# Introduction

In June 2009, the Division of Public Health and Community Services (DPHCS) underwent a Strategic Planning process to identify departmental strengths and areas for improvement using the National Association of County and City Health Official's Operational Definition Capacity Assessment which is based on the 10 Essential Services of Public Health. As part of this process, the need for a comprehensive Community Health Assessment (CHA) was discussed and became a top priority of the Division's Strategic Plan. A CHA is a process by which community members gain an understanding of the health concerns and needs of the community by identifying, collecting, analyzing and disseminating information on the community's assets, strengths, resources and needs. There are many health topics covered in this CHA, including access to healthcare, maternal health, mental health, oral health, injury, emergency preparedness, environmental health and substance abuse. The overarching goals of the CHA are to engage community partners, identify emerging health issues, provide information to community members and set the foundation for future programs and grant opportunities for the Greater Nashua Public Health Region.

The last comprehensive Community Health Assessment in the City of Nashua was completed over a decade ago, with the last assessment being conducted by Rivier College in 2001 which focused on medically underserved residents in the City of Nashua. The United Way of Greater Nashua also conducts a Community Assessment every three years that touches on health, with the most recent being published in 2009. Following the publication of this CHA, the DPHCS will work with community partners and stakeholders to develop the Community Health Improvement Plan (CHIP), which takes identified health weaknesses and emerging issues from the CHA and tries to improve the health of the community over a three year period by following a workplan (Figure I.1). The strategic plan, CHA and CHIP are part of the process for becoming voluntarily accredited as a local health department through the Public Health Accreditation Board, a non-profit organization that was created to promote and manage the national accreditation program.
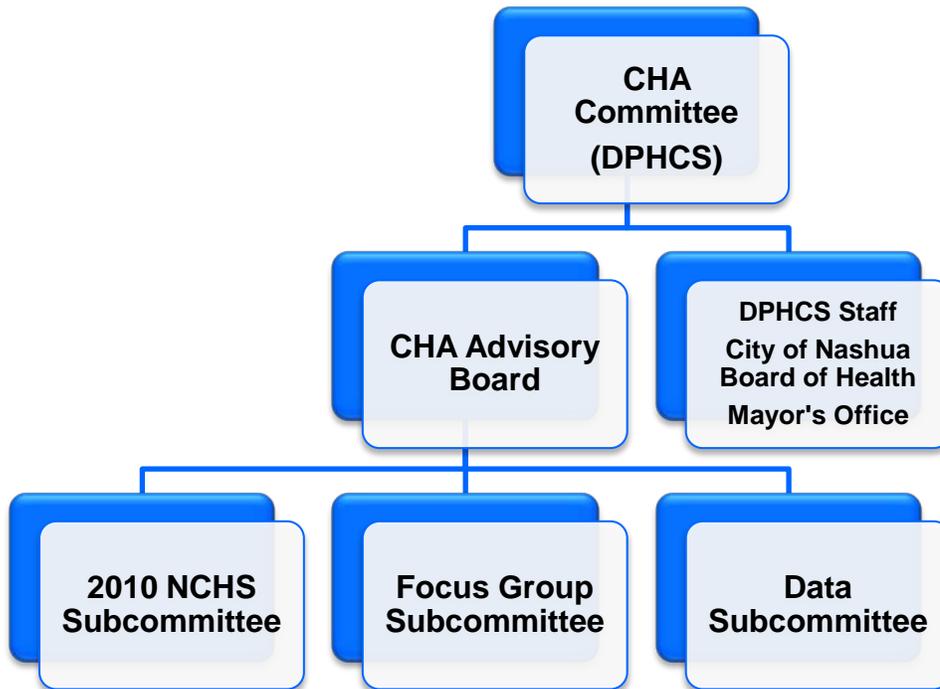
Figure I.1 Process
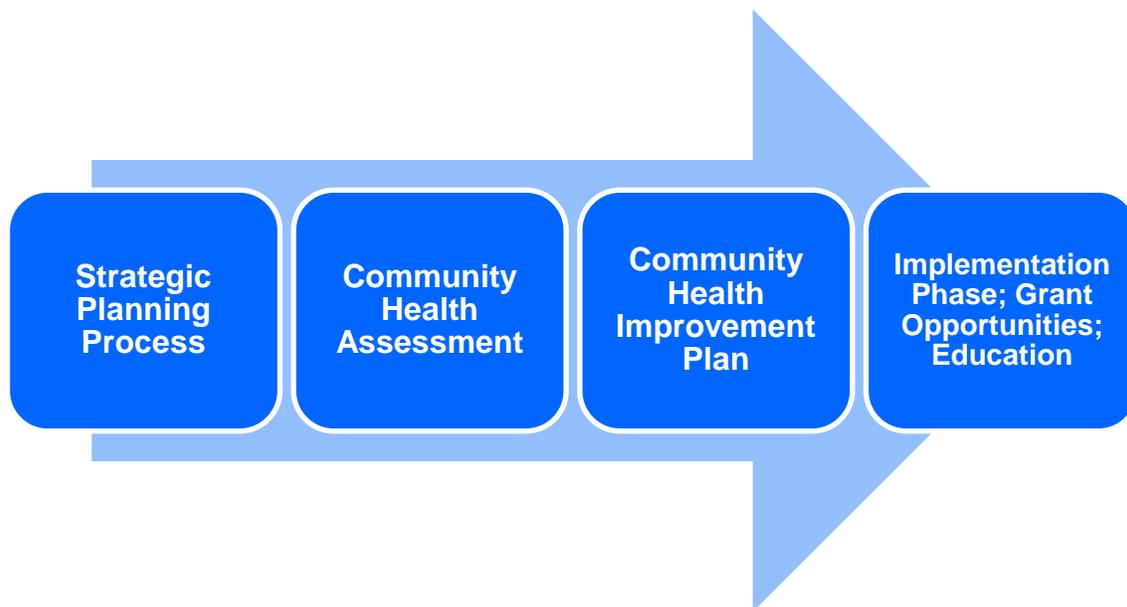
The steps for conducting a CHA are detailed below and followed a fourteen month timeframe from June 2010 to August 2011.

