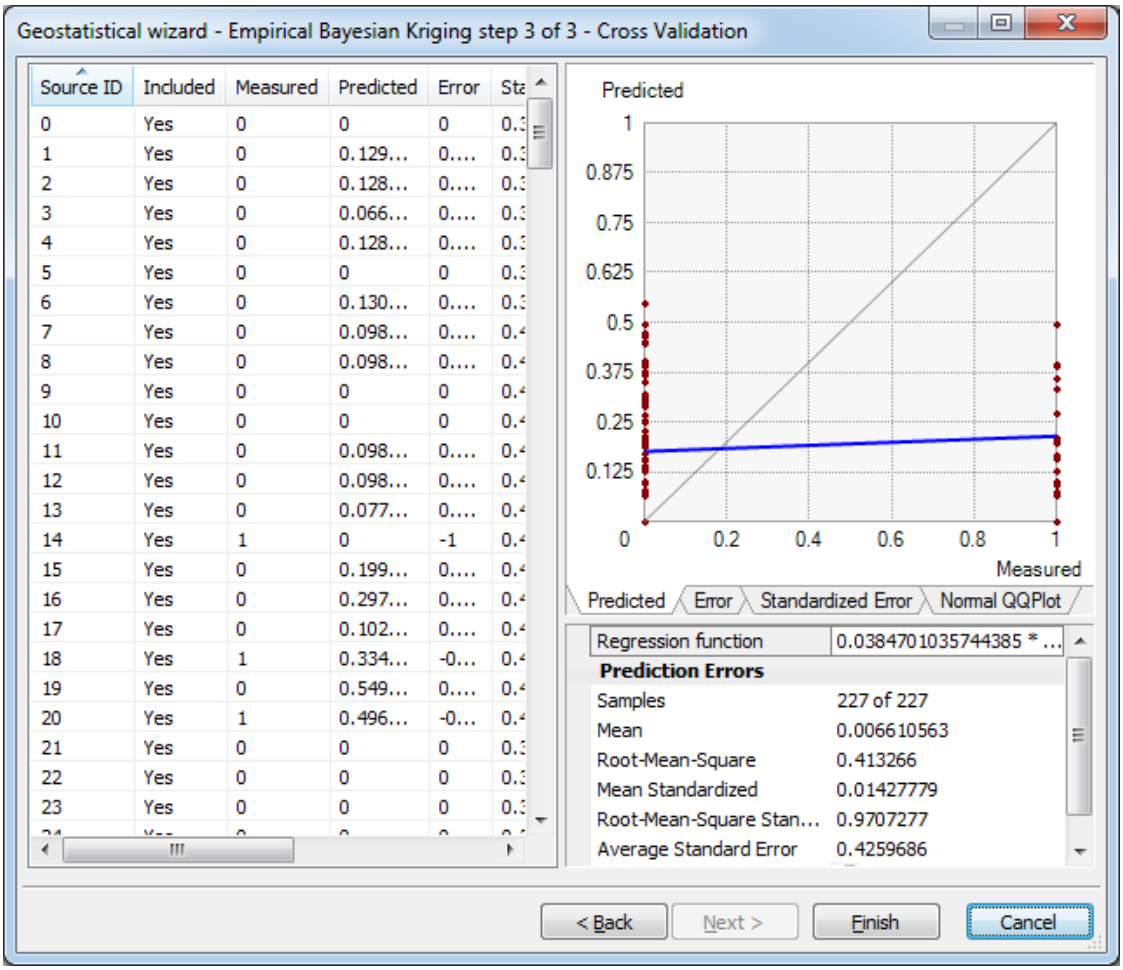


Figure 128: EBK Cross Validation

Click “OK” on the popup, the method report window. The results of the model will be added to the map document.

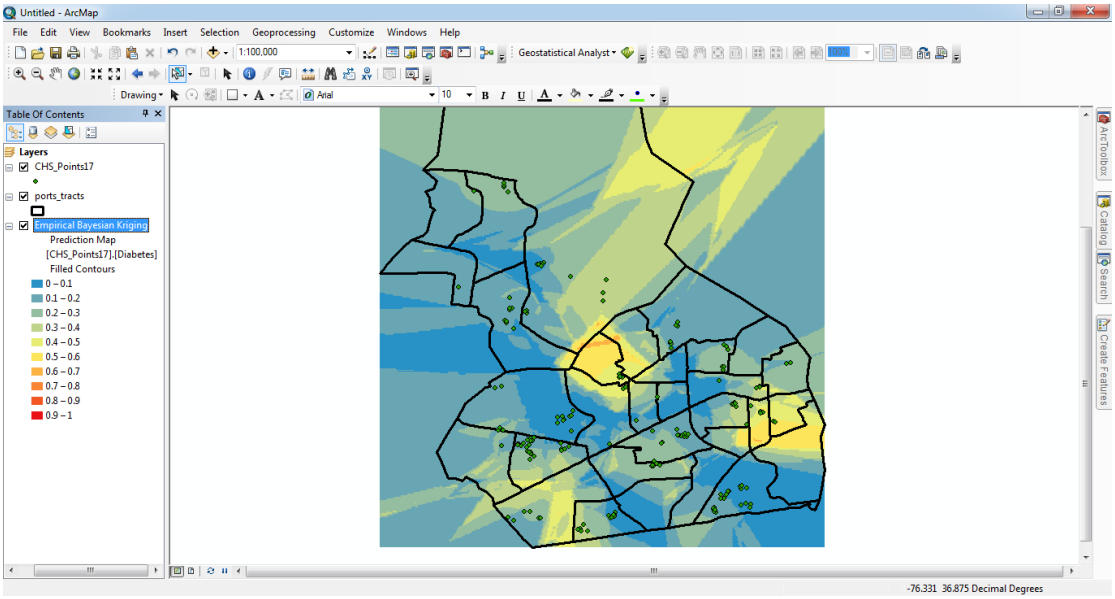


Figure 129: EBK Results

Right click on the "results" layer in the table of contents and select "properties" to open the feature properties window. Under the "Extent" tab, select Extent of "Ports_Tracts" as the set extent to option. Click "OK." This will expand the model to cover the entire study area.

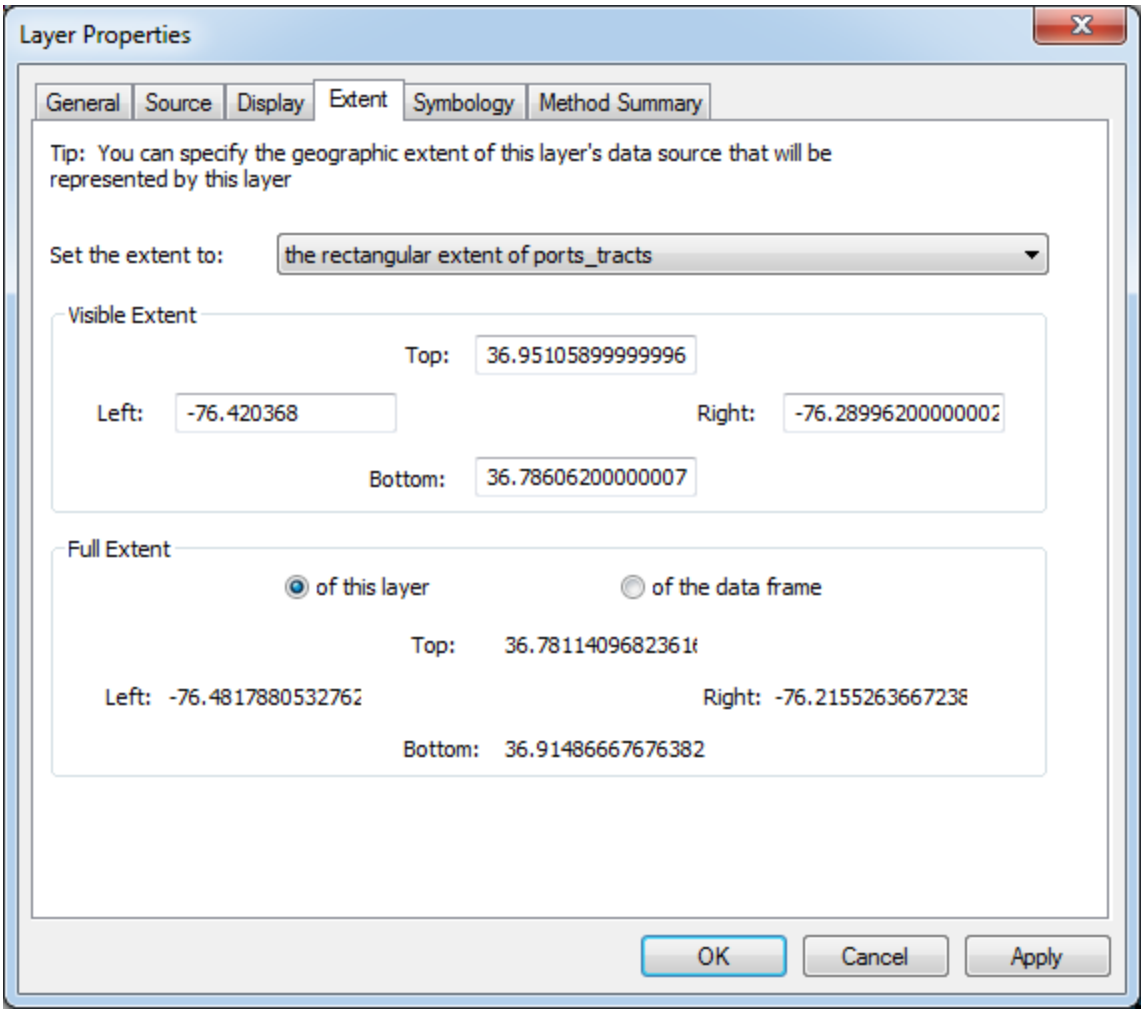


Figure 130: Extent of Layer Properties

Next Zonal Statistics will be performed to create rates for each census block. First right click on the "model results" layer, select "Data" and "Export to Raster." Choose the same location as the CASPER data and name this file "Diabetes_raw." Click "OK" and the raster will be added to the table of contents.

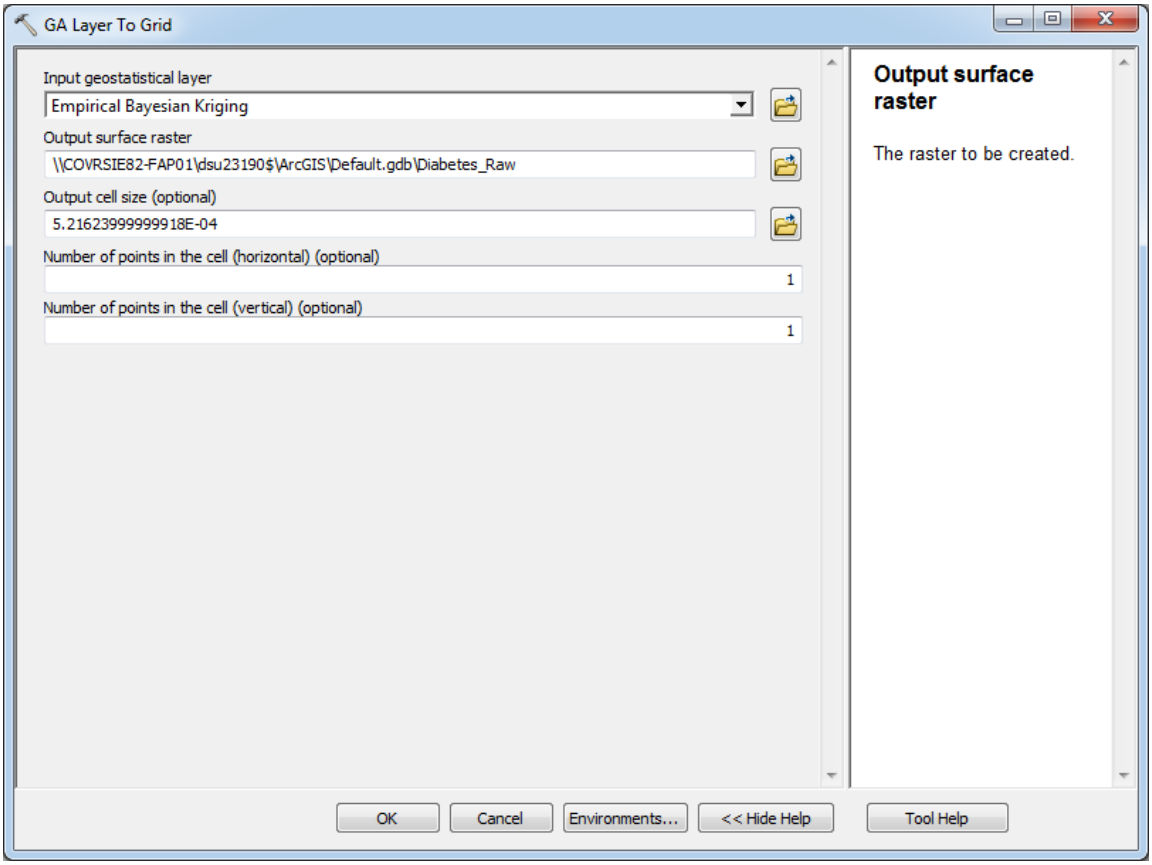


Figure 131: GA Layer to Grid Tool

In the search tool bar, type in Zonal Statistics and click the magnifying glass. Choose Zonal Statistics (Spatial Analysis). This will open the Zonal Statistics tool.

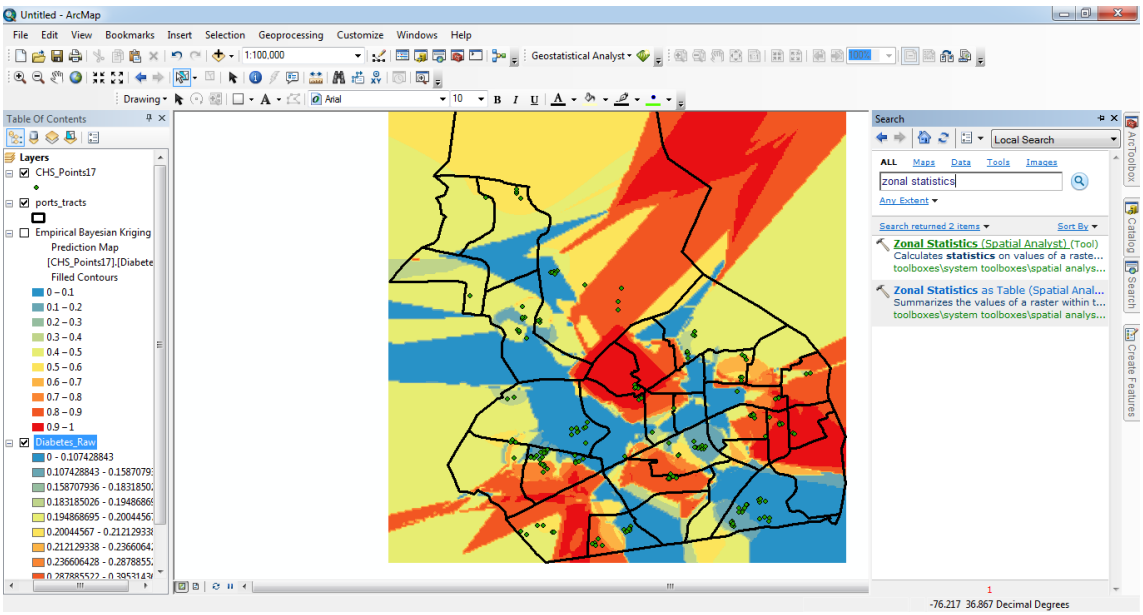


Figure 132: Search for Zonal Statistics Tool

The input field will be “Ports_Tracts.” The zone field will be the field containing the census track identifier. Select “Diabetes_Raw” as the input raster. Choose the CASPER root directory for the file and name it Diabetes. Click “OK” to run the tool.

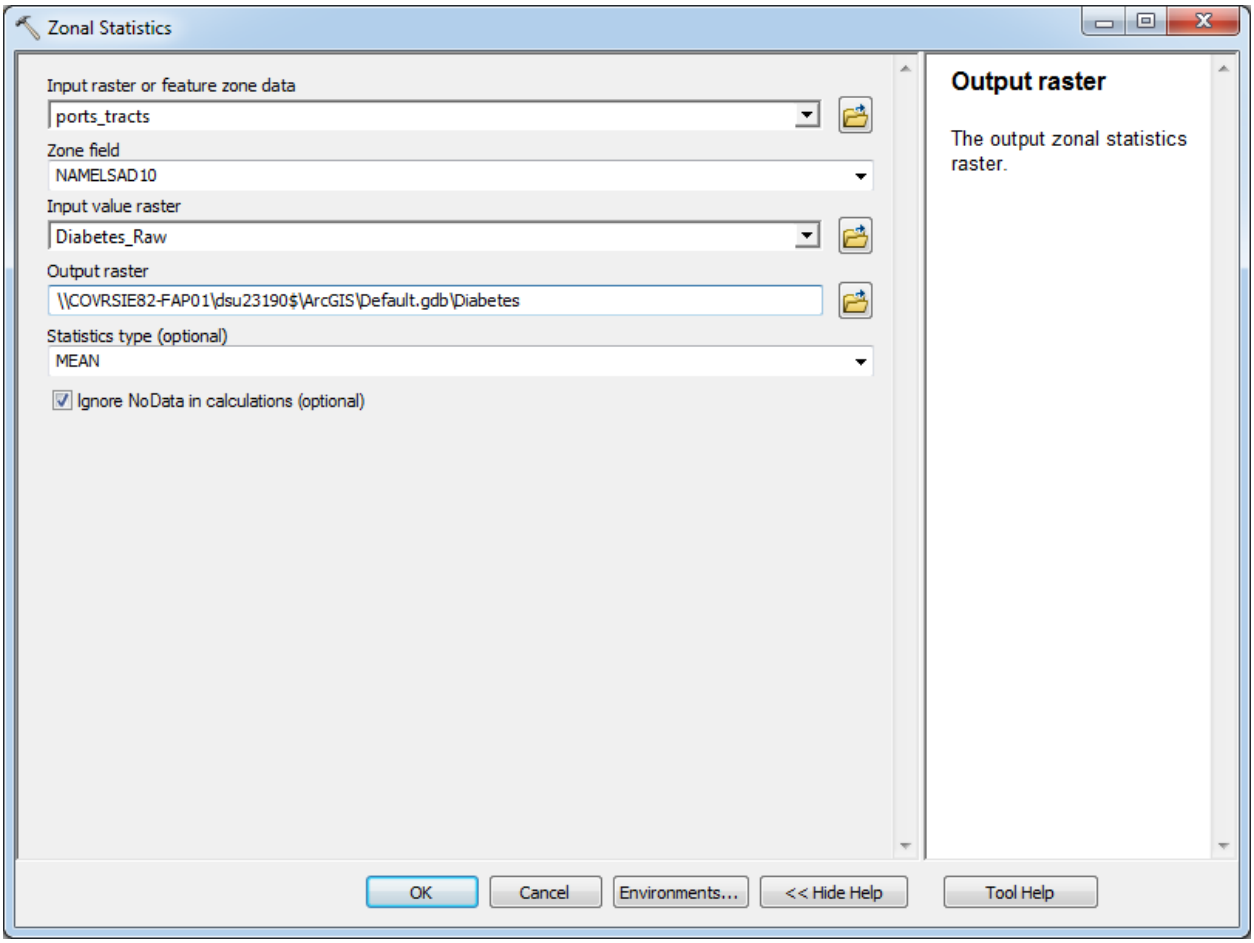


Figure 133: Zonal Statistics Tool

Next the values will be classified into percentages for the creation of maps. Right click on “Diabetes” and select “properties” to open the layer properties window. Choose the “symbology” tab.

