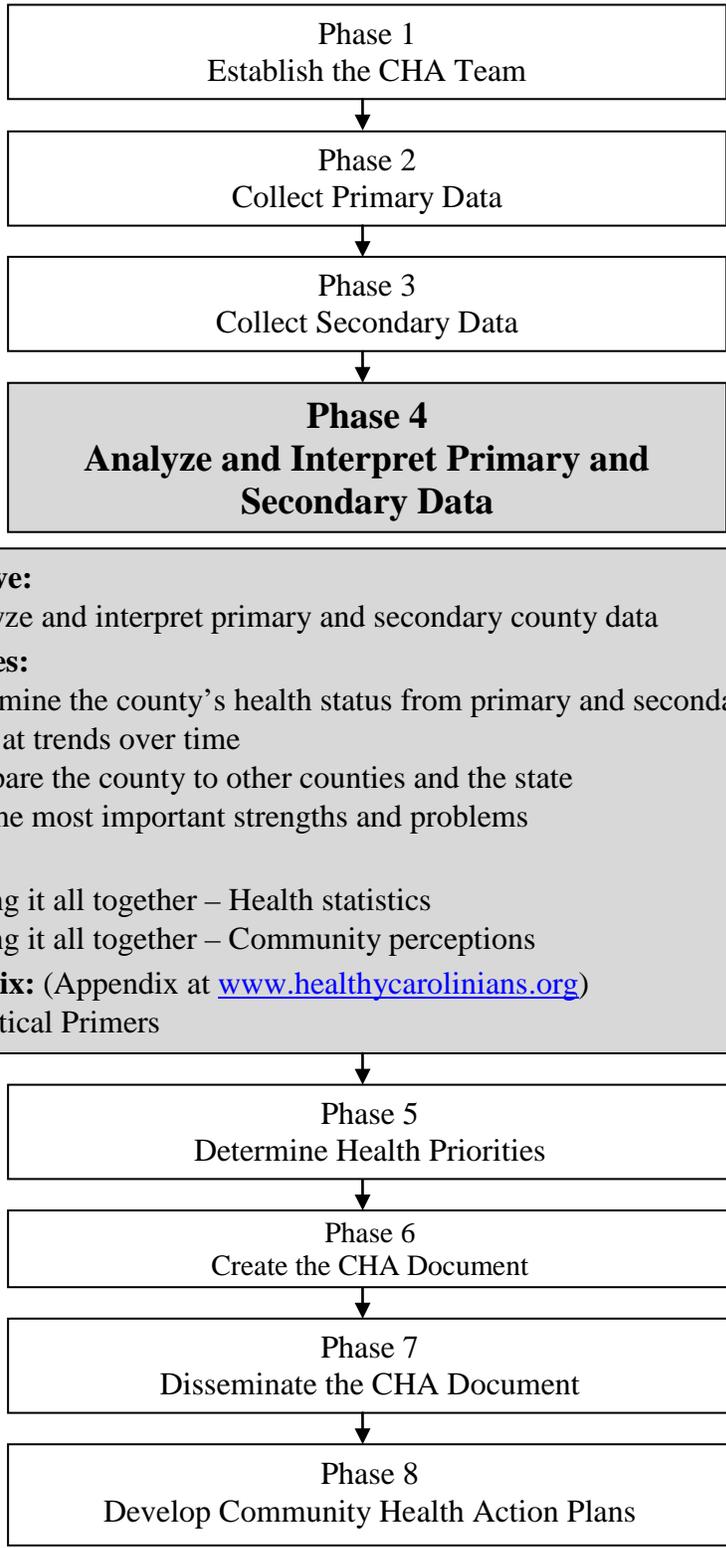


# NORTH CAROLINA COMMUNITY HEALTH ASSESSMENT PROCESS



**Essential Services #1** Monitor health status to identify community health problems

**Benchmark #1** LHD shall conduct and disseminate results of regular community health assessment

|                              |  |
|------------------------------|--|
| Accreditation Activity 1.1.b | Reflect the demographic profile of the population  |
| Accreditation Activity 1.1.c | Describe socioeconomic, educational & environmental factors that affect health                         |
| Accreditation Activity 1.1.d | Assembly/analyze secondary data to describe the community health status                                |
| Accreditation Activity 1.1.f | Compile/analyze trend data to describe changes in community health status and factors affecting health |
| Accreditation Activity 1.1.g | Use scientific methods for collecting and analyzing data   |
| Accreditation Activity 1.1.h | Identify population groups at risk   |
| Accreditation Activity 1.1.i | Identify existing and needed health resources  |
| Accreditation Activity 1.1.j | Compare selected local data with data from other jurisdictions   |

**Benchmark #11** LHD shall convene key constituents and community partners to identify, analyze and prioritize community health problems/issues.

**Benchmark #19** LHD shall identify populations that are not receiving preventive services or are otherwise underserved with respect to health care.

*Additional Accreditation Benchmarks may apply to the CHA (verify by Accreditation Site visit and LHD self-assessment instrument)*

## **Phase 4: Analyze and Interpret Primary and Secondary Data**

This Phase provides guidance for: gaining a basic understanding of the demographics of the county, the health status, and the major health risks and problems in the county, developing an hypotheses to explain the health risks in the county, and gaining insight into how the health status and health risk findings support, contradict, and relate to county residents' perceptions.

Once the CHA Team has collected a large amount of information about the county, it is time to pull the information together into a cohesive story. Analyzing CHA data requires pulling out the key pieces of information, thinking critically about where that information came from, interpreting what that information means for the county's health status, and then weaving the essential facts together into a complete picture of the county's health. Data describing the health of the county can be useful for program planning and evaluation and for developing CHA and community action plans. All the numbers, survey results, small-group discussion transcripts, and files of county and state level health statistics must be analyzed before developing a report to the community or selecting issues for the community health action plans.