Figure I.2 Steps for Conducting a CHA

```
┌─────────────────────────────────────────────┐
│         Form the Assessment Team(s)          │
└─────────────────────────────────────────────┘
                      ↓
┌─────────────────────────────────────────────┐
│         Identify and Secure Resources        │
└─────────────────────────────────────────────┘
                      ↓
┌─────────────────────────────────────────────┐
│       Collect Primary and Secondary Data     │
└─────────────────────────────────────────────┘
                      ↓
┌─────────────────────────────────────────────┐
│            Analyze the Health Data           │
└─────────────────────────────────────────────┘
                      ↓
┌─────────────────────────────────────────────┐
│    Share Preliminary Results and Determine   │
│               Health Priorities              │
└─────────────────────────────────────────────┘
                      ↓
┌─────────────────────────────────────────────┐
│               Write a Report                 │
└─────────────────────────────────────────────┘
                      ↓
┌─────────────────────────────────────────────┐
│             Disseminate Results              │
└─────────────────────────────────────────────┘
```

In June 2010, the DPHCS formed the CHA Committee, a team of staff members from each department within the Division, that worked together to formalize a plan of action, write the CHA and perform internal duties such as scheduling and organizing events. The Epidemiologist and Medical Director were identified as the lead coordinators for the project. Also during this time, the CHA Committee started to recruit medical, collegiate and social service organizations for the CHA Advisory Board. The Board was composed of 29 individuals from 27 organizations. The role of the Board was to attend bimonthly meetings, lend expertise to the DPHCS, review materials and data, become an advocate for the process, identify resources, and help disseminate the final report. Three subcommittees were developed under the Board to assist with planning: the 2010 Nashua Community Health Survey (NCHS) Subcommittee, the Focus Group Subcommittee and the Data Collection Subcommittee (Figure I.3).