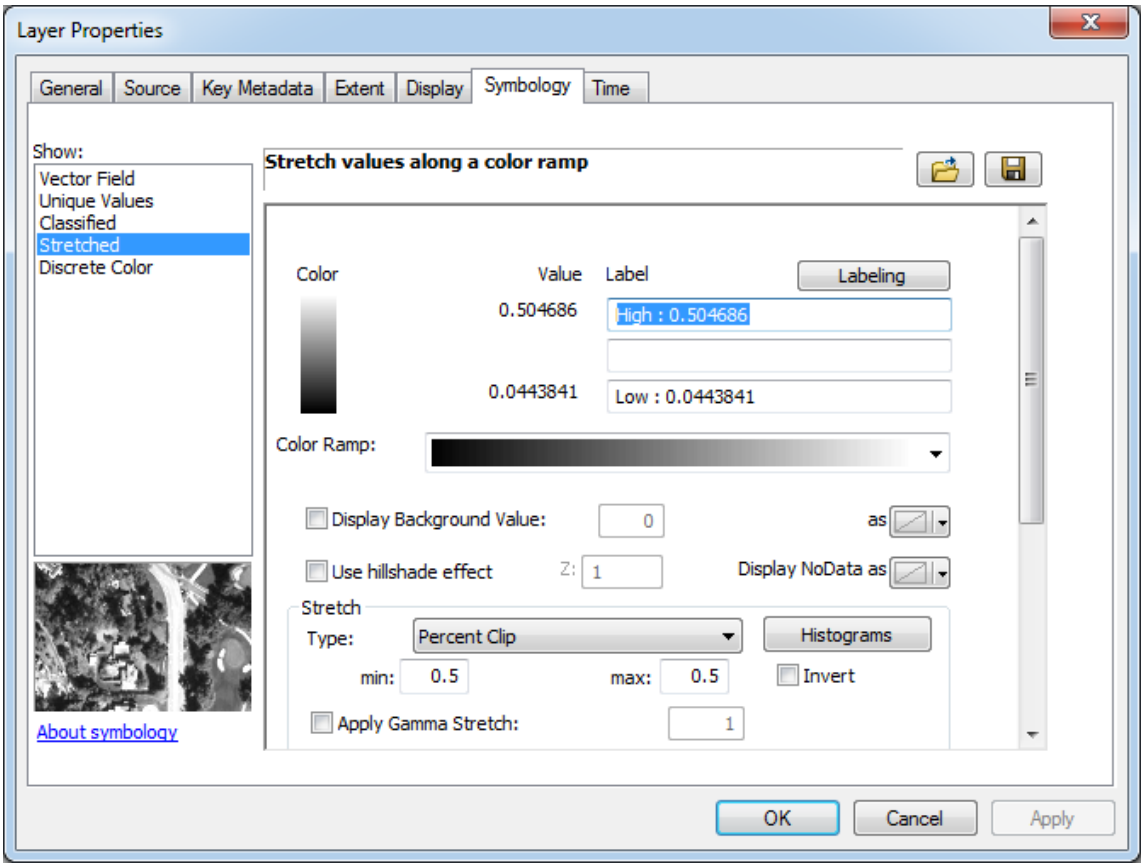


Figure 134: Symbology Layer Properties

Change the mode to “Classified” and select the “Classify” button. Change the method to “Quantified,” the classes to “5” and click “OK.”

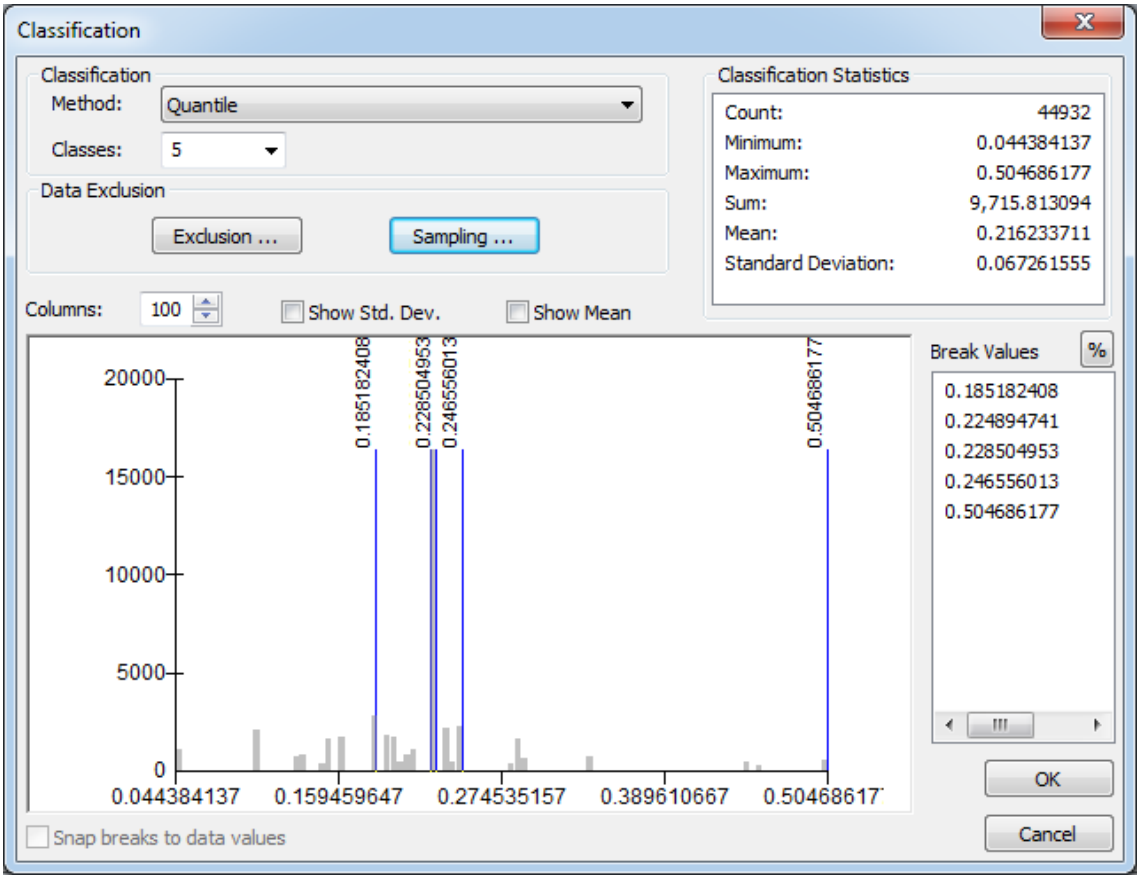


Figure 135: Formatting Labels

Click on "Label" and choose "format labels." Select the number that represents a fraction then numeric options. Reduce the decimal points to "0" and click "OK," then "OK" again.

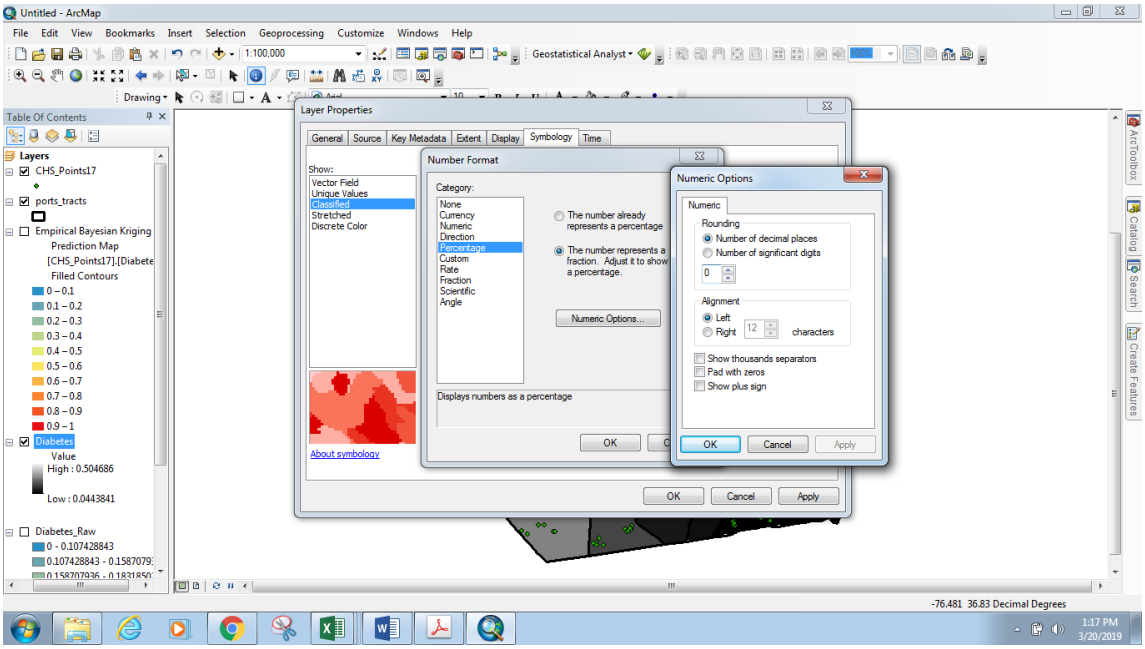


Figure 136: Formatting Number Symbology

Change the color ramp to a pleasing gradient, in this case yellow to blue with yellow being the lower rate and blue being the higher rate. Click “OK.”

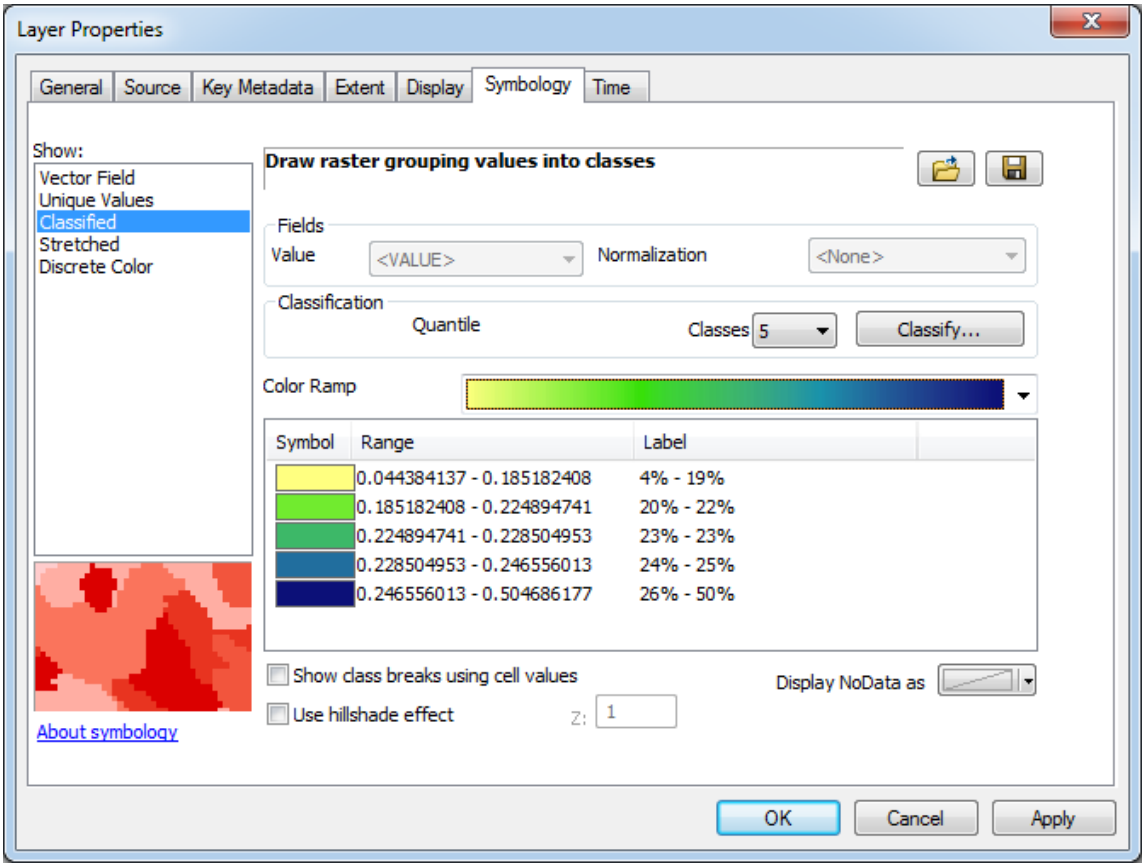


Figure 137: Formatting Color Wheel

The map now shows the percentage of people with diabetes per census tract and can be used to create maps and handouts.

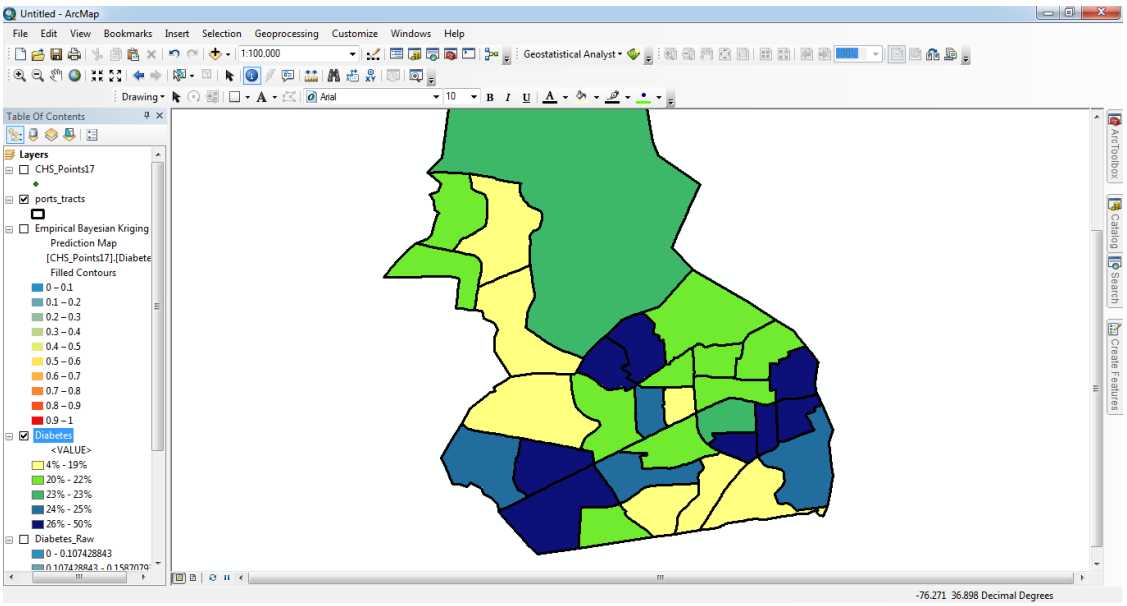


Figure 138: Percentage of people with Diabetes in Portsmouth, VA by census tract

Creating Maps from CASPER Data

Open a blank map document in ArcGIS and add Diabetes, city_outline, and the census tract layer to the map. Under Add Data, select Add Basemap and choose Light Grey Canvas, click "Add."

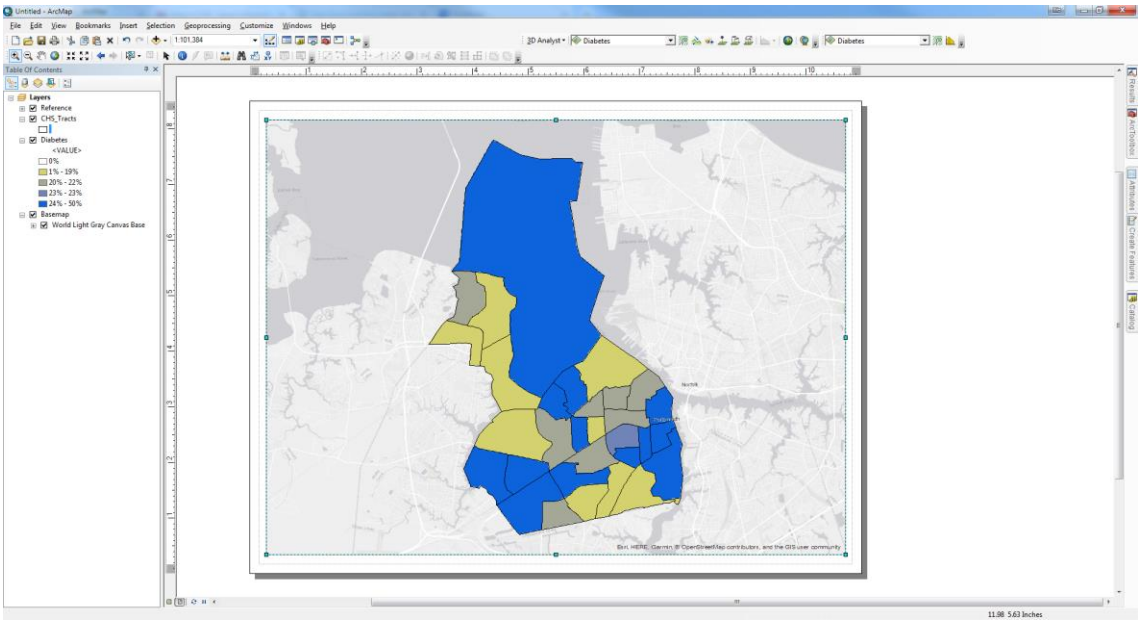


Figure 139: Add Layers to create Map of CASPER data

Drag the lower middle anchor point of the data frame upwards about 1 inch to make space for a title area. Using drawing tool bar, create a rectangle in this area. Using the zoom in magnifying glass, draw a box around most of the study area so the majority of the city is the focus of the data frame.