**It is not necessary to report all of the data collected in the CHA document.** Report key data that describes a current issue or issues in the county (e.g., an increase in the number of women who smoke while pregnant) as well as data that describes problems that an action plan might address. Data showing trends of improvement (e.g. since the last CHA) in the county are

also equally important to include in the report. Before developing the CHA document and selecting issues for the action plans, the data must be analyzed and interpreted carefully.

### Prepare Survey Data

The first step in analyzing survey data is to “clean” the data. Data cleaning is the process of looking over the raw data to make sure there were no mistakes in data recording or entry. Check the range of the data to make sure that all responses make sense. For example, if the answer choices were “a, b, and c” and one person wrote “z” as the answer, check the hard copy survey to be sure the answer was entered correctly. Answers that do not make sense should be deleted and counted as missing data.

Review secondary data carefully as it may be several years old, incomplete, or based on small numbers (less than 20 people). Primary data also can be subject to problems based on how the data were collected, how truthfully people responded, and how willing people were to participate. Unintentional bias (the way the data were collected or subjects selected) may cloud the picture from what is really happening in the county. In addition, data from one portion of the county is sometimes incorrectly used to represent the entire county. Just because data highlights an issue or event, it doesn’t mean that this issue or event is more importance than another that lacks the supporting data. Evaluate the importance of an issue or event by asking how many people the issue or event affects, how severe its effects are on the county, and whether or not anything can be done to prevent or lessen its negative effects.

The next step in survey data analysis is to calculate descriptive statistics such as percents and averages. These statistics will give a summary of the answers for each question. The CHA Team may also want to do a more complicated analysis of the results broken into demographic groups to see if there are differences between responses in each group.

If the survey sample is not representative of the county’s population (ex: a convenience sample), weight the results using population calibration. Population calibration adjusts for important differences between the demographics of the sample and the demographics of the county. Some people may be over-represented in the survey results and others may be under-represented. For example, if the sample has a larger percent of individuals that are younger and have lower incomes than the county’s population, the answers to survey questions on access to healthcare will be different than if a representative sample of the county’s population was surveyed. After deciding which demographic characteristics are likely to be related to the results, break up the sample into demographic groups according to these characteristics. Next find out the makeup of the county according to these characteristics, based on reliable sources such as the US Census data. The weight for each demographic grouping (ex: group 1 is all adults age 18-24 with income <\$15,000) will be:

$$Weight_{group\ x} = \frac{y}{x} = \frac{\text{(proportion of group x in county)}}{\text{(proportion of group x in sample)}}$$

Calculate this weight for each relevant characteristic and use the weights to correct the results. For example, if the CHA Team wants to know how many people in the county are uninsured based on the survey, multiply the weight for each demographic group by the percent of people in that group who said they are uninsured, and then sum up all of the adjusted percents for all demographic groups.

$$Total\ percent\ of\ uninsured\ in\ county = \Sigma (Weight_{group\ x} * proportion\ uninsured_{group\ x})$$

Add weights to the data using EpiInfo or in a spreadsheet program such as Excel. Seek statistical advice if there are questions about how to do population calibration.

### Explore What is Behind the Data

Quantitative data will not reveal everything. The number of reported incidents may be known but the number alone cannot give specific information such as:

- Why the incident happened
- If there has been a change over time
- If people are aware of or concerned about the change

Often the CHA Team needs to talk to county residents to find out the story behind the numbers. This is why it is important to combine the secondary, quantitative data with the primary, qualitative data. Data from several years may show that there has been a notable change over the period of time. Reasons for why the changes occurred need to be examined. Think about related interventions, diagnostic changes, migration of people, and social or economic trends.



- **Use caution if sample sizes are small because the information may be misleading.**
- **Data collected are only as accurate as the source of the data.** Sometimes there isn't any information on how or by whom the secondary data were collected.
- **Misinterpretation of data can lead to misunderstanding of the importance of some issues or events.**

The methods used to analyze the collected data can vary depending on the reasons for the assessment. In CHA, the focus is on analysis of data collected by a variety of methods to produce a CHA document and community health action plans. Community partners may also use these data to set priorities for their programs which may or may not be the same as the CHA priorities.

Analyze the results of each data collection method. Summarize the information learned from secondary and primary data using the *Putting It All Together Worksheets* in the Phase 4 Tools. Look for common threads between the two summaries and pay attention to any differences or emerging issues. All methods of gathering data probably will result in similar findings, pointing out important issues. For example, consider the following fictional scenario:

- Key informant interviews with *County X* community members and leaders indicate that their young people are dropping out of school and going to work in low-paying jobs in a plant in the county, with limited health insurance coverage.
- Secondary data from the State Center for Health Statistics indicate that *County X* has an unusually high public school dropout rate.
- Primary data from the Community Health Opinion Survey for *County X* showed that school dropout was a concern of 66 percent of those who completed the survey.
- Small-group discussions with *County X* community education leaders revealed that they think the dropout problem is worse than the statistics indicate.

With this confirmation of findings, the *County X* CHA Team may want to include a strategy to reduce the public school dropout rate in the community health action plan.

Sometimes data conflict with each other. This means that one method reveals one thing (e.g., secondary data statistics revealed heart disease is declining in the county) while another method

shows something different (e.g., health providers and citizens stated in interviews and surveys that more people have heart problems and they're concerned about it). It is important to reconcile these differences. When the cause for the discrepancy is unknown, find out what it is. It is risky to move forward on planning future action when there is conflicting information.

## Trend Analysis

It is very important to describe any noticeable trends or changes in the data that have occurred over time. While this is a requirement for local health department accreditation, it is also important for planning health programs and services. Use caution when developing a trend analysis by comparing indicators in the current County Health Data Book to the same indicators from previous County Health Data Books. The current County Health Data Book tables use the projected United States 2000 population as the standard for age adjustment, in keeping with the national practice. However, the rates in these tables are **not** comparable to the rates in similar tables that were published in editions of the County Health Data Book before 2000, which used the age distribution of the 1970 United States population. A comparison *can be* done between tables that were adjusted to the 2000 United States population standard. See *Statistical Primers* in Appendix C and D for further discussion of this issue.