Figure I.3 Organization/Communications Chart for the CHA

```
                    ┌─────────────────┐
                    │      CHA        │
                    │   Committee     │
                    │    (DPHCS)      │
                    └────────┬────────┘
              ┌──────────────┴──────────────┐
      ┌───────────────┐            ┌──────────────────┐
      │ CHA Advisory  │            │   DPHCS Staff    │
      │    Board      │            │  City of Nashua  │
      │               │            │  Board of Health │
      │               │            │  Mayor's Office  │
      └───────┬───────┘            └──────────────────┘
   ┌──────────┼──────────┐
┌──────────┐ ┌──────────┐ ┌──────────┐
│2010 NCHS │ │Focus Group│ │  Data    │
│Subcommittee│ │Subcommittee│ │Subcommittee│
└──────────┘ └──────────┘ └──────────┘
```

Healthy People 2020

A program of the Centers for Disease Control and Prevention (CDC), the Vision for Healthy People 2020 is, "A society in which all people live long, healthy lives". For three decades, Healthy People has set 10-year national objectives for improving the health of Americans. The objectives for Healthy People are to track and monitor health indicators over time to see if the targets set by Healthy People are being met. To assist organizations in implementing Healthy People 2020 (HP2020), a framework called, Mobilize, Assess, Plan, Implement, Track (MAP-IT) was developed for planning and evaluating public health interventions (Figure I.4). MAP-IT follows a similar process to the one developed by the DPHCS and the steps outlined in conducting a CHA (Figure I.1; Figure I.2). When appropriate, the data in the CHA will be compared to the HP2020 objectives and goals. For example, one of the objectives is to reduce low birth weight newborns and the target is to have less than 7.8% of newborns with a low birth weight. Nashua comes close to meeting the HP2020 objective with 8% of newborns with a low birth weight.

Figure I.4 Healthy People 2020's MAP-IT

| Mobilize | Assess | Plan | Implement | Track |

Nashua High School Photography Project

To encourage partnership from the community in the CHA, photography students from Nashua High School North and Nashua High School South were asked to take pictures of what they thought was public health or healthy and unhealthy behaviors within the community. Students submitted their pictures for inclusion in the CHA. Students were under the direction of their photography teachers, Erin Knoetig from Nashua High School North and Angela Walsh from Nashua High School South. Their pictures can be viewed throughout the report and are highlighted in Appendix 5.

Data Sources

For the CHA, primary data, or data that is collected firsthand, and secondary data, or data that is collected by another organization, was gathered from various sources within the City and the State of New Hampshire. Primary data was collected by conducting two focus groups and a door-to-door health survey in the community while secondary data was collected from local agencies in Nashua, the New Hampshire Department of Health & Human Services (NH DHHS) and the New Hampshire Department of Environmental Services (NH DES).

2010 NASHUA COMMUNITY HEALTH SURVEY

The purpose of this survey was to gather information from residents in Nashua for the CHA and to exercise, or test, a rapid needs assessment methodology for use in disaster response. An operations-based functional exercise was developed to test communications capability, emergency operations center management and epidemiological surveillance and investigation capabilities in response to an emergency. The 2010 Nashua Community Health Survey Committee was composed of Nashua Division of Public Health & Community Services staff and Community Health Assessment Advisory Board members (reference Acknowledgements section). Volunteers for the survey were from numerous agencies including, Greater Nashua Public Health regional partners, medical partners and the local colleges (reference Appendix 2). The Health Survey Committee determined the content and length of the health survey, qualifications for volunteers, avenues to publicize the event, and structured the public health emergency operations center to ensure the safety of volunteers and efficiency of the survey. The following objectives were developed for the 2010 Nashua Community Health Survey:

- Objective 1: To test public health emergency preparedness communications plans using landlines, cell phones, walkie talkies and handheld radios.
- Objective 2: To coordinate the health survey, allocate resources, provide support and maintain communication with volunteers.
- Objective 3: To gather health data from 210 Nashua residents.