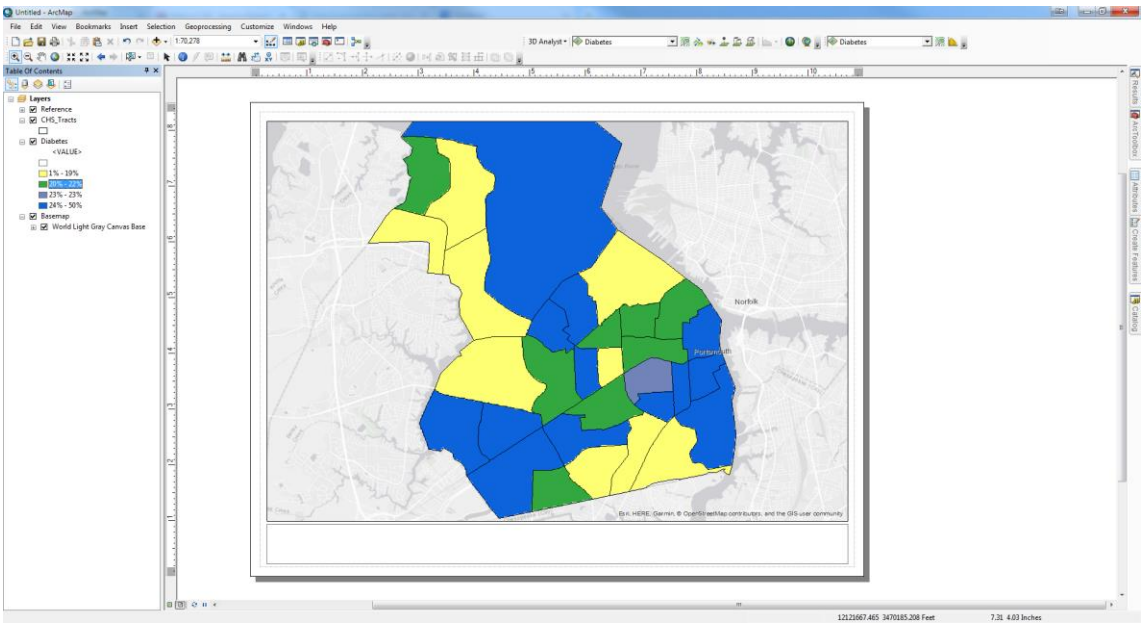


Figure 140: After resizing the data frame

Clip Diabetes and Census tract to the outline of the City of Portsmouth by opening the layer properties menu and choosing clip to shape under Data Frame. Exclude the basemap layers. Click “OK.”

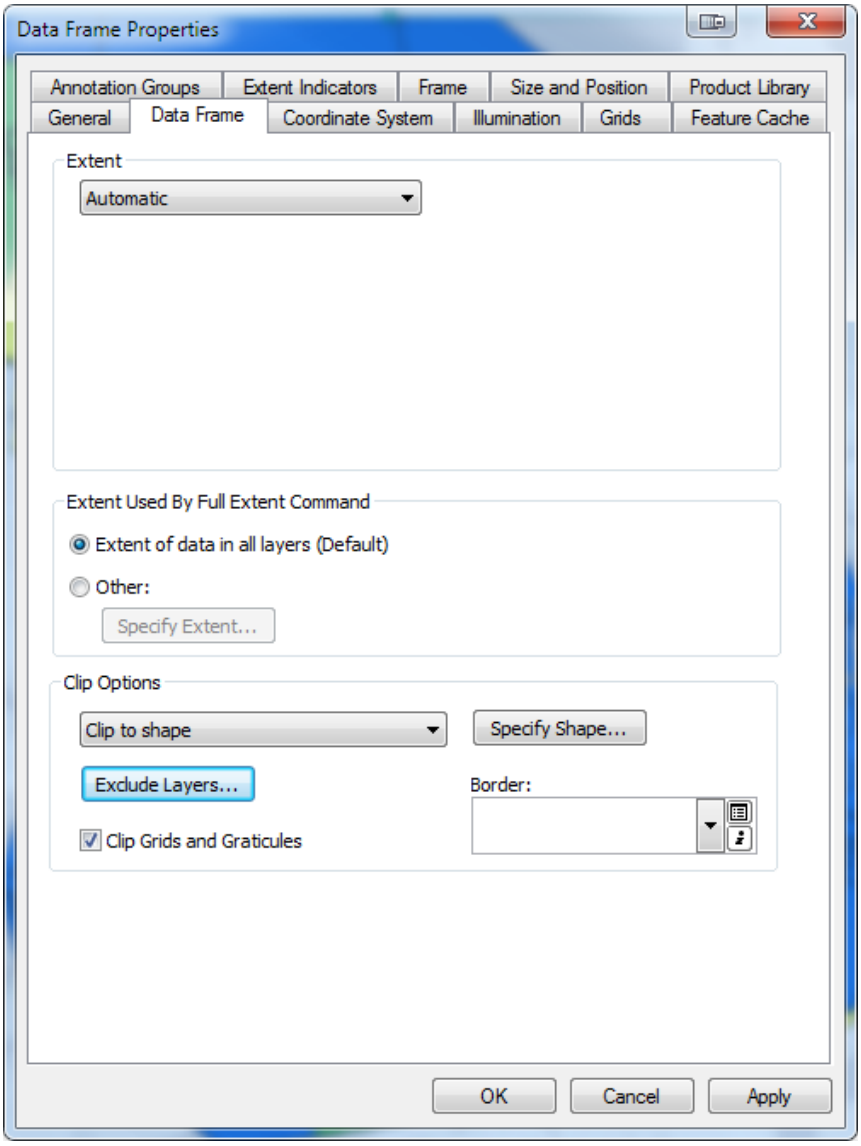


Figure 141: Data Frame Properties: Clip to Shape

Using the layer properties menu, change the symbology of City_outline and census tracts to a thin red hash mark and city boundary respectfully. At this time, the names of the layers can be double clicked in the table of contents and renamed.

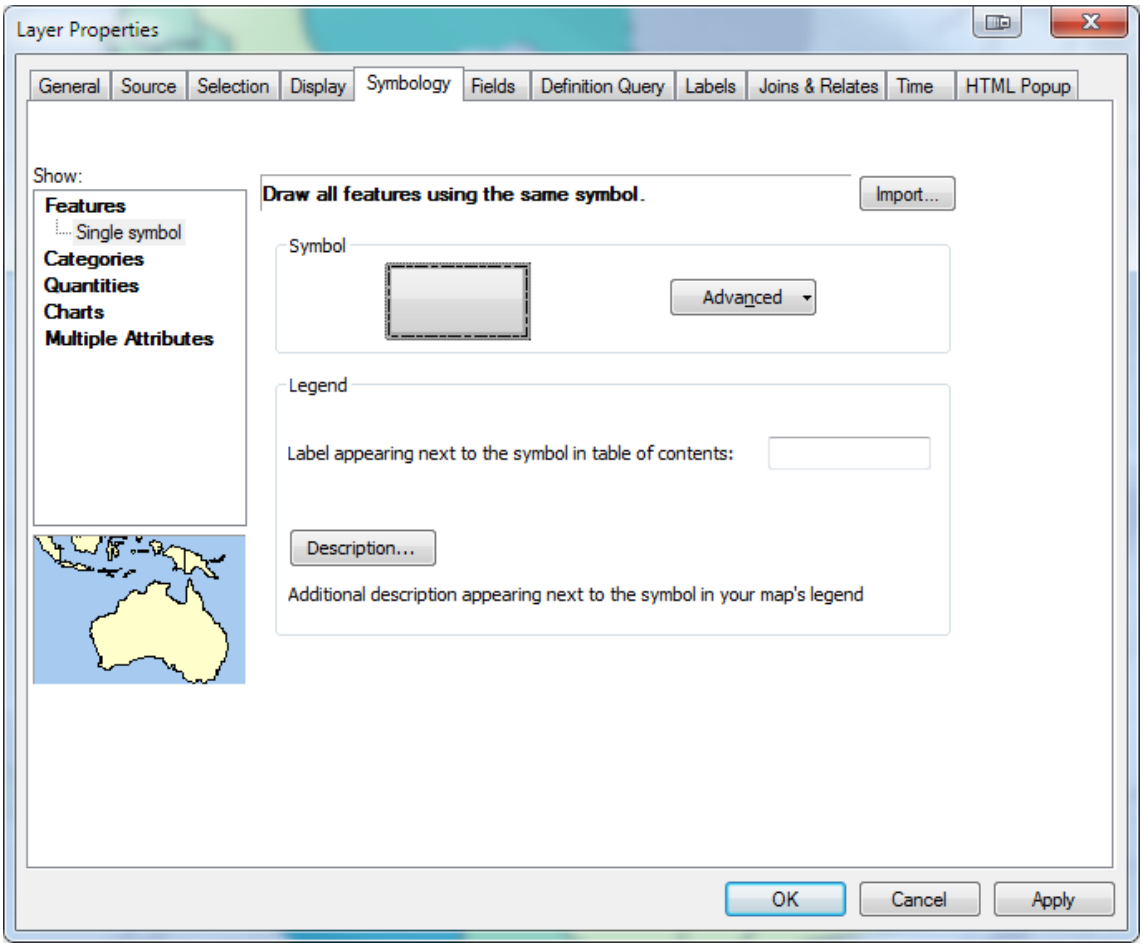


Figure 142: Change Symbology in Layer Properties

Open the Insert menu and choose Legend. Remove light grey canvas base from the legend items and click "Next."

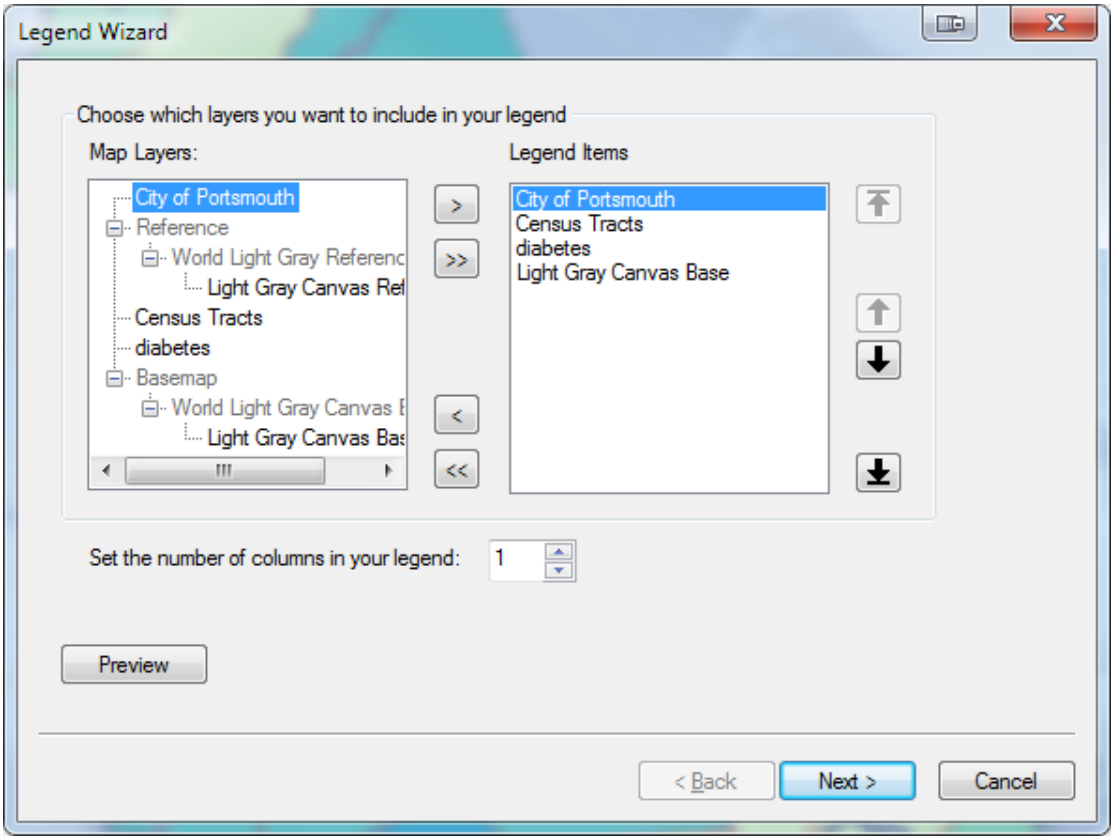


Figure 143: Legend Wizard: Layers

Choose a 1pt border and white background. Click “Next.”

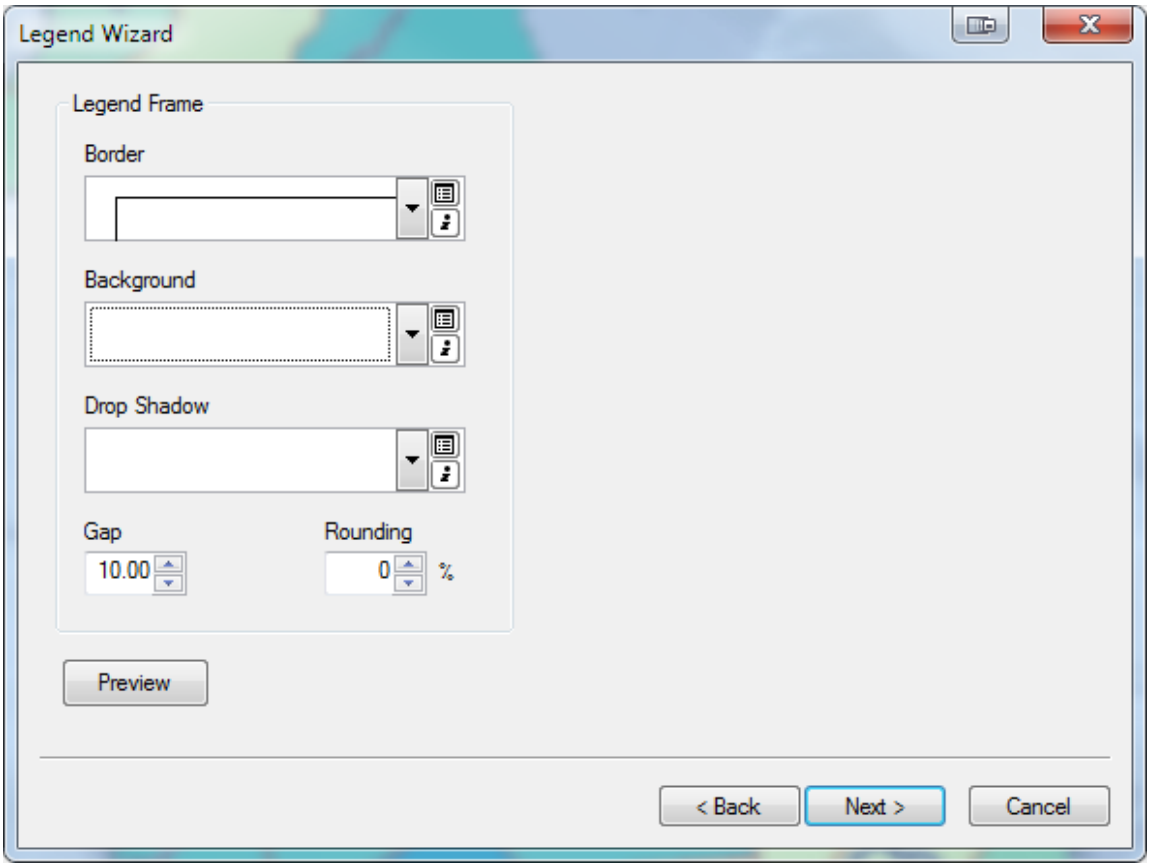


Figure 144: Legend Wizard: Legend Frame

Change any shape representation if you choose to as well as spacing, otherwise click “Next” on the following widows.

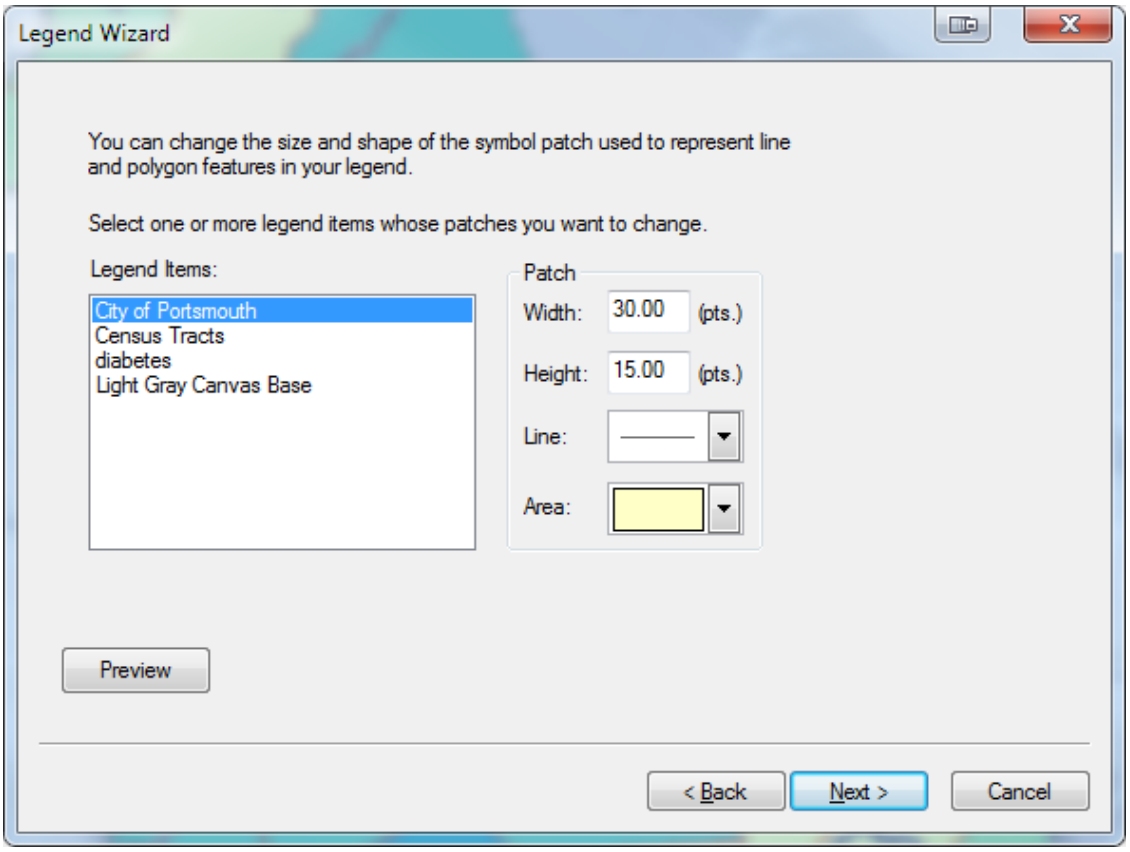


Figure 145: Legend Wizard: Patches

Click “Finish” and then double click the legend to edit legend properties.