Compare findings in the new CHA data to data in the previous CHA and look for trends. Look at the same health indicators so that they are directly comparable to the new data. In addition, the CHA Team may want to gather historical and current local information to examine trends in local data. Be sure that the data being compared covers the same time period (e.g., annual data, three or five-year data) and uses the same source for population demographics. This is especially important if comparing data from a previous community health assessment since the SCHS has changed some of the reporting periods.



**In rural counties, rates may seem to change dramatically year to year, based on just a few deaths or cases of illness. In these cases, it is better to calculate rates over a several-year period, and compare those to earlier several-year periods.**

The time period chosen for comparison should be meaningful to the data being compared. For instance, the incidence of influenza varies throughout the year so it might be helpful to know the months when the most cases occur. Trends in heart disease death rates for the county, however, might not be revealed in less than a five-year period. Other interesting health trends might show up around the time of notable events that affected the county, such as a hurricane.

Develop trends for any data that measure a health outcome at several points in time. If rates are measured for each year, then examine the yearly trends. If rates are measured over a longer period of time, examine the trends for several time periods. For example, the County Health Data Book often gives county-level data for births as rates over a five-year period of time. To analyze the change in the county's birth rate in the past 10 years, compare the birth rate for the most current five-year period with the birth rate for the five-year period immediately prior to that one. If data are available, it is best to look at trends over 15 years for five-year rates to get a better idea of whether the trend shows an increase or decrease.

Don't forget to use local expertise in the areas being examined to validate impressions and interpretations of the data. County residents may have valuable information relevant to data interpretation—their impressions may be as valuable as those of prominent experts. Solicit their feedback when preparing a summary presentation of initial CHA findings. It is crucial to obtain a complete picture of the trend being examined.



- What health risks seem to be increasing or decreasing?
- What improvements seem to have occurred in the county?
- What are the changes from the last CHA or state of the county’s health reports (SOTCH)? If the current survey contained any questions from previous surveys, small-group discussions, or key informant interviews, compare how responses may have changed over time.
- How does the county health data compare to the state and peer counties?

### Develop Analysis Summary

A summary of the analysis results should be prepared as a written document and as a presentation to the community. Here are some ways to organize the presentation:

- Discuss most prevalent and serious diseases or problems and resources in the community as discovered in relevant secondary data.
- Discuss concerns of citizens from surveys or small group discussions and indicate whether the secondary data supports citizens’ opinions on the greatest health problems for the county. Indicate where the data do not agree and why, if known.
- Discuss the informed beliefs and opinions of the CHA Team which were supported by data indicating the health problems of greatest concern to the county and resources needed to address these problems.
- Discuss emerging health issues such as new areas/diseases of focus, new risk factors, and improvements and setbacks since the last CHA.
- Summarize the results of each instrument used to collect data. (e.g., what the Community Health Survey and Health Resources Inventory revealed, what the secondary data indicate, what community members emphasized in the interviews, etc.) Include examples of where results from the various methods agreed and disagreed.

Since this information will be presented in various reports, present the results as clearly as possible. Many county residents are not familiar with statistics and health care jargon. Some counties make a short summary flier for the community in simple language highlighting only the priorities and save the bulk of the statistics for the full CHA report. The report or presentation should also be unbiased (except when it is made clear that the statements are opinions and not fact) and the language should be clear and non-judgmental.

County residents can benefit from learning what the assessment revealed. The residents who participated in the assessment process will value having their voices heard by health officials, and they and other county residents may be motivated to make a positive change in their county

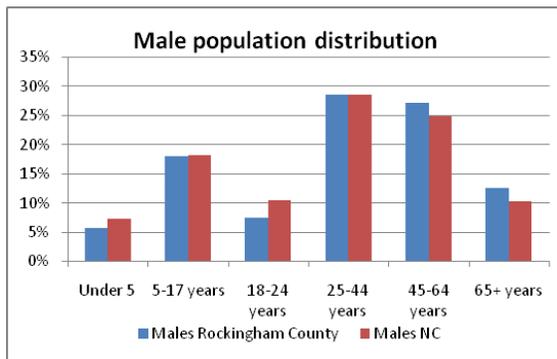


BEFORE CONTINUING THIS PHASE, IT IS IMPORTANT THAT THE CHA TEAM REVIEW AND UNDERSTAND THE STATISTICAL PRIMERS INCLUDED IN APPENDIX C AND D. THE TWO CONCEPTS DISCUSSED IN THESE PRIMERS—AGE ADJUSTMENT AND SMALL NUMBERS—ARE CRUCIAL FOR ACCURATE DATA INTERPRETATION.

## Analyze Data

### Population Demographics

The first step in understanding the health status in the county is to understand the demographics and socioeconomic factors which are powerful determinants of health. Compare the population percentages for selected age, race, and sex groups for the county and the state. Percentages show what proportion of people in the county belongs to each demographic group. In addition to percentages, the numbers are also important because they document the actual number of people potentially in need of certain health services. Consider drawing a population graph using a computer software program such as Excel to visualize population distributions.

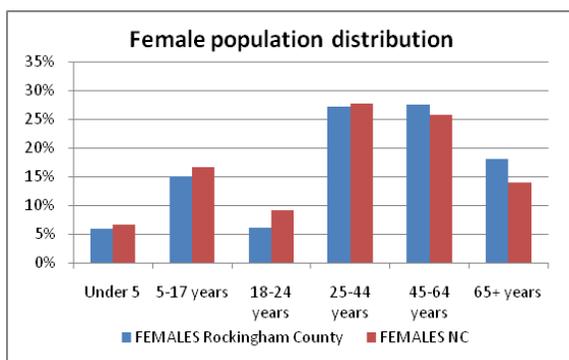


This is an example of an Excel population graph for Rockingham County and the state of North Carolina. These graphs can be interpreted as follows:

a) Rockingham County's population has a higher proportion of people over 64 than the state as a whole, for both males and females.

b) Proportions of males and females in each age group are similar except for ages over 64 years. There are more females in the oldest age group than males.

c) Both the county and the state have the highest proportion of their populations in the "25-44 year-old" group and the lowest proportion of their populations in the "Under 5" group. Notice that these two age categories use different lengths of time. The age categories were chosen to represent stages of life that have different health needs and risk factors.