The assessment protocol was based on the Centers for Disease Control and Prevention's Community Assessment for Public Health Emergency Response (CASPER). A multistage cluster sampling technique, based on the World Health Organization's Expanded Program on Immunizations, was used to identify thirty randomly selected census block groups and households based on probability proportionate to the number of housing units. Seven randomly selected households from each block group were interviewed by teams of volunteers using a thirty-four question health survey. Questions targeted various health and emergency preparedness topics. Data was collected using a paper-based system with Capturx software for Anoto digital pens and analyzed using Epi-Info.™ Maps with a random walking path of each block group were generated using ESRI's ArcGIS software. Volunteers received training on survey methodology, the questionnaire and the maps prior to deployment.

The rapid needs assessment successfully gathered health and emergency preparedness data for the community health assessment while training volunteers and exercising the ability to operate this protocol in the event of a disaster. For more detailed information and the results of the survey, please reference Appendix 2.

FOCUS GROUPS – FACILITATED DISCUSSIONS ON HEALTH

The Community Health Assessment Advisory Board determined that convening focus groups was the best method for engaging key stakeholders to discuss Nashua's health and healthcare needs. The Advisory Board and Focus Group Subcommittee identified key leaders and medical providers based on their role in managing community resources, providing direct health care services and spearheading change in the Nashua community. Two focus groups, one with key leaders and a second with medical providers were held in March 2011.

The first focus group had 16 key leaders from the Nashua and Greater Nashua community. It was held at Southern New Hampshire Medical Center and was conducted on Thursday, March 3, 2011. Eighteen medial partners from the City of Nashua participated in the second focus group on Monday, March 7, 2011 at St. Joseph Hospital. In total, the medical providers represented four disciplines: family medicine, obstetrics and gynecology, pediatrics, and internal medicine. The providers were from five healthcare facilities: Southern New Hampshire Medical Center, St. Joseph Hospital, Dartmouth-Hitchcock (Nashua), Lamprey Healthcare – Nashua Center and the Harbor Care Clinic, a program of Harbor Homes.

Both groups completed quantitative surveys with questions similar to those included on the 2010 Nashua Community Health Survey completed by Nashua residents in October 2010. Once analyzed, this data provided the opportunity to identify common themes and opinions regarding Nashua's health needs as perceived by key leaders, providers and the public. For more detailed information and the results of the focus groups, please reference Appendix 3.

GIS PROJECT

The Nashua Assessing Department uses ArcGIS for their daily assessing needs and has the capability to broaden the use of ArcGIS to other city departments. The DPHCS has partnered with the Assessing Department to utilize ArcGIS for many projects with the most recent projects focusing on the CHA. Throughout the CHA, mapping was used to highlight data by census tract in Nashua. For instance, the percentage of pre-1950 housing by census tract was mapped with an overlay for the number of children with elevated blood lead levels (reference Chapter 5).

For the 2010 Nashua Community Health Survey, GIS was used to map walking paths for the volunteers once the neighborhoods were determined using the CASPER protocol. For more detailed information on mapping for the health survey, reference Appendix 2.

SECONDARY DATA

Secondary data was collected by various local agencies (reference the Acknowledgements section) the NH DHHS and NH DES. Some of the databases used by NH DHHS and NH DES are highlighted below.

- **Emergency Department and Inpatient Hospitalizations Database**: This database includes information from emergency department visits and inpatient hospitalizations for New Hampshire residents. The data in this database is coded using the International Statistical Classification of Disease (ICD-9) codes, or codes that designate diagnosis and cause of death in the medical records.

- **New Hampshire Behavioral Risk Factor Surveillance System (BRFSS)**: This is a telephone survey of adults 18 years and over but does not include adults living in institutions or adults without a landline phone. The BRFSS is supported by the CDC and is administered in all the states and U.S. territories.