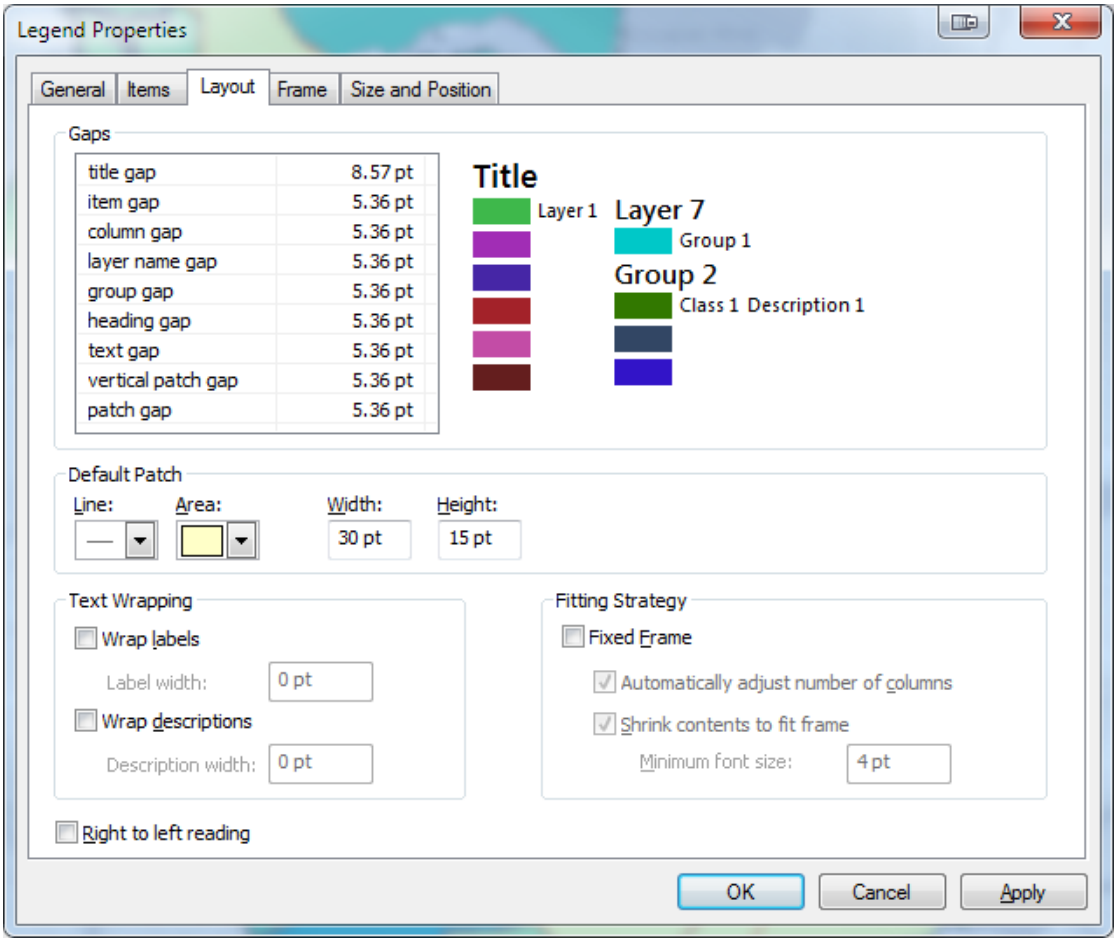


Figure 146: Legend Properties: Layout

Under Items, double click Diabetes and uncheck layer name symbol and heading symbol. Click "OK." Click "OK" again to close the legend properties window.

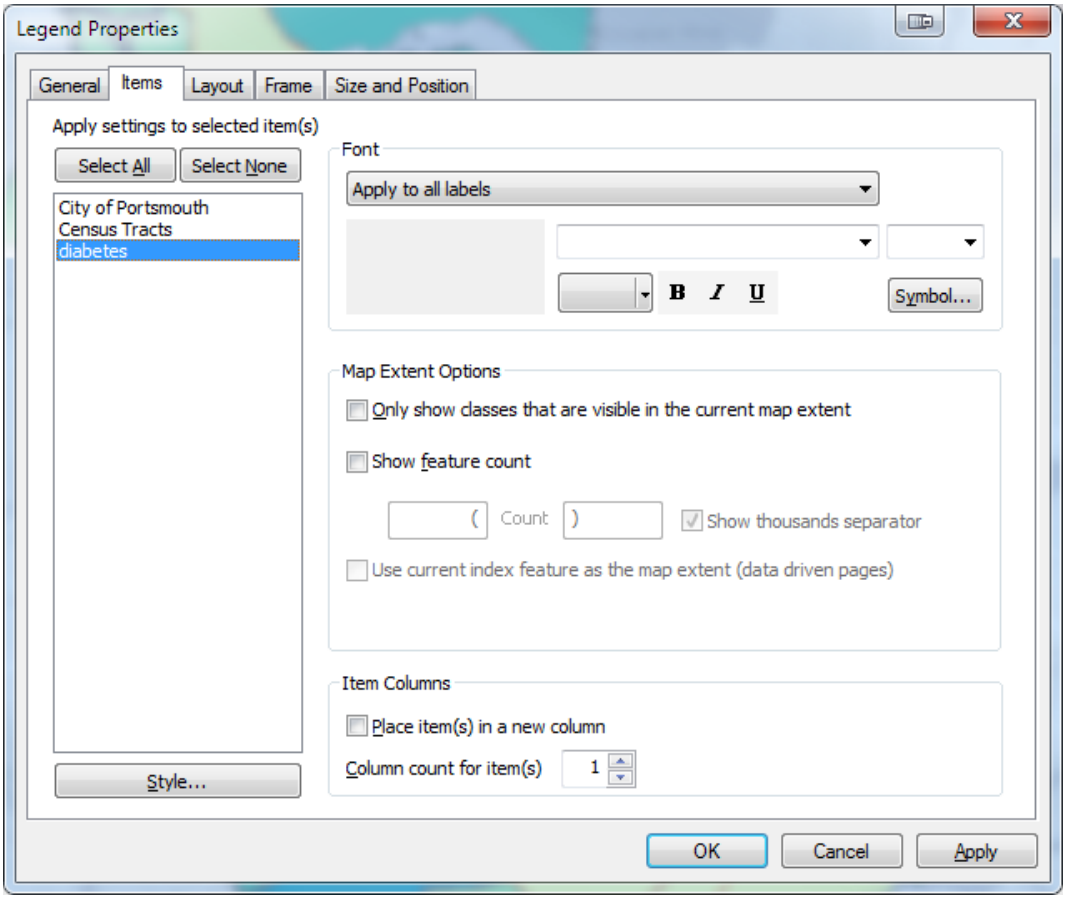


Figure 147: Legend Wizard: Items

Drag the legend to the upper right corner of the map.

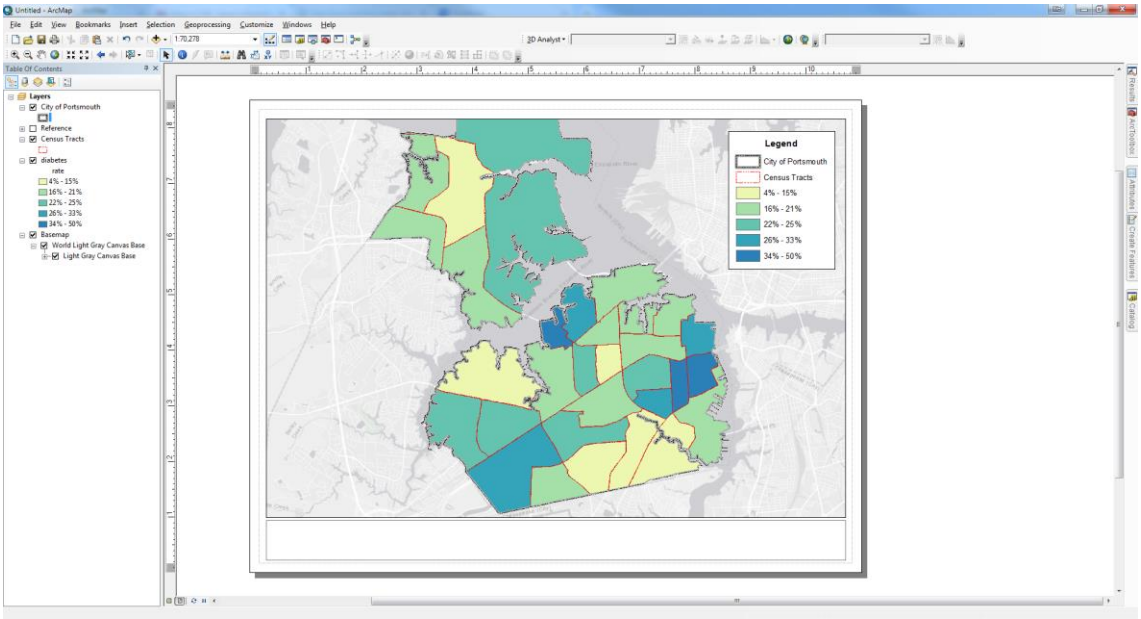


Figure 148: Formatting Legend in the Map

Select the text tool on the drawing toolbar and in the white box at the base of the map, type in the title: “Percentage of Portsmouth Residents Who Have Diabetes.” Click below the title to add a subtitle of “2017 Community Health Survey.” Change the fonts as preferred for stylistic purposes.

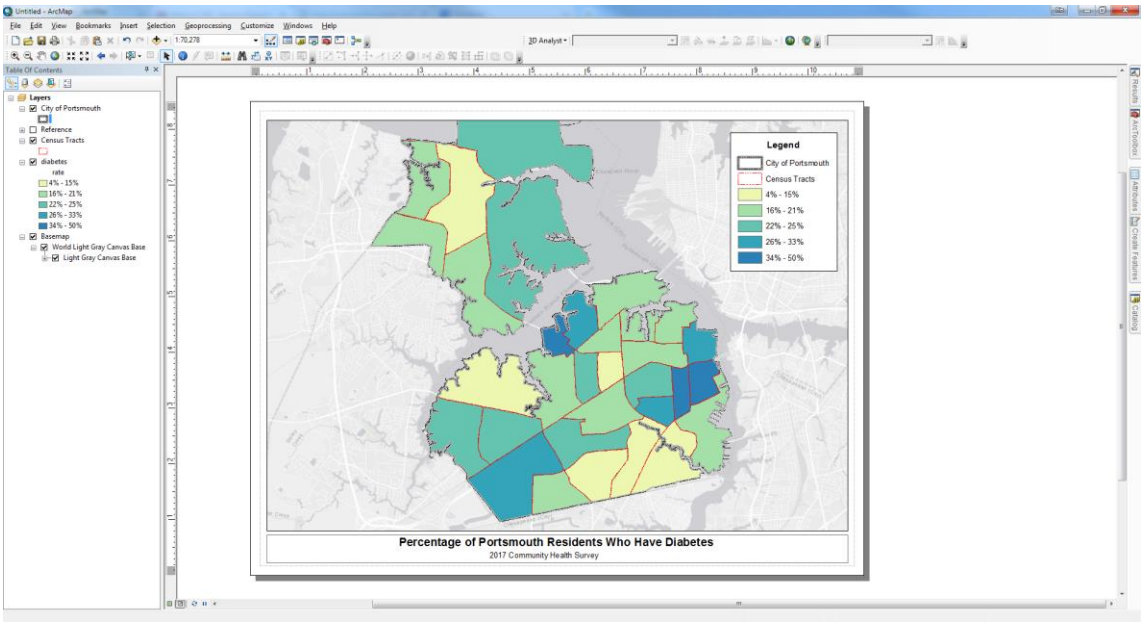


Figure 149: Adding Title to the Map

Under the insert menu, choose north arrow and image to insert a north arrow and department or CASPER logo into the map. Save the map document and exports as a .pdf and/or jpeg.

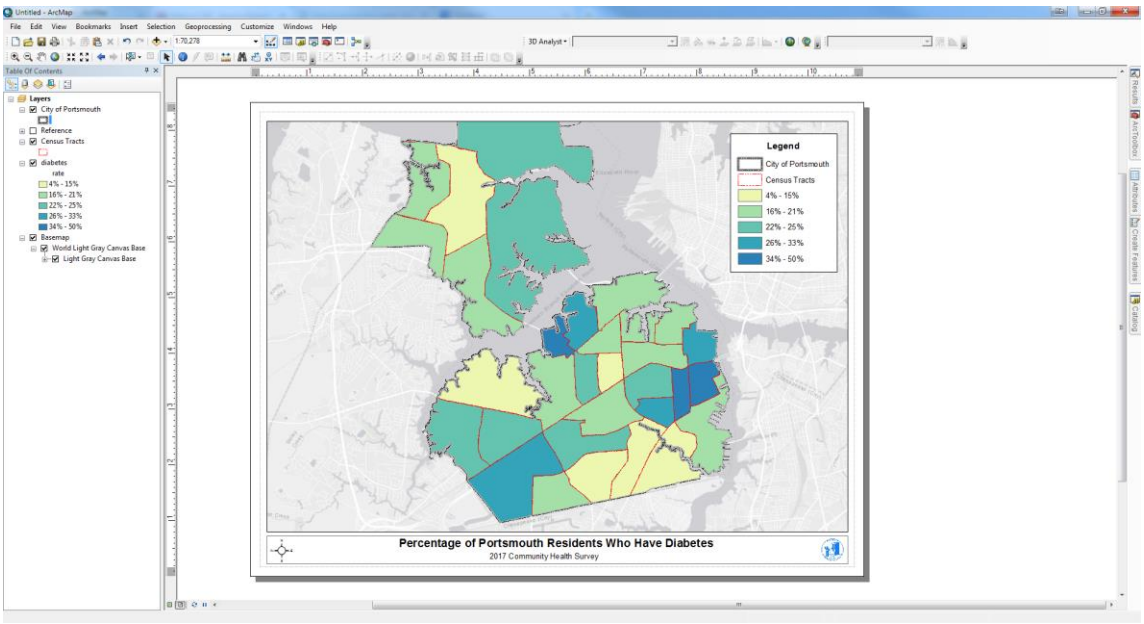


Figure 150: Add North Arrow and Logo to the Map

Repeat the process described above for each map where spatial analysis was completed. After all maps are completed, the process of including all data into the final report can begin.

Chapter 8: Reporting Results

Reporting the survey results to the public and key stakeholders is the final component of a successful CASPER. During the planning phase of the CASPER, the team should determine who is responsible for the final report. Ideally, multiple team members will contribute to different sections in order to lessen the burden and decrease the time it takes to write the report. The final report should include the following elements (CDC, 2012):

- Executive Summary that provides an overview of the CASPER, highlights key findings, and recommendations, which should generally be no more than two pages for easy consumption.

- Introduction and Background included the objectives of the CASPER and who determines a CASPER needs to be conducted.
- Methods section details when the survey took place, the sampling method chosen, number of field teams, the questionnaire, field team training, the electronic survey tool, and how the data were analyzed.
- Results section includes the three response rates: completion rate, cooperation rate, and contact rate, the number of households represented, and the main findings.
- Conclusion section discusses major findings, limitations, and recommendations.
- Acknowledgements to everyone who participated in the CASPER.
- Additional sections may include combining secondary data from the Census Bureau with the primary data of the CASPER to create neighborhood profiles (Figure 155).

The CDC CASPER Toolkit Appendix K has an example of the final report (CDC, 2012). PHD's 2017 CHS CASPER can be found at http://www.vdh.virginia.gov/content/uploads/sites/125/2018/11/CHS-2017-Report-FINAL.pdf.

Time management is a key aspect of reporting information. In order for the information and public interest to remain fresh and relevant, PHD recommends writing some sections of the report prior to the survey to decrease the amount of work needed after the survey. The introduction, methods, and the tables for the result sections were written during the planning staff and greatly decreased the effort needed post-survey. Requiring CASPER staff to write a report in the days following the long survey days can

be challenging. The task of performing data analysis and preparation for the field teams should not be assigned to the same persons responsible for writing the final report. While these staff members may contribute to sections, assigning other staff members, who did not have a significant role during the survey, will ensure timely report completion.

Presenting the data

Sharing the CAPER data in a timely and meaningful manner greatly benefits the community. PHD recommends sharing the data as widely as possible in the community via in person meetings or presentations. Local health coalitions, universities, civic groups, and town halls are good avenues to share the CASPER findings. Including time for dialogue is beneficial to implementing recommendations and determining next steps.

Feedback obtained from community partners revealed that few people scrolled through the entire one hundred-page report. Due to the limited audience of the report, PHD decided to build an interactive data tool to make the data more accessible and easily consumable. Using ERSI's story maps, PHD developed a web based map and data portal where stakeholders and the general public can access the health data they need at the smallest geographic unit possible. The Story Map translates traditional data tables (Figure 153) into pictures (Figure 154), highlighting areas of need as well as revealing trends (Figure 151). These pictures turn data into action allowing community partners to focus on public health interventions.