Some demographic questions to ask are:

-  Has there been an increase or decrease in overall population size?
- How has the population changed since the last CHA or SOTCH reports?
- What are the reasons/influences that caused the change?
- How does this influence health program planning?

### Sub-population Data

Identify if there have been any recent increases in population sub-groups in the county that might need special services due to age, language, or cultural differences. Are there any sub-groups of people who might be susceptible to health problems because of their economic status, insurance coverage, disabilities, or job exposures?

The extreme ages (youngest and oldest) are at the highest risk for health problems and are economically less productive than working-age persons. Like the rest of North Carolina and the United States, the county's population may be aging. As such, it is important to examine age trends to prepare for the way these changes might affect health status of the county residents and the health care system.

Note the extent to which the county's population is made up of persons of minority races. Racial groups often differ by socioeconomic factors that can impact health status (e.g., income and education), but race in and of itself has little direct bearing on health outcomes except for a few diseases (e.g., sickle cell anemia).

### Interpreting Health Data by Race

Race in and of itself does not cause poor health status. There is little understanding of the association between race and health problems, but factors such as socioeconomic status, stress, and racism may be among the underlying causes of the lower health status of minorities when compared to whites. However, these factors are seldom quantified or recorded, while data on race are easier to find. Thus, race often serves as a surrogate measure for a variety of other related factors.

Because race is a surrogate measure for a variety of other related factors, minorities as a group are compared to whites on a variety of health measures throughout the CHA process. For many health indicators, African-American and other minorities have a greater burden of preventable illnesses and deaths than whites. This, of course, may not be true on the individual level. The advantages of showing the data by race are obvious for targeting resources and interventions toward populations most in need.

The SCHS normally publishes data by race for only two groups: white and minority. The SCHS recognizes the various population groups in North Carolina and the need for more details on race but a number of factors have hampered efforts to obtain accurate minority populations data. Some of these factors are:

- Many people want more details on other racial groups, such as American Indians and Asians. However, there are relatively few people in these groups in North Carolina. This means that there are relatively few births, deaths, and other health events for these groups. Rates with small numerators often are statistically unreliable, particularly at the county level.
- Appropriate denominators to produce rates for small racial groups are not available on a yearly basis. The United State Census, which collects detailed racial population data, is conducted only every 10 years.
- The North Carolina Office of State Planning produces annual population estimates but these are only for "white" and "other."
- The SCHS does capture more racial detail on its health records and can produce counts of events for smaller racial groups, but it is often not feasible to produce statistically reliable rates and percentages.

Hispanic/Latino is an ethnic group, rather than a racial group. Hispanics may be counted in both white and minority populations. There are significant challenges for collecting accurate data for Hispanics and official statistics are likely to be underreported. However, it is important to recognize that, according to census data, the Hispanic communities in North Carolina are

growing steadily. In 2000, the census data showed approximately 379,000 Hispanics in the state (4.7% of the population). By 2006, the number of Hispanics in the state grew to a projected 597,000 (6.7 % of the population). For 2006-2008, the number of Hispanics in the state was estimated at around 636,786 (7% of the population) (*American Community Survey, US Census*)

Miller, et al. (1989) makes the case for careful interpretation of data on race and other proxies for socioeconomic status in their book *Monitoring Children's Health: Key Indicators*. Following is a quotation from this discussion:

“In the United States, scant data are available on socioeconomic levels, but vital statistics are full of information on race, age, and marital status. We tend to report data that are available and to interpret them by relying on known associations. Unless great care is exercised, discriminatory stereotypes can be perpetuated. Dysfunctional families occur among all races and all socioeconomic levels. If we had readily accessible measures of family dysfunction, we would understand better the dynamics of such outcomes as child abuse, teenage pregnancy, low birth weight, and high infant mortality. Lacking that information, we risk burdening minorities, teenagers, and unmarried mothers with stereotypes that they do not deserve.”



- Has any sub-population group changed far more than others?
- What are the changes in sub-population groups from the last CHA or SOTCH reports?
- What are the reasons/influences that caused the change(s)?
- How do these changes affect the usage of the local public health department, hospital(s) or other agencies and organizations?
- How is the county's population different from the state in regards to sub-populations?

For more information on minority health, see the SCHS publication “Racial and Ethnic Health Disparities in North Carolina,” at [www.schs.state.nc.us/SCHS/](http://www.schs.state.nc.us/SCHS/) under “Publications.” For more research on how race, socioeconomic status, and stress impact health, see:

- ✓ California Newsreel (2008). Unnatural Causes.
- ✓ Marmot, MG (2004). The Status Syndrome.
- ✓ Mustillo S, Krieger N, Gunderson EP, Sidney S, McCreath H, Kiefe CI. (2004). Self-reported experiences of racial discrimination and black-white differences in preterm and low-birthweight deliveries: The CARDIA Study. American Journal Public Health, 94, 2125-2131.
- ✓ Cohen S, Tyrrell DAJ, & Smith AP. (1991). Psychological stress and susceptibility to the common cold. New England Journal of Medicine, 325, 606-612.

## **Socioeconomic Factors**

Examine the socioeconomic measures for the county using data collected in Phase 3. Economic factors are powerful determinants of health since many diseases and risk factors are adversely affected by poverty. These data provide information about the level of poverty in the county, who is most affected, and what services may be needed. One way to estimate the number of impoverished residents in the county is to look at the number of recipients of Temporary Assistance for Needy Families (TANF)/Work First and Food and Nutrition Services (FNS) ([www.dhhs.state.nc.us/dss](http://www.dhhs.state.nc.us/dss)). Recipients of these social services are frequently in need of services provided by local public health departments and other agencies.