- **New Hampshire Youth Risk Behavioral System (YRBS)**: This is a national school-based survey conducted by the CDC to monitor health risk behaviors, asthma and obesity in young adults. The health risk behaviors include tobacco, alcohol and drug use, sexual risk behaviors, unhealthy diet behaviors and physical inactivity. The states, local education, health agencies and U.S. territories can also conduct the YRBS. The YRBS has not been conducted within the Nashua School District so the YRBS data that is portrayed throughout the report is for the State of New Hampshire and is not Nashua specific.

- **New Hampshire Environmental Public Health Tracking Program / Environmental Health Data Integration Network (EHDIN)**: Funded by the CDC, this initiative is to "improve public health by providing science-based information on the trends and distributions of environmentally-related diseases". EDHIN is the network that provides access to the data and information on environmental health.

U.S. CENSUS BUREAU

The U.S. Census Bureau collects a multitude of data through surveys of the American people. Information is collected every ten years for the U.S. Census with the most recent being conducted in 2010. Other surveys include the American Community Survey which is conducted every year, and the Economic Census and Census of Governments which is conducted every five years. In this report, data from the 2000 U.S. Census, the 2005-2009 American Community Survey and limited data from 2010 U.S. Census is used (complete data from the 2010 U.S. Census was not available at the time of writing this document).

Notes to the Reader

The following section provides additional information that may be useful to the reader.

GEOGRAPHY

The three geographies mentioned most often throughout the report are the City of Nashua, the Greater Nashua Public Health Region (GNR), which is also shortened throughout the report to be called the Greater Nashua Region and the State of New Hampshire. The City of Nashua is located in the southern portion of New Hampshire's Hillsborough County, approximately halfway between the Cities of Lowell, Massachusetts, and Manchester, New Hampshire. According to the 2010 U.S. Census, it's nearly 31 square miles are home to an estimated 86,494 people, or roughly 6.6% of New Hampshire's total population of 1,316,470 people. It is the second largest city in New Hampshire, with Nashua's population more than double that of Concord, the state's capitol and third largest city. Throughout the State of New Hampshire, there are fifteen public health regions and the Greater Nashua Public Health Region is composed of thirteen towns which include the towns of Amherst, Brookline, Hollis, Hudson, Litchfield, Lyndeborough, Mason, Merrimack, Milford, Mont Vernon, Nashua, Pelham and Wilton.

When possible, the data will be compared between geographies. For instance, the Nashua specific data will be compared to regional data and state data to see how Nashua compares to

these other geographies. In some cases, data for the region and Nashua are not available due to small sample sizes. When this occurs, data for the state or Hillsborough County will be shown.

TECHNICAL LANGUAGE

Although efforts were made to reduce the amount of technical language throughout the CHA, there still remains some language that may be unfamiliar to readers. Below are definitions for the most commonly used technical language in the CHA report (adapted from the 2011 New Hampshire State Profile).

- **Statistical Significance**: The word "significant" is a statistical term with technical meaning and does not define a health condition as important or not important. Differences calculated from small sample sizes or populations are less likely to show significance.
- **Confidence Intervals**: A confidence interval (CI) describes the level of variability in a sample estimate and specifies the range in which the true value of the population that the sample represents is likely to fall. We use the 95% confidence level, which means that this population value falls within 95% of the confidence intervals estimated from samples of this population. If the 95% confidence intervals of these estimates do NOT overlap, these estimates differ statistically significantly from each other at the 0.05 significance level.
- **Rate**: The number of events per 1,000, 10,000 or 100,000 population. Rates that are calculated with small sample sizes (<20 events) are unreliable. A crude rate does not factor in other variables such as age and commonly used crude rates include birth and death.
- **Incidence**: The number of new cases revealed or diagnosed during a specific time period. Represented as a rate.
- **Prevalence**: The number of cases existing at a specific time. Represented as a rate.
- **Mortality**: A health event resulting in death. Represented as a rate.
- **Age-Adjusted**: The rate that would occur if the population had the same age distribution as that of the United States. This allows for comparison between populations with different age distributions

DATA HIGHLIGHTS

The Data Highlights section of the report allows for a quick review and comparison of indicators that are found throughout the CHA report. This is not a comprehensive list of the data from the report but highlights from each chapter. When appropriate, the data will be compared to the Healthy People 2020 targets. A thumbs up or down graphic will be used to depict the progress made towards reaching the targets. For instance a "thumbs down" graphic indicates Nashua has not met the Healthy People 2020 goal and a "thumbs up" graphic indicates Nashua has already achieved the Healthy People 2020 goal.