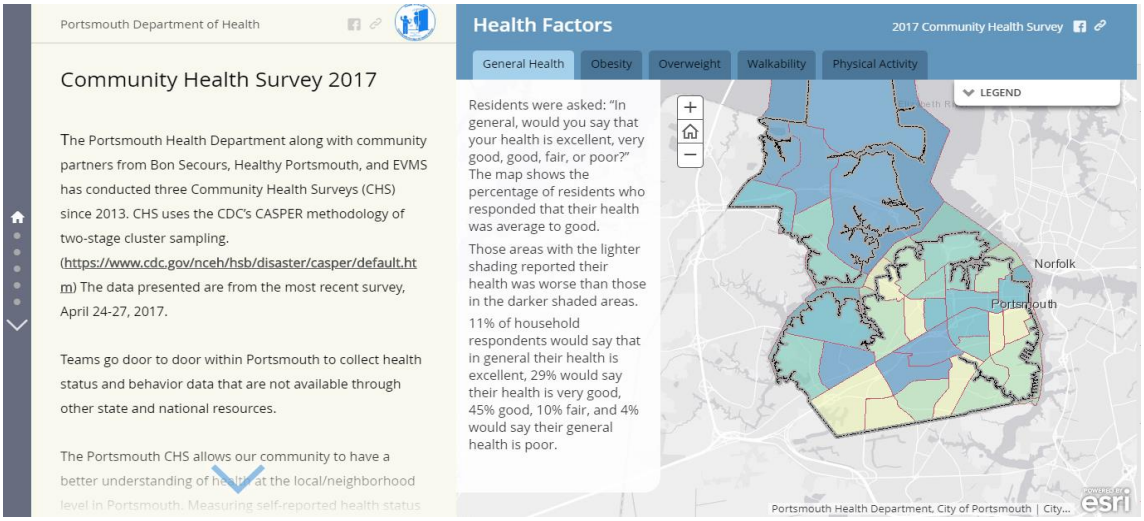


Figure 151: Screen Shot from the Community Health Survey Story Map highlighting areas where residents reported their general health was worse

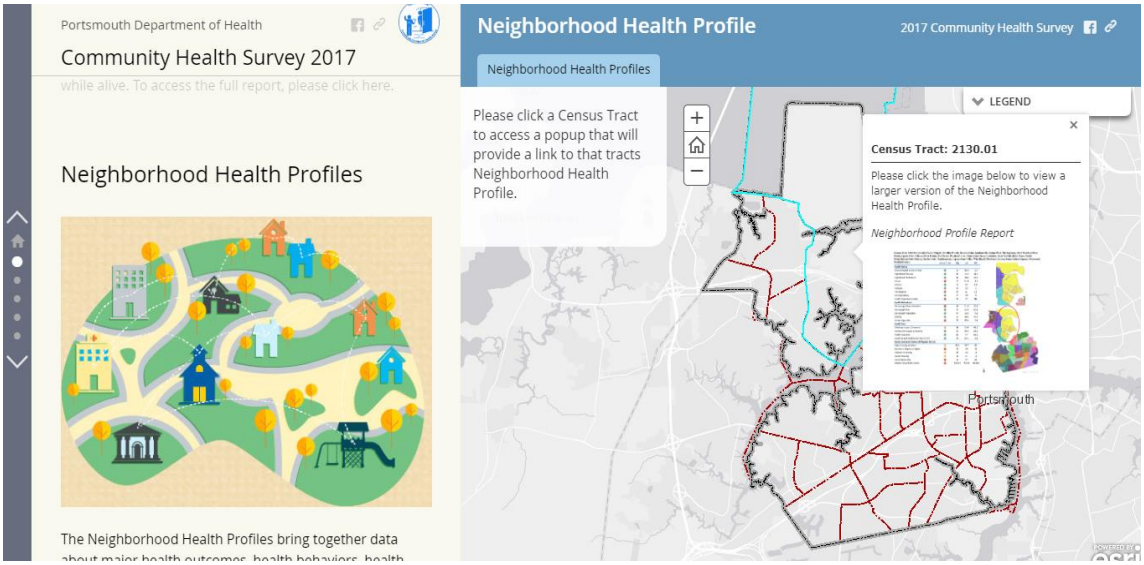


Figure 152: Screen Shot from the Community Health Survey Story Map: Neighborhood Health Profiles

Table 7. Nutrition					
Characteristic	Frequency (n=198)	% of households	Projected number of Households	Weighted %	Weighted 95% CI
How often did you purchase food from a convenience store					
None	112	50	19927	49	40-58
1-4 (some days)	68	30	12677	31	23-39
5-9 (every other day)	21	9	3498	9	4-14
10-13 (most days)	5	2	921	2	0-4
Everyday	19	8	3639	9	4-14
Eat at a fast food restaurant					
None	74	33	13889	34	27-41
1-4 (some days)	117	52	20799	51	43-59
5-9 (every other day)	18	8	1564	8	4-12
10-13 (most days)	8	4	1392	3	1-6
Everyday	9	4	1564	4	1-7

Figure 153: Sample Table from the 2017 Community Health Survey Report

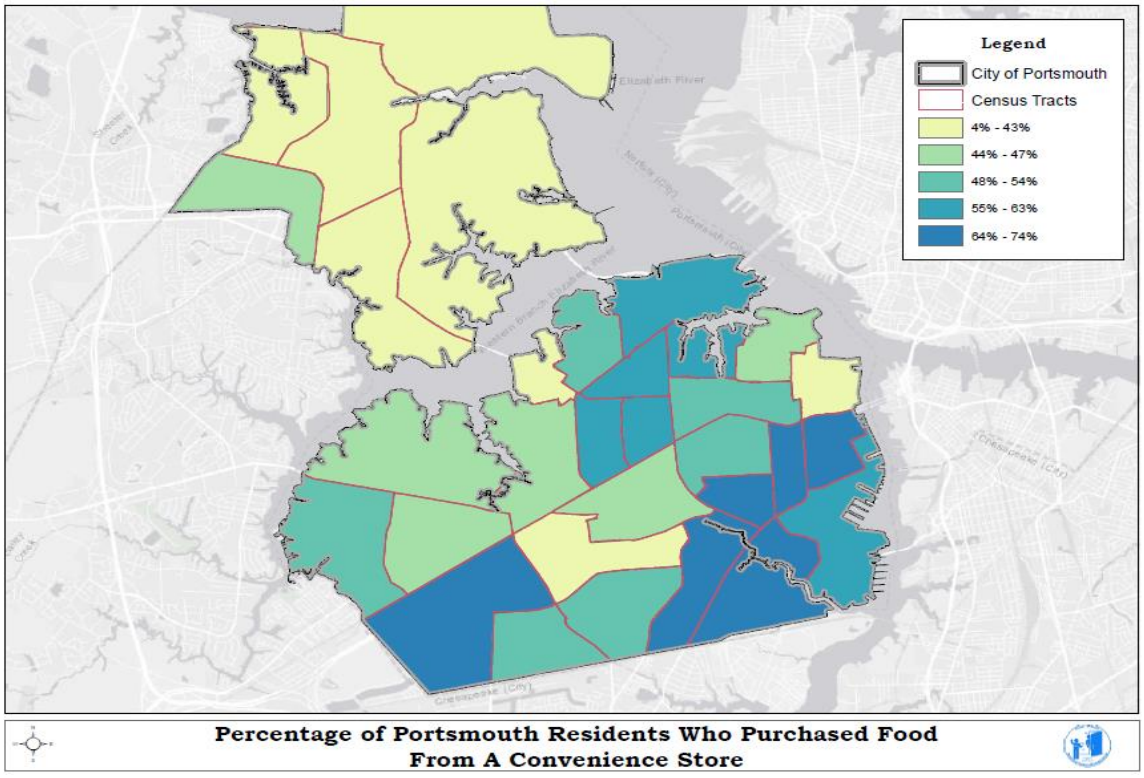


Figure 154: Map Created by ESRI Analyst for the Community Health Survey Story Map

Census Tract 2102: Includes Port Norfolk

	Census Tract	City	VA	US
Health Status				
General health as Fair or Poor		14	16.3	16.7
High Blood Pressure		47	32.5	31.4
High Blood Cholesterol		42	38.6	38.4
Cancer		9	11.8	12.9
Asthma		17	8.6	8.9
Diabetes		21	9.7	10
Pre-diabetes		24	12	13
Life Expectancy		73	79	79
Health Opportunity Index		22	67	NA
Health Behaviours				
Get enough Physical Activity		36	51.9	50.8
Eat enough Fruit		34	62.6	60.8
Eat enough Vegatables		44	78.6	77.1
Obesity		57	28.5	29.6
Smoke Cigarettes		21	19.5	18.1
Health Care				
Check-up in past 12 months		88	73.4	69.6
Dentist visit in past 12 months		61	69.3	65.3
Health Insurance		89	87	87.6
Could not get medical care due to cost		20	13.1	13.1
Social, Economic Factors, & Physical Factors				
High school graduation		89.6	89.7	88
Bachelor's Degree or higher		23	39	32
Children in Poverty		35	14	18
Vacant housing		11	11	13
Home Ownership		54	67	64
Median Household Income		50,242	71,535	60,336

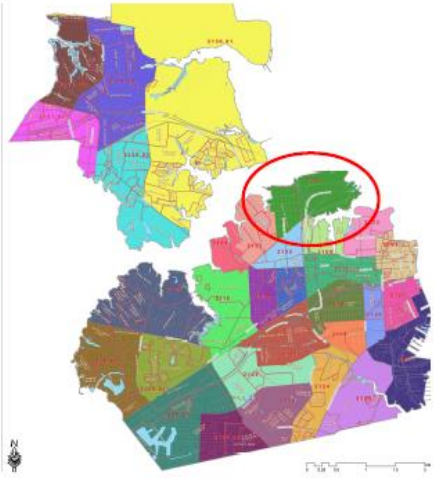


Figure 155: Sample Neighborhood Profile using data from the Community Health Survey and Census Bureau

Chapter V: Conclusions, Implications, and Recommendations

Introduction

This chapter provides a summary of the findings from the research conducted to create a Field Manual using the CASPER methodology. The implications of this approach to a Community Health Assessment and the limitations of the Field Manual are also examined. The chapter concludes with recommendations for next steps in using the Field Manual in future CASPERs.

Summary of Study

In communities where local data is not available at the city or county level, the local public health department collects its own data during a Community Heath Assessment. However, the collection of primary data representative of an entire community is expensive and time consuming. To empower local health departments in this data collection process, the CDC developed the CASPER methodology for collecting essential population health data in a low cost and timely manner. The conjoining CASPER Toolkit is a valuable resource for understanding the CASPER methodology, but it lacks critical step-by-step guidance for implementation. The purpose of this study was to create a Field Manual for conducting a Community Health Assessment using the CASPER methodology that would allow for easy adoption by any local public health department. A critical review of the literature, including peer reviewed studies and after action reports from previous assessments, and surveys of planning and field staff informed the content for the Field Manual. The Field Manual provides a detailed guide on how to properly implement the CASPER methodology for conducting a Community Health Assessment and increases awareness of the benefits of using the CASPER methodology by highlighting its focus on cost savings, ease of use, and low risk of failure. By making the CASPER methodology more accessible to local public health departments, the Field Manual represents an essential tool for successfully conducting Community Health Assessments.

Limitations

There are several limitations to the final Field Manual. The Field Manual has not been tested during an actual CASPER to test for completeness and potential errors. Also,

only reviewers from three states were selected to review the Field Manual. This could result in bias as many of the best practices identified came from two of those states. Finally, the guidance in the manual may not be appropriate for all counties or cities. The investigator only has experience in conducting a CASPER in a small, urban city where ninety-eight percent of the population speaks English. While notes were made about modifications in rural or larger cities, the emphasis of the manual was to provide step-by-step instruction for the Portsmouth Health Department or a similar geographic city.

Implications

The Field Manual gives the Portsmouth Health Department staff the ability to replicate the CASPER methodology even if the current subject matter experts leave the department. The ability to capture best practices from both local and other national CASPERs is vital to the success of the future CASPERs. Also, the Field Manual affords the department the opportunity to share experiences and knowledge with other local health departments.

Recommendations

In the future, the Field Manual should be tested during the planning and implementation phases of a CASPER. Staff can document omissions, errors, or needed additions during execution. Additionally, as more CASPERs are done, future peer-reviewed literature and after action reports should be reviewed for new promising practices. Lastly, reviewers recommended improving the visual appeal of the Field Manual. In the future, adding more graphics and pictures from future CASPERs and collaborating with a graphics and design specialist may improve the look of the manual.

Conclusion

When PHD started the process of collecting data for its Community Health Assessment, the health department found how limited the available data were for how many people were living with chronic diseases at the city level. Data for deaths and hospitalizations were readily available, but BRFSS data for the city were either several years old or completely missing for the city. Wanting to be an advocate for data driven decisions, it was frustrating to not be able to share with community partners how many people smoked in the city, what percentage of people exercised, or if they consumed healthy fruits and vegetables. Without this prevalence data, trying to enumerate the burden of diabetes or obesity in the city was difficult. By using the CASPER methodology, PHD was able to provide baseline data for Portsmouth's CHIP which focuses on physical activity, healthy eating, tobacco use, and mental health literacy. The department will also be able to provide mid-cycle and final data on outcomes identified in the CHIP which is required for PHAB annual reports and reaccreditation (Kronstadt, Chime, Bhattacharya, & Pettenati, 2018). The Field Manual will ensure that this vital data can be captured in the future.

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Appendix A: PHD CASPER Questionnaires from 2013, 2014, and 2017

Figure A1: 2013 CASPER Questionnaire (front)

Q1. Interview Date (MM/DD/YY):	**Q3.** Cluster Number:	**Q5.**Team Number:
Q2. County Name:	**Q4.** Survey Number:	**Q6:** Interview Initials:
Q7. Type of structure □ Single family □ Multiple unit □ Mobile home □ Other _____		
Q8. How many people live in your household? _____	**Q8b.** How many are in each age category? < 2 yrs old __ 2-17 yrs old __ 18-40 yrs old __ 41-64 yrs old __ ≥65 yrs old __ □ DK □ Ref	
Q9. What is the highest level of education completed by anyone in your household?	□Did not complete high school or equivalent □High school graduate or equivalent □Some college (associates degree, tech/trade school, or no degree) □Bachelor's degree (BA, BS, AB) □Graduate or Advanced degree (MD, MS, PhD, JD, etc) □ DK □ Ref	
Q10. Is English the primary language spoken in the household? □ Yes □ No □ DK □ Ref	**IF NO →Q10b.** What is the primary language?_____	
Q11. Do you own or rent your home? □ Own □ Rent □ DK □ Ref		
Disaster Preparedness Questions: Now I am going to ask you some questions about disaster or emergency situations.		
Q12. If you had to leave your home because of an emergency or disaster (such as a flood, fire, hurricane, evacuation): Do you have a plan for where everyone in your household would go? □ Yes □ No □ DK □ Ref		
Q13. Does your household have any pets? □ Yes □ No □ DK □ Ref	**IF YES→ Q13b.** Do you have a plan for where your pets would go during an emergency or disaster? □ Yes □ No □ DK □ Ref	
Q14. If you had to stay in your home during an emergency or disaster and had no utilities (electric, gas, water) does your household have:	**Q14a.** A 3-day supply of bottled or other fresh water (1 gal /person/per day) □ Yes □ No □ DK □ Ref	
	Q14b. A 3-day supply of canned or prepackaged food (per person) □ Yes □ No □ DK □ Ref	
	Q14c. A 3-day supply of food and water for your pet(s) □ Yes □ No □ DK □ Ref □N/A	
	Q14d. At least a 7-day supply of prescription medications □ Yes □ No □ DK □ Ref □N/A	
Q15. What is your household's main transportation?: (Pick one) □Personal Vehicle □Public Transportation □Family/friend □Walking □Biking □Other_____ □ DK □ Ref		
Q16. In an emergency or disaster would your household have access to a vehicle for transportation? □ Yes □ No □ DK □ Ref		
Q17. During a non-emergency situation, how does your household receive information? (check all that apply) □TV □Newspaper □Radio □Phone (land-line) □Texting/cell phone □Internet (news websites, etc) □Social media (Twitter, Facebook, etc) □Word of mouth/talking to people □Other_____		
Q18. During an emergency, which of these is your primary source of information? (choose one) □TV □Newspaper □Radio □Phone (land-line) □Texting/cell phone □Internet (news websites, etc) □Social media (Twitter, Facebook, etc) □Word of mouth/talking to people □Other_____		
Q19. Does your household have the following?	**Q19a.** A working smoke detector □ Yes □ No □ DK □ Ref **Q19b.** A working carbon monoxide detector □ Yes □ No □ DK □ Ref **Q19c.** A working fire extinguisher □ Yes □ No □ DK □ Ref **Q19d.** A back up heat source (wood stove, fireplace, kerosene heater, etc) □ Yes □ No □ DK □ Ref **Q19e.** A working generator □ Yes □ No □ DK □ Ref **Q19f.** A working flashlight □ Yes □ No □ DK □ Ref **Q19g.** A first aid kit □ Yes □ No □ DK □ Ref **Q19h.** Are you aware of carbon monoxide health risks or hazards? □ Yes □ No □ DK □ Ref	
Q20. Does anyone in your household have special medical needs or health conditions requiring help in performing activities, such as bathing, dressing, feeding, or toileting? □ Yes □ No □ DK □ Ref		**IF YES→Q20b.** Would you or they be interested in registering in the Hampton Roads Medical Needs Registry? □ Yes □ No □ Already Registered □ DK □ Ref Note: Printed form available for mailing.
Health Status: Now I am going to ask some questions about your health and the health of others living in the home.		
Q21. Have all individuals under the age of 18 had a well-child or physical exam in the past 12 months? □ Yes □ No □ DK □ Ref □ N/A	**IF NO→Q21b.** If not, was it because of (check all that apply) □ No insurance □No transportation □Unable to take time off from school/work □No time before or after school/work □ Other_____	
Q22. How many adults in your household had a physical health exam in the past 12 months ?	**IF NO→Q22b.** Was it because of (check all that apply) □ No insurance □No transportation □Unable to take time off from school/work □No time before or after school/work (refer to Q9 on p1)	
Q23. How many people in your household had their teeth cleaned by a dentist or dental hygienist in the past 12 months? _____		
Q 24. Has anyone in your household ever needed medical care but was not been able to get it? □ Yes □ No □ DK □ Ref □ N/A	**IF YES→Q24b.** Was it for any of these reasons (Check all that apply)?: □No insurance □No transportation □Insurance would not pay for services □No doctor □The services needed were not available in this area □Other_____	

Figure A2: 2013 CASPER Questionnaire (Back Side)