The per capita income for a typical rural county might be at least \$2,000 less than the state as a whole. This difference is large, but not unusual. Rural counties with lower average incomes may have more poverty-related illnesses compounded by challenges in accessing health care.



- How many families are recipients of TANF or FNS?
- Are there geographical areas of the county where more residents are recipients of TANF or FNS than other areas?
- How does this influence health program planning?
- What are the programs/sources for assistance for these recipients?
- How have the data changed from the last CHA or SOTCH reports?
- What are the reasons/influences that caused the change?
- How does the county data compare to the state?

## Education

Education influences a person’s health throughout his or her lifetime. Data from the NC Department of Public Instruction’s website ([www.ncpublicschools.org](http://www.ncpublicschools.org)) and other sites listed in the *Resource Guide* in Appendix H are useful for understanding the status of public education in the county. The US Census collects information on the educational attainment level and enrolment status of the residents in a county.

In addition to being one measure of socioeconomic status which affects health, education is closely related to health literacy. If people in the county have a low average level of education, this changes the way agencies and organizations need to deliver health messages, provide health care, and conduct health surveys.

- **Graduation Rates.** The four-year graduation rate may be an indicator of educational status and the need for additional health services geared towards the teenage population. If the county has a low four-year graduation rate compared to the state or peer counties, explore programs to improve retention. High dropout rates affect the employment potential of county residents which has implications for location of large employers and healthcare coverage of residents. Data on graduation rates is listed on the NC Department of Public Instruction’s website ([www.ncpublicschools.org](http://www.ncpublicschools.org)) under “Data & Statistics.”
- **SAT Scores.** The average SAT score of North Carolina students has been generally improving over the past three decades. Data on SAT scores is listed on the NC Department of Public Instruction’s website. Compare the county’s average SAT score to the state as a whole.

The most significant factor in interpreting SAT scores is the percent of students who take the exam. In general, the average scores are lower if more students take the exam. For example, in a county where a very small percentage of students—only those who are college-bound seniors with very strong academic backgrounds--take the SAT, the SAT averages reported for that county would be higher than the state average. If a greater proportion of students with a wider range of academic backgrounds take the SAT, the scores would expect to be closer to the state average.



- What are the trends in graduation rates for the school district(s)?
- Do the graduation rates vary by schools or school district(s)?
- How does the educational level in the county compare to the state?
- What are the changes in dropout rates and SAT scores from the last CHA or SOTCH reports?
- What are the reasons/influences that caused the change?
- Does there appear to be a relationship between the graduation rate and teen pregnancy, unemployment, and crime in certain areas of the county?
- What are the other sources for learning employment and life skills in the county?
- How does the educational level of the county's population affect the usage of the local public health department, hospital(s) or other agencies and organizations?

### **Environmental Factors**

Review data on potential environmental contaminants such as lead, tobacco smoke, and other sources of air and water pollution. Explore what can be done to remove these contaminants or lessen their impact on health in the county. If the county has high levels of air pollution and often has high ozone days, consider how those affect the ability of citizens to safely work and play or exercise outside. Consider other factors which make a county a place where people want to live and visit (e.g., good quality restaurants, hotels, daycares, pools, parks, and walking trails).



- Is the environment in the county conducive to a healthy lifestyle?
- What are the changes in the environment from the last CHA or SOTCH reports?
- Why have those changes occurred and how do they affect health?
- How does the county data compare to the state?
- What can be done to make the county a healthier place to live?

### **Pregnancies and Births**

Examine the county's data related to live births and pregnancy and compare that data to the state's data. In addition to the number of births, look for data on indicators of healthy pregnancy such as early prenatal care. Note risk factors for poor birth outcomes such as low birth weight, mothers who smoke, and inadequate child spacing. If the county has a lot of high-risk pregnancies, consider how the local public health department and other agencies can work to improve birth outcomes. The *Basic Automated Birth Yearbook (BABY Book)* on the SCHS web site contains information on prenatal care, birth order, birth weight, condition of newborns, and other important indicators.

### **Unplanned and Teen Pregnancies**

Unplanned pregnancy is a major problem in North Carolina. Indicators are large numbers of abortions, out-of-wedlock births, inadequate child spacing, and teenage pregnancies. It is useful to look at the number of occurrences of these indicators in the county compared to the state, because, while not all of these pregnancies are unwanted, many are unplanned. If the number of unplanned pregnancies appears to be high in the county, this may indicate a need to improve or expand family planning services. If county residents perceive teen pregnancy as a great concern,

look at data on the number of births to mothers less than 18 years old. Such information may be helpful in developing an action plan. Keep in mind that not all cultural groups view teen pregnancy as a problem. Different groups may also place different values on marriage.



- What percent of teen mothers are very young (10–14 years of age)?
- What percent of teen births are to unmarried mothers?
- What percent of teen mothers have not finished high school?
- What percent of births to teen mothers are second or higher order births?
- What are the changes in live births and pregnancy data from the last CHA or SOTCH reports?
- What are the reasons/influences that caused these changes if there are changes?
- How does the county data compare to the state?

## Mortality

### Fetal, Neonatal, Post-natal, and Infant Deaths

Because there are a small number of perinatal deaths that occur each year, perinatal death data has been aggregated to five-year rates. Perinatal (fetal, neonatal, post-natal, and infant) death rates represent deaths that occurred during a five-year period (e.g., 2004-2008). In counties with very small populations, the number of events that occurred over five years may still be too small to interpret. The county should have at least 20 or more events for any health indicator before its rate can be compared to the state rate.