ACRONYMS

There are many acronyms throughout the CHA report. To assist the reader, a list of acronyms can be found in Appendix 4.

DATA HIGHLIGHTS

Indicator	Nashua	New Hampshire	Healthy People 2020 Goal	Has Nashua reached the goal?
Demographics				
Percent of population in poverty[1]	**7.2%**	**7.7%**	*	*
Percent of children under 18 years in poverty[1]	**11%**	**9%**	*	*
Percent of employed population over 16 years[1]	**68.3%**	**66.2%**	*	*
Percent over 25 years with a high school diploma or higher[1]	**90.8%**	**90.5%**	*	*
Percent of students eligible for free and reduced lunch 2010-2011[2]	**38%**	**26%**	*	*
Median household income[1]	**$64,219**	**$63,033**	*	*
Percent of population that is Hispanic or Latino[1]	**7.8%**	**2.6%**	*	*
Maternal Health				
Teen birth rate per 1,000 women ages 15 to 19 years[3]	**18.5**	**15.4**	*	*
Percent receiving prenatal care in the first trimester[3]	**86%**	**83%**	**77.9%**	👍
Percent receiving early and adequate prenatal care[3]	**79%**	**81%**	**77.6%**	👍
Percent of newborns with a low birth weight (<2,500 grams)[3]	**8%**	**7%**	**7.8%**[+]	👎
Percent of newborns with a very low birth weight (<1,500 grams)[3]	**2%**	**1%**	**1.4%**	👍
Chronic Diseases/Injury				
Inpatient discharges for heart attacks (per 100,000 population) [3]	**193**	**193**	*	*
Inpatient discharges for stroke (per 100,000 population) [3]	**195**	**179**	*	*
Inpatient discharges for diabetes (per 100,000 population) [3]	**153**	**113^**	*	*
Percent of adults reporting hypertension[4]	**30%**	*	**26.9%**	👎

+ Nashua met the HP2020 goal for very low birth weight newborns in 2008 and 2007.
^ Statistically significant.
* Not applicable/Not Available

👍 = indicates Nashua has already reached the Healthy People 2020 Goal

👎 = indicated Nashua has not reached the Healthy People 2020 Goal

DATA HIGHLIGHTS

Indicator	Nashua	New Hampshire	Healthy People 2020 Goal	Has Nashua reached the goal?
Chronic Diseases/Injury Continued				
Percent of adults reporting high cholesterol[4]	38%	40%	*	*
Percent of adults with their cholesterol checked in past 5 years[4]	87%	83%	82.1%	👍
Rate of ambulatory care sensitive conditions for 0-4 year olds (per 100,000)[4]	1,822	1,081	*	*
Percent of adults over 65 years that received the pneumococcal vaccine[4]	70%	73%	90%	👎
Percent of adults that always use a seatbelt[4]	62%	64%	92.4%	👎
Environmental Health				
Percent of pre-1950 housing[7]	25.8%	28.8%	*	*
Percent of children screened for lead poisoning with elevated blood lead levels[8]	0.6%	0.8%	*	👎
Percent of children (12-23 months) screened for lead poisoning[8]	59.5%	50.6%	*	*
Percent of children (24-35 months) screened for lead poisoning[8]	33%	26.8%	*	*
Percent of tests conducted by NH DES with ≥4pCi/L of radon[9]	36%	31%	*	*
Current asthma prevalence in adults[4]	8.7% (2008, 2009)	10.5% (2009)	*	*
Hospitalization rate for asthma (per 100,000)[3]	135	81	*	*
Number of ozone exceedance days from 2000-2009[9]	57	135	*	*
Number of particulate matter ($PM_{2.5}$) exceedance days from 2000-2009[9]	6	15	*	*
Weight Management/Nutrition/Physical Activity				
Percent of adults neither overweight or obese[4]	40.5% (2008, 2009)	38% (2009)	33.9%	👍