Q25. Has anyone in your household ever been told by a doctor, nurse or other health professional that she or he had any of the following?:	**25a.**Heart Disease or high blood pressure □ Yes □ No □ DK □ Ref	
	25b. Lung or breathing problems (asthma, COPD, Emphysema) □ Yes □ No □ DK □ Ref	
	25c. Diabetes □ Yes □ No □ DK □ Ref	
	25d. Kidney Disease □ Yes □ No □ DK □ Ref	
	25e. Cancer □ Yes □ No □ DK □ Ref	
	25f. Overweight or Obese □ Yes □ No □ DK □ Ref	
Q26. Is there anyone in your household who currently	**26a.**Uses an oxygen tank □ Yes □ No □ DK □ Ref	
	26b. Receives dialysis(procedure to clean the blood if the kidneys are not working) □Yes □No □DK □Ref	
	26c. Receives insulin or any oral diabetes medications (shot or pill for high blood sugar) □ Yes □ No □ DK □ Ref	
	26d. Uses an inhaler or other medicine for asthma □ Yes □ No □ DK □ Ref	
	26e. Receives in-home medical care □ Yes □ No □ DK □ Ref	
	26f. Uses a walking aid/wheelchair □ Yes □ No □ DK □ Ref	
	26g. Is confined to a bed □ Yes □ No □ DK □ Ref	
Q27. Who in your household received the influenza (flu) shot (or spray) in the last 12 months? (Check all that apply) (refer to Q9 on p1)	□Everyone □All Children □Some children □All adults □Some adults □Only those 65 years or older □None	**IF YES→Q27b.** Where did people in your household receive the flu shot in the last 12 months? (check all that apply) □ School □ Pharmacy/Drug Store (CVS or Walgreen's) □Doctor's Office □Health Department □ Grocery Store/Target /Walmart □ Other_____
Q28. Does everyone in household < 18 have a.General healthcare □ Yes □ No □ DK □ Ref b.Dental care □ Yes □ No □ DK □ Ref c.Eye Exams □ Yes □ No □ DK □ Ref		**Q29.**Does everyone in household ≥18 have insurance to cover: a.General healthcare □ Yes □ No □ DK □ Ref b.Dental care □ Yes □ No □ DK □ Ref c.Eye Exams □ Yes □ No □ DK □ Ref
Q30. Has anyone in your household ever needed mental health, substance abuse, or other addiction treatment services? □ Yes □ No □ DK □ Ref	**IF YES→Q30b.** If yes, were they able to get the services they needed? □ Yes □ No □ DK □ Ref	**IF NO to 30b→Q30c .** Was it for any of these reasons (Check all that apply)?: □No insurance □No transportation □Insurance would not pay for services □No doctor □The services needed were not available in this area □Other_____
Q31. Has anyone in your household gone to the emergency room because they did not have a primary care provider? □ Yes □ No □ DK □ Ref □N/A		
Q32. Does anyone in your household use a physician or medical care provider located in Portsmouth? □ Yes □ No □ DK □ Ref		**IF NO→Q32b.** Is it for any of these reasons (Check all that apply)?: □Medical services provided in Portsmouth are not adequate/good □Specialists needed are not available in Portsmouth □Prefer provider in another city □Other_____
Q33. Are there any infants (under the age of 1 year) in your household? □ Yes □ No □ DK □ Ref		**IF YES→Q33b.** Are they (Check one)?: □.Formula feeding only □Breastfeeding only □Breastfeeding and supplementing with formula only □Formula fed with complementary foods (rice cereal) □.Breastfeeding with complementary foods
Q34. Does your household feel safe walking in your neighborhood? □ Yes □ No □ DK □ Ref		
Q35. During the past 7 days, how often did your household members get physical activity for at least 20 minutes ? (such as walking, running, basketball, fast bicycling, swimming, fast dancing) □Never/Rarely □Some of the time □Often □ Most of the time □ DK □ Ref		**IF NOT ACTIVE→Q35b .** (i.e., the person answered never/rarely), what prevents your household members from getting regular activity? □Feel like no safe place to exercise □No time □Not able to afford a gym □No transportation to gym □No sidewalks/parks in the area □Don't want to □Don't know how to □Health reasons
Q36. Where does your household usually buy <u>most</u> of your food? □Grocery Store (such Food Lion, Target, Walmart) □Corner/Convenience Store □Farmer's Market □ Fast Food business □D/K □Refused to Answer		
Q37. On average, how often does someone in your household cook dinner? □Never/Rarely □Some of the time □Often □ Most of the time □ DK □ Ref		
Q38. How often does your household eat fruit and vegetables including fresh, frozen, or canned (besides potatoes)?: □Never/Rarely □Some of the time □Often □ Most of the time □ DK □ Ref		
Q39. How often does your household eat at a fast food restaurant (e.g., McDonald's, Taco Bell, KFC)?: □Never/Rarely □Some of time □Often □ Most of time □ DK □ Ref		

Figure A3: 2014 CASPER Questionnaire (front)

Q1. Interview Date (MM/DD/YY):	**Q3.** Cluster Number:	**Q5.**Team Number:
Q2. County Name:	**Q4.** Survey Number:	**Q6:** Interview Initials:
Q7. Type of structure □ Single family □ Multiple unit □ Mobile home □ Other		
Q8. Indicate sex of respondent. (Ask only if necessary.) □ Male □ Female	**Q9.** What is your age? _____	**Q10.** Is English the primary language spoken in the household? □ Yes □ No
Q11. How many people live in your household?	**Q12.** What is your main mode of transportation to get to leisure activities (such as going to get food, shopping, go to the park)? □Walk □Bike □Bus □Your Own Car □ A Friend's Car	
Health Status: Now I am going to ask some questions about your health, health insurance, and access to care		
Q13. Have you EVER been told by a doctor, nurse or other health professional that you have had any of the following?	**13a.**Heart Attack, Angina, or Coronary Artery Disease **13b.**High Blood Pressure **13c.**High Blood Cholesterol **13d.**Cancer **13e.**Stroke **13f.**Asthma **13g.**COPD, Emphysema, or Chronic Bronchitis **13h.**Diabetes	□ Yes □ No □ DK □ Yes □ No □ DK □ Yes □ No □ DK □ Yes □ No □ DK □ Yes □ No □ DK □ Yes □ No □ DK □ Yes □ No □ DK □ Yes □ No □ DK
IF YES →Q14. Is your diabetes under control (A1c <9)? □ Yes □ No □ DK □ N/A		
Q15. Has anyone in your household ever been told they have diabetes only during pregnancy? □ Yes □ No □ DK		
Q16. Have you ever been told by a doctor, nurse, or other health professional that you have pre-diabetes or borderline diabetes? □ Yes □ No □ DK	**IF YES →Q16b.** Did you get any additional information from a health professional, make any lifestyle changes, or both? □ Additional Information □ Lifestyle Changes □ Both	
Q17. Do you have one person you think of as your personal doctor or health care provider? □ Yes □ No	**IF NO→Q17b.** Is there more than one, or is there no person who you think of as your personal doctor or health care provider? □More than one □No person	
Q18. Has anyone in your household ever needed medical care but was not been able to get it? □ Yes □ No □ DK	**Q19.** Was there a time in the past 12 months when you needed to see a doctor but could not because of cost? □ Yes □ No	
Q20. Do you have health insurance of any kind? □Yes □No	**Q21.** In the past year, have you visited…	**Q21a.** A dentist or dental hygienist? □ Yes □ No **Q21b.** A doctor for a check-up? □ Yes □ No
Q22. Would you say that in general your health is—? □ Excellent □ Very good □ Good □ Fair □ Poor		
Q23. How tall are you?	**Q23b.** How much do you weigh?	**Q24.** Is there a place to walk/exercise in your neighborhood? □ Yes □ No □ DK
Q25. What prevents your household members from getting regular activity? □ Safety □ No time □ Cannot afford a gym □ Do not have transportation to a gym □ No sidewalks/parks in the area □ Don't want to □ Don't know how to □ Health reasons □ N/A		
Q26. Of the past 14 days, how many days …	**Q26a.** Did you get at least 30 minutes of physical activity (such as walking, running, basketball, fast bicycling, swimming, fast dancing)? _____ **Q26b.** Did you stop at a convenience store to purchase food? _____ **Q26c.** Did you eat at a fast food restaurant (e.g., McDonald's, Taco Bell, KFC)? _____ **Q26d.** Did someone in your household cook dinner? _____ **Q26e.** Did you smell cigarette, cigar, or pipe tobacco smoke in your home that came from a neighboring condo, apartment, or hallway? _____ **Q26f.** Was your mental health not good (includes stress, depression, and problems with emotions)? _____ **Q26g.** Did you feel nervous or anxious? _____ **Q26h.** Did poor mental health keep you from doing your usual activities, such as self-care, work, or recreation?_____ **Q26i.** Did you feel so depressed that nothing could cheer you up? _____	
Q27. Of the past 7 days, how many days did you…	**Q27a.** Eat fruit, not including juice (Count fresh, frozen, or canned fruit)? _____ **Q27b.** Eat colorful vegetables that were not fried (Do not include rice or other grains)? _____ **Q27c.** Drink at least one sugary drink(Sodas, flavored waters/teas, sports drinks, energy drinks)? _____	
Q28. Has anyone in your household ever been to the farmers market in Portsmouth? □ Yes □ No □ DK		
Q29. Do you now smoke … every day, some days, or not at all?	**Q29a.** Cigarettes **Q29b.** Electronic cigarettes	□ Every day □ Some days □ Not at all □ Every day □ Some days □ Not at all
Q30. Do you or anyone else smoke …?	**Q30a.** Inside your home? **Q30b.** When you ride in a car?	□ Yes, I do □ Yes, Someone else does □ No one smokes □ Yes, I do □ Yes, Someone else does □ No one smokes
Q31. In the past year would you say you were worried or stressed about having enough money to pay vital expenses like your rent, mortgage, or food? □ Yes □ No		
Q32. Is anyone in your household now taking medicine or receiving treatment from a doctor or other health professional for any type of mental health condition or emotional problem? □ Yes □ No □ DK		

Figure A4: 2014 CASPER Questionnaire (back side)

Q33. Has anyone in your household ever needed substance abuse or other addiction treatment services? □ Yes □ No □ DK		**IF YES→Q33b.** Were they able to get the services they needed? □ Yes □ No □ Never sought services □ Didn't know where to get services □ DK
Q34. How much sleep do you usually get at night on weekdays or workdays? _____	**Q35.** Have you ever been told by a doctor or other health professional that you have a sleep disorder? □ Yes □ No □ DK	
Q36. Is anyone in your house currently pregnant or been pregnant in the past 5 years? □ Yes □ No □ N/A	**IF YES→Q36a.** Did they seek pre-natal care? □ Yes □ No □ DK	**IF YES→Q36ab.** How far along in their pregnancy did they receive prenatal care? □ First Trimester □ Second Trimester □ Third Trimester □ No care
	IF YES→Q36b. Did they use WIC services during the pregnancy?	□ Yes □ No □ DK
	IF YES→Q36c. Were they educated about safe sleep practices (ABCs)?	□ Yes □ No □ DK
Q37. How many children less than 18 years of age live in your household? _____ (*If 0 skip to Q42*)		
Q38. In the past five years, if there was an infant under the age of one in your household, was that infant exclusively breast-fed, exclusively formula-fed, or fed through a combination of both? □ Breast-fed □ Formula-fed □ Both □ DK □ N/A		
Q39. How many hours of TV does your child/children watch in a typical day? _____		**Q40.** How many hours does your child/children use a computer/tablet in a typical day? _____
Q41. Do you have a teen between the ages of 12 and 19 currently living at home? □ Yes □ No □ N/A	**IF YES→Q41b.** On a scale of 1-5, with 1 being not at all comfortable and 5 being very comfortable, how comfortable are you with talking to your teen about sex and pregnancy prevention? □ 1 □ 2 □ 3 □ 4 □ 5	**IF 3-5→Q41ab.** How often do you talk to your teen about sex and pregnancy prevention? At least… □ Once a week □ Once a month □ Once every 6 months □ Once a year
Q42. On a scale of 1 to 5, with 1 being no knowledge and 5 being receiving professional training,	**Q42a.** How knowledgeable are you about mental health?	□ 1 □ 2 □ 3 □ 4 □ 5
	Q42b. How knowledgeable are you about mental health resources in Portsmouth?	□ 1 □ 2 □ 3 □ 4 □ 5
Q43. On a scale of 1-5, with 1 being not at all likely and 5 being very likely, how likely would you eat at a restaurant that offered more healthy options? □ 1 □ 2 □ 3 □ 4 □ 5		
Demographics: Now I am going to ask you a few demographic questions		
Q44. Which one or more of the following would you say is your race? □White □Black or African American □American Indian or Alaska Native □Asian □Pacific Islander □ Other □ DK		
Q45. Are you Hispanic, Latino, or Spanish origin? □ Yes □ No	**Q46.** Are you …?	□ Married □ Divorced □ Widowed □ Separated □ Never Married □ A member of an unmarried couple
Q47. What is the highest level of education completed by anyone in your household? □Never attended school or only attended kindergarten □Grades 1 through 8 (Elementary) □Grades 9 through 11 (Some high school) □Grade 12 or GED (High school graduate) □College 1 year to 3 years (Some college or technical school) □ College 4 years or more (College graduate)		
Q48. What is your annual household income from all sources? □Less than $25,000 □$25,000-$50,000 □$50,000-$75,000 □More than $75,000 □ DK		**Q49.** Are you currently? □ Employed for wages □ Self-employed □ Out of work for 1 year or more □ Out of work for less than 1 year □ A Homemaker □ A Student □ Retired □ Unable to work
Q50. About how many hours do you work per week at all of your jobs and businesses combined? _____		
Q51. Have you ever served on active duty in the United States Armed Forces? □ Yes □ No (*Read if necessary: either in the regular military or in a National Guard or military reserve unit. Active duty does not include training for the Reserves or National Guard, but DOES include activation, for example, for the Persian Gulf War*).		
Q52. Would you support or oppose…	**Q52a.** The public use of Portsmouth school property for physical activity?	□ Support □ Oppose □ DK
	Q52b. A ban on smoking in apartments and multi-family buildings in Portsmouth?	□ Support □ Oppose □ DK
	Q52c. A ban on smoking on city property, such as parks, or around libraries and city buildings, in Portsmouth?	□ Support □ Oppose □ DK
	Q52d. Expanding sexual education in schools beyond abstinence only education--to include healthy sexual behaviors and methods of contraception?	□ Support □ Oppose □ DK

PORTSMOUTH
Health Department
Charting a Course for Good Health

Figure A5: 2017 CASPER Questionnaire (front)

Q1. Interview Date (MM/DD/YY):	Q3. Cluster Number:	Q5.Team Number:
Q2. County Name: Portsmouth	Q4. Survey Number:	Q6: Interview Initials:
Q7. Type of structure ◻ Single family ◻ Multiple unit ◻ Mobile home ◻ Other _____		
Q8. Indicate sex of respondent. (Ask only if necessary.) ◻ Male ◻ Female	Q9. What is your age? _____	Q10. Is English the primary language spoken in the household? ◻ Yes ◻ No
Q11. How many people live in your household? _____	Q12. What is your main mode of transportation? ◻Walk ◻Bike ◻Bus ◻Your Own Car ◻ A Friend's Car ◻ Other public transport ◻ Ride Share	
Health Status: Now I am going to ask some questions about your health, health insurance, and access to care		
Q13. Have you EVER been told by a doctor, nurse or other health professional that you have had any of the following?	13.Heart Attack, Angina, or Coronary Artery Disease ◻ Yes ◻ No ◻ DK 14.High Blood Pressure ◻ Yes ◻ No ◻ DK 15.High Cholesterol ◻ Yes ◻ No ◻ DK 16.Cancer ◻ Yes ◻ No ◻ DK 17.Stroke ◻ Yes ◻ No ◻ DK 18.Asthma ◻ Yes ◻ No ◻ DK 19.COPD, Emphysema, or Chronic Bronchitis ◻ Yes ◻ No ◻ DK 20.Diabetes ◻ Yes ◻ No ◻ DK	
IF YES →Q21. Is your diabetes under control? ◻ Yes ◻ No ◻ DK ◻ N/A		
Q22. Has anyone in your household ever been told they have diabetes only during pregnancy? ◻ Yes ◻ No ◻ DK		
Q23. Have you ever been told by a doctor, nurse, or other health professional that you have pre-diabetes or borderline diabetes? ◻ Yes ◻ No ◻ DK	IF YES →Q24. Did you get any additional information from a health professional, make any lifestyle changes, or both? ◻ Additional Information ◻ Lifestyle Changes ◻ Both	
Q25. Have you ever heard of the Diabetes Prevention Program? ◻ Yes ◻ No		
Q26. Where do you get most of your health information? ◻ Doctor/Nurse ◻ Books/magazines ◻ Internet ◻ Social Media ◻ Church ◻ My Child's School ◻ Other		
Q27. Do you have one person you think of as your personal doctor or health care provider? ◻ Yes ◻ No	IF NO→Q28. Is there more than one, or is there no person who you think of as your personal doctor or health care provider? ◻More than one ◻No person	
Q29. Has anyone in your household ever needed emergency medical care but was not been able to get it? ◻ Yes ◻ No ◻ DK	Q30. Has anyone in your household ever needed medical care for a chronic or ongoing health problem but was not been able to get it? ◻ Yes ◻ No ◻ DK	
Q31. Was there a time in the past 12 months when you needed to see a doctor but could not because of cost? ◻ Yes ◻ No		
Q32. Do you have health insurance of any kind? ◻Yes ◻No	Q33. In the past year, have you...	Q33. Visited a dentist or dental hygienist for a cleaning? ◻ Yes ◻ No Q34. A doctor for a check-up? ◻ Yes ◻ No
Q35. When was your last skin cancer screening? ◻ With the last year ◻ 1-2 years ◻ > 2 years ◻ Not sure ◻ Never had an exam		
Q36. (If female) When was your last mammagram or breast exam? ◻ With the last year ◻ 1-2 years ◻ > 2 years ◻ Not sure ◻ Never had an exam		
Q37. (If female) When was your last Pap test (vaginal exam)? ◻ With the last year ◻ 1-2 years ◻ > 2 years ◻ Not sure ◻ Never had an exam		
Q38. (If over 50) When was your last Colon cancer screening? ◻ With the last year ◻ 1-5 years ◻ 5-10 years ◻ + 10 years ◻ Never ◻ Not sure		
If yes, Q39 What type of screening was it? ◻ Colonoscopy ◻ FIT test ◻ or describe the type of screening (did you take it at home or go to a doctor's office) _____		
Q40. Would you say that in general your health is—? ◻ Excellent ◻ Very good ◻ Good ◻ Fair ◻ Poor		
Q41. Is there a place to walk/exercise in your community? ◻ Yes ◻ No ◻ DK		
Q42. What prevents your household members from getting regular activity (check all that apply)? ◻ Safety ◻ No time ◻ Cannot afford a gym ◻ Do not have transportation to a gym ◻ No sidewalks/parks in the area ◻ Don't want to ◻ Don't know how to ◻ Health reasons ◻ N/A		
Q43. Of the past 14 days, how many days ...	Q43. Did you get at least 30 minutes of physical activity (such as walking, running, basketball, fast bicycling, swimming, fast dancing, or other recreational sports)? _____	
	Q44. Did you stop at a convenience store to purchase a snack, food, or a drink? _____	
	Q45. Did you eat at a fast food restaurant (e.g., McDonald's, Taco Bell, KFC)? For Breakfast _____ Q45b. For Lunch _____ Q45c. For Dinner____	
	Q46. Did someone in your household cook dinner? _____	
	Q47. Was your mental health not good (includes stress, depression, and problems with emotions)? _____ **(If 0, skip to Q50)**	
	Q48. Did poor mental health keep you from doing your usual activities, such as hygiene, work, social or recreation? _____	
	Q49. Did you feel so depressed that nothing could cheer you up? _____	
Q50. In the past year would you say you were worried or stressed about having enough money to pay vital expenses like your rent, mortgage, or food? ◻ Yes ◻ No		
Q51. On a scale of 1 to 5, with 1 being no knowledge and 5 being receiving professional training	Q51. How knowledgeable are you about mental health conditions? ◻ 1 ◻ 2 ◻ 3 ◻ 4 ◻ 5	
	Q52. How knowledgeable are you about mental health resources in Portsmouth? ◻ 1 ◻ 2 ◻ 3 ◻ 4 ◻ 5	
Q53. Is anyone in your household now taking medicine or receiving treatment from a doctor or other health professional for any type of mental health condition or emotional problem? ◻ Yes ◻ No ◻ DK		
	Q54. Eat fruit, not including juice (Count fresh, frozen, or canned fruit)? _____	