#### **Guide to Perinatal Health Indicators**

**Early prenatal care** - first prenatal checkup is during the first trimester of pregnancy

**Low birth weight** - weight that is less than 2500g (5.5 pounds) at birth

**Very low birth weight** - weight that is less than 1500g (3.3 pounds) at birth

**Inadequate child spacing** - less than six months between the date of delivery and next conception.

*Definitions taken from the State Center for Health Statistics and WHO guidelines*

Infant mortality is an index used internationally to measure the overall health of a population. Although the United States has some of the most advanced health care technology in the world, as made less progress than many other counties in reducing infant mortality. Look at how the county's infant mortality rate compares to the Healthy NC 2020 Objectives. If the infant mortality rate is based on small numbers, see Appendix C before interpreting the data. If the infant mortality rate is a lot higher than the state's, explore the reasons why. Look at past statistics for the answers to these questions:



- Is the infant mortality rate higher now than five years ago?
- Has the infant mortality rate increased or decreased over the past 15 years?
- What are the changes in data from the last CHA or SOTCH reports?
- What are the reasons/influences that caused the change if there is a change?
- How does the county data compare to the state?
- Are there programs that the local public health department and other agencies can add or improve upon to lower the infant mortality rate?

Neonatal mortality (death within 28 days of life) accounts for approximately 70 percent of the infant mortality rate in North Carolina. Two factors are largely responsible for neonatal mortality. The first is serious birth defects and the second is low birth weight. Black infants are nearly four times as likely to die from prematurity and low birth weight as are white infants.

Fetal death rate (loss after 20 weeks of gestation and before birth) is another important measure of perinatal health. If the county has a high fetal death rate compared to the state and surrounding counties, consider the causes for this higher rate.

### **General Mortality**

Note that some of the mortality indicators represent unadjusted (or “crude”) rates, whereas others have been age-adjusted. Age-adjusted death rates are the most appropriate comparison measure because age differences in the population distributions have been controlled. All other factors being equal, age-adjusted death rates tell how many deaths would have occurred in a population of 100,000 persons in each of two locations if they had exactly the same age distribution. An adjusted rate is a hypothetical rate and is valuable for comparison only. Unadjusted rates are a better measure of the overall level of death from one particular disease versus another in the same county. When comparing deaths in the same county for the same time period, age adjustment is not necessary because the population will be the same. For more discussion on age adjusted rates, see Appendix D.

If only crude death rates are available, be sure to compare the age distribution of the county with the comparison group. For example, a small county with a large university will have a higher proportion of young people than counties with large retirement communities. As such, unadjusted death rates may vary considerably between these two counties simply because of the age differences.



- What are the leading causes of death in the county?
- What are the leading causes of death by age/race/sex?
- Are there large variations in the age-adjusted rates in specific sub-population groups?
- What sub-population groups are impacted most by unintentional and violent causes of death (e.g., homicide and suicide)?
- What are the changes in data from the last CHA or SOTCH reports?
- What trends can be identified in the mortality data?
- How does the county data compare to the state?

### **Morbidity**

Regarding morbidity (disease rates), remember that the cases noted in the County Health Data Book are only the ones that have been reported so use caution in drawing conclusions from this information. Rates in a county could be low because physicians do not report all of them, the health care community is not frequently diagnosing this disease, or the patients have not seen a health care professional for their illnesses. For example, the Centers for Communicable Diseases estimates that around 25 percent of those who are infected with HIV do not know that they carry the virus. Some factors that may cause disease rates to seem to artificially rise are improvements in diagnostic techniques (i.e. prostate cancer screening), people with the disease moving to the area because of a new specialty clinic, improvements in training of local health

professionals, or increased access to care and screening for county residents. Rare disease rates are usually susceptible to random fluctuations because they are typically based on small numbers. Consult SCHS staff for help with interpretation of trends in a rare disease. If the changes in disease rates cannot be readily explained and if the rate is consistently higher than expected, then it may be an important change.



- Are communicable disease case reports submitted to the local public health department from all appropriate health care providers?
- Which communicable/chronic diseases are highly prevalent in the county?
- Which diseases have incidence rates that appear to be substantially higher ( $\geq 15\%$  difference) than that of the state?
- What are the reasons why they are higher? (ex: People not getting immunized, poor sanitation)
- What are the changes in data from the last CHA or SOTCH reports?
- How does the county's data compare to peer counties?
- What strategies are these peer counties using for disease control and prevention?
- What health care resources currently exist in the county for addressing these diseases?

**Behavioral Risk Factor Surveillance System (BRFSS)** Data on several health behaviors including diet, exercise, tobacco use, and screenings for breast cancer (mammograms), cervical cancer (pap tests), colorectal cancer (colonoscopies), and prostate cancer (prostate exams) are available for most years for each region of North Carolina and some counties.



- Is BRFSS data available for the county or just for the region?
- What behavioral risk factors have a high prevalence in the county?
- What are the changes in data from the last CHA or SOTCH reports?
- What are the reasons/influences that caused the changes?
- How does the county or regional data compare with state and peer county data?
- What programs can be put into place to address these risk factors?

## Peer Counties

Compare the county's data to a neighboring county and to the peer counties by developing a spreadsheet. A "peer" county is another county similar in terms of population range, age, race, and poverty of residents. Contact the SCHS for more information on peer counties. If a peer or neighboring county is seeing more positive trends in a particular health data (e.g., cancer or stroke mortality rates), the CHA Team may want to investigate how the local data compares to state or national data over the same time period. The following example explains how to calculate the percent change for county rates and what percent difference there is between a county and another county or the state. These calculations are useful for examining local trends and comparing a county to other geographic areas. The SCHS recommends using the guideline of a 15 percent or greater difference in rates as an important difference when comparing one county to another county, a county to the state, or when examining local trends over time. Less than a 15 percent difference in rates could easily be caused by chance fluctuations in the rates. Before calculating the percent change, make sure that the rates are based on the same population unit (ex: both are in the format: number of cases per 100,000 people or per 1,000 people) and

that they come from the same period of time. If not, convert them to the same population unit or find rates from the same time period.

### Computing Percent Change or Percent Difference

To calculate both percent change and percent difference, use the following basic steps.