+ Nashua met the HP2020 goal for very low birth weight newborns in 2008 and 2007.
^ Statistically significant.
* Not applicable/Not Available

👍 = indicates Nashua has already reached the Healthy People 2020 Goal

👎 = indicated Nashua has not reached the Healthy People 2020 Goal

DATA HIGHLIGHTS

Weight Management/Nutrition/Physical Activity

Percent of adults that are overweight[4]	37.2% (2008, 2009)	36% (2009)	*	*
Percent of adults that are obese[4]	25.8% (2008, 2009)	26% (2009)	30.6%	👍
Percent of adults that ate >5 servings of fruit and vegetables[4]	22% (2008, 2009)	28% (2009)	*	*
Percent of adults with moderate/ vigorous physical activity[4]	48% (2008, 2009)	53% (2009)	47.9%	👍

Preventable Risks to Health

Percent of adults that are current smokers[4]	17% (2008, 2009)	16% (2009)	12%	👎
Percent of adults reporting heavy drinking[4]	8.6% (2008, 2009)	5.5% (2009)	*	*
Percent of adults reporting binge drinking[4]	5.8% (2008, 2009)	*	*	*
Rate of chlamydia cases for females 15-44 years of age[5]	237.1	158.5	*	*

Microbial Threats

Rate of confirmed salmonella infections (per 100,000)[6]	14.1	15	11.4	👎
Rate of confirmed campylobacter infections (per 100,000)[6]	12.7	13.5	8.5	👎
Rate of probable and confirmed Lyme disease cases (per 100,000)[6]	87	108	*	*

+ Nashua met the HP2020 goal for very low birth weight newborns in 2008 and 2007.
^ Statistically significant.
* Not applicable/Not Available

👍 = indicates Nashua has already reached the Healthy People 2020 Goal

👎 = indicated Nashua has not reached the Healthy People 2020 Goal

[1] U.S. Census Bureau. (2005-2009). *2005-2009 American Community Survey 5-Year Estimates*. Retrieved on April 6, 2011 from http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ACS&_submenuId=population_0&_lang=en&_ts=.

[2] NH Department of Education. (2001-2009). Data Collection & Reports. Retrieved on August 27, 2010 from http://www.education.nh.gov/data/attendance.htm.

[3] Office of Health Statistics and Data Management. *Emergency Department and Inpatient Hospitalizations Database*. Concord, New Hampshire: New Hampshire Department of Health & Human Services, 2003-2007.

[4] Bureau of Public Health Statistics and Informatics. *New Hampshire Behavioral Risk Factor Surveillance System Data*. Concord, NH: New Hampshire Department of Health and Human Services, 2008 & 2009.

[5] NH DHHS, Infectious Disease Surveillance Section. (2010). *NH STD/HIV Surveillance Project: 5 Year Data Summary Report 2005-2009*. Retrieved from http://www.dhhs.state.nh.us/data/documents/surveillance05-09.pdf.

[6] City of Nashua, Division of Public Health & Community Services. *Community Health Department Reportable Diseases Database*. Nashua, New Hampshire: City of Nashua, 2006-2010.

[7] US Census Bureau. (2000). *2000 US Census*. Retrieved in October 2010 from http://factfinder.census.gov/home/saff/main.html?_lang=en.

[8] New Hampshire Department of Health and Human Services (NH DHHS). (2009). *2009 Childhood Blood Lead Surveillance Data*. Concord, New Hampshire: New Hampshire Healthy Homes and Lead Poisoning Prevention Program, 2009.

[9] NH DES. (2011). *Internal Environmental Database*. Concord, New Hampshire: NH DES, 1994-2010.