Figure A31: 2017 CASPER Questionnaire (back side)

Q54. Of the past 7 days, how many days did you…	Q55. Eat colorful vegetables that were not fried (Do not include rice or other grains)? _____ Q56. Drink a sugary drink (Sodas, flavored waters/teas, sports drinks, energy drinks)? _____	
Q57. Has anyone in your household ever been to the farmers market in Portsmouth? ◻ Yes ◻ No ◻ DK		
Q58. On a scale of 1-5, with 1 being not at all likely and 5 being very likely, how likely would you eat at a restaurant that offered more healthy options? ◻ 1 ◻ 2 ◻ 3 ◻ 4 ◻ 5		
Q59. Who would you contact if you thought something you ate made you sick (food poisoning, food borne illness)? (check all that apply) ◻ Doctor ◻ Health Department ◻ Place/person that made the food ◻ Other _____		
Q60 Did you know the Health Department is available to answer your questions concerning Food Borne illness (food poisoning)? ◻ Yes ◻ No		
Q61. In your lifetime, have you ever smoked a cigarette or e-cigarette? ◻Yes ◻No (If no, skip to Q69)	IF YES Q62. How old were you when you smoked a whole cigarette for the first time? _____	
Q63. Do you **NOW** smoke … every day, some days, or not at all?	Q64. Cigarettes ◻ Every day ◻ Some days ◻ Not at all Q65. Electronic cigarettes ◻ Every day ◻ Some days ◻ Not at all	
Q66 (IF everyday or some days) The last time you bought cigarettes for yourself, how many did you buy? ◻ Single Cigarette, ◻ Pack (20 cigarettes), ◻ Carton, ◻ Other, ◻ Never bought cigarettes		
Q67. (IF everyday or some days) What price did you pay for the last pack of cigarettes you bought? _____		
Q68. (IF everyday or some days) Which statement best matches your current goals? ◻ I have quit within the past 6 months. ◻ I am not planning to quit. ◻ I am planning to quit in the next month. ◻ I would like to cut back. ◻ I am planning to quit in the next 6 months.		
Q69. Do you or anyone else smoke …?	Q69. Inside your home? ◻ Yes, I do ◻ Yes, Someone else does ◻ No one smokes Q70. When you ride in a car? ◻ Yes, I do ◻ Yes, Someone else does ◻ No one smokes	
Q71. Do you ever smell cigarette, cigar, or pipe tobacco smoke in your home that came from a neighboring condo, apartment, or hallway? ◻ Yes ◻ No ◻ DK		
Q72. Are you currently taking pain pills prescribed to you? ◻ Yes ◻ No ◻ DK	Q73. Have you used pain pills not prescribed for you within the past 5 years? ◻ Yes ◻ No ◻ DK	
Q74. Has anyone in your household ever sought services for substance abuse or other addiction treatment? ◻ Yes ◻ No ◻ DK	IF YES→Q75. Were they able to get the services they needed? ◻ Yes ◻ No ◻ Never sought services ◻ Didn't know where to get services ◻ DK	
Q76. How many children less than 18 years of age live in your household? _____ (*If 0 skip to Q82*)		
Q77. Do those children have health insurance of any kind? ◻Yes ◻No		
Q78. How many hours of screen time does your your child/children use in a typical day? _____		
Q79. Do you have a teen between the ages of 12 and 18 currently living at home? ◻ Yes ◻ No ◻ N/A	IF YES→Q80. On a scale of 1-5, with 1 being not at all comfortable and 5 being very comfortable, how comfortable are you with talking to your teen about sex and pregnancy prevention? ◻ 1 ◻ 2 ◻ 3 ◻ 4 ◻ 5	IF 3-5→Q81. How often do you talk to your teen about sex and pregnancy prevention? At least… ◻ Once a week ◻ Once a month ◻ Once every 6 months ◻ Once a year
Demographics: Now I am going to ask you a few demographic questions		
Q82. Which one or more of the following would you say is your race? ◻White ◻Black or African American ◻American Indian or Alaska Native ◻Asian ◻Pacific Islander ◻ Other ◻ DK		
Q83. Are you Hispanic, Latino, or Spanish origin? ◻ Yes ◻ No	Q84. How tall are you? _____	Q85. How much do you weigh? _____
Q86. What is the highest level of education completed by anyone in your household? ◻Never attended school or only attended kindergarten ◻Grades 1 through 8 (Elementary) ◻Grades 9 through 11 (Some high school) ◻Grade 12 or GED (High school graduate) ◻College 1 year to 3 years (Some college or technical school) ◻ College 4 years or more (College graduate)		
Q87. Do you strongly agree, Agree, disagree, or strongly disagree with the following statements?	Q87. The people running my community care about me ◻ Strongly Agree ◻ Agree ◻ Disagree ◻ Strongly Disagree	
	Q88. People are willing to help their neighbors ◻ Strongly Agree ◻ Agree ◻ Disagree ◻ Strongly Disagree	
	Q89. I can influence decisions that affect my neighborhood. ◻ Strongly Agree ◻ Agree ◻ Disagree ◻ Strongly Disagree	
	Q90. I feel I belong in my neighborhood. ◻ Strongly Agree ◻ Agree ◻ Disagree ◻ Strongly Disagree	

Appendix B: CASPER Tracking Forms

Figure B1: Tracking Form from Portsmouth CASPER (front)

TRACKING FORM: Portsmouth Health District CASPER

Cluster # (i.e., 1-30): ..... # of Houses in the Cluster:..... Interviewer(s): .....Date of Interview: ..... / ..... /.....

Instructions: Use one tracking form per cluster. Check where appropriate, but try to choose only one best option for each of the five categories. Go as far down the list as possible for each site you visit.

Sampled Housing Units	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1) ACCESS																	
House is Accessible	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
House is Inaccessible	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
2) TYPE OF DWELLING																	
No housing structure	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Mobile Home	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Single Family Home	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Apartment or Condo	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Other	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
3) ANSWER																	
Door was answered	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Appears as though someone is home but no answer	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Appears vacant	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Nobody home after… 1st visit	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
2nd visit	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
3rd visit	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
4) INTERVIEW																	
Language Barrier	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Refused to Participate	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Interview begun, not finished	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Interview Completed	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Survey # (i.e., 1–7) from Completed Questionnaire:																	

Figure B2: Tracking Form from Portsmouth CASPER (back)

TRACKING FORM: Portsmouth Health District CASPER

Instructions: Use this page to keep notes on which houses may need return visits.

Sampled Housing Unit:

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

16.

17.

Appendix C: Example of Introduction Letter for PHD CASPER

COMMONWEALTH of VIRGINIA

PORTSMOUTH
Health Department
Charting a Course for Good Health

Portsmouth Health Department
1701 High Street, Suite 102
Portsmouth, VA 23704
(757) 393-8585
FAX: (757) 393-8027

David Chang, MD
Health Director

WIC PROGRAM
1701 High Street, Suite 102
Portsmouth, VA 23704
(757) 393-5340
FAX : (757) 673-2018

Hello, we are [*name*] and [*name*] with the Portsmouth Health Department.

We are talking to residents in Portsmouth about their health and habits so that we can get a better idea of what health is like in our community. Your house is one of many that have been randomly chosen to be in this survey. If you agree to participate, we will ask you some general questions about your house and the people who live there regarding physical activity, nutrition, tobacco use, mental health, teen pregnancy, access to care, and perceptions of health. The survey should take no more than 15 minutes to complete. We will keep your answers private. You can refuse to take part in the survey or refuse to answer any of the questions. Nothing will happen to you or your household if you choose not to take part in the survey.

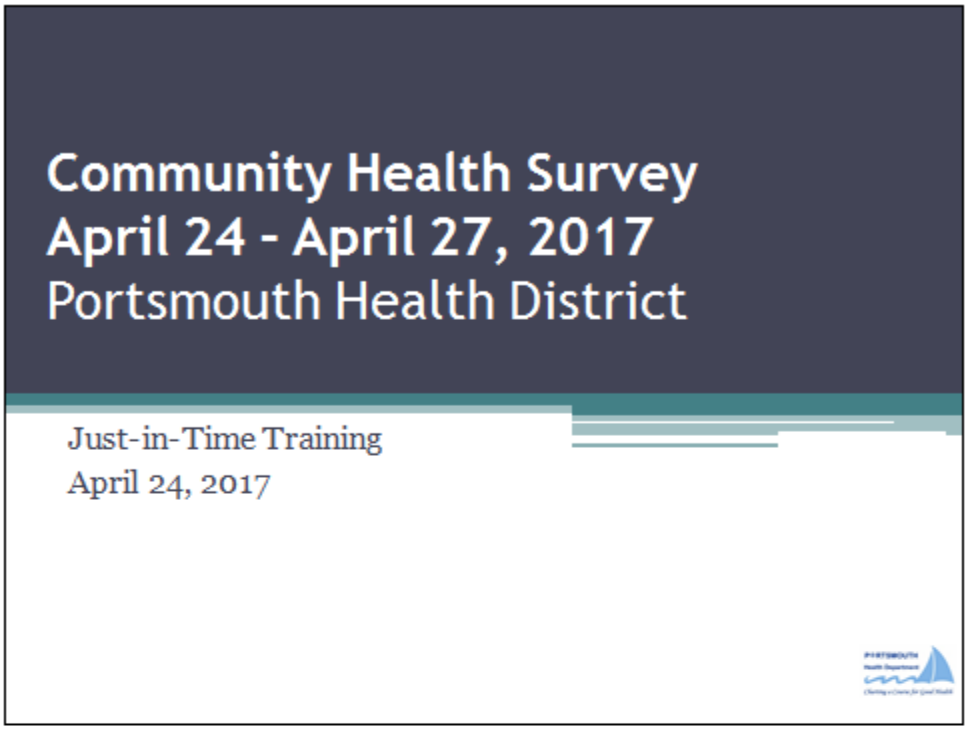
You may have questions about this survey. If so, you can ask anyone here right now. If you would like to confirm that we were sent by the Portsmouth Health Department, you can call Michelle Winz, epidemiologist, at 757-393-8585 ext 8701.

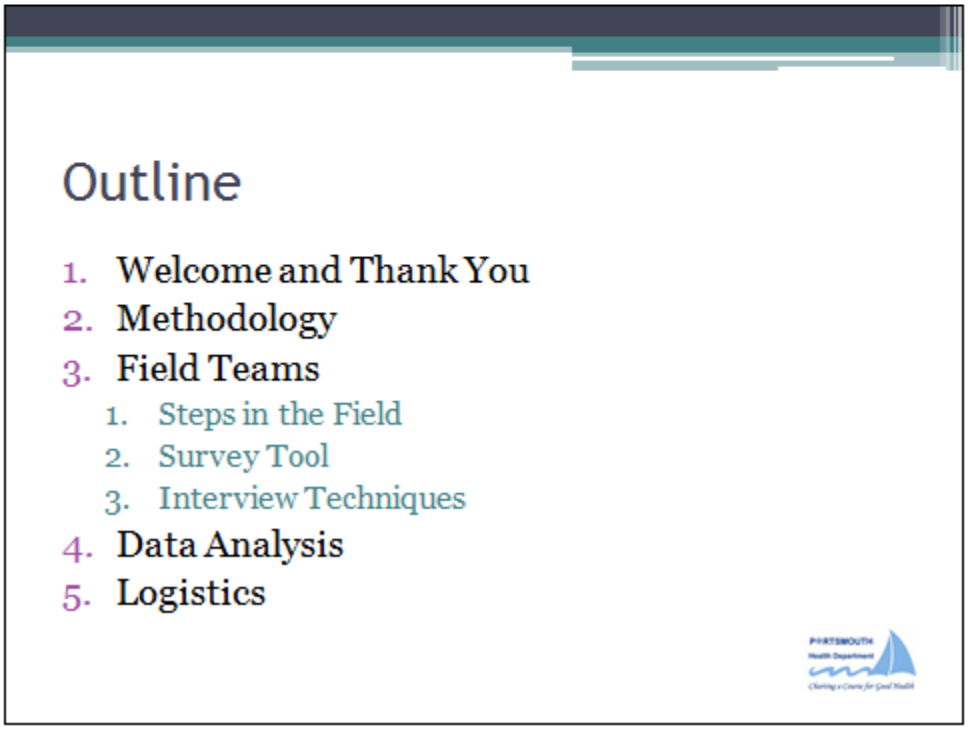
Are you willing to participate in this survey?

[WAIT FOR RESPONDENT TO CLEARLY ANSWER **YES** OR **NO**].

Thank you very much for your time.

Appendix D: Sample Slides from 2017 PHD CASPER Training





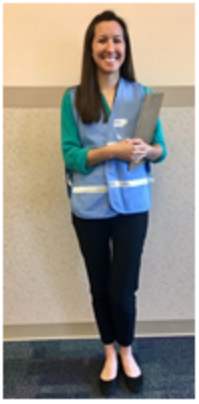
Welcome & Introductions

(name, department/district, role)

Sign In and Sign Out

- Sign In/Sign Out each day!
- Sign In/Sign Out for Equipment
  - VDH ipad you must sign in and out equipment

Safety Briefing



- Safety in numbers = TEAMS
- Know the area- study cluster and street map
- Be easy to identify- wear vest and picture ID
- Show confidence and professionalism
- Preparation is the KEY:
  -announcement to the community of the survey
  -contact local leaders, including police
  -have base office contact information with you
- Avoid carrying valuables on you or in your car

Logistics - CHS Schedule

- **Monday (April 24)**
- 12:30pm-3pm Training
- 3-3:30 pm Check-in and prepare
- 4-7:30 pm Household survey
- 8:00 pm Check-out and Debrief
-
- **Tuesday (April 25)**
- 3-3:30 pm Check-in and prepare
- 4-7:30 pm Household survey
- 8:00 pm Check-out and Debrief
-
- **Wednesday (April 26)**
- 3-3:30 pm Check-in and prepare
- 4-7:30 pm Household survey
- 8:00 pm Check-out and Debrief
-
- **Thursday (April 27)**
- 3-3:30 pm Check-in and prepare
- 4-7:30 pm Household survey
- 8:00 pm Check-out and Debrief

Introduction to Community Health Survey (CHS)

2017 CHS

- Similar to 2013 CASPER and 2014 CHS.
- A low cost, rapid, epidemiologic data collection process designed to obtain **household**-level information about the needs of an affected community after a disaster.
- This year we are focused on
  - Nutrition
  - Physical Activity
  - Reducing Use of Tobacco
  - Mental Health Literacy
  - Access to Care
  - Teen Pregnancy
  - Perceptions of Health
- Our data will be used in program evaluations, assessing any changes in health since the adoption of our Community Health Improvement Plan, and by our Partners.

How to Conduct a CHS?

Methodology Overview

Locate the Cluster

Sampling Method

- Sampling Frame: All households within the City of Portsmouth
- Two stage probability sampling
  - Stage 1: divide the city into 40 clusters or known number of housing units using U.S. Census blocks
  - Stage 2: pick at random 7 households from each cluster

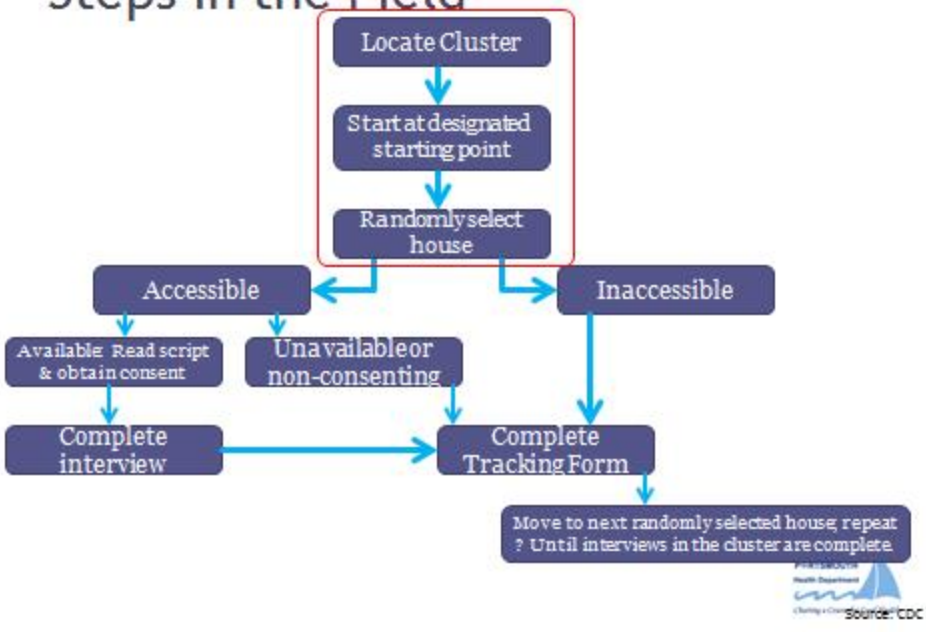
Example - Map of 1 Portsmouth Cluster

Randomly Selecting a House

❖ ***This will be done by YOU in the field***

- Review your cluster map
- Start at the icon
- Go in the direction of the arrow
- Visit every n'th house on one side of the street
- Repeat as needed until 7 interviews are completed

Steps in the Field



Paper Forms

Introduction Letter and Consent Script

- Verbal consent sufficient
  - No personal identifiers collected for CHS
- Provide interviewee's with written letter
- Consent script contains
  - Who you are
  - Why you are there
  - How long it will take
  - Explicit request for consent
  - Phone number for verification and questions

Hello, we are [name] and [name] with the Portsmouth Health Department.