1. Determine what the base is. (Hint: The base is the year or population group to which you want to compare your statistic.)
2. Subtract the base from the comparison value (your statistic).
3. Divide by the base value.
4. Multiply by 100.

So, your calculation should look something like this:

$$\frac{(\text{Comparison value} - \text{Base value})}{\text{Base value}} \times 100\% = \text{Percent change or Percent difference}$$

Don't worry. It's easier than it sounds! Here are some examples:

**Percent Change - Example 1:** County residents are concerned about the number of deaths from heart disease in your county. The County Data Book says that the county's death rate from heart disease was 45.0 deaths (per 100,000 population) in 2010 and 41.0 deaths (per 100,000 population) in 2008.

*What is the percent change in the heart disease death rate for the county in 2010 compared to 2008?*

The base year is 2008. So calculate the percent change this way:

$$\frac{(45.0 - 41.0)}{41.0} = 0.098 \times 100\% = \mathbf{9.8\%}$$

Interpret: The death rate for heart disease in the county increased by 9.8% between 2008 and 2010. This is not considered a drastic change since 9.8% is less than the SCHS guideline of 15% variance in rates.

**Percent Difference - Example 2:** A committee is to decide whether the new regional birthing center should be in your county, Mountain County, or the neighboring county, Cliffhanger County. The County Data Book says that between 2004-2009 the Mountain County's birth rate was 15.0 births (per 1,000 population) and Cliffhanger County's birth rate was 12.0 births (per 1,000 population).

*What is the percent difference in birth rates for Mountain County compared to Cliffhanger County?*

The base county is Cliffhanger County. So calculate the percent difference this way:

$$\frac{(15.0 - 12.0)}{12.0} = 0.25 \times 100\% = \mathbf{25\%}$$

Interpret: Mountain County's birth rate is 25% higher than Cliffhanger County's. This is a large difference!

*What if I want to say Cliffhanger County's birth rate is lower than ours? Can I use the same percent?*

**No!!!** The percents are different when you change the numbers.

$$\frac{(12.0 - 15.0)}{15.0} = -0.20 \times 100\% = \mathbf{-20\%}$$

Interpret: Cliffhanger County's birth rate is 20% lower than Mountain County's.



- What are the changes in data from the last CHA or SOTCH reports?
- How does the county's health data compare with the state and peer counties?
- Are there peer counties that appear to have better trends for certain health indicators?
- What are the causes for these better trends?
- Would the programs/interventions from the peer counties be useful in this county?
- Does this county have the resources to implement these programs/interventions?

## Health Resources

For county specific information, review data on health resources collected in Phases 2 and 3 which includes information on: (1) current agencies and organizations that have some effect on health, (2) needed resources that are currently lacking and (3) narrative explaining how current and needed resources influence the county residents' health.

### Health Care Facilities and Providers

For potential health care utilization and program information not included in the county health resource inventory, refer to the *Resource Guide* in Appendix H, SCHS website. A shortage of providers does not necessarily indicate that county residents are not receiving adequate care, but rather may suggest that a number of residents leave the county for care or that the particular type of specialist is not available or in high demand in the county. For persons living near the county line, it may be more convenient to leave the county than seek care in their own county. However, in some areas of the state, many neighboring counties share a shortage of health care providers, so receiving care is difficult. Looking at the statistics and listings of health care providers in the area to determine the barriers that hinder county residents from receiving the health care they need. Identify health care gaps in the county. Look at county services to determine if they are failing to reach those who need them the most.



- What are the health care gaps in the county?
- Are the existing programs and services failing to reach those who need them the most?
- How does this data compare with the data in the last CHA or SOTCH reports?
- Does the county have enough counseling and rehabilitation services?
- Do people know where to get counseling and rehabilitation help when they need it?
- How does the county's health data compare to the state and peer counties?

## Parks and Recreational Facilities

Another important issue related to community health is the availability and safety of neighborhood parks and sidewalks and existence of community recreational centers. Changing the way communities are can develop and increase physical activity and healthy eating opportunities. Many people express a desire to walk more and be more physically active, but find themselves hindered to a great extent by the design of their communities that are designed for automobiles rather than pedestrians. Stores, restaurants, and schools are often too far away from residential neighborhoods to be easily reached by foot.



- Does the built environment in the county encourage people to exercise, walk, and bike to places or to stay inside and drive?
- What resources are lacking in the county?
- Are there other facilities that could be utilized to replace missing facilities? (e.g., school or church gymnasiums for after school or night basketball leagues)
- How does this compare with the data in the last CHA or SOTCH reports?
- How does the county’s health data compare to the state and peer counties?

### Smoke-free Facilities

Information on smoke-free facilities may not have been included in the data collected earlier. Since smoking and second-hand smoke contribute to many health problems, it is critical for the CHA Team to look at the county and ask the following questions.



- What facilities are smoke free in the county? (e.g., recreational facilities, worksites)
- Do county residents support smoke-free public facilities?
- Do county policies reflect those beliefs?
- How has smoke free policies changed from the last CHA or SOTCH reports?
- How does the county data compare to the state and peer counties?
- What can be done to change the smoking environment and policy decisions in the county?
- How does a lack of smoke-free facilities limit the lifestyles of those with asthma and other chronic respiratory illnesses in the county?

### Other Resources

Data collected earlier provided information on a number of other resources in the county that effect the physical, mental, and social well-being of county residents. One starting point in analyzing this data is to look at the crime and substance abuse rates as well as domestic violence and child abuse rates. A high crime rate and widespread spousal and child abuse can signify a need for more social services that support county residents during hard and stressful times. Also, if the county has a young population, pay extra attention to data surrounding childcare and developmental services for early childhood. If the county has a large elderly population, look at data on the number and quality of retirement homes and assisted living facilities. In other words, tailor the information to describe the county and the needs of the residents.



- Are violent or property crimes a problem in the county?
- Are the crime rates dropping at a rate similar to that of the state or peer counties?
- How does the current crime rate compare with data from the last CHA or SOTCH Reports?