We are talking to residents in Portsmouth about their health and habits so that we can get a better idea of what health is like in our community. Your house is one of many that have been randomly chosen to be in this survey. If you agree to participate, we will ask you some general questions about your house and the people who live there regarding physical activity, nutrition, tobacco use, mental health, teen pregnancy, infant mortality, access to care, and perceptions of health. The survey should take no more than 15 minutes to complete. We will keep your answers private. You can refuse to take part in the survey or refuse to answer any of the questions. Nothing will happen to you or your household if you choose not to take part in the survey.

You may have questions about this survey. If so, you can ask anyone here right now. If you would like to confirm that we were sent by the Portsmouth Health Department, you can call Michelle Winz, epidemiologist, at 757-393-8585 ext 8701.

Are you willing to participate in this survey?

[WAIT FOR RESPONDENT TO CLEARLY ANSWER **YES** OR **NO**].

Thank you very much for your time.

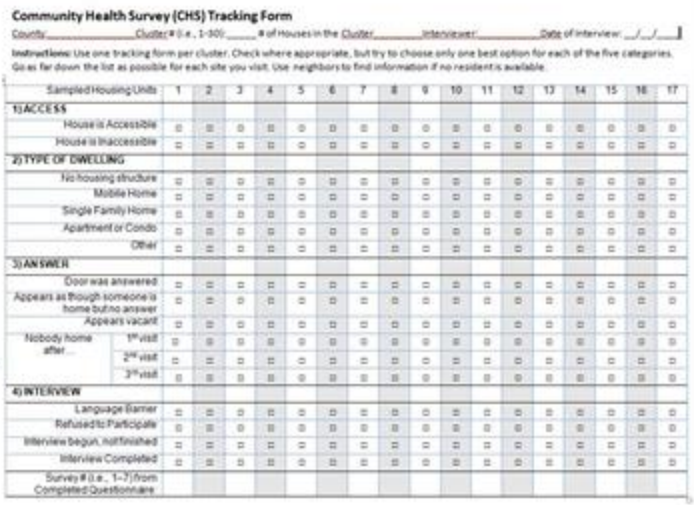
Please review paper copy

Survey Tool

Please refer to paper copies of survey for review

Tracking Form (Front)

- Access
- Type of dwelling
- Answer
- Interview



Community Health Survey (CHS) Tracking Form

County:_____ Cluster:# (i.e., 1-30):_____ # of Houses in the Cluster:_____ Interviewer:_____ Date of interview: __/__/____

Instructions: Use one tracking form per cluster. Check where appropriate, but try to choose only one best option for each of the five categories. Go as far down the list as possible for each site you visit. Use neighbors to find information if no resident is available.

Sampled Housing Units		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1) ACCESS																		
House is Accessible		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
House is Inaccessible		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2) TYPE OF DWELLING																		
No housing structure		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Mobile Home		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Single Family Home		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Apartment or Condo		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3) ANSWER																		
Door was answered		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Appears as though someone is home but no answer		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Appears vacant		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Nobody home after…	1st visit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	2nd visit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3rd visit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4) INTERVIEW																		
Language Barrier		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Refused to Participate		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Interview begun, not finished		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Interview Completed		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Survey # (i.e., 1–7) from Completed Questionnaire																		

Tracking Form (Back)

- Notes
  - Return visit needed?
  - Relevant comments
- Remember – fill out for every household
- There is a *Continuation Sheet* up to 34 attempts to interview 7 households

When You Return

- Check in and give forms to the group leader
- Return supplies to the group leader
- Check out!

Interview Techniques

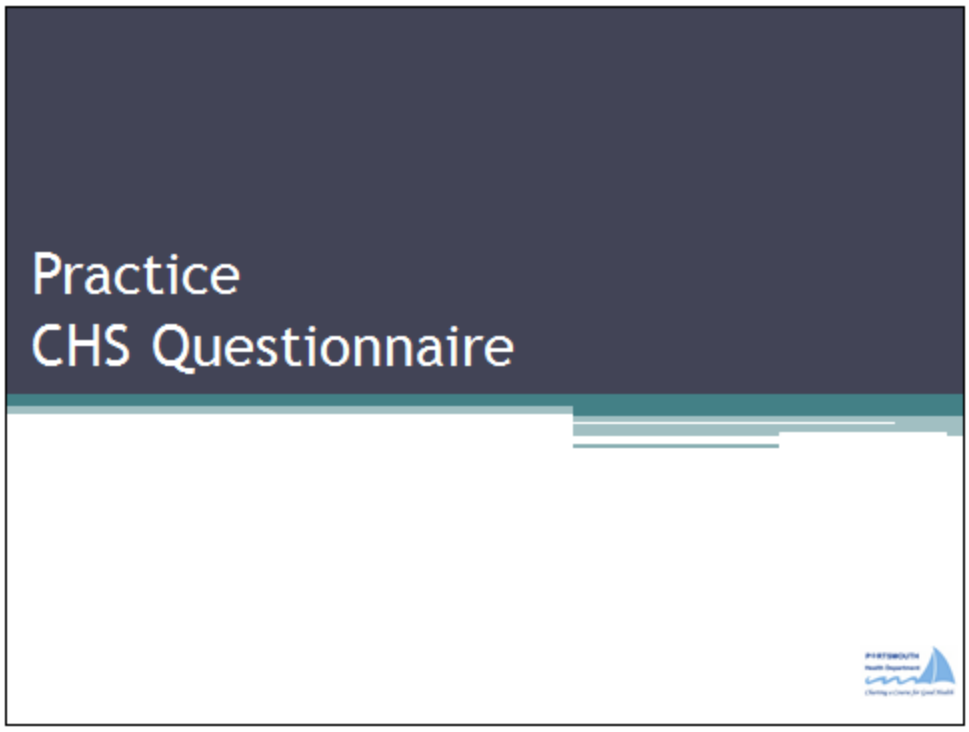
General:

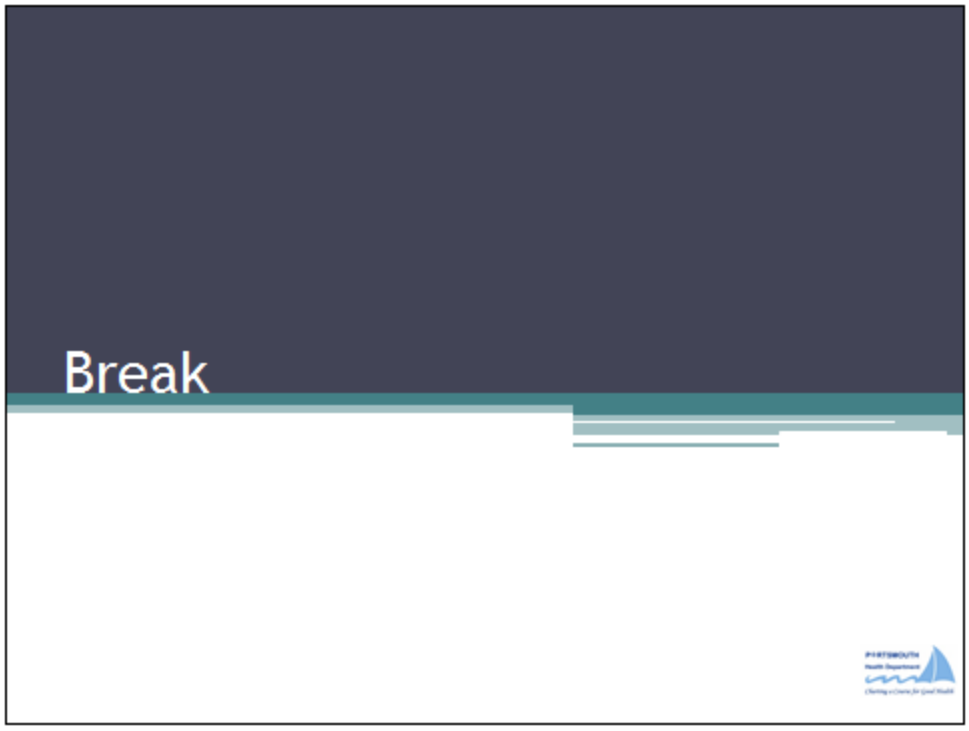
- Your language should be appropriate to ensure the interviewee understands any information provided or questions asked
- Remember cultural sensitivity
- Avoid jargons and abbreviations that might be commonplace for health department or healthcare staff, but unfamiliar for the layperson

Interview Techniques

During the Interview:

- **Use scripts/survey tool!**
- Introduce yourself and your affiliated organization
- Explain purpose of the interview
- Ask if the timing is good
- Estimate the length of the interview
- Discuss confidentiality
- Remain nonjudgmental regarding responses of interviewee


Practice
CHS Questionnaire

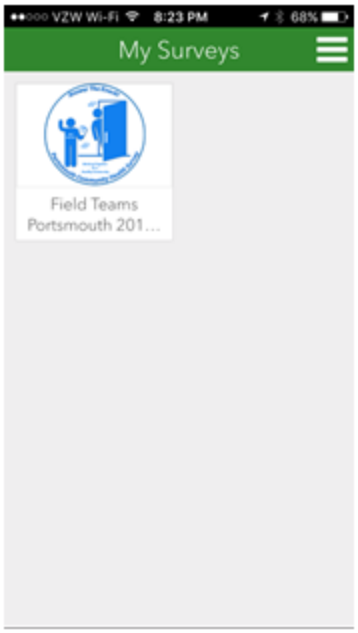

Break

Step 1

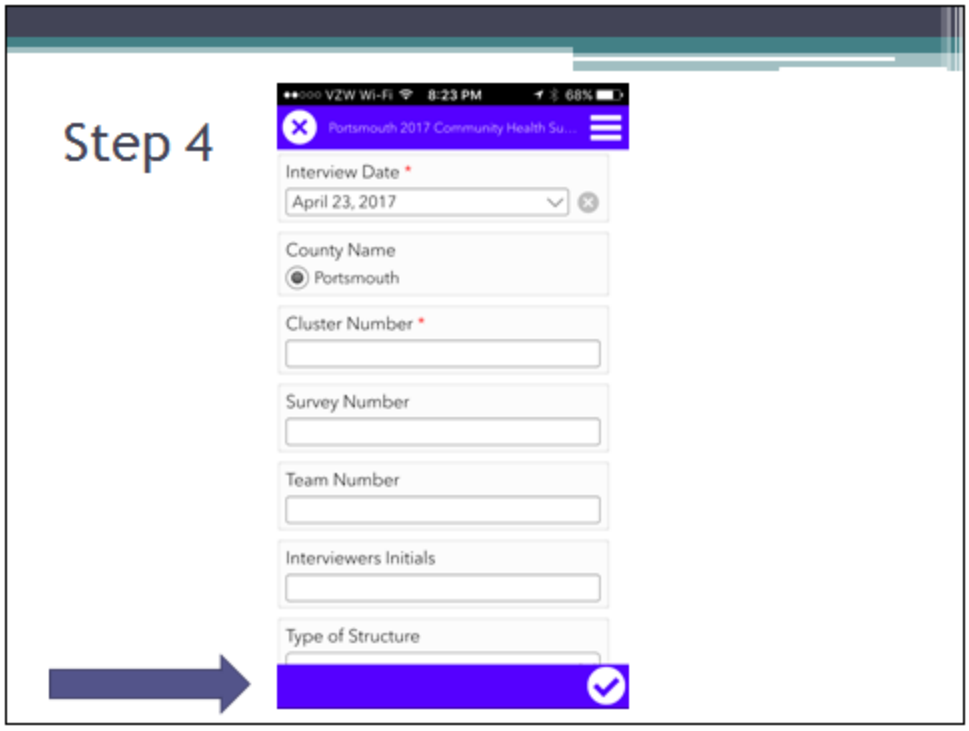
Turn on your device and select the Survey123 App

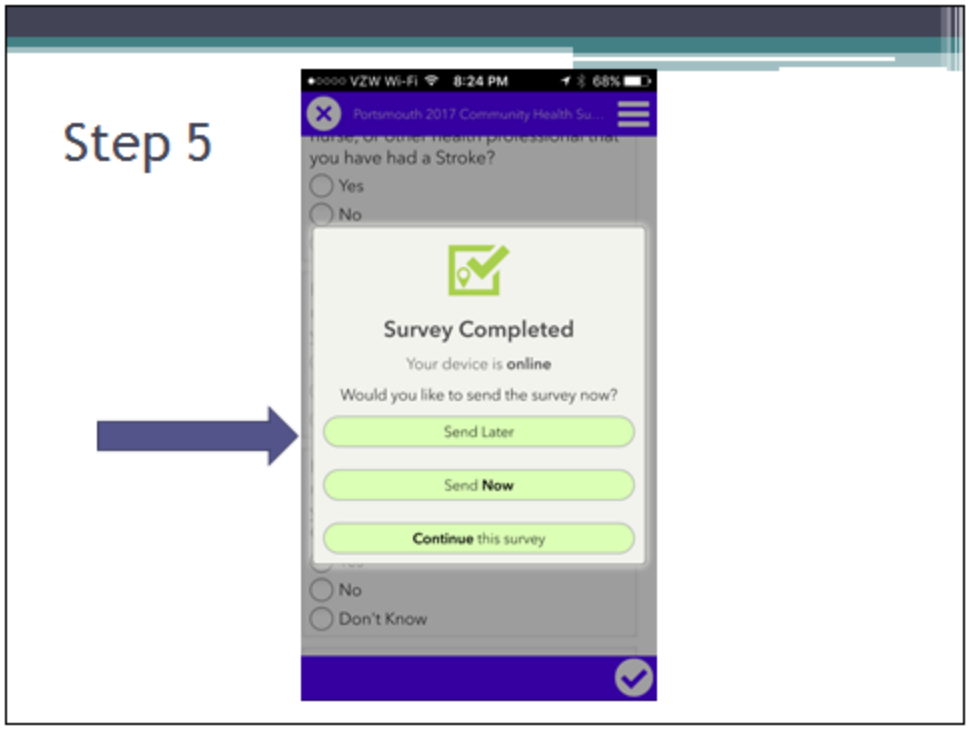
Step 2

Select 2017 Community Health Survey

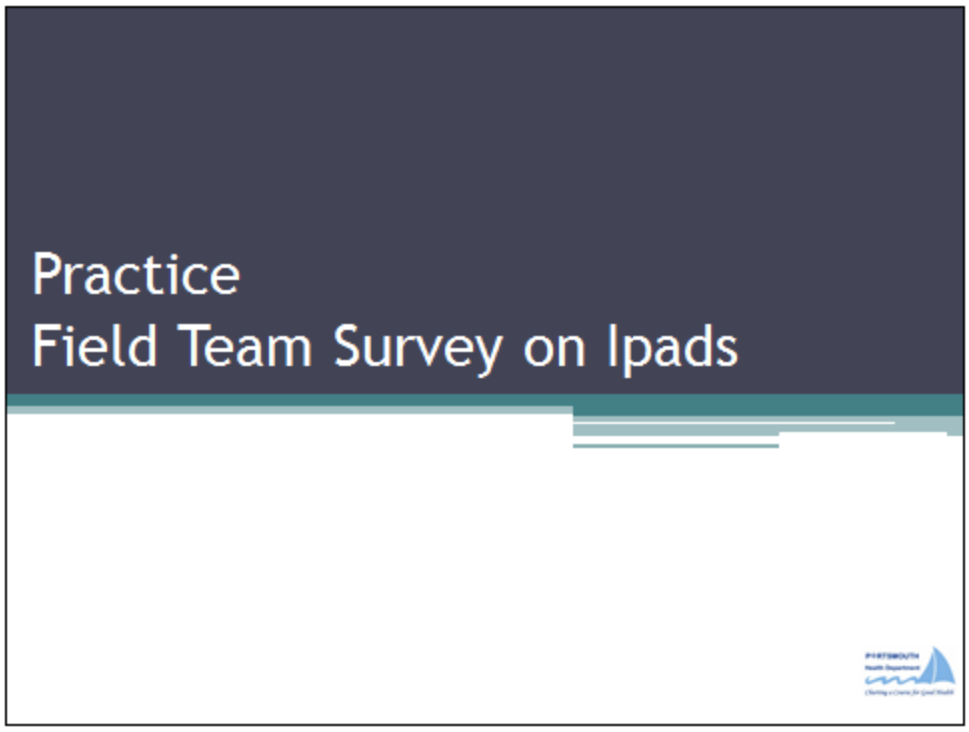



Step 3
VZW Wi-Fi 8:23 PM 68%
Field Teams Portsmouth 2017 Commun...
The Portsmouth Health Department asks residents to complete the 2017 Community Health Survey to collect information on nutrition, physical activity, tobacco use, mental health literacy, teen pregnancy, perceptions of and access to care.
Collect
Start collecting data


Step 4
VZW Wi-Fi 8:23 PM 68%
Portsmouth 2017 Community Health Su...
Interview Date *
April 23, 2017
County Name
Portsmouth
Cluster Number *
Survey Number
Team Number
Interviewers Initials
Type of Structure


Step 5
VZW Wi-Fi 8:24 PM 68%
you have had a Stroke?
Yes
No
Survey Completed
Your device is online
Would you like to send the survey now?
Send Later
Send Now
Continue this survey
No
Don't Know


Step 6 - Move on to the next house!



Team Member Responsibilities

- Remain Flexible – 2 person teams
  - 1 Electronic Survey
  - 1 Paper Survey
- Think Safety
- Understand the objectives
- Adhere to methodology
  - Map – maintain sample validity
  - Interview – data quality
  - Tracking form – representative
  - Data entry – timeliness
- Be respectful
- Understand personal limitations

VDH Confidentiality Policy

1. Limit Collection of Confidential Information
2. Limit Use of Confidential Information
3. Limit Access to Confidential Information
4. Limit Disclosure of Confidential Information
5. Acknowledgement of Confidentiality Policy and Procedures
6. Data Destruction

Full policy:
http://www.vdh.virginia.gov/mrc/WTMRC/documents/pdf/ConfidentialityPolicy.pdf

VDH Confidentiality Policy

7. Publications and Reports Based on Confidential Information
8. Security
9. Data Integrity
10. Compulsory Legal Process, Requests from Law Enforcement and Freedom of Information Act (FOIA) Requests
11. Non-Compliance

Full policy:
http://www.vdh.virginia.gov/mrc/WTMRC/documents/pdf/ConfidentialityPolicy.pdf

Analyzing Data

- Real-time Dashboard to keep track of surveys completed
- Household data is collected from questionnaires in paper and electronic form. Electronic database will be compared to paper copies for accuracy
- Analysis in ArcGIS/SAS/Epi Info
- Preliminary report within 72 hours

THANK YOU!

Questions?