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- Are child care needs met in the county?
- How does the county compare to the state in terms of the proportion of preschool-aged children in child care?
- How serious is domestic abuse and child abuse in the county?

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- Are people able to access the basic necessities for good health and quality of life such as grocery stores and markets with healthy food choices?
- Are nutritious food choices disproportionately available in different neighborhoods?
- How can zoning policies be changed to ensure that every neighborhood has access to good food?

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- Is there bus, taxi or other transportation services?
- Do bus routes serve areas with the most need for transportation?
- How is transportation routed in the county?
- Do routes connect people to job opportunities, health care, aid organizations, and other community resources?

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- What educational and service learning opportunities are offered in the county?
- What job skill training is offered to support local industries?
- How can people enrich their lives after graduation from high school?

### Community Health Opinion Survey

Report methods used for primary data collection in detail (about one paragraph) including a description of the target population, how participants were selected and recruited, and how the survey or small group discussions were administered.

Data from the Community Health Opinion Survey collected in Phase 2 can be entered into a program such as Excel or Epi-Info to organize and calculate statistics from the survey data. Enter participant's survey responses directly into a survey template which is set up in an Epi-Info format file at <http://www.healthcarolinians.org/assessment/resources/survey.aspx>. If any survey questions were added or deleted, be sure to modify the survey file in Epi-Info BEFORE entering any data.

When analyzing data from the survey, consider the makeup of the surveyed population and who it represents. Analyze this population to see if it is representative of the county's population. See *Comparing the Sample Population to the County's Population Worksheet* in Phase 2 Tools. If the sample population is not representative of the county's population, the data may need to be adjusted to account for the differences in the sample population. (See Phase 2 for a discussion on how to analyze survey data.)

Report the answers to all survey questions using percents and counts in an easy-to-read format using tables, graphs, and charts. Be sure to include interpretation of the answers and what they say about the perceived health of the county. Look at the survey information to see what the data says about quality of life, major health issues, and health resources in the county.

**REMEMBER: MISLEADING DATA IS WORSE THAN NO DATA!**

Results from convenience samples must be interpreted with caution. It is important to describe the people that the data represent because generalizations can be made only to persons who are similar to the convenience sample. For example, if people were sampled in the parking lot of a superstore on Tuesday morning during a certain time period, the results apply to those who would shop at that store on a weekday morning or more accurately, on Tuesday morning during that time period. Sampling procedure must be reported along with the results showing the

demographics of the sample compared with the demographics of the county.



- Is the sample population representative of the county’s population?
- How is it different?
- How will this difference influence the results of the survey?
- What is the general opinion of the quality of life in the county?
- What seem to be the county’s biggest assets?
- What are the biggest health problems according to the community members surveyed?

### Small-group Discussions

Using the information collected in small-group discussions, sort the information according to the key topics or areas of concern, such as schools, services for the elderly, child care, job opportunities, etc. Identify these topics and areas of concern from the various topics discussed during the discussions. When reporting the results from these discussions, do not interpret the data by a head count. For example, do not report that “85 percent of the respondents said ---.” These statements are inaccurate due to sampling bias and group dynamics.

When preparing a report on the results of small-group discussions, think about the CHA purpose and objectives, and the key decisions and steps that may be taken. Based on the discussions, address each key objective with recommendations and insights from the group. Look for places in the report to use phrases from the notes, quotes, or transcriptions.

There are several suggested components for the small-group discussion report:

- Summary
- Introduction and background including purpose and objectives
- Description of the research design chosen
- Results of the discussions
- Conclusions/recommendations
- Appendices (questionnaires, interview guides, or other materials used during the discussions)

### Putting It All Together

Use the *Putting It All Together Sample Worksheets* in Phase 4 Tools to document the county’s most pressing problems and most crucial strengths, as revealed by the analysis. In order to get a complete picture of the county, the CHA Team will need to use the County Health Data Book, the Community Health Opinion Survey, and data from other sources to look at current statistics and changing trends over time. Use the worksheets to report to the community and to prioritize the county’s health problems.

**TIP:** The decisions of the community are paramount. County residents need to decide on their own priorities based on their particular needs

## CHECKPOINT

Before leaving Phase 4, check to see if the following tasks are completed:

- ✓ Analyzed statistics from the County Health Data Book, and other data sources.
- ✓ Analyzed data from small-group discussions and/or the Community Health Opinion Survey.
- ✓ Involved the entire CHA Team in discussing implications and interpretations of the survey data combined with the secondary data analysis.
- ✓ Identified the county's most important strengths and problems on the *Putting It All Together Worksheets*.

## Appendix at

<http://www.healthycarolinians.org/assessment/resources/survey.aspx>

### PHASE 4 SAMPLE *PUTTING IT ALL TOGETHER* WORKSHEET

(Set up table for each worksheet with 10 rows for information. Include directions)

| <b>Putting It All Together Sample Worksheet – County Strengths</b>   |          |
|--|----------|
| Identify five to 10 of the community's most important <b>strengths</b> as indicated by the data in the <u>County Health Data Book</u> .  |          |
| Strength   | Comments |
|  |          |
| <b>Putting It All Together Worksheet – County Problems</b>   |          |
| Identify five to 10 of the county's most critical <b>problems</b> as indicated by the data in the <u>County Health Data Book</u> .   |          |
| Problem  | Comments |
|  |          |
| <b>Putting It All Together - Community Perceptions of Strength</b>   |          |
| Identify five to 10 of the community's most important <b>strengths</b> as indicated by the data gathered in the <u>community</u> (via local data, interviews, small-group discussions, surveys, and/or asset mapping). |          |
| Strength   | Comments |
|  |          |
| <b>Putting It All Together - Community Perceptions of Problems</b>   |          |
| Identify five to 10 of the community's most important <b>problems</b> as indicated by the data gathered in the <u>community</u> (via local data, interviews, small-group discussions, surveys, and/or asset mapping).  |          |
| Problem  | Comments |
|  |          |